Evidence pack

Nelson Tasman

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NZ TRANSPORT AGENCY
WAKA KOTAHI

Te Kāwanatanga o Aotearoa
New Zealand Government

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More information

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DRAFT 1.0	30/06/2025	First release	Evidence Pack Development Team for NLTP Team
DRAFT 1.1	30/07/2025	Addition of 'DRAFT' to the Pack for clarity as to its status of a work in progress.	Evidence Pack Development Team for NLTP Team
DRAFT 1.2	01/08/2025	Addition to disclaimer that 'any discussion or commentary on the region is an NZTA view'	Evidence Pack Development Team for NLTP Team
DRAFT 1.3	14/10/2025	Revisions and corrections to narrative in some regions due to regional feedback, replacement of Top of the South evidence pack with separate Nelson Tasman and Marlborough evidence packs. Clarification in some sections to reflect perspective from NZTA as the state highway manager.	Evidence Pack Development Team for NLTP Team

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Introduction

This Nelson Tasman section is part of the *Evidence pack*, that has been developed to help in the preparation of the strategic front end of regional land transport plans (RLTPs) 2027-37.

It does this by providing a consistent set of data and information setting out the current and future state of New Zealand's transport system at a national and regional level, and indicating what interventions are likely to be effective to address identified deficiencies.

This iteration is the first step in the collaborative development with the sector of consistent and comprehensive evidence and information. For future iterations we will be drawing on your feedback to iteratively improve it and close any data and analysis gaps.

For more background information about the evidence pack, see the Introduction and national summary.

What's in the evidence pack?

The complete evidence pack is available on the Transport Insights portal.

There you will find:

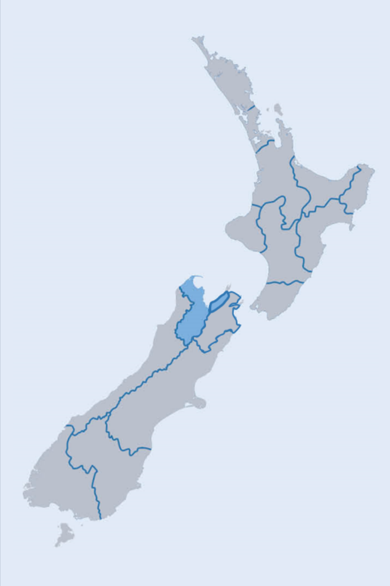
- evidence pack introduction and a national summary, which gives you more background to the pack, its purpose and where the information and data are sourced from, and provides an overview for the whole country
- a section for each region, with data and information (calculated as strategic measures) specific to that region, and discussion of how it fits into the national network.

What's in this Nelson Tasman section?

Each regional section follows the same structure:

- **Nelson Tasman overview** – a brief overview of the combined region.
- **Strategic measures** – which looks at how the region currently rates against the 14 strategic measures from the Land Transport Benefits Framework, and how it's expected to change over time.
- **Current and future challenges** – specific issues for the region to address.
- **Focusing effort** – identifies key areas to focus investment in the short and longer term and includes targeted suggestions of potential interventions.
- **Appendices** – data sources for the strategic measures and more information on potential interventions.

Nelson Tasman overview



Population in 2023
110,391

Projected Population in 2048 (2018 base)
122,300

Māori population and percentage of overall regional population in 2023
13,815 (12.5%)

Iwi and Hapū
- Ngāi Tahu
- Ngāti Apa ki te Rā Tō
- Ngāti Kōata
- Ngāti Kuia
- Ngāti Rārua
- Ngāti Tama ki Te Tau Ihu
- Ngāti Toa Rangatira
- Rangitāne o Wairau
- Te Ātiawa o Te Waka-a-Māui

GDP percentage of NZ total 1.8%
Tourism GDP of NZ total 4.6%
(year ending March 2024)

Key industries
- Rental, hiring and real estate
- Construction
- Agriculture
- Forestry and Fishing

Freight task 2017-2018 (Tasman/Nelson/Marlborough) 16.6 million tonnes, 6% Of NZ total

Freight percentage by method 2017-2018 (Tasman/Nelson/Marlborough)
Road 98.9%
Coastal Shipping -
Rail 1.1%

The Nelson Tasman region includes Cape Farewell in the north, Lewis Pass (SH7) to the south, the Marlborough border to the east and the scenic West Coast. It has some of the country's highest sunshine hours, three national parks and is popular for a range of outdoor recreation pursuits. Traditionally the Nelson Tasman region has been strong in primary production, more recently there has been an expansion in rental hiring and real estate, construction and aquaculture. Healthy tourist numbers support a thriving food and beverage sector.

The combined population of Nelson Tasman region is 110,391, with projections indicating growth to 122,300 by 2048.[1] The Nelson-Richmond urban area, home to approximately 68,000 residents, is expected to absorb most of this growth. Over the past 5 years, growth has been roughly in line with the national average. The region is ageing faster than the national average, with those aged 65 and over projected to make up 34 percent of the region's total by 2048, compared to 23 percent nationally.[2] A greater range of transport options will be needed, supported by new technologies, to ensure all ages have good access to essential services, employment, education, non-essential services, and recreational activities.

Māori make up 12.5 percent of the region's population, below the national average of 19.6 percent.[3] The Māori economy in the Marlborough and Nelson Tasman regions combined is valued at $4.2 billion.[4] Property is noticeably important.[5]

The Nelson Tasman transport network includes approximately 2,022 km of local roads, 642km of state highways and 91 km of rail, primarily used for freight.[6] Of the road network, a third is unsealed.[7]

[1] Stats NZ (2023). Population projections for the Top of the South region. Accessed October 2025. https://www.stats.govt.nz
[2] Stats NZ. (2023). *Place and ethnic group summaries – Nelson Region*. Accessed October 2025. *https://tools.summaries.stats.govt.nz/places/rc/nelson-region*
[3] Stats NZ. (2023). Place and ethnic group summaries – Nelson Region. Accessed September 2025. https://tools.summaries.stats.govt.nz/places/rc/nelson-region
[4] BERL. (2023). *Te Ōhanga Māori – The Māori Economy*. Business and Economic Research Limited. Accessed October 2025 from https://berl.co.nz/sites/default/files/2025-03/Te%20Ohanga%20Maori%202023%20-%20Final%20%28web%29.pdf
[5] BERL (2021). Te Ōhanga Māori – The Māori Economy 2018. Accessed October 2025 from https://www.rbnz.govt.nz/hub/research/additional-research/te-ohanga-maori---the-maori-economy-2018
[6] KiwiRail (n.d.). KiwiRail network map. Accessed October 2025 from https://kiwirail.maps.arcgis.com/apps/View/index.html?appid=556c4a9c73914fe1983529ddf9ae5099
[7] Nelson Tasman Regional Land Transport Plan Mid Term Review 2024-2034. Accessed October 2025 from https://www.tasman.govt.nz/my-council/key-documents/more/transport/nelson-tasman-regional-land-transport-plan

Network resilience is becoming a significant issue across the Nelson Tasman region, with more frequent disruptions and costly repairs from significant weather events.

The ports in Nelson play an important role in getting the region's goods to market. Port Nelson, the largest fishing port in Australasia, plays a critical role in seafood exports. In 2017/18, the freight task in the Top of the South (Nelson Tasman, Marlborough) totalled 9.3 million tonnes, 3.3 percent of the national total, with 98.9 percent moved by road and only 1.1 percent by rail.[8] The majority of the land-based freight travels by road, as rail opportunities are limited to the South Island main trunk line to the east of the region. The significant growth in primary products in the region means there are more heavy vehicles using the road network, from rural roads in the hinterland to the state highways within the metro areas.

The eBus service operates in the Nelson Tasman region, providing several routes connecting key areas in Nelson to Richmond, the hospital, the airport and Motueka. The Nelson-Tasman Public Transport Plan (2024–2034) aims to deliver a public transport system that builds upon the momentum created by the introduction of eBus services and increase service coverage.

The region has many cycling trails for day-to-day, recreational and scenic routes, and mountain biking parks. For example, The Great Taste Trail is a popular cycle route that connects various parts of the region, encouraging both locals and tourists to explore the area by bike. Nelson Tasman has one of the highest proportions of journey to work via walking/jogging (5.5 percent) and cycling (5.6 percent)[9] However, driving is the most common mode of commuting to work in the Nelson Tasman region, reflecting the region's reliance on road transport and private vehicles.

The transport network in the Nelson urban area is under growing strain because of population growth, reliance on small number of key corridors and the related demands for improved accessibility and increased freight movements.

Key projects from the State Highway Investment Programme (SHIP) include the Hope Bypass on SH6, which aims to reduce congestion and improve safety in Richmond, and resilience improvements on SH60 to enhance the region's transport infrastructure.[10]

The Nelson Tasman Regional Land Transport Plan, the Nelson Future Access Project and the Richmond Transport Programme Business Case highlight several key challenges, including increasing vehicle usage and related traffic congestion, safety, the impact of frequent and severe weather events, and the need for resilient infrastructure.[11] The region faces significant residential and freight growth, necessitating efficient management of networks to maintain access, reduce emissions and a focus on integrating transport planning with land use to support efficient, sustainable growth. Additionally, there is a strong focus on enhancing walking and cycling facilities to promote active transport and improve environmental outcomes.

[8] Ministry of Transport. (2019). *National Freight Demand Study 2017/18*. Ministry of Transport. https://www.transport.govt.nz/assets/Uploads/Report/NFDS3-Final-Report-Oct2019-Rev1.pdf

[9] Infometrics Regional Economic Profile (2024) accessed October 2025/ https://rep.infometrics.co.nz/new-zealand/census/indicator/means-of-travel-to-work-by-place-of-residence?census=nelson-tasman

[10] NZTA (2024). State Highway Investment Proposal 2024–34. https://www.nzta.govt.nz/resources/state-highway-investment-proposal-2024-34/ 2022

[11] Tasman District Council and Nelson City Council (2024). Nelson Tasman Regional Land Transport Plan 2024–2034. https://www.tasman.govt.nz/my-council/key-documents/more/transport/nelson-tasman-regional-land-transport-plan

Strategic measures – current and future

This section provides tables summarising the 14 strategic measures in relation to this region. The data and evidence used to produce these results is included in Appendix A.

The 14 strategic measures are a subset of 60+ measures included in the Land Transport Benefits Framework. They have been selected to provide a coarse but practical overview of the 5 Transport Outcomes, as shown in the diagram.

The tables provide indicative current and future values for the 14 strategic measures (grouped by outcome), to understand how each measure (and therefore outcome) is likely to change if there is no significant investment (beyond that already committed).

More detail about the measures can be found in the Land Transport Benefits Framework measures manual.

Healthy and safe people

Benefit framework measure	Units	Current (2023/24)	Future (2048)	Change
1.1.1 Collective risk (crash density)	Average annual fatal and serious per kilometre of road section	NA	NA	NA
1.1.3 Deaths and serious injuries (DSIs)	Number of DSIs (annual)	91	125	34 (+37%)
1.1.4 Personal risk (crash rate)	Average annual DSI per 100 million vehicle kilometres travelled	8.687	8.687	0 0%)
1.2.1 Road assessment rating – roads	Infrastructure risk rating (applies to both current and future)	High: 28.46% Medium-high: 27.02% Medium: 30.26% Low-medium: 12.74% Low: 1.51%		N/A

Insights

- If there is no significant investment (beyond that already committed), crash density and the number of deaths and serious injuries (DSI) across Nelson Tasman are projected to increase by 34% by 2048. Projections are unavailable for other strategic measures for safety but indicate Nelson Tasman currently performs poorly for this outcome on those strategic measures.

