



Image credit: Bob Zuur/Moments of Light

Wellington Regional Transport Emissions Reduction Pathway

2024



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Glossary

ERP	Emissions Reduction Plan
EV	Electric Vehicle
CSC	Community Services Card
FDS	Future Development Strategy
GWRC	Greater Wellington Regional Council
ICE	Internal Combustion Engine
LNIRIM	Lower North Island Rail Integrated Mobility
LTCP	Low Traffic Circulation Plan
Micromobility	Refers to a range of small, lightweight vehicles operating at speeds typically below 25 km/h and operated by users personally.
NIMT	North Island Main Trunk
NPS	National Policy Statement
NZTA	New Zealand Transport Agency
RCA	Road Controlling Authority
RLTP	Regional Land Transport Plan
VKT	Vehicles Kilometres Travelled
WTERP	Wellington Regional Transport Emissions Reduction Pathway

Background and scope

We need to reduce transport emissions

Climate change is set to become the most disruptive force we will face in the future – necessitating a change in the way humanity lives, consumes resources and uses energy.

New Zealand is fortunate to be among one of the less extremely affected countries in the world – but that does not mean we will be immune from the effects of heating climate. The less action we take now to mitigate the worst effects of climate change, the more insecure our children’s, and their children’s future will be.

But irrespective of how we may view the importance of climate change in our own lives, our country is a signatory to the Paris Agreement, which commits

us to a nationally determined contribution to limit global warming to well below 2 degrees above pre-industrial levels. In November 2023, at the Conference of Parties for the United Nations Framework Convention on Climate Change (COP28), the new government re-iterated New Zealand’s commitment to the nationally determined contribution to reduce net greenhouse gas emissions by 50 per cent below gross 2005 levels by 2030.

The impetus for this strategy is the need for the Wellington region to play its part in achieving our national emission reduction goals – net zero in long-lived greenhouse gas emissions by 2050.¹ Road transport is one of our largest sources of greenhouse



gas emissions and is responsible for about 17 per cent of national gross emissions and 39 per cent of total domestic CO2 emissions (see Figure 1 below).

The pathway for achieving our nationally determined contribution and net zero emissions by 2050 is set out in the national Emissions Reduction Plan (ERP) for years 2022 – 25. This plan required all tier 1 urban areas² in New Zealand to develop a programme setting out how they will contribute to the goal to reduce transport emissions by 41 per cent by 2035 (from 2019 levels).

The ERP sets out four transport targets, which when implemented fully are projected to generate this 41 per cent reduction in emissions. These targets are:

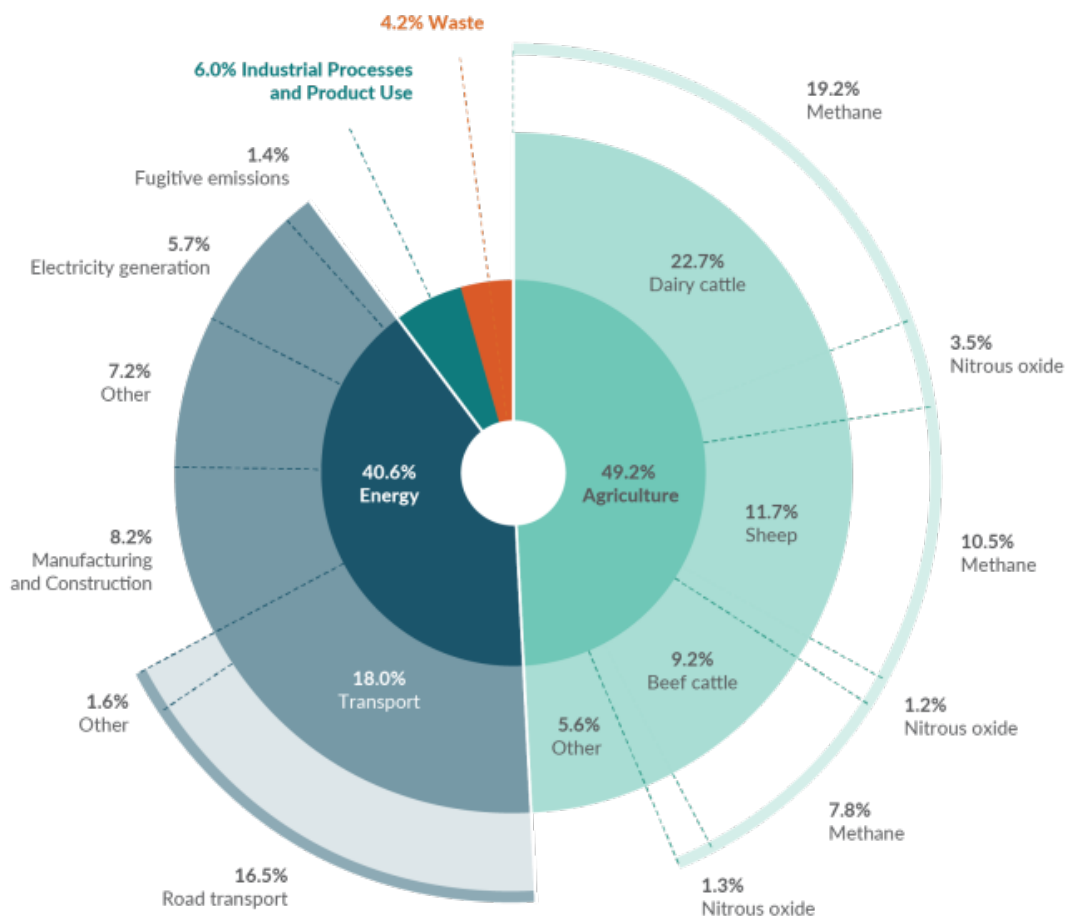
Target 1 – Reduce total kilometres travelled by the light fleet by 20 per cent (against a hypothetical minimal

intervention baseline) by 2035 (in real terms, a 1 per cent reduction from the 2019 baseline) through improved urban form and providing better travel options, particularly in our largest cities.

- Target 2 – Increase zero-emissions vehicles to 30 per cent of the light fleet by 2035.
- Target 3 – Reduce emissions from freight transport by 35 per cent by 2035.
- Target 4 – Reduce the emissions intensity of transport fuel by 10 per cent by 2035.

Since the publication of the ERP, the government has pulled away from the proposed biofuels mandate (the primary mechanism to deliver on Target 4), meaning that for the time being, more emphasis must be placed on the remaining three targets to meet the 41% transport emissions reduction target.

Figure 1: Gross greenhouse gas emissions in 2021 by sector, sub-category and gas type. Ministry for the Environment.



1 The Climate Change Response (Zero Carbon) Amendment Act 2019 introduced 2050 emissions reduction targets that are consistent with the Paris Agreement’s commitment to limit warming to 1.5 °C above pre-industrial levels. The targets require gross emissions of biogenic methane to reduce to at least 10% below 2017 levels by 2030 and to at least 24% to 47% by 2050. Emissions of all other greenhouse gases must reach net zero by 2050.

2 Tier 1 covers Auckland, Hamilton, Tauranga, Wellington, and Christchurch.

Focus areas of the pathway

Our Transport Emissions Reduction Pathway for the region (WTERP) is based on the foundation provided by the Emissions Reduction Plan and the Ministry of Transport's Decarbonising Transport Action Plan 2022-25. It has three focus areas, which are:

- Make it easier to access the things we need without a car (light vehicle VKT reduction)
- Support the shift to zero emissions vehicles
- Encourage low emissions freight and heavy transport options.

While the WTERP will cover all three focus areas above, there is a strong emphasis on the first focus area. This is because this is the area that collectively as councils in the region we can

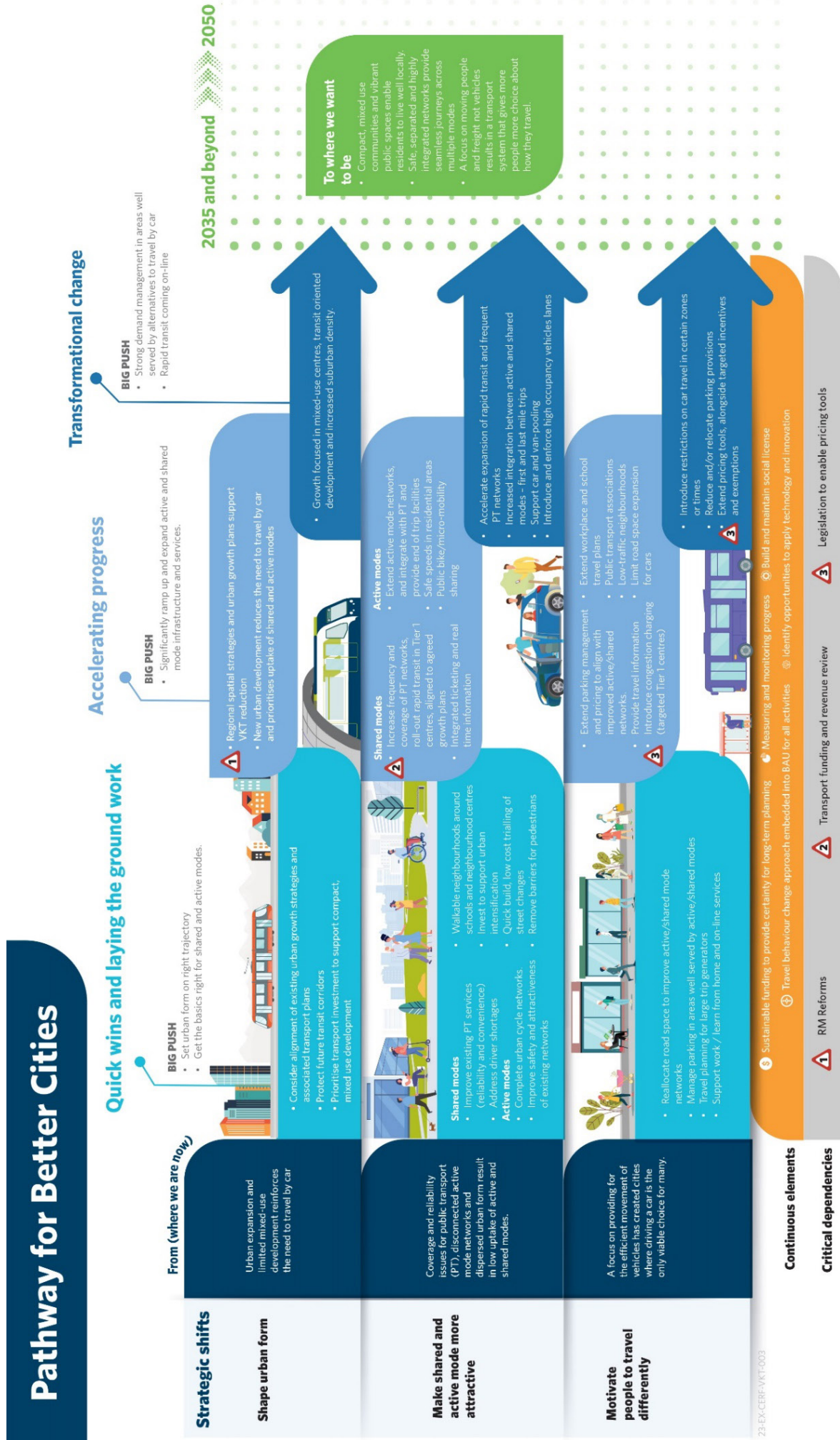
most influence change – through better urban design, provision of public transport, and active transport infrastructure, alongside economic tools (incentives and disincentives to encourage mode shift).

The Pathway for Better Cities graphic on the following page developed by New Zealand Transport Agency – Waka Kotahi (NZTA) provides a useful overview of the elements of a pathway for reduced VKT at the national level.³ While this graphic covers only light vehicle VKT, as noted, our regional pathway covers all land transport sector, including freight.



³ NZTA Waka Kotahi uses the AVOID-SHIFT-IMPROVE model to approach intervention and investment decisions. That is, prioritising first interventions aim to avoid or reduce the need to travel, or the time or distance travelled by car while improving accessibility, eg through integrated land use and transport planning for urban form that supports well-connected multi-modal access to local services and employment. Next, SHIFT focuses on shifting people who need to travel from cars to more energy efficient modes such as public transport and active or shared. IMPROVE focuses on improving the energy efficiency of motorised vehicles (eg through fuel standards or EV uptake) and optimisation of transport infrastructure and operations for more efficient vehicle movement. This pathway encompasses all elements of this model, but in recognising the length of time it takes to change urban form in a way that will materially impact VKT and emissions, the pathway focuses most on SHIFT interventions.

Figure 2: Pathway for better cities. NZTA—Waka Kotahi/Ministry of Transport



Continuous elements

- Sustainable funding to provide certainty for long-term planning
- Travel behaviour change approach embedded into BAU for all activities
- Measuring and monitoring progress
- Build and maintain social license

Critical dependencies

- RM Returns
- Transport funding and revenue review
- Legislation to enable pricing tools

What does our pathway aim to do?

This pathway sets out the things we need to do, at all levels of government and community, to reduce transport emissions by 41 percent by 2035, on the path to net zero emissions (across all sectors) by 2050. It is ambitious but based on our analysis using the latest data, it is also what is necessary to make the shifts required. But councils alone cannot make these shifts happen. We need central government to set in place the necessary legislative and regulatory changes, to help fund public and active transport infrastructure, and to support and incentivise the shifts we need across all sectors.

Therefore a major part of what this Pathway sets out to do is to create a vision and a pathway to achieve that vision, and present the evidence base supporting it. It will enable councils and communities of the region to effectively advocate for the support we need to play our part in achieving a net zero Aotearoa New Zealand by 2050.

But this isn't just about reducing greenhouse gas emissions. By implementing the pathway, we will help our region's communities to be more resilient and connected, and able to thrive in the face of the challenges to come.

Our targets

This pathway has two primary targets to achieve through its three focus areas:

- Reduce all road transport-generated carbon emissions by 35% by 2030 against a 2018 baseline (Regional Land Transport Plan 2021 goal)
- Reduce per capita light vehicle VKT by 25% by 2035 compared to 2019 baseline (national Emissions Reduction Plan derived goal).

Background on these targets, how they were developed as well as how they relate to national and regional strategic objectives is discussed in the Appendix to this document.

Building towards a low-carbon, more resilient future

The key driver for this pathway is the urgent need to reduce emissions to help achieve Aotearoa New Zealand's climate goals. A region that enables people to move around and access the things they need in everyday life without the necessity of using a private vehicle will not only be more resilient and contribute to climate goals, but will also contribute to healthier, more active lives, more community connectedness and thriving local communities and economies. On a practical level, it is also likely to save people money, especially as fuel costs and the costs associated with car ownership increase.⁴ If the pathway set out in this strategy is implemented to its fullest, this will not only mean that we can contribute towards meeting our country's national goals and international climate obligations, it would also mean a region more liveable for its residents.

Building our cities and towns so that they are less energy-intensive and more resilient will also enable our communities to respond and adapt to a future which is not going to be like the recent past. Globally, New Zealand is second only to Bangladesh in terms of its susceptibility to natural hazards,⁵ and this risk is only going to increase as the global climate warms and becomes less stable, characterised by more extreme weather. This reality is only amplified by the Earth being highly likely to breach the Paris threshold of 1.5 degrees C within the next few years,⁶ and our current growth trajectory tracking towards at least 2 degrees C warming. At this threshold, scientists warn that tipping points will trigger cascading and accelerating effects, including but not limited to, up to 12 metres sea-level rise.⁷

4 It is estimated by the Automobile Association that it cost a household \$8,000 to run even a small car (based on costs in 2021) and is only likely to increase as fuel and insurance costs increase (The cost of running a vehicle | AA New Zealand)

5 <https://www.icnz.org.nz/industry/media-releases/nz-ranked-2nd-riskiest-country-in-the-world/>

6 <https://www.washingtonpost.com/climate-environment/2024/02/08/1-5-celsius-global-warming-record/>

7 <https://www.latimes.com/environment/story/2023-11-20/earth-surpasses-critical-warming-threshold-officials-say>; Scientists who study Earth's ice say we could be committed to disastrous sea level rise (nbcnews.com).



The effects of rising sea levels and the densely populated equatorial belt exiting the so-called ‘human climate niche’ due to extreme heat will also mean that New Zealand, as one of the more liveable countries on the planet (natural hazard risk aside), will need to accommodate potentially large numbers of climate refugees. At the same time, in the context of a future in which material and energy supply chain disruption is likely to increase due to climate disasters and geopolitical instability (as resources such as land, water and energy become increasingly scarce),⁸ New Zealand will need to strengthen its ability to feed and energise itself. This will all need land and other natural resources.

Therefore, it will become critically important to grow our region in ways that will not compromise our region’s – and indeed our country’s – ability to sustain itself in a climate-disrupted and energy-constrained future.

Above: A green roof on a San Francisco apartment building strengthens resilience, has a cooling effect, enhances biodiversity and provides additional greenspace for urban dwellers.

⁸ Sixty percent of New Zealand’s energy needs are met by energy imported from overseas (<https://www.energyresources.org.nz/oil-and-gas-new-zealand/our-energy-mix/>).

