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## STATE HIGHWAY ACTIVITY MANAGEMENT PLAN 2015-18

DRAFT PROGRAMME FOR SUBMISSION  
TO REGIONAL TRANSPORT COMMITTEES

The State Highway Activity Management Plan (SHAMP) is the basis for the state highway bid for future maintenance, renewals, operations and improvements funding from the National Land Transport Fund. This draft SHAMP has been prepared for regional transport committees to form the state highway component of regional land transport plans (RLTPs).

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# CREATING TRANSPORT SOLUTIONS FOR A THRIVING NEW ZEALAND



## More information

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# FOREWORD

**Efficient, safe and resilient state highway infrastructure and transport services are essential enablers to deliver greater prosperity and opportunities for all New Zealanders.**

**The draft State Highway Activity Management Plan 2015-18 (SHAMP 2015-18) presents a complete picture of how the Transport Agency intends to plan, operate, maintain and improve the state highway network to deliver on the draft Government Policy Statement on Land Transport.**

In developing this plan, we've drawn on regional aspirations and aligned them with the national outcomes we are seeking as articulated in the early investment signals. It is a draft for submission to New Zealand's regional transport committees, and subsequent submission into the Transport Agency's National Land Transport Programme 2015-18.

This draft SHAMP 2015-18 continues a focus on customer journeys, enabling people and freight to travel safely and efficiently.

Safety remains at the forefront, with our commitment to *Safer Journeys, New Zealand's road safety strategy 2010-2020*, making our state highways increasingly free of death and serious injury, being reconfirmed.

Working with our road controlling authority partners in Auckland, Wellington and Christchurch, we aim to provide better services to road users by operating a network that is better integrated into the wider transport system, enabling better use of New Zealand's urban network capacity.

We have a significant programme of capital investment commitments including investment in delivering the roads of national significance and Auckland's acceleration programme.

We continue to invest in opening up more of the network to support more efficient freight journeys and we have broadened our focus to other proposed investments that seek to make our highways more resilient.

As always, value for money on our investment is fundamental to ensure activities are delivered in the right way at the right time at the best cost. The One Network Road Classification and the new Network Outcomes Contracts for maintenance are important examples – these changes enable an increasing corridor and network approach that will collectively yield greater overall outcomes.



**Tommy Parker**

Group Manager of Highways and Network Operations for the NZ Transport Agency

# 1. INTRODUCTION

## 1.1 ROLE OF THE STATE HIGHWAY NETWORK

The state highway network is a key facilitator of journeys. It enables people and freight to make national and regional road journeys effectively, efficiently and safely which, in turn, helps support a thriving New Zealand. At the national level, state highways support New Zealand's global competitiveness, connecting cities, producers and markets, and air and sea ports. At a regional level, they connect businesses, communities, families and friends with customers, services, work, play and each other.

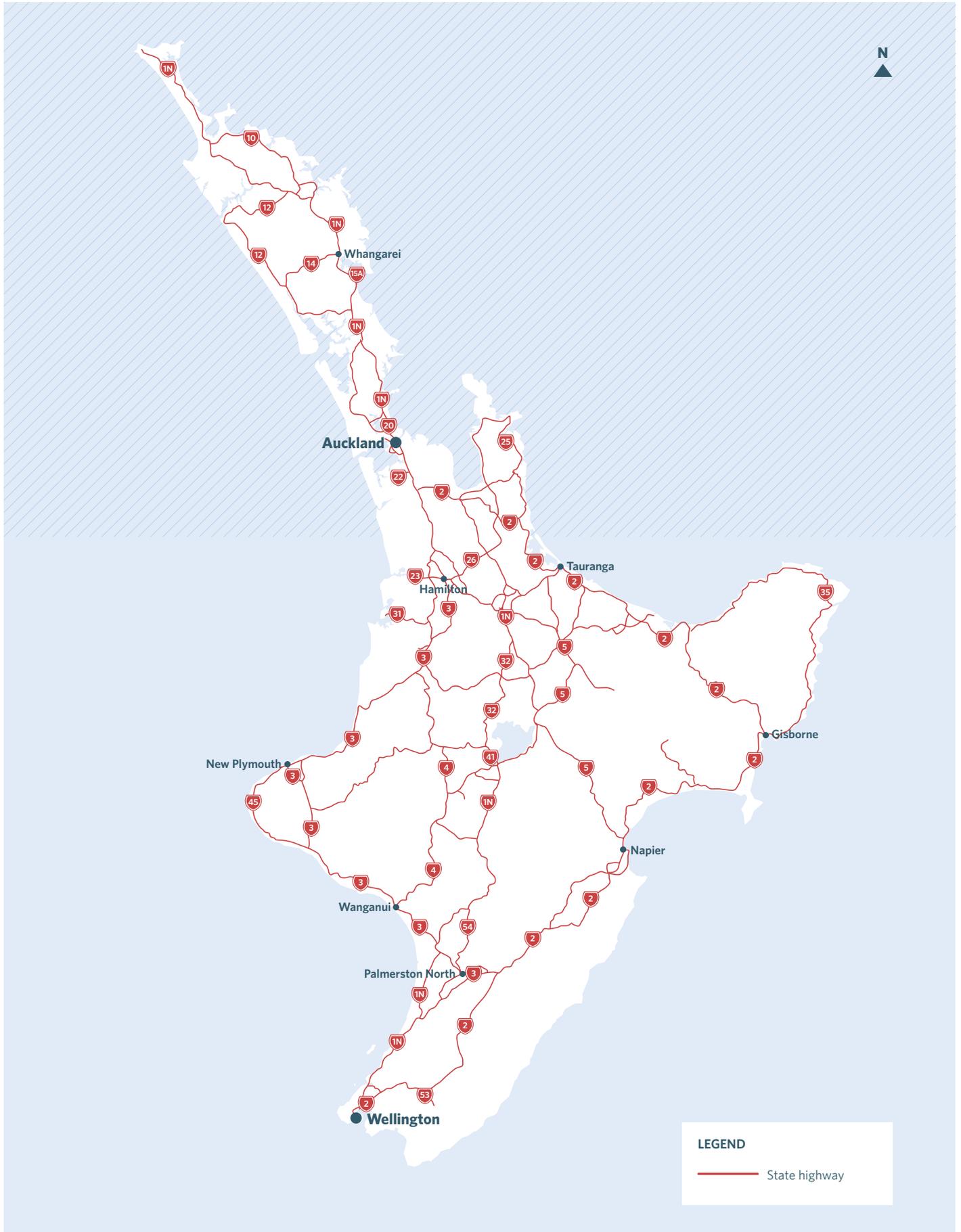
While the state highway network accounts for only 12 percent of the total road network in New Zealand, around 50 percent of all vehicle kilometres travelled and 70 percent of freight kilometres travelled are on state highways. The network contributes significantly to the country's economy and wellbeing by being a key player in moving people and freight.

The NZ Transport Agency is currently investing around \$500 million per annum in maintaining and operating the state highway network, and \$1.5 billion per annum in improving state highway assets. The network's assets are currently valued at approximately \$26 billion.

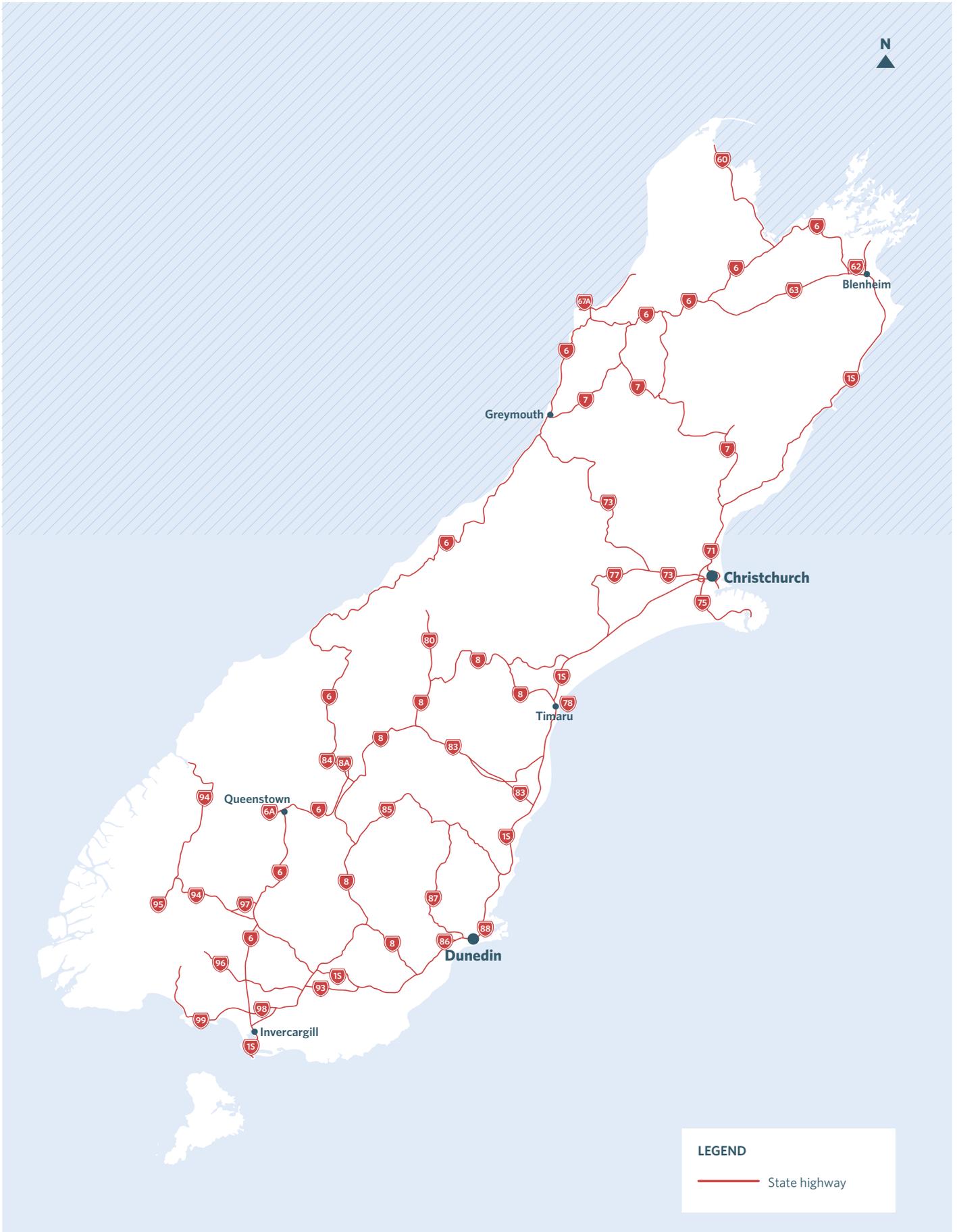
We are responsible for operating, maintaining, renewing and improving the state highway network. In doing so, we work closely with local government, KiwiRail, New Zealand Police and other partners to ensure New Zealand's state highways are operated and developed as an integral part of the overall land transport system.



# NORTH ISLAND NEW ZEALAND'S STATE HIGHWAYS



# SOUTH ISLAND NEW ZEALAND'S STATE HIGHWAYS



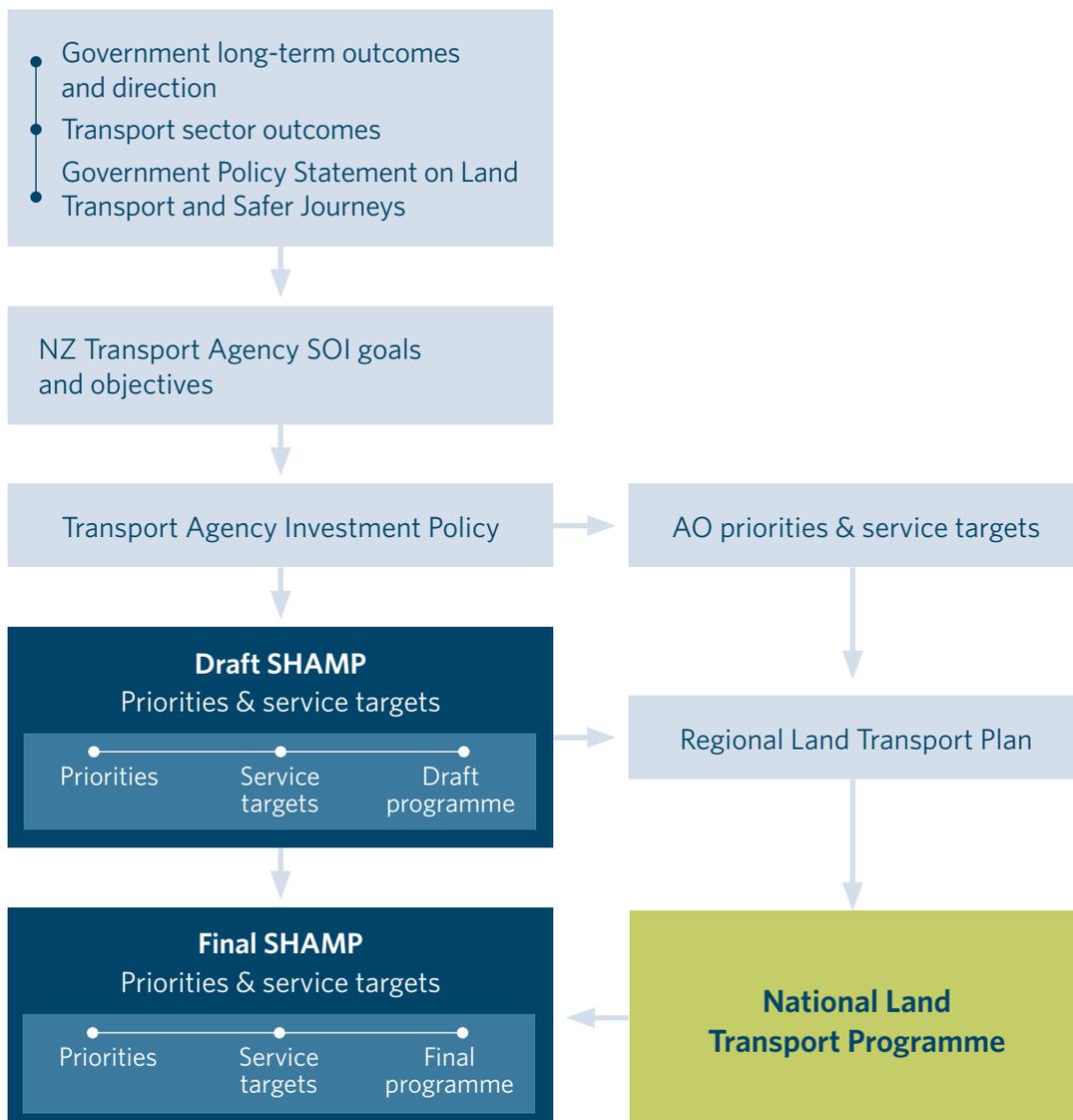
## 1.2 PURPOSE OF THIS PLAN

This draft State Highway Activity Management Plan 2015-18 sets out the rationale for our investment in and activities on the state highway network over the next 10 years. It is a proposal for how the investment programme will be planned and implemented, and provides an assessment of the expected outcomes and investment requirements and risks. In developing this draft SHAMP, we have drawn on regional aspirations and aligned them with the national outcomes we are seeking. This document should be read in conjunction with the Infrastructure Asset Management Plan<sup>1</sup> which provides comprehensive guidance on how the network will be maintained and renewed.

This draft will be used as an input to the development of regional land transport plans (RLTPs), for submission to the National Land Transport Programme (NLTP) 2015-2018. Following approval of the NLTP, a final version of the SHAMP 2015-18 will then be released to ensure consistency with the NLTP 2015-18.

The relationship between SHAMP 2015-18 and other transport planning documents is shown below:

### RELATIONSHIP BETWEEN THE SHAMP AND OTHER TRANSPORT PLANNING DOCUMENTS



1 <http://hip.nzta.govt.nz/processes/maintain-and-operate/lifecycle-asset-management-plans/>

## 2. PROGRESS SINCE SHAMP 2012-15

## 2.1 OVERVIEW

Substantial progress has been made since publication of the SHAMP 2012–15<sup>2</sup>. Some of the key achievements are summarised below – more details can be found in the Transport Agency’s annual reports<sup>3</sup>.

