TE PANE MATUA TAIAO
GREATER WELLINGTON

Our region's transport system 2050

Levers for system change

Greater Wellington
Te Pane Matua Taiao

Contents

This report has been developed by Greater Wellington Regional Council officers to inform the development of the Wellington Regional Land Transport Plan 2027. It has not been endorsed by the Wellington Regional Transport Committee.

Report outline

Building on the ambitious path set in the Wellington Regional Transport Emissions Reduction Pathway (the Pathway), this paper sets the scene for the transformational change we need to achieve a transport system fit for the future, as we lay the strategic foundations of the Regional Land Transport Plan 2027.[1]

Note that this report was developed by Greater Wellington officers and has not been endorsed by the Regional Transport Committee. We know from our modelling for the Pathway that small, incremental changes to the current system will not be enough to meet the challenges of the future: a future transport system needs to deliver on resilience, affordability, and accessibility outcomes, while enabling the region to move towards a low-energy, low-emissions economy.

The current Regional Land Transport Plan for the region has a strong focus on health, environment, climate, and equity outcomes as well as core network efficiency and economic outcomes, consistent with the current 'four wellbeings' mandate for local government under the Local Government Act and the Transport Outcomes Framework (discussed further below). Building on this foundation, this paper introduces the lens of the wellbeing economy to examine the transport system, not just as a means of getting people and goods from A to B, but as a key enabler of liveability, social connectedness and good health for all.

This paper employs a system view to set the broad scene of transport in the Wellington Region, using wellbeing economy as central, unifying lens. It will examine the status quo, the key challenges and barriers preventing us from getting the most out of our transport system, and the levers for transformational change. It provides some early thinking that could usefully inform the overarching 30-year vision and development of high-level headline targets and strategic objectives for the Wellington Regional Land Transport Plan 2027 (RLTP).[2] While the focus is on how a wellbeing economy lens might be useful as a strategic foundation for RLTP 2027, the paper also suggests ways that the Regional Transport Committee, as an important governance group representing government bodies in the region, can influence change through processes and forums outside the RLTP process.

1 Note that this report was developed by Greater Wellington officers and has not been endorsed by the Regional Transport Committee.

2 Note that while the title of this report is 'Our Transport System 2050', the RLTP takes a 30-year view (2027–57). The 2050 timeframe aligns with net zero 2050 timelines, and is therefore well-socialised, but in this context can be taken to encompass the decade of 2050.

Background

Since the 1980s, investment in the transport system has largely been measured on the basis of narrow metrics, primarily its contribution to productivity and efficiency, rather than taking a system-wide view of the benefits and disbenefits (and tradeoffs) of different investments. This is despite some recent efforts to move away from a narrow focus on productivity and efficiency towards a whole-of-system wellbeing approach (see Considering transport with a Wellbeing Economy lens below).

However, transport policy has not always been characterised by this focus on productivity and revenue generation: the Report of the Committee of Inquiry into Urban Passenger Transport in 1970 (stood up by the Second National government led by Keith Holyoake) emphasised the public good nature of public transport:

"The Committee is of the opinion that

> urban passenger transport is basically a community service vital to the future welfare of urban areas … It is hoped that, in future, public transport will cease to be judged on its profit or loss result, and instead will be judged on the contribution it is making to welfare generally of the city it serves.
>
> The principal reasons for maintaining urban passenger transport services, even if they no longer pay, are that they provide an alternative the use of the private car, and that they are inherently the most efficient and economical means of moving large numbers of people, especially at peak periods of travel."

Also, the provision of reasonably cheap and convenient transport services for the young, the old, and the handicapped is a desirable community objective in itself, quite apart the value of these services for workers, shoppers, and others."

Not only did the committee's report highlight the public good benefits, but it also made it clear that owing the magnitude of those benefits, there should be no imperative for the public transport function to operate at a profit:

> "From a purely economic standpoint, losses on urban passenger services are likely to be much less of a burden (as a national cost) than attempts to provide an increased amount of road space and other facilities for all who wish to use their private motorcar in preference to public transport."[3]

This argument remains cogent in the 2020s, its validity and relevance is only amplified by the increasing breadth and scope of wide-scale costs of an increasingly motor vehicle-dependent economy – at a scale that policymakers 50 years ago would not have envisaged. These costs are wide-ranging and include injuries and deaths caused by motor vehicles, health impacts of air pollution, health impacts of increasingly car-dependent, sedentary lifestyles, climate impacts of greenhouse gas emissions, the energy cost of a high-energy transport system, and cost burden of the maintenance of extensive road networks owing to a heavier road freight burden, and increased extreme weather events. (The benefits that private motor vehicles offer must also be acknowledged, including improved accessibility for many – though this should be counterbalanced with the negative impacts of urban sprawl and the hollowing out of amenity in once-thriving communities, making it more necessary to use a car to access the services required for everyday life.)

As we move into a new era characterised by climate disruption, energy and material constraints, geopolitical tensions and concomitant supply chain disruption (alongside escalating costs of infrastructure and renewal), an aging population and the increasing burden of costly but preventable chronic disease, it is all the more important that investment in transport infrastructure and other public goods are evaluated within the wider purview of benefits to society over the longer term, not just short-term fiscal returns or productivity benefits. To this end, a frame that is increasingly being employed by policymakers around the world is the 'wellbeing economy' framework.

3 'Urban passenger transport in New Zealand' Report of the Committee of Inquiry into Urban Passenger Transport (1970), accessed from https://www.austlii.edu.au/nz/other/NZBCPubInq/1970/4.pdf

Considering transport with a Wellbeing Economy lens

The current 30-year vision statement in the region's RLTP 2021 envisions the following:

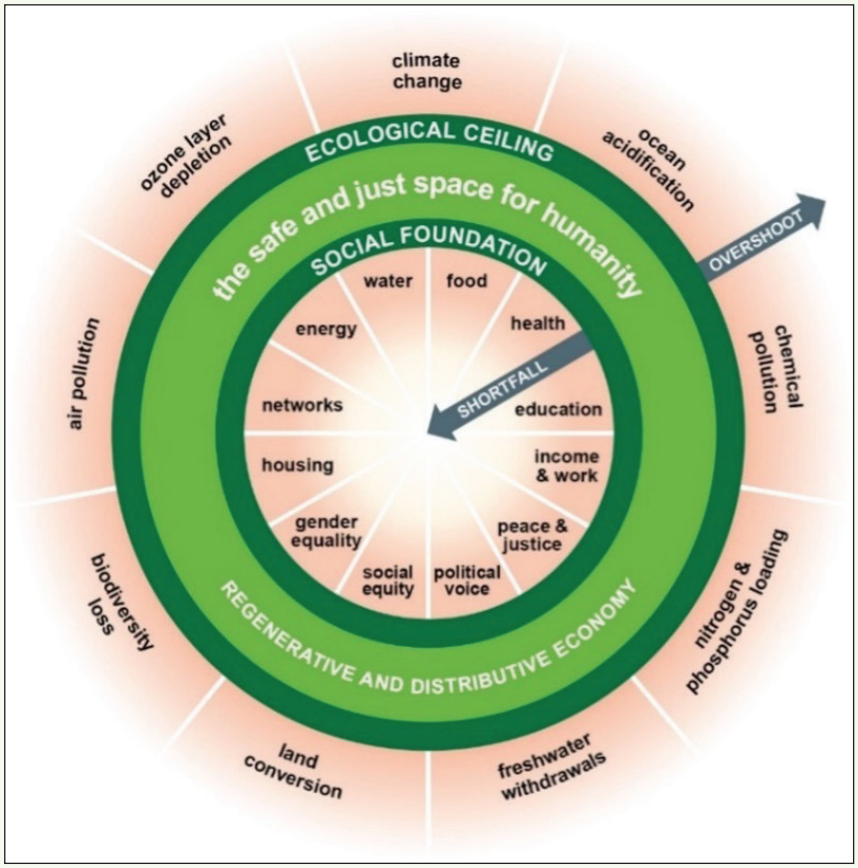
> A connected region, with safe, accessible and liveable places – where people can easily, safely and sustainably access the things that matter to them and where goods are moved efficiently, sustainably and reliably.

While this vision speaks to the fundamental requirement for the transport system to be safe, accessible, efficient, and reliable while contributing to liveable places, the lens of the wellbeing economy views these core outcomes as part of the wider picture of an economy that meets the needs of society.

In a wellbeing economy, the definition of success shifts beyond short-term economic growth (usually measured in terms of gross domestic product) to delivering on shared wellbeing across society, while maintaining an economy that operates within the material and energy constraints of a finite planet (known as planetary boundaries).[4]

In the doughnut economy model (one influential model which sits under the broad 'wellbeing economy umbrella), developed by economist Dr Kate Raworth, a 'wellbeing economy' is situated between the ecological ceiling defined by the planetary boundaries, and the social foundation, comprised of housing, energy, health, education and other 'public goods'.

Figure 1: Doughnut economy model

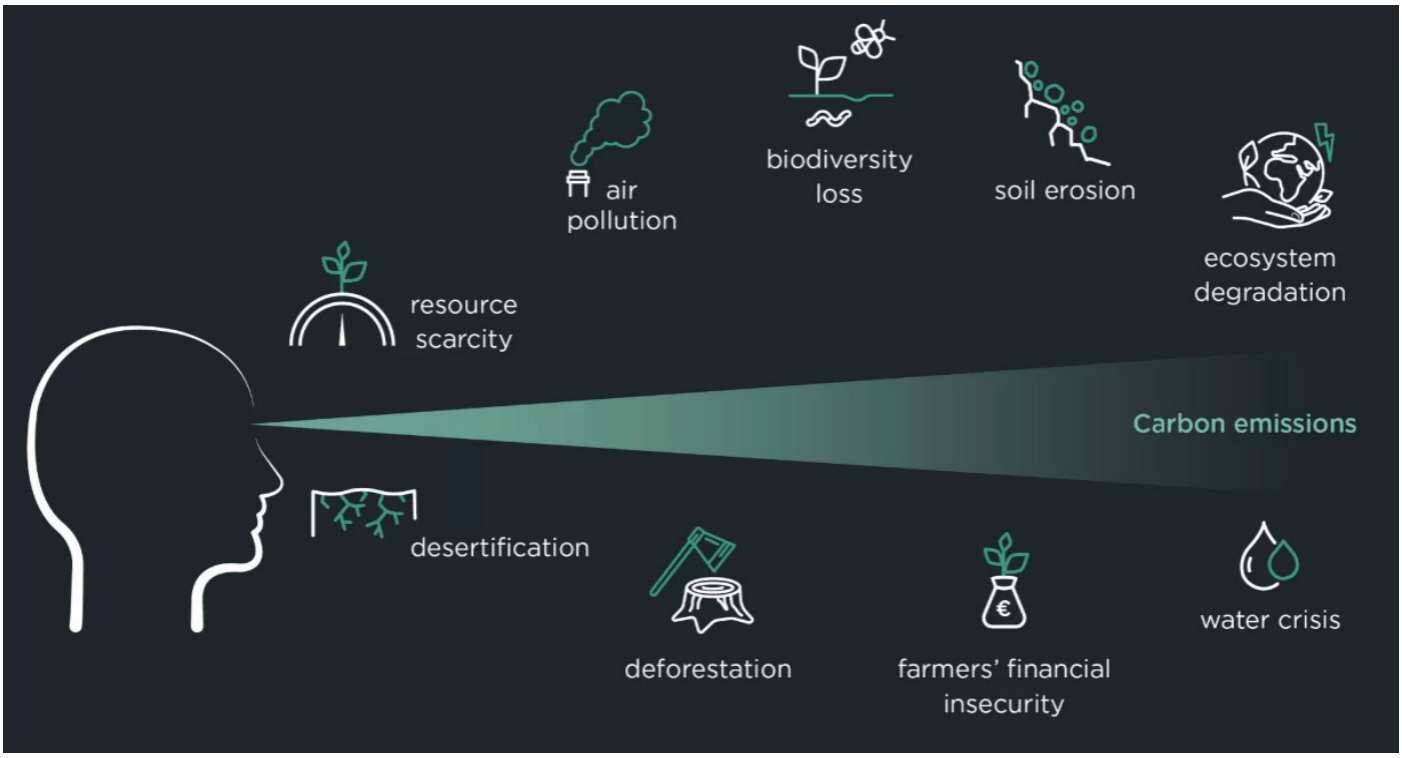


4 The planetary boundaries have been identified by scientists as the safe limits for human pressures on the nine critical processes which together maintain a stable and resilient Earth. Globally, human society is now in breach of six of nine of these boundaries (which are shown around the outside of figure 1 above).

Significantly for its application in New Zealand, the doughnut economy model and its circular systems thinking resonate strongly within the Māori world view. In 2020, the doughnut was reimagined from a Tūhoe Māori perspective by indigenous researchers Teina Boasa-Dean and Juhi Shareef.[5] Boasa-Dean reoriented the doughnut with the environment as its foundation, and social elements on the outer ring.[6] The Doughnut Economic model was adopted as a foundational element of Wellington City's Economic Wellbeing Strategy, published in 2022.[7]

Moving towards the development of the RLTP 2027, the wellbeing economy lens provides rich potential to develop a strategy and policies that link transport with wider socioeconomic wellbeing outcomes, with public good at its fulcrum. Employing a system-wide view in all policy spheres, including transport, encourages policy- and decision-makers to look beyond siloed 'single issues'. It helps us to understand that there are multiple outcomes that we will need to achieve for a transport system that is fit for the future. Notably, it helps to avoid 'carbon tunnel vision', as portrayed by Figure 2 below, a condition that has characterised much (albeit well-intentioned) policy in recent years. 'Carbon tunnel vision' can lead to policies or investments that potentially result in favourable outcomes in terms of emissions reduction, but have adverse impacts in others (e.g., economic, environmental, social or health). Incentivising large areas of plantation forestry through carbon credits is one example. While such forestry can act as a temporary carbon sink (once it reaches maturity), it has negative impacts in terms of local economies, employment, land-use potential, environment damage, and increases flood hazard and damage to property and people. Similarly, EVs are often heralded as a solution to transport emissions. But while they have no tailpipe emissions, they have a larger embodied carbon and material footprint than petrol cars, and remain problematic from a public health perspective: they do not reduce car-dependency and therefore the health risks associated with inactive lifestyles, and because they are heavier than petrol cars, they have a greater risk of serious injury to other road users in case of collision. Their heavier weight also means more damage to roads.

