Taunakitanga mō ngā rautaki whakatika - Te kaupapa whakangao: He rīpoata āpiti ki te rautaki hukihuki mō Ngā Ara Hono ā-rohe 2024-2054

Evidence base for key strategic problems – the case for investment: A supplementary report to the draft Waikato RLTP 2024-2054

Waikato
REGIONAL COUNCIL
Te Kaunihera ā Rohe o Waikato

1. Introduction

The Waikato region's transport system is complex and needs to address several issues. Analysis of national and regional research and data reveals important trends and lessons. The most important lesson is that solving transport issues requires a multi-faceted approach. Cities and regions that have great transport systems have adopted a complementary mix of policy, infrastructure projects and service enhancements.

This supplementary report provides a summary of local and national evidence to address each of the objective policy streams adopted in the Waikato Regional Land Transport Plan. Specific trends and relevant lessons are summarised below, grouped according to the areas of relevance for the RLTP.

This supporting evidence document was prepared in 2023 under the previous Labour government policy framework.

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2. RLTP problem statement: climate change (reducing emissions)

Land use and transport planning has led to transport being a key contributor of greenhouse gas emissions which is exacerbating the effects of climate change.

Priorities:

1. **Reduce transport emissions**
2. **Transform towards an environmentally sustainable, low carbon transport system**

Urban form and the transport system shapes the way we live. While this integrated system provides the foundation for thriving communities, if poorly formed it can also establish and perpetuate unhealthy urban form and travel patterns and increase the greenhouse gas emissions that contribute to climate change.

We are heavily reliant on high carbon transport. Reducing transport emissions is critical to reducing the effects of climate change, and ensuring New Zealand can meet its targets under the Paris Agreement and the Climate Change Response (Zero Carbon) Amendment Act.

The national priority to address climate change by reducing emissions is signalled through various statutory requirements and other national direction.

Aotearoa New Zealand's first emissions reduction plan has three key transport focus areas:

- Making it easier to get around without a car
- Helping people and businesses switch to zero emissions vehicles
- Encouraging low emissions freight options

Figure 1: Emissions Reduction Plan targets

ERP 2035 TARGETS: [2.21]

1. 20% reduction in total kilometres travelled by the light fleet
2. 30% zero-emission vehicles in the light fleet
3. 35% reduction in freight transport emissions
4. 10% reduction in total fuel emissions intensity
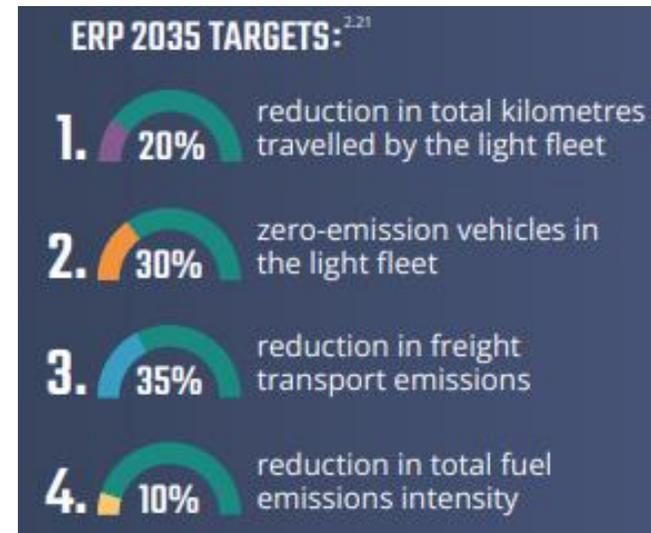
Source: (Drive Electric, 2023)

Reducing emissions is also a strategic priority in the draft GPS on land transport with a primary objective to transition to a lower carbon transport system.

2.1   Current situation

Greenhouse gas emissions from transport are a significant contributor to climate change and adversely affect air quality more generally. As a result of strong population growth and an increase in vehicles, New Zealand's greenhouse gas emissions from transport fuels have increased by nearly 70 per cent from 1990 levels. They continue to increase and transport emissions now make up nearly 20 per cent of New Zealand's gross emissions profile. Ninety percent of that is due to road transport. Vehicles reliant on fossil fuels are the fastest growing source of greenhouse gas contributions to the environment.

Figure 2: CO2 emissions from transport
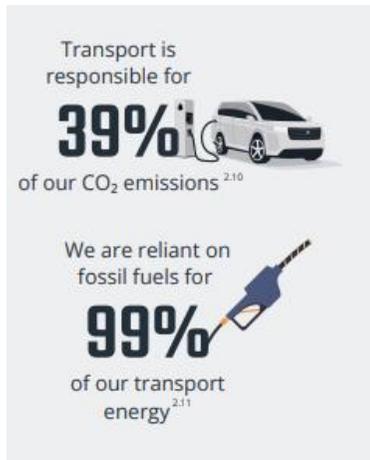
Source: (Drive Electric, 2023)

Figure 3: New Zealand GHG emissions snapshot
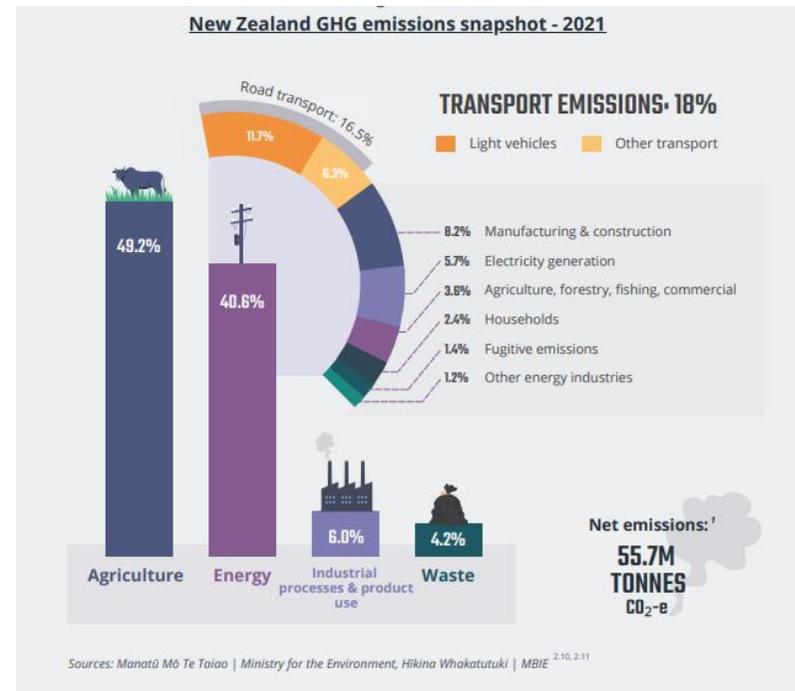
Source: (Drive Electric, 2023)

Waikato region is the highest emitter of total greenhouse gases in New Zealand and accounts for 14 percent of national vehicle emissions.

Figure 4: Percentage of gross emissions by source (excluding forestry) for Waikato region
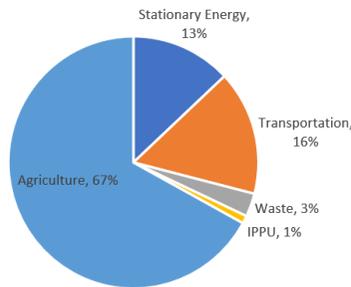
Source: (Waikato Regional Council, 2023)

The 2021/22 Waikato Region Greenhouse Gas Inventory shows that transport sources emitted 1,903,581 t CO_2e, representing 16 percent of the Waikato region's total gross emissions and about 19 percent of net emissions. Transport was the second highest contributor to regional net and gross emissions after agriculture.

This is a decline in regional transport emissions compared to the previous 2018/19 reporting period and is largely attributed to covid lockdowns and people working from home. However, the overall general trend is that transport emissions are increasing but with a fluctuating trend between years.

Light vehicles account for 90% of regional transport emissions.

Metro area emissions

About two thirds of transport emissions are generated in the Hamilton-Waikato metro area. The metro area transport emissions as a proportion of the regional total is as follows:

- Hamilton City   35.5%
- Waikato District   17.2%
- Waipā District   11.8%

Freight emissions

There are no official regional statistics for emissions from heavy vehicle or rail freight.

Public transport emissions

Based on travel distance, emissions generated by public transport in the region in 2022 were:

- Bus services   4,847 tCO2e (2022/23) or 5,514 tCO2e (2022)
- Te Huia   1,181 tCO2e (2022/23) or 1,179 tCO2e (2022)

2.2   Cause of transport emissions in our region

Across the region there is a heavy reliance on cars for travel. The Waikato region has the most extensive state highway network in New Zealand, as well as a substantial local road network. Outside of the metro area, long

distances must be travelled between towns, adding to the transport emissions.

Our region's greenhouse gas emissions are expected to be impacted by a growing population, particularly in and around Hamilton and in the north of the Waikato district. In the subregion of Waikato and Waipā districts and Hamilton city, demand for dwellings is projected to increase by about 56 per cent from 2020 to 2050. Accommodating this growth will be challenging and good planning to support low-emissions urban form will be vital.

In the metro area, high vkt, single occupant car use over short distances, low use of public transport and active modes, low-density and high growth rates in the main urban areas with a traditional emphasis on greenfield development all contribute to transport emissions.

Transport is responsible for 53 percent of CO_2 emissions in the Hamilton-Waikato metro area (FutureProof, 2020) and 64 percent within Hamilton city (Hamilton City Council, 2022).

The Regional mode shift plan (Waka Kotahi, 2020) notes:

Hamilton currently has some of the highest car use rates for trip making in the country. This is likely to reflect the high levels of roading investment within the city, such as the delivery of the Waikato Expressway and SH1 around the west of the City. This investment has supported the growing importance of Hamilton as part of the Upper North Island freight system and also as a centre for manufacturing. However, many of these strategic roads have also enabled short distance vehicular movement within the city and result in additional separation of communities making it preferable to drive.

Figure 5: Transport mode share - Hamilton compared to other major centres

TRAVEL BEHAVIOUR – TRANSPORT MODE SHARE (ALL TRIPS)

	AUCKLAND	HAMILTON	TAURANGA	WELLINGTON	CHRISTCHURCH
Walking	12%	10%	11%	24%	12%
Cycling	1%	2%	2%	1%	3%
Public transport	4%	1%	1%	5%	2%
Other modes	83%	87%	86%	70%	83%