## 2.2 MAINTENANCE AND RENEWAL

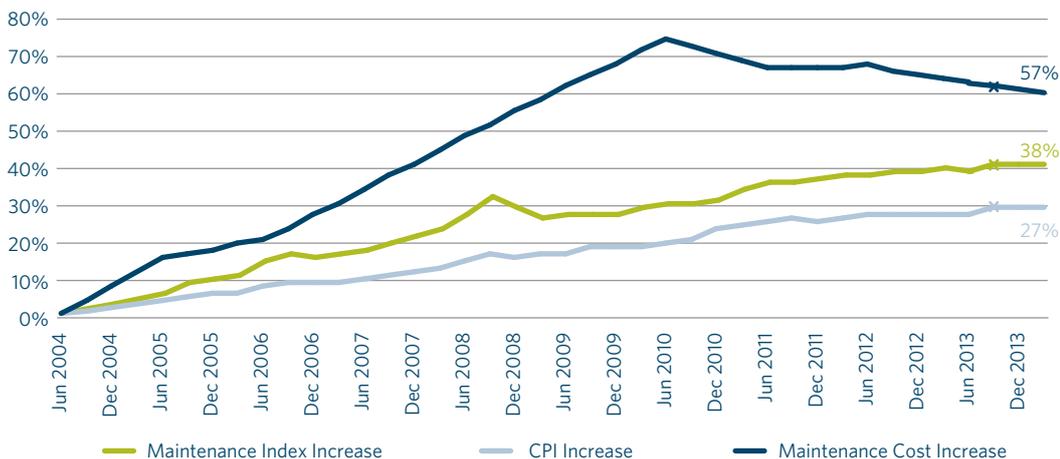
We have changed the way New Zealand’s state highways are maintained and operated. The Transport Agency has taken a stronger strategic approach to asset management (nationally and in the regions). We have sought to increase our ownership and expert management of the network through moving from 37 to 23 contract areas coupled with increased collaboration with our suppliers to account for the quality of work done on our highways.

The Transport Agency has undergone an organisational redesign to give best effect to the new maintenance and operations approach, and we have strengthened our focus on strategic asset management through development of a performance framework and moving towards consistency in levels of service across the network.

We have increased our focus in working with territorial local authorities to operate the roading network as One Network – an example being the joint venture between the Transport Agency and Gisborne District Council, Tairāwhiti Roads.

The Transport Agency has only just begun to see the benefits of the above changes. So far we have seen four percent annual cost savings over the last three years, amounting to savings of approximately \$120 million as shown in the figure below. This has been achieved despite input cost price increases and increases in the scale and complexity of the network.

### MAINTENANCE INDEX AND COSTS 2003/04-2012/13



2 <http://www.nzta.govt.nz/resources/state-highway-asset-management-plan/docs/state-highway-asset-mgmt-plan-2012-2015.pdf>

3 <http://www.nzta.govt.nz/about/who-and-what/what-we-do/measuring-performance.html#annualreports>

## 2.3 ROADS OF NATIONAL SIGNIFICANCE (RoNS)<sup>4</sup>

The Victoria Park Tunnel project has been completed since 2012, resulting in a measured reduction in peak period congestion in Auckland. Also completed was the Christchurch Southern Motorway Stage 1 which has improved freight reliability. Two sections of the Waikato Expressway are now open (Te Rapa and Ngaruawahia) and are already providing customers with reduced travel times.

Of the projects forming the Western Ring Route, all but one have progressed to construction with the most significant, the Waterview Connection on target to be complete by early 2017.

During the period of the SHAMP 2012-15, the Transport Agency has progressed Transmission Gully's public private partnership (PPP). This is New Zealand's first roading project PPP, which aims to be complete and operational by 2020/21.

## 2.4 SAFE SYSTEM APPROACH

We have made good progress with embedding the Safe System<sup>5</sup> approach in our state highway activities by building capability and removing barriers to the adoption of safe system treatments. The state highway elements of the *Safer Journeys*<sup>6</sup> action plans are progressing. These include targeting efforts to high-risk rural roads, high-risk intersections and a motorcycle demonstration routes project. Funding for these has primarily been through the minor works programme and a range of small capital safety projects.

This investment has seen realignments of curves on several high-risk corridors, the installation of over 200km of roadside protection barriers, over 300km of new audio tactile road markings (rumble strips), improvements at a number of intersections including nine electronic speed management trial systems and improvements at 12 rural schools adjacent to state highways.

## 2.5 JOURNEY MANAGEMENT

Our journey management approach is making good gains towards our strategic priorities of putting customers at the heart of our business and making the most of urban network capacity. The National Journey Management Guidance Framework provides guidance on how operational services can be integrated into investment programs, enabling collaboration with our local and regional partners as well as our customers, and highlights the ongoing capability and capacity requirements.

We have expanded our capability and capacity in integrated real-time operational services through the establishment of the Transport Operating Centres (TOCs) in Auckland, Wellington and Christchurch. The TOCs are jointly managed with our local partners and manage, monitor, inform and optimise the transport networks in their respective cities and, in some cases the wider state highway network. In addition to this, TOCs provide operational support to our regional partners, particularly in managing the effects of incidents and events on the transport network.

In collaboration with our local government partners, we have developed a Network Operating Framework, and collaboratively produced network operating plans for Auckland, Wellington, Christchurch and Hamilton. For the first time, we have the tools available to prioritise competing demands for the available road space based on the preferred modes of travel and the needs of access and mobility by time-of-day. These network operating plans provide us with the opportunity to make best use of the existing urban networks.

4 <http://www.nzta.govt.nz/network/rons/index.html>

5 <http://www.nzta.govt.nz/resources/safe-system/>

6 <http://www.saferjourneys.govt.nz/>

Our focus on enabling people to make smart travel choices has seen an expanded range of channels available to customers to access travel information. We now use Twitter, Facebook, text (SMS) and web-based applications to notify our customers and third-party providers of our highway conditions and upcoming events.

## 2.6 FREIGHT MOVEMENT EFFICIENCY

Our focus on an efficient freight system is reducing the cost of doing business in New Zealand. High productivity motor vehicles (HPMVs and 50MAX) provide productivity benefits<sup>7</sup> that will help improve the competitiveness of New Zealand's exports, reduce the costs of the goods we buy, and grow our economy.

Bridge upgrades to ensure our roads are capable of handling heavier trucks has been underway and continues over 2015-18.

In addition to targeting the national HPMV network, a 50MAX permit was introduced in 2013. The 50MAX permitting process is a joint Transport Agency/local government initiative and allows HPMVs to travel on most of the road network. Over 1000 permits have been issued for 50MAX for an area including the entire state highway and 45 local authority road networks.

## 2.7 ONE NETWORK APPROACH

Putting the customer at the heart of our business has informed the adoption of a one network approach to the way the Transport Agency works with its partners to plan, maintain, operate and develop the transport system. The 'one network' approach recognises that customers desire efficient journeys across the transport system, irrespective of which agency is responsible for that aspect of the journey.

## 2.8 ONE NETWORK ROAD CLASSIFICATION

The Road Efficiency Group<sup>8</sup> developed the One Network Road Classification<sup>9</sup> (ONRC), comprising categorising roads into six functional categories based on the role they perform as part of an integrated national network, contributing to national, regional and local economies and social wellbeing. The classification helps the Transport Agency and local government to plan, invest in, maintain and operate the road network in a more strategic, consistent and affordable way throughout the country. The ONRC is assisting with:

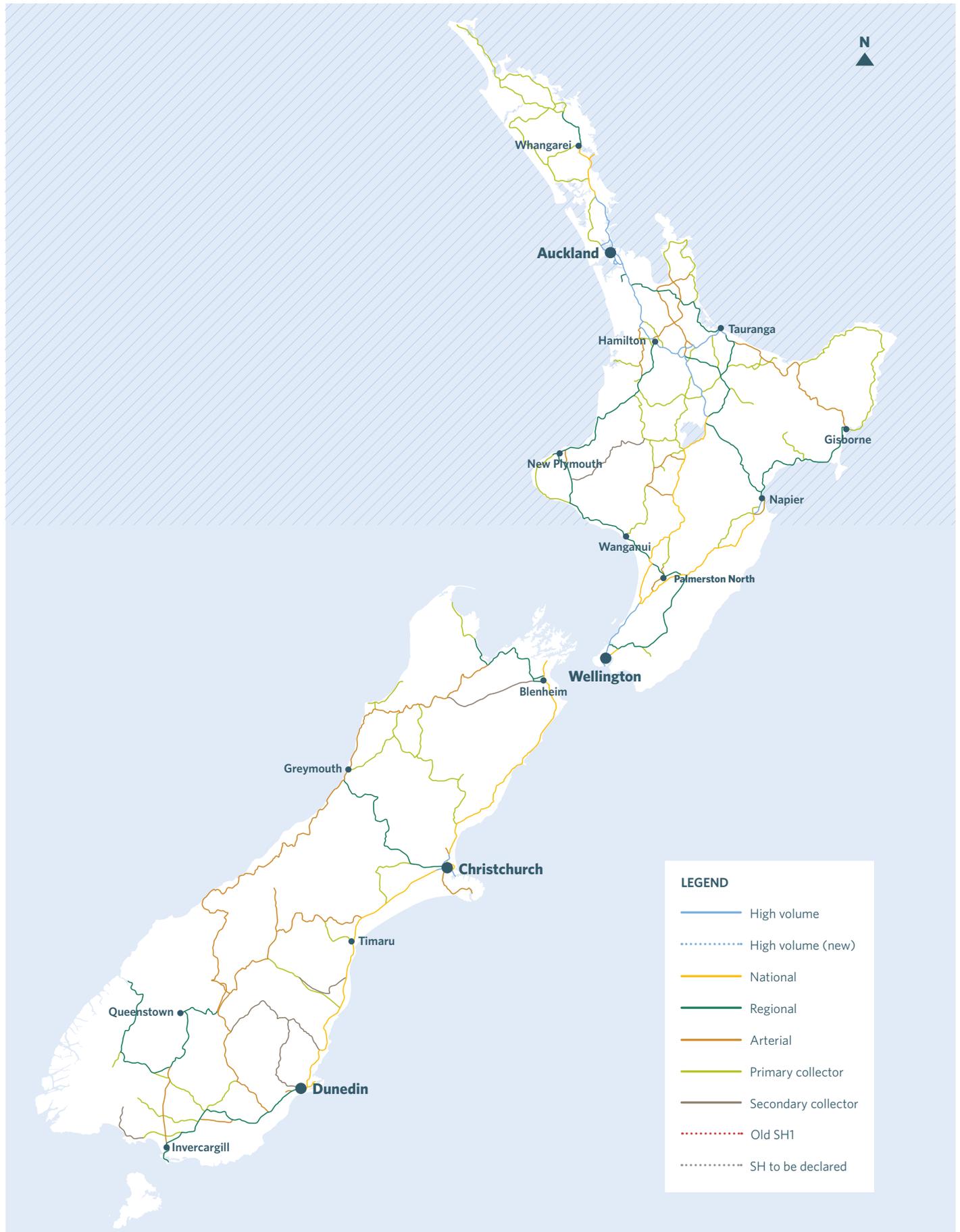
- delivering efficient, safe and responsible highway solutions for customers – by helping to set consistent and differentiated customer levels of service for the highway network
- maximising effective, efficient and strategic returns for New Zealand – by helping align investment with agreed outcomes to drive value for money
- integrating one effective and resilient network for customers – by supporting one network approaches across the sector with a common framework and language, and supporting clustering and collaboration for efficient delivery
- shaping smart, efficient, safe and responsible transport choices – by assisting with implementing the national speed management programme across the network.

7 Potential freight productivity gains are in the order of a 20 percent decrease in truck trips using over-mass permits and a 14 percent decrease in trips for over-dimensioned permits. This means HPMVs will undertake 14-20 percent less travel to move the same amount of freight as standard trucks.

8 <http://www.nzta.govt.nz/projects/road-efficiency-group/>

9 <http://www.nzta.govt.nz/projects/road-efficiency-group/onrc.html>

## ONE NETWORK ROAD CLASSIFICATION





# 3. THE CHALLENGES AHEAD

### 3.1 OVERVIEW

This section highlights a series of existing and future gaps in the performance of the state highway network. Guided by our strategic direction, as discussed in Section 4, the primary issue faced by our state highway network, and those using it, can be summarised as:

*...the reliability and safety with which people and goods can make journeys on the network, against a background of rising and regionally uneven demand. This in turn is leading to increasing costs of doing business, and increasing environmental and community impacts.*

### 3.2 TRAVEL DEMAND PRESSURES

The Transport Agency expects demand for travel on the state highway network to grow faster over the next 10 years than it has done over the past decade. This trend is likely to be particularly evident for heavy vehicle travel, as a result of the expected economic growth being higher than in the recent past.

The pattern of demand for travel at a national level will not necessarily be replicated at the regional level. While all regions are likely to experience some increases over the next 10 years, those regions with large and growing populations, significant productive capacity, key ports of entry/exit into or from New Zealand, and/or have limited transport alternatives, are likely to experience the largest increases in travel demand on their respective state highway networks.

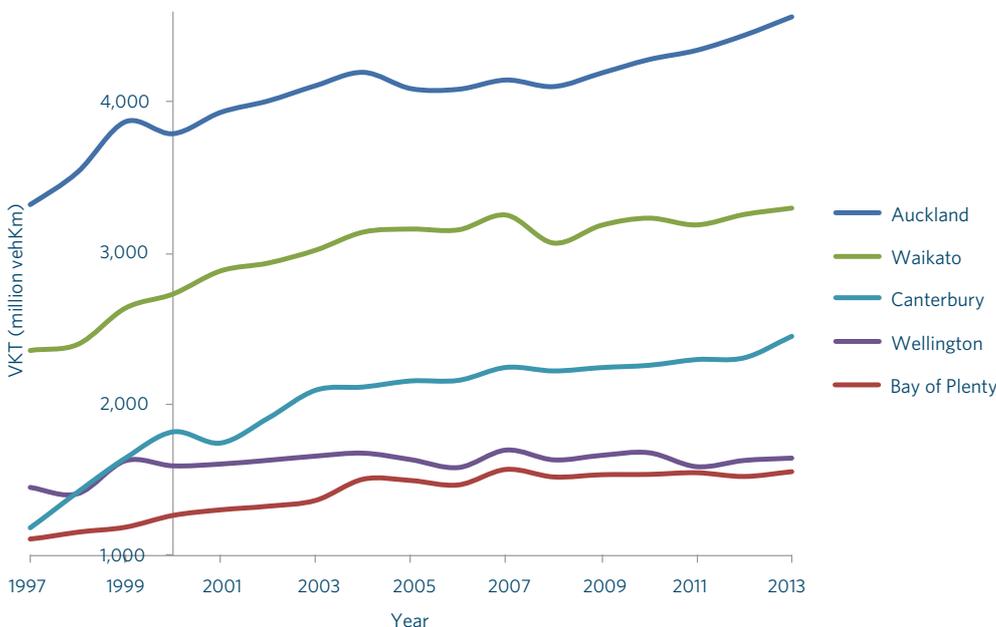
#### 3.2.1 Recent national trends in state highway vehicle kilometres travelled

Over the 1997 to 2005 period, national state highway vehicle kilometres travelled (VKT) grew at an average rate of approximately 4.0 percent per year. However, in the 2006 to 2013 period, national state highway VKT grew at an average rate of 0.4 percent per year as a result of a halving of the internal population growth rate compared to the 2001 to 2006 period, low inbound migration and a downturn in economic performance.

In more recent times, there has been an upswing in kilometres travelled as New Zealand's economic performance has strengthened, with increased production and consumption, including growth in employment and income. Increasing inbound migration into New Zealand has also supported kilometres travelled in New Zealand.

The national picture masks significant historic and forecast regional variations. This regional variation is generated by variations in regional population growth, household size, differential economic growth and structure. Historic regional growth in key regions is shown below along with a map of current state highway vehicle kilometres travelled by local authority area.

#### REGIONAL VARIATIONS IN STATE HIGHWAY VEHICLE KILOMETRES TRAVELLED (VKT)



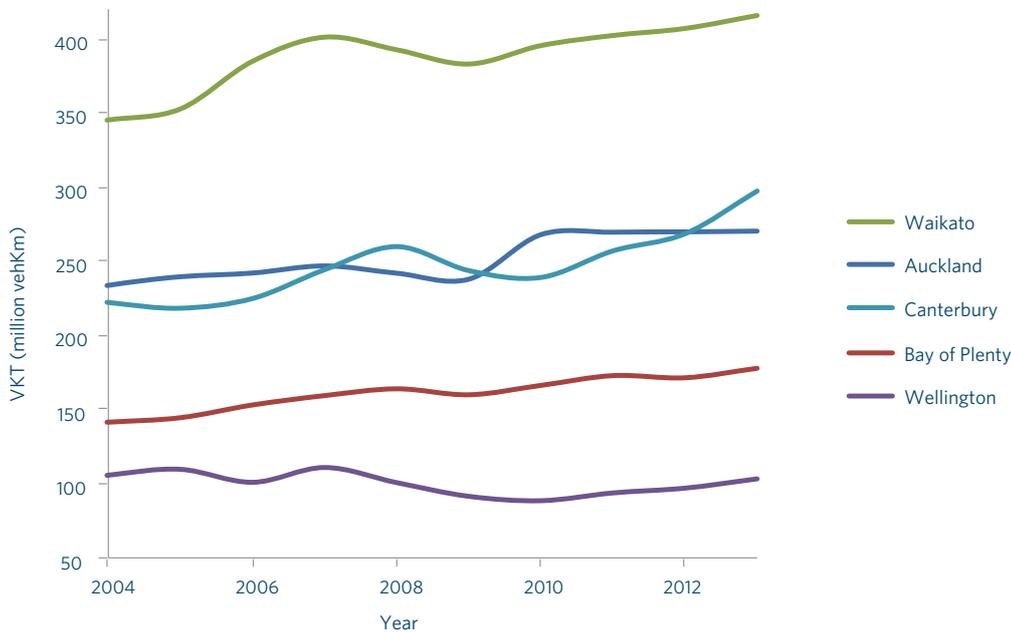
Historically all regions have experienced lower growth over the 2006 to 2010 period largely due to low population growth and low inbound migration. The sluggish economy also had an impact between 2007 and 2009 particularly in the Auckland and Waikato regions. Subsequently a strengthening economy, supported by growing migration into New Zealand from overseas, has seen a solid upturn in travel in the Auckland, Waikato and Canterbury regions in the last two years. The Canterbury region in particular has seen a strong upturn in demand which is fuelled by a strong economic performance in Canterbury and surrounds and in part the rebuild following the Canterbury earthquakes.