Figure 2: Carbon tunnel vision



5 An earlier interpretation was completed by Johnnie Freeland in 2019, placing whakapapa or a genealogically centred approach in the centre of the doughnut.
6 An Indigenous Māori View of Doughnut Economics.
7 Economic Wellbeing Strategy - He Rautaki Ohanga Oranga

A wellbeing economy approach to policy would aim to minimise failure demand (where the way the economy operates leads to downstream failures in the system, often associated with substantial cost to government). A wellbeing economy approach encourages policymakers to take a system view of interventions, with a broad analysis of the long-term social benefit of investment in the transport sector and associated areas, such as urban planning. Transport is a quintessential example of a policy area that can be usefully evaluated using the wellbeing economy lens – in other words, an analysis which considers the public good outcomes of investment and the flow-on benefits to society and the economy of those investments. Clearly, governments choose to invest in the transport system (whether roads, rail, cycleways or footpaths) because it delivers on other wellbeings – primarily economic, but also social, and in some limited cases health and climate/environmental. However, if we widen the lens to take in the full extent of benefits (as well as disbenefits) of various transport investments, including benefits and disbenefits accruing over the longer term, a very different cost/benefit picture is likely to reveal itself, pointing to very different decisions.

It is useful to recognise that recent government policy in the transport sphere has made efforts to widen the lens beyond a narrow focus on network efficiency, to include more emphasis on wellbeing, notably through the Transport Outcomes Framework released by the Ministry of Transport in 2018 (see figure 3), against which subsequent Government Policy Statements (2018 and 2021) on Land Transport were assessed.[8] Even in these cases, however, the benefits were monetised, which can have the effect of limiting or diminishing benefits and costs that are more difficult to quantify in purely monetary terms.

The detrimental impacts of decision-making that only considers short-term fiscal considerations (eg, narrow-scope 'value for money' evaluations) can be substantial, wide-ranging and often long term. Government policies around regulation and investment decisions play a critical role in how our economy operates. When the way the economy operates leads to downstream failure in the system, this is referred to as 'failure demand', outcomes that the government then needs to respond to – often with urgency and at substantial cost.

Figure 3: Transport Outcomes Framework (Ministry of Transport)

A wellbeing economy provides an analytical lens that encourages policymakers and decisionmakers to reduce the downstream damage of an economy that fails to deliver on the needs of society or, conversely, creates harm to social and economic wellbeing. Ultimately, this would be more fiscally sustainable, because it is much more economical and efficient to avoid failures through timely and focused investment, rather than attempt to address the cascading and amplified effects of failure downstream. The downstream effects of failure demand are also readily quantified, making it a useful frame to incorporate into policy decision-making, especially around investment priorities.

Examples of failure demand in the transport system include road surface damage (potholes), congestion, road deaths and injuries, health-damaging pollution and greenhouse gas emissions, and some of these will be explored in more detail in the section below *Failure demand in the transport system.*

8 Government Policy Statements (GPS) on land transport in 2018 and 2021 referenced this framework (and its five outcomes) as a basis for setting strategic priorities centred around safety, access to better travel options, and the environment and climate change alongside priorities related to economic development. This wider wellbeing lens was also evident in the government's Wellbeing Budget (released in May 2019), which presented investment in rail as part of a suite of interventions achieving a range of wellbeing benefits – opportunities to transition to a sustainable, low-emissions economy, with more economic efficiency achieved through moving more freight on rail.

Road and rail bridges span Te Awa Kairangi (Hutt River), while the Hutt River Trail provides a scenic route for walkers and cyclists along the river.

Setting the scene – our transport system today

The national context

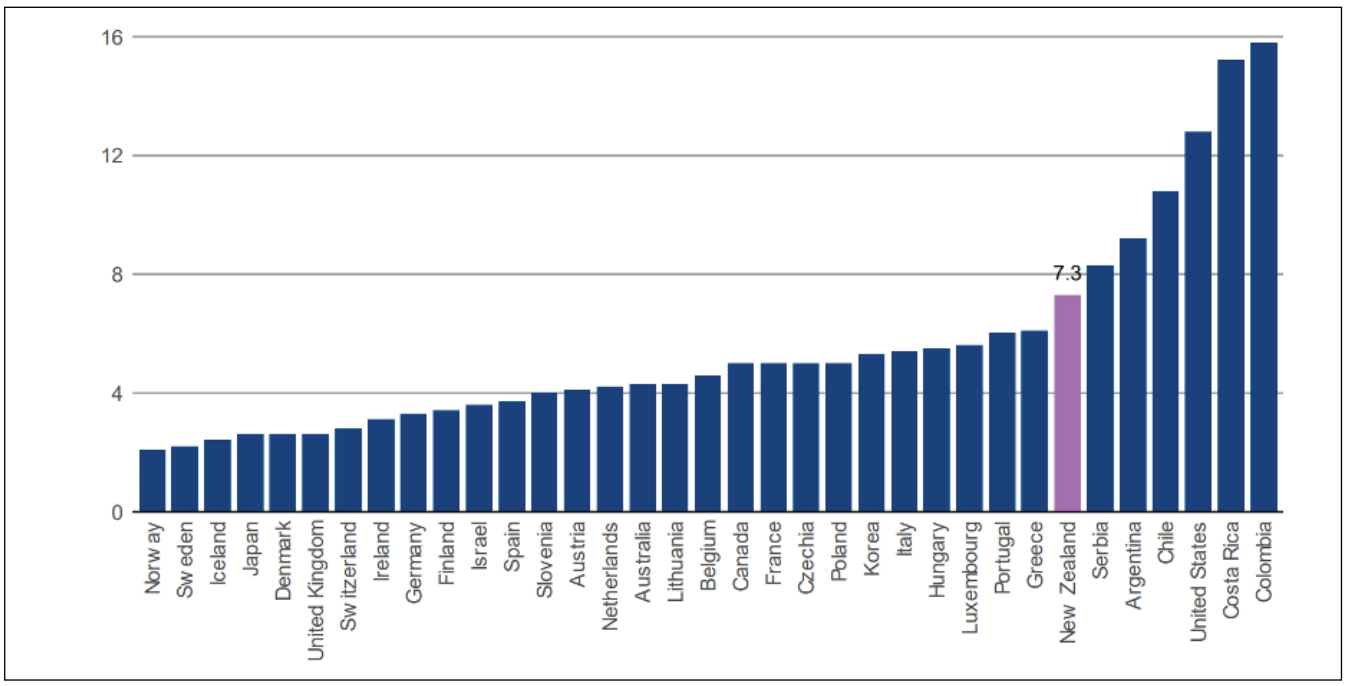
New Zealand is an island nation roughly the size of Great Britain, California or Japan, but with a population much smaller – approximately 13 time smaller in the case of Great Britain and 23 times smaller in the case of Japan. However, like other developed countries, the New Zealand population is highly urbanised: about 86% of New Zealanders live in towns and cities.

Until recent decades, most towns and cities were serviced by an operating rail network, and even today it has been estimated that 87% of the nation's population live within 15 minutes of a current or former railway station.[9] But like other countries, since the 1950s when cars became more affordable, New Zealanders have developed a heavy reliance on private motor vehicles for their transportation needs. Today New Zealand boasts one of the highest rates of car ownership in the OECD, with a significant portion of journeys being made by private vehicles. In 2023, about 85% of New Zealanders commuting to work used a private motor vehicle, with less than 15% using public or active transport modes to commute.[10] While it is difficult to find country-by-country comparisons, a comparison with some major European cities provides some insights. On average, 56% of residents in major European cities (Berlin, Madrid, Paris, Stockholm and Warsaw) used private motor vehicles for day-to-day trips such as commuting.[11]

After agriculture, transport is the second-largest carbon emissions generating sector in New Zealand: heavy vehicles and road freight are major contributors to the emissions profile, with heavy vehicles accounting for almost a quarter of total transport emissions (as measured in 2022).[12] In New Zealand, rail networks are significantly under-utilised to transport freight – in 2023, less than 13% of all freight (as measured by tonne/km) was carried by rail, with road freight making up 87% of all freight.[13] In comparison, in Australia, more than half of freight in 2023 was transported by rail.[14]

9 Does the New Zealand rail network actually serve New Zealanders? - Greater Auckland.
10 Main mode of transport to work, 2023 Census. EHINZ, 2025.
11 https://www.sustainable-bus.com/news/gart-upf-study-european-mobility-expo-2024/
12 New Zealand Government, 2022, Aotearoa New Zealand's First Emissions Reduction Plan, p.186
13 OECD, OECD Data Explorer – Transport performance indicators, accessed from https://data-explorer.oecd.org/.
14 https://www.bitre.gov.au/sites/default/files/documents/bitre-yearbook-2023.pdf

Figure 4: Road fatalities per 100 000 inhabitants in New Zealand compared to other OECD countries, 2022



Turning to road safety, New Zealand ranks poorly compared to the OECD in terms of road deaths and serious injuries. In 2022, New Zealand recorded approximately 7.3 road deaths per 100,000 inhabitants, ranking 29th (from lowest to highest) among 35 surveyed countries (see figure 4).[15]

Moreover, while deaths from road accidents have decreased in other middle to high-income countries over the last decade, New Zealand's road toll has increased by 2% over the same period.[16] While the reason for this trend is unclear, contributing factors may include speed limits set at higher rates than assessed as safe and appropriate according to international best practice,[17] and alcohol impairment and reduced levels of enforcement for drivers on learner licenses have also been identified as a contributing to increased crashes since 2013.[18] It is also useful context that rural roads account for approximately two thirds of road deaths (as of 2022).[19]

The regional context

In the Wellington Region, the land transport network comprises two road/rail corridors converging south of Ngauranga Gorge, resembling a wishbone shape. State Highways 1 and 2 serving as the major road arteries connecting the districts of the region, and beyond to the Manawatu and Hawke's Bay to the north. Rail moves freight to and from the port along the main trunk line and the Wairarapa lines, with metro rail services to Waikanae in the west and Upper Hutt in the east, and less frequent commuter services to Palmerston North and Masterton (see figure 5). A number of strategic destinations are concentrated at the bottom of the wishbone (Wellington Railway, Parliament, and Wellington CBD) as well as Centre Port, with its onward links to the South Island.

15 ITF (2024), New Zealand: Road Safety Country Profile 2023, OECD Publishing, Paris.

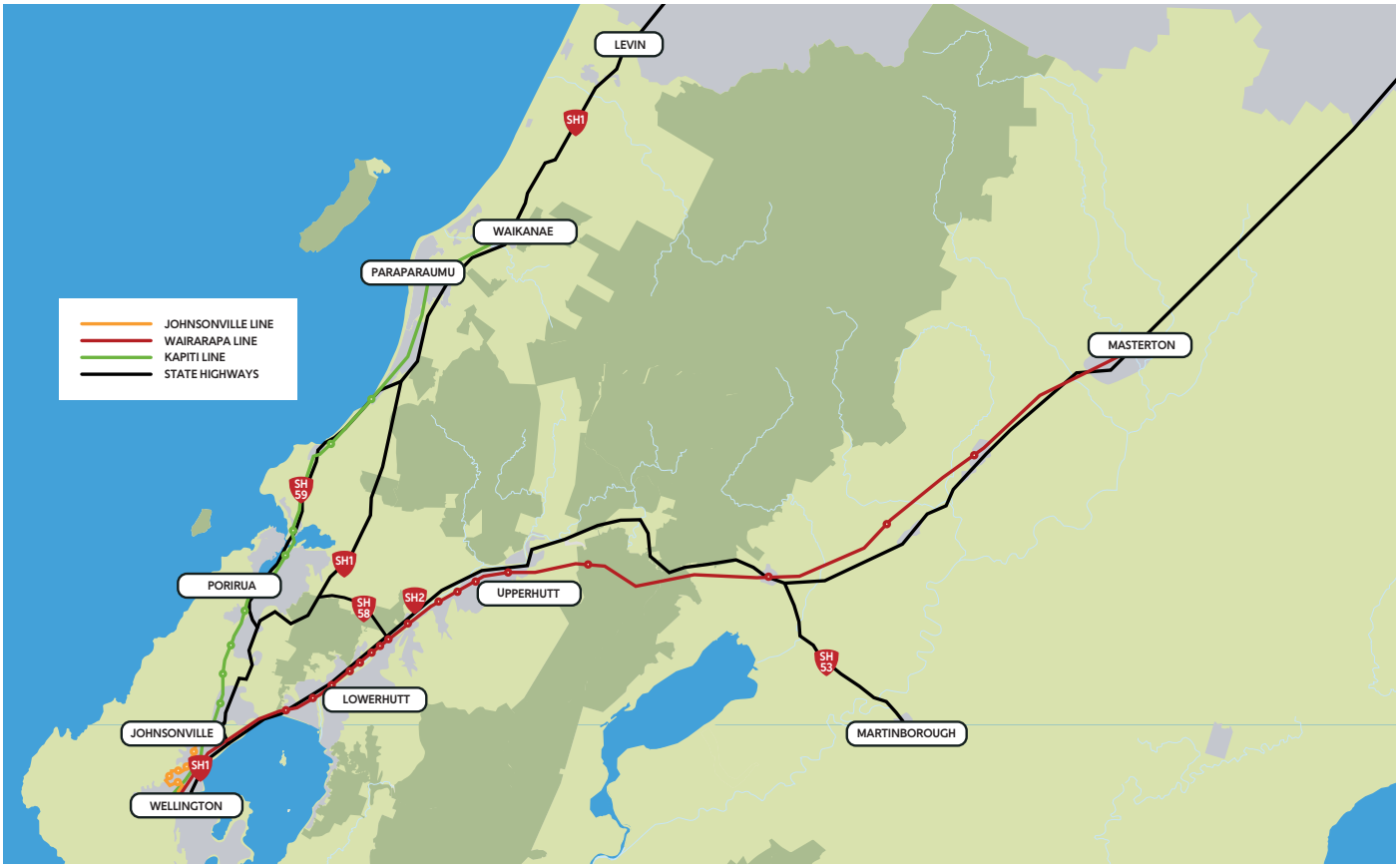
16 In 2011, the Decade of Action for Road Safety 2011-2020 (led by the United Nations Road Safety Collaboration) brought together more than 110 countries in an initiative to reduce global road fatalities by 50 percent. By 2020, after sustained and coordinated initiative to improve road safety, 48 middle- and high-income countries had recorded reductions in their road tolls.