Please see Table 13 in technical report for more details
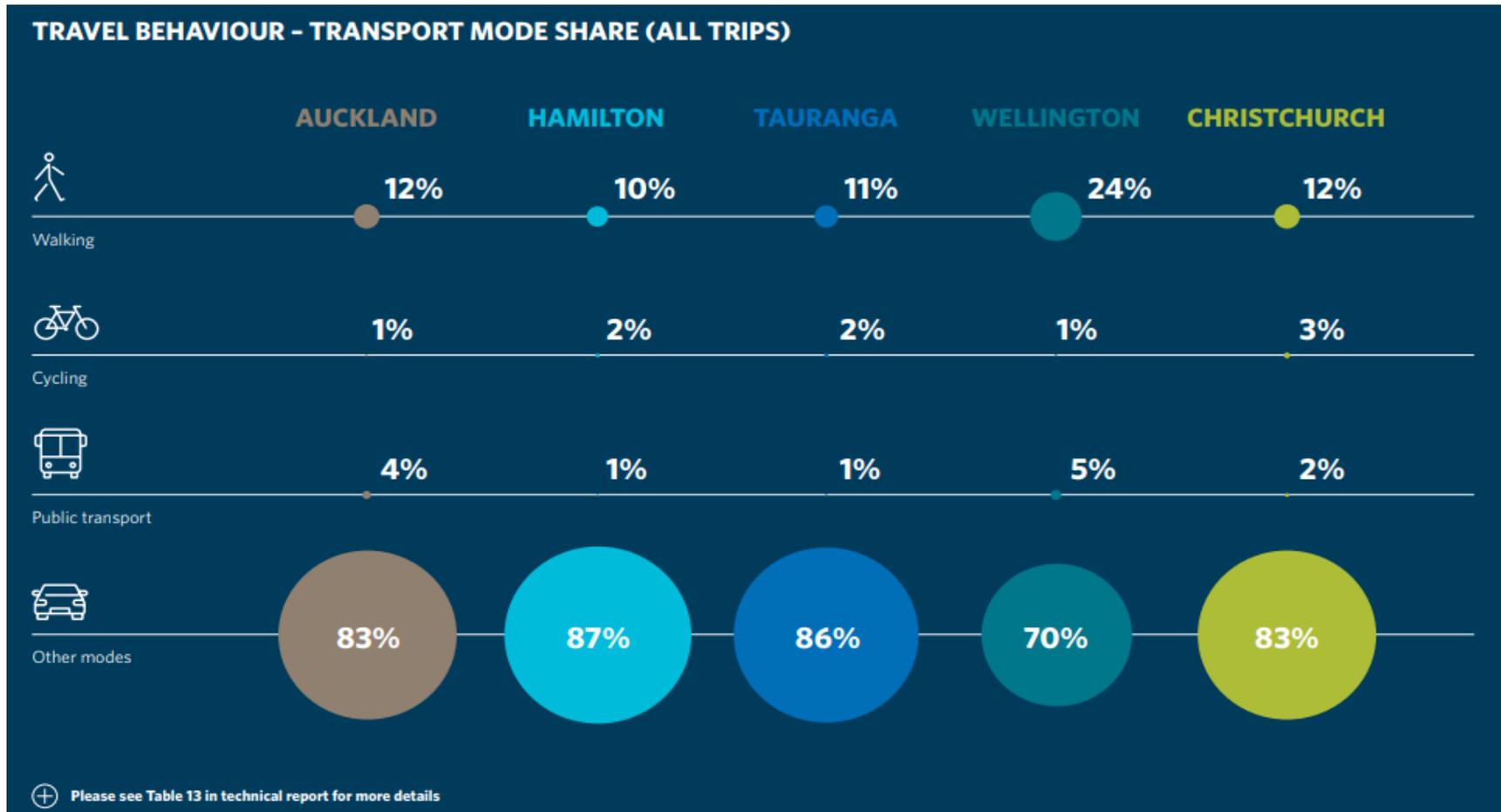
Source: (Waka Kotahi, 2022)

Figure 6: Travel behaviour for trips under 5km - Hamilton compared to other major centres

TRAVEL BEHAVIOUR FOR TRIPS UNDER 5KM

65.5%

of all trips (across all modes, inlcuding private vehicles) are under 5km

The high percentage of short trips by car are contributing to our carbon emissions.

All trips (across all modes) less than 5km
64%
71%
60%
72%
63%

Trips by car less than 5 km
58%
64%
55%
68%
58%

All trips (across all modes) less than 2km
36%
46%
34%
42%
37%

Trips by car less than 2 km
28%
33%
27%
37%
30%

KEY: AUCKLAND HAMILTON TAURANGA WELLINGTON CHRISTCHURCH

Source: (Waka Kotahi, 2022)

Figure 7: VKT by year - Waikato region
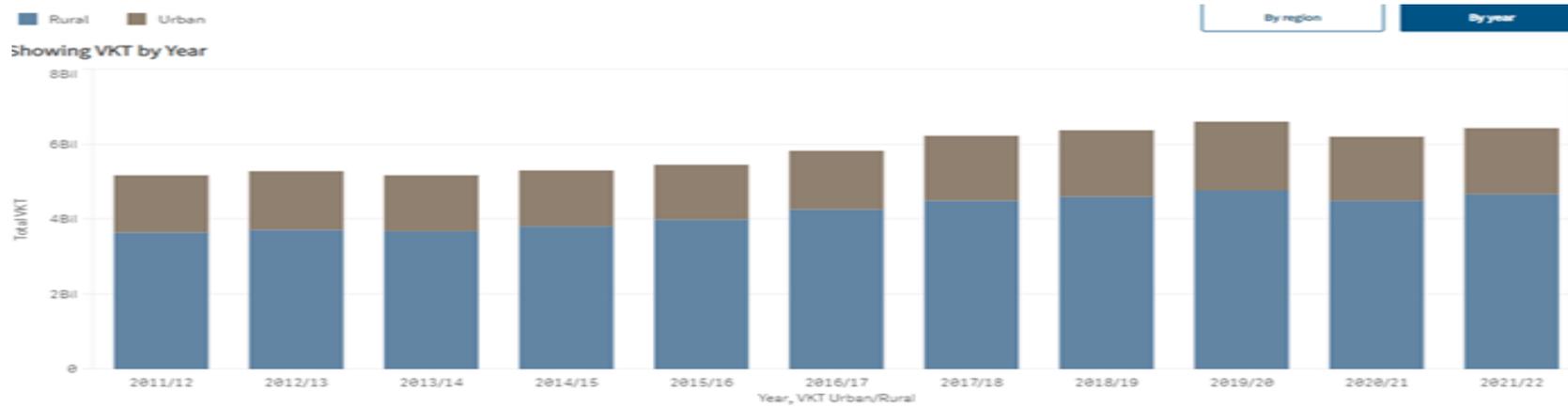
Figure 8: VKT by district - Waikato region
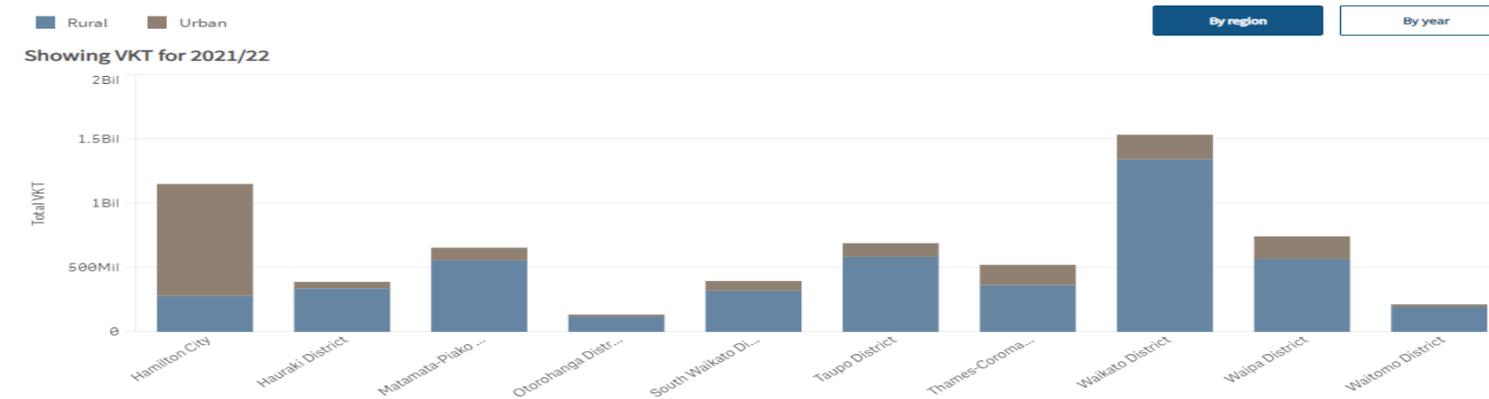
Source: (Waka Kotahi, 2024)

Figure 9: Tier 1 driven journeys proportions by distance
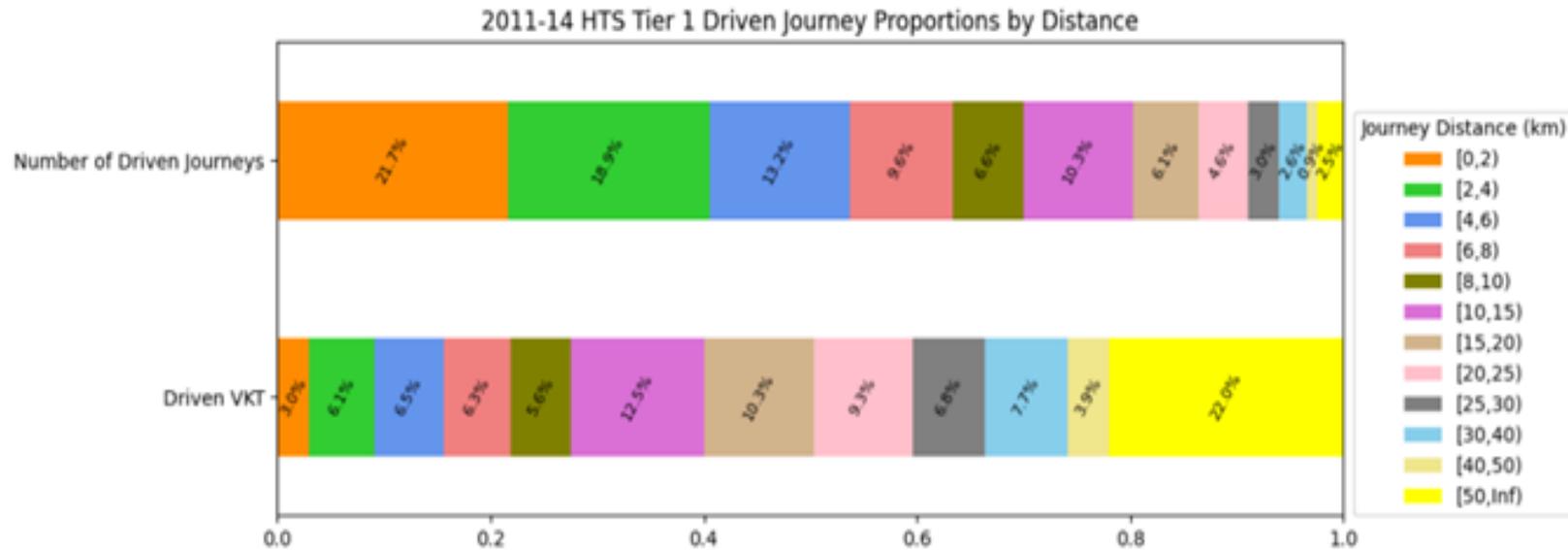
Note: In Tier 1

- 60% of car driver VKT is by trips of journey length greater than 15km
- 54% of driven journeys are under 6km – these contribute only 15.6% of LV-VKT
- 2.5% of journey (>50km) contribute over 20% of VKT
- 21% of journeys (<2km) contribute only 3% of VKT

The paper "Household travel in major urban areas" finds that mode shift alone is unlikely to achieve the goals of the Emissions Reduction Plan. Shorter journeys of under 15km are potentially more feasible to shift to an alternative mode. But because these journeys contribute only 25% of VKT, targeting these journeys will not achieve the reductions required. Even if all short car journeys (<6km) were suddenly not driven, it still wouldn't reduce VKT by 20%. Achieving the target set in the Emissions Reduction Plan will require a suite of measures targeting journeys driven of all distances and purposes.

Source: (Waka Kotahi, 2023)

2.3   Impacts of emissions

Climate change

Addressing the causes and impacts of climate change is a global and national priority. We are seeing the effects of increasing emissions in more extreme weather events regionally and around the world. Transport plays a significant role in climate change, and vehicles reliant on fossil fuels are now the fastest growing source of greenhouse gas contributions to the environment. It is clear from international and national evidence that urgent action is required across many sectors to reduce climate emissions, including from transport.

Health impacts

In addition to the emissions that contribute directly to climate change, transport is responsible for two thirds of the harm estimated to be caused by human-made air pollution. Each year in New Zealand harmful emissions result in:

AIR POLLUTION AND HUMAN HEALTH

Transport is responsible for two-thirds of our 'harmful emissions' (air pollution).[2.14]

Each year, harmful emissions from transport result in:[2.15]
- 2,200+ premature deaths
- 9,200+ hospital admissions for respiratory and cardiac illnesses
- 13,200+ cases of childhood asthma
- $10.5 billion+ in social costs

Research indicates that widespread EV uptake could result in a ~50% reduction in the health impacts of air pollution.[2.16]

Not only do EVs provide less air pollution, they also contribute to quieter cities.

Both petrol and diesel vehicles release pollution harmful to human health. Diesel vehicles make up a small part (23 percent) of New Zealand's vehicle fleet, but they produce most (82 percent) of the harm, because their engines produce higher levels of nitrogen oxides and particulate pollution. Exposure to nitrogen oxides causes respiratory and cardiovascular damage and can contribute to smog. Particulates can cause lung cancer, and both forms of pollution contribute to asthma (Ministry of Transport, 2024).