- Collective risk (crash density) shows where the biggest difference can be made in terms of absolute numbers of deaths and serious injuries and is affected by population size and transport mode chosen. This data is not currently available for Nelson Tasman.
- Nelson Tasman has the seventh-lowest number of DSI of all regions, with about 3 percent of the national total and lower than the average number of DSI of all regions. The number of DSI is projected to increase by 31 percent by 2048.
- Personal risk (crash rate) highlights areas where a crash is more likely to occur based on use of the road network. The average annual DSI per 100 million vehicle kilometres travelled (VKT) in Nelson Tasman is currently more than the national average and in the middle of the range by average of all regions.
- Infrastructure risk rating (IRR) describes the underlying level of risk a road presents to an individual road user based on key physical and operational attributes. The proportion of Nelson Tasman 's roads rated as being at medium-high and high risk (that is, with DSI per 100 million VKT equal to or greater than 8) is 8 percent more than the country as a whole and in the middle of the range of all regions.

Resilience and security

Benefit framework measure	Units	Current (2023/24)	Future (2048)	Change
4.1.1 Availability of a viable alternative to high-risk and high-impact route	Percentage of high-risk, high-impact route with a viable alternative	Not included in this release		
4.1.2 Level of service and risk (note that for this evidence pack this data is from the National Resilience Assessment Tool (NRAT) and includes only state highways)	Number of identified sites in region by combined risk rating (future, geological and hydrological)	Low: 160 Med: 51 High: 43 Critical:4 Not yet rated: 52	N/A	N/A

Insights

- If there is no significant investment (beyond that already committed), Nelson Tasman is projected to have the fourth-highest number of future (emerging) risks. The low proportion of high and critical risks indicate Nelson Tasman currently performs well for this outcome.
- Hazard events at identified risk sites can lead to unplanned closures of the state highway network, impacting network resilience. Nelson Tasman is mostly at risk from geological events (rockfall, overslips, underslips), which make up 293 of the 319 risk resilience sites in the region.
- High and critical risks make up 18 percent of all risks in the region that have been rated to date. The proportion of high and critical risks is 16 percent lower than the national rate and the third lowest of all regions.
- The risks include 26 sites with future (emerging) risks, because of the impact of climate change for example. Nelson Tasman has the fourth-highest number of all regions, if there is no significant investment (beyond that already committed).

Economic prosperity

Benefit framework measure	Units	Current (2024)	Future (2048)	Change
5.1.2 Travel time reliability – motor vehicles (note for this evidence pack, the data only relates to state highway traffic monitoring system (TMS) sites)	Calculated using coefficient of variation (CoV); standard deviation of travel time divided by average minutes travel time Rate: High <0.3, Medium 0.3–0.6, Low >0.6)	Low: AM 3% Day 0% Med: AM 11% Day 0% High: AM 86% Day 100%	Low: N/A% Med: N/A% High: N/A%	Low: N/A% Med: N/A% High: N/A%
5.1.3 Travel time delay (note, data is from National Network Performance (NNP) model, which is currently limited to state highway TMS sites)	Difference between average travel time during AM peak and average travel time during the inter-peak in minutes per kilometre (by mode) as a percentage	Car: 2% PT: N/A Cycle: N/A	Car: N/A PT: N/A Cycle: N/A	Car: N/A PT: N/A Cycle: N/A
5.2.2 Freight – mode share value	Percentage of value for each mode	Not included in this release		
5.2.3 Freight – mode share weight	Percentage of weight for each mode	Road:100% Rail: 0%	Road: 100% Rail: 0%	Road: 0% Rail: 0%

Insights

- Nelson Tasman is not served by rail. Therefore, all land-based freight movement is by road. . A projection is unavailable for travel time reliability, but the good travel time reliability in Nelson Tasman compared to the national rate and other regions indicate this region currently performs well for this strategic measure.
- Travel time reliability can impact the efficient movement of people and goods. 3 percent of the state highway network in Nelson Tasman (limited to data based on where we have TMS sites) has poor travel time reliability (that is, a high CoV), compared to 6 percent for the country as a whole and in the middle of the range of all regions. Unexpected events on the state highway network impacts travel time reliability in Nelson Tasman. The capability to estimate travel time reliability for future years is still being developed and is intended to be included in later iterations of the evidence pack.

Environmental sustainability

Benefit framework measure	Units	Current (2023)	Future (2048)	Change
8.1.1 Greenhouse gas emissions (all vehicles)	Annual tonnes of CO_2 equivalents (CO_2-e) emitted	0.29 m	0.20 m	-0.10 m (-33%)
8.1.3 Light vehicle use impacts	Annual light vehicle kilometres travelled (light VKT)	928 m	1,257 m	+329 m (+35%)

Insights

- If there is no significant investment (beyond that already committed), Nelson Tasman's greenhouse gas (GHG) emissions from all vehicles are projected to reduce significantly (primarily due to a highly uncertain assumed level of vehicle fleet electrification) and light vehicle VKT is projected to increase significantly.
- Land transport is a major contributor to GHG emissions. The Nelson Tasman accounts for 2 percent of transport GHG emissions in New Zealand. This proportion of the national total is one of the smallest contributions of all regions. If there is no significant investment (beyond what is already committed), both the Nelson Tasman's volume of GHG emissions and the proportion of the national total are projected to decrease by 2048 – primarily through electrification of the vehicle fleet (as forecast using the Ministry of Transport Vehicle Fleet Model (VFM)) – the proportion of the national total will remain stable. This assumed level of electrification has high uncertainty and is a major factor affecting GHG emissions; and therefore, the 33 percent decrease needs to be considered in this light.
- Light vehicle VKT is currently the largest source of transport GHG emissions. Electrification of the light vehicle fleet could be complemented by mode shift to public transport and/or active modes to maximise a reduction of GHG emissions. Nelson Tasman accounts for 2 percent of light vehicle VKT in New Zealand. This proportion is the fifth-smallest contribution of all regions. If there is no significant investment (beyond that already committed), Nelson Tasman's volume of light vehicle VKT is projected to increase and the proportion total is projected to increase to 3% by 2048.

Inclusive access

Benefit framework measure	Units	Current (2023)	Future (2048)	%Change
10.2.1 People – mode share	Percentage by mode (Census (2023) journey to work and education)	Car: 78.24% PT: 1.41% Cycle: 8.30% Peds: 12.05%	Car: N/A PT: N/A Cycle: N/A Peds: N/A	Car: N/A PT: N/A Cycle: N/A Peds: N/A
10.3.1 Access to key social destinations (all modes)	Number of jobs (x1000) accessible by mode in	0–5 / 5–10 / 10+km Car: 40 / 80 / 83	0–5 / 5–10 / 10+km Car: 44 / 89 / 92	0–5 / 5–10 / 10+km Car: 10% / 11% / 11%

	AM peak (car 40 min, PT 45 min, cycle 45 min) and distance from city centre (km)	PT:	26	42	13	PT:	28	47	15	PT:	10%	12%	16%
		Cycle:	33	71	23	Cycle:	37	79	26	Cycle:	10%	11%	13%

Insights

- If there is no significant investment (beyond that already committed), the proportion of jobs more than 5km from central Richmond and Nelson city accessible by public transport and cycling is projected to increase by 2048. A projection is unavailable for mode share for journeys to work and education, but the high proportion of journeys by car in this region compared to the national rate and other regions indicate Nelson Tasman currently performs poorly for this outcome.
- The availability of public and shared transport services and active mode infrastructure can reduce car dependence, which can be a barrier to access for those who are on low incomes or unable to drive. Journeys to work and education in Nelson Tasman by all modes are 3 percent of the national total, and this proportion is in the lowest quarter range of all regions.
- Journeys by car in Nelson Tasman are one percent higher than the national rate and the fifth-lowest rate in the country by all regions.
- Public transport use is 6 percent lower than the rate for the country as a whole and the fifth lowest in the country. The proportion of people cycling in Nelson Tasman is 5 percent higher than the national rate and the highest of all regions.
- The proportion of people walking in Nelson Tasman is two percent higher than the national rate and the fourth highest of all regions
- The low provision of public and shared transport services and infrastructure for walking and cycling in urban areas impacts mode share for people in Nelson Tasman.
- The accessibility of jobs by modes other than car increases people’s ability to work. There are many more jobs accessible by car than other modes in Nelson Tasman.
- Within 5km of central Richmond and Nelson city, accessibility by car is higher than for cycling and approximately double that for public transport. For locations further out, the difference is greater for public transport. If there is no significant investment (beyond that already committed), the proportions of jobs more than 5km from the town centres accessible by public transport and cycling are projected to remain relatively stable by 2048.
- Several settlements around Nelson Tasman, and a dispersed urban form in each, means people who live further away from central Richmond and Nelson city work more locally.

- The lowest income households spend a greater proportion of their incomes on transport.[12] These factors combine to result in transport poverty (where people lack adequate access to affordable and reliable transport, hindering their ability to participate in essential activities such as work).

Interdependencies between outcomes

- Addressing the current and future challenges for one transport outcome can have negative impacts on others. On the other hand, it is also often possible to take an approach to each outcome that makes a positive impact on the others
- For example, improving the quality of key state highways to address reduce safety risk (see healthy and safe people) could be done in a way to address current geological risks and the future impacts of climate change (see resilience and security). Safety risks could be reduced further by implementing a compact urban form and increasing the coverage of public transport services further from the centre of each main town, and more shared transport in dispersed areas, which can improve access to work and education (see inclusive access). This could improve the efficient movement of goods (see economic prosperity) and reduce emissions, mitigating the long-term impacts of climate change (see environmental sustainability).

[12] Te Manatū Waka Ministry of Transport (2022). *The distributional impacts of transport-related carbon policy*. https://www.transport.govt.nz/assets/Uploads/The-Distributional-Impacts-of-Transport-final-report-005.pdf

Current and future challenges

To achieve a land transport network that is safe, efficient and effective for the Nelson Tasman region, it's important to understand it in combination with the needs and lives of the region's communities? and the unique natural and built environment.

National context

New Zealand's transport networks are extensive and vital for the country's connectivity and economic prosperity. The state highway network spans about 11,750km,[13] while the local road network covers about 83,368km.[14] Additionally, the rail network consists of around 4128km of rail lines.[15]

Maintaining existing networks

Maintaining such a vast network requires significant effort. Annually, 5−10 percent of the road network (4750km to 9500km) needs resurfacing or rebuilding.[16] The network includes nearly 4200 bridges[17] on state highways and about 15,000 on local roads.[18] Urban growth and higher traffic volumes, especially of heavy vehicles, increase maintenance needs, which strains budgets. Neglecting maintenance can lead to safety risks, higher long-term costs, and disrupted connectivity.[19]

Looking ahead, future challenges are expected to intensify. Climate change is likely to increase the frequency and severity of extreme weather events, such as flooding and heatwaves, which can damage infrastructure and accelerate wear and tear. Technological advancements, such as the rise of electric and autonomous vehicles, may require new types of infrastructure and maintenance protocols. Additionally, population growth and urban sprawl will create pressure to further expand the network, which will lead to increasing the scale and complexity of maintenance operations.