17 According to the 'Safe System Approach'. Moreover, researchers also suggest that speed as a contributing cause of crashes causing death and serious injury (Job, R.F.S and Brodie, C. (2022). 'Understanding the role of Speeding and Speed in Serious Crash Trauma: A Case Study of New Zealand'. Journal of Road Safety, 33(1), 5-25).

18 Darren Walton, Dan Jenkins, Roselle Thoreau, Simon Kingham, Michael Keall, Why is the rate of annual road fatalities increasing? A unit record analysis of New Zealand data (2010–2017). Journal of Safety Research, vol. 72, 2020.

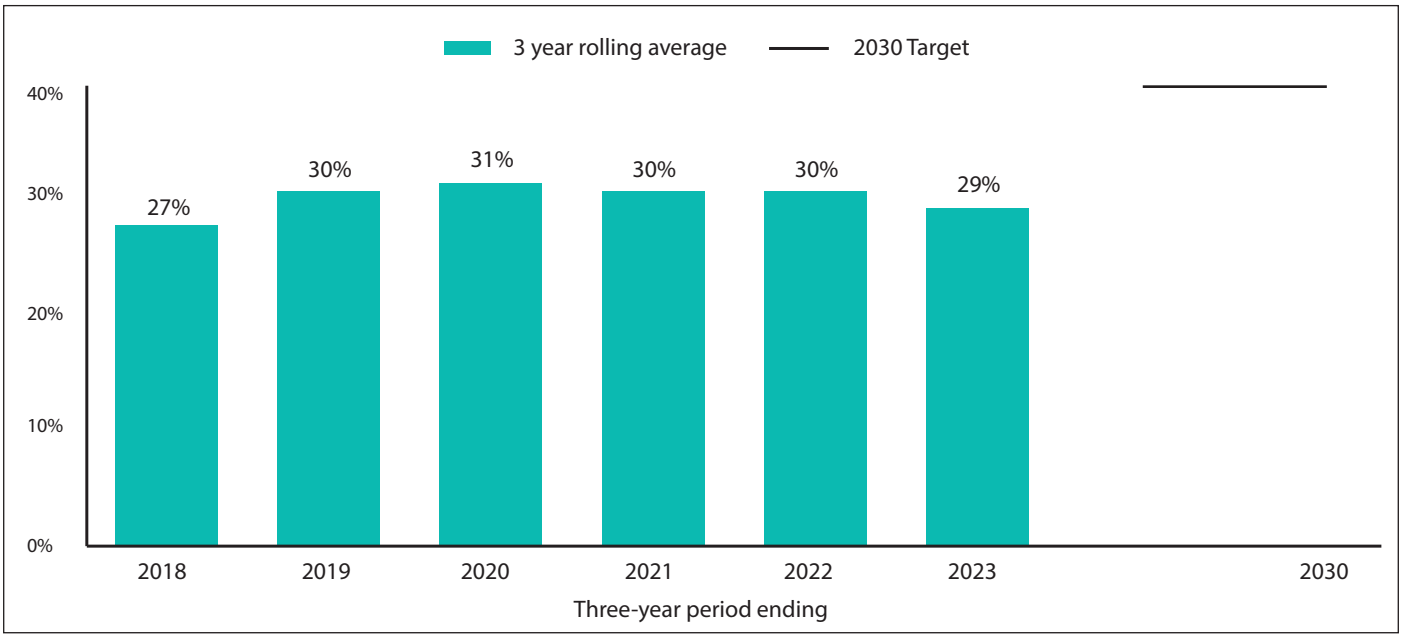
19 Fifty five percent of New Zealand's rural road network (and 47% of the urban network) were rated as high or medium-high risk in terms of likelihood of being killed or seriously injured on the road per 100 million kilometres travelled (Overview of Road Safety in New Zealand, Ministry of Transport 2018).

Figure 5: Map of Wellington Region showing urban areas and key transport routes



Compared to other regions of New Zealand, a relatively high proportion of residents use public and active transport, much of this in Wellington City, where residents have lower car ownership rates than other parts of the region. In 2023, 8.4% of travellers in the region commuted to work by bus (compared to 3.7% nationally), 7% took the train (compared to 1.3% nationally), 8.3% walked (compared to 4.2% nationally), and 2.4% cycled (compared to 1.9% nationally).[20] While bus patronage continues to increase, rail patronage is showing a declining trend in the region, likely reflecting disruptions for maintenance and renewal work as well as fare increases. Over the last 5 years, the share of public transport as a proportion of all modes has remained static (see figure 6).

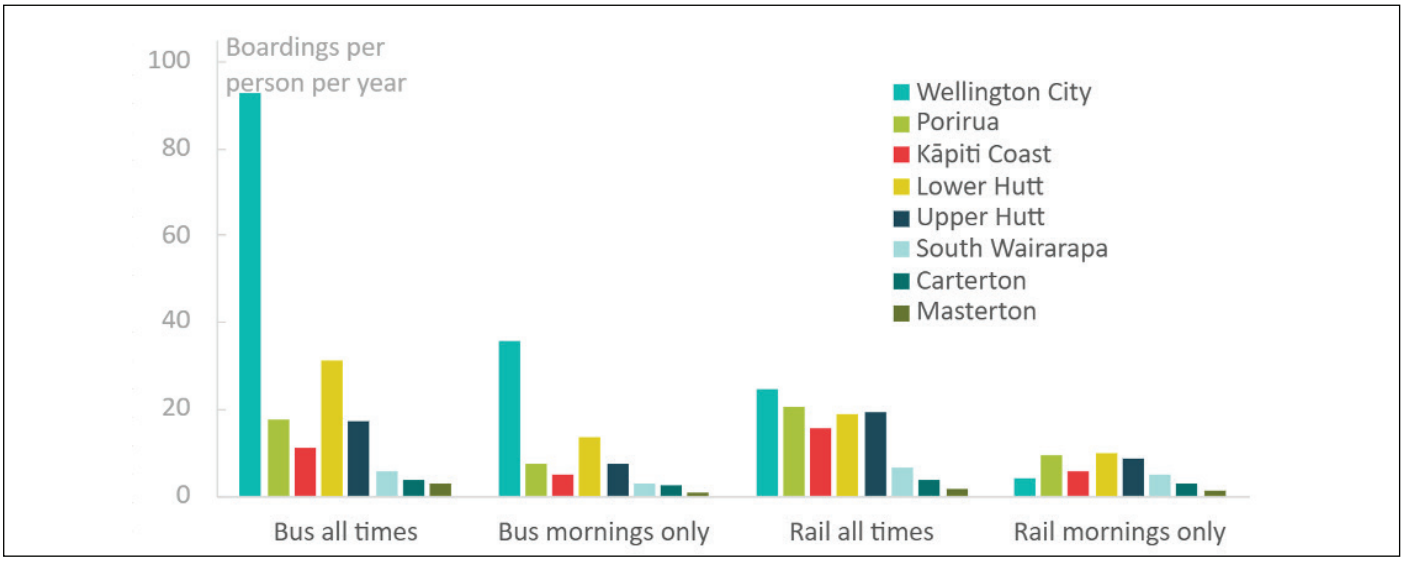
Figure 6: Active and public transport mode share (FY2023/24)



20 Stats NZ, Main Means of Travel to Work. Census 2023.

The uptake of public transport is relatively high in Wellington City, but is significantly less elsewhere in the region (figure 7).

Figure 7: Per capita public transport boardings by territorial authority (2024)



Increasing the mode share of public transport relies on having reliable, safe, accessible and affordable networks with trip durations that are not substantially longer than private transport travel times. As a rule of thumb, to be sufficiently attractive to encourage increased mode share, public transport trips should be no more than 1.5 times longer than the same trips by private vehicle.[21]

However, under current conditions, it is likely that Metlink will struggle to increase the share of public transport usage. In particular, funding reductions made through the National Land Transport Plan in 2024 will make it difficult to deliver the level of service necessary to attract more patronage. This challenge will be magnified by recent direction from government to increase the 'private share' revenue to help fund services. Private share revenue is derived from 'farebox recovery' (what people pay to use public transport) and other revenues, for instance from advertising. A requirement to increase private share will necessitate an increase in fares, making public transport less affordable and therefore less attractive.[22]

In line with national trends, the volume of freight transported in and out of the Wellington region by rail has declined in recent years. In 2023/24, volumes had dropped by nearly 17% compared to 2015/2016, to the lowest levels over that period. Though in part attributable to the economic downturn, which also affected road freight, the decline in rail volumes is more marked than road freight, suggesting that other factors are at play, including an increase in track user charges (the charges KiwiRail charge to its rail freight customers).[23]

As is the case elsewhere in the country, population demographics influence how, when, and why people travel in the region. A key consideration for transport planning is the region's ageing population – a trend evident across all developed countries. Over the last 10 years, the proportion of the population aged over 65 has increased by 30 percent, while the population under the age of 15 has decreased by 3 percent. The ageing of our population will have implications for how transport is planned and funded – for example, increasing the demand for more public transport services between peak commuting hours and accommodating more subsidised (currently Gold Card) use on the network.

Current trends show that a continuation of the status quo will fail to achieve the transformational change envisioned in the Wellington Regional Land Transport Plan (RLTP) 2021 and its strategic objectives. The region is not tracking favourably against any of the RLTP's three headline targets (35% reduction of transport-generated carbon emissions, 40% increase in active and public transport mode share, and 40% reduction in road deaths and serious injuries by 2030). This calls into question the region's progress towards achieving the RLTP's strategic objectives themselves, suggesting that much more

21 E.B. Lunke, N. Fearnley, J. Aarhaug. Public transport competitiveness vs. the car: impact of relative journey time and service attributes. Res. Transp. Econ. (2021).

22 In April 2025, Greater Wellington Regional Council agreed to adopt private share targets of 23.9 percent (for FY 2024/25) and 25.1 percent (for FY 2025/26).

23 NZTA Annual Report 2024, Section C.

will need to be done to accelerate the rate of change. Fundamental to this will be an uplift in government funding and investment. For more discussion see Levers for transformational change, below.

How transport investment is currently funded

Since the reforms of the 1980s, which led to widespread deregulation, commercialisation and in some cases privatisation of many formerly government functions, transport infrastructure and services are funded from a combination of Crown funding, local body share and a dedicated fund (now called the National Land Transport Fund (NLTF)) which is derived from fuel excise duties, road-user charges, vehicle and driver registration and licensing, and road tolling. This was a significant change from the previous regime, under which rail and many inter-regional bus services were funded as a government department, with losses absorbed by government in recognition that public transport was not operated as a revenue-generating enterprise, but rather as a public good.[24]

Until 1988, the Ministry of Works and Development was responsible for the funding and construction of most major roads. In 1989, the independent Crown agency Transit New Zealand was established, and took over the responsibility for road funding. Under the new regime, local authorities became responsible for maintaining and developing local roads while Transit New Zealand managed state highways. In 1996, Transfund was established as the administrative arm to oversee the National Roads Fund independently of Transit New Zealand.

The Land Transport Management Act 2004 further adjusted the structure of land transport funding administration, creating Land Transport New Zealand. In 2008, New Zealand Transport Agency Waka Kotahi was established, merging Land Transport New Zealand and Transit New Zealand and their respective funding, regulatory and monitoring functions. Today, transport projects such as roads or bridges are generally funded on a 51:49 percent basis (provided they meet specified central government-set criteria) – i.e., central government contributes 51% through NLTF and the local authority contributes a 49 per cent from rates or other local revenue. This is referred to as the Funding Assistance Rates (FAR).[25]

The main exceptions to this model of funding are:

- the state highway network, which is 100 per cent Crown funded (from the NLTF)
- rail, which until the Land Transport (Rail) Legislation Act 2020 was funded via the Crown investment 'vote' process (i.e. via the annual budget) but was aligned more with other transport funding through the New Zealand Rail Plan 2021. This Plan established the Rail Network Investment Programme (RNIP) to be prepared by KiwiRail—the RNIP sets out government investment commitments over a three-year period, with a 10-year forecast period. Funding in the RNIP draws from the NLTF, track user revenue, and Crown budgets.
- public transport, which is split between FAR, local share (rates revenue), and private share (primarily farebox) revenue.

Major one-off investments in rail rolling stock or network improvements can also involve specific funding arrangements. For example, the second Matangi units for the Wellington metro network attracted a 90% share from central government, as will the new Lower North Island Rail-Integrated Mobility (LNIRIM) trains (18 new hybrid diesel-electric trains).

To receive funding for a significant new transport project from the NLTF, councils (and other approved organisations such as KiwiRail) need to make bids through the Regional Land Transport Plan, which is renewed every 6 years (and reviewed at mid-term) by the Regional Transport Committee and also includes councils' business-as-usual funding bids (e.g. maintenance, operations and renewals).[26] If the government agrees to co-fund the project, the project becomes part of the National Land Transport Programme (NLTP), a three-year programme with a 10-year forecast of revenue and expenditure. The short-term nature of funding commitments makes the funding and implementation of longer term or phased projects challenging, given the uncertainty involved when government priorities change.

24 In addition, some cities also operated local bus services, funded through local rates, supplemented by central government funding in some cases. Until the 1950s, some centres including Auckland, Wellington, Christchurch also ran extensive tram services.

25 Funding assistant rates (FAR) policy (archived). 2021-24 National Land Transport Programme, NZTA.

26 To get funding for a transport project an organisation has to be an 'Approved Organisation' (AO) as defined under the Land Transport Management Act. The Regional Transport Committee is comprised of representatives from the AOs (territorial authorities, regional council as the Public Transport Authority, NZTA, KiwiRail, and the Department of Conservation).

The challenges

Lack of long-term future-focused investment strategy

Government priorities for investment in the transport system are reset every three years through the Government Policy Statement on Land Transport (GPS).[27] This makes investment priorities highly vulnerable to political shifts, and creates uncertainty about what projects will be funded long-term. As has been pointed out by Te Waihanga/Infrastructure Commission among others, a long-term political consensus around infrastructure investment priorities will be critical to a strong and resilient economy that meets the needs of New Zealanders into the future. Te Waihanga is seeking to produce a National Infrastructure Plan setting out a 30-year view of critical infrastructure needs and priorities, but to create the certainty required, this will need to gain cross-party consensus.