2.4   What is required to meet the targets?

We need to invest in interventions that will reduce emissions. If we don't reduce the cause of climate change we will continue to face threats to nationally and regionally important strategic corridors and lifeline routes. The economic and social burden on the region will be unsustainable.

Without intervention the region will face further adverse consequences such as congestion, loss of productivity, and increased travel times. These consequences are likely to create more emissions, further compounding the issue. Community and individual health will also continue to be impacted by transport emissions.

Waikato region's target of reducing transport emissions by 41 percent[1] by 2035 and reaching net zero emissions by 2050 is consistent with the Emissions Reduction Plan, and numerous other national and international commitments. For Waikato region to achieve these targets, the existing land transport system and the way we live and move around needs to be transformed.

Our biggest opportunity to reduce transport emissions is in the metro area through increased patronage on public transport and other low carbon transport modes. It is critical to focus on this area to achieve the transformation required to meet national and international obligations, and to reduce the impact of climate change into the future.

Other opportunities exist to reduce emissions in the freight and public transport sector, and through adoption of new technology, both for the light and heavy vehicle fleets.

Specifically we need to:

- Reduce vkt by 24%
- Increase EVs to 30% of the light fleet
- Increase PT by 100%
- Increase walking by 100%
- Increase cycling by 100%
- Increase fuel economy by 10%

Electric vehicles

EVs have a role to play in reducing transport emissions. Currently about two percent of the Waikato region light fleet is an EV. The ERP sets targets to increase EVs to 30% of the light fleet. The Clean Car Discount has coincided with an increase in EVs but will no longer be available from the end of 2023. It is not known what impact this will have on the uptake of EVs in the region.

While most EVs will be charged at home or work, there will always be a need to charge vehicles elsewhere. Drivers will need to use conveniently located public chargers. Currently, there are not enough public chargers to cater for the anticipated increase in EVs.

Figure 10 shows the location of public EV chargers in Waikato region. There are 42 fast chargers and five ultrafast chargers across 36 locations in the region.[2]

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[1] Equivalent national reductions by 2025 from 2019 levels where Targets 1 – 4 in the Emissions Reduction Plan are met.

[2] Excludes Tesla chargers because Tesla chargers were not universal to all EVs. Tesla chargers are now universal.

Figure 10: Public EV chargers in Waikato region
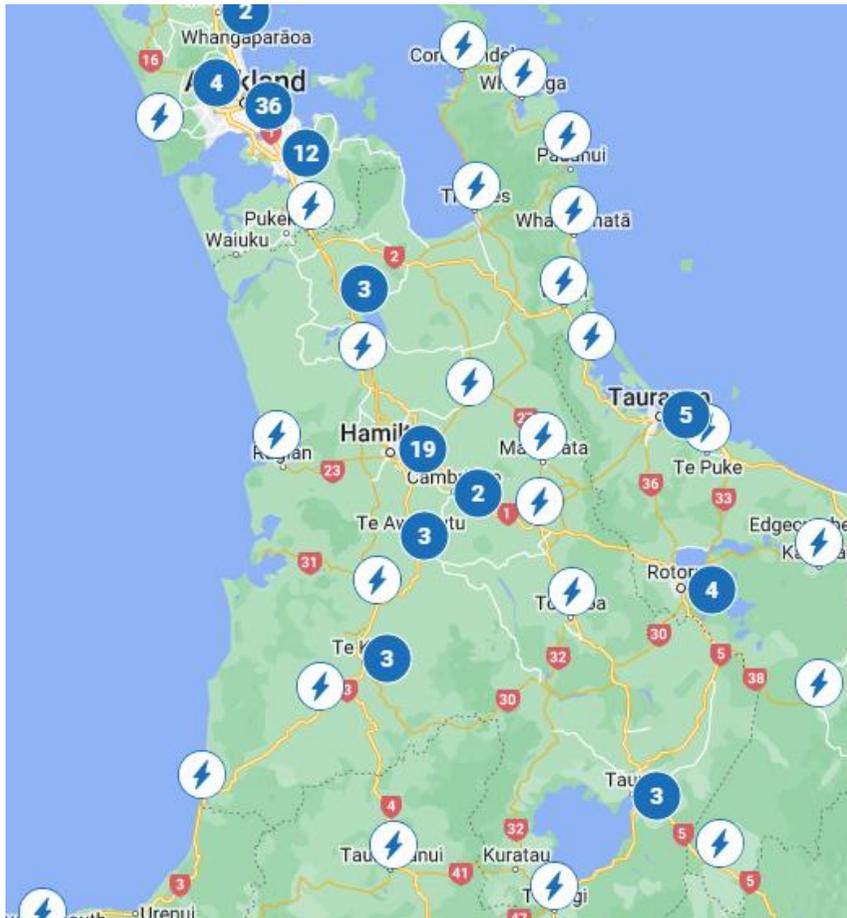
Source: (Waka Kotahi, 2024)

There are several gaps in the EV charging network across the region, particularly to the west in the Kawhia area, the central area bounded by Te Awamutu – Taumarunui – Taupō– Rotorua – Tokoroa, and in the north-east of the region across Hauraki and towards Thames and Coromandel Peninsula.

It is important to support the uptake of EVs in the region by increasing the number of public charging stations available.

Public transport

Waikato Regional Council has made a commitment to "deliver public transport services in a way that achieves at least net neutral carbon emissions for the period 2025 to 2050 by:…Transitioning to a zero emission public transport fleet as a priority". The table below shows the forecasted figures for public transport emissions as electric buses are introduced to the fleet.

Figure 11: Emissions forecast by public transport unit

EMISSIONS

	Unit	Sum of 2022/23 CO2-e	Sum of 2023/24 CO2-e	Sum of 2024/25 CO2-e	Sum of 2025/26 CO2-e	Sum of 2026/27 CO2-e
West Hamilton	1	1,160	1,837	1,837	1,837	1,837
East Hamilton	2	2,196	2,112	2,191	2,191	2,191
North Waikato	3	521	521	521	0	0
Eastern Connector	4	227	227	227	0	0
Raglan	5	110	110	110	0	0
South Waikato	7	92	92	92	92	92
Taupo	9	86	38	38	38	38
Pokeno-Pukekohe	3A	198	198	198	198	198
Thames	TS2020	10	10	10	10	10
Waipa	6	276	0	0	0	0
Grand Total		**4,875**	**5,144**	**5,223**	**4,365**	**4,365**

Mode shift

People will need to use their cars less and choose to use public transport and active modes to really make a difference. The increases required to meet the targets above will need to be supported by safe walking, cycling and public transport infrastructure.

Perception of, as well as real personal safety is important if mode shift is to be achieved. If people feel unsafe using a transport option, the less likely they are to choose it. Cyclists sharing road space with cars is a particular concern. In Hamilton, trips to school are considered to be an area of opportunity to reduce car use. Urban cycle networks should be designed to be suitable for users of all ages and capabilities (Waka Kotahi, 2020).

3.   RLTP problem statement: resilience

The transport network is becoming increasingly vulnerable to climate change and other disruptions which is putting communities at risk and affecting the ability to maintain route security.

Priorities:

1. **Maintaining the transport system**
2. **Ensuring community access**
3. **Building regional resilience**

Transport enables connection. In the transport context, resilience is the ability of a transport system to move people and goods around in the face of one or more major obstacles to normal function. Resilience efforts should focus on what happens to communities when the network is disrupted by different shocks and stresses.

Climate change is increasing the risk, severity and frequency of natural hazards and some Waikato communities are more susceptible to these risks and disruptions than others.

The resilience of our road transport network to natural hazards and climate change, whether it be sea level rise, coastal and riverine flooding, or increasing temperatures, is critical to secure social and economic wellbeing in the Waikato region. Climate change impacts are not distributed equally, and vulnerable populations such as low-income or rural communities are often disproportionately affected by weather events and poor urban and transport planning. Our planning for urban form and transport needs to be accessible, affordable, reliable, safe, inclusive and efficient to support these communities.

3.1   The national picture

New Zealand's location and geography exposes it to a broad range of hazards, including earthquakes, tsunamis, volcanic activity, ex-tropical cyclones, floods, droughts and wildfire. Climate change will increase the frequency and severity of climate-related risks to New Zealand infrastructure and communities.

Future climate projections for New Zealand include:

- Temperature – by 2040 average temperature is projected to increase by between 0.7°C to 1.1°C, and up to 3.0°C by 2090 under different scenarios. There will be more hot days, fewer frost and snow days, and an elevated fire risk in rural areas.
- Rainfall – projected changes in rainfall vary around the country and with seasons. The overall annual pattern is for increased rainfall in the west and south, and decreases in the north and east. There will be an increase in very extreme rainfall throughout the country. Drought intensity and severity will also increase.
- Strong winds – extreme wind speeds will increase by up to 10% or more in parts of the country, with the most robust increase in the southern half of the North Island and throughout the South Island.
- Sea level rise – median sea-level rise across Aotearoa is projected to be between 0.44 metres and 1.09 metres under different scenarios by 2100. In coastal areas where the land is subsiding the rate of relative sea-level rise will be even higher. Sea-level rise will accelerate coastal erosion and increase coastal inundation.

Figure 12: Climate change projections for New Zealand

Temperature
By 2040 average temperature is projected to increase by between 0.7°C (RCP2.6) to 1.1°C (RCP8.5), and up to 3.0°C by 2090 (RCP8.5).[5] There will be more hot days, fewer frost and snow days, and an elevated fire risk in rural areas.

Strong winds
Extreme wind speeds will increase by up to 10% or more in parts of the country, with the most robust increase in the southern half of the North Island and throughout the South Island.

Rainfall
Projected changes in rainfall vary around the country and with seasons. The overall annual pattern is for increased rainfall in the west and south, and decreases in the north and east. There will be an increase in very extreme rainfall throughout the country. Drought intensity and severity will also increase.

Sea-level rise
Median sea-level rise across Aotearoa is projected to be between 0.44 metres (RCP2.6) and 1.09 metres (RCP8.5) by 2100. In coastal areas where the land is subsiding the rate of relative sea-level rise will be even higher. Sea-level rise will accelerate coastal erosion and increase coastal inundation.

Source: (Waka Kotahi, 2022)

Alongside the increasing hazard risk from climate change impacting the transport network infrastructure directly, potential disruptions and impacts on the transport system range from vehicle crashes, changing demographics, energy supply for an emerging decarbonised vehicle fleet, and cyber security.

All of these have implications for how well the transport system and communities cope in the face of disruption.

3.2   The regional picture

The Waikato region transport network is one of New Zealand's busiest because of its strategic location in the upper North Island. It is a corridor region between Auckland and the rest of New Zealand to the south and contains strategic freight and tourism routes, as well as access to rural communities, and access to and within the large metro urban area of Hamilton.

Some of these routes are particularly affected by disruptions caused by natural hazards because of extreme weather events. For example, Cyclone Gabrielle took a very heavy toll on state highways 25 and 25a on the Coromandel Peninsula, 23 between Hamilton and Raglan, and 31 to Kawhia.

Other areas of the region are also susceptible to longer term climate change impacts, such as:

- 558km of local and arterial roads in areas impacted by a sea level rise of 1.2m above the current coastal 1% AEP levels
- 2750km of road exposed to known or mapped floodplains
- 4,00ha below sea level in the Lower Waikato River area
- 22,148ha below sea level in the Hauraki Plains

Additionally, the region has an ageing, and in some districts a declining population, which will have implications for funding and use of the transport system.

3.3   Impacts

Climate change and other stressors will impact the transport network both directly (i.e. damaging infrastructure) and indirectly (i.e. changing network use). To be resilient, the region's transport system must be able to adapt to uncertainty and change. There is currently little data available to help us understand the scale of vulnerability in the region. What we do know is that there are many challenges due to the costs and uncertainties involved.

The consequences of climate impacts will reach beyond damage to transport infrastructure. It will impact the economy and affect the lives and livelihoods of people who rely on the land transport system.