Access to opportunities and enabling the efficient movement of freight around the country

The transport system underpins economic and social wellbeing, ensuring access to jobs, education, healthcare, and efficient freight movement. Remote and rural areas face significant access challenges, especially during adverse weather. These challenges include a lack of alternatives to private vehicle trips as public transport services are not a viable alternative because of coverage and frequency. In addition, there is a lack of redundancy in parts of the land transport system – some places rely on one or 2 critical lifelines to stay connected.

Looking ahead, existing access challenges in remote and rural areas will be exacerbated by the impacts of climate change and demographic change. The population is expected to remain static or decline in smaller, rural, and remote districts. In some areas, people aged over 65 are expected to make up more than 35 percent of the population. The affordability of local government rates increases will be an issue in these areas. Network resilience will be further challenged as damage caused by climate change becomes more frequent, outages last longer and repair costs increase. Rural and coastal communities may become increasingly isolated and have difficulty accessing essential services – this may particularly impact Māori.

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[13] NZTA (n.d.). State highway frequently asked questions. https://www.nzta.govt.nz/roads-and-rail/research-and-data/state-highway-frequently-asked-questions/
[14] Ministry of Transport (n.d.). Statistics and insights. https://www.transport.govt.nz/statistics-and-insights
[15] Stats NZ (n.d.). Transport. https://www.stats.govt.nz/topics/transport
[16] NZTA (n.d.). Road management and maintenance. https://nzta.govt.nz/roads-and-rail/management-and-maintenance/
[17] NZTA (n.d.). Bridges and structures. https://www.nzta.govt.nz/roads-and-rail/bridges-and-structures/
[18] Figure.NZ (n.d.). Number of bridges on local roads in New Zealand. https://figure.nz/chart/nHM7UwJuYIrWnLdT
[19] Government of New Zealand (n.d.). Government Policy Statement on land transport 2024–34. https://www.transport.govt.nz/assets/Uploads/Government-Policy-Statement-on-land-transport-2024-FINAL.pdf

Freight is a key part of economic activity and is fundamental to making places great to live (liveability).[20] The efficient movement of freight is essential for economic productivity. Current freight inefficiencies such as delays, detours and highly variable travel times can increase costs by up to 20 percent.[21]

Looking ahead, total freight volume is expected to increase by 39 percent by 2053.[22] The location of freight origin and destination may change. A growing population in the largest urban areas means more goods will need to be moved to these locations, and industry and population concentration is occurring in the upper North Island. Climate change is expected to change the nature and location of primary production and increase the frequency of extreme weather events, disrupting transport networks, isolating communities, and affecting freight reliability.[23] Technological shifts, including the rapid growth of e-commerce and the transition to low-emission freight vehicles, will require significant infrastructure upgrades and new logistics strategies to ensure efficiency and sustainability.[24]

Resilience to natural hazards and climate change

New Zealand faces significant natural hazard risks, including earthquakes, floods, and cyclones, worsened by climate change. The land transport system has always been exposed to natural hazard risks, with minor closures or delays through small scale events like slips and localised flooding common. However, the network is increasingly exposed to national and regional scale events such as Cyclones Hale and Gabrielle and the Kaikoura earthquakes that caused widespread and significant damage.[25] For instance, Cyclone Gabrielle alone caused damage estimated at $13.5 billion.[26]

Recovery from small events is quick, but larger events, such as Cyclone Gabrielle, cause extensive damage and long recovery times. The state highway network performs critical lifeline functions for communities, and repeated disruption to these functions impacts communities’ access to the services they need.

Looking ahead, the land transport system will have to adapt to escalating impacts from natural hazards and climate change now and into the future. These impacts include sea-level rise and ongoing changes in the physical environment, as well as increasingly severe and frequent climate-related events such as storms, flooding, droughts, and wildfires.[27] The probability of an Alpine Fault earthquake occurring in the next 50 years is 75 percent, and there is a 4 out of 5 chance that it will be a magnitude 8+ event.[28] Such an event has the potential to cause severe damage and disruption across the entire South Island, with major consequences for the rest of the country.

These types of impacts will continue and will affect communities and the transport networks that connect them. As damage becomes more frequent, outages last longer and repair costs increase,

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[20] Auckland Transport (2020). Auckland freight plan. https://at.govt.nz/media/1983982/auckland-freight-plan.pdf

[21] Ministry of Transport (2023). Aotearoa New Zealand Freight and Supply Chain Strategy. https://www.transport.govt.nz/assets/Uploads/MOT4806_Aotearoa-Freight-and-Supply-Chain-Strategy-p09-v03.pdf

[22] Ministry of Transport (2019). *New Zealand transport outlook – Freight model*. https://www.transport.govt.nz/assets/Uploads/Data/Transport-outlook-updated/Freight-Model-Version-2-Documentation-20190423.pdf

[23] KPMG & The Aotearoa Circle (2024). *Transport sector climate change scenarios: Report on big climate risks to New Zealand’s transport sector*. https://kpmg.com/nz/en/home/media/press-releases/2024/06/report-on-big-climate-risks-to-new-zealand-s-transport-sector.html

[24] Ministry of Transport (n.d.). Climate change — emissions work programme. https://www.transport.govt.nz/area-of-interest/environment-and-climate-change/climate-change

[25] Byett, A, et al (2019). *Climate change adaptation within New Zealand’s transport system*. Motu Economic and Public Policy Research. https://www.motu.nz/our-research/environment-and-resources/climate-change-impacts/climate-change-adaptation-within-new-zealands-transport-system

[26] NIWA (2024). Cyclone Gabrielle was intensified by human-induced global warming. https://niwa.co.nz/news/cyclone-gabrielle-was-intensified-human-induced-global-warming

[27] NZTA (2022). *Tiro Rangi: our climate adaptation plan 2022–2024*. https://www.nzta.govt.nz/assets/resources/tiro-rangi-our-climate-adaptation-plan-2022-2024/tiro-rangi-our-climate-adaptation-plan-20222024.pdf

[28] AF8 (2022). *AF8 Programme Strategy 2022–25*. https://af8.org.nz/media/fpxjy3uu/af8_programme-strategy-2022-25-jul22.pdf

rural and coastal communities may become increasingly isolated and have difficulty accessing essential services, and this may especially impact Māori. In urban areas, the impacts of climate change on multimodal networks can be complex, widespread and cascade across the land transport system. Interregional connections will also be disrupted.

Congestion and capacity constraints, especially in large and growing cities

New Zealand's road network is a vital part of the country's infrastructure, with significant portions now facing congestion and capacity constraints. This is particularly evident in Auckland, where congestion costs are estimated to range between $1.3 billion and $2.6 billion annually.[29]

The demand for transport in New Zealand has grown rapidly, meaning that in some places the demand exceeds the ability of the transport system to cater for it. This has resulted in frequent congestion across parts of the road and public transport networks, particularly on motorways in Auckland, Tauranga, Wellington, Queenstown and Christchurch. Previously confined to 'rush hour' periods, congestion has steadily lengthened and worsened over time.[30] Congestion on the local road network is a growing concern, especially in urban areas. Rail network capacity restraints currently affect both public transport services in Auckland and Wellington, and freight movements across the country. Population growth, dispersed land use patterns, and increasing vehicle ownership will continue to contribute to this issue into the future.

Looking ahead, a growing population in the largest urban areas means more people who need to get to work, education, business and entertainment. New Zealand's population is projected to reach over 6 million by the early 2030s, with much of this growth concentrated in urban areas.[31] This, combined with dispersed land use and rising vehicle ownership – currently at nearly 0.9 vehicles per person – will further strain transport corridors and worsen congestion.[32] Without significant investment, it is likely congestion will worsen, network productivity will fall, and emissions will rise. Future challenges include adapting for electric and autonomous vehicles, building resilience to climate impacts and reducing emissions through urban planning, mode shift and fleet carbonisation.

Reducing the level of harm to people and the environment

New Zealand's land transport system faces significant safety and environment challenges. In 2024, there were 292 road fatalities, placing New Zealand 7th highest in road deaths per capita among 35 OECD countries.[33] Contributing factors include adverse weather, unsafe driving behaviour, and poor road conditions. Rural road fatalities are disproportionately high, accounting for 60 percent of all road deaths, despite rural roads making up only 40 percent of the network.[34]

Air pollution from fossil fuels and particulate matter continues to impact public health, contributing to an estimated 2247 deaths in 2016.[35] While low-emission vehicles are essential for reducing transport-related emissions, they are not a complete solution. A broader systems approach – encompassing clean energy, sustainable manufacturing, and urban planning – is needed to fully address environmental harm.[36]

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[29] NZTA (2013). *The costs of congestion reappraised*. https://www.nzta.govt.nz/assets/resources/research/reports/489/docs/489.pdf
[30] NZTA (2024). *Significant land transport challenges facing New Zealand*. https://www.nzta.govt.nz/assets/planning-and-investment/nltp/2024/docs/significant-challenges-nltp-2024-27.pdf
[31] NZTA (n.d.). *Significant land transport challenges facing New Zealand*. https://www.nzta.govt.nz/assets/planning-and-investment/nltp/2024/docs/significant-challenges-nltp-2024-27.pdf
[32] NZTA (n.d.). *Significant land transport challenges facing New Zealand*. https://www.nzta.govt.nz/assets/planning-and-investment/nltp/2024/docs/significant-challenges-nltp-2024-27.pdf
[33] International Transport Forum (2024). Road safety country profile – New Zealand 2023. https://www.itf-oecd.org/sites/default/files/new-zealand-road-safety.pdf
[34] Stats NZ (n.d.). Transport. https://www.stats.govt.nz/topics/transport
[35] Emission: Impossible Ltd and the HAPINZ 3.0 team (2022) Key findings from HAPINZ. https://ehinz.ac.nz/projects/hapinz3/key-findings-from-hapinz/
[36] Auckland Council (2022). *Transport emissions reduction pathway*. https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/Documents/transport-emissions-reduction-pathway.pdf

The impact on the environment, including climate, on and from the transport network and its use is another pressing issue. The extensive road system crosses many sensitive ecosystems, habitats, and waterways, leading to habitat fragmentation, noise pollution, artificial light, and stormwater discharges.

Looking ahead, climate change is expected to intensify these impacts because of more frequent extreme weather events, increased infrastructure stress, and greater disruption to both human and natural systems. Future challenges will also include managing the environmental footprint of new transport technologies and ensuring that safety improvements keep pace with population growth and the needs of changing demographics (such as people with children), travel patterns (increased travel by older people) and vehicle types, while also taking advantage of new technologies (for example cooperative intelligent transport systems and alternatives to bitumen) to improve safety and environmental outcomes.