Setting the scene

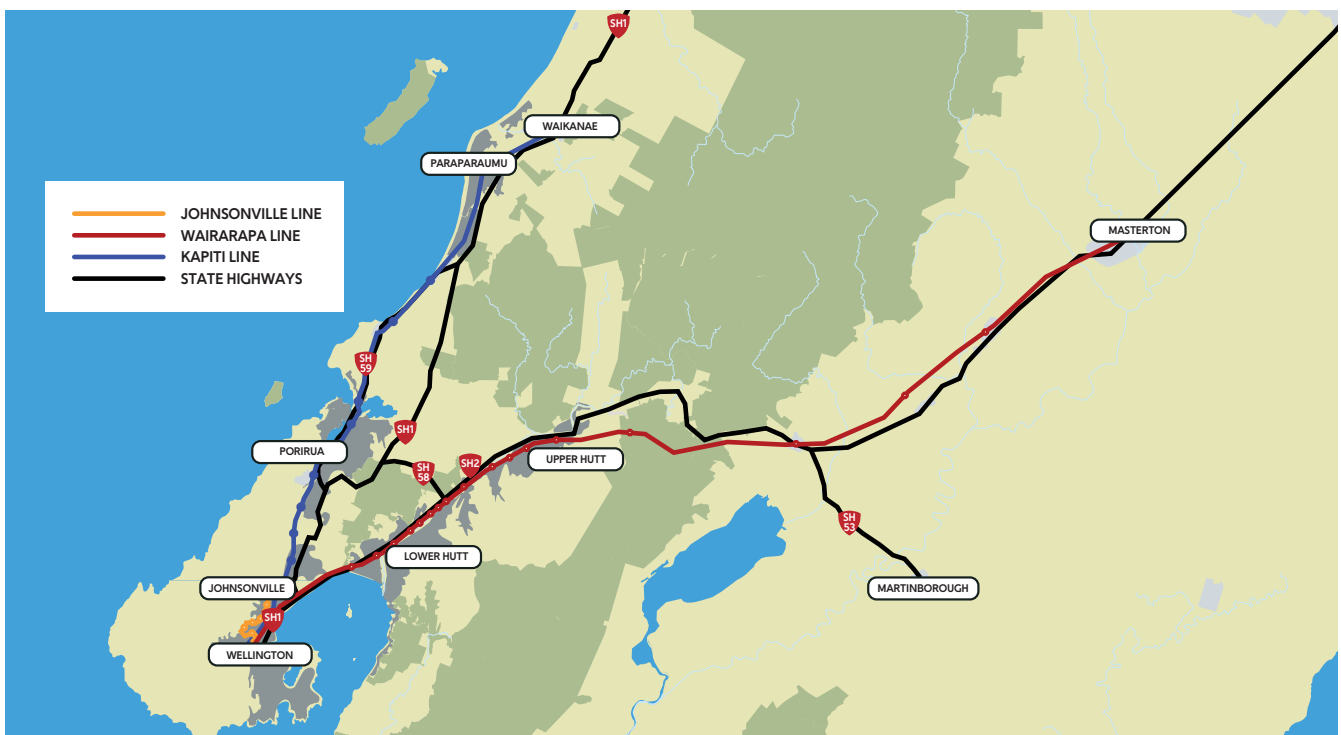
Geographical context

Owing to its challenging topography and the mountainous spine formed by the Remutaka and Tararua Ranges, development in the greater Wellington region has formed in a distinctive Y shape, with urban development focused along two transport corridors. One along the western (coastal) side of the mountain spine running from Wellington, through Porirua and up to the Kāpiti Coast, and the second along the eastern side, through the Te Awa Kairangi (Hutt River) Valley and on to the Wairarapa.

This has had implications for the way the region has grown spatially. A relatively modest regional population (currently around 530,000), is spread over a wide area, much of the region some distance from Wellington City.⁹ For example, on the west of the 'Y', Paraparaumu is 55 kms from Wellington City,

and Ōtaki is 73 kms, while to the east, Upper Hutt is 30 kms from Wellington City, while Masterton is 100 kms. By comparison, Auckland's urban fringe is approximately 20-30 kms from the CBD. While useful context, this analysis also needs to take into account the relative importance of the Wellington CBD as a commercial and employment centre for districts within the region (in comparison to Auckland city centre). Overall, of all the region's residents who commute to work, about a quarter commute to the Wellington CBD. For some districts and communities within the region, it is of critical importance as an employment centre, but for others, it is less important. For instance, in the 2018 census, less than 4% of all of those who commuted to work from Ōtaki reported commuting to the Wellington CBD, while in the case of Masterton, the percentage was

Figure 3: Map of Wellington Region showing urban areas and key transport routes

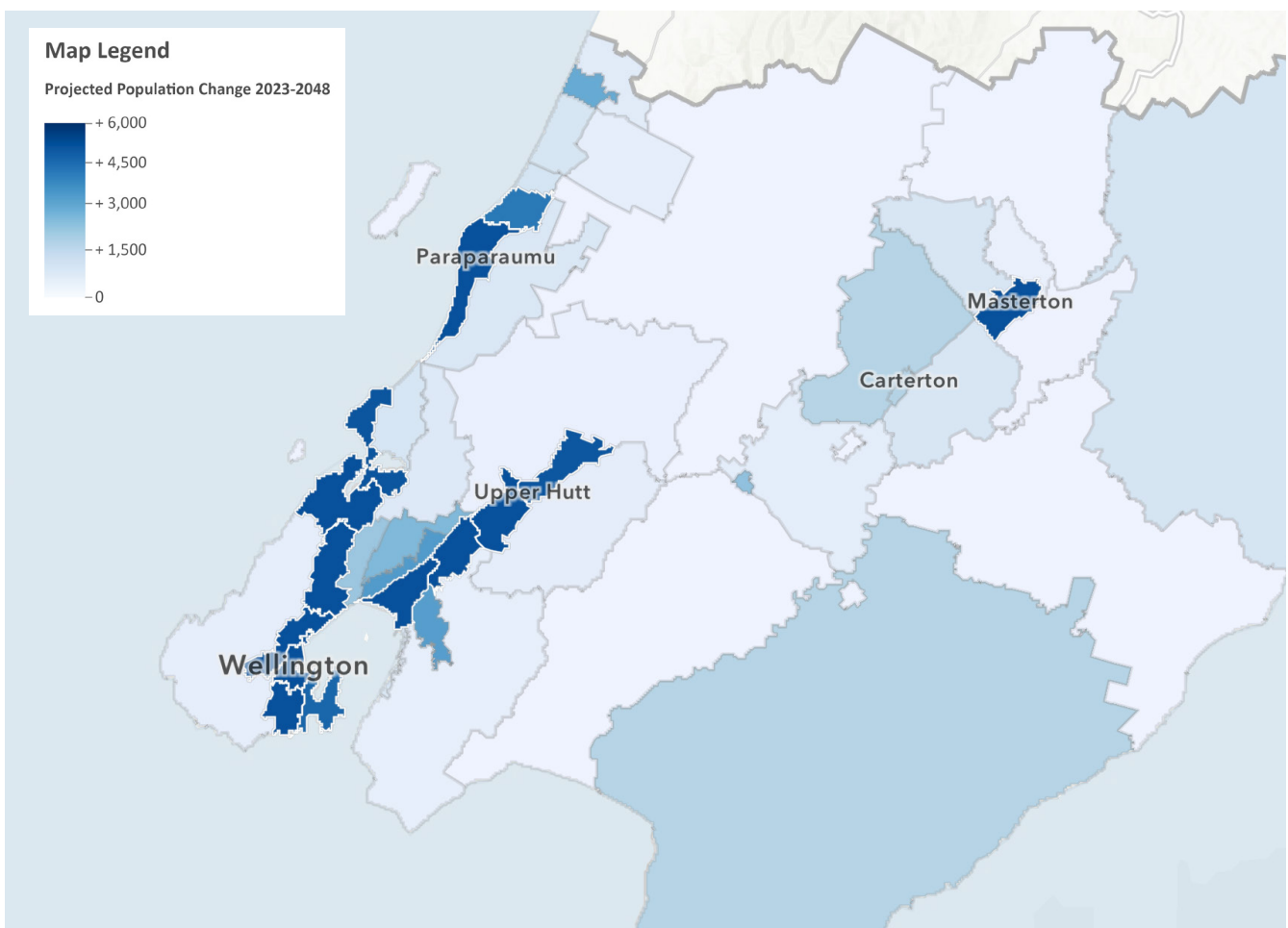


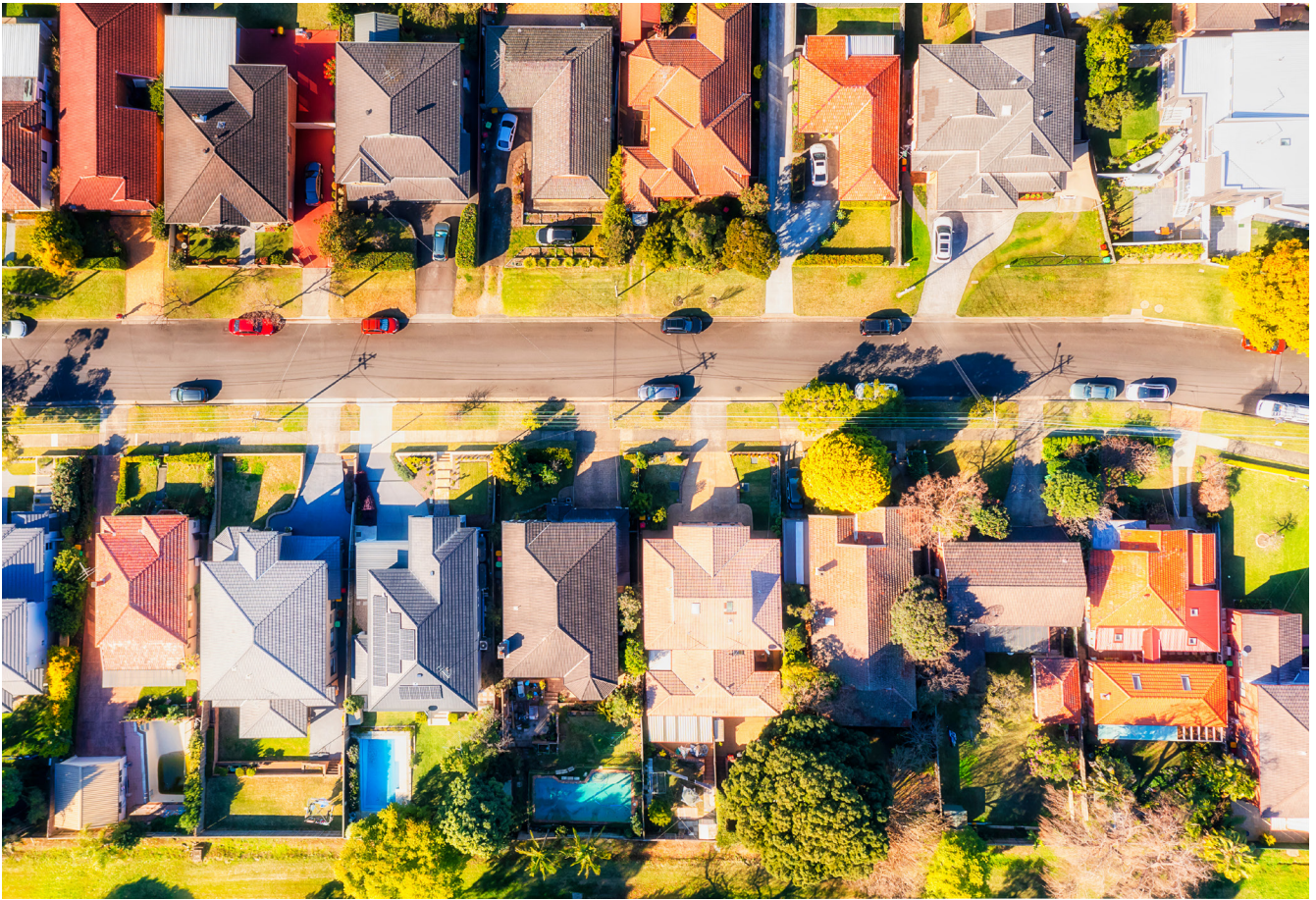
⁹ There is a risk in over-emphasising the idea of Wellington's growth and urban development in a cohesive regional context, particularly as it relates to Wellington City being the urban centre of the region. The current regional boundaries were only put in place in the late 1980s, based on catchment board boundaries. The primary role of this regional tier of government was catchment management (i.e., soil conservation and flood management) not oversight of urban development or spatial planning. The idea of taking a regional view of urban growth is relatively recent, within the context of the Urban Development Act, the NPS for Urban Development and other recent national policy. While it is tempting to see Wellington City as the "urban nucleus" and economic core for all districts in the region, this is not necessarily the case. Ōtaki for example, is potentially more north-oriented (towards the Horowhenua and Manawatū) than Wellington-oriented. It is also questionable whether the Wairarapa Districts see Wellington City as their regional urban centre, in terms of economic activity, employment or day-to-day needs.

less than 2%. This suggests that it may not be useful to think of the region's communities as satellites orbiting around Wellington city as the main cultural, economic and employment 'engine room'. Instead we may be better served thinking of the region as a constellation of town centres and communities, all with diverse strengths and potentialities, which can be linked by an overarching regional identity and vision.

To date, planning for growth has primarily been undertaken at district rather than at a regional level, with district objectives and benefits at the forefront of planning. Through the establishment of the Wellington Regional Leadership Committee, councils in the region (extended to include Horowhenua) have begun to work together on a shared vision for the region, first through Wellington Regional Growth Strategy, and more recently through the Future Development Strategy (FDS), which is mandatory for tier 1 councils under the National Policy Statement for Urban Development.

Figure 4: Projected population change 2023-2048 (Sense Partners 2023 data)





Few controls on urban expansion has led to car-dependent suburbs on the periphery of cities.

As is the case elsewhere in New Zealand (and indeed the industrialised world), over the last several decades, urban development has taken the form of a monocentric urban core surrounded by low-density urban sprawl, in which residents are almost entirely reliant on the private motor vehicle. This pattern became particularly marked from the 1950s, as governments around the world became focused on post-war economic growth and ‘modernisation’. Wellington City has been a notable exception to this style of growth, especially in recent decades. Its challenging topography has constrained the city’s ability to grow outwards, which has resulted in a more compact urban form and more inner city living than most other New Zealand cities, also reflected in the comparatively high levels of public transport and active mode use.

A range of factors have shaped the urban form over the last several decades and how we move around in these spaces. Urban areas have grown outwards, driven by cheaper land on the periphery of urban

areas, but pushing people away from existing retail and social services, as well as places of employment and education, increasing car dependency and trip times. At the same time, many services – including day-to-day requirements such as groceries – have been increasingly centralised so that many people must travel further (usually by car) to access the things they need for everyday life. As the orbit of activity has moved away from them, some local centres have become degraded and under-utilised, further pushing residents to abandon them in favour of centralised locations such as suburban malls, and perpetuating the downward spiral for many once-thriving local communities. This has further created severance and dislocation of some local communities, with higher traffic volumes and car dependency having implications for transport emissions, air pollution, public health (diminished physical activity) and road safety.

How do people in the region travel now?

While not necessarily a full picture, we have a good understanding of how people in our region travel. This is through travel questions in the national census undertaken by Stats NZ every five years, and also the annual Household Travel Survey undertaken by the Ministry of Transport, which measures the travel New Zealanders do by asking everyone in randomly selected households to record their travel over two days. Information from the survey is used to develop policies relating to road safety, roading, public transport, pedestrian and cycling.¹⁰

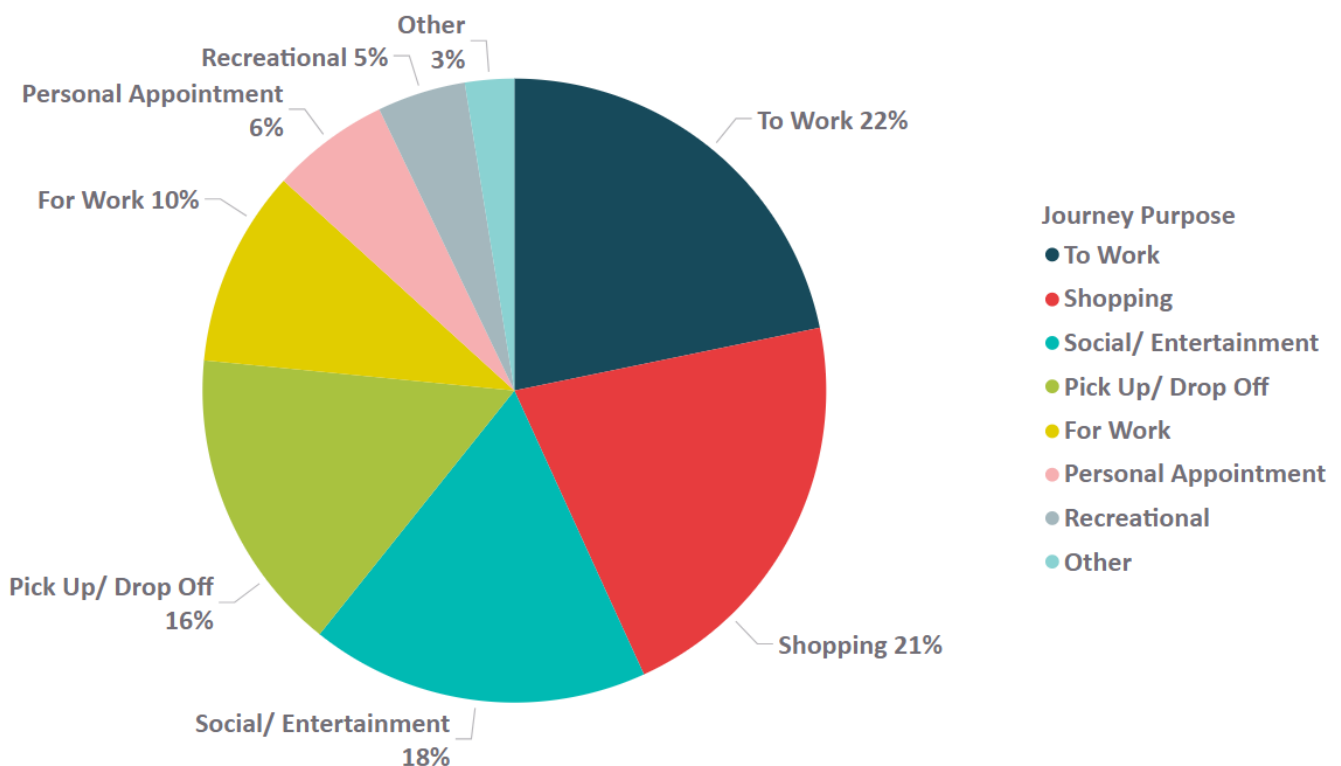
From this information we know that journeys across all districts in the region are car-dominated. The one notable exception is journeys to work originating in Wellington City, for which active and public transport modes make up just over 50%.