The demand for travel in the Wellington region has seen a more complex oscillatory behaviour with a modest underlying growth up to 2010. Over the 2007 to 2010 period the Wellington regional economy performed strongly relative to other regions but structural change including the capping of the public sector, has contributed to volatility in travel demand. However, in the last two years the strengthening economic position has seen an upswing in underlying demand for travel albeit at a more modest rate than some of the other regions.

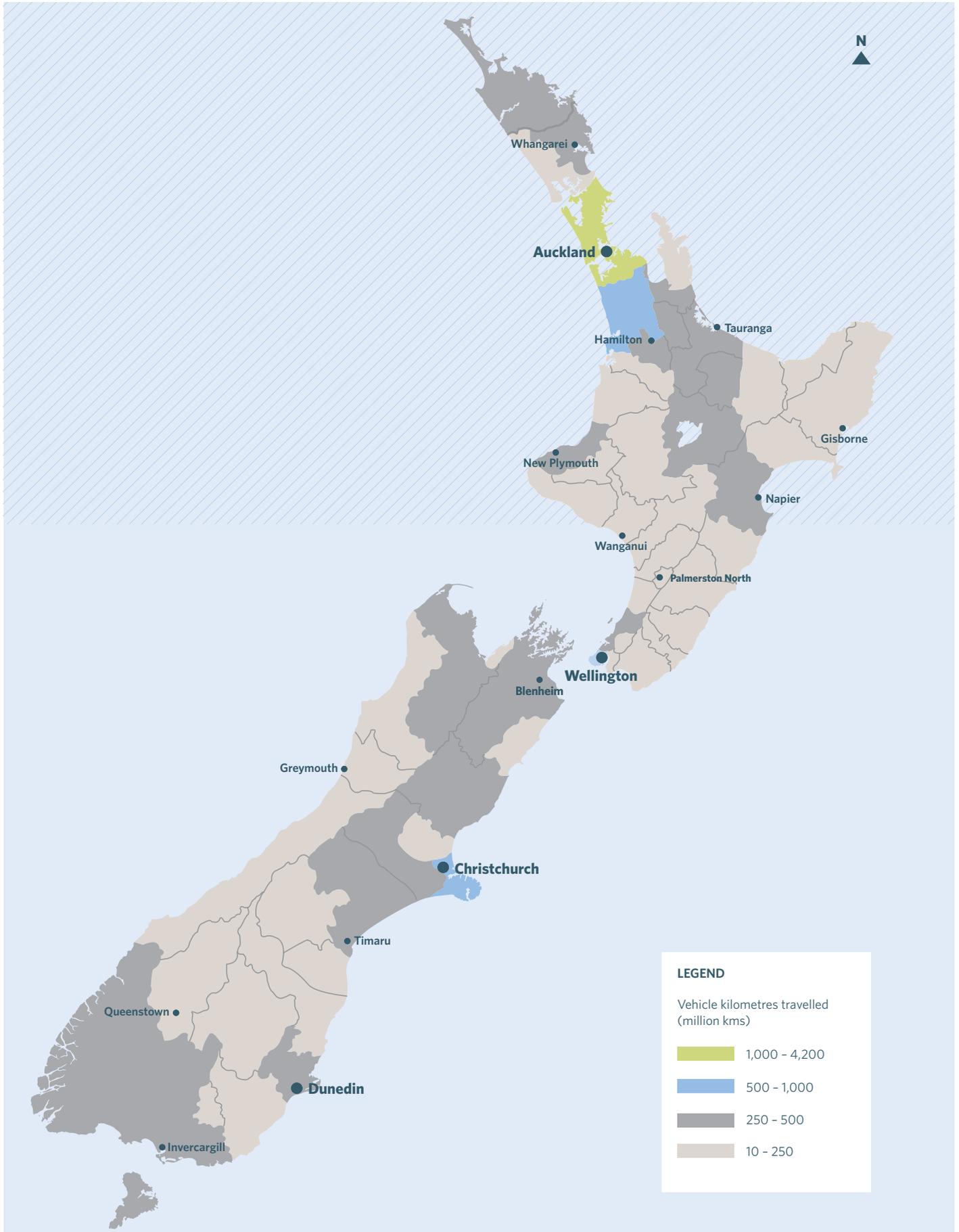
Road freight is primarily generated by the supply of agricultural, forestry, and fishery, as well as the products of manufacturing.

Nationally, heavy commercial vehicle (HCV) travel grew at an average growth rate of 1.2% percent per year over the 2005 to 2013 period, with an exception for the 2008 to 2010 period. The 2008 to 2010 period was at the height of the economic downturn and consequently there was a pronounced dip in state highway HCV travel at that time.

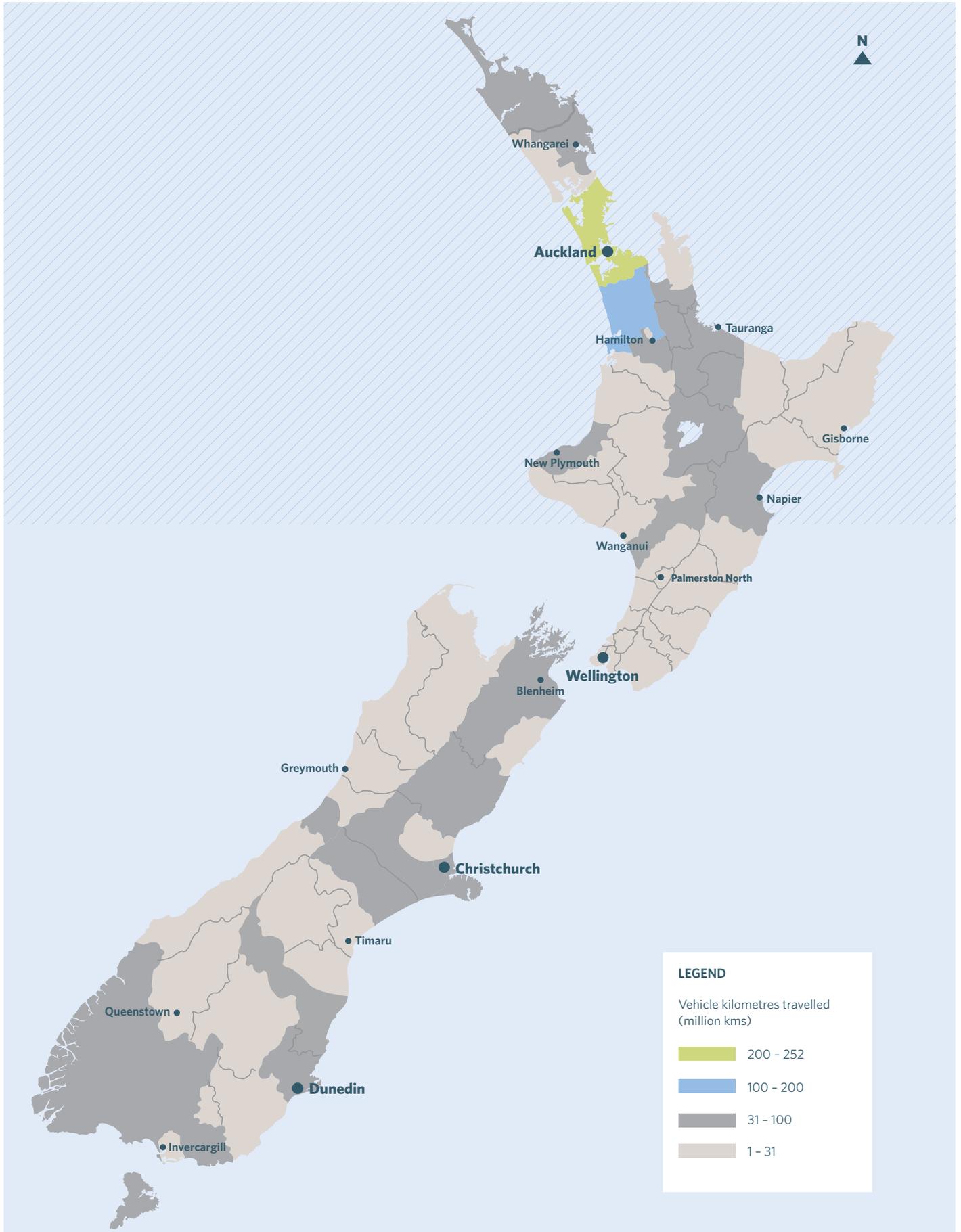
**REGIONAL VARIATIONS IN HEAVY COMMERCIAL VEHICLE (HCV) KILOMETRES TRAVELLED**



## TOTAL VEHICLE KILOMETRES TRAVELLED ON STATE HIGHWAYS IN 2013 BY TERRITORIAL LOCAL AUTHORITY



# KILOMETRES TRAVELLED BY HEAVY COMMERCIAL VEHICLES ON STATE HIGHWAYS IN 2013 BY TERRITORIAL LOCAL AUTHORITY



### 3.2.2 Future demand

Forecasting undertaken for the draft GPS 2015 and the recently released National Freight Demand Study suggests that the demand for transport will recover as the economy strengthens<sup>10</sup>.

The draft GPS 2015 tells us that this recovery in demand will be led by freight traffic as economic activity increases. While personal travel is expected to increase in line with demographic trends, the best available information to date suggests that growth in personal vehicle travel will remain more muted than in previous economic cycles. Overall demand is forecast to grow over the period of the draft GPS 2015 and in the medium term, albeit at a slower rate than the early 2000s.

The Transport Agency uses a number of different scenarios to predict what future travel demand might look like. Based on these, our expectation is that growth in vehicle kilometres travelled on the state highway network will average somewhere between 0.4 percent to 1.5 percent per year over the 10 years of the SHAMP.

The draft GPS 2015 reports that New Zealand's freight task is forecast to grow by 58 percent by 2042 (from 236 million tonnes in 2012 to over 373 million tonnes). This rate of growth is slower than forecast in 2008, but still represents about 2 percent growth per annum. Road is expected to continue to remain the main mode for freight, accounting for about 70 percent of tonne kilometres, up to 26.3 billion kilometres. The Transport Agency anticipates that forecast growth in heavy vehicle kilometres travelled on the state highway network will be around 0.3 percent to 2.7 percent per year over the 10 years of the SHAMP.

National forecasts of travel demand mask significant regional variations and the table below shows the range of our expectation of where travel demand might lie.

#### ACTUAL AND EXPECTED VEHICLE KILOMETRES TRAVELLED ON REGIONAL STATE HIGHWAYS

Region	2012/13 all vehicle kilometres travelled (billion)	2024/25 all vehicle kilometres travelled (billion)	2012/13 heavy vehicle kilometres travelled (billion)	2024/25 heavy vehicle kilometres travelled (billion)
New Zealand Total	19.6	20.5-23.3	2.00	2.10-2.70
Northland	0.9	0.9-0.9	0.09	0.09-0.17
Auckland	4.2	4.4-5.0	0.26	0.26-0.34
Waikato	3.3	3.5-4.1	0.40	0.42-0.67
Bay of Plenty	1.5	1.6-2.1	0.17	0.18-0.31
Gisborne	0.2	0.2-0.9	0.03	0.03-0.03
Hawkes Bay	0.6	0.6-0.6	0.08	0.08-0.08
Taranaki	0.7	0.7-0.9	0.07	0.07-0.10
Manawatu/Wanganui	1.3	1.3-1.4	0.17	0.17-0.22
Wellington	1.6	1.6-1.7	0.10	0.10-0.11
Nelson/Marlborough	0.7	0.7-0.7	0.08	0.08-0.09
Canterbury	2.3	2.6-3.4	0.27	0.28-0.49
West Coast	0.4	0.4-0.4	0.05	0.05-0.05
Otago	1.3	1.3-1.3	0.15	0.15-0.19
Southland	0.6	0.6-0.6	0.08	0.08-0.13

10 National Freight Demand Study 2014, Ministry of Transport 5 Demand Forecast, NZIER, December 2013

### 3.3 UNDERSTANDING OUR CUSTOMERS' NEEDS

An engagement programme, 'Customers First', has helped to identify the key outcomes our customers want:

- More efficient journey, as a result of better co-ordinated maintenance activities.
- Safer journeys, including reduced impacts from bad decisions made by other drivers.
- More reliable journeys and reduced journey times through more effective use of existing capacity on the network and providing more efficient freight movements and services.
- The ability to make smart travel choices using accurate traveller information before and during their journeys.

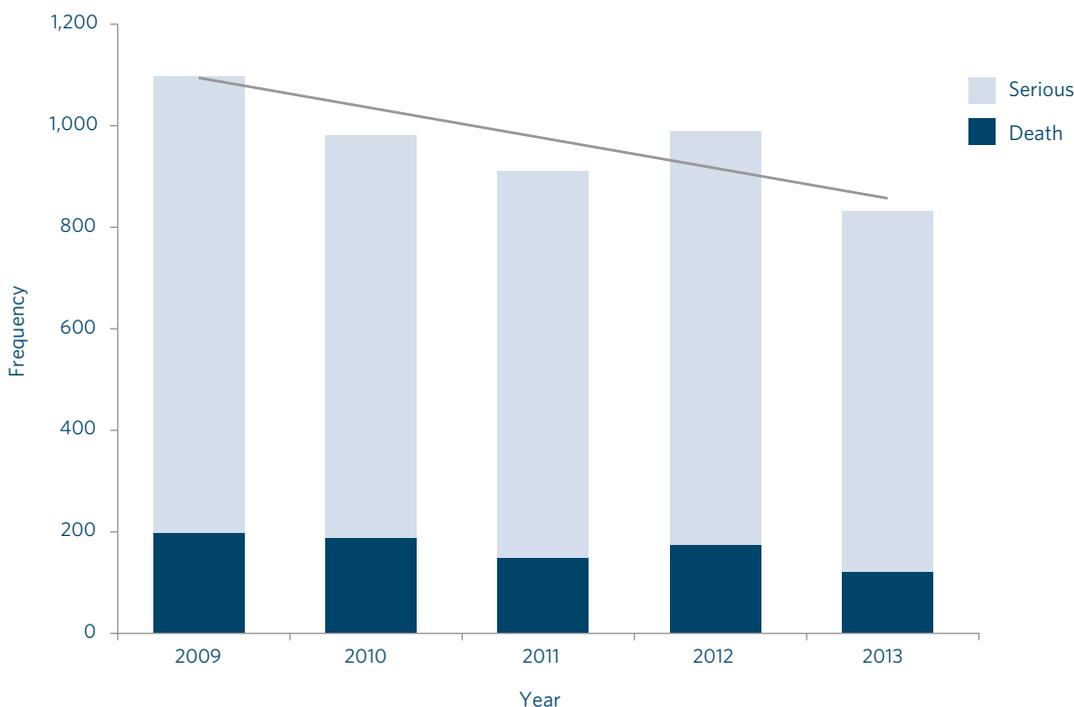
### 3.4 SAFETY CHALLENGES

Despite substantial progress over the last 30 years, New Zealand still lags behind many other countries in road safety. Every year, around 300 people are killed, 2700 hospitalised, and a further 10,000 injured on New Zealand's roads at a social cost of around \$3.5 billion. Slightly over half of all fatalities and around 37 percent of serious injuries occur on the state highway network, at an approximate cost of \$1 billion each year.

Approximately 85 percent of state highway deaths and serious injuries occur on the high speed rural network, with 87 percent of these resulting from three main crash types: run-off road (37 percent); head-on (25 percent); and intersection (25 percent). The vast majority are occupants of light vehicles (72 percent) with motorcyclists making up 14 percent; truck occupants, four percent; and pedestrian and cyclists making up 5 percent and 4 percent of deaths and serious injuries respectively.

Over the last five years, the state highway safety resources have been targeted towards high-risk sites identified through KiwiRAP<sup>11</sup> and other resources such as the *High-risk intersections guide*<sup>12</sup>. This has seen a reduction in the collective risk (total deaths and serious injuries) on the state highway network. We need to continue this focus on creating a Safe System, making corridors and intersections more forgiving of human error.

