SECTION C
NGĀ WHAINGA MATUA
KEY DRIVERS
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While we cannot predict the future, we can identify emerging trends that will influence the choices and trade-offs we need to make.

Understanding the challenges and opportunities that New Zealanders are likely to face between now and 2031 is the first step in preparing for change. This will ensure we are better prepared for the future, avoid the cost of poor decisions, and are well positioned to better shape the land transport system.

We have summarised the six key drivers that will shape the future land transport system as:

1. demographic change
2. climate change
3. technology
4. customer desire
5. changing economic structure, and
6. funding and financing challenges.

The themes are not new but in the context of Arataki, the key drivers set a clear focus for achieving step change.

We have considered how these key drivers will impact on the land transport system and the way people use it at a national, pan-regional and regional level as we identify what is needed to make sure our land transport system meets future needs.
DEMOGRAPHIC CHANGE
Population growth is closely linked to transport growth.

Population growth results in an increased number of journeys to access employment, commercial and social services, education and recreation. It also results in increased freight movement and business travel.

Significant population growth is forecast to continue in the upper North Island, with more than 50% of this in Auckland. The increasing population concentration in the Auckland, Waikato and Bay of Plenty regions will put pressure on transport networks and freight movement to and from the ports at Tauranga and Auckland.

Declining birth rates and better healthcare means we have longer life expectancy. We are living longer and being more active, although many are still on fixed incomes.

In many regions, the percentage of our population aged over 65 is projected to be more than 35% by 2043. This has an impact on the demand for travel, with seniors spending less time travelling per week, especially those over 75 years. While time spent travelling to work may decrease at age 65, working past this age is becoming the norm. Older people are traveling more for physical and social activities. Accessible and reliable transport options, along with well-maintained urban spaces, footpaths and crossing points will be key as our population ages. New transport technologies could create both opportunities and risks for older people.

The land transport system will need to respond to this growth and our older, more diverse population, each of which presents different needs and demand for travel.

Domestic and international tourists have increased the number of people in some centres at particular times of the year, placing additional demand and pressure on the land transport system. However COVID-19 has impacted on these patterns, with significantly reduced numbers of international visitors likely in the short to medium term.

In parts of the country where the population is forecast to decline, the land transport system will play a critical role in supporting the economic and social wellbeing of these communities and business. This may change travel demand.
FORECAST POPULATION CHANGE

Figure 03

Projected percentage of people over 65 in 2043 by TA:

- <25%
- 25-30%
- 30-35%
- >35%

Legend

Growth centre population projections (main urban areas)

- 2013
- 2023
- 2033
- 2043

TA population % change 2013–43:

- Growth <0
- Growth >0
Climate change will be one of the most significant drivers influencing the land transport system during the next decade.

Transport accounts for nearly 20% of New Zealand’s total greenhouse gas (GHG) emissions, of which 90% is road transport. Light vehicle emissions are the fastest growing of these, overwhelmingly concentrated in large urban areas.

Changing weather patterns with extreme weather, rainfall intensity and sea level rise will impact the transport network’s infrastructure. Sea level is expected to rise by an average of 20 to 30cm by 2040. Severe weather will increasingly impact our environment, communities and infrastructure including roads, rail, community facilities and both water supply and management.

Most New Zealanders live within a few kilometres of the coast and many next to rivers and lakes. As sea levels rise, tides, waves, storm surges and increased groundwater will reach further inland causing more frequent and extensive flooding. Along some coasts, erosion will increase and shorelines will recede. Long-term, we need to plan for sea level rises of more than 1m.

Climate change adaptation must be integrated into future planning and investment in the land transport system. Appropriate planning will be critical to avoid development of transport corridors in vulnerable locations.

Hotter temperatures and wild fires can damage our transport infrastructure and cause buckled railway lines and damaged roads, which results in subsequent disruption and repair costs. More extreme weather will also impact vulnerable areas of the land transport system, causing disruption from slips, flooding and wash-outs.

As parts of our country become warmer, drier or wetter, the nature and location of our primary production may change, bringing downstream impacts on the location of businesses and the freight movements that support them.