Where do people travel to?

As seen from figure 5, work-related trips (either to work, or for work) make up nearly a third of all trips taken by individuals in the household across the region, when measured in terms of total kilometres travelled (as opposed to total trip numbers, shown in figure 6). Shopping is the next biggest percentage of trips (21%), followed by social/entertainment trips (18%). Pick up/drop off (16%) is likely primarily made up of school drop off/pick up and after-school activity trips.

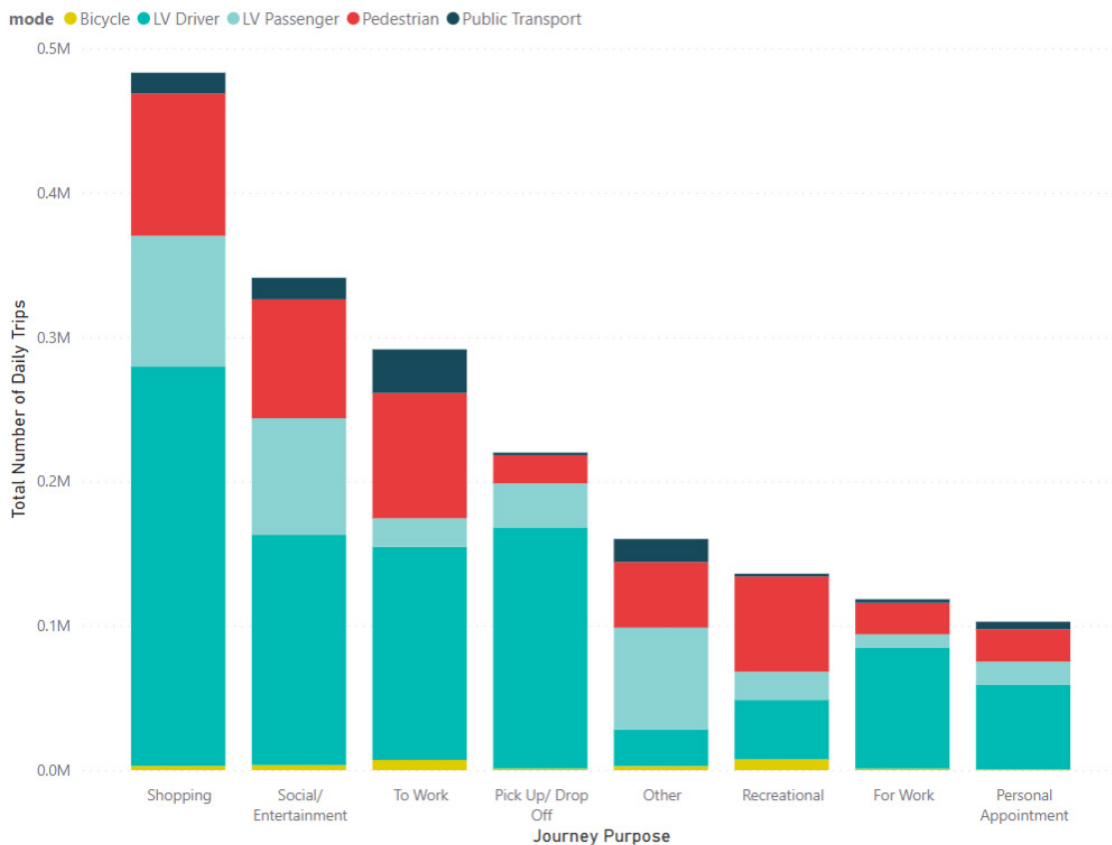
It should be noted that the data below excludes any trips made to or from locations outside the Wellington Region, e.g. holiday travel etc.

Figure 5: Purpose of journeys by light vehicles measured by kms travelled in the Wellington Region (Household Travel Survey 2016-2022)



¹⁰ Metlink also collects a rich source of data on patronage of public transport services and change over time.

Figure 6: Number of daily trips by purpose and mode



District by district comparison

The following graphs provide an overview of light vehicle travel in each of the districts within the region. As shown in figure 7, in terms of total kilometres travelled, Wellington City has the highest share, followed by Lower Hutt. However, when calculated as per capita kilometres travelled (figure

8), Kāpiti Coast has the highest share, followed closely by Wairarapa. In the case of Kāpiti Coast, about half of these trips are for work, while in the case of Wairarapa, they are more evenly spread across the three purpose categories (see Figure 10).

Figure 7: Share of light vehicle kms travelled by district of origin (as proportion of regional total)

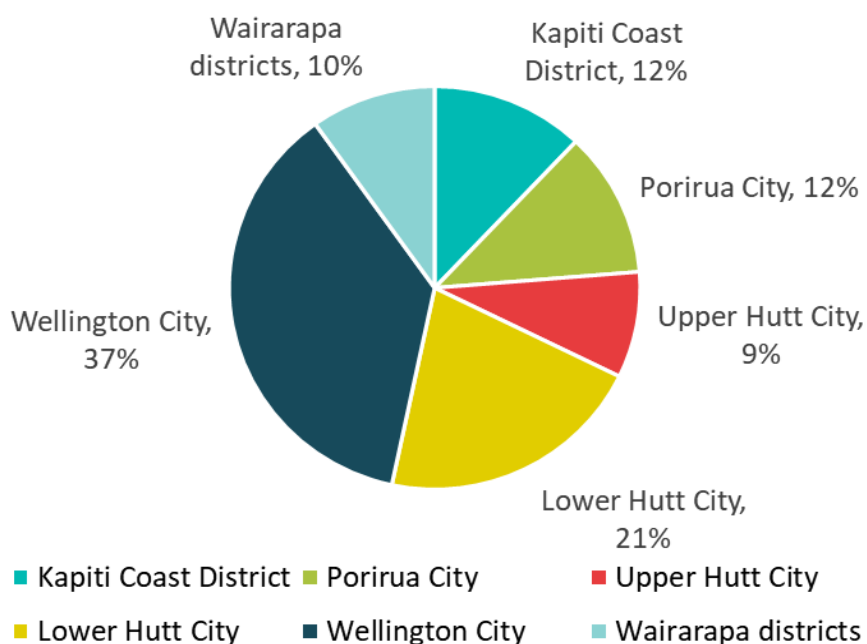


Figure 8: Per capita daily light vehicle VKT by district of origin

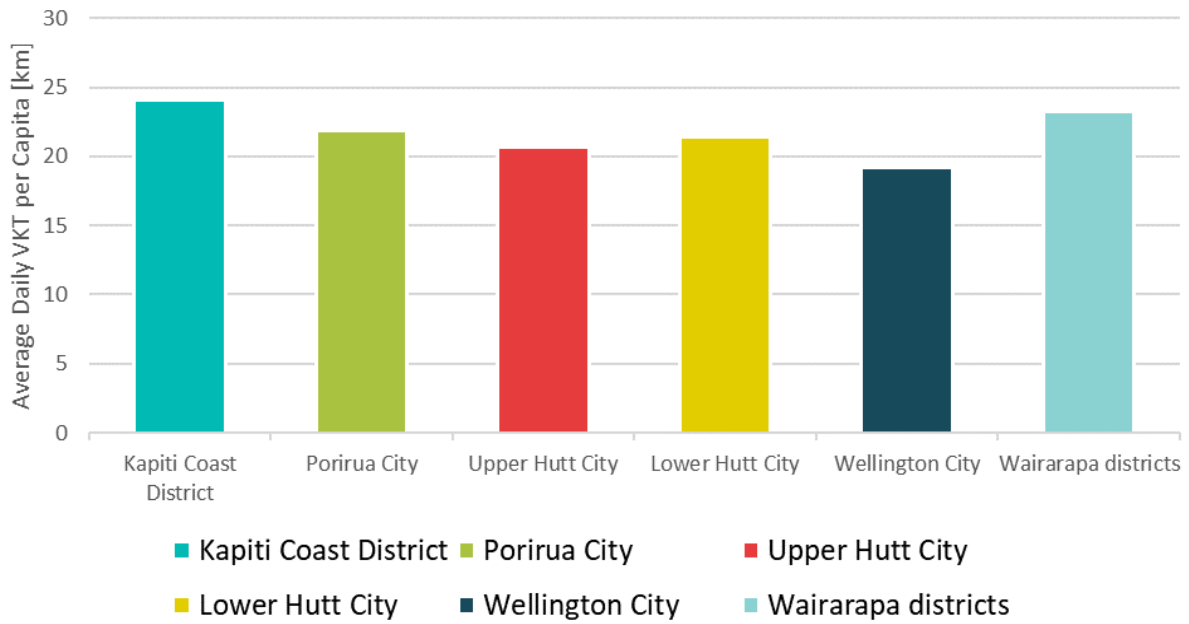
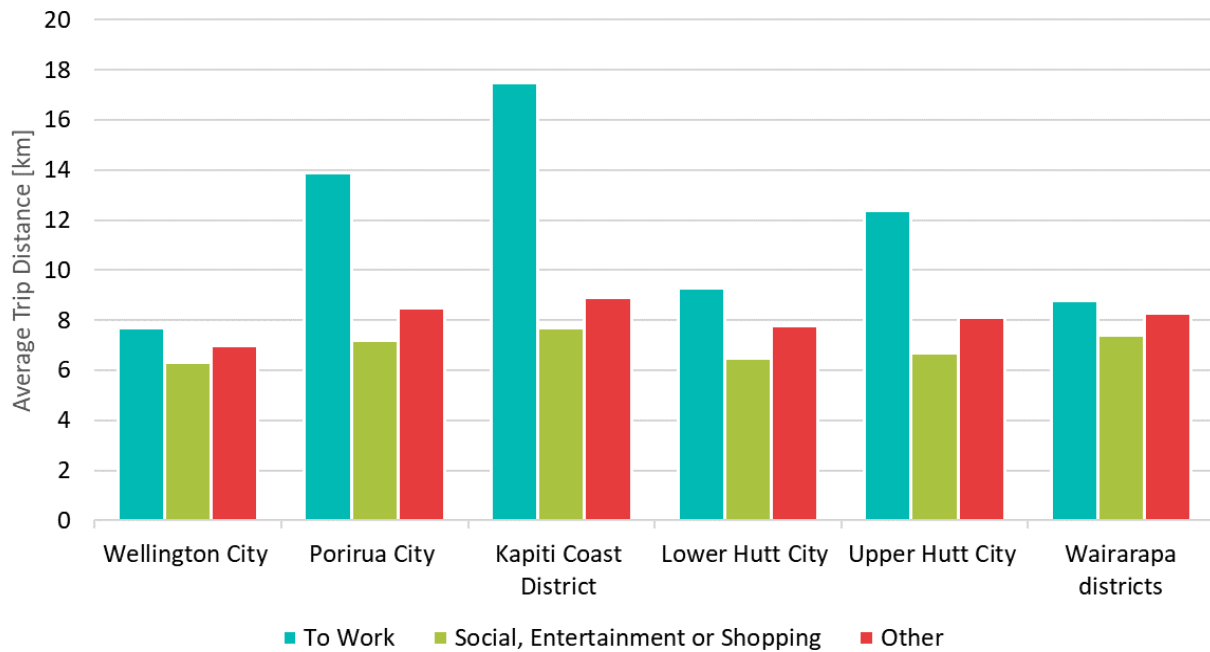


Figure 9: Average (mean) trip distance (by light vehicle) by purpose and district of origin



How people get to work

We have a good understanding of how people travel to work (or in some cases, don't travel to work) from the results of the 2018 census. The census question relates to primary mode of travel to work, so this means if a journey is comprised of a short car trip to the railway station, a longer train trip, and shorter walking trip, this journey would be identified as a train journey.

It should be noted that journeys to work make up just over 20% of all journeys, and tend to have a higher public transport mode share than other journey types.

In summary:

- More than 85% of trips to work are made by car for most destinations (except Wellington City)
- Commuting trips into Wellington City (including intra-Wellington City trips) have a car mode-share of around 50%
- Commuting trips to or within Wellington City make up about half of all commuting trips in the region (see Figure 11)

Figure 10: Mode share of journey to work trips by destination city/district (percentage) (census 2018)

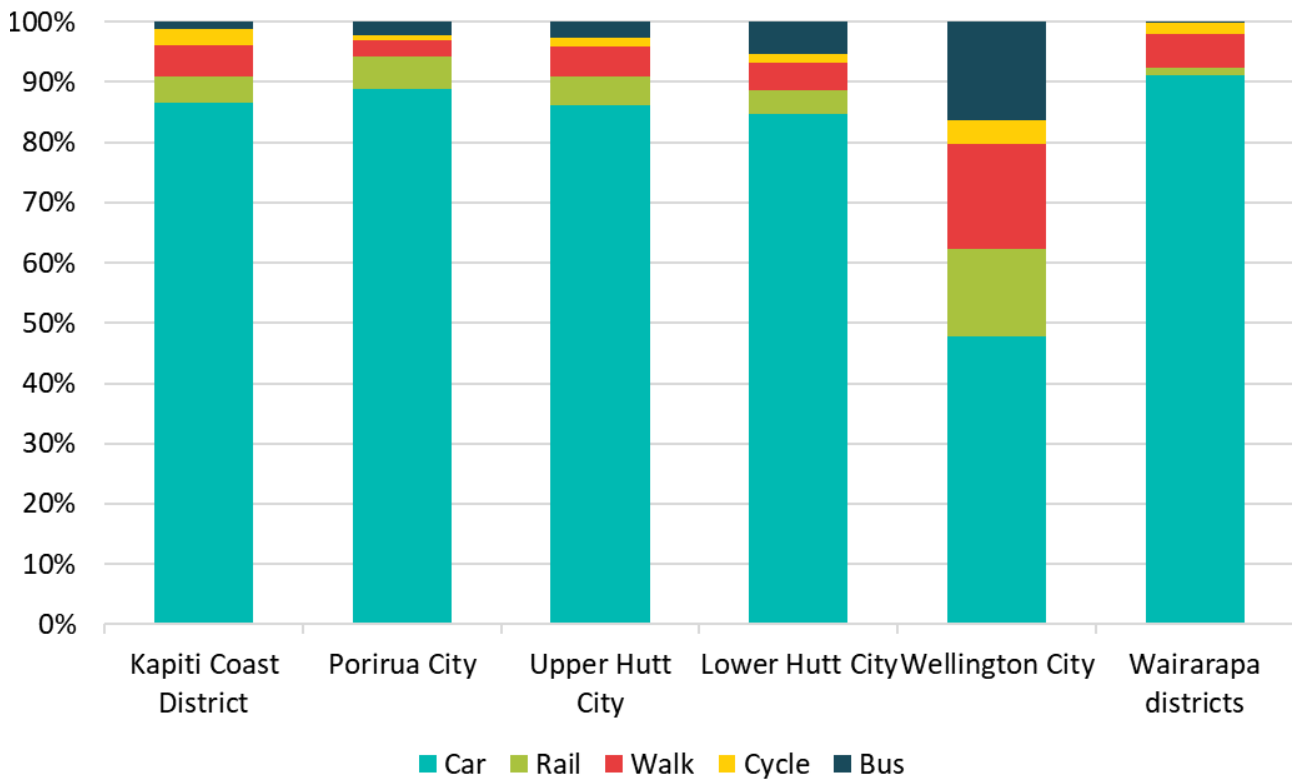
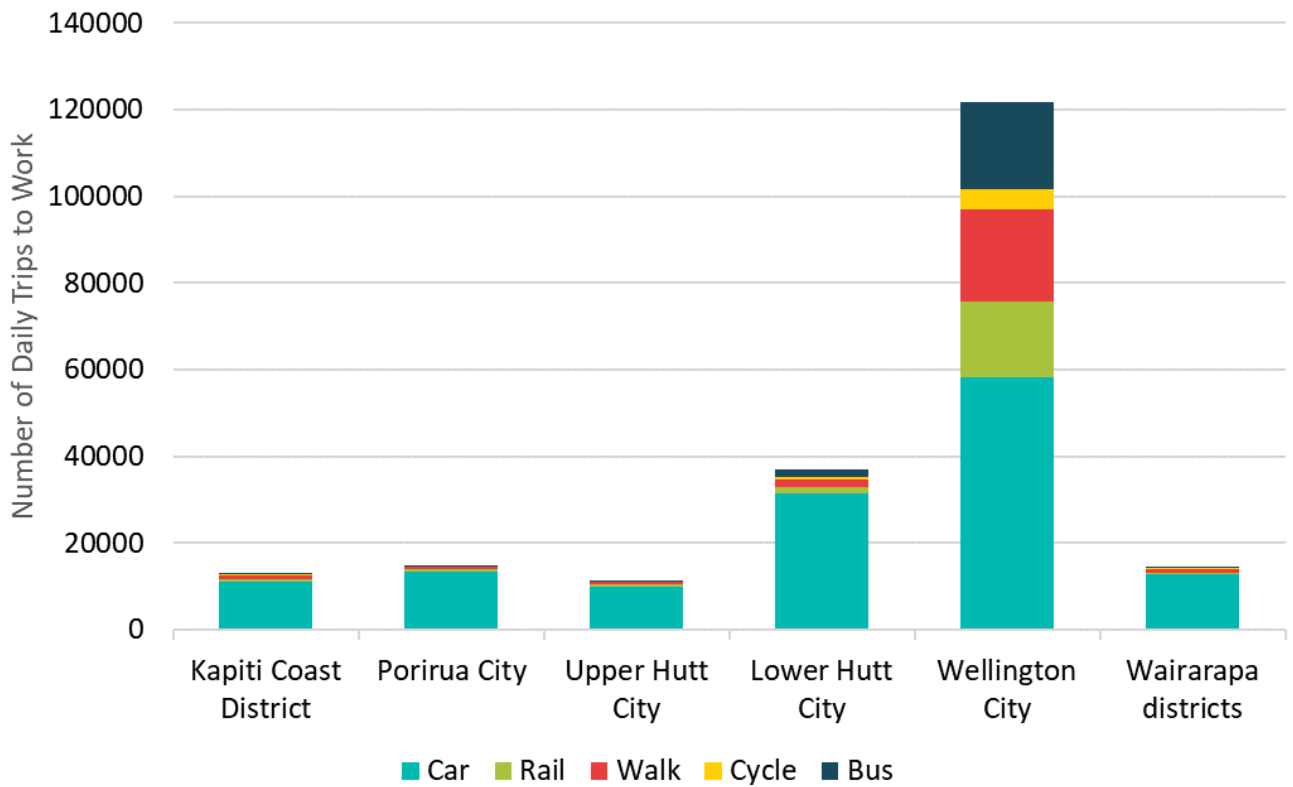


Figure 11: Mode share of journey to work trips by destination city/district (in absolute numbers) (census 2018)



Achieving mode shift away from car use to public and active transport

As seen from the data, despite the range of transport options available to some communities in the region, the private vehicle is still the dominant mode of transport overall. This presents a challenge but also an opportunity, because there is a significant latent potential for mode shift;¹¹ for people to shift to lower carbon modes of transport, or to avoid the need to travel altogether through better urban design.