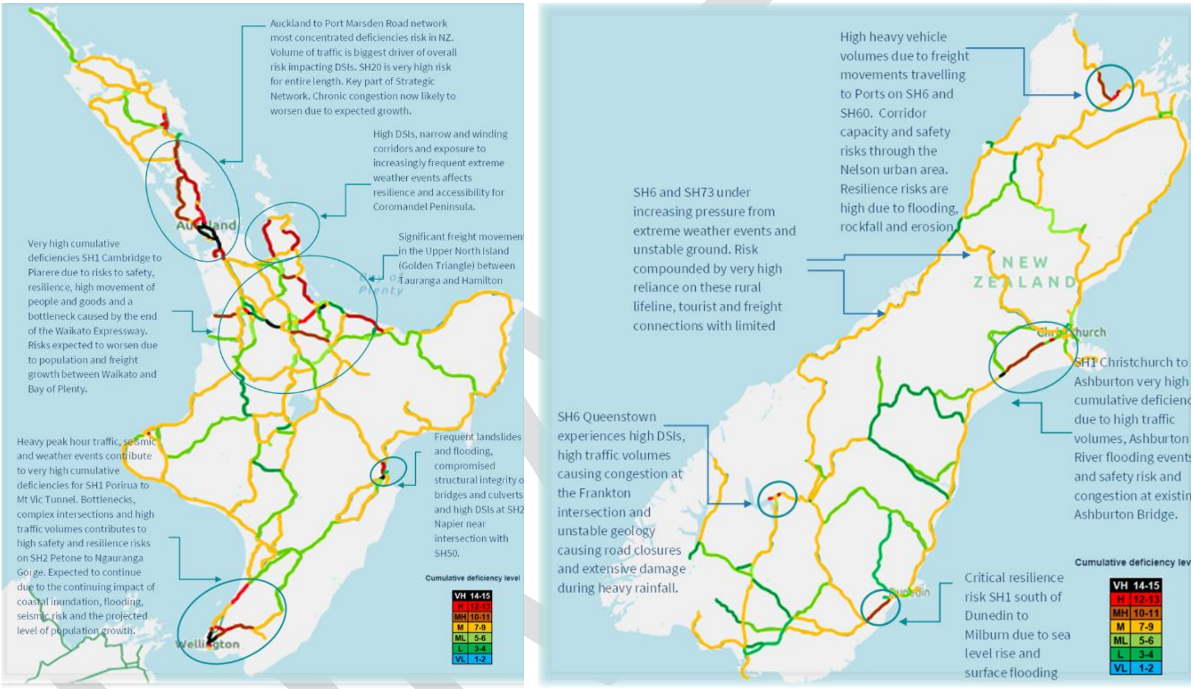

Figure 1: Combined (resilience, reliability and safety) deficiencies across the state highway network (source: NZTA data[37])

Regional context of the state highway network

The Nelson Tasman region's transport network plays an important role in the South Island. The South Island is vital to New Zealand's social and economic success. It's home to nearly a quarter New Zealand's population and generates more than 22 percent of the national GDP. About 22 percent of the country's population growth over the next 20 years is expected in the South Island.

[37] Analysis of NZTA National Resilience Assessment Tool (NRAT), NZTA average annual daily traffic and NZTA combined risk using DSI data from 2019 to 2023.

Figure 2: Current strategic network in the South Island (source: Arataki)

The Nelson Tasman transport network connects to:

- east: SH6 to Marlborough
- south: SH63 and SH7 to Canterbury and Christchurch
- west: SH6 to West Coast.

These connections provide critical links to the rest of New Zealand, urban areas, freight hubs, ports, employment areas and tourist hotspots.

This section discusses the key current and future challenges of this region's transport network, using evidence and insights from NZTA's *Arataki* and regional planning documents.

As the population grows, the pressure on transport networks to move both freight and people will increase, especially in urban areas. A large number of trips are currently made in single-occupancy vehicles and if this trend continues, key areas of the urban network will struggle to maintain current service levels. This will lead to more congestion, less reliable travel times, greater community division, and reduced safety for pedestrians and cyclists. Additionally, it will hinder the timely movement of road freight, which is set to increase.[38]

The Nelson Tasman RLTP identifies the following key transport issues in the next 10 years:

- vehicle usage growth and its effects on access
- safety on our roads
- our communities are susceptible to losing access in more frequent weather events
- maintenance has been underfunded in the past and road condition is getting worse
- vehicle usage is affecting our natural environment.[39]

Improving road safety

Nelson and Tasman have a relatively poor road safety record with issues including:

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[38] Tasman District Council and Nelson City Council (2024). Nelson Tasman Regional Land Transport Plan 2024–2034. https://www.tasman.govt.nz/my-council/key-documents/more/transport/nelson-tasman-regional-land-transport-plan

[39] Tasman District Council and Nelson City Council (2024). Nelson Tasman Regional Land Transport Plan 2024–2034. https://www.tasman.govt.nz/my-council/key-documents/more/transport/nelson-tasman-regional-land-transport-plan

- high-risk intersections such as Māpua Drive along State Highway 6
- run-off road crashes
- vulnerable users, such as harm to people cycling or walking
- high-risk urban and rural roads
- speeding.[40]

Without a focus on safety in the urban areas and on high-risk rural roads, poor road safety will continue.

Improving transport accessibility for all communities

The region's transport system struggles to provide people of all ages, abilities, and income levels with safe, sustainable, and reliable access to a wide variety of social and economic opportunities. A high reliance on private vehicles outside of the urban area of Nelson creates a number of access challenges, including:

- creating difficulties for those without easy access to, and use of, a private vehicle to fully participate in society
- placing significant pressure on household budgets to meet the high costs of car ownership and use
- limiting people's ability to travel in a way that best meets their needs because of poor travel choice.

Rural communities need access to key centres, such as Motueka and Nelson, for education, employment, and essential services so maintaining levels of service for these key rural to urban connections is important. Severance is an issue with state highways travelling through town centres such as SH60 through Motueka.

When Takaka Hill Road is closed, Golden Bay loses its only road access. This has occurred periodically, including over a recent four-year period with one-way stop-go traffic. Fonterra faces challenges with distribution of products from its factory in Takaka. The Takaka airport has seen increased traffic use during road closures/restrictions.

Like many regions in New Zealand, as the population of Nelson and Tasman ages, travel needs will change; there will be a greater need to access health services, and less need to access education and employment. An ageing population means a wider range of accessible options are required, including room for mobility scooters and a wider range of walking and cycling facilities. This need ca be supported by land-use planning that enables more people to live close to amenities.

With minimal intervention, transport accessibility will not improve and the high reliance on private vehicles will continue.

Improving transport resilience

Severe weather in Nelson and Tasman in recent years has resulted in long lasting infrastructure damage, placing the roading network under considerable strain. This has resulted in continued challenges as the region's economy needs a resilient roading network to support the productivity of its primary industries.

The impacts of climate change will place even greater pressure on the region's ability to maintain networks and fund new infrastructure and services. The next 30 years will see a growing risk of damage to road and rail networks because of increased rain and storm intensity, coastal and soil erosion, sea-level rise, flooding, slips, and storm surges.[41]

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[40] NZTA (2022). Crash Analysis System. https://www.nzta.govt.nz/safety/partners/crash-analysis-system
[41] Ministry for the Environment (n.d.). Climate projections map. Climate Data Initiative. https://map.climatedata.environment.govt.nz/

Tasman, along with Canterbury and Otago, has the highest estimated value of roading infrastructure exposed to the risk of sea level rise.[42] Frequent rockfall on the State Highway 6 stretch between Murchison and Kawatiri (SH63 intersection) are considered a high resilience priority for the Tasman region.[43] Seismic risk associated with the Alpine Fault is also significant across the top of the South Island.

The bridge over the Motueka River remains functional and is structurally sound. However, it is narrow, requiring trucks to stop and wait to cross. Sea level rise poses a threat to land east of State Highway 60, while land to the west is not affected. Central Takaka is low-lying and was severely affected by recent weather events. State Highway 60 between Takaka Hill Road and Takaka township includes fibre infrastructure, which was damaged during the storms.

With minimal intervention, the Nelson Tasman regions' road and rail networks will remain under pressure from the effects of climate change, and their reliability will be compromised. It is worth noting that some interventions to improve resilience may not be driven by transport. For example, there are local planning processes underway to address resilience risks, and adaptation planning for areas such as Motueka and Nelson City.

Funding new, and maintaining existing infrastructure

While the population of the Nelson Tasman region is projected to grow during the next 30 years, an ageing population and increasing number of residents on fixed incomes may make it harder to:

- maintain existing infrastructure
- fund new infrastructure
- provide appropriate services.

State highway hotspots

The following transport network issues are from the perspective of NZTA as the state highway manager.

The following data sets have been overlaid to identify 'hotspots' on the state highway network:

- **Reliability**: Measured by average annual daily traffic (AADT), which calculates the total number of vehicles, including heavy vehicles, passing through traffic count sites. High to medium reliability issues are identified when highways frequently operate at or near their capacity of 20,000 vehicles per day.
- **Resilience**: Assessed by examining the risk of disruptions across the state highway network over the past 12 years.
- **Safety**: Derived from the NZTA Collective Risk Map, which uses historical crash data from 2019 to 2023 to identify areas with higher accident risks.

[42] NIWA (2015). National and regional risk exposure in low-lying coastal areas. https://ref.coastalrestorationtrust.org.nz/documents/national-and-regional-risk-exposure-in-low-lying-coastal-areas-areal-extent-population-buildings-and-infrastructure/

[43] Tasman District Council and Nelson City Council (2024). Nelson Tasman Regional Land Transport Plan 2024–2034. https://www.tasman.govt.nz/my-council/key-documents/more/transport/nelson-tasman-regional-land-transport-plan

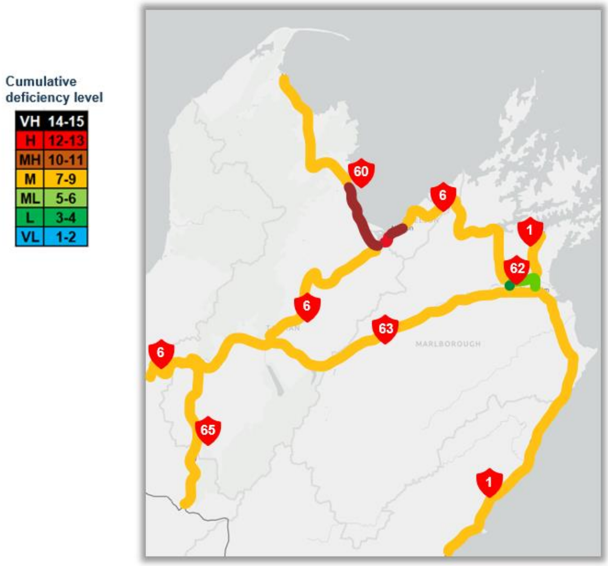

Figure 3: Combined deficiencies across the state highway network across Nelson Tasman and Marlborough regions (source: NZTA data[44])

High and medium-high combined deficiencies

The Nelson Tasman region currently has 2 key transport corridors with road sections that have cumulative deficiency ratings of medium-high or high. These are on sections of SH6 and SH60.

- **SH6** between Nelson and Richmond and heading north-west towards Appleby on SH60. There are sections with high and medium-high risk ratings. This is because of high AADT and high heavy vehicle numbers. The risk ratings reflect that this corridor is a key route for locals and tourists, connecting destinations such as Nelson, Blenheim and Abel Tasman National Park. SH6 is crucial for freight movement, especially between the port of Nelson and other parts of the region.