Examples of climate impacts include:

Rural and coastal communities	Urban areas	Major transport corridors	Other resilience factors
• disruption to emergency services • Māori communities • isolation of communities • access for tourists • disruption to rural businesses	• complex transport system disruption • closure of major routes • reliable public transport • interdependent infrastructure	• increased maintenance and renewal • disruption of inter-regional connections • exports and imports • access to consumer goods	• ageing population • fuel and energy security (e.g. for EVs) • cyber security

3.4 Adaptation responses

The ability of a community to respond to transport disruptions depends on the level of resilience built into the transport system. The best way to build resilience into the future is to avoid the conditions that lead to climate change, adapt to increased natural hazards and the threat they pose to the transport network using a variety of strategies, enable a variety of transport options, and improve community preparedness and connections so that disruptions are more successfully recovered from.

The New Zealand transport system needs to adapt to the impacts of climate change and be resilient to other disruptions. The National Adaptation Plan provides a framework for adaptation response. A regional response to climate related hazards needs to include consideration of:

- Avoid building transport infrastructure and other development in locations that are exposed to significant climate-related hazards
- Protect transport infrastructure from climate hazards using both engineering solutions and nature based solutions
- Accommodate climate-related hazards by accepting they will occur but ensuring disruption is minimised and recovery occurs quickly.
- Retreat by relocating transport infrastructure and other assets away from locations exposed to climate-related hazards.

4. RLTP problem statement: growth and economic development

Growth in the upper North Island and the Hamilton-Waikato metro spatial area is impacting on the efficient movement of people and freight.

Priorities:

1. **Implement the Hamilton-Waikato Metro Spatial Plan Transport Programme Business Case**
2. **Future proof and optimise priority strategic corridors (road and rail)**
3. **Resolve rail constraints and build rail capacity**

The Waikato region has the fourth largest population and the fourth largest regional economy in New Zealand. The region is part of the 'golden triangle' encompassing Waikato, Auckland and Bay of Plenty regions. The regional transport network forms a key part of strategically important inter- and intra- regional road and rail corridors in the upper North Island and national land transport network.

The region is a major producer of key exports from forestry, aquaculture, agribusiness and agriculture. Alongside products from these traditional sectors, commercial and industrial activities such as warehousing are increasingly moving out of Auckland and into the Waikato region.

Transport enables growth but can also be adversely affected by growth. Growth in the north Waikato has been faster that it has been possible to plan, fund and build transport choices for residents who live there. Growth pressures in this location, and in other parts of the region adversely impact on the efficiency of the primary state highway corridor between Hamilton and Auckland.

The Future Proof Strategy identifies benefits and challenges for the sub-region. While the regions have strong economic linkages, the challenges include "growth displacement from Auckland into the northern Waikato, the strong activity and transport links between Auckland and the Waikato, the impact of shorter travel times between the two regions. There is increasing growth in freight, constraints in the road and rail networks, pressures on land use, particularly residential and industrial land and the need for a more coordinated approach between regions".

In the metro area, half of Hamilton's growth has occurred in existing urban areas (infill) with the other half occurring in greenfield areas. Residential expansion has continued onto highly productive land (Jones & Borman, 2023) and has implications for transport networks. The larger an urban footprint, the lower the efficiency of transport, especially when spread out over a wide or lower density area. It is important therefore that a compact urban form in the metro area is maintained over the longer term to achieve transport efficiencies and avoid transport problems evident in bigger centres.

It is more expensive to build and maintain longer lengths of road network and this contributes to higher costs of production and distribution leading to higher prices for food, commodities, and other goods. Demand on the transport network increases VKT, emissions and congestion ultimately leading to a loss of productivity and a decrease in social and economic wellbeing.

The major factors influencing the level of congestion and general movement across any network is the type and location of development and travel behaviour.

Travel by car has a high impact on the environment and takes up the most road space per person of any method of travel (Hamilton City Council, 2022). The transport system needs to be better balanced and requires other travel options to be better and easier to use.
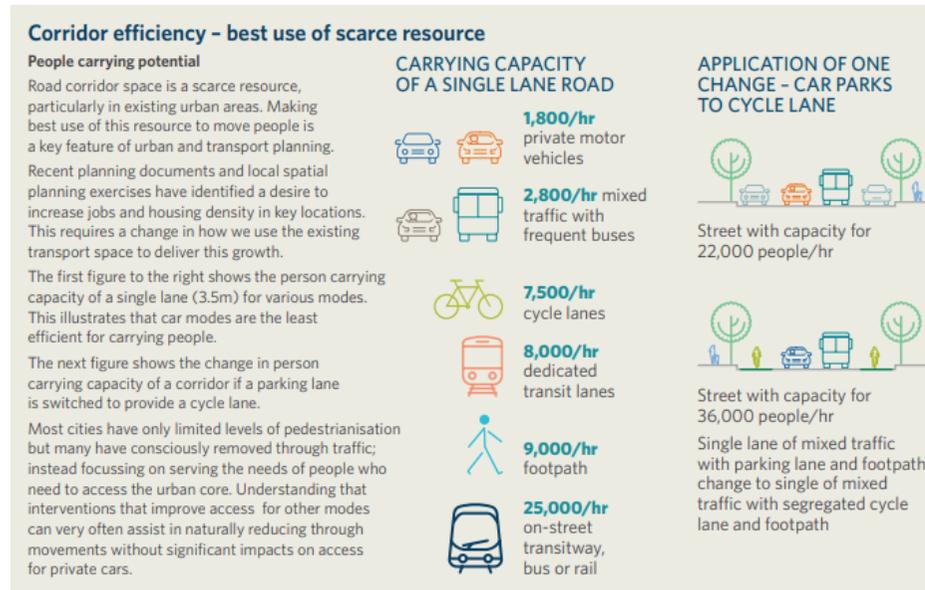
Source: (Waka Kotahi, 2020)

4.1 Growth

The population of the Waikato region has been growing steadily and latest data shows that the region is growing faster than the national average (Stats NZ, 2024). Population in most of the districts within the region has increased slightly in the year to June 2023 with the highest increases in Hamilton City and Waikato District. The Hamilton-Waikato metro area is the third fastest growing urban area in New Zealand and its population is expected to double in the next 50 – 100 years. This is equal to about 5000 people extra in the metro area every year (Hamilton City Council, 2022).

The regional settlement pattern is largely determined by the Future Proof Strategy which includes the Hamilton to Auckland (H2A) Corridor Plan, and the Hamilton-Waikato Metropolitan Metro-Spatial Plan.

The rest of the region is not growing at the same pace, with low growth, static or declining populations.

The impact of resource management legislation, and national direction for urban development, highly productive land and natural hazard decision-making is not clear yet. However, there are no plans to change the proposed settlement patterns and what is in the current strategy is likely to remain, particularly in the metro area.

Figure 13: Regional population increase 1996-2018
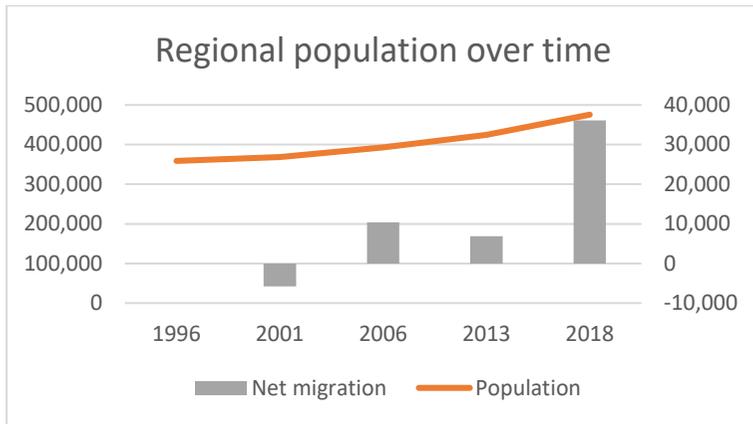
Figure 15: Metro area population increase 1996-2018
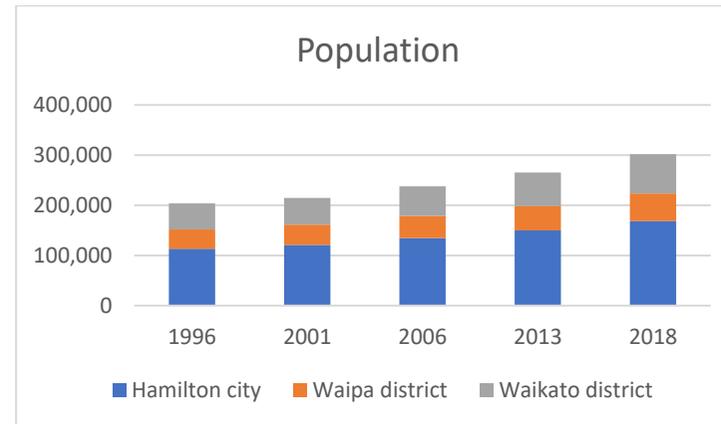
Figure 14: Hamilton population increase 1996-2018
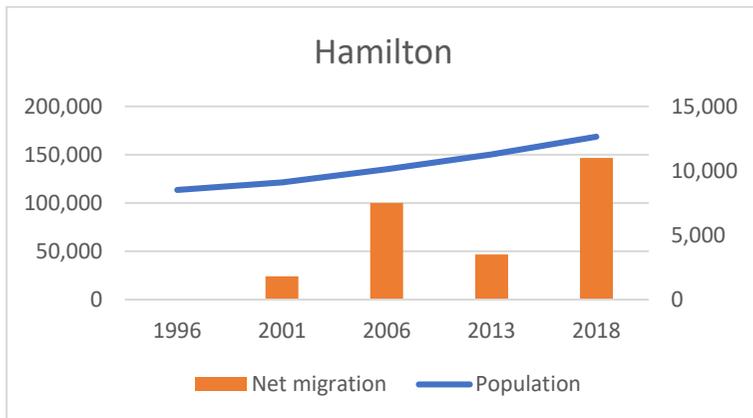
Figure 16: Projected metro population increase 2018-2048
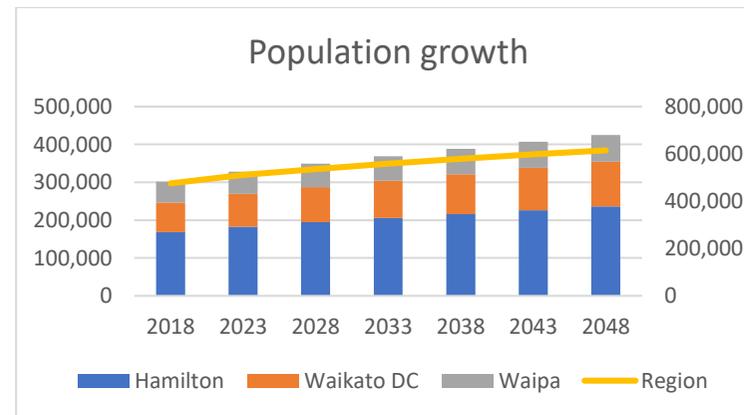
4.2　Impacts of growth

Accompanying growth is increasing vehicle ownership and traffic growth which in turn is accelerating congestion and safety problems, increasing travel times, and affecting efficient freight and people movement.

Figure 17: Increase in light vehicles and population in Waikato 2001-2015
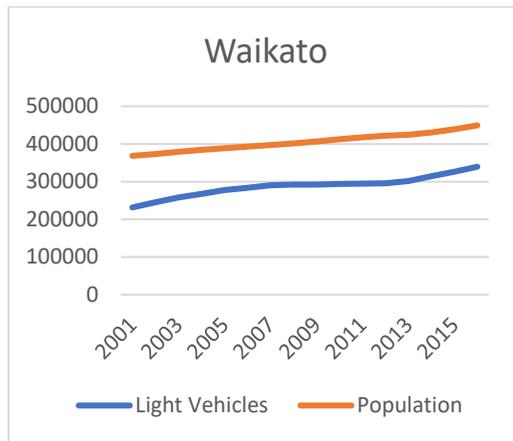
More people and vehicles accessing the network leads to congestion. The direct economic costs as a result of congestion include:

- Cost of travel time delay imposed on users (passengers as well as freight)
- Cost of unreliable travel time in passenger transport
- Cost excess fuel consumption
- Associated cost of CO2 emissions due to excess fuel consumption

4.3　Strategic corridors

With the region being part of the 'golden triangle" and the level of growth projected, the network of strategic corridors, both road and rail are vitally important for the movement of freight and the overall economic wellbeing of the region, and all New Zealand.