Certain conditions need to be in place to achieve wide-scale mode shift across the population. For instance, as a useful rule of thumb to achieve widescale mode shift to public transport, a public transport trip should be no longer than 1.5 times the travel time by private vehicle, with no transfer (e.g., from bus to train or vice versa) and with services available at 15-minute frequency or less. (A sign of a true rapid transit service level is one where a user does not have to look at a timetable, in the knowledge that there will be a service within a short wait time.) However, such a rapid transit service comes at a cost and cannot realistically be provided everywhere throughout the region – instead it must be integrated with the long-term growth plans for the region. Rapid transit is most effective when it links key destinations and centres of activity, and where people live at relatively high densities, enabling high usership.

Public transport is critically important, therefore, but only forms part of the solution. Helping people to travel in more sustainable ways is only a means to the end. The outcome that we need to achieve is a more equitable society in which anyone is able to access the goods and services, and social and economic opportunities to meet their needs. Therefore, long-term, the most effective lever for achieving a low-carbon transport system will be urban form that delivers on equitable access (e.g., to health services, education, health food and green space) and liveability. That is, reshaping our



¹¹ The term ‘mode shift’ refers to the shift from reliance on private vehicle to other modes – usually public transport, active transport (walking, cycling) or micromobility. Micromobility refers to a range of small, lightweight vehicles operating at speeds typically below 25 km/h and operated by users personally.



Farmers' markets provide residents with access to fresh produce and locally made goods, provide the opportunity for social and cultural connection, and help create a vibrant, local economy.

cities, towns and rural communities so that people have access to most of the services and amenities they need for a 'good life' within a short walk, cycle or public transport trip of their home.

If we are going to reap the benefits of urban areas designed for people and liveability, we need to stop building in areas of low amenity, from which residents need to travel to access all the things they need, and start building high quality and higher density homes proximate to public transport nodes and other services. Further greenfield development will simply increase and prolong dependency on private vehicle use, as even with a considerable injection of additional funding for public transport, it would be difficult to rationalise prioritising a new or extended service to low-density suburbs, when much

better outcomes can be achieved by delivering a higher level of service (i.e. rapid transit) in higher density areas of our towns and cities. It is useful to note that already the Wellington Region has a passenger rail network that is of a similar size and extent (i.e., covers a similar geographic area) of that in the Auckland region, yet is funded with a third of the rate-payer base.

Even if we start planning for better urban areas now, it will take decades for the full benefits to be realised. In the meantime, and especially with the 2035 goal in mind, we need to use all the levers that are available to us to reduce trips by private vehicle – the most energy-inefficient mode of land transport¹² – and shifting to other modes – public transport and walking, cycling and other active modes.

12 Noting also that the average private vehicle occupancy rate (on average the number of people traveling in a car or light vehicle) is about 1.5 persons (<https://www.transport.govt.nz/assets/Uploads/Report/Drivers-Travel-Survey-2015.pdf>).

A polycentric regional future? Resilient, thriving and diverse urban centres connected by public transport networks

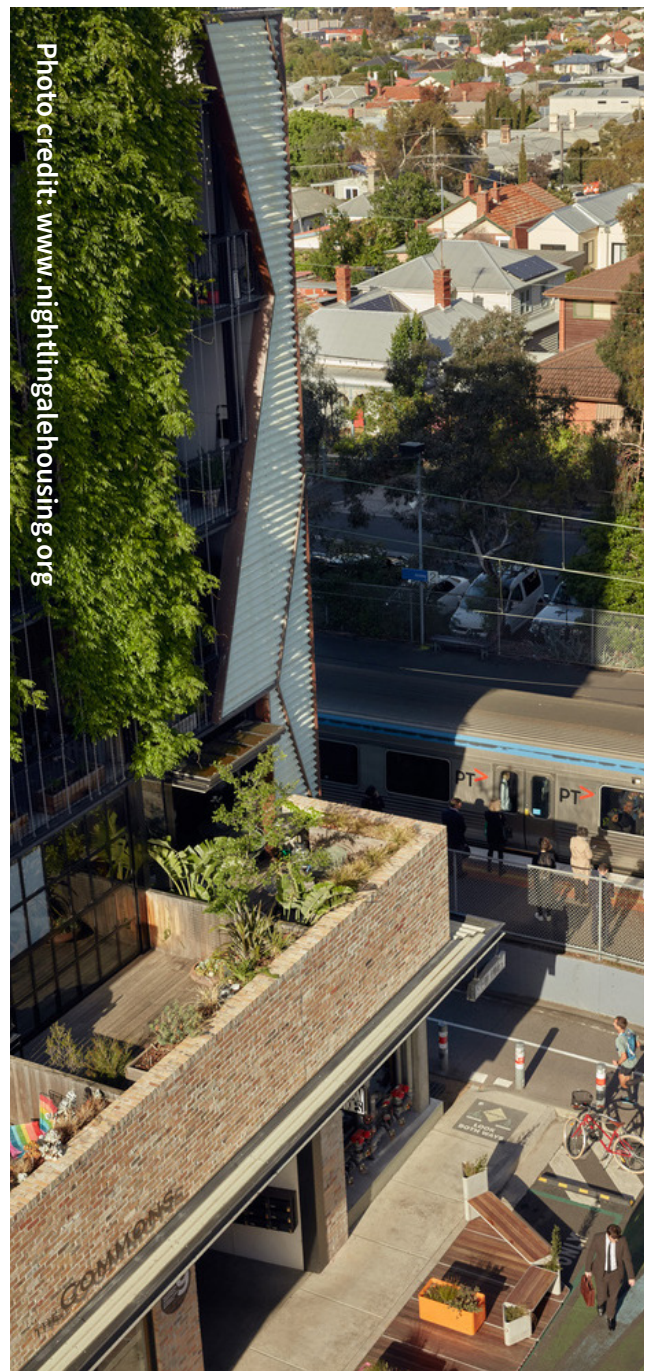
With its unique geographical and topographical features, the Wellington Region is ideally suited to polycentric urban (and semi-urban) form throughout the region.

That is, a network of economically and culturally diverse urban centres, comprised of dense clusters of mixed-use walkable communities, connected by reliable and regular public transport.

As a region, we also need to look to the importance of other land uses in and around our cities and towns. For instance, the protection of productive land to boost food security and resilience of food supply chains through a focus on reducing food miles and simplifying supply chains, at least for a portion of our regional food requirements. With more strategic foresight brought to this and other sectors we can support sustainable and diversified local economies and local employment.

Furthermore, by *building on* the strengths of geographical and climate characteristics of each

Right: The Commons apartment complex in Melbourne Australia embodies many future-resilient features: proximity to rapid transit, common areas and public realm space, resilience features such as green walls.





district – rather than *building over* natural features as has been the case historically – we can enhance the unique offering of both our region as a whole and each district and community individually.

Examples of such natural systems include wetlands, dune systems, rivers and streams. As the effects of climate change begin to accelerate and amplify, we will gain more from the ecosystem services that these natural systems provide (as flood buffer, carbon sequestration etc) than from their destruction for development.¹³

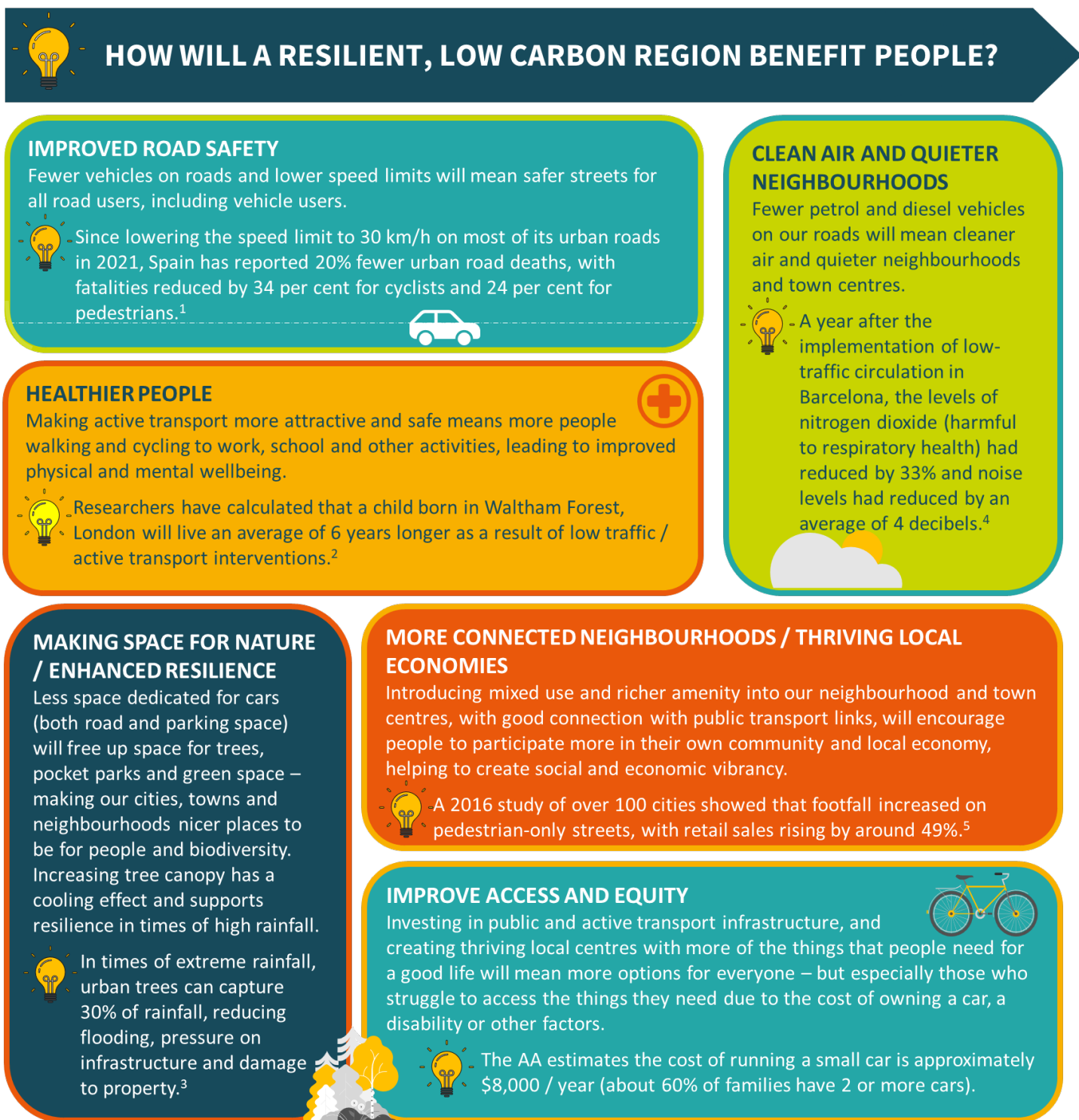
Strategic foresight must also be brought to the locations of commercial and industrial activities in the region, particularly with an eye to minimising freight movements (and therefore emissions) – both inter-regional and intra-regional.

Finally, the co-benefits of creating low-emissions cities, towns and rural communities are wide-ranging and include human wellbeing benefits, thriving local economies and cultural centres, ecological restoration and ecosystem services benefits (see Figure 12).

Above: Urban farms give urban residents access to freshly grown food, enable people to attain new skills and strengthen food security and resilience.

13 Recent reports expanding on these benefits include ‘Sponge cities: Can they help us survive more intense rainfall?’ August 2023 (WSP & Helen Clark Foundation) https://helenclark.foundation/app/uploads/2023/09/CS2023_2314_HCF-Report-Sponge-Cities_FINAL.pdf and ‘Are we building harder, hotter cities?’ March 2023 (Parliamentary Commissioner for the Environment), <https://pce.parliament.nz/publications/are-we-building-harder-hotter-cities-the-vital-importance-of-urban-green-spaces/>

Figure 12: The co-benefits of a resilient, low-carbon region



1 Spain's message to Wales on lower speed limits days ahead of 20mph roll out | GOV.WALES
2 Waltham Forest mini-Holland blueprint for the 'new normal' | SERA.ORG.UK
3 David Hall, Listener, 18 February 2023.
4 Barcelona's Superblocks: Putting people at the centre – literally | CITYCHANGERS.ORG
5 What are the economic benefits of car-free cities? | EURONEWS.COM

Improving equity through more connected communities

Improving transport options will contribute to a fairer society

All residents need to be able to get around our cities in safe and convenient ways. Making places more walkable and bikeable, and improving affordability and accessibility of public transport services, will benefit many groups that are currently disadvantaged in our transport system.

About a quarter of our population identify as disabled, and many have physical or vision impairments that prevent them from driving. Making footpaths, cycling networks, and public transport services more accessible for disabled people – as well as providing access to mobility services and parking – will support their wellbeing. Many people experience disabilities as they get older, so these

improvements will also help to deliver on the Government's strategy for an ageing population.¹⁴

Enabling young people to get around without needing someone to drive them will give young people more autonomy. It will also reduce the amount of driving that their caregivers do. Young New Zealanders strongly support better options for travelling by foot, bike, and public transport, including travel to and from school.

There are also inequities in access to transport for Māori, for women, for the LGBTQI+ community, and for ethnic minority groups. These inequities can be reduced by ensuring transport options are inclusive for people in these groups.



Māori are more likely to experience transport inequity

Compared to other groups, Māori do not have equal access to transport and are more likely to experience transport-related social exclusion. Lack of transport access can make other inequities worse.

Many Māori live and work in areas that are not well served by public transport and are potentially missing out on important trips for shopping, social contact, sports, exercise, education, and medical appointments. For instance, in 2020–2021, 5.5% of Māori reported not being able to visit a general practitioner because they did not have transport, compared to 2.4% of all New Zealanders.

Māori have lower incomes on average and are more likely to have a disability at younger ages than other ethnicities. Both of these factors affect access to the transport system. Māori are more likely to be unable to afford or drive a vehicle, or experience ‘forced car ownership’, where a low-income household must have a vehicle and a high proportion of their income must go towards maintenance and upkeep.

Being less car-dependent will make households better off

Making it easier for people to get around without a car will make many households financially better off.

While cars provide people with many benefits, owning and maintaining a vehicle is expensive. These costs include purchase, servicing, repairs, insurance, registration, and fuel. Often people go into debt to purchase a vehicle and may face high financing costs.

On average, about 14 percent of household costs are transport costs – for low-income households, the figure is 28 percent. Low-income households often live in areas that are not well connected by public transport, and that are further away from amenities, places of work, and essential services.

Improving options for people to access places by public transport and active modes will give households more opportunities to travel by low-cost modes. This will reduce the need for households to own multiple cars. In 2017, it was estimated that families in Auckland using one fewer car could save on average \$10,200 every year.