- **SH60** plays a vital role in supporting both freight and tourism. Stretching from its intersection with SH6 near Hope/Richmond to Riwaka, this section is rated as having a medium-high combined deficiency. This rating is largely as a result of the high volume of heavy vehicles, particularly those travelling to and from Port Motueka, and its critical or high resilience ratings. On average, over 1200 heavy vehicles use this route daily, contributing significantly to the overall traffic volume.[45] The highway is susceptible to various hydrological and geological risks, such as flooding, rockfalls, and erosion. Additionally, it's still in the recovery phase from the significant damage caused by the weather events of 2022.

Proposed initiatives

The major proposed intervention for the Nelson region is the SH6 Hope Bypass, a new Road of National Significance. The bypass would benefit the Hope and Richmond areas of Nelson by reducing congestion, boosting economic growth, improving safety and providing a more resilient roading network.

Other initiatives for the region focus on improving resilience on key locations on SH60 north of Motueka and on SH6 south-west of Hope.

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[44] Analysis of NZTA National Resilience Assessment Tool (NRAT), NZTA Average Annual Daily Traffic and NZTA Cumulative Risk using DSI data from 2019 to 2023.

[45] NZTA**.** State highway traffic volumes (Annual Average Daily Traffic – AADT) [Dataset]. NZTA Open Data Portal. https://opendata-nzta.opendata.arcgis.com/datasets/b90f8908910f44a493c6501c3565ed2d_0

Further investigation may be required to understand the future resilience pressures on the remaining corridors and whether MOR activities will be sufficient to maintain the required level of network performance over the next 30 years, particularly because of the lack of suitable detour routes for many corridors in this region. SH6 from Blenheim to Nelson is a regionally strategic section of the network but no intervention has been identified in the state highway investment plan. Normal maintenance, operations and renewals (MOR) activities will continue across the region's network.

Focusing effort

Note: this section has a high-level strategic focus; we'll develop more specificity in future iterations of the evidence pack.

Based on the preceding sections and consideration of regional investment priorities identified in regional plans (e.g. RLTP, RPTP, FDS), the following lists are examples of investment focus.

Longer-term investment focus

Effectively delivering on transport outcomes requires long-term planning and investment, examples include:

Resilience and security

- Investigating options for critical transport corridors away from high-risk areas in the face of natural hazards (where possible) such as relocation and extension of routes – this includes working with communities to identify plans for when to defend, accommodate, or retreat.
- Investigating the diversification of transportation networks by developing alternative modes.
- Develop response plans for an Alpine Fault magnitude 8 event (AF8) impacting the regional transport system
- Develop a plan for maintaining, operating, and replacing end-of-life infrastructure

Economic prosperity

- Align transport investments with urban development plans – supporting, enabling, and encouraging growth and development in areas that have good travel choices and shorter trip lengths
- Progress the longer-term priorities identified in the Nelson Future Access Project such as investigating and planning for the need for new arterial routes and developing a multi-modal transport system.
- Improving travel in and around key destinations with complex transport interconnections, especially interregional connections, town centres and key freight and industrial hubs.

Healthy and safe people

- Continue to invest in safety infrastructure, education, enforcement, and incentives that significantly reduce harm caused by the region's transport system.
- Focus improvement on local corridors that have safety deficiencies across multiple modes.

Environmental Sustainability

- Continue to reduce the environmental impact of the maintenance, operations and improvement across the transport network including waste minimisation and resource efficiency.
- Deliver interventions, activities, and investments needed to achieve emissions reduction across the region.

Inclusive access

- Working with iwi/hapū partners to improve or maintain, as appropriate, physical access to marae, papakāinga, wāhi tapu, and wāhi taonga.
- Continue to improve the design and provision of transport infrastructure and services to meet the needs of people of all ages and abilities, focusing on groups with unmet needs.
- Progressive implementation of connected walking and cycling networks in urban areas – this includes the completion of cycling networks in Nelson/Richmond and improved active-mode facilities in smaller towns.

- Progressive implementation of an integrated bus network with service improvements across the region

Short-term investment focus

Projects in the shorter term typically will involve low-cost, low-risk, high-effectiveness improvements and projects that 'set the scene' to incrementally enable (or transition to) longer-term outcomes.

Steps to make progress towards transport outcomes in a more efficient and cost-effective way include:

- renewing the focus on programmes' small-scale projects
- getting more from existing infrastructure, by making the most of existing networks, services, and demand management
- reallocating existing road space, particularly for public transport and active modes
- seeking continuous improvement in network resilience through targeted maintenance, renewals, and low-cost, low-risk investments, with a focus on mitigating the impacts of more severe weather events
- influencing travel behaviour and growth patterns.

Examples of investment focus include:

Resilience and security

- Develop an understanding of routes such as the SH6, SH63 and SH65 corridors, which provide critical connections, including their conditions, pressures, and the level of investment needed to address impacts.
- Investigate whether maintenance, operations, and renewals (MOR) will be sufficient to maintain the required level of performance over the next 30 years.
- Identify transport assets and infrastructure at risk of natural hazards and impacts of climate change, identifying priorities for network resilience and options for alternate routes less likely to be disrupted.

Economic prosperity

- Progress the short-term priorities identified in the Nelson Future Access Project.
- Influence growth through the Nelson Tasman Future Development Strategy to make sure future greenfield development is integrated with public transport and active mode networks.
- Maintain and improve the resilience and efficiency of road network to surrounding regions and Port Nelson.

Healthy and safe people

- Continue safety improvements that target high-risk intersections, run-off road crashes, high-volume roads, and head-on crashes on high-risk rural roads, this includes a critical focus on SH6 between Blenheim and Nelson and the intersection of SH60 and Mapua Road.
- Address safety challenges in non-protected areas of existing cycling and walking networks.
- Improve access to sites of cultural significance with high safety risk.

Environmental sustainability

- Plan what interventions, activities, and investments are needed to achieve emissions reduction, focusing on the Nelson/Richmond urban area.
- Reduce the environmental impact of the maintenance, operations and improvement across the transport network by supporting and enabling low-emission, low-carbon and low-impact policies, practices, and standards.

Inclusive access

- Improve travel choice and access to opportunity for areas of low access and low income.
- Improve public transport service quality and reliability by increasing frequency and coverage in Nelson.
- Improve access to opportunities for iwi Māori, focusing on enabling papakāinga development and commercial interests.

Potential interventions

As part of the PIE programme, NZTA is developing the Intervention Catalogue (IC) tool, which compiles a wide range of empirical data relating to the implementation of transport projects and how effective they have been in achieving the intended outcomes. We'll continue to add to this over time, using data from benefit realisation associated with the investment logic mapping (ILM) process.

An AI interface for supporting queries and providing relevant evidence is currently being investigated.

An example of how exploratory use of this tool might be used to match potential interventions to deficiencies to understand and compare the likely relative effectiveness is included in Appendix B.

The process seeks to avoid potential pitfalls that might occur during option formulation:

- an over-reliance on preconceived ideas
- a focus on the more obvious supply-side measures, such as infrastructure and management rather than demand-side measures such as regulation and pricing
- a general lack of awareness of the wider range of policy measures available
- lack of evidence of the performance of those measures in other contexts
- lack of a formalised or consistent approach for option generation.

The example tables included in Appendix B take the focus areas and related transport issues from the previous section of this report and maps them to some relevant interventions from the KonSULT knowledgebase.

Insights

Using IC is only intended to inform the option formulation process. It does not replace the need for judgement but rather provides a set of empirical evidence that supports decisions (along with additional information sources).

The tables in Appendix B indicate the following:

- Most interventions related to addressing the identified deficiencies are likely to be cost effective.

- Most interventions have mostly a positive (or neutral) effect across all outcomes, much more so than negative.
- Some of the most effective interventions for Nelson Tasman indicated by IC include:
  - new infrastructure (safe systems)
  - new infrastructure and maintenance (resilience)
  - new services (PT)
  - walking and cycling network improvements
  - road space reallocation
  - spatial and place-based planning.

Short-list of most effective interventions

It is intended that the information and tools provided above will assist consideration and development of projects to be included in the next RLTP and NLTP.

It provides a starting point for us to understand regional issues and investment opportunities, which can then be expanded upon through further engagement between approved organisations and NZTA to increase the likelihood of suitable projects being submitted for funding via the NLTP.

Appendix A: Data sources for the strategic measures

This appendix references all relevant data sources and assumptions for the 14 strategic measures reported within each regional chapter.

Because this is the first attempt at providing the evidence pack, and the development of the associated tools and processes under the Planning and Investment Evidence base (PIE) programme is still ongoing, we do not yet have the full capability to report outputs for all measures, particularly for future years. In these instances, we have noted that the data is 'not available' by using the 'N/A' abbreviation as a placeholder until such time this can be addressed by a subsequent version of the evidence pack.

Similarly, the process has identified the need for better understanding and reporting of data quality ratings, version control and internal consistency (that is, a single source of truth). These are all things we intend to improve in subsequent releases.

Bearing the above in mind, we have adopted the following general convention for this version in how we report numbers:

- For large numbers, only report 3–4 significant figures (and using rounding units of thousands or millions).
- For small numbers (including percentages), report to one decimal place by default, but make exceptions where appropriate (for example where more or less detail is required to make meaningful comparisons).

The focus is on convenience and the useability of the data. As such, it doesn't necessarily imply a particular level of accuracy (especially for future year forecasts, which have a great deal of uncertainty associated with them).

Each section below (grouped by outcome) provides data for all regions to allow comparison in terms of how each region contributes to the national total. It also provides any important caveats and limitations associated with each of the measures for that outcome.

Healthy and safe people

To understand the current and future safety risk both at the regional and national level, we calculated deaths and series injuries, personal risk and collective risk as shown in the following table. More details can be found in the Land Transport Benefits Framework.

Benefit framework measure	Units
1.1.1 Collective risk (crash density)	Average annual fatal and serious per kilometre of road section
1.1.3 Deaths and serious injuries (DSIs)	Number of DSIs (annual)
1.1.4 Personal risk (crash rate)	Average annual DSI per 100 million vehicle kilometres

Notes, caveats and data limitations:

- Data for the number of deaths and series injuries (DSIs) is sourced from the Crash Analysis System (CAS) database managed by NZTA.
- Regional VKTs and network length in kilometres is sourced from the NZTA official data published for financial year 2023/24.[46]
- Generally, DSI measures are calculated as multi-year rolling average. However, because of time and resource constraints the following data is for the financial year 2023/24 only.

[46] https://www.nzta.govt.nz/planning-and-investment/learning-and-resources/transport-data/data-and-tools/

- Future year growth factor is based on regional VKT change. This method to calculate this change is discussed in more detail for the 'E.4 Environmental sustainability' section later in this appendix.
- It is assumed that crash rates remain constant over time. This is consistent with safety expert advice that application of crash trend adjustment factors for long term future predictions may no longer be supported by evidence.
- Future year DSIs were estimated based on the regional change on VKT (all vehicles) between 2023 and 2048 adopted for the GHG emissions measure (8.1.1). This assumes the crash rate (per VKT) remains constant (that is, no crash trend reduction factors applied).