Figure 18: Freight transport networks
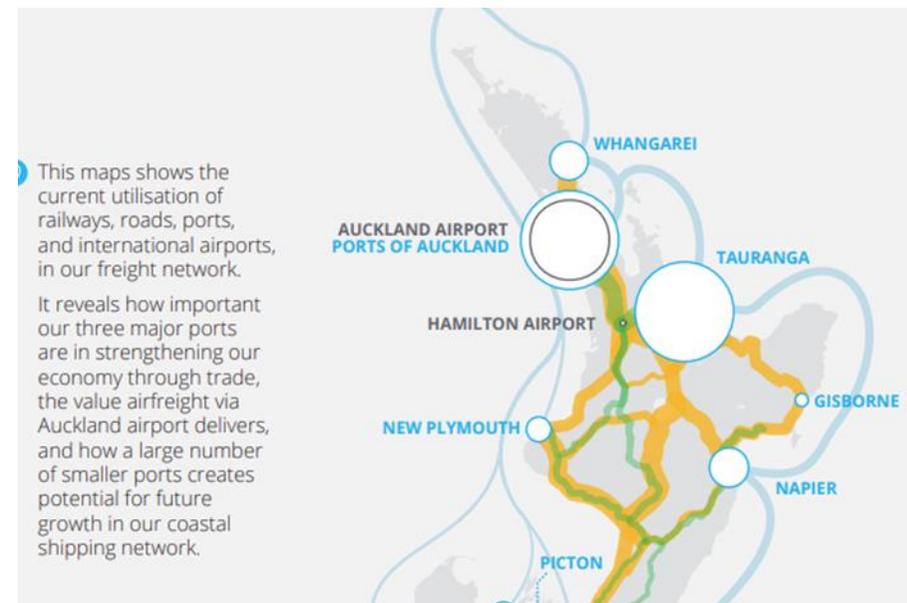
Source: (Ministry of Transport, 2023)

Waikato has an increasing commercial and industrial presence and is now home to several major distribution and freight and logistics hubs that have access to road and rail networks, Ports of Auckland, Port of Tauranga and markets to the south. In 2017/18 68 million tonnes of freight was moved through the region. Freight volumes are forecast to grow 47 – 65 % by 2030. For this reason, the Waikato regional land transport network plays a vital role in the national and regional economy and it is essential that key corridors are protected and maintained to support this.

Figure 19: Road freight flows to and from Tauranga port

Source: (Ministry of Transport, 2023)

Key: Flow quantiles

— Low
— Medium
— High
— Very high
— State highways
● Industrial clusters

Reference: Flows approximated from aggregated telematic data provided by EROAD for July 2020.

Figure 20: Road freight flows to and from Auckland port
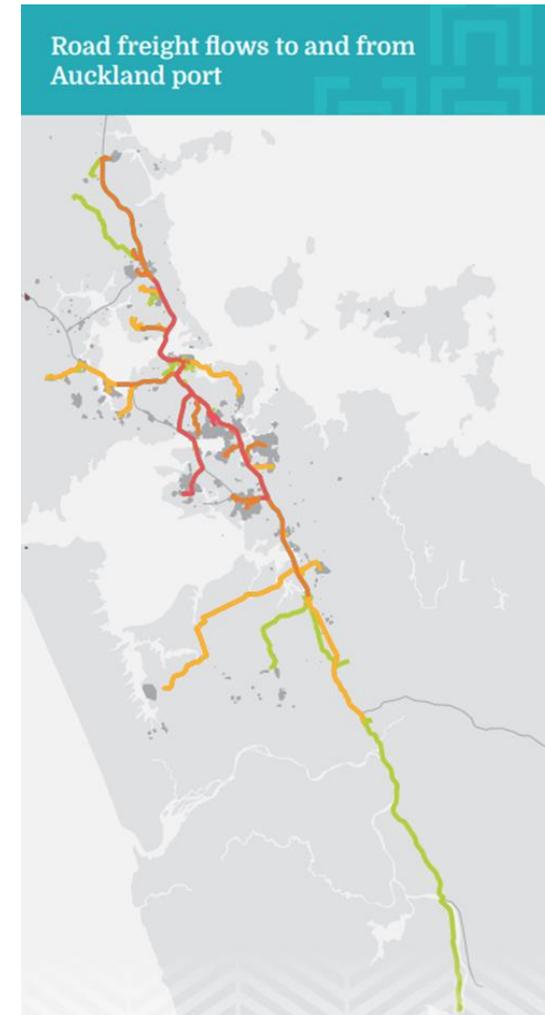
Source: (Ministry of Transport, 2023)
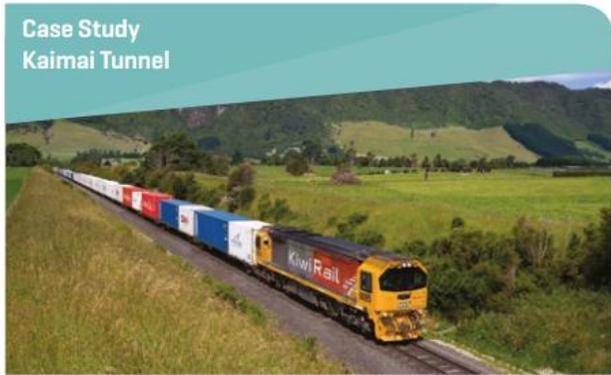
Case Study
Kaimai Tunnel

The Kaimai Tunnel is an example of the benefits of past transformational investment in the rail network. Opened in 1978, and the longest tunnel in New Zealand at 8,879 metres, the Kaimai Tunnel links the Bay of Plenty to the Waikato, Auckland and beyond. It is an essential component of the East Coast Main Trunk rail route between Hamilton and Tauranga, linking key customers such as Fonterra and the Port of Tauranga, and is essential to support KiwiRail's freight business.

Before the tunnel opened in September 1978, the East Coast Main Trunk route, which passed through the Karangahake and Athenree Gorges, was constrained by its length, difficult grades, and inadequate rail, and prohibited the use of the more powerful diesel locomotives.

The Kaimai Tunnel was constructed to service this increasing traffic between Hamilton and Tauranga. The rail link has brought significant change in the

distribution economics of the North Island, conferring regional economic benefits through more efficient rail links. It has reduced travelling times between Hamilton and the Port of Tauranga by approximately an hour and a half, and has enabled heavier trains, running at greater frequencies. This is much safer than putting this freight on road, and avoids the use of the difficult road over the Kaimai Range.

Today there are more than 30 freight train movements per day through the Kaimai Tunnel. Freight transported includes import/export container traffic, dairy products, logs, pulp and paper, and manufactured goods. The volume of freight goods has grown significantly since its opening, and has now increased to over five million net tonnes in 2018/19, almost four times the volume the old route handled in 1978.

30
MORE THAN 30 FREIGHT TRAIN MOVEMENTS PER DAY THROUGH THE KAIMAI TUNNEL

5,000,000+
OVER FIVE MILLION NET TONNES OF FREIGHT IN 2018/19

4
ALMOST FOUR TIMES THE VOLUME THE OLD ROUTE HANDLED IN 1978

Source: (Ministry of Transport, 2021)

4.4 Opportunities

Multiple interventions will be required to accommodate the projected increased regional population, particularly in the Hamilton – Waikato metro area, and the increasing freight task for the region. Demand on the road network will need to be managed to maintain capacity for increased movements of people and vehicles. Opportunities include:

- implement spatial planning outcomes for compact urban form and housing and growth in Hamilton – Waikato metro area. Higher urban density will support a shift to more active modes, and rapid and frequent public transport initiatives linking urban growth centres.
- enable and encourage mode shift as more people walking and cycling and on buses will reduce congestion in the metro area and in smaller towns across the region (and provide multiple other benefits such as improved health and reduced transport emissions)
- optimise road network to ensure reliable public transport
- protect strategic road corridors to maintain lifeline routes across the region and capacity for freight movements
- Te Huia – enhanced and increased services – benefits wider than this region
- opportunities for growth in rail freight have been identified although it is acknowledged that many types of freight are not suitable for rail. Some freight that is currently transported by road could shift to rail if key barriers (perceived and real) were addressed. Key barriers that prevent more freight being moved via rail include the perceived price competitiveness relative to other options (e.g. road) and perceived capacity constraints on the rail network. There is therefore an opportunity to make rail

more attractive, to realise wider environmental and health and
safety benefits for New Zealand.

5. RLTP problem statement: accessibility/transport options

The transport system struggles to provide people with safe, reliable, and equitable transport options to meet their social, cultural, and economic needs.

Priorities:

1. **Shape urban form to grow mode shift and transport options**

2. **Targeted intervention to recognise different transport and accessibility needs across the region**

Accessibility refers to people's ability to reach desired services and activities, together called *opportunities.* Accessibility is the goal of most transport activity (Litman, 2023).

A key purpose of the transport system is to provide people with access to social and economic opportunities, such as work, education, healthcare, and leisure. Having accessible, affordable, equitable and reliable travel choice is fundamental to the ability of people to participate in society and to the wellbeing of our regional communities and visitors. Providing people with reliable access to social, cultural, and economic opportunities through a variety of transport options is a strategic priority under the draft GPS 2024. The LTMA 2003 also requires that the needs of the transport disadvantaged must be considered in developing the RLTP.

Our regional transport system does not currently meet all those needs, particularly for the transport disadvantaged.

5.1 Factors affecting accessibility

The way people live is shaped by the land use and infrastructure system and cars have become a necessity because of the way our towns and cities are built. They have become auto-centric and focussed on moving cars around, rather than human-centric and moving people.

While this system provides the foundation for thriving communities, it can also establish and then perpetuate unhealthy travel patterns when poorly designed. In New Zealand, many urban areas have been constructed to accommodate cars as the dominant transport mode, at the expense of other ways to travel.

This impacts the way people move around the region, and ultimately affects their ability to access opportunities. Age, ability, and income all affect how easily people access opportunities.
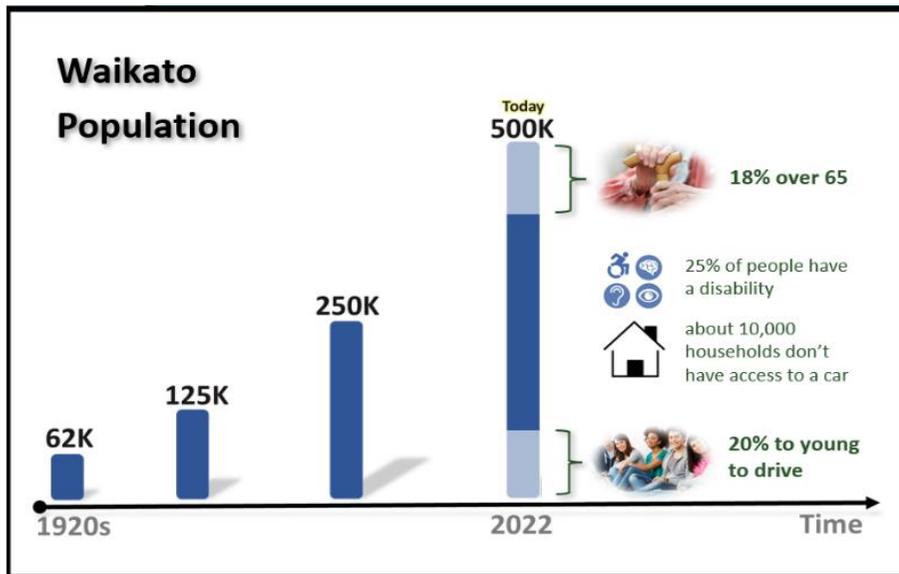
Other factors impacting accessibility to opportunities and travel choice across the region include:

- Urban form, location and distance to essential services
- Availability of reliable public transport services and quality of associated infrastructure
- Safe alternative modes of transport

Key accessibility and transport choice issues for urban areas

- While there are more transport options in urban areas, particularly Hamilton city, there is still high dependence on private vehicles for travel, and low use of public transport and active modes.
- Coupled with population growth, this results in congestion, safety problems, and an urban environment that is dominated by private vehicles and that is unfriendly for active modes. It also contributes towards air pollution, climate change and physical inactivity which affects the health and wellbeing of communities.