The Climate Change Response (Zero Carbon) Amendment Act provides a framework for New Zealand to develop and implement clear and stable climate change policies. These will contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5°C Celsius above pre-industrial levels. The act requires the government to develop and implement policies for climate change adaptation and mitigation. It will also have a significant impact on land transport investment and decision-making.

Emissions budgets arising from the act will require significant change in land-use patterns, the supporting land transport system, the vehicle fleet and our travel choices, particularly in urban areas. The next decade will be critical to lay the foundation for meeting targets. This will require a shift in transport modes away from private, carbon-fuelled vehicles towards shared, energy-efficient vehicles.

Interventions that reduce GHG emissions will also reduce local air pollution and improve public health through increased physical activity as a component of travel choice.
CLIMATE CHANGE IMPACTS ON NEW ZEALAND

Figure 04

TEMPERATURE
Temperature is expected to increase throughout the country. This will mean:
- decreased frequency and severity of frost
- more days above 25°C
- longer growing season
- increased rural fire risk
- increased demands for water
- increased occurrence of food and water-borne diseases.

TOWNS AND CITIES
- increased stormwater flooding
- warmer winters: decrease in cold related illnesses
- warmer summers: increase heat stress
- decreased electricity use in winter (less heating)
- increased electricity use in summer (more air-conditioning)

WETTER
- increased precipitation
- increased intensity in weather events
- increased flooding particularly in already flood-prone areas
- increased slips
- increased soil erosion

COASTAL
- sea level rise
- increased storm surge
- coastal inundation
- increased coastal erosion

EX-TROPICAL CYCLONES
- increased intensity
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WIND
- increased westerly winds in winter and spring (especially in the south), more north-easterlies in summer and autumn (especially in the north)

SNOWLINES AND GLACIERS
- changes in length and area of glaciers
- rise in snowline
- reduction in snow days
- decrease in seasonal snow duration and depth

NATURAL AREAS
- species distribution changes
- changes to/loss of habitat
- increased pressure from pests, animals and plants

DRIER
- decreased annual rainfall
- decreased run-off to rivers
- increased evaporation
- increased frequency and severity of drought
- increased irrigation demand
TECHNOLOGY

Technological advances are occurring rapidly in the land transport sector and increasingly disrupting the way we use and manage the system.

From e-bikes to autonomous vehicles, our travel options are increasing. New technologies, and associated business models, will continue to have an impact on the transport sector. Increased customer choice and flexibility using apps and on-demand transport services will continue at pace. Technology is broadening the range of mobility options and available services. Urban spaces will need to safely accommodate different forms of transport competing for the same space.

Shared mobility may become more common in the coming decade, in particular vehicle sharing in high-density areas. The most effective shared mobility services are likely to be car-sharing, bicycle-sharing and on-demand shared shuttles. The adoption of a broader range of micro-mobility options such as e-scooters and mobility scooters, can bring co-benefits for health and wellbeing for all ages.

Technology is helping us to monitor and maintain the land transport system. As technologies that enable greater use of the network become more widespread, we can expect to see changes to how we invest in infrastructure, including digital infrastructure.

Technology will also help us to deliver a land transport system that can respond in real time to customer demand and information needs and start to predict and avoid disruptions for customers. Connected vehicle technologies, that enable the sharing of data between vehicles, other road users and infrastructure, are expected to improve road safety outcomes and the efficiency of the network.

Transport technologies have the potential to respond to several transport challenges by improving, and in some cases transforming, the way people and freight travel. However, it is also important that we understand the potential issues. For example, vehicle-sharing and autonomous vehicles may need to be managed to avoid increased travel and congestion.

CUSTOMER DESIRE

Customer needs and wants influence how people choose to travel and will drive change across the land transport system in tandem with technological change.

Our cities and urban areas are becoming increasingly populated by younger, more ethnically diverse and techno-savvy residents. Many are choosing to delay getting a driver licence and/or purchasing a vehicle.

The changing nature of work from advances in technology and shifts in workplace culture have been underway for some time. During the next decade, more people will be able to work from anywhere, at any time. The New Zealand Workplace Diversity Survey (2019) says the possibility to work remotely is the second most common form of flexibility in organisations, after flexible work time.7

With the increasing popularity of inner-city living, demand will increase for walking and cycling infrastructure and public transport. Public transport currently has a small share of all national travel, at just 3% of household trips.8 And while public transport use is projected to increase, especially in Auckland, its share will remain below 10% without a significant change in behaviour.8 Cycling is increasing in some urban areas, particularly Christchurch.