Region	Current 2023/24			Future 2048		
	DSIs #	Per km	Per 100 million VKT	DSIs #	Per km	Per 100 million VKT
01 – Northland	181	0.027	7.783	176	0.026	7.554
02 – Auckland	593	0.073	4.267	924	0.114	6.651
03 – Waikato	416	0.035	6.372	501	0.042	7.678
04 – Bay of Plenty	184	0.038	5.321	210	0.044	6.059
05 – Gisborne	33	0.015	7.779	37	0.016	8.737
06 – Hawke's Bay	125	0.027	7.005	145	0.031	8.135
07 – Taranaki	82	0.021	6.293	97	0.024	7.429
08 – Manawatū-Whanganui	234	0.026	7.718	231	0.026	7.619
09 – Wellington	171	0.039	4.671	230	0.052	6.289
10a Marlborough	26	NA	3.843	30	NA	3.843
10b Nelson Tasman	91	NA	8.687	125	NA	8.687
11 – Canterbury	346	0.021	5.007	480	0.030	6.942
12 – West Coast	43	0.014	7.548	43	0.014	7.545
13 – Otago	137	0.013	4.799	142	0.013	4.968
14 – Southland	51	0.007	3.877	53	0.007	4.024
15 – Chatham Islands	0	0.000	0.000	0	0.000	0
National	**2713**	**0.025**	**5.451**	**3419**	**0.035**	**5.055**

Infrastructure risk rating (safety)

We calculate strategic measure 1.2.1 Road assessment rating to understand the current situation of infrastructure risk both at regional and national level. This measure can be used for any safety-related investment benefits, particularly those that target road infrastructure to improve safety. It is a comprehensive measure that considers land use, road type, alignment, average annual daily traffic (AADT), intersection density, land and shoulder width, roadside hazards and access density. More details can be found in the Land Transport Benefits Framework.

Benefit framework measure	Units
1.2.1 Road assessment rating – roads	Average infrastructure risk rating

Notes, caveats and data limitations:

- Data to calculate the regional infrastructure risk rating (IRR) measure in the following table is sourced from Megamaps, which is a geospatial platform managed by NZTA.[47]
- IRR data used to calculate regional and national measure values in the following table was calculated in Megamaps in 2024. The raw data used is for the period 2019–23.
- The data in Megamaps is for each road segment, intersection or corridor. We have aggregated it to calculate regional percentages under each risk band.

Region	High	Medium-high	Medium	Low-medium	Low
01 – Northland	45.77%	26.44%	18.74%	8.34%	0.71%
02 – Auckland	14.92%	17.54%	48.12%	13.18%	6.24%
03 – Waikato	21.40%	25.42%	34.39%	15.15%	3.64%
04 – Bay of Plenty	17.10%	20.74%	37.82%	19.35%	4.99%
05 – Gisborne	50.43%	19.93%	21.93%	7.50%	0.21%
06 – Hawke's Bay	33.47%	25.30%	29.79%	9.16%	2.28%
07 – Taranaki	28.83%	24.08%	33.13%	13.13%	0.83%
08 – Manawatū-Whanganui	41.81%	19.13%	25.67%	12.43%	0.96%
09 – Wellington	17.98%	19.51%	41.67%	13.62%	7.22%
10a Marlborough	40.79%	19.50%	25.07%	13.23%	1.41%
10b Nelson Tasman	28.46%	27.02%	30.26%	12.74%	1.51%
11 – Canterbury	10.87%	29.16%	42.29%	16.36%	1.32%
12 – West Coast	17.75%	29.97%	38.04%	13.61%	0.63%
13 – Otago	21.83%	37.95%	26.55%	12.63%	1.04%
14 – Southland	6.99%	41.27%	37.99%	13.34%	0.42%
National%	**23.21%**	**2.29%**	**13.50%**	**34.25%**	**26.75%**

47 https://spatial.nzta.govt.nz/apps/megamaps/

Resilience and security

This transport outcome is about minimising and managing the risks from natural and human-made hazards, anticipating and adapting to emerging threats, and recovering effectively from disruptive events. We intended to use strategic measure 4.1.1 and 4.1.2 from the Land Transport Benefits Framework to understand the resilience and security situation at national and regional level. However, we don't currently have data to calculate measure 4.1.1, so this time around we have only calculated measure 4.1.2. The intent of the measure 4.1.2 is to allow for description and measurement of the risk to level of service by unplanned disruption (including earthquakes, storms, volcanos and tsunamis). This measure is generally used for any investment that focuses on maintaining or increasing the resilience of the transport network.

Benefit framework measure	Units
4.1.1 Availability of a viable alternative to high-risk and high-impact route	Percentage of high-risk, high-impact route with a viable alternative
4.1.2 Level of service and risk	Number of identified sites in region by combined risk rating (future, geological and hydrological)

Notes, caveats and data limitations:

- The data for the following measure is sourced from the National Resilience Assessment Tool (NRAT) managed by NZTA.[48]
- The following table shows the regional number of resilience risks on state highways under each risk band. This includes hydrological, geological and future risks.
- 'No rating' is for considered risk sites that have not yet been rated.
- There is no easy way to currently calculate future projections for this measure, but we are working on the capability to do so.

Regions	Critical	High	Moderate	Low	No rating
01 – Northland	29	84	276	171	169
02 – Auckland	5	13	29	41	1
03 – Waikato	20	175	212	174	149
04 – Bay of Plenty	16	64	153	121	67
05 – Gisborne	1	7	35	49	74
06 – Hawke's Bay	18	123	72	30	143
07 – Taranaki	0	11	9	0	98
08 – Manawatū-Whanganui	1	11	9	8	8
09 – Wellington	39	37	25	118	1
10a Marlborough	5	8	8	17	39
10b Nelson Tasman	4	43	51	160	52
11 – Canterbury	32	88	57	195	46
12 – West Coast	34	49	21	34	37
13 – Otago	26	84	86	247	172
14 – Southland	27	23	18	28	14
National	**257**	**820**	**1061**	**1393**	**1070**

48 https://national-resilience-assessment-tool-nzta.hub.arcgis.com/

Economic prosperity

This transport outcome is about supporting economic activity via local, regional, and international connections, with efficient movements of people and products. We calculated the following strategic measures from the Land Transport Benefits Framework to measure the economic prosperity outcomes at both regional and national level.

Benefit framework measure	Units
5.1.2 Travel time reliability – motor vehicles (note for this evidence pack, the data only relates to state highway traffic monitoring system (TMS) sites)	Calculated using coefficient of variation (CoV); standard deviation of travel time divided by average minutes travel time Rate: Low <0.3, Medium 0.3–0.6, High >0.6)
5.1.3 Travel time delay	Difference between average travel time during AM peak and average travel time during the Inter Peak in minutes per kilometre (by mode) as a percentage
5.2.2 Freight – mode share value	Percentage of value for each mode
5.2.3 Freight – mode share weight	Percentage of weight for each mode

Notes, caveats and limitations:

- Data for travel time reliability and delay measures is sourced from the National Network Performance (NNP) platform managed by NZTA.
- The sources used to calculate following measures is limited to the TMS sites only – that is, for state highways. In future, as more data is available in NNP for local roads, we intend to calculate using extensive local and state highway roads. Additionally, NNP will be able to assess both travel time delay and travel time reliability.
- The data for 5.1.2 Travel time reliability and 5.1.3 Travel time delay is for a typical day.
- Where we have gained access to regional model origin–destination data (for Auckland, Waikato, Wellington and Christchurch), we have used this to estimate current and future values of travel time for all available modes.
- Measure 5.2.2 Freight – mode share value has been selected as one of the 14 strategic measures but currently, there is insufficient data to reliably calculate this. Therefore, the data table for this measure remains unpopulated as a placeholder.
- Measure 5.2.3 Freight – mode share weight would ideally include coastal shipping but currently only includes road and rail modes.
- Future road freight is based on the same data used to forecast heavy commercial vehicle (HCV) VKT (also used for other measures) combined with average cargo weight from weigh-in-motion (WiM) sites (collected for the North Island only but also applied to the South Island due to lack of data from the South Island). This data covers seven years and shows a trend of average load sizes decreasing over time. This trend line was used to estimate the 2048 average cargo weight (4615kg). Compared to the 2024 value (4822kg), this implies the average load size is projected to decrease by 7%. In contrast, national HCV VKT is projected to increase by 39% (2024 to 2048).
- The last seven years of rail freight net tonne-kilometres (NTK) by line segment has been provided by KiwiRail. This indicates that the amount of freight is reasonably steady over this period (with a small decline over the last few years). Based on the overall trend, we have assumed future year (2048) NTK will remain the same as current day (2024)
- A discrepancy in the rail data has been noted, where a 27km section of the network is missing from the calculations. This is possibly the section between Palmerston North and Woodville, which has been noted for further follow up.

5.1.2 Travel time reliability – motor vehicles

Region	Daily (CoV)			Peak time (CoV)		
	Low	Medium	High	Low	Medium	High
01 – Northland	96.43%	3.57%	0.00%	88.24%	0.00%	11.76%
02 – Auckland	96.67%	2.50%	0.83%	78.57%	9.18%	12.24%
03 – Waikato	94.59%	1.35%	4.05%	95.00%	0.00%	5.00%
04 – Bay of Plenty	100.00%	0.00%	0.00%	80.56%	19.44%	0.00%
05 – Gisborne	96.30%	3.70%	0.00%	100.00%	0.00%	0.00%
06 – Hawke's Bay	98.95%	1.05%	0.00%	65.38%	34.62%	0.00%
07 – Taranaki	94.74%	5.26%	0.00%	69.44%	16.67%	13.89%
08 – Manawatū-Whanganui	92.11%	7.89%	0.00%	82.56%	8.14%	9.30%
09 – Wellington	92.37%	6.78%	0.85%	67.90%	30.86%	1.23%
10a - Marlborough	100.00%	0.00%	0.00%	86.49%	10.81%	2.70%
10b – Nelson Tasman	100.00%	0.00%	0.00%	86.49%	10.81%	2.70%
11 – Canterbury	94.39%	3.96%	1.65%	73.98%	16.84%	9.18%
12 – West Coast	96.30%	1.23%	2.47%	98.08%	0.00%	1.92%
13 – Otago	92.59%	6.79%	0.62%	75.56%	17.78%	6.67%
14 – Southland	93.27%	5.77%	0.96%	71.43%	21.43%	7.14%
National	**95.30%**	**3.84%**	**0.86%**	**77.34%**	**15.54%**	**7.12%**

5.1.3 Travel time delay

Region	Peak (mins/km)	Inter-peak (mins/km)	Difference (mins/km)	%Change
01 – Northland	0.78	0.85	0.7	8.40%
02 – Auckland	0.77	0.86	0.8	10.23%
03 – Waikato	0.79	0.87	0.8	9.17%
04 – Bay of Plenty	0.69	0.76	0.6	8.18%
05 – Gisborne	0.75	0.77	0.2	3.30%
06 – Hawke's Bay	0.79	0.87	0.7	9.15%
07 – Taranaki	0.80	0.88	0.7	8.46%
08 – Manawatū-Whanganui	0.73	0.78	0.4	5.72%
09 – Wellington	0.83	1.00	0.2	16.94%
10a – Marlborough	0.82	0.84	0.1	1.98%
10b – Nelson Tasman	0.82	0.84	0.1	1.98%
11 – Canterbury	0.75	0.77	0.2	3.46%
12 – West Coast	0.74	0.77	0.2	3.13%
13 – Otago	0.74	0.78	0.3	4.69%
14 – Southland	0.73	0.76	0.2	3.23%
National	**0.76**	**0.83**	**0.6**	**8.17%**