Key accessibility and transport choice issues for rural areas

- Transport choice is limited. For people who do not have access to a car in rural areas, transport choices to access services in larger centres can be non-existent, inaccessible, inconvenient, impractical, or expensive. A Strategic Case undertaken for the Waikato Regional Public Transport Plan in 2018 found that this situation is impacting on the economic and social vitality of rural communities.
- Providing equitable transport choice requires a different strategic response to traditional models, such as providing more targeted and demand responsive services.

Location

A person's location affects their ability to access opportunities. This will differ according to whether a person lives in the metro area, a small town or a rural area.

In urban areas, the distance to essential services is a measure of accessibility (University of Canterbury, 2024). The four biggest urban centres in the region have varying levels of accessibility to amenities such as supermarkets, schools, a pharmacy, a GP or a park. In each of the urban areas of Hamilton, Cambridge, Te Awamutu and Taupō, fewer than 20% of residents live less than a 10 minute walk to all amenities.

Hamilton, Te Awamutu and Cambridge had the highest accessibility to amenities by cycling (91%, 95% and 80% respectively) while Taupō was the least accessible by cycling at 58% of residents being within a 10

minute cycle of amenities. The least accessible amenity for each of the towns was either a supermarket or a GP.

Figure 22: Accessibility to amenities by walking or cycling in Hamilton

• Twelve percent of all Hamilton residents live within a 10 minute walk of all amenities.

• 91 percent of all Hamilton residents live within a 10 minute cycle of all amenities. • Hamilton's least accessible amenity by walking and cycling is a supermarket
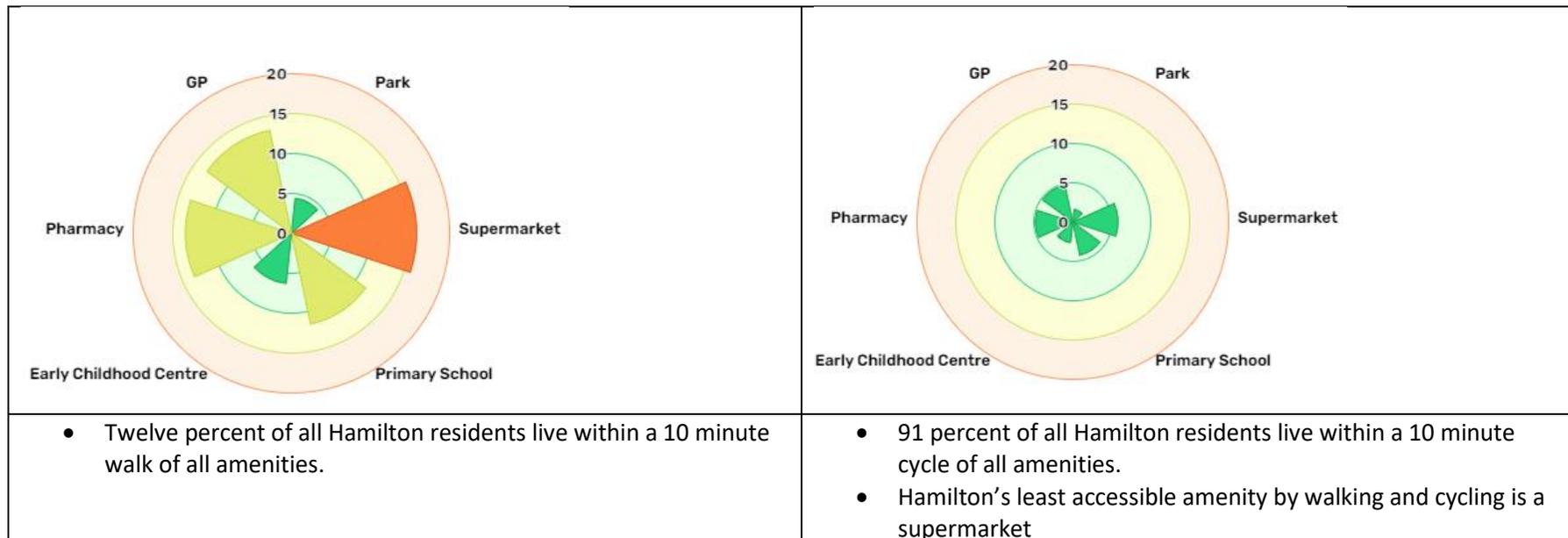
Figure 23: Accessibility to amenities by walking or cycling in Taupō

• 5% of Taupō residents live within a 10 minute walk of all amenities.	• 58% of all Taupō residents live within a 10 minute cycle of all amenities. • Taupō's least accessible amenity is a GP.
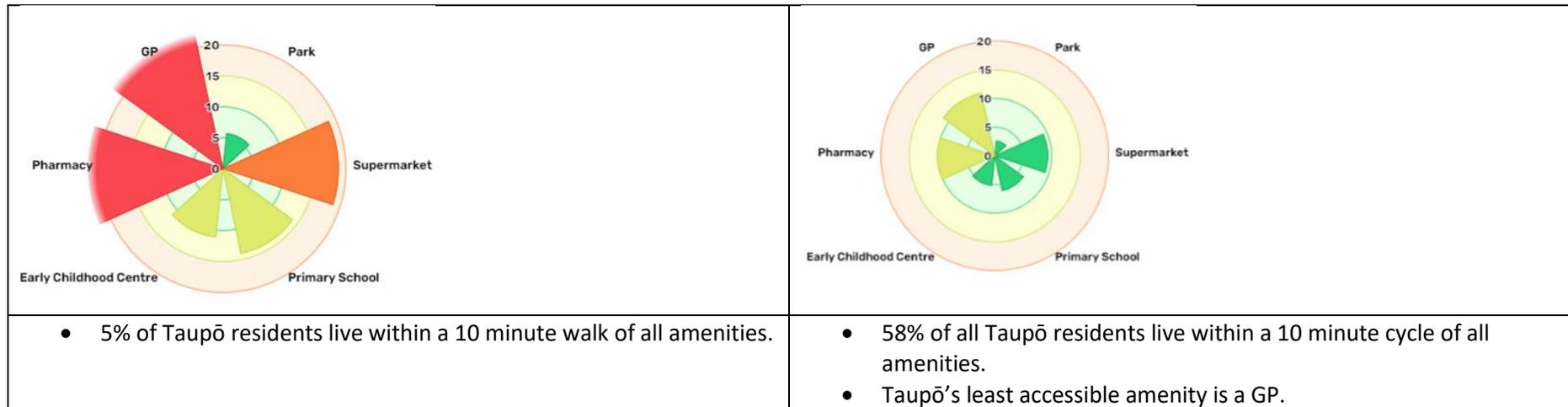
Figure 24: Accessibility to amenities by walking or cycling in Cambridge

• 4% of Cambridge residents live within a 10 minute walk of all amenities.	• 80% of all Cambridge residents live within a 10 minute cycle of all amenities. • Cambridge's least accessible amenity by walking and cycling is a supermarket
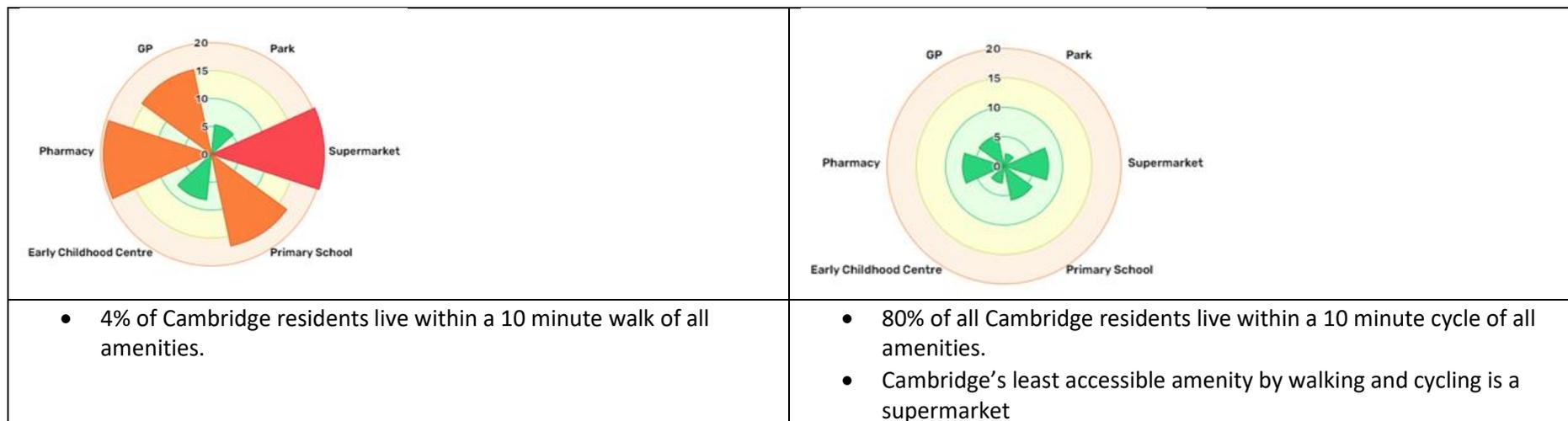
Figure 25: Accessibility to amenities by walking or cycling in Te Awamutu

- 16% of residents of Te Awamutu live within a 10 minute walk of all amenities.

- 95% of residents of Te Awamutu live within a 10 minute cycle of all amenities.

- Te Awamutu's least accessible amenity by walking or cycling is a GP.
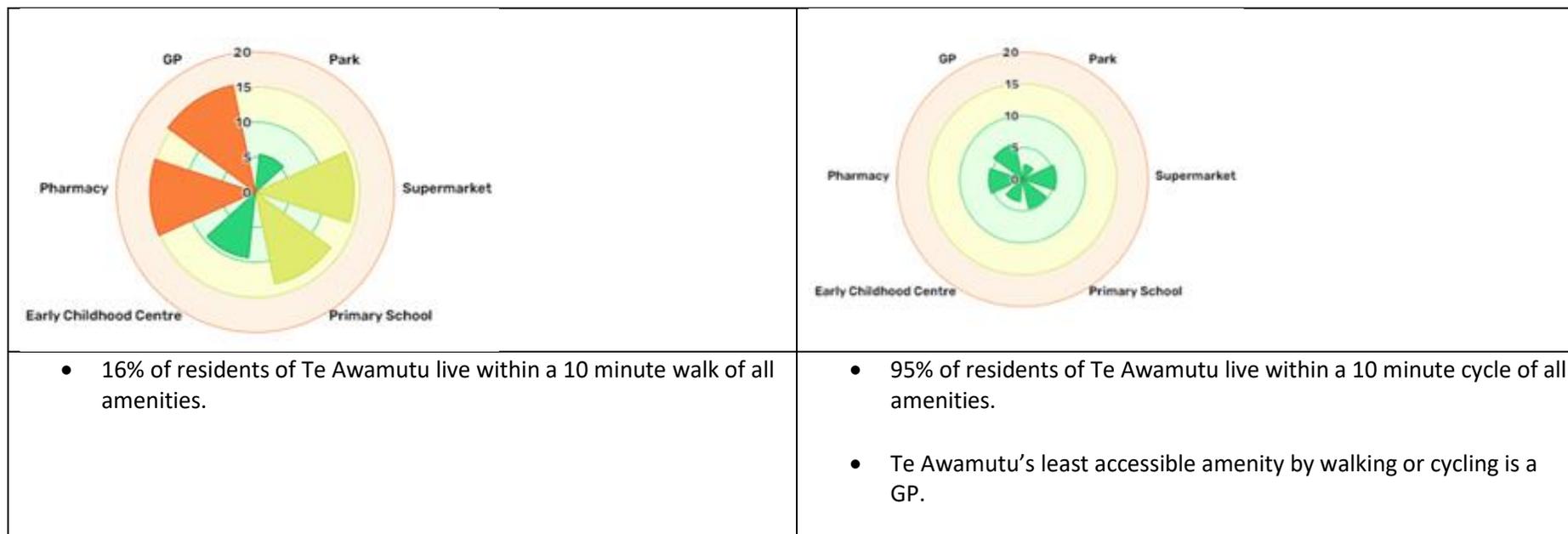
Considering factors such as age, ability and income, it is vitally important to promote an urban form that places essential amenities and services in close proximity to where people live thus enabling them to move around their town or city without the need for a car.