Furthermore, the prioritisation of infrastructure investment needs to be informed by evidence rather than sector interests. For example, energy will need to be a key consideration. Evidence suggests we are entering an energy-constrained world. The extraction of conventional oil has peaked, and it is taking more energy to extract and process oil (most notably 'tight oil', a type of oil found in impermeable shale and limestone rock deposits, also known as 'shale oil', extracted using hydraulic fracturing, or 'fracking'). Moreover, while governments around the world are focusing on a transition to renewables, renewable sources are only useful for generating electricity, which is just 20% of final energy consumption globally.[28] But electricity cannot readily be used for many industrial processes requiring high temperatures, including steel-making, blast furnace operations, cement kilns, fertilizer production and petrochemical processes, nor is it currently viable for powering large ships, aircraft and trucks. This means that any transition away from fossil fuels is likely to require a downscaling of energy consumption through more efficient use. Therefore, as a country, we need to be planning for infrastructure and, more broadly, city design that enables us to live and operate our economy with decreased demands on energy. Electrified mass transit, active transport, amenity-rich compact urban design and local and regional economies with strengthened sufficiency and resilience will all be key to making this transition a reality. But this shift to a lower-energy and less resource-intensive transport system and urban design will also bring a swathe of other benefits including local economic vibrancy, improved public health outcomes (both physical and mental wellbeing), more social connection and community vitality.

Resilience will also need to be a critical consideration: not only will we experience more extreme weather, but as climate change and other resource constraints come to bear, there is likely to be more geopolitical instability as nations contest access to resources (e.g. minerals, land, water, oil), and disruptions arise to global trade and shipping (as we are currently seeing with the Suez Canal). As a geographically isolated and resource-poor country, New Zealand will need to strengthen its self-reliance and resilience to withstand future shocks, whether caused by climate or geopolitical events.

In a transport context, it is becoming increasingly unaffordable for small councils to continue to maintain rural roads serving small populations, especially as they are subject to increased climate-related damage. Yet, the loss of local roads may mean isolation of communities and dislocation of freight and flows of essential goods, such as fuel, food and medical supplies. In this context, there would be value in assessing whether rail will provide a more resilient and reliable mode of transport including in once rail-serviced rural areas (most likely supplementing, rather than supplanting local roads).

In urban areas, including rural towns, better planning to ensure that residents have less need to travel long distances to access the goods and services they need for everyday life will also increase resilience. This will be especially important as our population continues to age. Older people tend to travel less than younger people, have different patterns of travel (i.e. may travel using different modes and at different times of the day), have different sources and levels of income, and have higher levels of chronic illness. All of these factors have important implications for funding of and demand for transport.

27 While the LTMA requires the GPS to set priorities with a six-year financial outlook, those six-year outlooks are often reduced to three years of certainty in practice; the Minister of Transport has the right of review at least once every three years, meaning changes of Government could result in new GPS priorities with each three-year election cycle).

28 World total final consumption by source, 1971-2019. Key World Energy Statistics 2021.

Alongside this, consideration of the diversification and strengthening of local and regional economies to improve local food production capacity will enable communities to better withstand extreme weather events and other disruptions that impact their communities.

Lack of spatial planning on a regional scale

Regional spatial planning that integrates urban development with existing and planned transport nodes would help to reinvigorate local communities and economies, increase amenity and transport options for residents, and have environmental, climate, resilience and public health benefits. By incorporating Te Tiriti principles and mātauranga Māori, and with an effective partnership, spatial planning could also give effect to Māori aspirations for wellbeing, helping to address past harms caused by land use and development that did not consider Māori needs, and impeded access to cultural sites (wāhi tapu) and essential services.[29]

Currently, New Zealand lacks the requirement for statutory spatial planning that guides development on a regional scale.[30] The Wellington Region did produce a Wellington Regional Growth Framework at its own initiative and more recently a Future Development Strategy (under the National Policy Statement for Urban Development 2020) which both mapped desired future development areas on a regional, sub-regional and metro scale.[31] However, the spatial direction provided is not statutory: irrespective of what the strategy signals around desired growth locations, there are other factors and drivers that can result in development being progressed outside those areas.

Enforceable spatial planning provides the agreed basis for long-term infrastructure investment commitments (as discussed earlier). Conversely a lack of such planning has meant that residential planning is often led by the market (driven by the maximisation of private sector revenue generation) rather than driven by the impetus to maximise public good outcomes.

In addition to regional or sub-regional spatial planning, precinct planning and project-specific master planning are tools that can bring together central government, local government and the private sector to agree to phased development that maximises public good outcomes and provides certainty for investment. Again, these planning tools have been under-utilised, both in the region and nationally.

The government is signalling statutory regional spatial planning through its proposed resource management reforms, which promises to partially fill this gap. However precinct planning and master planning around the likes of transport nodes (transport-oriented developments) could be initiated now, starting with locations identified as priority development areas in the Future Development Strategy.

Insufficient revenue to cover costs of investment and operation of transport network

Overall, land transport funding in New Zealand is under pressure, with land transport spending exceeding current land transport revenues.[32] There is insufficient revenue from current sources (predominantly fuel excise duty, road user charges and general rates) to pay to operate and maintain the current network and services and fund significant new investment. This shortfall can be seen in the graph on the following page.

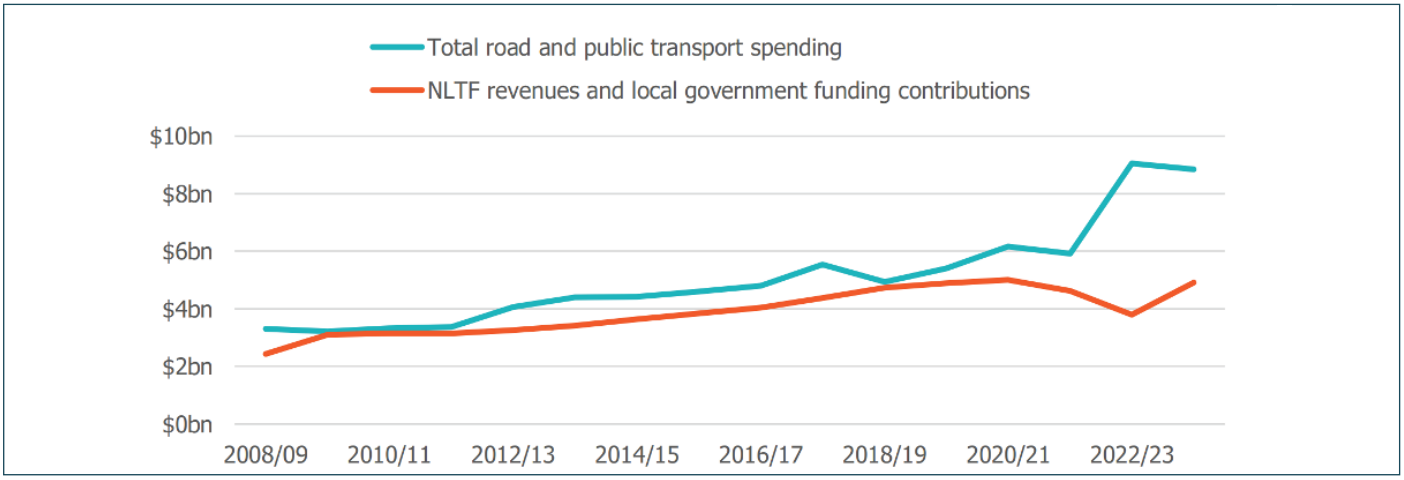
29 Sweeney, M., Breitenmoser, T., & Dickson, I. (2022). A pathway towards understanding Māori aspirations for land transport in Aotearoa New Zealand (Waka Kotahi NZ Transport Agency research report 688).

30 It should be noted that cities and districts may undertake spatial planning on a district scale, but not at a regional scale. For example, A Spatial Plan for Wellington City - Plans, policies and bylaws - Wellington City Council.

31 Wellington Regional Growth Framework Report JULY 2021, maps 4 and 5, p. 38, Wairarapa-Wellington-Horowhenua Future Development Strategy 2024-2054, p.15, and subregional maps: Altered-Map.pdf.

32 New Zealand Infrastructure Commission. (2024). Buying time: Toll roads, congestion charges, and transport investment. Wellington: New Zealand Infrastructure Commission / Te Waihanga.

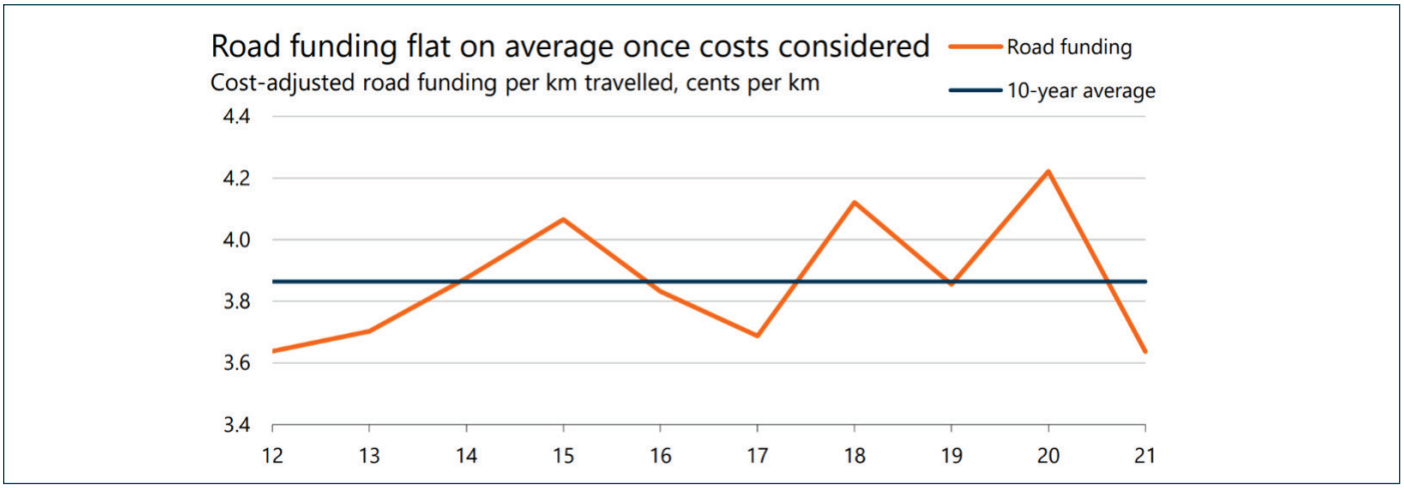
Figure 8: Road and public transport spending vs. NLTF revenues and local government contributions



Furthermore, revenue from fuel excise tax is projected to decline as private vehicles become more efficient, and the proportion of EVs in the national fleet increases.

Inflation in construction costs in the transport sector has also negatively affected the delivery of transport projects in real terms. An analysis of trends in road transport funding demonstrated that – when adjusted for construction costs extrapolated from level of road use and maintenance required – the ten-year trend for cost-adjusted road funding per kilometre travelled was flat for 2012–2022 (see figure 9).[33]

Figure 9: Cost-adjusted road funding per kilometre travelled



Costs of maintaining the road network not distributed to those who benefit most

The shortfall in revenue to cover costs, particularly of road maintenance, is not only attributable to a declining take in fuel and road user charges, but also t-he misaligned distribution of costs, which does not reflect the benefits accrued (and costs incurred) by some road users. Put simply, as noted by former Climate Change Commission Chair Dr Rod Carr, 'road user charges do not reflect basic physics'.[34]

Damage to road surfaces (commonly known as potholes) is almost entirely caused by heavy vehicles: trucks and, to a lesser extent, buses. However, according to a report by Gasson (2024),[35] road user charges were never allocated to fully reflect the wear and tear of each vehicle class; instead, light vehicle users subsidise heavy vehicle users by paying more than their share of damage (which is close to zero).

33 Analysing trends in road transport funding for Local Government New Zealand, Infometrics, November 2022.
34 This statement was made by Dr Rod Carr in his keynote address to the 6th Transport Research Network Symposium, 2025.
35 Gasson, Mark. June 2024. 'Review of the draft 2024 Government Policy Statement on Land Transport; 2024-2034: Investigation into Heavy Vehicle Subsidies on New Zealand Roads'.

The growing size of the 'pothole problem' not only has implications for council budgets, it has also had a major impact on the funding available for other transport initiatives. In 2024, the government allocated $2.08 billion nationwide towards state highway pothole prevention and $1.90 billion towards local road pothole prevention.[36] This was achieved by redistributing funding previously allocated to other activities – most notably, walking and cycling improvements, which were allocated only $385 million nationwide (compared to $910 million through NLTP 2021–24) – as well as significant reductions to funds available for public transport infrastructure and maintenance, operations, and renewals. The funding allocated to 'pothole prevention' also significantly outstripped funding allocated to public transport ($2.05 billion), only exacerbating the funding shortfall for public transport.[37]

By 2027 road surface maintenance costs are projected to increase to $2.1 billion, of which an estimated $1.5 billion (72%) will be allocated as pavement wear costs (measured in equivalent standard axles, or ESA). Heavy vehicles are projected to incur $1.4 billion in pavement wear costs, but only pay $752 million in ESA-related road user charge revenue. This means that the $650 million net annual shortfall needs to be made up from elsewhere – currently via the road user chargers paid by other road users, including light vehicle users whose vehicles cause negligible damage to roads. This can be characterised as a subsidy paid by other road users to cover the cost of damage incurred by the road freight and haulage sectors. In addition to this, because the heavy vehicle contribution to other categories of expenditure on roads has failed to keep up with actual (and projected expenditure), the total value of the subsidy that will be enjoyed by the heavy trucking sector by 2027 is estimated at $1.4 billion, a cost that is borne by the taxpayer and by other transport users.[38] (See also Failure demand – Potholes.)