5.2.3 Freight – mode share weight – base year 2024

Region	Road (m NKT/yr)	Rail (m NKT/yr)	Total (m NKT/yr)	Road (%)	Rail (%)
01 – Northland	933	17	950	98%	2%
02 – Auckland	2,968	132	3,100	96%	4%
03 – Waikato	5,128	751	5,878	87%	13%
04 – Bay of Plenty	2,257	534	2,791	81%	19%
05 – Gisborne	308	0	308	100%	0%
06 – Hawke's Bay	1,145	31	1,145	97%	3%
07 – Taranaki	616	59	675	91%	9%
08 – Manawatū-Whanganui	1,864	646	2,510	74%	26%
09 – Wellington	1,027	102	1,128	91%	9%
10a – Marlborough	603	60	662	91%	9%
10b – Nelson Tasman	609	0	609	100%	0%
11 – Canterbury	4,135	563	4,697	88%	12%
12 – West Coast	418	313	731	57%	43%
13 – Otago	1,427	220	1,647	87%	13%
14 – Southland	794	73	867	92%	8%
15 – Chatham Islands	0	0	0	100%	0%
Grand total	**24,238**	**3,500**	**27,738**	**87%**	**13%**

5.2.3 Freight – mode share weight – future year 2048

Region	Road (m NKT/yr)	Rail (m NKT/yr)	Total (m NKT/yr)	Road (%)	Rail (%)
01 – Northland	978	17	955	98%	2%
02 – Auckland	4,137	132	4,269	97%	3%
03 – Waikato	6,676	751	7,427	90%	10%
04 – Bay of Plenty	2,942	534	3,476	85%	15%
05 – Gisborne	285	0	285	100%	0%
06 – Hawke's Bay	1,330	31	1,361	98%	2%
07 – Taranaki	744	59	803	93%	7%
08 – Manawatū-Whanganui	2,341	646	2,987	78%	22%
09 – Wellington	1,047	102	1,149	91%	9%
10a – Marlborough	838	60	898	93%	7%
10b – Nelson Tasman	846	0	846	100%	0%
11 – Canterbury	5,155	563	5,717	90%	10%
12 – West Coast	464	313	777	60%	40%
13 – Otago	1,701	220	1,921	89%	11%
14 – Southland	922	73	995	93%	7%
15 – Chatham Islands	0	0	0	100%	0%
Grand total	**30,419**	**3,500**	**33,919**	**90%**	**10%**

Environmental sustainability

This transport outcome is about transitioning to net zero carbon emissions, and maintaining or improving biodiversity, water quality and air quality. We calculated following strategic measures from the Land Transport Benefits Framework to the measure the economic prosperity outcomes at both regional and national level.

Benefit framework measure	Units
8.1.1 Greenhouse gas emissions (all vehicles)	Annual tonnes of CO_2 equivalents (CO_2-e) emitted
8.1.3 Light vehicle use impacts	Annual light vehicle kilometres travelled (light VKT)

Notes, caveats and limitations:

- Current year data for VKT is sourced from NZTA's open data portal.
- Future light national VKT projections have been sourced from the NZTA 2024 Light VKT projection models. These are based on Stats NZ population growth and forecasts for GDP and fuel prices (mid-range assumptions have been adopted for this evidence pack).
- Future regional light vehicle VKT distribution is based on research work done by Beca (VKT and GHG emissions baseline report – NZTA research note 008 September 2022). This assumes the base year light VKT per capita remains unchanged and uses population projection to estimate light VKT within each territorial local authority (TLA). The results are aggregated to spatial areas and adjusted to reconcile with the Ministry of Transport (MoT) observed and projected national totals. It uses base and projected light vehicle fleet GHG emissions factors from the Vehicle Fleet Emission Model (VFEM) to calculate GHG emissions for the baseline spatial areas. The report year 2035 (future) VKT values (by region) have been adjusted (scaled) to 2048 national light vehicle (LV) totals.
- Future year regional heavy vehicle VKT distribution has been calculated using growth factors comprising trend data, Stats NZ medium population forecast, and Ministry of Business, Innovation and Employment (MBIE) GDP forecast data. This is a placeholder calculation pending further work on HCV demand forecasting currently being developed (using this general approach) as part of the PIE programme.
- GHG emissions have been estimated by applying light and heavy VKT to Vehicle Emissions Prediction Model (VEPM) (v7.0) emission rates (for current and future years) using the default MoT Vehicle Fleet Model (VFM) assumptions within VEPM (for each year) and average vehicle speeds from NNP or regional transport models (Auckland, Waikato, Wellington and Christchurch).
- Estimates of VKT are key inputs to multiple measures (such as vehicle emissions (affecting both health and environmental measures), DSIs, freight etc. Care has been taken to ensure consistency at the national, regional and local levels.

8.1.1 Greenhouse gas emissions (all vehicles)

Region	Current 2024	Future 2048	Change	% Change	Contribution
01 – Northland	0.61	0.27	-0.35	-57%	4%
02 – Auckland	3.58	2.19	-1.38	-39%	26%
03 – Waikato	2.00	1.36	-0.64	-32%	14%
04 – Bay of Plenty	1.01	0.63	-0.38	-38%	7%
05 – Gisborne	0.13	0.07	-0.06	-48%	1%
06 – Hawke's Bay	0.52	0.30	-0.22	-42%	4%
07 – Taranaki	0.35	0.19	-0.16	-46%	3%
08 – Manawatū-Whanganui	0.87	0.49	-0.38	-44%	6%
09 – Wellington	0.93	0.45	-0.48	-52%	7%
10a – Marlborough 10b –Nelson Tasman	0.21 0.29	0.16 0.20	-0.05 -0.10	-26% -67%	2% 2%
11 – Canterbury	1.98	1.26	-0.71	-36%	14%
12 – West Coast	0.17	0.10	-0.08	-44%	1%
13 – Otago	0.78	0.40	-0.38	-48%	6%
14 – Southland	0.38	0.21	-0.17	-46%	3%
15 – Chatham Islands	0.002	0.001	-0.001	-39%	0.02%
National	**13.83**	**8.29**	**-5.54**	**-40%**	**100%**

8.1.3 Light vehicle use impacts

Region	Current 2024	Future 2048	Change	% Change	Contribution
01 – Northland	2172	2075	-97	-4%	5%
02 – Auckland	13137	20504	7367	56%	29%
03 – Waikato	5597	6514	918	16%	12%
04 – Bay of Plenty	3056	3349	293	10%	7%
05 – Gisborne	369	420	52	14%	1%
06 – Hawke's Bay	1581	1810	229	14%	3%
07 – Taranaki	1199	1397	198	17%	3%
08 – Manawatū-Whanganui	2702	2523	-179	-7%	6%
09 – Wellington	3488	4746	1258	36%	8%
10a – Marlborough 10b –Nelson Tasman	558 928	597 1,257	39 329	7% 71%	1% 2%
11 – Canterbury	6182	8583	2402	39%	14%
12 – West Coast	494	476	-18	-4%	1%
13 – Otago	2610	2624	14	1%	6%
14 – Southland	1175	1182	7	1%	3%
15 – Chatham Islands	5	4	-0.4	-7.9%	0%
National	**45250**	**58062**	**12812**	**28%**	**100%**

Inclusive access

This transport outcome is about enabling all people to participate in society through access to social and economic opportunities, such as work, education and health care. We calculated the 10.2.1 and 10.3.1 strategic measures from the Land Transport Benefits Framework to measure the inclusive access outcome both at the national and regional level.

Benefit framework measure	Units
10.2.1 People – mode share	Percentage by mode (Census (2023) journey to work and education)
10.3.1 Access to key social destinations (all modes)	Number of jobs (x1000) accessible by mode in AM peak (car 40 min, PT 45 min, cycle 45 min) and distance from city centre (km)

Notes, caveats and limitations:

- There is a limited information about measure 10.2.1 in the Land Transport Benefits Framework measures manual – that is, its intent, scope, forecasting methods etc are not defined yet.
- Mode share data, that is main means of travel to work and education, is sourced from census 2023 outputs produced by Stats NZ.[49]
- The data for all public transport (PT) modes (buses, trains and ferries) is aggregated together.
- Where we have gained access to regional model origin–destination data (for Auckland, Waikato, Wellington and Christchurch), we've used this to estimate current and future values of 10.2.1 People – mode share based on modelled relative changes applied to the base year census values.

10.2.1 People – mode share

Region	%Car	%PT	%Cycle	%Peds
01 – Northland	91.00%	1.33%	0.99%	6.67%
02 – Auckland	77.81%	11.29%	1.32%	9.58%
03 – Waikato	86.34%	2.69%	2.49%	8.48%
04 – Bay of Plenty	87.36%	2.06%	3.37%	7.22%
05 – Gisborne	89.78%	0.43%	2.54%	7.25%
06 – Hawke's Bay	88.12%	0.99%	2.96%	7.93%
07 – Taranaki	87.18%	1.25%	2.91%	8.66%
08 – Manawatū-Whanganui	86.33%	1.77%	2.60%	9.30%
09 – Wellington	63.97%	18.40%	2.98%	14.64%
10a – Marlborough	84.37%	0.39%	5.82%	9.42%
10b- Nelson Tasman	78.24%	1.41%	8.30%	12.05%
11 – Canterbury	85.26%	0.17%	3.27%	11.30%
12 – West Coast	79.75%	4.44%	6.27%	9.54%
13 – Otago	73.35%	4.38%	3.77%	18.50%
14 – Southland	87.70%	0.70%	3.40%	8.21%
Auckland city	77.78%	11.30%	1.32%	9.59%

49 https://explore.data.stats.govt.nz/?fs[0]=2023%20Census%2C0%7CTransport%23CAT_TRANSPORT%23&pg=0&fc=2023%20Census&bp=true&snb=9

Region	%Car	%PT	%Cycle	%Peds
Hamilton city	82.96%	4.96%	3.08%	9.01%
Tauranga city	85.33%	2.92%	4.65%	7.10%
Wellington city	48.62%	28.51%	3.59%	19.29%
Christchurch city	77.74%	5.84%	7.20%	9.22%
Queenstown-Lakes District	79.27%	4.13%	5.77%	10.83%
National total	**79.45%**	**7.46%**	**2.91%**	**10.19%**

Accessibility to employment

Notes, caveats and limitations:

- Data is sourced from the Accessibility Toolkit (ATK).
- It uses network-based travel times (by mode) between household locations and employment locations. This uses recorded travel times for general traffic, bus timetables for PT and road network distance with a constant average speed applied for cycles (the default used in OpenTripPlanner, which is 5m/s = 18km/h).
- Measure 10.3.1 currently estimates accessibility to employment rather than social destinations. Further work is progressing using ATK to also include access to social destinations, which will be included in subsequent versions of this evidence pack.
- ATK has been used to estimate future accessibility in a very limited way by only looking at changes associated with land-use growth based on population and employment sub-regional projections (while keeping base year travel times by mode). It may be possible to improve this in future releases, where other tools (currently being developed) can provide suitable inputs to ATK regarding future network performance (including travel times).