Location or distance from urban centres also has an impact on accessibility to services such as health care or education. For example, a Waikato health study shows that there are limited accessible and affordable transport options for those in some rural areas of the region.

- South Waikato (64%) North Ruapehu (59%) Waitomo/Otorohanga (41%) and North Waikato (36%) are localities that have the highest proportions of people living in high socio-economic deprivation across our DHB area.

- Limited public transport services are provided in some rural towns such as Tokoroa, and between some rural towns (such as Paeroa) and Hamilton -issues are linked to available funding and affordability

- Transport options to take people to essential services such as health care are limited, in particular in some of our rural localities that have a high proportion of the resident population with high needs e.g. only one local service in both Huntly and in Te Kuiti.

*Source: Socio-economic Deprivation in the Waikato Region –Percentage of population living in NZDep 9 and 10 areas

Waikato DHB's population is around 425,836 people and is one of the larger DHBs in the country

Thames-Coromandel-Hauraki 48,137

North Waikato 23,663

Greater Hamilton 266,404

Matamata-Piako 35,677

Waitomo-Otorohanga 19,567

South Waikato 24,033

North Ruapehu 8,355

Figure 1: Waikato DHB geographic localities, by highest levels of social deprivation
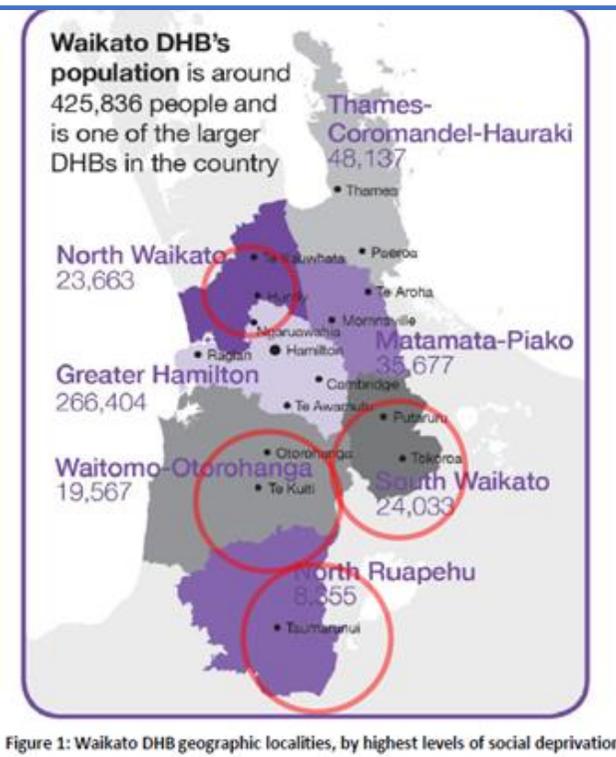
Public transport

A good public transport system is essential for people who don't drive to access services beyond their immediate neighbourhood. It provides access to jobs, education and health services, and provides real choice about how to move around a town or city. A good public transport system reduces congestion and emissions and improves health and safety outcomes.

Negative preconceptions about using public transport are a barrier to growing public transport patronage.

Reasons for poor patronage:

- Bus travel is not seen as safe or pleasant by non-users:
- other user's behaviour
- bus services finish too early
- quality of buses and bus shelters

33

Public transport is not perceived as affordable or more convenient than the car:

- no time benefit as buses get caught up in congestion
- inconvenience due to multiple bus transfers required
- perceived unreliability and lack of frequency
- private car use is convenient and efficient (good road networks, easy car parking)

Changes to specific bus routes and frequency of services, and the introduction of new services in Hamilton have led to a positive, and in some cases significant, increase in patronage. The Comet and Orbiter routes accommodate over 1.2 million passenger boardings per year (about 40% of total city patronage) and account for 90% of the city's patronage growth over the last three years.

*Figure 26: Patronage on the Orbiter*
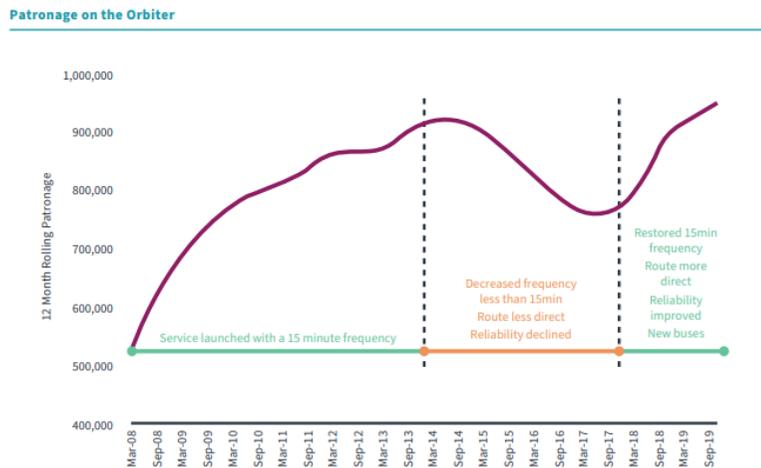
Figure 27: Patronage on north-south corridor
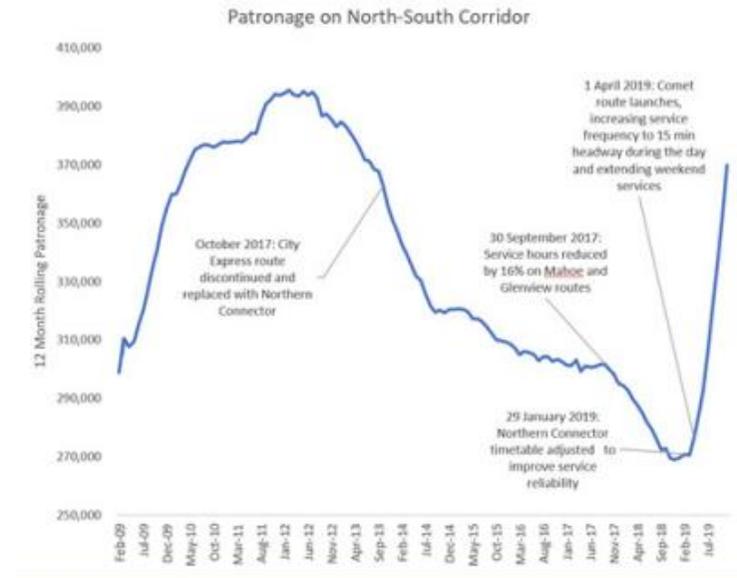
Spotlight on Te Huia

Te Huia, the passenger rail service between Waikato and Auckland provides choice for the way people travel between the two major centres. Patronage continues to increase and customer satisfaction is high.

Across the rest of the region, new services available in smaller towns to and from Hamilton are providing access to services that would not otherwise be available. The Te Kuiti and Tokoroa Connector services are a return service on weekdays that allow students to access tertiary education in Hamilton.

Figure 28: Patronage for Tokoroa and Te Kuiti Connector bus services

Tokoroa Connector   *Te Kuiti Connector*
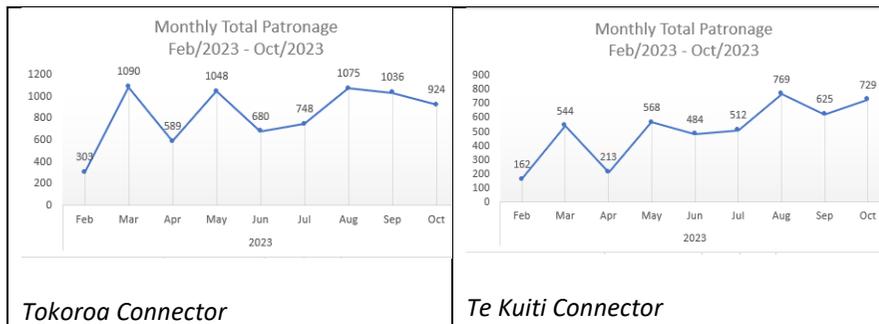
Safe alternative modes

Walking and cycling improve health outcomes. There is also a direct correlation between transport choice and people's participation in society. The adverse public health impacts of car dependency are of a similar scale to road trauma statistics but are less well recognised.

Better and more connected cycle and pedestrian networks are therefore critical to achieving better health and access and mobility outcomes. In Hamilton City where 7.2% of people walk or cycle to work, new cycleways and pedestrian networks should see this figure grow.

A lack of access to transport is known to reduce participation and quality of life for many people.

Concern about safety, both real and perceived, is a key issue for the uptake of active modes. This has been recognised in the Hamilton-Waikato Mode Shift Plan. Actions that make people feel safe and that promote active modes are needed to achieve more liveable and vibrant towns and cities.

Cyclists and pedestrians are at risk on the Waikato transport network, with cyclists representing 15 percent of urban fatal and serious crashes, and pedestrians 21 percent of urban casualties in the region between 2009 and 2018. Vehicle speed, unsafe infrastructure, and inadequate visibility by and of pedestrians are factors that influence pedestrian activity. The main risk factors for cyclists are decreased stability and a much lower level of protection than that provided by a vehicle. Cyclists are less visible than other road users and the relatively low presence of cyclists mean that drivers are not used to looking out for them. Poor road and street infrastructure is a barrier to would-be cyclists, indicating that if these were improved, low-carbon transport options would be considered as a viable travel option by more people.

5.2   Achieving better accessibility and transport choice

Urban areas

There has been a greater focus on mode shift to increase the share of travel in cities such as Hamilton by public transport, walking, cycling and micro-mobility options (e.g. electric bikes, scooters, and skateboards). Programmes to achieve mode shift identified in the Waikato-Hamilton Mode Shift Plan include shaping urban form, making public transport more competitive, making walking, and cycling significantly safer through

lowering speeds and delivering segregated infrastructure, and influencing travel demand and transport choice.

Providing greater transport choices that support and are supported by denser urban form will have many benefits, including improving access to employment, education and services, assisting with emission reductions and climate resilience, and freeing up the wider network for freight movements.

Spatial planning and mode shift work in the Hamilton-Waikato metro area is setting the direction for the urban transport network - a multi-modal transport system capable of providing a range of integrated transport options.

Rural areas

For rural areas the issues of accessibility and capacity to provide a range of transport options are more challenging. 'On-demand' services and community transport services are starting to provide fresh options. These include:

- demand-responsive services to provide coverage and service during periods of low demand and/or where population density is low
- better coordinated funding and service provision across multiple entities
- supporting and leveraging existing community transport initiatives
- providing for transport disadvantaged
- increasing demand through travel behaviour change

Higher proportions of residents with fixed incomes makes it harder to raise rates to fund transport options. This impacts on the level of service that can be provided and the type of solutions that can be considered.

6. RLTP problem statement: safety

System failures and user behaviours expose people to risk, resulting in the unacceptable occurrence of deaths and serious injuries.

Priorities:

1. **Implement the Safe System approach for the Waikato region**
2. **Focus on speed and infrastructure, education and behaviour change for high risk and vulnerable users, and enforcement**

Safe roads are critical to the wellbeing of our communities, to enable all people to arrive safely at their destinations every time they travel, and to enable people to feel safe to choose any mode of travel for themselves and their families.

Despite significant work nationally and regionally, the statistics show that the road casualty rate is not reducing fast enough. The growth we are seeing in the region and associated growth on the transport network is exacerbating the safety risk of travel and exposing vulnerable road users to greater levels of risk.

Safety issues in the Waikato are made worse by the complexity of the network and high proportion of movement on the road network through and within the region. Major national arterials provide links between export industries and international ports, commercial urban hubs and popular tourist and holiday destinations. Traffic volumes are high and traffic movements include short haul, local and long distance inter-regional traffic. Motorised traffic often mixes with vulnerable users in both rural and urban areas which cause conflicts with use.