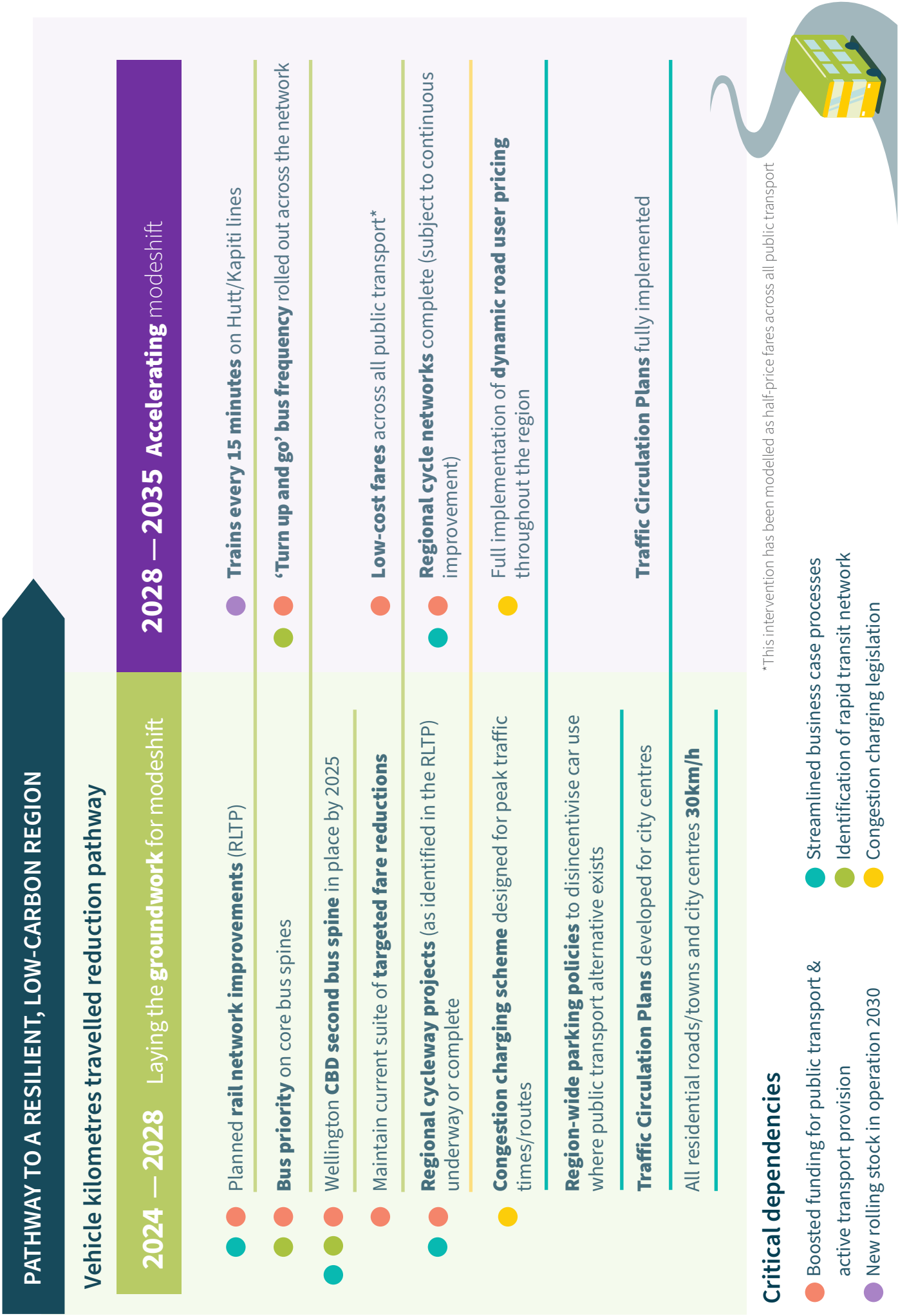
Our pathway for reduced transport emissions and a more resilient future

This section will focus on the proposed pathway and actions that need to be taken to reach our transport emission reduction goals, that is:

- 1. Reduce all road transport-generated carbon emissions by 35% by 2030**
- 2. Reduce per capita light vehicle VKT by 25% by 2035**

Our pathway is presented graphically over page.

Figure 13: Pathway to a resilient, low-carbon region



Cleaner vehicle fleet - what we plan to do

2025

Decarbonise Metlink bus fleet. All new buses to be electric by 2025

Ongoing

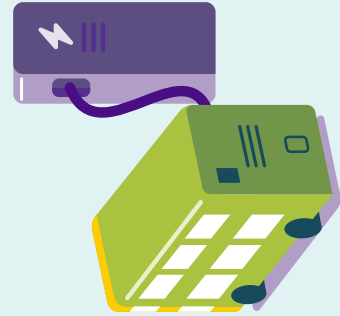
Emissions standards for existing ICE fleet. Advocacy for emissions standards for the existing ICE fleet

Ongoing

Support uptake of EVs for **car-share schemes**. Councils work in partnership with stakeholders to establish car-share schemes

Ongoing

Electricity supply/energy security. Advocacy for national planning & strategy



Smarter Freight - what we plan to do

2025

Lower North Island Freight Strategy. Strategy developed in partnership with regional councils, KiwiRail, NZTA, Ministry of Transport

Ongoing

Strengthen capacity and resiliency. Move to higher resiliency, lower emissions system through strategic planning, land acquisition, capacity upgrades etc

Ongoing

Transport funding system. Advocate for a fairer funding system for roads and rail, based on true cost of infrastructure use by freight industry

Ongoing

Decarbonisation of rail freight operations: Advocate for electrification of rail freight operations



How we determined the light vehicle VKT reduction pathway

This pathway is underpinned by extensive modelling of the suite of interventions available to facilitate a shift away from car dependency to increased use of public and active transport modes. A description of the interventions, for modelling purposes (as distinct from Pathway policy development purposes), is set out below.

Table 1: Interventions modelled

Interventions modelled	
Interventions	Indicative of
Projects identified in Regional Land Transport Plan	<ul style="list-style-type: none"> Bus priority, mass rapid transit to south in Wellington City (previously Let's Get Wellington Moving) Riverlink project Rail network improvements Cycle network expansion/improvement Increased density in central locations (as anticipated by the Future Development Strategy)
Additional public transport improvements	<ul style="list-style-type: none"> Region-wide bus improvements including bus priority on core routes and increased frequency Articulated buses with all-door boarding Rail service improvements, including increased rail frequency by 25% Half-price fares
De-prioritising car use	<ul style="list-style-type: none"> 30k/h speed limit on all non-arterial urban streets Low-traffic neighbourhoods & traffic circulation plans Parking policy/pricing in urban centres and/or residential areas Decrease in car ownership (e.g. through parking pricing and behaviour shift in densely populated areas)
Additional active modes improvements	<ul style="list-style-type: none"> Increased amenity for walking in low-traffic environments Increase in micro-mobility Increased uptake of cycling on quiet roads/shared spaces Increased uptake of e-bikes
Road pricing	<ul style="list-style-type: none"> Peak-time cordon charge for CBD Region-wide road pricing (equating to approx. 5 cents/km distance-based charge)
WTERP policy suite	All of the above

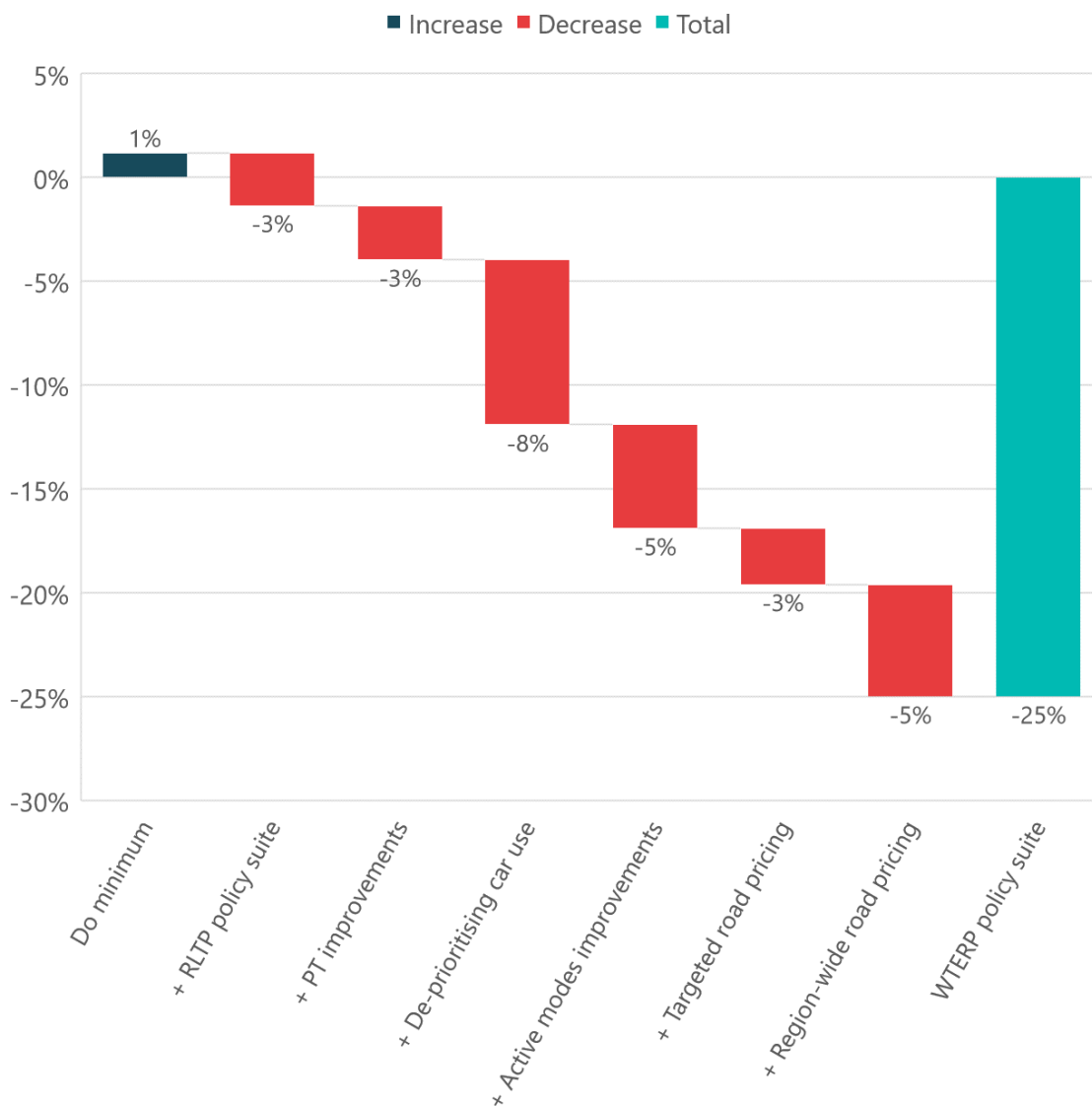
The results of the modelling are shown below. Perhaps the most significant insight we gain from the modelling is the sheer extent of the interventions required to achieve the scale of shifts required to achieve the 25% reduction in per capita VKT.

A number of other points worthy of note:

- A business-as-usual scenario as currently planned in the RLTP we anticipate just a three percent reduction in VKT per capita. (Furthermore, this is an optimistic view as fully funding the signalled initiatives is contingent on very constrained funding in council long-term plans and central government funding through National Land Transport Fund.)

- If only a targeted road pricing regime is implemented, we are unlikely to reach this goal – modelling indicates that a region-wide pricing regime is required.
- Modelling can only estimate the impact of each discrete intervention (or grouping of interventions) as represented by a proxy metric. It cannot capture the cumulative (or multiplying) impact of a suite of interventions. It is possible therefore that even without additional region-wide road pricing, the 25% goal would be achieved, as the other interventions collectively create system-wide shifts not captured by the modelling.

Figure 14: Modelled change in per capita VKT (2035) as result of a range of interventions



This modelling takes into account some level of land-use change, principally intensification in the Wellington and Lower Hutt CBDs. However, given the limited level of population growth in this period to 2035, the effect of land-use change will be minimal. To understand the impacts of different forms of land-use change in our urban areas, we need to look over a longer timeframe. The following modelling shows the scale of change we might expect from different forms of growth over the period to 2053. The scenarios modelled are:

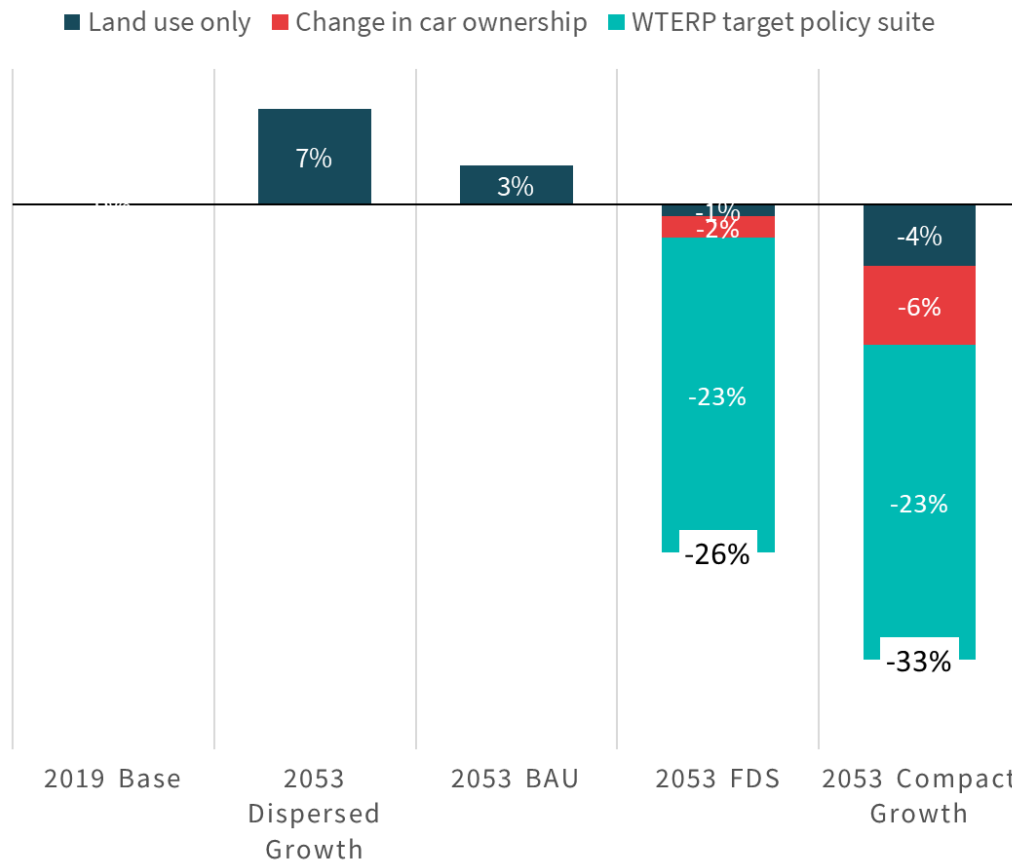
- Dispersed growth
- Continuation of the status quo with minimal policy interventions to encourage mode shift or reduce emissions/VKT

- Future Development Strategy with ERP target-oriented suite of interventions
- Compact Growth with ERP target-oriented suite of interventions

It should be noted that while there is no specific goal set for VKT reduction for 2050 (here modelled to 2053), we can expect that per capita VKT will continue to decline as land-use change continues to take effect, though perhaps at a reduced rate, with the significant policy interventions having already occurred in the earlier years of this period.



Figure 15: Modelled change in per capita VKT (2053) as a result of different land-use scenarios



It is important to note that the difference in population distribution between these scenarios is only in the population growth from 2019 to 2053. The underlying 2019 base population remains spatially in place (although demographics may change). It shows that indicatively we can expect continued dispersed growth to lead to increased VKT per capita, while we can expect compact growth to lead to reduced VKT per capita. The additional reductions in red and teal are the VKT reductions through changes in car ownership and changes that might be anticipated to occur as a result of the WTERP policy package.

While it is easy to separate land-use and network/policy in the model, in reality, these two aspects are not independent. There is a complex interplay between land use and the transport network: changes to (and investment in) the transport network will likely result in changes in land use (such

as more intensification near key public transport nodes). Conversely, increased density of urban form in a certain area could enable an expansion of public transport networks or services, because it is more affordable to serve a population at higher densities.

One aspect of this is that in denser urban centres car ownership rates (cars per person) can be assumed to be lower. Therefore, car ownership in dense urban centres and near high-frequency transit stops has been reduced in the FDS scenario, and – to a greater degree – in the compact growth scenario. These changes are represented by the red-coloured bars.

The teal-coloured bars are indicative of changes to the transport network itself, and for simplicity it is assumed that the WTERP policy suite network delivers a similar percentage decrease in 2053 as in 2035.

Unpacking the actions: what we need to do reduce emissions from light vehicles

This section provides more background and detail on the actions and interventions outlined in the graphic above.

Critical dependencies

The pathway for better towns and cities identifies critical dependencies. These are conditions that need to be in place to achieve the actions set out in the pathway. These conditions are:

- Boosted funding for public transport and active transport provision
- Congestion charging legislation
- Streamlined business case processes
- New rolling stock in operation by 2030

Boosted funding for public transport and active transport provision

Like much of our infrastructure across New Zealand, our rail network has suffered from decades of inadequate investment. This means that the necessary upgrades to move our regional rail network to rapid transit services levels cannot be undertaken until a significant backlog of deferred maintenance is completed. This maintenance and upgrade work will not only provide for the roll-out of the new hybrid inter-regional trains, due to arrive in 2028, but is also critical to the safe and reliable operation of the network. This upgrade work is currently costed at \$128 million.

Additionally, the completion of the regional cycleway network is reliant on sufficient funding being made available for this investment through both councils' long-term plans and the National Land Transport Programme.

Congestion charging legislation

Congestion charging can only be implemented when the necessary legislative framework has been established through amendments to the Land Transport Management Act 2003 and Land Transport Act 1998 (enforcement powers). It is our understanding that this legislation – the Land Transport Management (Congestion Charging) Amendment Bill – has been prepared and has been on the legislative programme since 2022. The legislation will enable territorial authorities to develop and implement congestion charging schemes in their districts, within certain parameters.

Streamlined business case processes

Current planning and business case processes have become cumbersome and time-consuming, leading to significant delays before work can commence, and in turn to cost increases. For larger projects, business casing can run through initial, programme, indicative and detailed stages prior to any procurement taking place. Separate and sometimes conflicting consenting processes can lead to further delay. The regional sector Transport Special Interest Group has advocated for some years for Regional Land Transport Plans to become the overall programme business case for each region, which would remove at least one loop of the cycle. Further work is also required to better integrate the planning, business case and consenting processes so that decisions are taken once and supported investment can progress more rapidly into implementation.

New rolling stock in operation by 2030

New rolling stock (due to be in service by 2030) will provide for more frequent services on Wairarapa and Kāpiti/Manawatū rail lines with the delivery of 18 four-car tri-mode hybrid electric trains, associated enabling infrastructure on the rail lines, and an increase in service on the portions of those electrified lines. These improvements will be delivered through the Lower North Island Rail Integrated Mobility project led by Greater Wellington Regional Council in collaboration with Horizons Regional Council and KiwiRail (who will provide the enabling infrastructure). Following that, a further tranche of about 15 four-car units (60 cars) will be required (currently planned for the mid-2030s) to realise the high-frequency service that will drive mode shift.