#### DEATHS AND SERIOUS INJURIES ON STATE HIGHWAYS 2009-13



<sup>11</sup> <http://www.kiwirap.org.nz/>

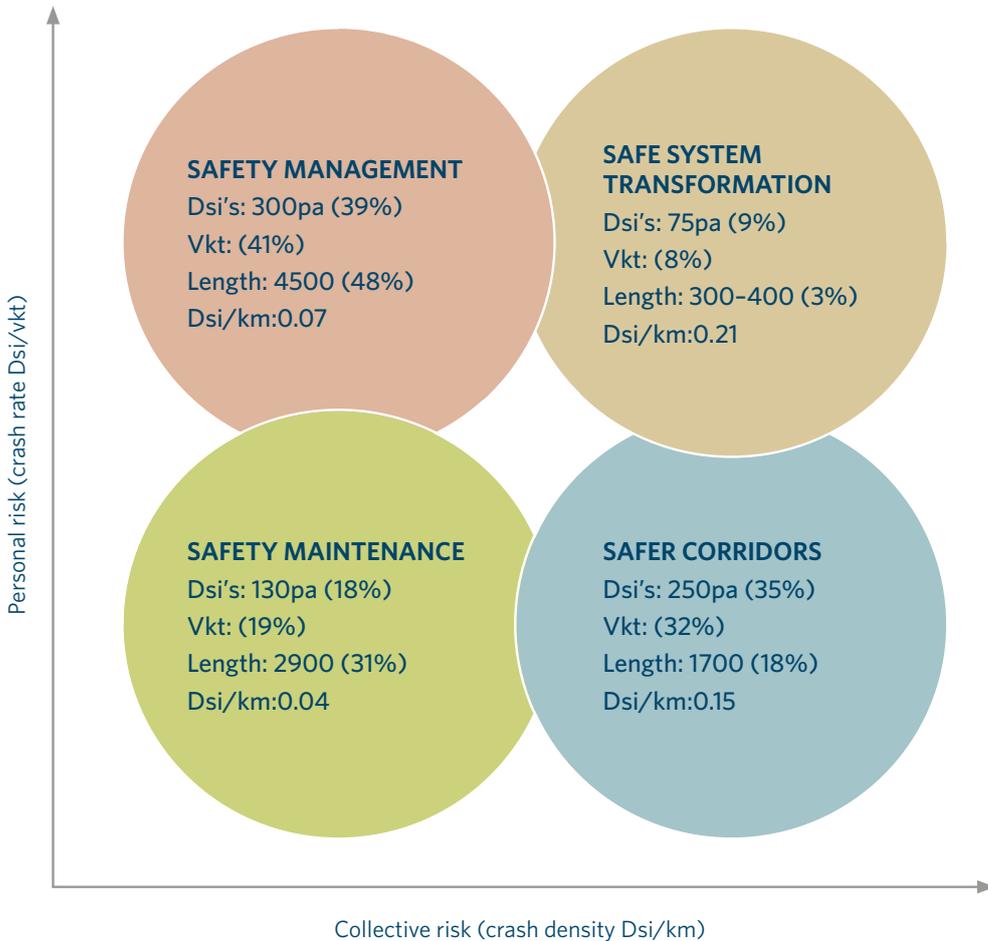
<sup>12</sup> <http://www.nzta.govt.nz/resources/high-risk-intersections-guide/>

Using KiwiRAP risk data, the state highway network has been divided into four primary categories for treatment, depending on the scale of the collective risk and personal risk of the highway in question:

- safe system transformation, requiring significant reconstructions such as the Roads of National Significance
- safer corridors, requiring medium level works such as curve realignments, widening and side barriers
- safety management, requiring lower cost delineation, skid resistance and speed management improvements
- safety maintenance.

About 2000 km of state highway network, primarily higher volume national and regional strategic corridors, fall into the first two categories, requiring reasonably substantial infrastructure improvements (refer figure below). In addition, we need to continue making high-risk intersections on the state highway network safer. Of the 100 worst intersections in New Zealand, over 40 are on the state highway network.

### SAFETY RISK TREATMENT PHILOSOPHY



### 3.5 NETWORK RESILIENCE

Journey reliability is important for our customers, particularly businesses that need to have confidence in the network so that their choice of transport maximises their productivity. The reliability of some highways, real or perceived, can impact on business confidence and undermine economic growth within a region. Inconsistent network reliability (as a result of unexpected or unplanned events) reduces the choices for locating a business, reducing inter-regional competitiveness.

A resilient transport network is one that meets current and future needs of customers and has the ability to recover from events impacting network availability and reliability of travel.

As traffic volumes have continued to grow, the freedom to travel at a desired speed has become increasingly impeded by other vehicles in the traffic stream on increasing lengths of some state highway corridors. This has led to a reduction in the reliability of journey times and a resulting increase in the cost of doing business.

The risks and hazards that can cause disruption to the land transport system, therefore impacting on the resilience of the network, range from events such as vehicle breakdowns, congestion or crashes on key routes.

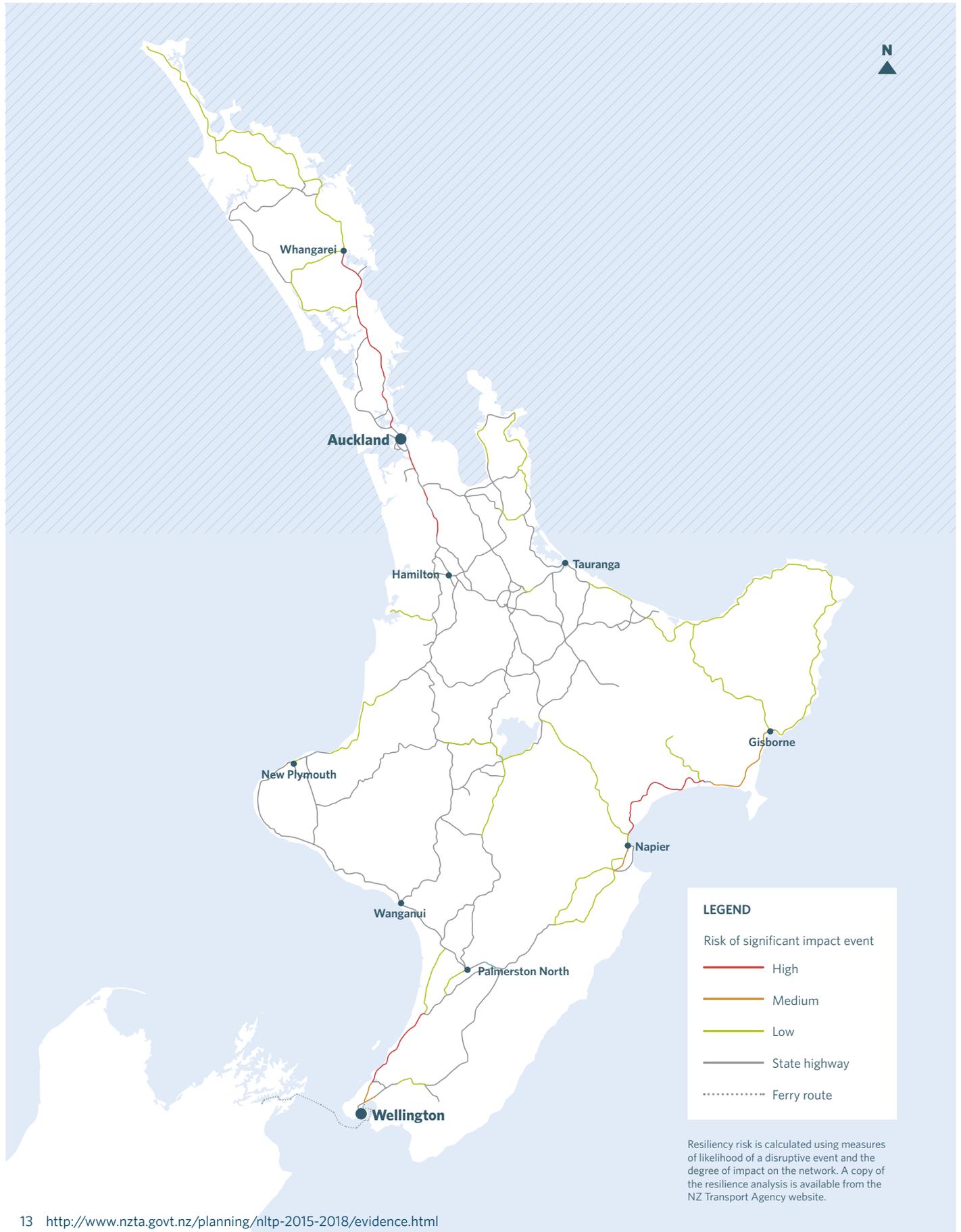
The climate and terrain in New Zealand also give rise to reduced reliability of journey times. Snow and ice, surface flooding and landslides occur regularly, especially in winter months, and often result in road closures or considerable reductions in operating speeds.

To get the most gains in meeting the needs of New Zealand's aspirations for economic growth and social vitality, the land transport system needs to respond efficiently and effectively to such events.

There are a number of high-risk corridors in terms of their lack of resilience as shown below. These maps highlight the areas, routes or locations where disruptive events would affect large numbers of network users and economic productivity.

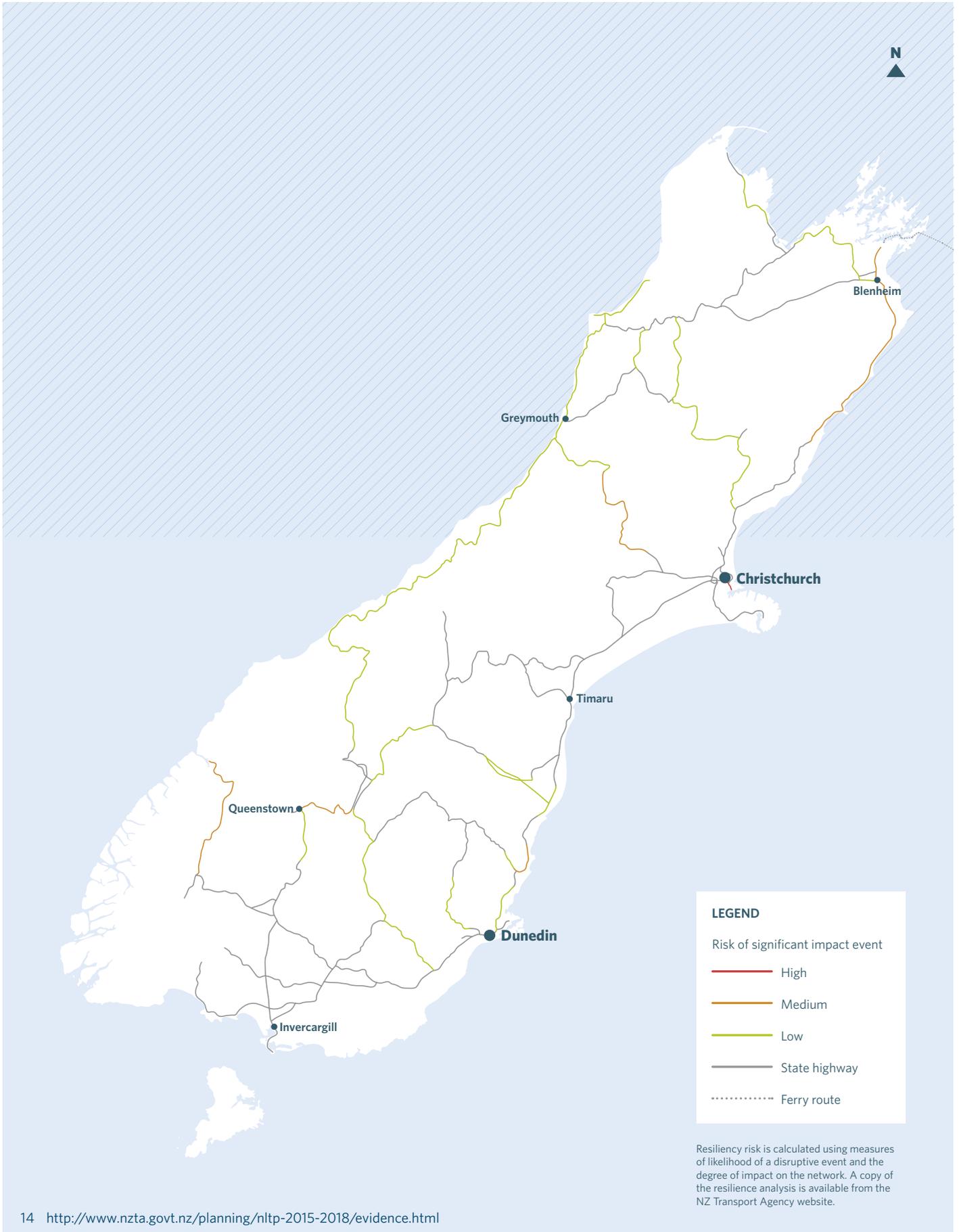


## NORTH ISLAND REGIONAL RESILIANCE RISK RATINGS<sup>13</sup>



13 <http://www.nzta.govt.nz/planning/nltp-2015-2018/evidence.html>

## SOUTH ISLAND REGIONAL RESILIENCE RISK RATINGS<sup>14</sup>



14 <http://www.nzta.govt.nz/planning/nltp-2015-2018/evidence.html>

### 3.6 INCREASING URBAN CONGESTION

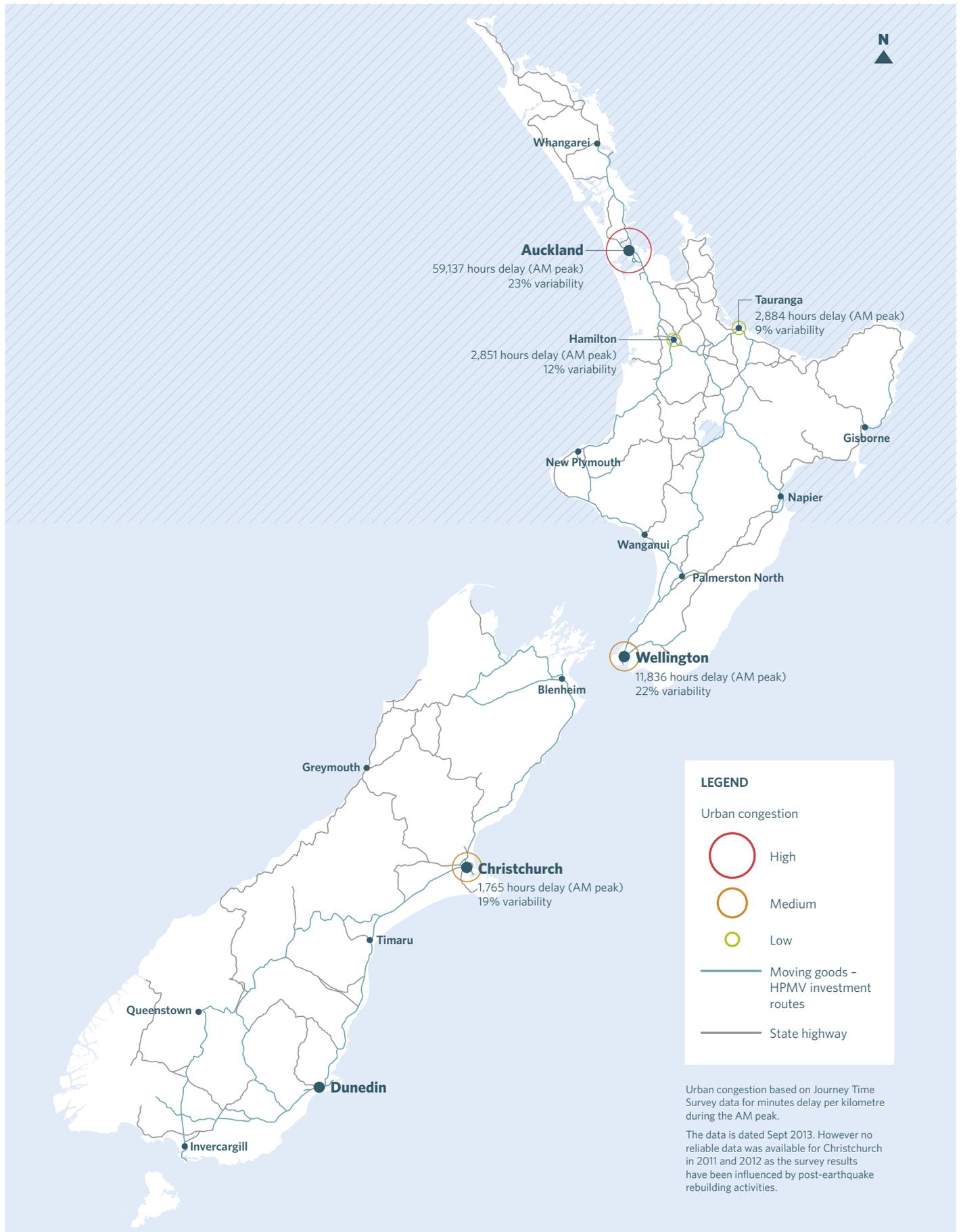
Issues of congestion and reliability of travel are most pronounced in the major urban areas of Auckland, Wellington and Christchurch. The impact of congestion is constraining the ability of the land transport system in moving people and goods efficiently.

Some parts of the Auckland and Wellington state highway networks continue to be subject to severe congestion for periods longer than the typical commuter peaks, and congestion in Christchurch is heavily influenced by the inability to respond quickly enough to the dynamic change in population and employment centres following the Canterbury earthquakes.