The consequences of this current distribution of costs can be seen at local level, with councils struggling to keep up with maintenance and repair of rural roads affected by forestry truck damage, while other rural districts are facing downgrading many of their rural roads as they are unable to afford the cost of their maintenance (see foot notes for two such local examples, in Taranaki and Southland Districts).[39]

Moreover, heavy trucks also cause a disproportionate cost to life, which is not reflected in the contribution these road users make towards the public health, social and economic cost of death and injury. In recent years, on average between 20% and 25% of deaths occurred in road accidents involving trucks, despite trucks accounting for only about 7% of vehicle kilometres travelled (VKT).[40] This indicates that trucks are nearly three times more dangerous than other vehicles per VKT, on average (primarily attributable to vehicle size and weight rather than driver culpability). Truck users currently pay up to $43 million in ACC levies per year.[41] In comparison, the total social cost of fatal crashes only (i.e., excluding those resulting in serious injuries but not death) for 2023 was $1.8 billion, with the share in which trucks were involved (at a conservative estimate) amounting to $361 million. This represents a $318 million negative externality (for the single year) flowing from the road freight and other heavy truck users, paid for by the rest of society.[42]

36 This funding was allocated through the National Land Transport Programme 2024-27.
37 The government has sought to make up this shortfall by requiring public transport authorities to increase its farebox revenue for public transport services. This is done by increasing fares. This makes public transport less affordable and attractive and undermines efforts to increase modeshare of public transport.
38 Gasson 2024.
39 Radio New Zealand: Council bills forestry companies as roads fall to bits and Farmers Weekly: Bumpy ride ahead for rural networks as councils struggle to maintain roads.
40 MoT, 2022. 'Fleet Statistics: Annual Fleet Statistics.'
41 MoT, 2022. 'Fleet Statistics: Annual Fleet Statistics.'
42 The average social cost is estimated at $5.30 million per fatal crash, $987,000 per reported serious crash and $100,000 per reported minor crash. In 2023, there were 304 fatal crashes (341 fatalities), generating a total social cost (for deaths only) $1.8 billion. At a conservative estimate, the share of this cost involving trucks is $ 361 million. Figures from Ministry of Transport, Social Cost of Road Crashes and Injuries.

The Centennial Highway runs along the Kāpiti coastline while the Kāpiti rail line conveys KiwiRail freight and Metlink passenger services on the slope above.

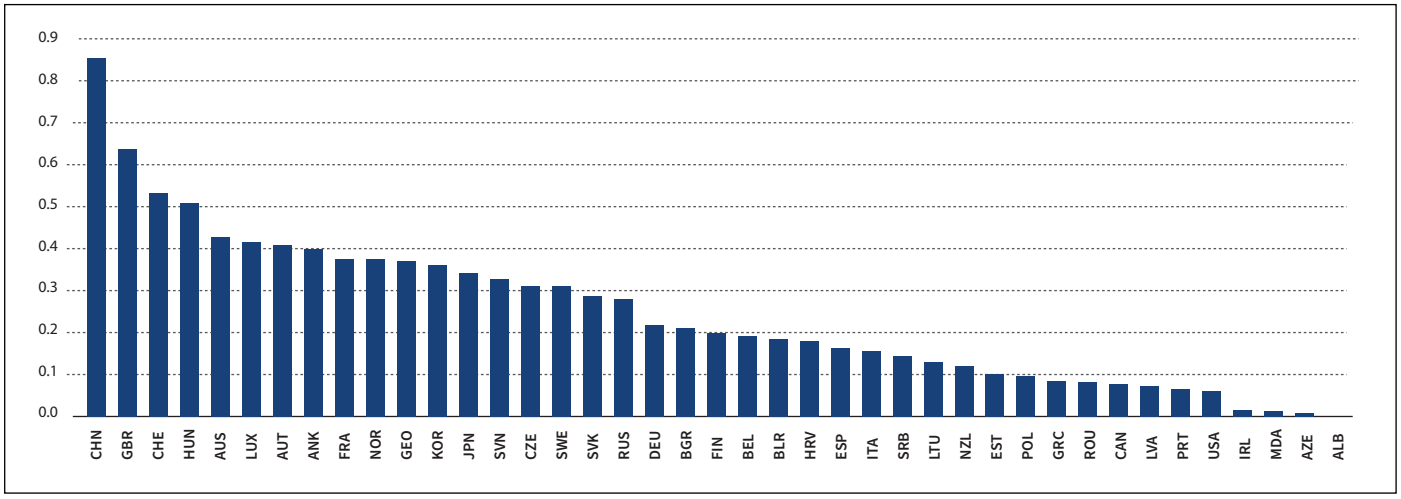
Investment in rail is not proportionate to its full range of benefits to the economy and society

Much of New Zealand's rail network was built in the 1880s, with the North Island main trunk line completed in 1908.[43] For decades, the railway, alongside coastal shipping, served as the transport arteries of the nation. With the advent of lorries to carry freight on roads, regulations were put in place to protect and preserve the position of rail and coastal shipping.[44] However from the 1970s, these protections were progressively stripped away and rail and shipping was forced to compete on an 'equal footing' with road freight.[45]

Rail was corporatised in 1982, while still owned by the state. In 1993 it was privatised and sold to Tranz Rail Holdings then sold again in 2004 to Toll Holdings, before being purchased back by the government in 2004. During this period of private ownership, rail was severely run down and there has been a significant backlog of investment required to return it to full operability. Since then, improvements to the rail network have not kept pace with what is required for rail to compete with the convenience and flexibility of road transport.

At the same time that rail and coastal shipping were being deregulated,[46] investment in the roading network (especially highways and motorways) was ramped up, with motorways and other new major roads built and existing roads upgraded. In comparison, there has been little investment in the rail network to increase efficiency and reduce travel times.[47] 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.

Figure 10: Investment in rail infrastructure by country, 2018 (Percentage of GDP)



Source: International Transport Forum, OECD

43 A final leg of the main trunk line was completed in 1945 when the Main North Line from Christchurch to Picton was opened. While much of the network was complete by WW1 significant gaps including connecting Whangarei, Gisborne to Napier, Stratford to Okahukura, Tauranga and Bay of Plenty, and Christchurch to Picton were completed between the end of WW1 and end of WW2. The South island was more complete than the South and some parts were never connected and closed.

44 The government limited the distance trucks could carry goods, initially to 30 miles (50 kilometres) in 1936, extended in 1961 to 40 miles (67 kilometres), and then in 1977 to 94 miles (150 kilometres). Carriers were licensed to carry specific types of freight, within particular areas. In addition, domestic coastal shipping was protected against competition with international shipping operators through cabotage regulations.

45 As noted above, in fact rail freight is not competing on a level playing field because the road freight sector receives significant subsidies from other road users in the form of misallocated road user charges.

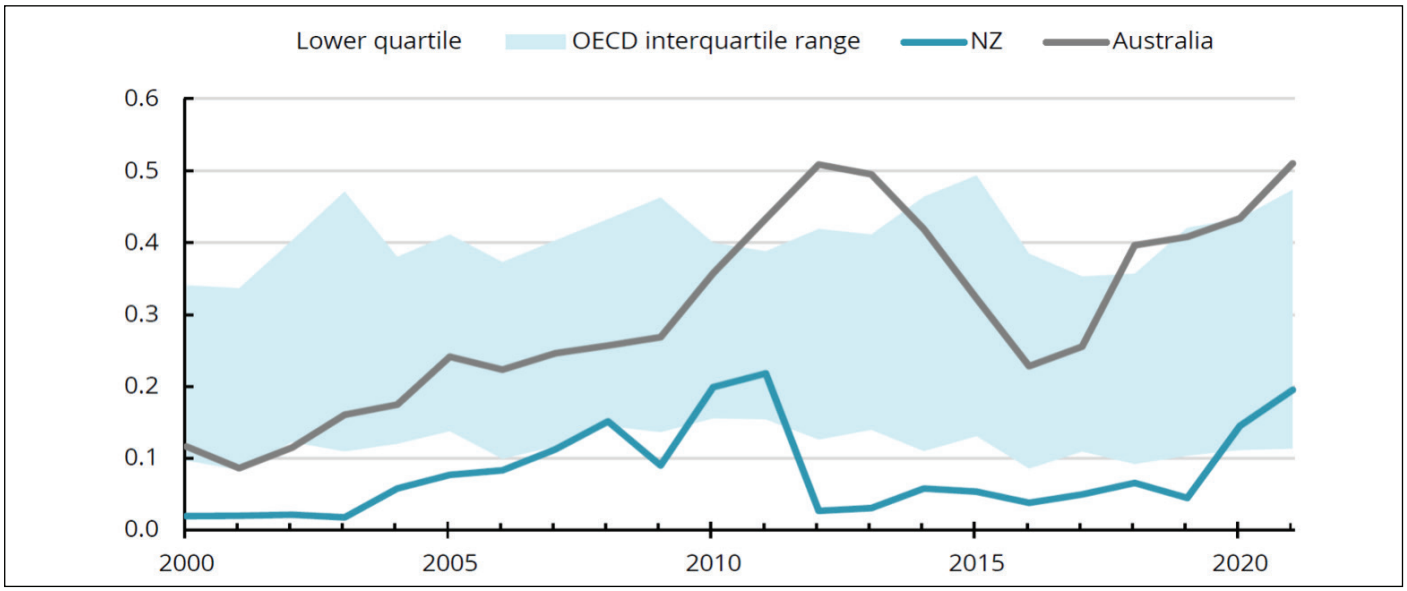
46 As with rail freight, the viability of coastal shipping by domestic operators was weakened in the 1990s by the removal of regulations (known as cabotage) that had protected domestic coastal shipping up to that time. As a result, it became more difficult for domestic coastal shipping operators to be competitive compared to international shipping operators, which could carry freight between domestic ports at significantly lower costs. 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).

47 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.

Compared to other developed countries, New Zealand does not prioritise the investment in rail. It ranks 29th of 41 developed countries in terms of its share of rail investment as percentage of GDP (see figure 10). (Source: International Transport Forum, OECD).[48]

Compared to our closest neighbour Australia, New Zealand's investment does not compare favourably. Australia invested 0.4% of GDP per year on average over the five years to 2021, compared to 0.1% in New Zealand. On a per capita basis, Australia is investing six times that of New Zealand (see figure 11 below).

Figure 11: Rail investment share of GDP (New Zealand and Australia)



As a result of decades of under-investment, a growing market demand for just-in-time freight deliveries,[49] and the government-mandated imperative for rail to operate commercially despite delivering substantial public good benefits,[50] the share of rail freight has been dropping since the 1970s. In 1972, it held a 50% share of net tonne-kms, but has now slipped to about 11.5%, with remaining freight activity concentrated on long-distance haulage of commodities such as logs, coal and milk and container traffic (see figure 12 for trends since 2012).[51] Alongside this, under the State-Owned Enterprises Act 1986, KiwiRail must 'operate as a successful business' (section 4(1)), which requires the return of a surplus to its government shareholders.

The need to return a profit, at least nominally, is likely to shape decision-making across the business to prioritise short-term returns over the maximisation of public good over the long term (such as emissions reduction, energy efficiency, public health and safety, congestion reduction). However, there is a question as to whether the operation of a national rail network is a public good that should be required to run like a profit-seeking private-sector company, which will inevitably involve trade-offs between maximising profit and public good. The question of whether a state-owned enterprise with a central profit motive is the appropriate form of organisation for New Zealand's rail network has been the subject of previous government-led reviews.[52]

48 International Transport Forum. Infrastructure Investment Data Reveal Contrasts Between Countries, 2022.

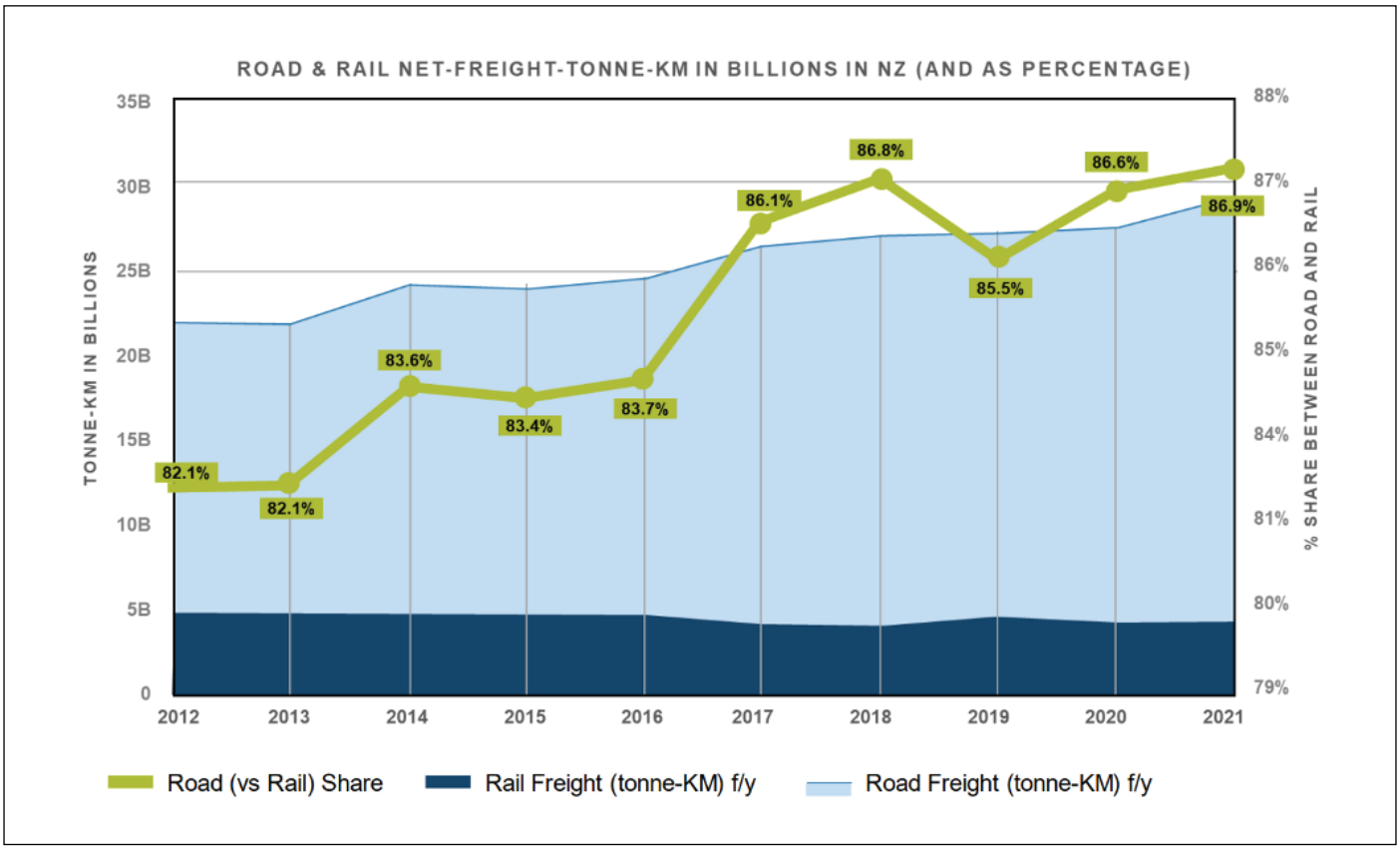
49 In New Zealand, road freight has developed around a just-in-time inventory system, that is, a system whereby the client company receives goods as close as possible to when they are needed, with inventory (and the associated warehousing costs) kept to a minimum. This is a model designed to support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

50 The State-Owned Enterprises Act 1986 states at section 4(1), that every state-owned enterprise (including KiwiRail) must 'operate as a successful business' and be 'as profitable and efficient as comparable businesses that are not owned by the Crown' (s. 4(1)(a)). Importantly however, it also states that it is also expected that it exhibit 'a sense of social responsibility by having regard to the interests of the community in which it operates …' (s. 4(1)(c)).