The way people communicate, shop and socialise continues to evolve. Consumers are increasingly shopping online with goods being delivered to the home. This presents considerable opportunities and challenges for the freight sector and land-use planning which must adapt to meet this new demand and delivery needs.

There is also an international and national groundswell of concern about the impacts of climate change on communities. Over time, this may result in people choosing lower emissions transport options or choosing not to travel. These actions will influence transport and land-use planning in the next 10 years and beyond.
CHANGING ECONOMIC STRUCTURE

The trend towards a service industry-based economy is leading to greater urbanisation, more intense urban development and the greatest changes in transport demand.

The economy is both shaped by, and a shaper of, our land transport system. Economic changes impact on wages, consumer demand, and the prices of raw materials. Higher income growth usually signals higher consumer spending, leading to increased business spending and demand for goods and services. The performance of the land transport system can impact on the efficiency with which businesses are able to bring goods and services to market.

For some time, New Zealand’s economic growth has been focused in large urban areas, in particular Auckland. These centres attract the highest number of immigrants and growth in employment trips, business trips and freight movement have been strongest in these areas. While the long-term trend towards an economy driven by urban centres appears likely to continue, the impact of the current COVID-19 pandemic is likely to significantly impact on the nature and scale of economic activity in the short to medium term.

COVID-19, responses internationally and the national lock-down in New Zealand, will contract short-term economic activity as a result of factors including:

- disrupted access and reduced demand for exports to overseas markets, and potential restrictions on imported goods
- a sharp decline in the number of skilled workers, international visitors and students entering New Zealand as a result of border control measures
- reduced demand for goods and services in the domestic market due to the lock-down
- the temporary or permanent closure of firms, and increased unemployment.

Fiscal and monetary stimulus responses that have begun already are intended to reduce the effect of these negative impacts on households and communities in the short term and support economic recovery in the medium to long term.

The nature, scale, duration and location of the economic impacts of the current COVID-19 pandemic are still highly uncertain. There is therefore a need to continuously monitor how it will influence the structure of the economy and the medium to long-term implications for demand for the movement of people and freight in the land transport system. It is suggested currently that these could potentially include:

- changes to the movement of goods internationally, with a shift away from globalisation to an increased focus on local production and economic self-sufficiency
- changes to the movement of people into New Zealand, with reduced immigration and tourism
- accelerated changes to the nature of work, with increased remote working and automation of some jobs
- changes to the movement of people for work, education and essential services, with increased remote working and learning, and online retailing.
FUNDING AND FINANCING CHALLENGES
Step change will need to be supported by appropriate investment and financial levers.

The way we have funded vehicle-based infrastructure is no longer affordable or feasible. We must prioritise our investment to deliver the most effective, long-term solutions to move people and freight. The increase in capital costs, such as managing the effects of climate change, will impact the amount of funding available to central and local government for the land transport system.

Some districts are facing additional funding pressures because of forecast declining population. These declines are often combined with an aging population on fixed incomes, resulting in communities that are less able to cope with significant rates increases.

Local government funding for the land transport system may also be constrained as the sector faces significant investment in three waters (drinking water, wastewater and stormwater) and other infrastructure during the next 10 years. This could be exacerbated if the economy contracts over the same period. Alternative funding tools may need to be explored.

Shifts in transport options, and changes in the way people pay for transport because of new technology, could impact revenue and provide increased opportunity for travel demand management.

While the volume of freight is presently forecast to increase, improvements in efficiency, electrification of the heavy fleet and changes in travel choice could impact revenue.

Changes in household transport preferences such as fewer people choosing to own a private vehicle, coupled with requirements for greater fuel efficiency or alternative fuels, could increase the equity gap between those who can afford more fuel-efficient vehicles and those who cannot.

We need to understand the changing nature of transport demand, both for communities facing declining populations and those managing growth. A more sophisticated approach to planning, developing and managing the land transport system is needed with a focus on desired outcomes rather than assets.

Economic tools may be used to influence access to and use of the land transport system.