In relative terms, Auckland and Wellington have similar levels of congestion, with Christchurch slightly less. However the cost of congestion is greater and resultant recovery times are much longer in Auckland due to the number of people affected by congestion.



## URBAN CONGESTION IN AUCKLAND, WELLINGTON AND CHRISTCHURCH

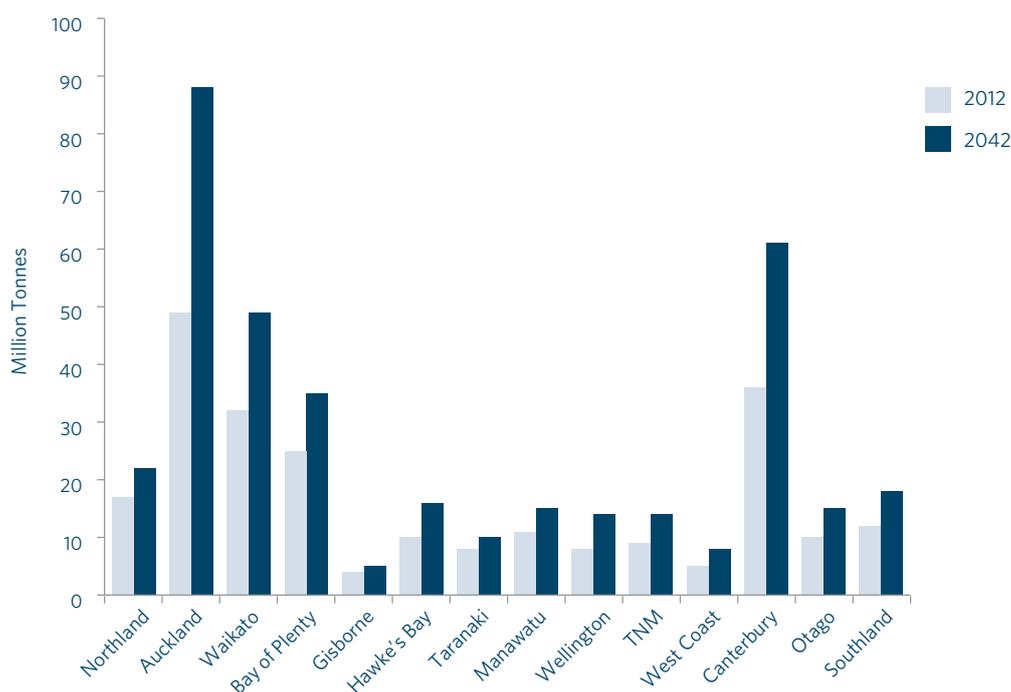


### 3.7 FREIGHT PRODUCTIVITY

Road is the dominant mode in terms of both tonnes and tonne-kilometres, accounting for 91 percent of tonnes moved and 70 percent of tonne-kilometres, of which 72 percent are on state highways. The National Freight Demand Study 2014<sup>15</sup> has forecast road freight tonne kilometres to grow by around 50 percent by 2042.

The regions with the largest anticipated change are Wellington and Auckland, with large populations and limited primary production compared to other regions. Therefore, they are more greatly affected by changes in domestic economic activity, as shown below.

#### CHANGES IN FREIGHT FLOWS BY ORIGIN REGIONS 2012 AND 2042 (MILLION TONNES)



This highlights the high growth forecast for the Auckland region, reflecting its growing share of population and economic activity and its increasing role as a national distribution centre. The increase forecast for Canterbury reflects its role both as a major agricultural area and as the centre for South Island distribution. Other high flows are forecast for the other regions in the upper North Island.

The expectation is that, over time, modal share will remain similar to that in 2012, with rail continuing to carry around six to seven percent of freight volumes and road continuing to carry 91-92 percent.

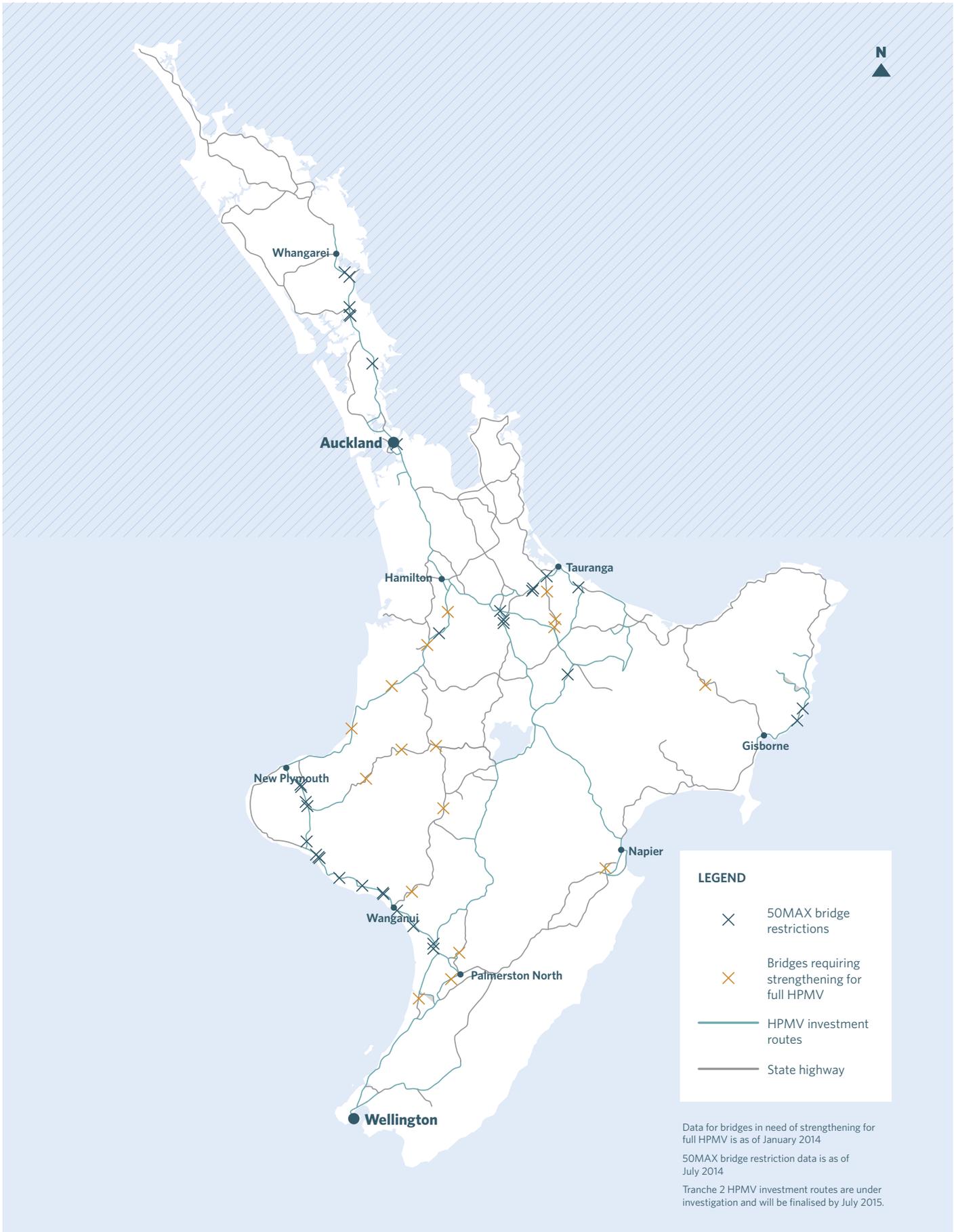
To move this increase in freight will either require more trucks and truck trips or to move more freight on every truck trip, where this is feasible. There are significant efficiency gains from reducing the number of truck trips on state highways, while still moving the same amount of freight. This can be achieved by allowing higher weight carrying trucks (high productivity motor vehicles - HPMVs) to operate on state highways where the road pavement and structures are sufficiently strong to carry them.

We are continuing to build our understanding of the nature and location of constraints impacting key freight routes across the whole network. We have already identified and delivered HPMV investment routes, as illustrated by the maps on pages 27 and 28.

A number of freight routes rely on efficient travel times to fit the desired number of trips into allowable driving hours. Some of these routes are reaching the limits of this reliability, and work will continue to understand these key routes to better understand constraints and options for providing reliable travel times and tangible improvements in freight efficiency.

15 <http://www.transport.govt.nz/research/nationalfreightdemandsstudy/>

## NORTH ISLAND LOCATION OF HPMV CONSTRAINTS



## SOUTH ISLAND LOCATION OF HPMV CONSTRAINTS



### 3.8 ENVIRONMENTAL AND COMMUNITY IMPACTS

Developing, maintaining and operating the state highway network can have both positive and negative impacts on the environment and neighbouring communities in many ways.

The Transport Agency's overarching policies and standards apply good practice in environmental, cultural and heritage management activities to ensure we appropriately avoid, mitigate or remedy these environmental and community 'harms' from the state highway.

Negative environmental and community impacts, such as pollution from water run-offs and exhaust emissions, and noise, dust and visual impacts, are critical issues in determining the overall performance of the state highway programme.

Over 200 kms of state highway is located within ecologically sensitive conservation areas managed by the Department of Conservation, as illustrated by the maps below. In addition, there are more than 300 registered heritage sites within 200m of the Roads of National Significance.

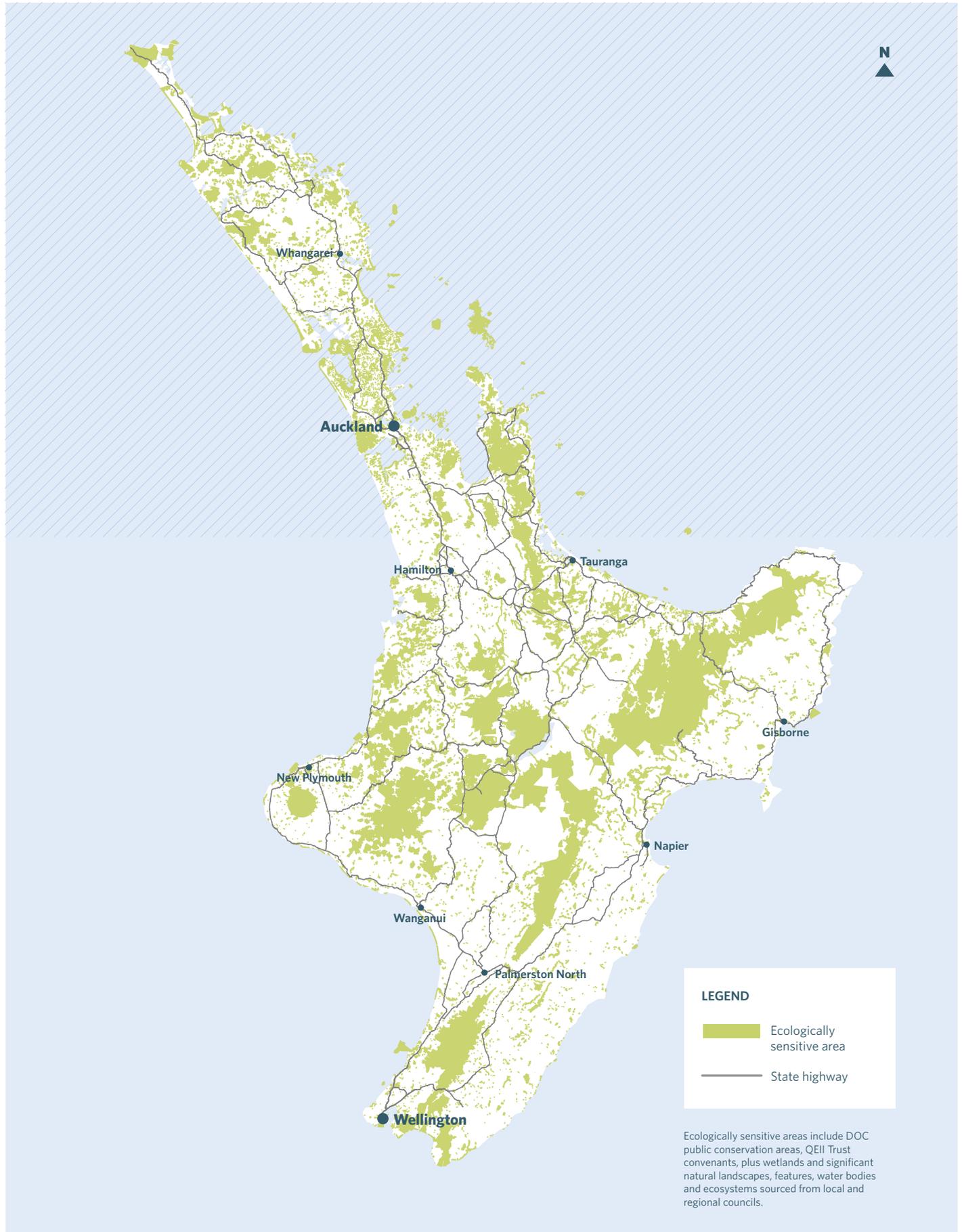
State highways can create various social impacts ranging from adverse effects arising from construction and maintenance activities such as noise and dust to severance and accessibility issues. Such issues tend to be more acute in the vicinity of the 2000 plus km of state highway that are located in urban areas.

Road traffic noise associated with highly-trafficked state highways in urban areas can create unreasonable noise. Within the period of the 2015-18 NLTP we have a particular issue adjacent to the Auckland motorway network where there are a growing number of properties which, as a consequence of traffic growth and urban intensification, have progressively been exposed to elevated levels of road traffic noise.

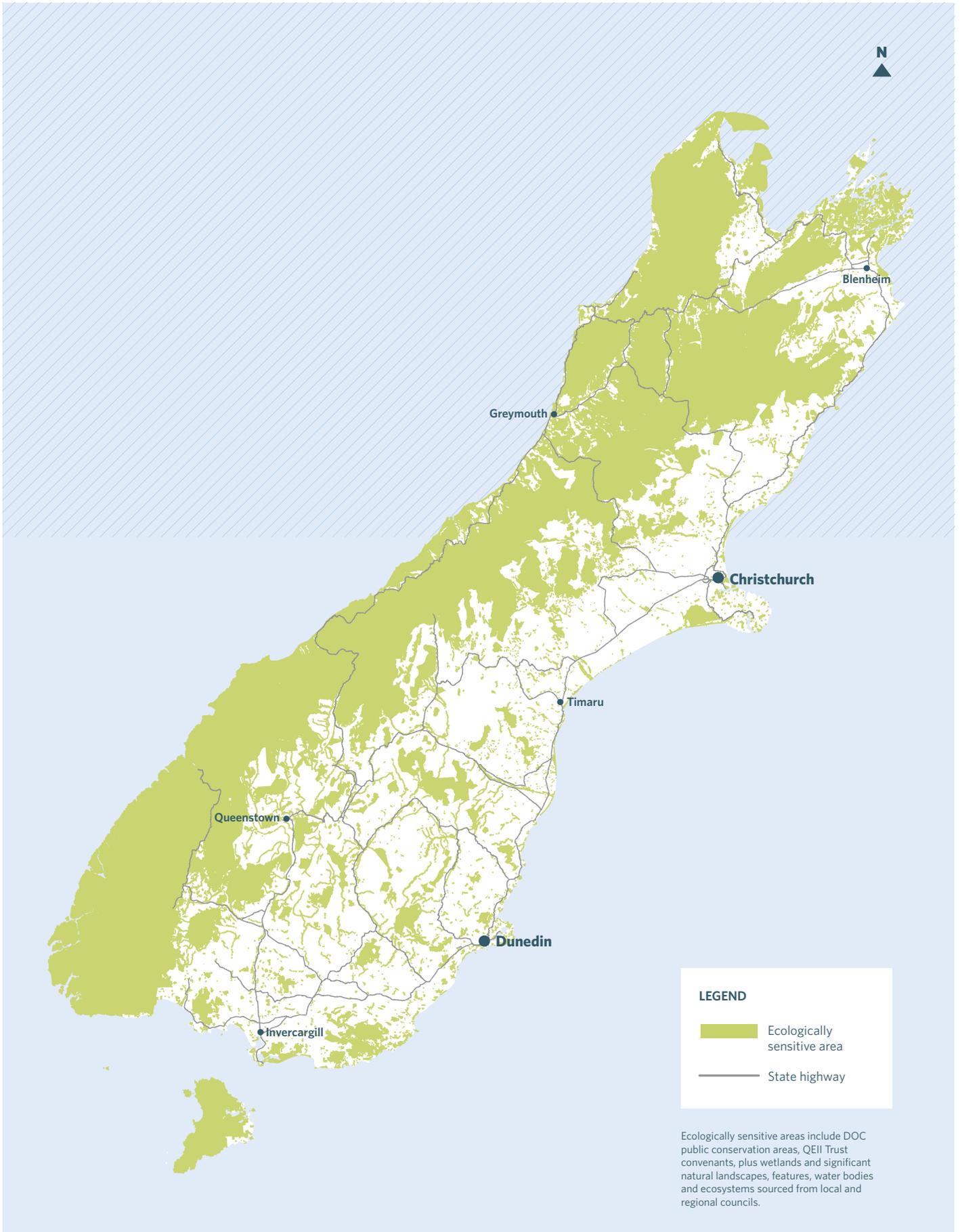
We continue to work with our partners to avoid or minimise potential adverse human health/public health effects associated with the state highway network.