51 VKT Reduction Evidence Package, May 2022. NZTA Waka Kotahi.

52 Business Desk, 9 December 2021, KiwiRail, commercial player or public good?; TransportTalk, 10 October 2022, KiwiRail remains state-owned enterprise following review.

Figure 12: Road and rail Freight in New Zealand (net freight/tonne km in billions and as a percentage)



This underinvestment means that rail in New Zealand is not reaping the full extent of its potential benefits to society and the economy. This was confirmed by a 2024 report on the benefits of rail,[53] in which the authors noted that a full analysis of externality benefits (that is, monetised benefits derived from rail beyond narrow economic benefits such as contribution to GDP) indicates that rail services are under-utilised in New Zealand. As the report explains, this is because decision makers in the private sector (eg, those deciding whether to move their products via road or rail) are unlikely to reflect wider costs to the country of their decision-making – for example, implications for hospital admissions as a result of deaths and injuries caused by road accidents or illness caused by road transport pollution.[54] This can be characterised as a 'market failure', because the market is not reflecting the true costs (or benefits) of one player, nor is that player being adequately funded for the country to capitalise fully on the benefits it provides.

The report suggests therefore that:

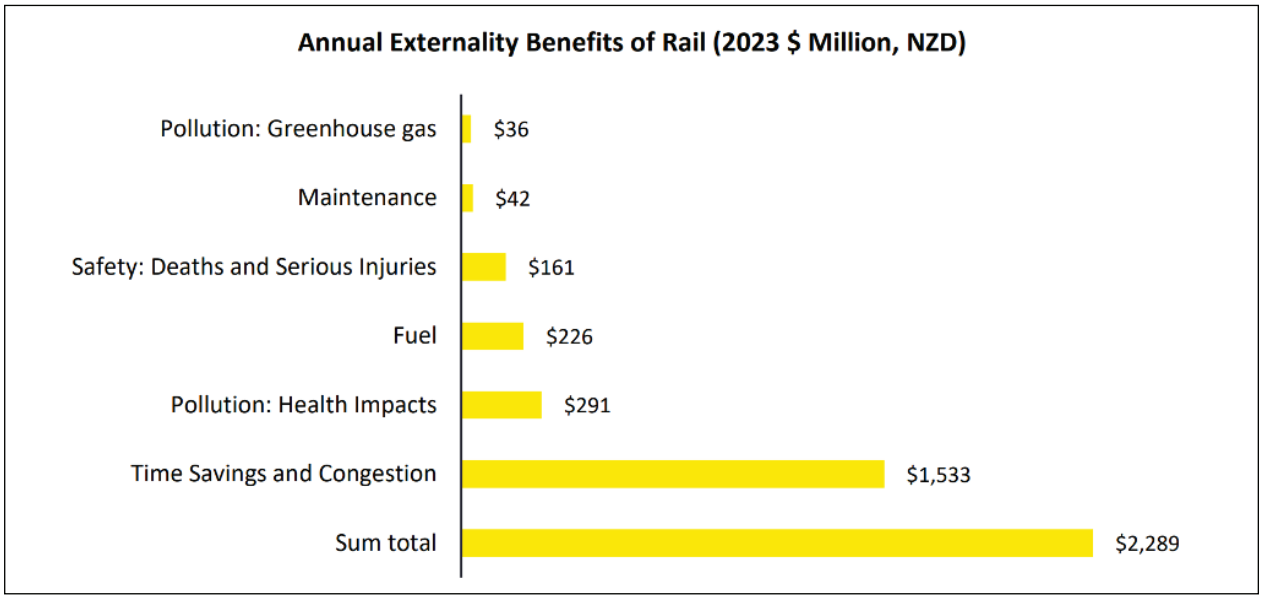
'there may be opportunities to improve market efficiency and economic performance in New Zealand, via proportionate and evidence-based levels of rail funding. Ensuring funding reflects the size of [positive] externalities, such that the freight and travel prices faced by New Zealanders reflects true economic costs, has the potential to improve both economic and social outcomes.'[55]

The report further concludes that despite considerable progress being made by the Ministry of Transport in pricing externalities through the funding and revenue system for transport, 'it is still likely that road transport is under-priced in the terms of its true economic cost when accounting for all externalities.'[56]

53 EY, 2024, p. 32
54 EY, 2024, p. 32
55 EY, 2024, p. 32.
56 EY, 2024, p. 32.

The report further concludes that rail system investment should be considered as a mechanism for delivering on economic and social policy, in addition to supporting the land transport network (echoing the sentiment expressed in the 1970 Urban Passenger Transport report cited above). (And in fact, it can be argued that all transport policy should be considered a key mechanism for delivering on economic, social and health policy – not just rail.) The report suggests that it would be beneficial for government to consider rail services when considering wider policies such as air pollution in cities, urban development, energy security, and local government finance.[57]

Figure 13: Annual External benefits of rail (in millions NZD, for 2023)



In its report EY estimated that rail generated $2.3 billion in monetised externality benefits. These are outlined in the graph below (figure 13). It is important to note that these externality benefits are quantified on the basis of current rail operation levels, which are at historically low levels. With any expansion of rail operations and services, especially those leading to an increase in mode share (freight and passengers), a proportionate increase in externality benefits would be expected.

57 EY, 2024, p. 31.

Failure demand in the transport system

Outlined in the section that follows are examples of failure demand in the transport system – i.e., the downstream effects of failures in how the economy functions. These sort of effects are sometimes referred to as 'perverse outcomes' – the possible negative outcomes of policy proposals. But rather than being theoretical, as they are in a policy development context, these outcomes are ones that have already played out, and are therefore both real and quantifiable.

This section will outline some key examples of failure demand in the transport system: potholes, road deaths and injuries and other health impacts, and the climate, health and environmental impacts of transport pollution – for all of which we have ample data. There are also areas where failure demand is more difficult to quantify due to data being limited, such as health and productivity effects of inadequate access to transport, and the social and economic impacts that barriers to transport access have on people and the economy. In lieu of quantitative data, the section includes a brief qualitative discussion of the social, health and productivity cost of inadequate accessibility.

Road wear and tear

On the face of it, wear and tear to road surfaces – commonly referred to as potholes – is the consequence of insufficient money being spent on road maintenance. However, the root cause is much deeper than this and can be directly attributed to a series of central government policy decisions that have set the foundations for our transport system – in other words, the proliferation of potholes throughout our roading network is an example of failure demand.

In 2010, policy changes were made to allow the maximum weight of trucks to increase from 44 to 53 tonnes, introducing a new class of high productivity motor vehicles (HPMVs), often referred to 50MAX trucks.[58] Theoretically, HPMVs were only supposed to use particular routes, on roads designed to for this increased weight. In reality however, these HPMV vehicles do not limit their movement to state highways – they also use local roads that are not designed for heavy trucks.[59] The ultimate result has been an acceleration in the deterioration of roads, manifesting in a proliferation of 'potholes', further exacerbating the shortfall in funding derived from road user charges to address the damage.[60]

But tracing the root cause back even further, it is clear that while damage to roads and costs of road maintenance have escalated since the introduction of heavy trucks in 2010, this policy was simply one of many in a history of decision-making since the 1980s favouring road freight over other freight modes (rail and coastal shipping). While the removal of regulations favourable to rail and coastal freight was viewed as consistent with the laissez-faire 'free market' approach of the 1980s onwards, as the EY report notes this approach does not fully reflect the vast range of positive externalities that rail (and coastal) freight and transport delivers to society as a whole, nor does it price in the full extent of negative externalities[61] of increased road volumes (especially but not limited to freight and haulage).

In summary therefore, potholes represent the demand failure of an economy in which heavy trucking is subsidised by the public at the expense of other road users, and at the cost of other downstream impacts, such as road safety, as outlined above and below.

58 HPMVs are often referred to as 50MAX trucks, which are slightly longer than standard 44 tonne vehicles, have an additional axle (9 in total) and can have a total weight of up to 50 tonnes.

59 In New Zealand, the most widely used pavement construction is an unbound granular structure with chipseal surfacing. Asphaltic concrete is used on the more heavily trafficked sections of pavement, including parts of the State Highway network.

60 Recognising this, the National Land Transport Fund 2024-27 has allocated $5.51 billion to significant road maintenance, under the new activity class 'pothole prevention', comprised of $2.07 billion for state highways $3.44 billion for local roads – see planned investment by activity class.

61 This report used the term 'externality', while acknowledging that is a problematic term, in that it implies that environmental and social costs or benefits are separate from or outside of the economy, when environmental and social impacts, such as pollution or resource depletion, are integral to economic systems.

Road deaths, injuries and health impacts

Another readily quantifiable example of failure demand in the transport system is road deaths and injuries. Road deaths and injuries have significant social and economic costs that have downstream effects on an already overstretched medical system, broader social wellbeing and economic productivity. The estimated social cost of road crashes in New Zealand (including loss of life, medical, legal, and vehicle expenses) was $9.77 billion in 2021 – approximately 3% of national GDP.[62] Road injuries disproportionately impact Māori: Māori are significantly more likely than non-Māori to be injured or killed in transport-related accidents (this is primarily an outcome of social deprivation, because social deprivation worsens road safety outcomes).[63]

Transport is responsible for two thirds of the harm estimated to be caused by human-made air pollution. Motor vehicle emissions release various pollutants that negatively impact human health, including particulate matter (PM), nitrogen dioxide (NO2), carbon monoxide (CO), and volatile organic compounds (VOCs), leading to respiratory and cardiovascular problems, and increased risk of cancer.

Each year in New Zealand noxious emissions result in:

- the premature deaths of more than 2,200 adult New Zealanders
- more than 9,200 hospital admissions for respiratory and cardiac illnesses
- over 13,200 cases of childhood asthma, and
- social costs of $10.5 billion.[64]

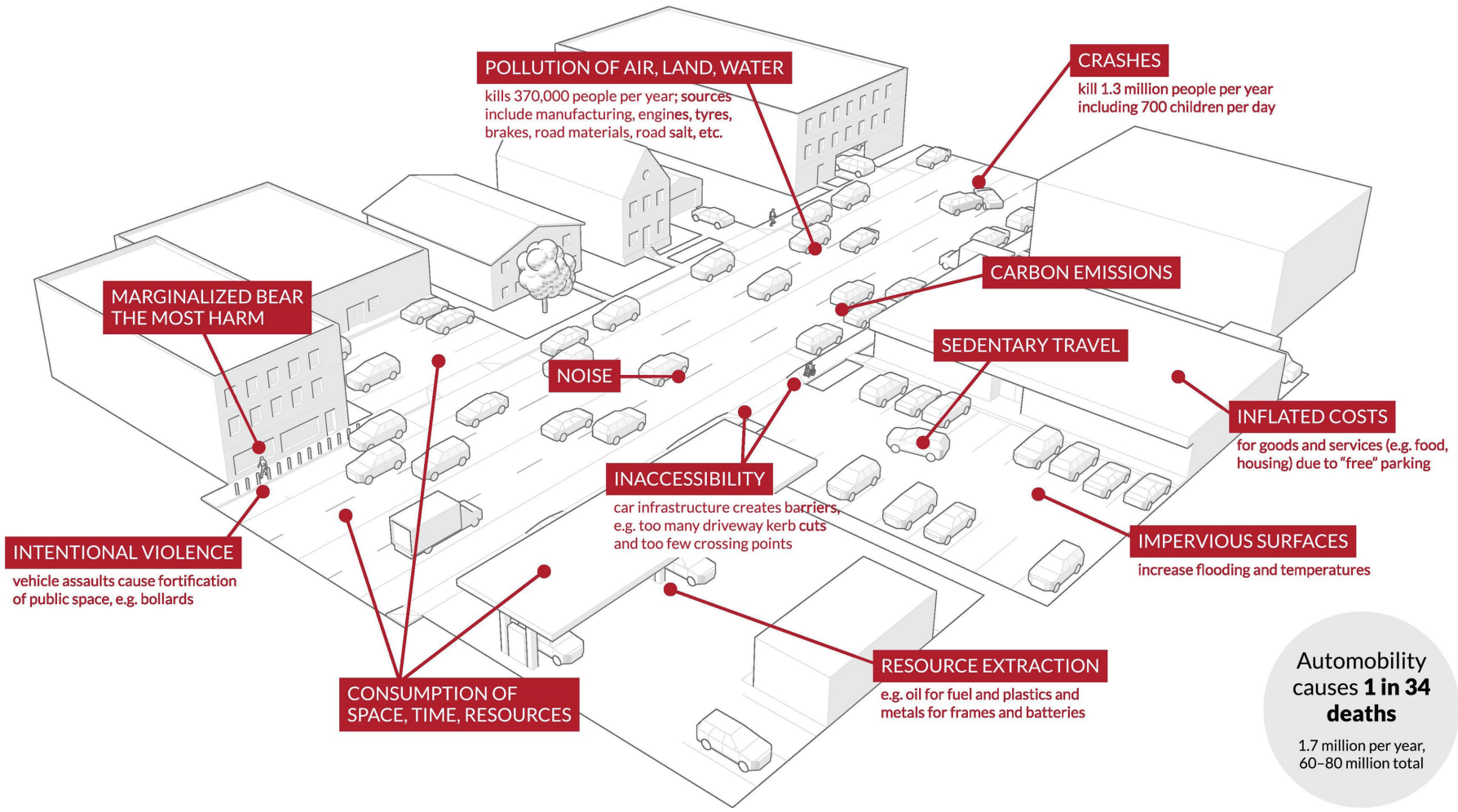
Both petrol and diesel vehicles release pollution harmful to our health. However, while diesel vehicles (primarily heavy and light trucks, including SUVs) make up only 23% of our vehicle fleet, they produce 82% of the harm, because their engines produce higher levels of nitrogen oxides and particulate pollution. In New Zealand, the problem of transport-caused air pollution is exacerbated by the fact that our light fleet is relatively old, and therefore more polluting, compared to other OECD countries. Exposure to nitrogen oxides causes respiratory and cardiovascular damage and nitrogen oxides can contribute to smog. Particulates can cause lung cancer, and both forms of pollution contribute to asthma.[65] New Zealand has comparatively weak emissions standards, compared to jurisdictions such as the European Union, which, alongside poor enforcement means that the harm to New Zealanders' health from poor air quality is higher than would be expected for a high-income country with relatively low population density.