Identification and protection of rapid transit network

Current and future rapid transit corridors in the region need to be identified and protected. This work can begin immediately, with a final map of the rapid transit network to be included in the RLTP

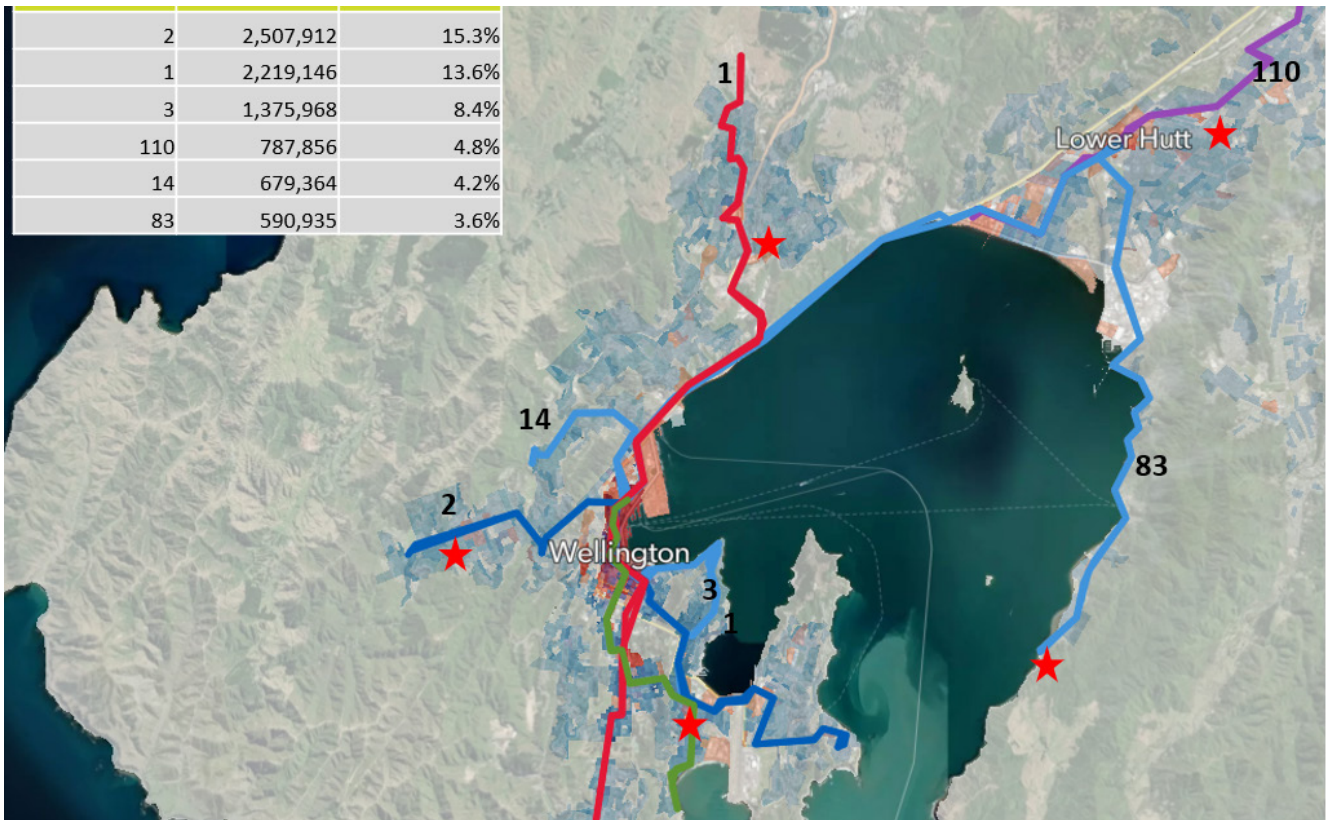
2027. This will support clear and consistent decision-making on the prioritisation of investment.

Once identified, the protection of these corridors (e.g., for dedicated bus lanes) needs to be undertaken through Traffic Resolutions under the Land Transport Act, initiated by Road Controlling Authorities (local authorities for local roads and Waka Kotahi for state highways).

The rapid transport network should be mode-agnostic (i.e., bus, bus rapid transit (BRT), heavy rail or light rail), and be developed around the customer in terms of the attributes that drive patronage.

Metlink has identified the bus routes across the region that provide 50% of all travel by bus, as shown in figure 16. This is the strategic core of the bus network and as such its protection, enhancement and continuity are critically important to public transport network as a whole. It also makes clear that these routes are the strategic priority for future investment. As such, there is potentially a case to be made for a central government role in funding and maintaining this strategic core, just as it does the state highway network.

Figure 16: Wellington’s key bus spines. The bus routes shown provide 50% of all bus travel.



Laying the groundwork

These are actions that are critically important to lay the groundwork to enable the transformational changes to reach our emissions reductions targets and create a more resilient future for the region.

The majority of these actions and interventions are identified in the Regional Land Transport Plan (RLTP), which sets out our region's bid for funding from the National Land Transport Fund. Their successful implementation are dependent on adequate funding, as noted above.

Planned rail network improvements

- The following network improvements, planned for over the next 30 years, will enable the regional rapid transit network. These improvements include:
- Replacement of North Island Main Trunk (NIMT) bridge 23 at Paekākāriki
- Improvements to the Remutaka tunnel
- Plimmerton area capacity enhancements

- Track improvements to Wellington Metro Rail (which will increase capacity in and out of station and also have resilience benefits)
- Upgrade of substations
- New Lower North Island Rail Integrated Mobility (LNIRIM) rolling stock (first carriages due to arrive 2028, with full fleet in service with increased timetables before 2030)
- Improvements detailed in the [Wellington Rail Programme Business Case 2022](#) (summarised in figure below) rolled out. Note however that this programme is approved but not funded; each element will need to be individually funded through the RLTP process, and likely also by additional Crown funding separate to the National Land Transport Fund.



Figure 17: Planned improvements to rail infrastructure



Bus network improvements

This grouping includes:

- Bus priority on core bus spines
- Wellington CBD second bus spine

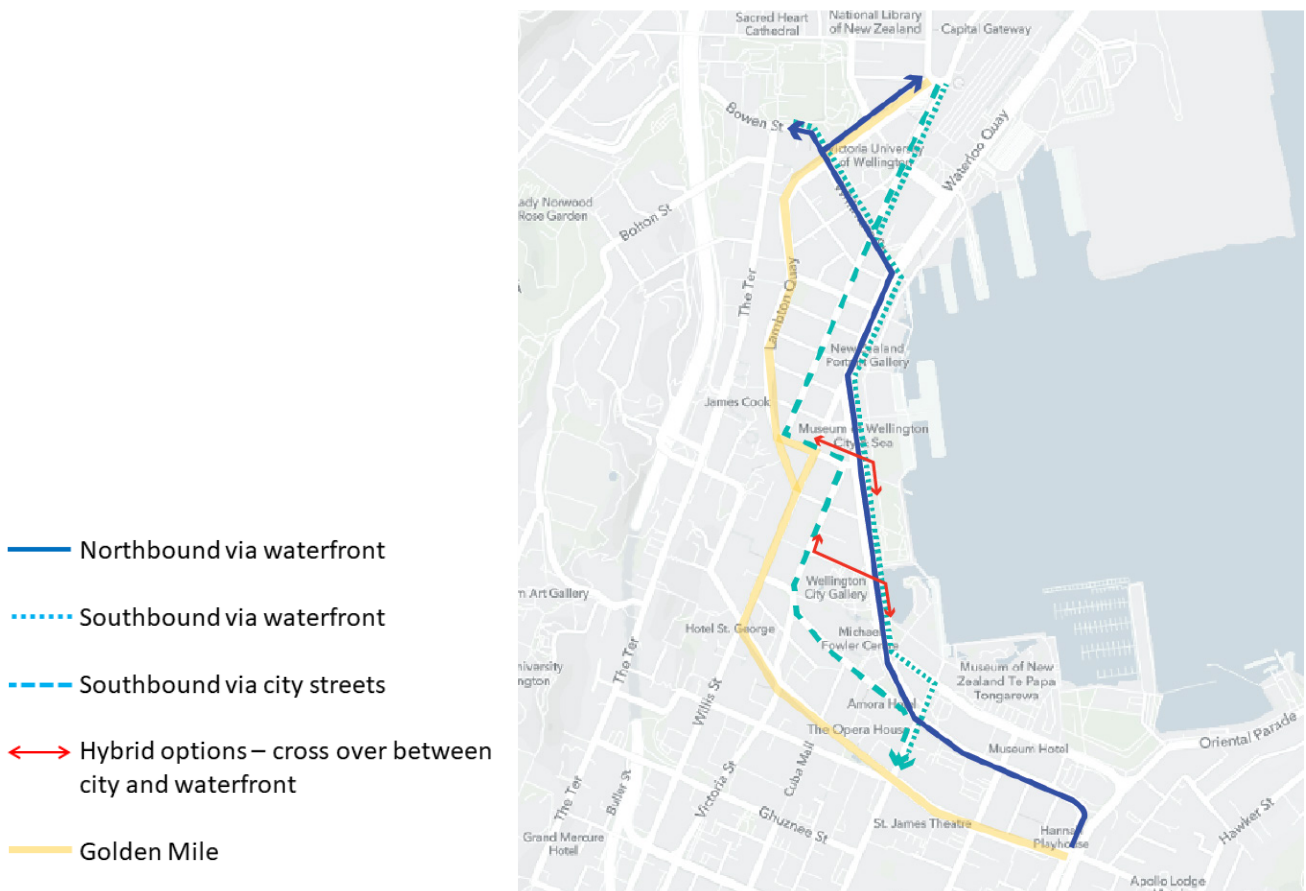
Bus priority on core bus spines ('core spines'¹⁵ as defined under the NZTA One Network Framework for Public Transport) will be critical to making public transport a fast, efficient and reliable alternative to private car use in our urban areas. Bus priority must first be enabled by the designation of bus lanes through Road Controlling Authority (RCA)-initiated traffic resolutions under the Land Transport Management Act. Bus priority will likely include supporting measures such as priority signalling for buses at intersections.

A second bus spine through the CBD is critical to enable the Wellington city bus network to accommodate expected future bus demand. The current Golden Mile (the retail and hospitality strip

that runs from the Embassy Theatre to Parliament) exceeds optimal bus numbers at peak times and is expected to be operating at capacity by 2025. Even now, every extra bus that operates at peak times leads to increasing delay and congestion. To address this increasing congestion and unlock critical future capacity for the wider bus network an alternative second bus spine is crucial.

This second spine is expected to operate along the waterfront (see figure 18 below) providing a complementary corridor for express and longer distance commuter services, as well as the Airport Express service, with core local and standard bus services focussed on the Golden Mile for city access and circulation. It will provide enhanced access to the central city by servicing destinations such as Tākina (the Wellington Convention and Exhibition Centre), which are not on the current Golden Mile route.

Figure 18: Indicative second spine



15 The definition of a 'spine' or public transport level 2 in the One Network Framework is a strategically significant corridor where many frequent public transport services operate and converge to create very high frequencies and overall passenger movement.

In addition, an intervention for future consideration is all-door boarding on buses. All-door boarding on buses will enable faster boarding and alighting from buses, speeding up passenger journeys and reducing travel time variability on the public transport network. Allowing bus passengers to board and disembark from both the front and middle doors (rather than just at the front as is currently the case) will improve the efficiency of buses, in turn reducing congestion on busy sections of the bus network.

Advocate for the retention of targeted fare concessions (central government subsidy)

Affordability, combined with other factors such as service reliability and ease of use, increases the attractiveness of public transport – retaining and building on current fare reductions can therefore help to encourage mode shift through increased public transport use. In the case of younger people especially, these concessions are useful in ‘normalising’ public transport use and making it part of the rhythm of everyday life.

Recently, public transport users benefited (albeit temporarily) from the government’s half-price public transport fares initiative that ended in the Wellington region in September 2023. This universal discount was replaced by the extension of the Community

Connect concession (a targeted package aimed at making public transport more accessible for those least able to afford it), which includes:

- free fares for public transport users under the age of 13
- half-price fares for public transport users under the age of 26
- half-price fares on Total Mobility services
- half-price fares for Community Services Card (CSC) holders.

The concession for CSC holders was introduced on the network in July 2023, and the age-based concessions were subsequently introduced in September 2023 in the Wellington region. The government has since announced the age-based concessions under Community Connect will end on 1 May 2024, but concessions for CSC holders and Total Mobility services will continue. These targeted concessions join the suite already available on the Metlink public transport network (free travel for children under 5, free off-peak travel for SuperGold card users, a 75% discount for youth between 13 and 18 years old, a 50% discount for people with disabilities (accessible concession), and a 25% peak-fare discount for tertiary students).



Complete regional cycleway projects

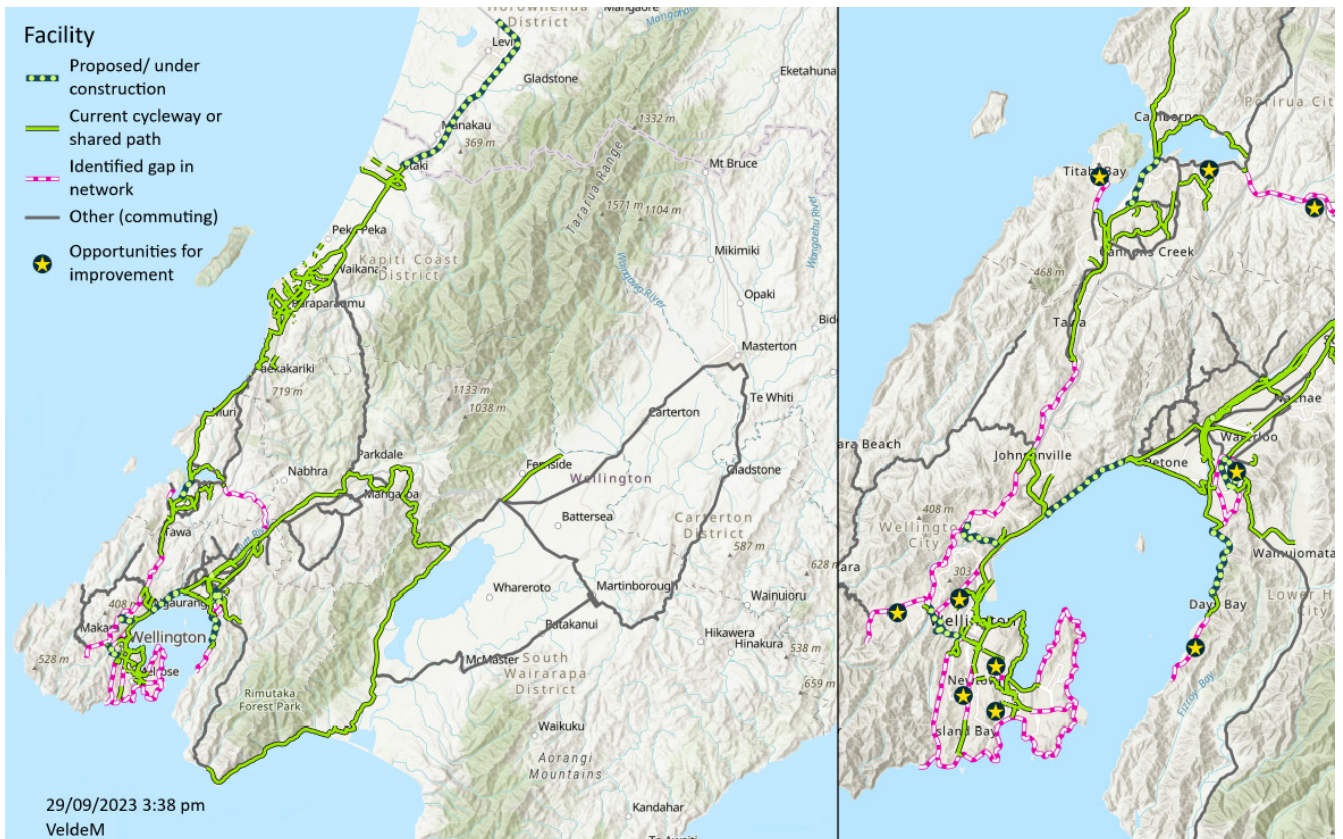
The regional cycle network refers to all parts of the cycle network that deliver transport utility (i.e., get people from A to B), though may also be used for recreational purposes. Once completed, the regional cycle network aims to enable people to travel safely and efficiently by bike to key strategic locations throughout the region, whether for work or to access services and other amenities. A ‘complete’ network would be one that provides people with an alternative active transport route to all key locations – such as city and town centres, railway stations, and key social infrastructure (sports centres, etc.) – without gaps in the network.

The current cycle network (including segments planned but not constructed) is shown in the map below. Activities identified in the Regional Land Transport Plan as part of the National Land

Transport Fund bid for 2024–27 focus on delivering shared paths including Te Ara Tupua (improving the linkage between the Hutt Valley and Wellington CBD), Porirua CBD to Titahi Bay, and those in the Wellington City’s Paneke Pōneke - Bike Network Plan.

For territorial authorities and NZTA to construct and deliver regional cycleway projects, it is crucial that there is sufficient funding available in the National Land Transport Fund (which allocates funding through the ‘walking and cycling’ activity class, as set out in the draft Government Policy Statement on Land Transport 2024). Dedicated central government funding is essential to enabling and maintaining a regional cycle network that is safe, efficient, and connected. A dedicated source of funding precludes councils from having to make the inevitable trade-offs between two or more possible investments, with comparable merit.