## NORTH ISLAND ECOLOGICALLY SENSITIVE CONSERVATION AREAS



## SOUTH ISLAND ECOLOGICALLY SENSITIVE CONSERVATION AREAS



# 4. STRATEGIC DIRECTION



## 4.1 DRAFT GOVERNMENT POLICY STATEMENT 2015

The draft Government Policy Statement on Land Transport (GPS) 2015<sup>16</sup> sets out the government's priorities for expenditure from the National Land Transport Fund (NLTF) over the next 10 years. Economic growth and productivity is the key priority for the government. To achieve this, the government wants to see the land transport system moving people and freight as quickly, efficiently and safely as possible.

A key focus of the draft GPS 2015 is investment in the Roads of National Significance (RoNS). These projects will move people and freight between and within New Zealand's five largest population centres more safely and efficiently. They enable economic growth rather than simply responding to it, particularly through the draft GPS 2015, providing high quality connections to major ports and airports from key export production and urban areas.

Road safety is another key priority for the government. The draft GPS 2015 confirms the government's commitment to the Safe System approach which is being addressed through our *Safer Journeys*<sup>17</sup> road safety strategy accompanied by a series of action plans. The philosophy behind the Safe System is that humans make mistakes and the network should help to minimise mistakes and manage energy forces to within survivable limits when crashes do occur. This is done through safer use, safer speeds, safer vehicles and more forgiving roads and roadsides.

Improving Auckland's transport system will continue to be an important priority under the draft GPS 2015. Auckland is home to a third of New Zealand's population and is predicted to account for 60 percent of the country's population growth over the next 20 years. Getting Auckland's transport working well is crucial to improving the contribution the city can make to national economic growth.

To ensure the maximum impact from the NLTF, the draft GPS 2015 strengthens the priority for value for money in the land transport sector. There is an expectation that a strong rationale will be demonstrated for projects and activities, and that a greater emphasis will be given to progressively finding smarter ways of operating and maintaining networks.

## 4.2 NZ TRANSPORT AGENCY GOALS

The Transport Agency's *Statement of intent 2014-18*<sup>18</sup> states the Transport Agency's strategy for giving effect to the government's direction for transport. The Transport Agency's overall aim is to support a thriving New Zealand through achieving four long-term goals:

- Integrate one effective and resilient network for customers.
- Shape smart, efficient, safe and responsible transport choices.
- Deliver efficient, safe and responsible highway solutions for customers.
- Maximise effective, efficient and strategic returns for New Zealand.

The state highway network contributes to all of the long-term goals and many of the medium-term objectives. A summary of the Transport Agency's operating intentions is shown in the figure below.

16 <http://www.transport.govt.nz/ourwork/keystrategiesandplans/gpsonlandtransportfunding/gps2015/>

17 <http://www.saferjourneys.govt.nz/>

18 <http://www.nzta.govt.nz/resources/statement-of-intent/docs/SOI-2014-18-web.pdf>

# SUMMARY OF OUR OPERATING INTENTIONS

The following framework diagram provides an overview of the relationship between the sector outcomes and the contributions we will undertake, as well as the indicators that will measure our progress toward achieving the desired goals and outcomes.



## Desired outcomes

from the New Zealand transport sector.

### EFFECTIVE

Moves people and freight where they need to go in a timely manner

### EFFICIENT

Delivers the right infrastructure and services to the right level at the best cost

### SAFE & RESPONSIBLE

Reduces the harms from transport

### RESILIENT

Meets future needs and endures shocks

## OUR PURPOSE

Creating transport solutions for a thriving New Zealand

## 2013-32

### Long-term goals

Our strategic direction.

## 2013-22

### Medium-term objectives

Implemented through the Transport Agency 10-year work programme, with key results specified for 2016.

**Integrate one effective and resilient network for customers**

- 1 Integrate land uses and transport networks to shape demand at national, regional and local levels.
- 2 Integrate national and local transport networks to support strategic connections and travel choice.  
SHORT-TERM FOCUS: making the most of urban network capacity PRIORITY 2
- 3 Improve freight supply chain efficiency.  
SHORT-TERM FOCUS: moving more freight on fewer trucks PRIORITY 3

**Shape smart efficient, safe & responsible transport choices**

- 4 Implement the Safe System approach to create a forgiving land transport system that accommodates human error and vulnerability.  
SHORT-TERM FOCUS: safe speeds to reduce deaths and serious injuries PRIORITY 4
- 5 Incentivise and shape safe and efficient travel choices using a customer-focused approach.
- 6 Reduce costs for transport users through better regulation and willing compliance.

**Deliver efficient, safe & responsible highway solutions for customers**

- 7 Greater resilience of the state highway network.
- 8 Deliver consistent levels of customer service that meet current expectations and anticipate future demand.  
SHORT-TERM FOCUS: safe speeds to reduce deaths and serious injuries PRIORITY 4  
SHORT-TERM FOCUS: efficient road maintenance investment and delivery PRIORITY 5
- 9 Plan for and deliver the roads of national significance.

**Maximise effective, efficient & strategic returns for New Zealand**

- 10 Align investment to agreed national, regional and local outcomes and improve value for money in all we invest in and deliver.  
SHORT-TERM FOCUS: efficient road maintenance investment and delivery PRIORITY 5
- 11 Ensure effective and efficient co-investment with our partners.
- 12 Explore innovative revenue, pricing and financing approaches that enhance the value delivered by land transport investments.

## 2013-16 Shorter-term priorities

Our key areas of focus to achieve ambitious targets against the goals.

## 2014 → Outputs\*

### 1 Putting customers at the heart of our business

3-year emphasis of all objectives

PLANNING THE LAND TRANSPORT NETWORK  
output classes

### 2 Making the most of urban network capacity

3-year emphasis of objective

2

PROVIDING ACCESS TO AND USE OF LAND TRANSPORT SYSTEM  
output classes

### 3 Moving more freight on fewer trucks

3-year emphasis of objective

3

MANAGING THE STATE HIGHWAY NETWORK  
output classes

### 4 Safe speeds to reduce deaths and serious injuries

3-year emphasis of objectives

4

8

INVESTING IN LAND TRANSPORT  
output classes

### 5 Efficient road maintenance investment and delivery

3-year emphasis of objectives

8

10

\* For further information on output classes, refer to the *Statement of performance expectations*.

### 4.3 EARLY INVESTMENT SIGNALS

The Transport Agency works closely with the sector to ensure the NLTP delivers the best outcomes it can to support a thriving New Zealand.

This coming NLTP 2015-18, is the first to be developed since the 2013 amendments to the Land Transport Management Act, and adoption of different ways of working and new frameworks – including the Public Transport Operating Model, One Network Road Classification and business case approach.

To achieve a successful NLTP, the Transport Agency has indicated that all contributing transport programmes, including the SHAMP and activities should be:

- well aligned to the GPS – the NLTP must give effect to the GPS and deliver on the Government's expectations. RLTPs must be consistent with the GPS
- outcome-focused – delivers outcomes and benefits for the users of the transport network aligned to investment priorities
- evidence based – underpinned by supporting information and evidence
- integrated, optimised and tested to deliver value for money.

This draft SHAMP 2015-18 has been prepared, taking on board the planning and investment signals and guidance information the Transport Agency has provided to organisations that develop programmes as part of the NLTP.

### 4.4 INVESTING IN OUTCOMES

The Transport Agency is focused on delivering outcomes that are clearly aligned to the direction set by the GPS and through the Transport Agency's strategy. Investments will be targeted to achieve outcomes, rather than outputs. The Transport Agency's priorities for investment that are most relevant to the draft SHAMP 2015-18 are summarised below in relation to the four overarching outcomes:

- Effective (moves people and freight where they need to go in a timely manner):
  - › delivering reliable service levels that safely move people and goods and support economic growth and productivity
  - › the shorter-term focus is on making the most of urban network capacity and improving freight supply chain efficiency including moving more freight on fewer trucks.
- Efficient (delivers the right infrastructure and services to the right level at the best cost):
  - › delivering fit for purpose levels of service that are appropriate to the different parts of the network
  - › improving value-for-money in relation to how the road network is maintained and operated.
- Safe and responsible (reduces the harms from transport):
  - › targeting efforts to reduce head-on, run-off road, intersection and vulnerable road user deaths and serious injuries on high risk corridors and locations
  - › improving roads and roadsides so they are more self-explaining and forgiving, and encourage safer speeds and safe road use.
- Resilient (meets future needs and endures shocks):
  - › identifying high impact events that would impact on large numbers of network users and economic productivity
  - › clarifying the lifeline functions of transport corridors and where these can be compromised by disruptive events, including outlying communities.

## 4.5 INTERVENTION HIERARCHY AND MANAGING DEMAND

Activities forming the draft SHAMP 2015-18 have been developed using the Transport Agency's 'intervention hierarchy'<sup>19</sup> to maximise the value of existing investments. Under this approach, investment in new infrastructure is only considered when other interventions such as integrated land use and transport planning, travel demand management, and network management have first been applied to address performance gaps.

### 4.5.1 Managing demand

The Transport Agency is actively working to manage growing demand for travel by providing customers with better choices in how to undertake their journeys. A key decision is land use, which affects where our customers chose to live, work and play which, in turn, impacts on the demand for travel. By better integrating transport and land use we can positively influence this demand. We do this by:

- participating in planning processes – getting involved early to influence land use decisions by working in partnership with local government and the private sector to promote national and inter-regional network perspectives
- place shaping – working collaboratively to consider the impact of new development on the state highway network, as well as the opportunities to develop settlement patterns that will improve connectivity, accessibility and safety across all modes of transport
- managing adverse planning impacts – identifying the functions of different parts of the state highway network to inform appropriate responses to development proposals.

Another way we are shaping demand is by providing customers more choices on how they travel. By providing more effective travel choices, the Transport Agency can proactively manage the level of traffic growth on the state highway network. We achieve this through a range of travel information and road space management activities, including:

- providing travel information through various channels
- allocating road space to buses and high occupancy vehicles
- providing safe and convenient walking and cycling opportunities
- enabling park and ride with our partners
- proactively managing the movement of freight on the network.

<sup>19</sup> <https://www.pikb.co.nz/home/the-way-we-work/nzta-planning-and-investment-principles/optimize-the-provision-and-use-of-the-land-transport-network/>



## 5. MEASURING PERFORMANCE

## 5.1 OVERVIEW

The Transport Agency has developed key performance indicators (KPIs) and associated measures specifically to assess the cumulative performance of the State Highway Programme against the goals of the draft SHAMP 2015-18.

Six KPIs have been developed to be specific to the role that state highways plays through this draft SHAMP 2015-18 in contributing to the goals of the government and the Transport Agency. These KPIs have a direct link back to our overarching strategic direction as outlined in section 4.

Our six key performance indicators for the draft SHAMP 2015-18 are:

- efficiency in maintenance and operations
- better utilisation of existing capacity
- improved reliability
- reduced travel time
- reduction in deaths and serious injuries
- reduction in collective risk.

## 5.2 MEASURING PERFORMANCE

In developing measures we have aimed to use metrics available from current data sets that are common to (or readily calculable for) the full state highway portfolio. The measures are complementary to the Transport Agency's statement of performance expectations<sup>20</sup> and other performance management frameworks.

We have chosen two sets of metrics for the improvement programme: monetised metrics and outcome metrics.

Monetised metrics are based on an aggregation of monetised benefits which are required as part of the Transport Agency's economic evaluation processes:

- Economic growth – summation of *Economic evaluation manual* journey time savings and vehicle operating cost savings.
- Safety benefits – crash cost savings saved on the state highway.

Outcome metrics provide a more tangible measure of how the draft SHAMP 2015-18 will affect our customers.

The maintenance and operations programme is measured in a different way. The main driver for the maintenance and operations programme is the achievement of the One Network Road Classification (ONRC) levels of service for the least cost. The Road Efficiency Group is in the process of developing ONRC performance measures and we expect our maintenance and operations portfolio to be measured against that framework. It is anticipated that the ONRC performance measures will complement the suit of other measures used to monitor the condition of the state highway network which have been developed as part of the Network Outcome Contract.

20 <http://www.nzta.govt.nz/resources/statement-of-intent/docs/SOI-SPE-2014-18-web.pdf>

The combination of these two sets of metrics will provide a rounded view of the outcomes achieved from the draft SHAMP 2015-18. It allows for uncertainty around the availability of outcome metrics which are still being collated while using a more robust set of economic proxies based on well-established requirements to produce economic assessments in accordance with the Transport Agency's *Economic evaluation manual*<sup>21</sup>. The measures are shown in more detail in the figure below.

### SHAMP PERFORMANCE MEASURES

SHAMP KPI	Performance measure	Status of measure
Efficiency in maintenance & operations	ONRC performance measures	Current/aspirational
	\$/lane km (by classification)	Current
Better utilisation of existing capacity	Total HPMV network added (km)	Current
	Network productivity in Auckland, Wellington & Christchurch	Aspirational
Improved reliability	Number of journeys impacted by an unplanned event(s)	Aspirational
	The variability of state highway travel times on key journeys	Aspirational
Reduced travel time	NPV of travel time and VOC savings by classification	Current
Reduction in deaths and serious injuries	No. of serious and fatal crashes on state highway network each year as part of a five year trend	Current
	NPV of safety savings	Current
Reduction in Collective Risk	Annualised state highway serious and fatal crashes per km by classification and risk rating	Current

## 5.3 CRITICAL SUCCESS FACTORS

In addition to the key outcomes and goals of the draft SHAMP 2015-18, there are other critical success factors (examples of which are outlined below) that underpin everything the Transport Agency does in planning, operating, maintaining and improving the state highway network as part of the overall transport system.

### 5.3.1 Value for money

We constantly consider how to deliver the outcomes sought by the draft SHAMP 2015-18 in the most effective and efficient manner, to obtain the best value for money. As funding for state highway infrastructure comes from road users (individuals and businesses) we have a responsibility to ensure that costs are kept under control, and that all funding delivers the best possible outcomes for New Zealand.

### 5.3.2 Environmental and social responsibility

Land transport investment can have positive as well as negative impacts on the environment. Investment in new state highways that remove traffic from suburban streets can significantly improve the living environment for many people. However, improvements can also have adverse impacts on those living closest to the improvements. These impacts need to be addressed at reasonable cost in the course of securing approvals if the full benefits of transport investment are to be realised.

There are a number of Acts of Parliament which underpin the work the Transport Agency does with the aim of ensuring that transport projects contribute positively to the environments they sit in.

### *Land Transport Management Act 2003*

The legal foundation of the Transport Agency is the Land Transport Management Act. The Act established the Transport Agency and requires us to undertake our functions in a way that contributes to an effective, efficient, and safe land transport system in the public interest. The Act contains operating principles for the Transport Agency which includes exhibiting a sense of social and environmental responsibility.

### *Resource Management Act 1991*

The Resource Management Act (RMA) promotes the sustainable management of natural and physical resources. The state highway network and the various environments it interacts with are resources that fall within the remit of the RMA and need to be sustainably managed. The RMA has a particular focus on ensuring that the adverse environmental effects of activities are avoided, remedied or mitigated.

The Transport Agency aims to be socially and environmentally responsible. We promote an accessible and safe transport system that contributes positively to New Zealand's economic, social and environmental welfare, and we are committed to acting in an environmentally and socially responsible manner.

### **5.3.3 Health and safety**

As part of the government's vision to improve New Zealand's health and safety performance by 25 percent by 2020, the Transport Agency will meet and exceed the requirements of the new Workplace Health and Safety legislation which comes into effect in April 2015.

As a Person Conducting a Business or Undertaking (PCBU), in our roles as principal, employer and designer, we will focus on providing risk-based, proactive solutions to ensure the safety of workers through implementing the Transport Agency's Zero Harm Strategic Plan 2014-2020 across the organisation.

### **5.3.4 Better understand our customers**

In delivering activities on the state highway we have to make trade-offs. We have made substantial change whereby we consider both customer and engineering challenges more effectively in making our trade-off decisions. We are doing this by building our capability to design with our customers in mind. In addition, we have also made changes by:

- improving engagement with the public by making it easier for customers to contact us and share their feedback
- improving our engagement with other road controlling authorities and additional key stakeholders through establishment of new Journey Manager roles as a key liaison point
- improving our processes and systems for dealing with customer complaints and enquiries.

Continuing to focus on understanding our customers' needs and working with other network providers to deliver outcomes as part of One Network will be critical to successfully planning and implementing the draft SHAMP 2015-18.

## 6. OVERALL PROGRAMME DEVELOPMENT



## 6.1 OVERVIEW

Funding for state highways is planned and allocated within three-yearly cycles through the National Land Transport Programme, allowing medium-term certainty and avoiding costly resource reallocation.

The draft GPS 2015 states that we must continue to focus on targeted, value for money spending to ensure that costs are kept under control, and that all funding delivers the best possible outcomes for New Zealand. In particular the government is seeking continued progress in the area of maintenance investment including the ongoing implementation of the findings of the Road Maintenance Taskforce with a desire for further improved investment productivity. Similarly, the government wishes to see a continued drive for the best possible measureable value from state highway improvements.