Additionally, increased levels of sedentary activity in New Zealanders' lives, in which motor-vehicle dependency is a significant factor, contributes to a range of preventable, lifestyle illness including obesity, heart disease, stroke, Type 2 diabetes, colon, breast and uterine cancers, osteoporosis, high blood pressure and high cholesterol, and is associated with higher prevalence of depression and anxiety. In respect to obesity alone, which is associated with numerous health conditions, New Zealand has the third highest adult obesity rate in the OECD, and our rates are continuing to rise. One in three adult New Zealanders (over 15 years) is classified as obese.[66] Excess weight (obesity) is associated with many health conditions that place an additional burden on an overstretched health system.

In addition to the harms to health as outlined above, researchers have identified a range of other harms associated with motor vehicles, as shown in figure 14.

62 According to analysis published by the International Transport Forum.
63 Sweeney, M., Breitenmoser, T., & Dickson, I. (2022). A pathway towards understanding Māori aspirations for land transport in Aotearoa New Zealand (Waka Kotahi NZ Transport Agency research report 688).
64 Ministry of Transport, 2024, Reducing noxious vehicle emissions from road transport.
65 Ministry of Transport, 2024, Reducing noxious vehicle emissions from road transport.
66 Ministry of Health, 'Obesity', accessed from https://www.health.govt.nz/strategies-initiatives/programmes-and-initiatives/obesity#toc-0-1.

Figure 14: How automobility harms environmental and human health (source: Miner et al, 2024).[67]



67 Miner, P., Smith, B, Jani, A., McNeill, G., Gathorne-Hardy, A. (2024). Car harm: A global review of automobility's harm to people and the environment, Journal of Transport Geography 115 (2024).

State Highway 2 runs through the Wairarapa, providing a critical route for people and freight.

Climate and environmental impacts of pollution

Nationally, road transport is one of our largest sources of greenhouse gas emissions and is responsible for about 17 percent of national gross emissions and 39 percent of total domestic CO^2 emissions. It is also identified as one area in which it is possible to make transformative change, using technologies we have now.

Conversely, with the global policies and actions in place currently, scientists assess that we are on track for 2.7°C of global warming above pre-industrial levels by the end of the century (noting that some scientists project much higher increases).[68] This will have a catastrophic effect on ecosystems, economies and human society. The Institute and Faculty of Actuaries (professionals that provide the analysis of risk and uncertaintly for the insurance sector) projected that on current trajectories there is increased likelihood to the world breaching 2°C above pre-industrial levels by 2050, resulting in significant social and ecological breakdown, two billion deaths associated with climate change, and a 25% contraction in the global economy.[69]

While on its own, New Zealand cannot curb the worst effects of climate change, it has committed to making a proportionate contribution to climate mitigation (known as Nationally Determined Contribution). A failure to meet these commitments may have serious implications for trade and our wider economy, as well as failing to reap the range of co-benefits accruing from a transition to a low-emissions transport system and economy (including the export potential of climate-mitigation technology and intellectual property).

As well as being a significant source of climate emissions, as outlined above, our heavily road-based transport system is responsible for a high level of health-damaging pollutants, including nitrogen dioxide and particulate matter (PM2.5).

In addition to tail-pipe emissions, motor vehicles (principally via their tyres) shed environmentally damaging pollutants including heavy metals and microplastics. For example, tyres are one of the main sources of zinc in our waterways. Zinc oxide is highly toxic for fish and other aquatic life and disrupts ecosystems even in trace amounts. Heavy metals are persistent so once in the environment, they will remain there indefinitely. Another chemical that is shed by tyres is 6PPD, which, when exposed to air and water, transforms to 6PPD-quinone, a compound linked to mass fish die-offs. Tyres also account for 28% of microplastics entering the environment globally. Microplastics enter the food chain and are harmful both to ecosystems and to human health.

Moreover, the heavier the vehicles, the more tyres shed these pollutants – this has implications for the greater number of SUVs and electric vehicles now making up the national fleet, in addition to trucks.[70] Tyres also present a major disposal issue at the end of life. New Zealand currently generates approximately 4 million end-of-life tyres per annum. Tyres are landfilled, stockpiled or used as silage cover in the agricultural industry. Storing or stockpiling tyres outdoors poses a risk of harm to the environment and human health, including through the discharge of contaminants into the soil and as a highly hazardous fire risk.[71]

68 Climate Action Tracker: 2024 warming projection update ; Climate Action Tracker: Emissions pathways.
69 Planetary Solvency Dashboard, https://global-tipping-points.org/risk-dashboard/
70 The Conversation: Care tyres shed a quarter of all microplastics in the environment – urgent action is needed.
71 Ministry for the Environment, 2004, End-of-life tyre management: Storage options.

The social, health and productivity cost of inadequate accessibility

A significant downstream cost of underinvestment in accessible transport options is harder to quantify based on limited data, but relates to the social, health and productivity costs associated with the inability to access work opportunities, services and social activities. Poor access is both an outcome of inadequate transport choice and affordability, as well as poor urban design.

In many parts of the world, including New Zealand, cities and towns have developed with housing areas disconnected from the services and amenities that people need in their everyday lives – this is especially true of areas associated with high social deprivation.

Generally speaking, wealthier people are more able to use private vehicles to access the things they need – in New Zealand people who live in the wealthier areas drive nearly 100 kilometres more per week and emit 79 percent more transport emissions.[72] Poorer people unable to afford private vehicles generally rely on public transport or the support of family or friends for these everyday trips.[73] At the same time, people with lower incomes who work shift work or irregular hours and live in less-connected residential areas (such as Porirua, which has a significant proportion of people living in decile 1 or 2 areas) may have to rely on a car to be employed. In contrast, Wellington City (the least deprived area in the region) has a high proportion of professional services workers who can easily access frequent public transport.[74]

Lack of affordable, accessible transport options can exacerbate social inequities by creating barriers to employment and essential services (including social determinants of health such as participation in social activities), and evidence suggests that people living in areas with poor access to public transport are more likely to be unemployed or on welfare.[75] Māori tend to experience poorer transport access, further exacerbating social inequities. Analysis of national data indicates that Māori use public transport and walk less than New Zealand Europeans, contributing to poorer health outcomes, and Māori tend to experience more 'forced car ownership' (referring to low-income households that have high car use – often leading to a higher proportion of their income being used for private motor vehicle travel).[76] Māori are also over three times more likely to report lack of transport as a barrier to visiting a health professional than non-Māori.[77]

People with disabilities are also affected by barriers to transport access and experience reduced options to use active or public transport. Case studies in Canada have shown how government focus on 'value for money' as the basis of decision-making can worsen barriers to access, because narrow 'value-focused' criteria tend to devalue or completely ignore the criticality of transport as a public good – particularly for socially and economically vulnerable communities.[78]

72 Caroline Shaw, Ryan Gage, Melissa McLeod, Rhys Jones, Anja Mizdrak, Alistair Woodward. Socioeconomic inequalities in greenhouse gas emissions from household travel in Aotearoa/New Zealand. Travel Behaviour and Society, Volume 37, 2024.

73 A recent Te Waihanga report suggests that higher income households spend more (total) on transport but as a smaller overall percentage of their household income.

74 RLTP 2027 State of Transport Report, Wellington Transport Analytics Unit.

75 Jacob Albin Korem Alhassan and Paulo Aciaes (2025): Public transport investments as generators of economic and social activity, Journal of Transport & Health, accessed from ScienceDirect.

76 Sweeney, M., Breitenmoser, T., & Dickson, I. (2022). A pathway towards understanding Māori aspirations for land transport in Aotearoa New Zealand.

77 Rhys Jones, Melissa McLeod, Ryan Gage, Alistair Woodward, Caroline Shaw, Inequities in patterns and determinants of travel for Māori in Aotearoa/New Zealand, Journal of Transport & Health, Volume 40,2025.

78 Jacob Albin Korem Alhassan, Charles Smith & Lori Hanson (2021): Politics, transportation, and the people's health: a socio-political autopsy of the demise of a 70-year-old bus company, Critical Public Health.

Summary of failure demand in the transport system

This section presented four examples of failure demand in the transport system: potholes, road deaths and injuries and other health impacts, and climate, health and environmental impacts of transport pollution, which are all readily quantifiable. Less quantifiable due to lack of data was the social, health and productivity cost of inequitable transport accessibility.

A wellbeing economy approach to policy would aim to minimise failure demand by taking a system view of interventions, with a broad analysis of the long-term social benefit of investment in the transport sector and associated areas, such as urban planning. The following section outlines some key levers that if activated would enable transformation change with broad and long-term benefits for society as a whole.

Passengers board Metlink's Airport Express in downtown Wellington. This airport service runs on 100 percent electric buses.

Levers for transformational change

This discussion of the levers for system change in the transport system can be divided into two categories: transport-focused levers and broader system levers. All levers should be focused on shifting government decision-making and investment towards upstream investment that will avoid failure demand in our economic system, in the long run saving the government costly expenditure.

The Next steps section below sets out how these levers might inform tangible policy, advocacy and other measures. These measures will be developed more fully through the next phase of the RLTP development process.

Commitment to long-term infrastructure planning and investment

As identified by Te Waihanga/Infrastructure Commission and others, there is a need for a much longer view of infrastructure requirements in New Zealand. Plans for infrastructure investment need to have a 30-year horizon, and to create the certainty required, need to secure cross-party consensus. Furthermore, decision-making on infrastructure investment must be based on broad-scope benefits to society – not limited to narrow-scope productivity or revenue gains. Without this broader scope lens capturing the longer term benefits to society and economy as a whole, it is possible that the case for further investment in rail and other public transport will be further undermined.

The Future Network Plan for the region, proposed to be developed as part of the RLTP 27 programme, will lay the foundation for an agreed view on the investment required to build out the transport network through to 2050.

Funding that provides for long-term investment and certainty

Under the current legislative and institutional arrangements, local and regional authorities wishing to gain government co-funding for transport activities must make a bid every three years, with no guarantee that their bid will be successful. For longer term investments (eg, in rail), renewed bids need to be made for each phase of the project, creating uncertainty that forestalls long-term planning, absorbing time and resource, and duplicating effort through the lengthy business casing process.

Opportunities to significantly improve the land transport planning and funding system – through LTMA reforms or other mechanisms – have recently been explored through the Transport Special Interest Group established by Te Uru Kahika (the organisation representing regional and unitary councils). This includes an option to uncouple the process for funding continuous programmes such as maintenance, operations and renewals and low-cost low-risk activities from the NLTF bidding process (potentially with a ten year 'regional allocation' to improve certainty), with a dedicated fund set aside for major or one-off improvement projects.

Road user charges that reflect the true costs incurred and benefits enjoyed by road users

As outlined above, New Zealand currently has a road user charging regime that does not accurately reflect the distribution of costs incurred on the network, or benefits enjoyed by some sectors. Specifically, the current system does not reflect the fact that, outside of damage caused by natural hazards, damage to road surfaces is almost entirely caused by heavy vehicles, nor does it reflect the disproportionate involvement of heavy vehicles in road accidents causing death or serious injury. As described,

the road freight and haulage industry is currently enjoying a significant subsidy paid for by other road users. But as the costs of maintaining the road network increases, the burden of this maldistribution will only increase, falling on local government and their communities.

The re-alignment of the pricing regime to reflect the true distribution of costs and benefits would not only create incentives for more efficient use of the transport network that minimises social, public health, environmental and climate externalities, it would also reduce the cost burden on local communities – especially more rural territorial authorities with small ratepayer bases.

Making the upfront investment to support walkable, transport-integrated, amenity-rich urban form

International experience shows that in order to give the development sector certainty to invest in the compact, mixed-amenity urban development that will support thriving and diverse local communities, the sector needs to have clear investment signals from government. Better still, the development sector likes to see infrastructure in the ground – investment in rapid transit networks (eg, metro rail, light rail, trackless trams or bus rapid transit), on which it will quickly capitalise with transit-oriented developments and amenity-rich, mixed-use development.

While this sort of proactive investment is rare in New Zealand, in Australia it is more common for state government to invest proactively in infrastructure and leverage land it owns to facilitate transport-oriented developments (TOD). For example, the New South Wales Government announced in 2023 a TOD programme that promises to deliver affordable, well-designed housing within 400 metres of 37 transport hubs, providing more access to transport, jobs, and services. The state government is catalysing this development through a $520 million investment in community infrastructure, roading upgrades, active transport links and good quality public open spaces. It has also changed the zoning rules to enable higher density mixed-use residential development. This government commitment to investment up front provides the development community the certainty it needs to invest.[79]

In addition, public good outcomes can be maximised through master or precinct planning in partnership with local authorities and central government. For instance, through its development arm, Eke Panuku, Auckland Council has achieved good results through master-planned mixed-use developments (eg, Hobsonville and Wynyard Quarters) but there are few instances of this tool being used in the Wellington Region. Under the Urban Development Act Kāinga Ora has a dual role in designing and building residential housing, but also in purchasing land in strategic locations (land agglomeration) that can enable transport integration. In its Urban Development Strategy, Kāinga Ora identified 'effective transit oriented development' as a key lever to achieving public good, and envisioned playing a lead role in such developments, including in the Wellington Region (eg, Waterloo Station). [80]

With its extensive metro rail network servicing most established communities from Kāpiti and Porirua in the west and Upper Hutt in the east, the region is uniquely placed to maximise and build on existing infrastructure to create the foundation for amenity-rich, low-emissions communities of the future. Strategic, long-term regional scale spatial planning (signalled by proposed resource management reform) will provide the foundation for transport-integrated urban development. However, even without statutorily enforceable spatial planning in place, and building on the Future Development Strategy as a basis, much can be done by Wellington Regional Leadership Committee councils alongside central government and the development community. By planning a pipeline of projects (eg Waterloo, Carterton, Levin, Upper Hutt, Porirua, Paraparaumu, and Ōtaki),[81] the region would foster and develop a regional nucleus of capability and establish itself as a leader in transit-oriented developments. Such a pipeline of projects would help to revitalise local communities and deliver on much-needed housing in the region.