Figure 20: Current regional cycle network including segments proposed or under construction



Travel Demand Management

In the Pathway, travel demand management refers primarily to economic instruments designed to nudge people away from certain behaviours (e.g., low occupancy car use on routes where public transport exists) and towards more desirable ones (e.g., use of public or active transport). The tools include expanded road pricing and congestion charging, neither of which are tools currently available to RCAs. For these tools to be implemented, central government legislation and interventions will be required. The proposal is to use a unified regional voice to advocate for these measures, given the evidence that without them, we are unlikely to reach our emissions/VKT reduction targets for the region.

This suite of interventions includes:

- Congestion charging schemes designed to address peak traffic times and routes, while addressing equity
- Region-wide parking policies to disincentivise car use
- Low traffic circulation plans developed for city centres and low traffic neighbourhoods for selected suburbs or neighbourhoods
- 30 km/h speed limit for all residential roads/ town and city centres



Low Traffic Circulation Plans

A low traffic circulation plan (LTCP) strategically directs where and how cars circulate in a city. It establishes restrictions on general vehicles to prevent through-traffic from passing through certain areas. Through-traffic is directed to specially designated and designed traffic arterials and distributor roads. The goal of an LTCP is to achieve low-vehicle traffic town and city centres, creating more space for public realm (town squares, interactive spaces, green space etc), active transport and public transport, and creating safe, healthy and vibrant city and town centres. One key strength of this tool is it does not require significant infrastructure investment and elements can be tested through easily implementable pilot projects and moveable infrastructure, such as modal filters.

Cities in the Netherlands and Belgium have been the leaders in using this tool to create transformative change in cities. In Belgium, the city of Ghent's circulation plan resulted in bike mode share increasing from 22% in 2012 to 35% in 2018, while car travel reduced from 55% to 39% in the same time period. Bus patronage in Leuven, Belgium increased by 18% in the three years following the introduction of the traffic circulation plan, while cycling increased by 16%. Traffic volumes in Oslo reduced by 11% from 2016 to 2018, and by 19% from 2018 to 2019 following the implementation of the city's traffic circulation plan, with much of the car mode share shifting to cycling and public transport. Strasbourg experienced a reduction in absolute numbers of vehicles traveling to the central city from 240,000 in 1990, to 200,000 in 2000.



LTCPs are generally used alongside other tools such as congestion charging, changes in parking charges and space allocation, and access restrictions based on emissions profiles of vehicles.

To date, no city in New Zealand has fully implemented a LTCP, but Auckland has developed a comprehensive LTCP as part of its master plan for the city's transport,¹⁶ and elements have been implemented (e.g., through the Queen Street and Shortland

Street pilots). A concept for a LTCP was also developed for Wellington City in 2021 and informed aspects of the Let's Get Wellington Moving project before it was cancelled.¹⁷

A related tool is low-traffic neighbourhoods – a commonly used tool in the United Kingdom and the Netherlands, and also in Spain – most notably in Barcelona's 'Super Blocks'. These have been implemented on a pilot basis in Auckland.



16 Access for Everyone (A4E) (aucklandccmp.co.nz) as part of the City Centre Masterplan (aucklandccmp.co.nz)

17 MRC_Te_Aro_Tatou_Report_final.pdf (mrcagney.com)

Accelerating mode shift

With the foundation laid by the preceding interventions, the following interventions have been identified as being critical to accelerating mode shift.

Trains every 15 minutes on Hutt/Kāpiti Lines

The completion of the network infrastructure upgrades outlined above alongside the new rolling stock coming into operation will enable services to run on the Hutt and Kāpiti lines every 15 minutes – not just at peak time but throughout the day. This will provide ‘rapid transit’ level service, so critical to building confidence in our public transport network and facilitating wide-scale mode shift. In addition, the ‘Drive Mode Shift’ programme in the Wellington Rail Business Case (endorsed but not yet funded) seeks to have services running at 6-minute intervals on both the Hutt and Kāpiti lines within a 30-year timeframe (2052).

‘Turn-up-and-go’ bus frequency rolled out across the network

Bus services at 5–10-minute intervals across the network will enable users to walk to their nearest bus stop and be confident that a bus will take them to their desired destination within a few minutes wait. Pre-requisites to this level of service will be the second spine in the Wellington CBD, all-door boarding (enabling shorter dwell times), and dedicated bus lanes to facilitate swift journeys, unaffected by vehicle congestion (also making buses more appealing as an alternative to private vehicles).



Low-cost fares across all public transport

This intervention was modelled as half-price fares (or equivalent). The intervention may be more targeted than this but would need to be of the same scale of magnitude to achieve the same level of mode shift. Half-price fares (or similar) would ensure that public transport offers an attractive and competitive option to private car use, especially as the cost of private car use increases with the introduction of increased road-user charges, congestion charging etc.

Regional cycle network complete (subject to continuous improvement)

The ability to get to key destinations within and between districts safely by cycling will be critical to maximising uptake of cycling as an everyday mode of transport. Lower speed limits in residential and town centre areas and low traffic circulation plans that incorporating modal filters that create more space for active modes will make cycling an appealing mode of transport for people of all ages and abilities.

Full implementation of dynamic road user pricing throughout the region

Appropriate road user pricing, especially for those routes experiencing high levels of congestion and for which there are alternative public transport modes available, will not only incentivise people to get out of their cars and use other modes, but will also create a dedicated revenue stream that can be utilised to upgrade and improve public and active transport services, in turn encouraging their use.

Low traffic circulation plans fully implemented in city centres

All elements of a low traffic circulation plans are implemented, primarily in the form of modal filters or 'snips', traffic cells, changes in street direction, and other traffic circulation changes.



Other interventions and activities not directly modelled

Urban planning and design

As noted above, over the long term, it will be urban form that creates the biggest shift in how we get around (and how much we need to travel to access the things we need for a 'good life'). However this takes time, and changes in urban form will principally affect new growth, rather than existing urban areas. A number of policy measures and initiatives are in place that will help to support this shift, which are:

- Implementation of national policy through district plans: NPS on Urban Development and Medium Density Residential Standards (under the Resource Management Act), which encourage intensification within existing urban footprints and along rapid transit corridors
- The Future Development Strategy for the Wellington region, which sets out where new growth will be distributed, with an emphasis on accommodating most of our growth within the current urban boundary with intensification along metro rail corridors. This aligns with the direction set in the proposed changes to the Natural Resources Plan and Regional Policy Statement, which aim to limit greenfield development for both water quality and climate emissions reasons.

- GWRC is developing guidance to support urban design best practice for lower VKT and enhanced liveability in a range of urban scenarios (e.g., large lot, neighbourhood, town centre scale). This is non-mandatory guidance to enable councils, developers, communities and mana whenua to advocate for urban design that will support enhanced liveability and climate resilience, along with a range of other co-benefits.
- The region may also wish to explore the option of appointing an urban design specialist for the region to help support best practice. This could be a shared on-staff expert (employed using a similar funding model as the Transport Analytics Unit), whose expertise could support councils to influence processes and engage with stakeholders to achieve better outcomes in urban planning in the region.

Behaviour change programme

The GWRC Travel Choice team provides ongoing support for mode shift, through workplace and school travel plans, cycle skills training, events, employer subsidised travel scheme, car-pooling trials, first-last leg initiatives as well as a range of other initiatives. These initiatives will continue to play a vital role in supporting behaviour change throughout the region.



Cleaner fleet

Decarbonise Metlink fleet (buses)

In 2021 the government announced that it would require only zero-emission buses to be purchased from 2025 with a complete decarbonisation of the public transport bus fleet by 2035. Currently, about 23 percent of the Metlink bus fleet is electric, but Metlink's remaining (diesel) fleet is relatively new and efficient with a higher European emissions standard that has led to improvements in air quality in Wellington CBD.

Due to the very high capital expenditure required to bring electric buses online (many millions of dollars will be required to build an electrified depot), electrification of the fleet may only make sense from a financial perspective for those routes covering longer journeys. Per unit, electric buses also cost

considerably more than their diesel counterparts. It is clear that this level of spending is beyond the financial capacity of GWRC. The question of how this transition will be will need to be addressed over the 2024 period.

Emissions standards for internal combustion engines

The new emissions standards introduced in 2023 only apply to imported vehicles. There is an opportunity to advocate for standards for the existing fleet, as is the case in many other countries. This would not only reduce harmful emissions, but also lead to public health benefits through improved air quality, especially in our cities.



Support uptake of EVs for car-share schemes

New Zealand has one of the highest car ownership rates in the world, and continued high car ownership – irrespective of whether the vehicle is EV or ICE – will only ‘bed in’ car-centric urban design. Further, there is evidence that EVs will increase pressure on existing networks (due to their higher average weight and harder braking dynamics EVs cause more damage to roads compared to ICE vehicles and also take up the same, if not more, space once charging infrastructure is factored in), exacerbate safety issues for non-car users (also due to weight), and amplify transport equity issues – all working against what this strategy sets out to achieve.

Additionally, EVs are certainly cleaner in terms of tailpipe emissions than conventional internal combustion engine (ICE) vehicles. However, they are significantly more energy- and carbon-intensive than ICE vehicles to manufacture – primarily due to the heavy reliance on rare and earth metal extraction for their batteries. Extraction of these materials – often in the ‘global south’ (developing countries) – causes severe environmental degradation and places pressure on natural resources such as water, which will become an increasingly scarce resource in many regions as climate change deepens. As an environmental regulator with a focus on an equitable transition, GWRC in particular is well-placed to consider the wider effects of our consumption, including on communities in the global south – and avoid narrow-scope carbon accounting.

With a major push to increase EV penetration by multi-national vehicle manufacturers, uptake of EVs will increase irrespective of any initiatives to support this by councils. It would be useful instead to explore how the cleaner (consumer-end) technology offered by EVs can be utilised in situations where public transport or active modes are less viable – in rural communities, greenfield developments or commuting journeys where public transport is not accessible or practical. There may be opportunities to support/partner with large employers, developers of large new greenfield developments, airport etc to encourage car-sharing using EVs.

Electricity supply and energy security

The broader issue of electricity supply and capacity will be a major challenge as the region and country transitions transport and other sectors to electricity. It also links to a broader issue of energy security as we move into an energy-constrained future – it is generally agreed that we have passed ‘peak-oil’, as evidenced by the poorer quality (energy density) and lower energy return on investment of the oil now being extracted. Note that while the focus is often on electricity supply, it will take an unprecedented amount of fossil fuels to build out the electricity infrastructure we will need to serve a lower carbon future. As councils of the region, we need to be working with our partners to advocate for a comprehensive energy security strategy to help protect New Zealand against future supply shocks and help increase resilience longer term.

Smarter freight – mode shift and decarbonisation

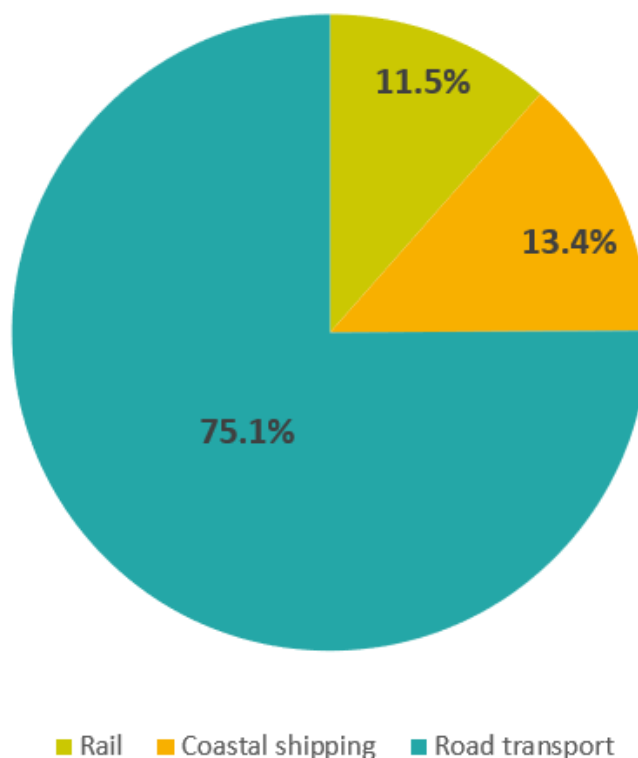
The challenges

Challenges or barriers to shifting freight from roads to rail and coastal shipping include aging and poorly maintained rail infrastructure, a road-user pricing regime that favours road freight over rail/coastal shipping, and governance models for ports and KiwiRail (state-owned enterprise model) that mandate profit maximisation over delivery of public good or environmental outcomes. While this model was arguably useful for making the New Zealand economy for competitive globally, it does not necessarily serve well at this time of transition we need to move urgently to decarbonise our economy. The primary barriers and challenges are set out below.

Ageing rail tracks and yards with limited load capacity, single lane tracking and height and space restrictions

The last major infrastructure improvements to New Zealand's rail infrastructure were the civil engineering associated with the North Island Main Trunkline (NIMT) electrification in the 1980s. With the lifting of the last remaining long-distance road freight restrictions in the 1980s and the stripping away of the regulations that had protected domestically-operated coastal shipping (which was connected to the broader rail network), rail-yards lost capacity as a further share of rail freight moved to roads. The share of rail freight has been dropping since the 1970s, when it held a 50% share, to now being 11.5% of net tonne-kms,¹⁸ with remaining freight activity focused on long-distance haulage of commodities such as logs, coal and milk and container traffic

Figure 20: Freight mode share in tonne-kms (2017/18)



Rail and coastal shipping have lost share due to perception of inadequate timeliness and efficiency

Comparative to the state highway network, there has been little investment in the rail network to increase efficiency/reduce travel times. For the most part, the rail network still follows original alignments laid down over a century ago, whereas state highways alignments have been progressively improved, reducing travel times. Similarly, coastal shipping has been required to compete against road freight, which operates on a state highway network that enjoys a high level of government investment to improve and maintain.

18 <https://www.transport.govt.nz/assets/Uploads/Report/NFDS3-Final-Report-Oct2019-Rev1.pdf>, figure 1, p.ii.

As with rail freight, the viability of coastal shipping by domestic operators was weakened in the 1990s by the removal of regulations (known as cabotage) that had protected domestic coastal shipping up to that time. As a result, it became more difficult for domestic coastal shipping operators to be competitive compared to international shipping operators and – most critically – road freight. A reduced freight share for domestic operators to move also makes their operations less viable, further diminishing their ability to compete with other players (both international shipping and road freight).

Today, coastal shipping by domestic operators is restricted to the inter-island ferry services and services operated by Pacifica Shipping from Auckland, Marsden Point (Northland), Lyttleton and Timaru. (Noting that international operators also operate on routes between New Zealand ports.)

Freight by road not paying true cost of movements

It has been estimated that about two thirds of the cost of building new highways is the engineering necessary to make them strong enough for trucks and other large vehicles. Over time, the size of trucks has become heavier necessitating a higher standard of construction. Conversely, excluding damage from storms, slips and other natural hazards, it is generally considered that around 80% of all road maintenance costs are the result of the damage caused by trucks (Analysts suggest that light vehicles cause practically no damage to road pavement.)¹⁹

However, the trucking industry pays less than a quarter of the costs of building and maintaining highways.²⁰ These ‘true costs’ also do not take into account other externalities of road freight such as carbon emissions and air pollution. Rail freight delivers carbon emissions reductions of up to 70% compared to road freight,²¹ while coastal shipping offers an approximately 80% reduction in emissions for the same freight volumes over the same distance.²² Translated as a cost, this means that road freight generates 70% more climate emissions than rail, but is not paying the cost of this harm.



Image credit: KiwiRail

19 How Much Damage Do Heavy Trucks Do to Our Roads? | Inside Science; <https://ftp.txdot.gov/pub/txdot/gov/hb-2223-final-report.pdf>

20 Petrol taxes are subsidising the trucking industry | Scoop News, citing Ministry of Transport data.

21 See Sustainability | KiwiRail.

22 How New Zealand can cut freight transport emissions | University of Canterbury

Operation of lower North Island ports and wider network does not optimise for emissions reductions

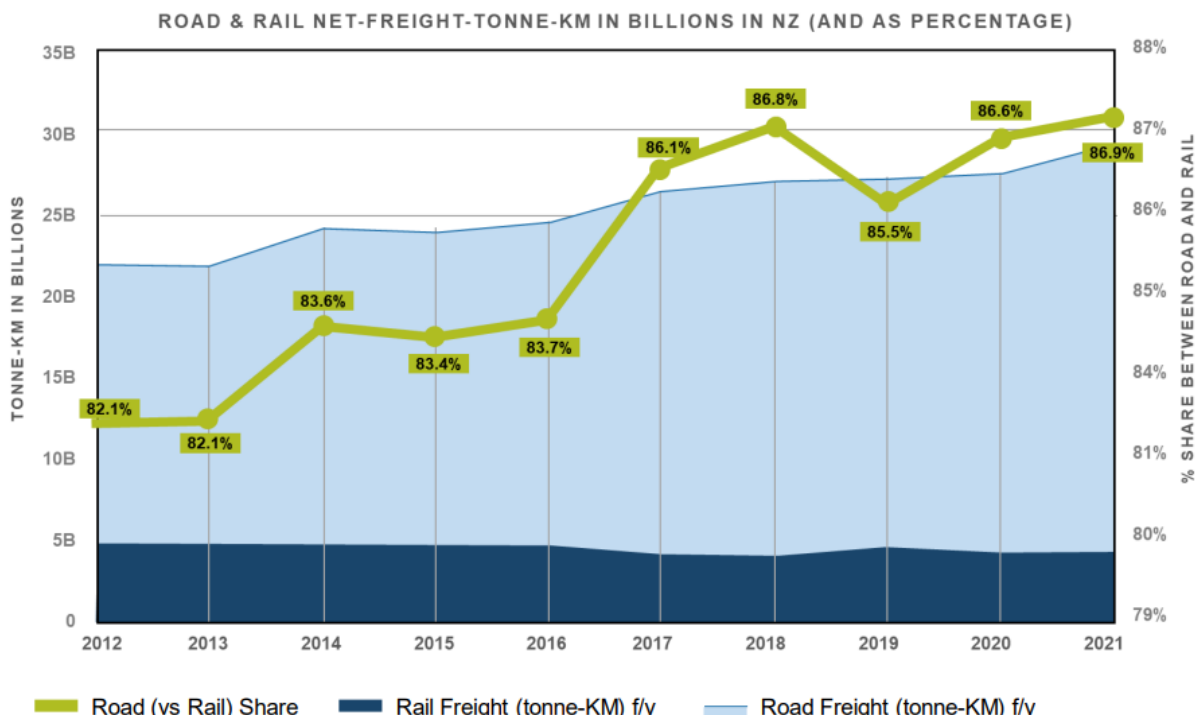
The three ports in the lower North Island (Taranaki, Manawatu-Whanganui, Hawke’s Bay and Greater Wellington) area are wholly owned by the regional councils and compete commercially with each other. In addition, KiwiRail is a state-owned enterprise, and is required to generate a profit for its government owner.²³ There are also intermodal freight hubs, some owned/operated by KiwiRail, while some are privately owned. There are a number of existing intermodal hubs and more that are proposed to facilitate efficient freight supply chain activities and group together related sector industries.