The draft SHAMP 2015-18 has been driven by the requirement to give best effect to the draft GPS 2015. While funding is planned through the National Land Transport Programme, it is the draft GPS 2015 that sets the funding ranges available. The table below shows the proposed funding allocations over the ten-year period of the SHAMP 2015-18.

**GPS 2015 (draft) state highways funding ranges (\$million)**

	Bands	2015/18	2018/21	2021/25
State highway maintenance	Lower	1,350	1,380	1,910
	Upper	1,810	1,980	2,930
State highway improvements	Lower	3,150	3,450	5,100
	Upper	4,350	4,800	7,500

## 6.2 OVERALL PROGRAMME DEVELOPMENT

Through the SHAMP 2015-18 we aim to maximise the benefit derived from investment in maintaining, operating and improving state highways as part of the transport system, to New Zealand's economy in a safe and sustainable manner. The SHAMP 2015-18 aims to achieve the right outcomes by targeting the right treatment or activity, in the right place, at the right time, and for the right cost.

In developing the SHAMP 2015-18 we must also ensure that the expenditure associated with the relative programmes of work fit within our allocated budgets. To do this, we have implemented a rigorous programme development process to extract maximum value for money from our operations, maintenance and improvements programmes. The process has involved:

- targeting the most important issues for our customers
- identifying where we can make the greatest difference to improving journeys
- identifying the best programme of activities we can implement to close the level of service gap.

The SHAMP 2015-18 has been developed from maintenance, renewal, operational and infrastructure improvement activities already underway, together with new activities that have been prioritised and programmed using the business case approach<sup>22</sup>.

We prioritise activities (or groups of activities) for inclusion in the National Land Transport Programme through the application of the intervention hierarchy and the Transport Agency Investment Assessment Framework<sup>23</sup>. However, we also consider other factors and the approaches taken to developing the respective programmes is outlined further in sections 7, 8 and 9.

<sup>22</sup> <https://www.pikb.co.nz/home/planning-to-project-delivery-process/overview-documents/the-business-case-approach-high-level-overview/>

<sup>23</sup> <https://www.pikb.co.nz/home/nzta-investment-policy/assessment-framework-overview/>



# 7. MAINTENANCE AND RENEWAL OF THE NETWORK

## 7.1 OVERVIEW

Draft SHAMP 2015-18 seeks to deliver the One Network Road Classification levels of service and make maintenance and renewal cost savings of at least four percent each year to counterbalance the underlying factors that are pushing up asset management costs.

The main factors that are driving increased costs are:

- scope increases: for example, new additions to the network from the capital improvements programme (3.75% of the value of the SH network) such as the Waterview Tunnel, that add assets that need to be operated, maintained and renewed
- demand changes: for example, the growth in heavy vehicle kilometres and HPMV impacts which add to wear and tear on the network
- input prices increases: for example rising bitumen and aggregate costs due to market supply pressures and international currency matters.

The aim is to counterbalance these trends through:

- improved effectiveness: constructing and renewing assets so they are fit for purpose having regard to an appropriate level of service for the road in question
- improved efficiency: optimally maintaining, repairing and renewing assets to minimise whole-of-life costs
- improved economy: smarter procurement that reduces the costs of delivering the programme while maintaining competitive markets, and risk transfer to the Transport Agency for renewal investment decisions.

## 7.2 APPROACH TO MAINTENANCE AND RENEWALS

The Transport Agency's approach to developing the proposed maintenance and renewals programme for 2015-18 and beyond is to bank the efficiency gains made to date and aggressively pursue new opportunities. It is targeting a 4% saving each year.

The One Network Classification levels of service are progressively becoming the target for state highway networks, through the roll-out of our Network Outcomes Contracts across New Zealand.

We are continuing to embed changes to our asset management structures, roles and processes that are now beginning to improve the efficiency and effectiveness of the maintenance and renewal programmes. Key areas of focus for the future are outlined below.

### 7.2.1 Sound network condition

The state highway network is generally in good condition. Current indications are that pavements may have longer service lives than once forecast and that, on average, they are less than halfway through their service lives. This means that we can reduce the amount of pavement rehabilitation in the short to mid-term period compared to the sustainable level without adverse impact on long term costs. We are improving our measurement of pavement condition and forecasts of service lives in order to improve our confidence in the scope for continued programme reductions below the long term sustainable level.

### 7.2.2 Network Outcomes Contracts (NOCs)

We will be completing the roll-out of NOCs which will help us to achieve procurement efficiencies, give a greater focus to customer service, and provide improved performance incentives for improved contractor performance. Coupled with enhanced performance management, this is expected to improve the durability of road works and extend service lives beyond those previously achieved.

### 7.2.3 Data acquisition, analysis and use

We will be using improved network benchmarking metrics to identify and target opportunities for improvement. We aim to enhance our modelling of asset condition and the maintenance and renewal works required to meet service level targets for the least long-term cost to increase our confidence that the current and planned reductions in renewals programmes will be sustainable. This includes improving our dTims modelling and implementing the UK Highways Maintenance Efficiency Programme's stochastic modelling process. This analysis is already supporting our reduced renewals programmes. By engaging with sector and infrastructure best practice groups we will be better able to benchmark practices and identify further opportunities for improvement.

### 7.2.4 Working the asset

By moving to ONRC levels of service and, in some parts of the network, replacing our assets later in their lifecycle, the state highway network will be less frequently renewed. This will result in more patched roads and a less smooth journey for customers on about 10% of our lower classification network. However, road conditions will be monitored, as described in section 7.2.5, to ensure safety is not compromised.

### 7.2.5 Condition monitoring

We aim to change our approaches to monitoring the condition of pavements and forecasting remaining lives by implementing new condition monitoring techniques and lessons learnt from past condition metrics. The Transport Agency is one of the three Australasian state road agencies that have collaborated with ARRB to import and systematically use the Traffic Speed Deflectometer to measure pavement condition so that life remaining can be reliably forecast at a network level. This will be used to more accurately forecast the remaining service lives of our pavements, and therefore the amount of pavement renewal works that are required to cost effectively maintain access.

### 7.2.6 Infrastructure Asset Management Plan

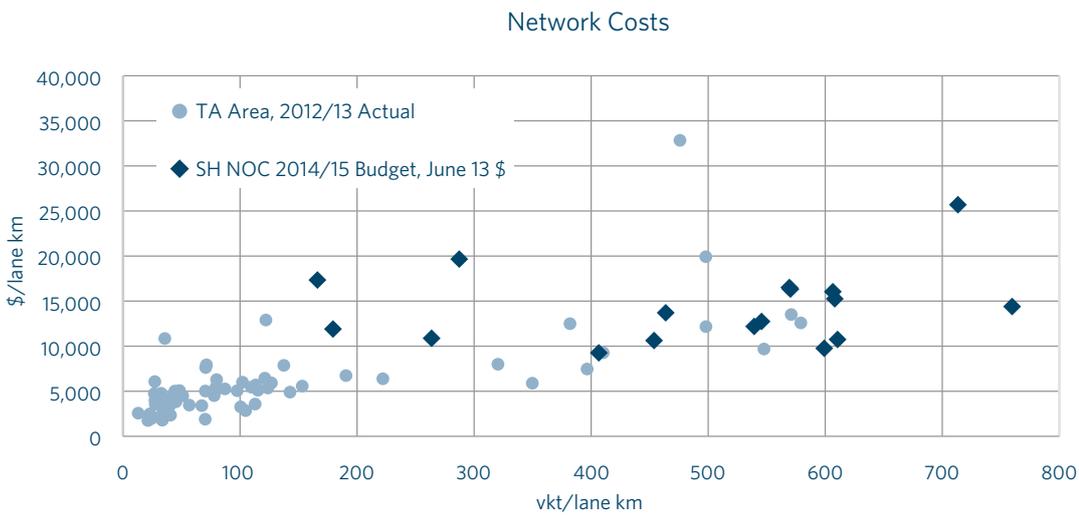
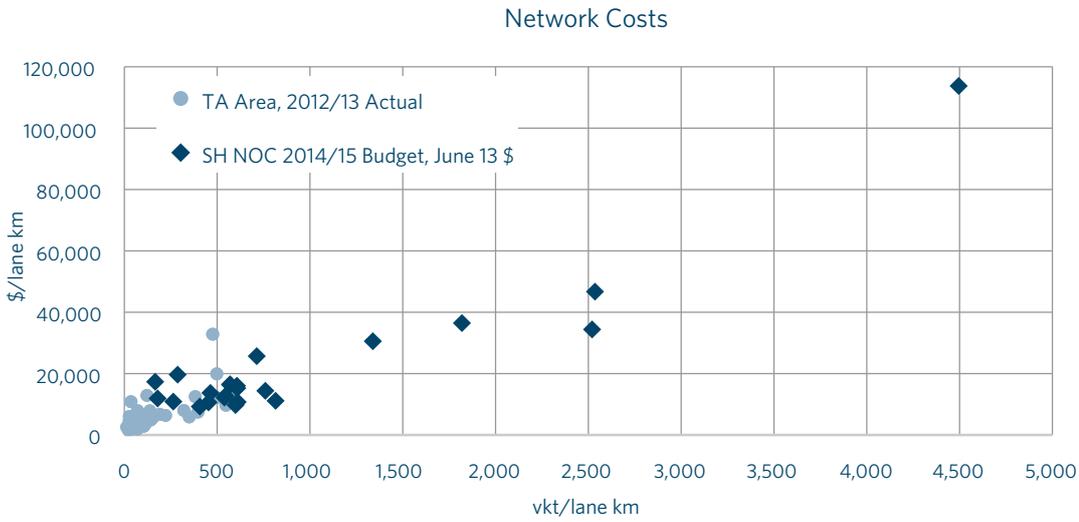
We have prepared an Infrastructure Asset Management Plan to provide comprehensive guidance on how state highway assets should be maintained and renewed in order to deliver the maintenance and renewal programme proposed here. The plan documents a clear link between service level, infrastructure condition, lifecycle management needs and costs, and has been seen and reviewed from an investment perspective.

The Infrastructure Asset Management Plan contains individual lifecycle asset management plans for the different asset classes (described in appendix D). These will be updated over 2015-18 as we review each service area and whenever any other significant improvement opportunity arises. The plans will provide the benchmark requirements for asset management planning for all networks. This will increase the consistency of approach across networks and the implementation of improved practices as these are developed.

### 7.2.7 Cost effectiveness of state highway maintenance and renewals

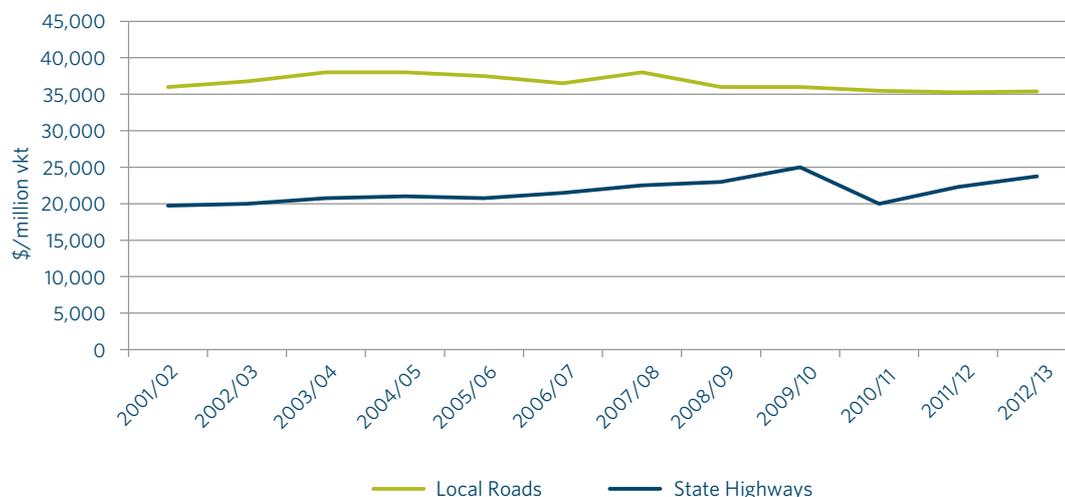
As part of the advanced strategy described above, the Transport Agency can demonstrate cost efficiency per vehicle kilometre travelled (VKT) when compared with local roads as shown in the figure below, and also highlight the need to address apparent cost inefficiencies on particular networks.

### COMPARISON OF STATE HIGHWAY AND LOCAL ROAD COSTS PER VEHICLE KILOMETRES TRAVELLED (VKT)



The figure above shows a comparison of the recent costs of maintaining the state highway network compared to local road networks. The graph shows that both state highway and local road costs are similar for similar networks, with the exception of networks such as the Milford Road and West Coast South where there are continued efforts to reduce the costs imposed by their unique situations.

## TREND OF STATE HIGHWAY AND LOCAL ROAD COSTS PER VEHICLE KILOMETRES TRAVELLED (VKT)



Both figures above demonstrate that maintenance and renewals of the state highway network have been carried out in an efficient manner.

### 7.3 PROPOSED PROGRAMME

The proposed programme reflects an aggressive and optimistic approach to risks, and future efficiency and effectiveness improvements.

The proposed programme was developed through a combination of detailed development at a regional level, followed by nationwide review and moderation.

Assumptions and inputs to the financial forecasting are:

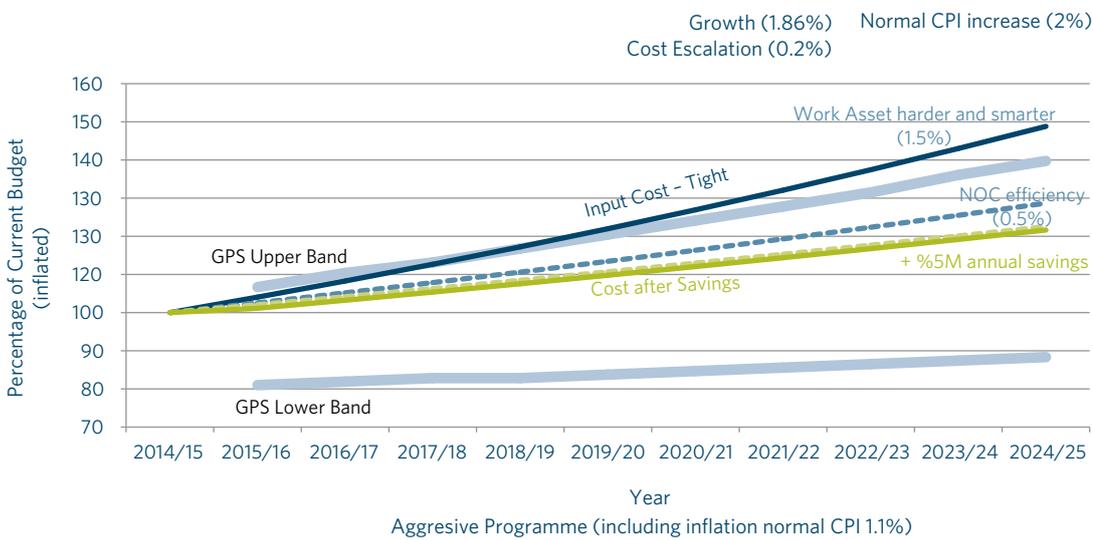
- less than the sustainable level of pavement renewal works can be undertaken in the short to mid term without long term cost impact because pavements are in generally good condition
- continued success of reductions in renewals programmes compared to the 'base preservation quantities' as set for the 2014/15 programme, without significant change to repair programmes
- that Network Outcomes Contracts will continue to yield efficiency gains beyond the changes to renewal programme reductions in line with expectations
- a continued programme of \$10 million per year to maintain safe skid resistance in addition to that provided as a consequence of conventional resurfacing works
- full adoption of Network Outcome Contracts and the aggressive renewal programmes across all networks, thereby reducing resurfacing and rehabilitations by \$7 million per year in addition to reductions already realised
- provision for increased operation, maintenance and renewal of the growing and increasingly complex network increasing from \$2.4 million in 2015 to \$75 million in 2025. Maintenance costs increase by \$20million pa over 2015/18 largely due to the \$15million pa operating cost of the Waterview tunnel
- provision for increasing pavement deterioration of 0.7 percent per year as a result of freight increasing at 1.2 percent per year
- provision for a drop in escalation from past rates of about 3.5 percent per year to about 10 percent greater than the cpi rate forecast by Treasury from 2014/15. The Transportation Agency is adopting a new input price index for inclusion in its Network Operating Contracts which is expected to grow slightly faster than the cpi due to the greater influence of fuel and bitumen on the road maintenance compared to consumer activity

- no allowance for any impact on input prices as a result of increasing economic activity or the Christchurch rebuild beyond Treasury’s cpi forecasts
- the minor works programmes and preventive maintenance programme included in the improvements activity class reduces the amount of emergency works and extends the service lives of pavements by improving network drainage and reducing the incidence of slips
- cost savings from additional efficiency strategies of 2 percent per year.