79 NSW Government. Planning: Transport Oriented Development Program, 2025.

80 Kāinga Ora Urban Development Strategy, October 2022.

81 A report taken to the Greater Wellington Transport Committee identified a range of locations to investigate for development potential, including Carterton and Masterton (Transport-Committee-25-November-2021-Order-Paper.pdf).

A key factor in developing a 'well-functioning urban environment' is walkability (the ability to walk or actively move safely through urban environments – especially urban centres – and to access the things we need to everyday life, such as education, health services and food shopping). As well as reducing emissions, and improving air pollutions and public health, making city, town and neighbourhood centres can enhance public safety and make local centres more economically and culturally vibrant. RTC members have significant influence over the quality of walking within town and city centres and neighbourhoods, through placemaking[82] and walking infrastructure (footpaths, crossings, walking paths).

Catalysing mode shift for better environmental, climate and health and safety outcomes

As set out above, a shift away from high car dependency towards greater uptake of public and active transport would realise a swathe of public good benefits including emissions and pollution reductions, road safety and health outcomes. Because this shift would also lead to reduced congestion on the busiest parts of the roading network, it would also contribute towards improved economic productivity. And from an individual and household perspective, it will likely lead to considerable financial savings. Building equity into transport policy and initiatives will be of particular importance to catalysing mode shift, to mitigate existing barriers to transport access (particularly high for Māori, people with disabilities, and poorer people). It is also important to recognise that greenhouse gas emissions are also not generated equally across society; wealthier households generate more transport emissions than poorer ones.

The Wellington Region Transport Emissions Reduction Pathway, released in 2024,[83] set out a suite of initiatives and tools that would help to achieve this shift, alongside better urban form. This supplements and supports the strong regional direction set out in the current RLTP on mode shift

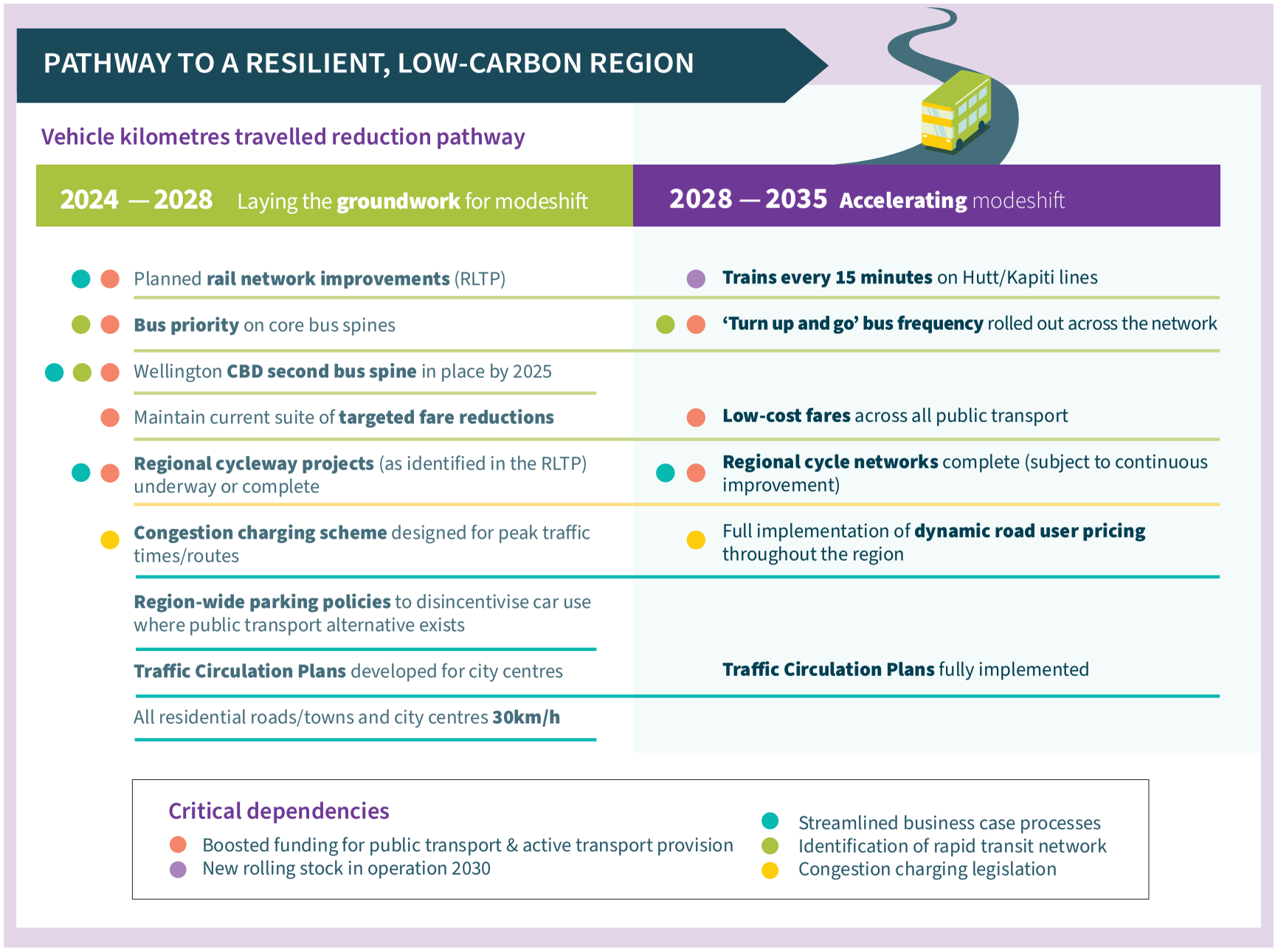
and emissions reduction. It is recommended that mode shift and emission reduction continue to be prioritised through the development of the RLTP 27 strategic direction and that the RTC members work together to facilitate and support mode shift within their areas of influence, including through the active mode and public transport infrastructure and activities, and through land-use planning.

The diagram in figure 15 shows the two phases of actions to bring about transformational change towards a resilient, low-carbon region. In terms of these actions, only the planned rail network improvements have made some progress. Legislation to enable time of use charging has been introduced, highlighted as a critical dependency in the Pathway (for the design and implementation of a congestion charging scheme in the region). However, as was noted in the Wellington RTC's submission on the Bill, such a scheme must be accompanied by supporting measures to make public and active transport more accessible, affordable, and safe if it is to be successful in reducing overall traffic volumes.

82 'Placemaking' is a people-centred approach to shaping public spaces, emphasising community involvement and engagement to enhance the quality of life of residents. It involves designing spaces that foster a strong sense of belonging and connection, leading to positive social, environmental and economic outcomes.

83 Greater Wellington — New transport strategy sets a bold pathway to a resilient, low-carbon future.

Figure 15: Pathway to a resilient, low-carbon region from the Wellington Regional Transport Emissions Reduction Pathway Development contributions that reflect positive and negative externalities and provide for investment in better transport outcomes



Currently, development contributions (the fees charged to developers as their contribution towards the infrastructure that the local authorities must invest in to support growth) do not generally reflect the full scope of negative externalities borne by local councils, and ultimately their ratepayers. This is because councils tend to want to attract development to their locality, irrespective of its costs. However, a development contribution regime more fully reflective of the externalities (both positive and negative) would incentivise the development that supports housing, environmental and local economic outcomes, while disincentivising harmful outcomes, such as higher emissions and energy use, greater land-use, impacts on waterways and so on. If well designed, such a system could encourage more compact urban form, with high public amenity and water-sensitive urban design, while discouraging car-dependent, low-amenity suburban developments.

The government has signalled it will introducing a new development contribution levy regime through an amendment to the Local Government Act, likely to be enacted in 2026. This will allow councils to recover infrastructure costs whether or not infrastructure is planned or costed (currently councils can only recover infrastructure costs for planned, costed and in-sequence developments).[84] The levy system proposed sets out to ensure developers contribute a proportionate amount towards the total cost of capital expenditure necessary for new infrastructure. However, it is unclear whether the new levy system will allow councils to adjust levy rates to incentivise 'good practice' development that minimises social, climate and environmental externalities, while disincentivising development that increases these impacts while placing an additional burden on infrastructure already under pressure (roads, stormwater network etc). This could be aspects about which councils in the region could submit when the bill is introduced.

A further form of revenue that is not currently leveraged in New Zealand is land value capture – whereby the government recovers a portion of the increased land value realised through public infrastructure investments. This revenue can be used to help fund new infrastructure projects or address social and environmental issues. Land value capture is utilised to a much greater extent in other countries, including the United Kingdom. In London, for example, Transport for London (under the limited company Crossrail, responsible for building the Crossrail project) was funded by the Department of Transport combined with funding drawn from property taxes, development contributions and so-called 'betterment fees', a form of land value capture. Overall, the Crossrail example demonstrated the success of using land value capture to diversify revenue collection and reduce risk for public authorities.[85]

There is also significant potential to utilise land value capture in the Wellington Region, where it was estimated in 2020 that the value of land located close to a public transit station is between 4 and 22% higher than land less proximate, while conversely the value of land located near a motorway or road is between 6% and 12% lower. These estimates relate to current infrastructure benefits and disbenefits and therefore are likely to understate the benefits in terms of land value uplift from infrastructure or urban form investment that would enhance an area beyond the status quo. Modelling shows that revenue potential is a direct function of the number of people or the land area that the infrastructure benefits.[86]

In European countries revenue gained from congestion charging and tolls has been allocated to public transport. For instance, 80 percent of the revenue from the congestion charge in London, introduced in 2003, goes towards public transport, with the remaining 20 percent being allocated to road safety, and walking and cycling.[87]

84 Separate levies will be maintained for specific infrastructure such as drinking water, wastewater, stormwater, reserves, community infrastructure and transport. These levies will be the same across each "levy zone" and will be calculated based on the overall growth costs and expected levels of growth.

85 OECD Regional Development Papers. Financing Transportation Infrastructure through Land Value Capture: Concepts, Tools, and Case studies, 2022.

86 Pages 43, 47. New Zealand Infrastructure Commission. (2025). Paying it back: An examination of the fiscal returns of public infrastructure investment. Wellington: New Zealand Infrastructure Commission / Te Waihanga.

87 https://www.oecd.org/content/dam/oecd/en/publications/reports/2024/02/the-future-of-public-transport-funding_d0cb-c29f/82a4ba65-en.pdf

Next steps – how the levers for transformational change will inform policy and advocacy

This section sets out ways in which the levers for transformational change can tangibly inform policy, advocacy and other measures. These measures are not limited to the RLTP 2027 strategic framework review, but also include actions taken through processes and forums outside of RLTP development.

The RLTP policy review will be an important next step to discuss and agree concrete actions, and will be part of the next phase of RLTP 2027 development through to mid-2026.

A view of Tītahi Bay in Porirua.

Lever	Possible actions for local government decision-makers
Commitment to long-term infrastructure planning and investment	• Working with Te Waihanga/Infrastructure Commission, Ministry of Business, Innovation and Employment, and the Minister of Infrastructure, support the creation of long-term, bipartisan, strategic infrastructure investment plans that optimise benefits for society – both current and future generations. • Work with partners to develop a shared understanding of our long-term aspiration for the future transport network for the region through a new Future Network Plan 2050.
Funding that provides for long-term investment and certainty	• Lobby the government for changes to the way land transport is funded, to ensure a more effective and efficient system that is less complex and unnecessarily resource intensive, provides better funding certainty, encourages long-term planning, and facilitates quicker delivery of improvements.
Road user charges that reflect the true costs incurred and benefits enjoyed by road users	• Work with the government to review the road user charging regime to more accurately reflect the costs incurred and benefits enjoyed by road users. This will increase efficiencies in the road network, and reduce costs for local councils and their communities.
Making the upfront investment to support walkable, transport-integrated, amenity-rich urban form	• Through the work of the Wellington Regional Leadership Committee (eg Future Development Strategy) or via a future regional spatial plan, consider developing a blueprint envisaging a pipeline of transit-oriented developments for the region, making the case for partnership between central and local government, iwi and private sector to deliver on such projects guided by master planning that unlocks public good benefits and revitalises local communities. By having a pipeline of projects (eg Waterloo, Levin, Upper Hutt, Porirua, Paraparaumu, Otaki), the region would foster and develop a regional nucleus of capability and establish itself as a leader in transit-oriented developments. • As road controlling authorities, member councils could consider a stronger focus on walking and placemaking in towns, cities and districts to support walkability of centres and neighbourhoods.
Catalysing mode shift for better environmental, climate and health and safety outcomes	• As part of RLTP27 development, maintain and strengthen the current strategic direction that prioritises mode shift and emissions reduction as important long-term goals and continue to identify opportunities to support mode shift through RTC member activities.
Development contributions that reflect positive and negative externalities and provide for investment in better transport outcomes	• Continue to engage with the Minister of Transport and relevant government departments to gain support for the transformative actions required to make the shifts necessary. These shifts will not only be beneficial for emissions but also for energy efficiency, resilience, public health and productivity. • Work with the government to review the legislation under which development contributions are made, enabling councils to more easily charge fees that reflect the true cost (and benefits) of different forms and locations of development.

Summary

This paper has used a system view to describe the transport system in the Wellington Region, within the broader national context. Building on the objectives across the wellbeings of the current RLTP, the paper has proposed the wellbeing economy framework as a useful strategic foundation for RLTP 2027, by offering a single, unifying lens.

Through 'failure demand', the wellbeing economy framework also provides a powerful mechanism for quantifying how inadequate policy or investment decisions in transport or related spheres ultimately costs the government and society more as a whole – both financially and as a consequence of downstream economic, environmental, social and public health impacts.

The report examines the historic context of our current transport system, the current system (including aspects such as funding), the key challenges and barriers preventing us from getting the most out of our transport system, and the levers for transformational change.

The levers for transformation change identified in the paper are:

- Commitment to long-term infrastructure planning and investment
- Funding that provides for long-term investment and certainty
- Road user charges that reflect the true costs incurred and benefits enjoyed by road users
- Making the upfront investment to support walkable, transport-integrated, amenity-rich urban form
- Catalysing mode shift for better environmental, climate and health and safety outcomes
- Development contributions that reflect positive and negative externalities and provide for investment in better transport outcomes.

The Next steps section sets out ways in which these levers could be considered as we develop RLTP 2027 policies, as well as identify other actions that can be taken by RTC to influence and shape the future transport system.

This report has been developed by Greater Wellington Regional Council officers to inform the development of the Wellington Regional Land Transport Plan 2027. It has not been endorsed by the Wellington Regional Transport Committee.

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