10.3.1 Access to key social destinations (all modes)

Region	Mode	Current year (2023)			Future year (2048)		
		0–5km	5–10km	10+km	0–5km	5–10km	10+km
01 – Northland	Car	31,292	30,536	35,034	36,807	35,913	40,486
	PT	16,850	5,845	869	19,200	7,465	1,311
	Cycle	29,138	19,854	2,377	34,068	24,541	3,369
02 – Auckland	Car	716,503	536,916	455,088	899,714	670,758	582,690
	PT	313,788	177,213	124,557	388,878	224,214	151,103
	Cycle	355,847	280,586	216,239	451,914	355,494	265,792
03 – Waikato	Car	133,357	133,999	213,804	176,632	177,837	276,406
	PT	69,881	25,929	9,321	95,049	33,744	12,351
	Cycle	104,923	82,607	16,567	140,886	112,340	21,034
04 – Bay of Plenty	Car	79,040	77,841	93,611	103,455	101,584	107,430
	PT	35,631	23,794	18,017	47,915	32,656	20,225
	Cycle	58,707	40,240	26,289	77,374	54,337	29,099
05 – Gisborne	Car	17,327	17,265	25,979	18,308	18,254	27,378
	PT	9,241	144	147	9,421	137	150
	Cycle	15,211	10,255	517	15,898	9,799	849
06 – Hawke’s Bay	Car	72,436	71,160	165,625	82,291	81,101	186,660
	PT	18,570	12,495	21,930	20,305	13,607	26,451
	Cycle	27,802	26,148	59,881	30,745	29,448	70,751

07 – Taranaki	Car	36,869	36,779	81,917	41,180	40,985	91,527
	PT	17,946	6,379	3,989	19,839	7,537	4,939
	Cycle	27,594	21,814	5,315	30,784	26,806	6,171
08 – Manawatū-Whanganui	Car	63,400	60,858	116,324	70,215	68,118	129,915
	PT	42,455	8,809	12,769	47,710	12,863	14,373
	Cycle	49,725	27,467	15,275	55,486	31,480	16,815
09 – Wellington	Car	226,937	203,306	257,735	254,242	227,977	286,594
	PT	149,015	87,351	100,318	169,490	97,902	112,643
	Cycle	160,012	138,296	82,987	178,699	153,837	93,008
10a – Marlborough	Car	19,964	19,095	32,261	21,619	20,585	35,127
	PT	7,983	190	1,188	8,526	197	1,404
	Cycle	14,614	6,898	2,668	16,039	9,916	3,234
10b – Nelson Tasman	Car	39,545	80,419	82,729	43,586	89,050	92,130
	PT	25,571	42,044	13,310	28,005	47,026	15,456
	Cycle	33,490	70,733	23,425	36,934	78,811	26,394
11 – Canterbury	Car	246,820	237,377	350,704	298,103	286,139	440,946
	PT	135,521	83,670	25,420	164,523	99,853	33,350
	Cycle	197,173	163,672	46,480	238,400	196,568	59,540
12 – West Coast	Car	6,225	6,455	14,589	5,843	6,196	13,893
	PT	3,757	183	1,862	3,445	210	2,326
	Cycle	5,537	4,664	3,015	5,099	4,604	3,432
13 – Otago	Car	59,213	58,364	112,598	62,075	61,521	128,941
	PT	45,898	27,674	13,916	48,301	33,897	16,699
	Cycle	53,343	41,614	12,458	55,959	47,303	15,473
14 – Southland	Car	32,733	33,106	69,145	34,463	34,638	71,342
	PT	20,598	10,281	2,169	21,320	13,138	2,138
	Cycle	27,027	22,387	4,685	28,399	26,232	4,374
National	**Car**	**1,781,661**	**1,543,200**	**2,035,679**	**2,148,533**	**1,854,674**	**2,432,812**
	PT	**912,705**	**490,617**	**337,520**	**1,091,927**	**600,629**	**400,609**
	Cycle	**1,160,143**	**914,371**	**497,220**	**1,396,684**	**1,111,936**	**595,451**

Appendix B: Intervention Catalogue

As part of the PIE programme, NZTA is developing the Intervention Catalogue (IC) tool, which compiles a wide range of empirical data relating to the implementation of transport projects and how effective they have been in achieving the intended outcomes. We'll continue to add to this over time, using data from benefit realisation associated with the investment logic mapping (ILM) process.

An AI interface for supporting queries and providing relevant evidence is currently being investigated.

For this evidence pack, a limited subset of data (related to 80 interventions) based on the KonSULT knowledgebase maintained by the University of Leeds in the UK, on sustainable urban land use and transport has been made available to demonstrate how IC might be applied to explore and identify the effectiveness of various interventions as part of the option formulation process.

Effectiveness is reported using a simple qualitative 1–5 scale that is indicative rather than absolute, and results may vary based on context.

The screenshot in Figure 4 shows the interventions we extracted from the KonSULT knowledgebase. This data is available in the summary spreadsheet: Extract-of-IC-KonSULT-data-(interventions-typology).xlsx.

Figure 4: Extract of IC KonSULT data

We've used the data shown in Figure 4 to create a draft interactive tool ([Spreadsheet-deficiency-to-intervention-example.xlsx]) that allows users to explore the effectiveness and trade-offs associated with a range of interventions that are associated with a user-specified list of issues or deficiencies.

The tables shown in the screenshots below are examples of how the tool can be used (and is not necessarily recommending any of the interventions currently selected).

User Inputs	Intervention Catalogue	Intervention Catalogue		4) Select Area Type	5) Review likely effectiveness of se		
Issue/Deficiency	Intervention Group	IC Interventions	IC Lever		Effectiveness	Cost	
1) User to provide list of issues/deficiencies below	2) User drop down menus to explore availble Groups	3) User drop down menus to explore Interventions in Group		Area	(1-5)	Min.	Max.
Consolidate growth, shorten trip lengths, co locating transport hubs with community services	Regulation (pricing and incentives)	Public transport fare reductions	Pricing	Tier 1	3	0	0
Design and Planning - adaptable 'scenarios-based' (defend, accommodate, retreat), identify critical routes, improve operational responses to events	Spatial and place-based planning	Design and Planning	Resiliance	Tier 1	0	0	0
perceived safety (incl. crime)	Deliver new or upgraded infrastructure and services	Safe system approach	Safe System	Tier 1	4	0	0
prioritise low risk low cost maintenance projects	Maintain and optimise existing networks and services	Maintaining the existing road network level of service	Infrastructure	Tier 1	3	0	1
Implement high quality improvements that bring about mode change	Maintain and optimise existing networks and services	Conversion of road capacity to shared and active modes	Optimisation	Tier 1	2	0	2
perceived safety (incl. crime)	Deliver new or upgraded infrastructure and services	Safe system approach	Safe System	Tier 1	4	0	0
rapid transport network	Spatial and place-based planning	Spatially integrated land use and transport networks	Multi-modal planning	Tier 1	4	0	1
Improved services	Deliver new or upgraded infrastructure and services	Fixed line mass public transport	Public transport	Tier 1	3	0	5
Road pricing	Regulation (pricing and incentives)	Time and distance based charges	Pricing	Tier 1	2	-4	0
PT Fares	Regulation (pricing and incentives)	Public transport fare reductions	Pricing	Tier 1	3	0	0
Road safety plans, safe speed limits, reduce dangerous behavior	Deliver new or upgraded infrastructure and services	Safe system approach	Safe System	Tier 1	4	0	0
Encourage Evs (low emission zones)	Maintain and optimise existing networks and services	Banning polluting vehicles from a defined area	Management	Tier 1	2	0	1
Encourage active modes	Deliver new or upgraded infrastructure and services	Networks for small, low powered, low speed transport devices	MAAS	Tier 1	4	0	1
Encourage active modes	Education and awareness	School based travel behaviour change	Travel reduction	Tier 1	4	0	1
Accessible infrastructure	Deliver new or upgraded infrastructure and services	On call shared transport	Public transport	Tier 1	2	0	1
Adaptable approach to road space management (e-scooters)	Deliver new or upgraded infrastructure and services	Networks for small, low powered, low speed transport devices	MAAS	Tier 1	4	0	1
More Freq Rail &PT Services	Deliver new or upgraded infrastructure and services	New rail services on existing lines	Public transport	Tier 1	1	0	3
Bus Priority	Maintain and optimise existing networks and services	Reduce journey times and improve reliability of bus services	Public transport	Tier 1	3	0	1

Figure 5: Example of using tool to explore overall effectiveness and cost of potential interventions based on a list of user specified deficiencies or issues (entered in the first column)

User Inputs	Intervention Catalogue	MoT Outcome(s)											
Issue/Deficiency	IC Interventions	Economic prosperity		Environment		Health		Inclusive access		Safety		Resilience	
1) User to provide list of issues/deficiencies below	3) User drop down menus to explore Interventions in Group	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Consolidate growth, shorten trip lengths, co locating transport hubs with community services	Public transport fare reductions	0	0	0	2	0	2	0	4	0	1	0	0
Design and Planning - adaptable 'scenarios-based' (defend, accommodate, retreat), identify critical routes, improve operational responses to events	Design and Planning	0	0	0	0	0	0	0	0	0	0	0	0
perceived safety (incl. crime)	Safe system approach	-2	2	-1	3	0	0	0	3	0	5	0	0
prioritise low risk low cost maintenance projects	Maintaining the existing road network level of service	0	1	0	2	0	1	0	3	0	3	0	2
Implement high quality improvements that bring about mode change	Conversion of road capacity to shared and active modes	-1	2	-1	3	-1	4	0	3	0	3	0	0
perceived safety (incl. crime)	Safe system approach	-2	2	-1	3	0	0	0	3	0	5	0	0
rapid transport network	Spatially integrated land use and transport networks	0	3	0	2	0	3	0	4	0	3	0	0
Improved services	Fixed line mass public transport	-1	3	0	2	0	0	0	2	0	3	0	0
Road pricing	Time and distance based charges	0	3	0	4	0	3	-3	3	0	3	0	0
PT Fares	Public transport fare reductions	0	0	0	2	0	2	0	4	0	1	0	0
Road safety plans, safe speed limits, reduce dangerous behavior	Safe system approach	-2	2	-1	3	0	0	0	3	0	5	0	0
Encourage Evs (low emission zones)	Banning polluting vehicles from a defined area	-2	0	0	1	0	4	-2	0	0	1	0	0
Encourage active modes	Networks for small, low powered, low speed transport devices	0	0	-1	1	0	0	0	2	-1	0	0	0
Encourage active modes	School based travel behaviour change	0	1	0	3	0	3	0	1	0	4	0	0
Accessible infrastructure	On call shared transport	0	0	0	1	0	1	0	3	0	1	0	0
Adaptable approach to road space management (e-scooters)	Networks for small, low powered, low speed transport devices	0	0	-1	1	0	0	0	2	-1	0	0	0
More Freq Rail &PT Services	New rail services on existing lines	0	0	0	2	0	2	0	3	0	2	0	0
Bus Priority	Reduce journey times and improve reliability of bus services	0	2	0	2	-1	2	0	3	0	2	0	0

Figure 6: Example of using tool to explore overall trade-offs between outcomes associated with potential interventions