There are two main types of freight flows: import/exports and domestic freight. Imports for domestic consumption generally come into the upper North Island ports. They then go to warehouses in the Upper North Island before they get shipped via domestic freight networks through the rest of New Zealand. Which ports are used is also influenced by

international shipping companies which consider logistics from a global shipping network lens versus what is best from the perspective of the regional freight network. Adjustments are always being made to balance and optimise inward and outward freight flows to New Zealand, meaning that freight flows are influenced at the national (and at times international) scale, rather than just on the lower North Island scale.

Due to this ownership structure, external drivers influencing freight flows and the primacy of the profit-making imperative, there is no direct incentive for the ports and for KiwiRail to work together to improve efficiencies (including emissions reductions) of the system as a whole across the lower North Island. An added complication for rail is that ports get the product whether it arrives by road or rail – and there are often additional costs associated with the handling of freight from rail, so an increase in rail freight volumes will not always be seen as advantageous from a port company’s perspective.

Figure 21: Share of road versus rail for freight over time (2012–2021). Ministry of Transport



23 The State Enterprises Act sets out that a state-owned enterprise’s principal objective is to be a successful business and requires them to be ‘as profitable and efficient as comparable businesses that are not owned by the Crown’ (section 4(1)(a)).

Rail freight continues to lose share to road freight

As a result of the historic changes in the system outlined above, including removal of protections for rail and coastal shipping, and limited investment in rail infrastructure compared to increasing investment in the state highway network, the share of freight moved on roads (versus rail) has been at more than 80%, with that ratio steadily rising over the last decade, from a historic share of 50% in 1972.

In New Zealand, road freight has developed around a just-in-time inventory system, that is, a system whereby the client company receives goods as close as possible to when they are needed, with inventory (and the associated warehousing costs) kept to a minimum. This is a model designed to support the manufacturing industry (it was first developed by the car-manufacturing industry) which is not a strong sector in New Zealand, compared to other countries.

Internationally, a just-in-case inventory system (that is, whereby companies develop more substantial inventories on site or nearby warehousing to reduce the reliance on fast freight delivery timelines) is an emerging feature of transport networks. This shift was amplified by supply chain disruption during the peak of the Covid pandemic. Such a transition towards a just-in-case system for industry and commercial sectors would enable rail and coastal shipping to take a higher share of freight, as the focus would be on efficiency (including in terms of energy and emissions) rather than fastest time. This would not only reduce emissions and energy demands but also increase resilience, which is likely to become a more prominent goal of the New Zealand economy, as energy and material supply constraints bed in alongside increasing disruption to supply chains from climate change and increased geopolitical tensions over resources.



What we plan to do to support reduced emissions in the freight sector

Four key actions are identified:

Lower North Island Freight Strategy.

Recognising the need for more strategic and long-term vision for the region, this Pathway strongly recommends the development of a Freight Strategy for the Lower North Island, led by Ministry of Transport/NZTA in partnership with KiwiRail, port companies and regional councils.

Strengthen capacity and resiliency.

Future planning for the region (e.g., the FDS or a future spatial plan) needs to allow for greater capacity for freight logistics at key locations. For example, regional freight hubs that link road and rail networks as well as seaports, will facilitate the movement of long-haul freight in the most energy- and emissions-efficient means possible.

In the future freight hubs can be used as a means for rail to do the linehaul part of the freight task with electric trucks undertaking the local (out-and-back) distribution.²⁴ These may be linked to local pick-up and drop off points enable people to collect their goods or use less carbon-intensive modes such as motor scooters or cargo bikes. Removal of long-haul freight from city streets would reduce carbon emissions and air and noise pollution, while improving safety and efficiency for other road users. It would also improve the efficiency of the freight journey.

A regional strategy should support for a shift away from 'just-in-time' expectations (both from end consumer and freight user perspective) to a just-in-case model, by increasing inventory at freight hubs and reducing freight movements, would strengthen resiliency, better protect against future supply chain

shocks, and reduce emissions from the additional freight movements required to achieve a just-in-time system.

Transport funding system.

This Pathway sees a role for councils and partners to advocate for a fairer funding system for roads and rail, based on true cost of infrastructure use by freight industry, better reflecting the externalities (damage to roads, carbon emissions, reduced road safety and reduced efficiency of the roading network). This would help create a fairer playing field and incentivise the freight industry to use rail and coastal shipping.

With adjustments in funding and pricing structures, coastal shipping could once again become an attractive option, especially as the economy shifts more towards a just-in-case inventory model to help protect against future supply chain disruption and reduce energy dependency and emissions generation.

Decarbonisation of rail freight operations.

KiwiRail are currently exploring the best solutions to transition toward carbon net zero freight train operations. The most viable options to achieve this include extending the overhead traction wire network along with new generation electric locomotives and/or battery electric locomotives. KiwiRail is currently developing a business case for this work, to be completed by June 2025.

In summary

This pathway sets out the things we need to do, at all levels of government and community, for the region to play its part in reducing transport emissions by 41 percent by 2035, on the path to net zero emissions (across all sectors) by 2050. The regional targets are:

- 1) Reduce all road transport-generated carbon emissions by 35% by 2030 against a 2018 baseline.
- 2) Reduce per capita light vehicle VKT by 25% by 2035 compared to 2019 baseline.

We have developed an ambitious pathway but based on the data we have, the interventions identified are what is necessary to make the shifts required. Neither Greater Wellington Regional Council nor all councils collectively can make these shifts happen. We need central government to set in place the necessary legislative and regulatory changes, to fund public and active transport infrastructure and to incentivise the shifts we need across all sectors.

Therefore a major part of what this Pathway sets out to do is to create a vision, a pathway to reach that vision, and the evidence base supporting it. It will enable councils and communities of the region to effectively advocate for the support we need to play our part in the net zero 2050 goal.

But this isn't just about meeting an abstract goal. By implementing the pathway, we will help our region's communities be more resilient and connected, and able to thrive in the face of challenges to come.

The Pathway is divided into three areas, being:

- Reduced car dependency (VKT)
- Cleaner fleet
- Smarter freight

The light vehicle emissions reduction, measured by VKT, is the strongest area of focus in the Pathway because this is the area that we as councils and partners are most able to influence through investment in public and active transport, urban planning and traffic demand management (but within a regime set by central government).

The part of the pathway dealing with VKT reduction is strongly informed by modelling. The most

significant insight we gain from the modelling is the sheer extent of the interventions required to achieve a 25% reduction in per capita VKT. In addition, while changing land use (more compact, public transport-integrated urban form) will be the most powerful lever over the long term, it will make negligible difference over the period to 2035 (the focus of this strategy).

Nevertheless, our vision for the region must take the long-term view. This reflects the fact that long term, the most effective lever for achieving a low-carbon transport system will be urban form that delivers on equitable access (eg, to health services, education, healthy food and green space) and liveability. That is, building our cities, towns and rural communities so that people have access to most of the services and amenities they need for a 'good life' within a short walk, cycle or public transport trip of their home.

With its unique geographical and topographical features, the Wellington Region is ideally suited to polycentric urban (and semi-urban) form throughout the region. That is, a network of economically and culturally diverse urban centres, comprised of dense clusters of mixed-use walkable communities, connected by reliable and regular public transport. Strategic foresight must also be brought to the locations of commercial and industrial activities in the region, particularly with an eye to minimising freight movements (and therefore emissions) – both inter-regional and intra-regional.

The benefits of creating low-emissions cities, towns and rural communities go well beyond climate mitigation; the co-benefits are wide-ranging and include human wellbeing benefits including safer and healthier communities, thriving local economies and cultural centres, ecological restoration and ecosystem services benefits. Namely, a resilient, low-carbon region fit for the future.

The final section sets our commitments towards our regional VKT reduction and transport emissions reduction goals, and ultimately towards a more resilient, low-carbon and liveable region.

24 Out and back refers to a vehicle returning to a known stabling point or depot with charging facilities. Out and back routing provides operators with greater certainty that they will be able to recharge their vehicles in a timely manner and control costs. Additionally, local delivery runs tend to be smaller which places them well within ranges of existing non-ICE light vehicles ie, less than approximately 400 km/day.

Our commitments

What?	When/phasing/dependencies	Who?	Funded?
CRITICAL DEPENDENCIES			
Congestion charging legislation - advocacy	2024/ongoing	All councils	N/A
Boosted funding for public transport and active transport provision - advocacy	2024/ongoing	All councils	N/A
Streamlined business case processes	2024/ongoing	GWRC/local government transport sector group	N/A
Identify and protect rapid transit network throughout region	2024 - 2027	GWRC/Metlink/RCA	N/A
LESS CAR-CENTRIC CITIES AND TOWNS (VKT REDUCTION PATHWAY)			
Public transport			
Planned rail network improvements (RLTP)	Phased, to 2030	KiwiRail	Partially funded
Bus priority on core bus spines (Wellington City)	Phased, with first spine in place by 2026	WCC/Metlink	Indicatively funded
National ticketing payment system (universal payment by credit/debit card and phone nationwide. Fare products to encourage greater use.)	By 2025	Metlink	In RLTP/ funding TBD
Wellington CBD second bus spine	By 2025		Unclear
Retain targeted fare reductions, moving to low-cost fares (modelled as half-price) by 2027 – advocacy	2024-6/2027	Advocacy	Central government subsidy (not currently funded)
Move to rapid transit level of service on Hutt/ Kāpiti Lines	2030	GWRC/Metlink	Unfunded
Move to rapid transit level of service on all major bus routes	2030	GWRC/Metlink	Unfunded

What?	When/phasing/dependencies	Who?	Funded?
Active transport			
Regional cycleway projects (as identified in the RLTP) underway or complete	By 2027	RCAs	Partially funded
Regional cycle network complete (subject to continuous improvement)	2027-2035	RCAs	Unfunded
Behaviour change programme and support	2024	GWRC	BAU/funded
Urban planning and design			
Support urban design best practice for lower VKT and co-benefits	Toolkit complete by 2024	GW	Funded
Explore option for urban design specialist for region	2024	GW	Not funded
Travel demand management			
Congestion charging scheme designed for peak traffic times/routes	By 2026 contingent on legislation	RCAs	Unfunded
Full implementation of dynamic road user pricing throughout region	By 2030	RCAs	Not funded
Region-wide parking policies to disincentives car use where public transport alternative exists	By 2026	TAs	Not funded/BAU
Traffic circulation plans developed for city centres, fully implemented by 2030.	By 2026/2030	RCAs	BAU
All residential roads/town and city centres reduced to 30 km/h	2026	RCAs	BAU
CLEANER VEHICLE FLEET			
Decarbonise Metlink bus fleet. All new buses coming into fleet to be electric by 2025.	2025	Metlink	Unfunded
Emissions standards for existing ICE fleet. Advocacy for the introduction of emissions standards for the existing ICE fleet (in addition to imports)	N/A	MOT/Waka Kotahi	No funding required (advocacy only)

What?	When/phasing/dependencies	Who?	Funded?
<p>Support uptake of EVs for car-share schemes.</p> <p>Councils work in partnership with public sector/employers/developers to encourage establishment of car-share schemes</p>	ongoing	GWRC/TAs in partnership	BAU
<p>Electricity supply/energy security. Advocacy for central government foresight planning and national strategy</p>	ongoing	All councils	BAU
SMARTER FREIGHT			
<p>Lower North Island Freight Strategy. Strategy developed in partnership with Lower North Island regional councils, KiwiRail and NZTA/Ministry of Transport</p>	2025	NZTA/Ministry of Transport, KiwiRail, GWRC, Hawke's Bay Regional Council, Horizons, Taranaki Regional Council, freight sector.	Listed as an unfunded activity in the RLTP
<p>Strengthen capacity and resiliency. Increase capacity for freight logistic centres (storage, breakout) at key locations in the region.</p> <p>Support region to transition from a 'just in time' system to a higher resiliency, lower emissions system through strategic planning, strategic land acquisition, capacity upgrades etc.</p>	ongoing	Wellington Port Company, KiwiRail, TAs, GWRC (who else?)	BAU
<p>Transport funding system. Advocate for a fairer funding system for roads and rail, based on true cost of infrastructure use by freight industry. E.g., review road user charging regime to ensure that users that generate the most damage pay a share reflective of the costs to repair.</p>	ongoing	GWRC/KiwiRail/all councils	BAU
<p>Decarbonisation of rail freight operations: Advocate for electrification of rail freight operations, aligned with KiwiRail business case.</p>	ongoing	KiwiRail/all councils (KiwiRail business case due for completion 2025)	BAU

Appendix: Background to the WTERP targets

This appendix provides some background to the targets in this pathway.

This pathway has two primary targets to achieve through the three focus areas:

- Reduce all road transport-generated carbon emissions by 35% by 2030 against a 2018 baseline (Regional Land Transport Plan goal)
- Reduce per capita light vehicle VKT by 25% by 2035 compared to 2019 baseline (national Emissions Reduction Plan (ERP) derived goal).

Timeframe

Because they are derived from two different policy processes (Wellington Regional Land Transport Plan 2021 and ERP 1), the target timeframes are not aligned (2030 vs 2035).

RLTP transport emissions reduction goal. Assuming 10 percent population growth, this equates to a 15–25% reduction in VKT (across the entire vehicle fleet – not just light vehicles) alongside 25–35% of the fleet being electric by 2030 (the latter target is aligned with national targets for EV penetration).²⁵ While the magnitude of VKT reduction (15–25%) inferred by this emissions reduction target is roughly aligned with the 29% reduction goal, it is for all the vehicle fleet – not just light vehicles.

Light vehicle regional VKT reduction target derived from the national VKT reduction target

Indicative advice was that our regional goal would be to reduce regional VKT by the light fleet by 29% by 2035, derived from the national ERP 1 goal of 20% light fleet VKT reduction by 2035 against the hypothetical ‘do nothing’ 2035 baseline (representing in real terms a one percent reduction against the 2019 baseline).

From a policy and practical perspective, this is problematic because the 2035 baseline designed to serve as a comparison is a hypothetical future state based on minimal interventions to reduce VKT. One advantage of this approach is that population growth will be assumed the same across both the hypothetical baseline and the alternative pathway in 2035 and is therefore not a variable that needs to be taken into account.

Measuring VKT against a real 2019 baseline is more meaningful and useful, but brings the complication of population growth as a major variable. There are a wide range of population projections for the region, including the Sense Partners’ projection that the region will grow by 200,000 people over the next 30 years, compared to the more conservative Stats NZ projections which projects population growth of about 86,000 (at mid-range projections) over the next 30 years (to 2048).²⁶

Instead, we have chosen to use a per capita goal, which has a number of advantages including that it is:

- measurable
- scalable – can be measured at individual, community, district or regional level
- relatable – vehicle kilometres travelled (per person) is an idea an ordinary person can relate to without any prior knowledge of climate or transport policy, and can apply intuitively to their own lives without the need for complex calculations or analysis
- measuring against an actual baseline (rather than a hypothetical one) makes it more tangible.

Taking population growth into account, the original ERP VKT target translates to about 24% per capita, measured against an (actual) 2019 baseline. For ease of communication, we have rounded this up to 25%, which means that from a

25 As of June 2023, plug-in electric vehicles (comprised of all electric and hybrid) made up less than 2 percent of New Zealand’s 4,798,770 vehicle fleet

26 Stats NZ, 30 March 2021, Subnational population projections: 2018(base)–2048 | Stats NZ

practical standpoint, one of every four trips made at an individual or household level would be avoided or taken via another mode.

The Regional Land Transport Plan public transport and active transport mode share target

The RLTP is a statutory document that sets the direction for the transport network in the region for the next 10-30 years, identifying regional priorities, policies, targets, and objectives. The Wellington RLTP developed in 2021 also has a goal to increase mode share for public and active transport to 39%. The goal is as follows:

In 2018, 28 percent of trips were made by public transport and active travel – we aim to increase this to 39 percent by 2030 [representing a 40% increase]. We will measure this using the household travel survey produced by the Ministry of Transport. Assuming 10 percent population growth, to achieve this target, we will need an

increase in public transport patronage and active travel of around 50 percent.

There are a number of challenges with this goal. Firstly while it is straightforward to measure public transport patronage, it is much more difficult to measure mode shift away from private vehicle to active modes (e.g., it is not always clear whether cycling activity constitutes a trip that would have otherwise been taken by a private vehicle or whether it is additional to those vehicle trips), making this goal difficult to measure, and in turn difficult to know whether it has been achieved.

Secondly, this target is not derived from the emissions goal or aligned with any national goal – it is a goal that exists independently of these other targets.

Thirdly, while it makes sense to those in the transport policy world, a mode share goal is not relevant or meaningful to most ordinary people. For these reasons, it is recommended that this goal is retained as an RLTP target but not adopted as a target for the WTERP.