6.1 Road safety in Waikato region

Road safety in the Waikato region is a nationally significant issue.

- The Waikato regional transport network is complex, with key inter-regional high-volume routes, 16 percent of the national state highway network (1,700+ kms) and 10 local Road Controlling Authorities (RCA) with 11,000 kilometres of local roads.
- Road deaths and serious injuries (DSI) in the Waikato region represents around 20 per cent of national road casualties each year.
- In the Waikato region 73 people were killed and 374 were seriously injured on our roads in 2022. This is nearly twice what a region might expect based on population.
- The estimated social cost to the region is around $500 million per year.

*Figure 29: Road safety statistics for Waikato roads*
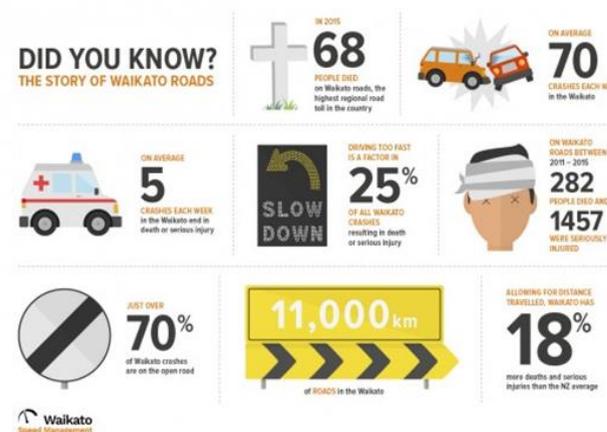
Figure 30: Heat map of road trauma deaths and serious injuries in Waikato region 2009 - 2018
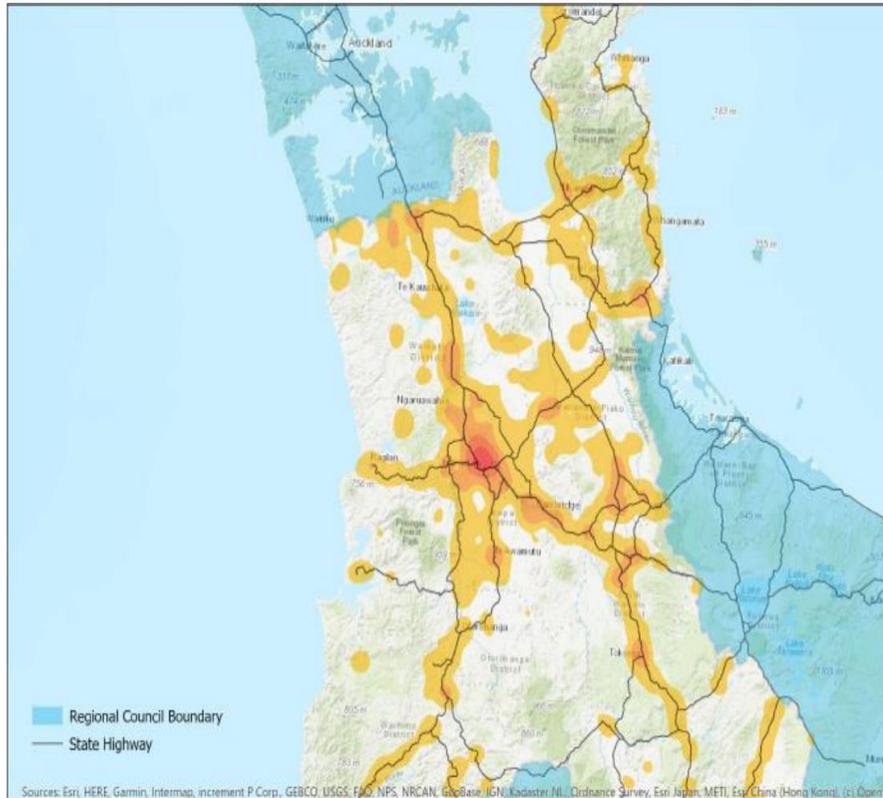
Source: (Waikato Regional Council, 2020)

Figure 31: Fatal and serious crashes 2014 to 2018
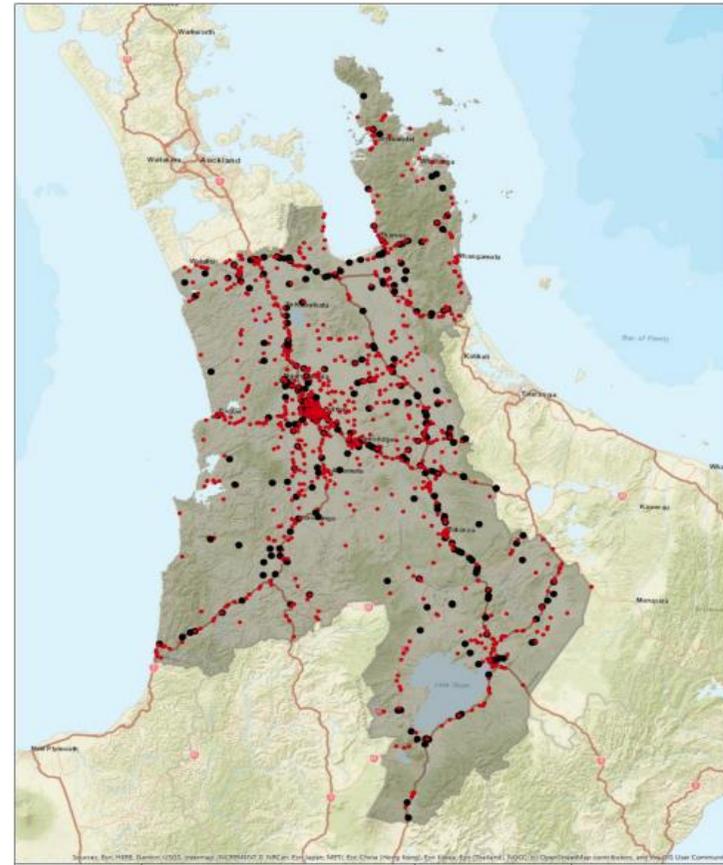
Source: (Waikato Regional Council, 2020)*Waikato Regional Council*

The reasons for these serious and fatal crashes are detailed in [Challenges we face - Waikato region transport safety evidence base](#). A lack of safe and accessible transport options can prevent people from participating fully in the economic and social life of our region.

6.2   Factors affecting road safety

Key risk factors (Waikato Regional Council, 2020):

- Active transport – pedestrians and cyclists are extremely vulnerable in a crash and are disproportionately affected by traffic volume increase and vehicle speeds.
- Motorcycling – our proximity to Auckland and increased motorcycling popularity has seen a significant rise in these high-risk activity crashes.
- Road Infrastructure Risk – many state highways and local roads have low KiwiRAP5 star rating with relatively lower safety standards than other regions and this combined with high traffic volumes leads to increased crash risk.
- Speed – speed related crashes result from user behaviour or inappropriate or inconsistent speed limits on roads, where the speed limit does not suit the form or function of the road.
- Freight – Waikato roads carry large freight volumes compared to our population and trucks are significantly over-represented in serious and fatal road crashes.

- Vehicle age – the New Zealand fleet is ageing and is not being replaced by enough newer and safer vehicles. Older vehicles have fewer safety features than newer cars and fare badly in crashes. Young drivers are often in older, less safe vehicles.
- High risk behaviour, impairment, and inexperience - alcohol and drug driving, inappropriate speeds, not wearing seat belts or helmets, fatigue and distraction all contribute to our fatal and serious crashes. Risks are higher for young drivers and young people walking or biking from lack of experience and higher risk-taking profiles.

The region is underrepresented for crashes occurring in urban areas and overrepresented in crashes occurring in rural areas compared to its peer group and all New Zealand. Consistently over the 10-year analysis period over 70% of all high severity crashes occur in rural areas.

Beyond direct injuries or death, the social impacts (costs) include loss of quality of life, loss of output due to temporary incapacitation, medical and legal costs, property damage costs, and impacts on family, colleagues, and social connection.

Waikato region death and serious injury crashes (requiring hospitalisation)

RURAL CRASHES
70%
Over 70% of all high severity crashes occur in rural areas.

URBAN CRASHES
31%
31% of casualties in urban areas are cyclists and pedestrians (active users).

PEDESTRIANS & CYCLISTS
5-9 year olds
5-9 year-olds were the highest pedestrian casualties and 45-49 year-olds were the highest cycle casualties.

MOTORCYCLISTS
20%
20% of severe regional crashes involve motorcyclists and 45-49 year olds feature most.

HEAVY VEHICLES
60-65 year olds
Heavy vehicles are over represented in crashes and older drivers 60-64 year-olds are most involved.

ALCOHOL & DRUGS
30%
Over 30% of crashes involve alcohol or drug impaired drivers and both types of crashes have been increasing.

SPEED & CONDITIONS
20%
Speed (or travelling too fast for the conditions) caused 20% of high severity crashes.

Spotlight on speed

Speed or driving too fast for the conditions continues to be a significant contributor in fatal and serious crashes in the Waikato and accounts for 24% of high severity crashes in the region. Each year approximately 100 people are killed or seriously injured in speed related crashes in the Waikato.

The Road to Zero Speed and Infrastructure Programme is targeting roads and roadsides that offer the greatest potential to reduce deaths and serious injuries.

- The Waikato region is well prepared to progress with targeted transport safety actions outlined in the Road to Zero for the Waikato strategic plan
- The Waikato Regional Road Safety Forum (WRRSF) supports an effective regional road safety response through collaboration with road safety partners and key stakeholders
- The region invests heavily in education and behaviour change programmes, targeting highest risk and vulnerable people to help save lives and reduce serious injuries.

6.3   Interventions

The region invests heavily in education and behaviour change programmes, targeting highest risk and vulnerable people to help save lives and reduce serious injuries. The Waikato Regional Road Safety Forum (WRRSF) supports an effective regional road safety response

through collaboration with road safety partners and key stakeholders. The region is well prepared to progress with targeted transport safety actions outlined in the Road to Zero for the Waikato Strategic Plan (Waikato Regional Council, 2020) and local urban plans such as the Access Hamilton Strategy (Hamilton City Council, 2022). The table below outlines current interventions.

Safe System approach	Targeted Intervention	Speed Management
• Road safety in the Waikato region is a nationally significant issue and a national priority under Road to Zero • Investment is needed to save lives and to reduce the significant social and economic costs of deaths and serious injuries • Investment is needed across all regional priorities to support the transformation necessary to realise our national and regional road safety vision	• The Road to Zero Speed and Infrastructure Programme - targeting highest risk roads and roadsides in the Waikato region that offer the greatest potential to reduce deaths and serious injuries. The programme includes safety treatments and speed management on state highways and local roads. • Targeted investment in education and behaviour change for highest risk and vulnerable people will help to save lives and reduce serious injuries. • Positive evaluation findings for the Ruben the Road Safety Bear programme for young road users.	• The Setting of Speed Limits Rule 2022 requires that RCAs and RTCs prepare local and regional speed management plans. • As an early adopter of local speed management plans, the Waikato has the opportunity to continue to build on speed management leadership both regionally and nationally. • Speed Management continues to be a priority for the region due to the high Death and Serious Injury (DSI) rates, related to speed in the region.

Spotlight on Ruben the Road Safety Bear

In the Waikato region, transport is the leading cause of unintentional injury death for children and young people aged 0-24 accounting for 69 percent of all unintentional injury deaths. Pedestrians aged 5-9 years are the highest casualty age group followed by 10-14, and 20-24- year olds.

Ruben the Road Safety Bear has been part of the WRC's road safety programme since 1997. The Ruben programme has resources, a website, Apps, a club and a life-size bear able to make appearances at schools, preschools and relevant community events. Road safety partners are able to utilise Ruben to support their road safety programmes with primary and pre-school aged children.

Independent evaluation findings show that the Ruben programme in 2020/2021 is a programme that is appreciated and valued by educators and children across the Waikato region as an effective road safety education tool for young children resulting in positive behaviour change.

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