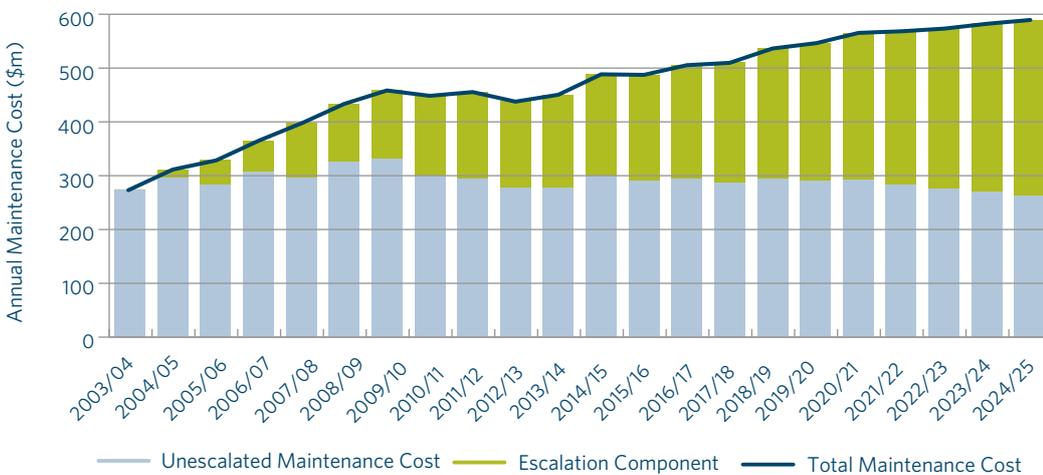
These strategies and interventions are further detailed in the Lifecycle Management Plans. Because we have proposed an aggressive approach we believe there is a greater likelihood that costs may increase rather than decrease. These will be closely monitored and should additional savings not be available then either service levels will be reduced or a funding increase sought.

The proposed programme is about \$30m per year below the top of the funding range for state highway maintenance in the draft GPS 2015.

**AGGRESSIVE PROGRAMME (INCLUDING INFLATION NORMAL CPI 1.1%)**

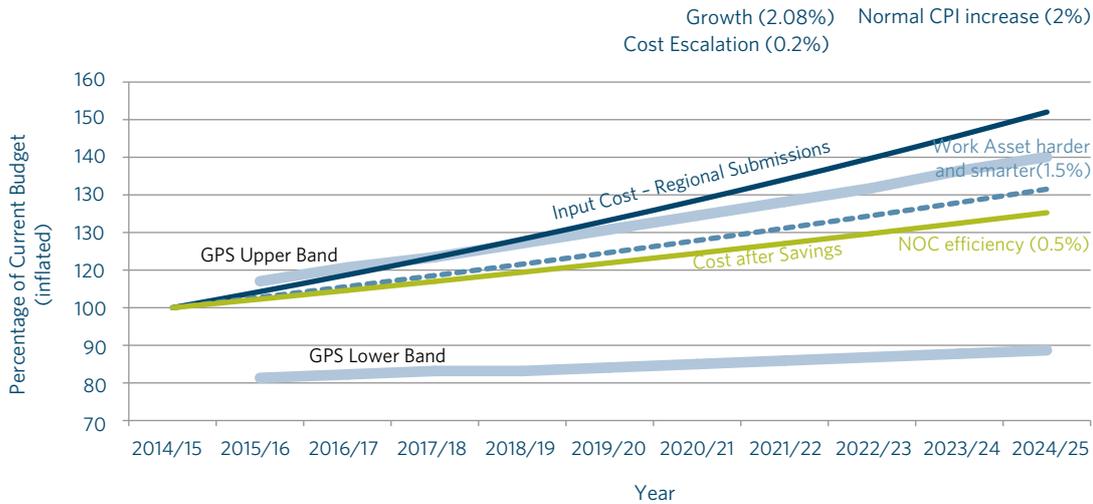


**REAL MAINTENANCE SPEND AND ESCALATION**



The graph above presents costs calculated in 2003 dollars. This demonstrates that real (unescalated) costs have remained relatively constant since 2003 and are projected to do so for the duration of the draft SHAMP 2015-18 through the adoption of an aggressive programme. An alternative approach is to adopt a more conservative and higher cost programme having greater certainty of maximum expenditure.

## CONSERVATIVE PROGRAMME

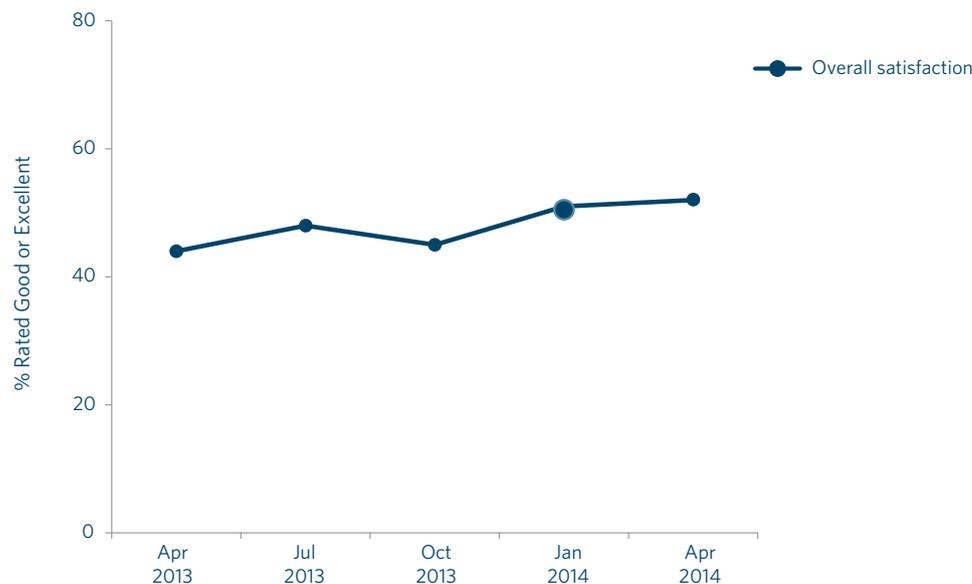


## 7.4 IMPACT ON CUSTOMERS

The proposed programme aims to deliver the service levels of the One Network Road Classification. We are seeking a good balance between the increased cost of repairs, savings made to the renewals programme and the impact of repair work on our customers.

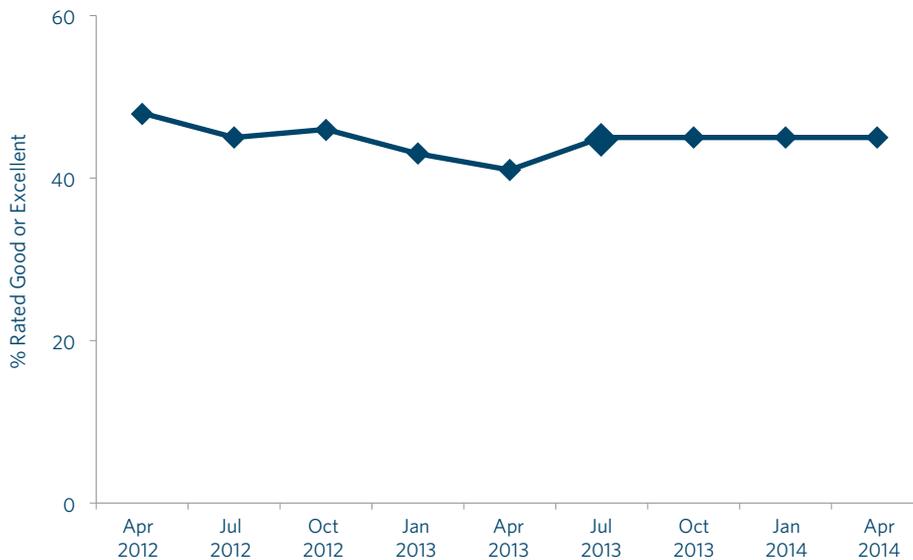
Because we are keeping road surfaces in service longer there is increased risk that, in a few cases, a road will deteriorate faster than expected and require more extensive repair works than are optimal. In these instances, all faults will be repaired to ensure that the road continues to be safe, and the skid resistance of the road’s surface will be maintained to the same level as before. However, on the lower classification roads, there will be more patched roads than have previously been the case. We will monitor the frequency of such occurrences and adjust our renewals programme accordingly.

## OVERALL CUSTOMER SATISFACTION RESULTS FROM A TRANSPORT AGENCY CUSTOMER SURVEY



The above graph shows a general increase in overall customer satisfaction. Highway maintenance is a large contributor to public perception of the Transport Agency, and despite our reduced programme, public satisfaction with state highways continues to improve.

## CUSTOMER IMPRESSIONS OF STATE HIGHWAY ROAD SURFACING



Maintaining a safe road surface is paramount to the way the Transport Agency manages its highway network. The above graph shows that even though significant savings have been made through reduced maintenance work, public perception continues to improve in relation to roadside surfacing. Perceptions have improved steadily since mid-2013. This is despite a continued reduction in spending across this period.

## 7.5 DEMAND AND VOLUME DRIVERS

The proposed programme reflects the expected impacts of a growing and increasingly complex network, and the increasing impacts of growing freight vehicle kilometres travelled. The current capital improvement programme is about 3.75 percent of the replacement cost of the state highway network demonstrating that the size and complexity of the State highway network is continuing to grow and that consequentially the operations, maintenance and renewal works programme will grow to maintain service levels over a larger network.

The volume and complexity drivers are shown in detail in the Infrastructure Asset Management Plan. The proposed programme reflects the increasing maintenance and renewal needs arising from:

- projects constructed in the past where the infrastructure has deteriorated and warrants renewal, eg resurfacing on roads completed seven to 10 years ago
- new operational costs on recently completed projects when the contractors responsibility for maintenance has expired, eg lighting costs or roadmarking costs
- the reduction in costs when state highways are revoked and transferred to councils when new state highways are completed.

The greatest single impact is the operational costs of \$15 million per year that will arise when Waterview tunnel is opened (increasing to \$17m when maintenance responsibility transfers to the Transport Agency).

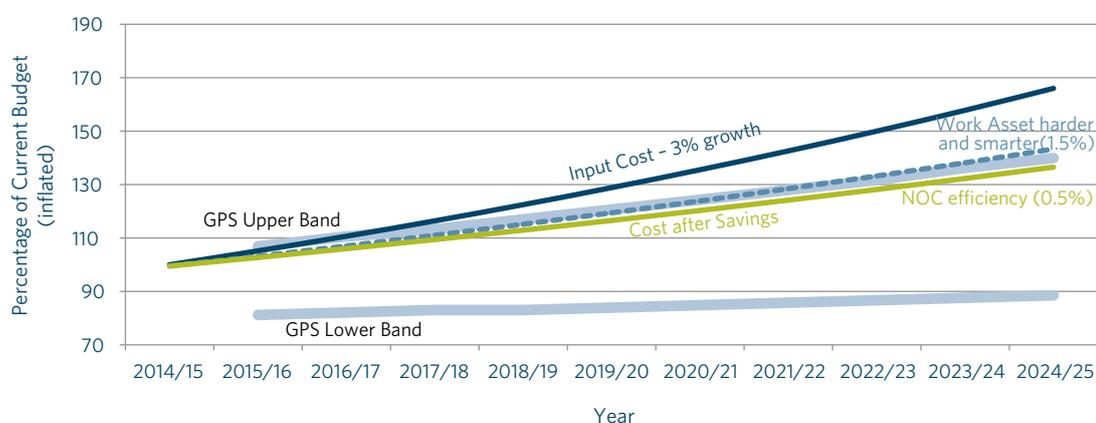
The forecast increase in freight vehicle kilometres travelled decreases the life of pavements and surface because of the increased deterioration rate. The programme reflects the impact of a one percent growth in vehicle kilometres travelled on pavement maintenance and renewal costs.

## 7.6 INVESTMENT RISKS AND OPPORTUNITIES

The risks inherent in the proposed programme are that:

- input prices rise faster than 1.1×consumer-price-index as assumed, potentially adding \$15 million
- the assumed reduction in renewals programmes below the base preservation quantity are unsustainable, with a risk estimate of \$25 million per year
- the efficiency savings of the Network Outcomes Contracts fall below the two percent expected, adding \$7-10 million per year
- the predicted growth due to HPMV freight is greater than the 1.2 percent per year, rising to 3 percent as occurred in 2014, adding \$5 million per year.

### INDICATIVE PROGRAMME BASED ON RISK GROWTH AT THREE PERCENT APPLIED TO ALL COSTS, INCLUDING TWO PERCENT ANNUAL SAVINGS



There are opportunities to improve levels of service and value for money not reflected in this programme.

Not all state highways can be economically converted to HPMV routes in the short term because the forecast numbers of HPMV trips are small and/or the required works are extensive because of poor strength in current pavements. However, where there is sufficient potential demand for HPMV capacity, it could be advantageous to select HPMV-capable treatments whenever pavements are rehabilitated as part of normal periodic renewal processes. This would deliver HPMV capacity over a longer timeframe for less cost than a current retrofit. The estimated cost of this is between \$5-10 million per year.

On high volume routes, where resurfacing or pavement rehabilitation works have significant impact on customers, there is potentially an economic advantage by using higher strength, more durable treatments that extend service lives and reduce customer impact. However, these cost more and so require greater renewal expenditure over 2015-18 in order to deliver subsequent savings in maintenance and renewal costs. Examples are:

- the use of Epoxy OGPA, a high strength road surface material on high volume rigid pavements to extend surface lives from about seven to eight years to potentially 50 years
- the use of bound structural pavements on higher volume routes to extend the service life of pavements and reduce the impact on traffic.

We will continue to explore with our sector partners and investors the business case for investment in these level of service improvements with whole-of-life economic benefits.



## 8. OPERATING THE NETWORK

## 8.1 OVERVIEW

Aligned to our intervention hierarchy, operational activities form a key element in our service delivery to our customers and help us maximise the value of our existing investments. The draft SHAMP 2015-18 seeks to continue operational activities as part of our journey management approach, which are delivered on an ongoing basis, frequently in real-time, and in collaboration with other organisations. The four main areas of operational activity are:

- network monitoring – collection of network intelligence
- traveller information – communication of network intelligence
- management of events – control and response to events on the network
- network optimisation – maximising the value of the state highways and our services to customers.

The Transport Agency is using journey management to actively manage delays and hazards caused by everyday unexpected events like weather, road works, incidents or congestion.

These events are temporary in nature and create an imbalance between what the network provides and what customers need.

Journey management will become an increasingly important activity as future changes to the economy, demographics, and environment are likely to increase the frequency and impact of events on the transport network.

Intelligent transport systems (ITS) are playing an increasingly important role in shaping how we use and pay for transport systems. Recognising this, the Transport Agency released a position statement on ITS which commits to making more effective use of constantly improving technology. ITS is a means to an end, not the end itself and unlocking the potential benefits will require strong leadership and cross-sector collaboration, which will be a major focus for 2015-18.

With increasing availability of in-vehicle navigation and safety systems we will need to further explore the wider benefits of such systems which might be realised through further investment in network management tools to deliver on our strategic goals.

Because our customers want to undertake seamless journeys, we need to work more closely than ever before with our local government partners. This requires collaboration, and success will be determined by how strong the Transport Agency's relationships become.

## 8.2 OPTIMISING NETWORKS

To optimise our networks the Transport Agency has adopted a network operating framework, which is an integrated process that helps the Transport Agency and other network providers to better manage and plan the use of the transport network, and its relationship with the adjacent land uses. This framework is a key planning and operational process to inform decisions, and to link those decisions to strategic objectives and operational interventions.

The process involves transport stakeholders agreeing on a collaborative view of the strategic intent for a geographic area and how this is enabled and delivered by transport. At all stages, stakeholders agree what is expected of the One Network, having regard to insights into customer requirements from traveller information systems and other sources. This includes an agreed position on which customers have priority on different parts of the network at different times of the day, and the anticipated effect of interventions on the network.

Towards the end of the process, there is a tool that allows performance deficiencies to be identified and interventions to be tested and compared. This informs decision-making and helps establish agreements, partnerships and understanding of the network-wide effects of interventions. In turn, this provides a sound basis for the network providers to develop optimised network operating plans.

### 8.3 APPROACH TO INVESTING IN JOURNEYS

Journey management and operations is new in comparison to the safety portfolio and the maintenance and renewals programs. As a result, there are a number of opportunities to improve our performance and capabilities, integration, collaboration and optimisation.

Draft SHAMP 2015-18 seeks to bridge the gaps between the current service offering and what is needed to provide the levels of service that our customers expect (and that we offer through the One Network Road Classification). This will provide a sound basis for future investment in expanding our capabilities in readiness for emerging technologies. The operations programme 2015-18 therefore has a strong focus on increasing the effectiveness of our existing services and processes by tailoring levels of service where there are sound business reasons to do so. We are also rationalising systems and investing such that we can improve the productivity of the transport operating centres.

### 8.4 PROPOSED PROGRAMME

Key elements of the proposed programme are summarised below.

#### 8.4.1 National operating model

We have plans to develop a national operating model and delivery plan outlining how we undertake our activities and the resource, systems, infrastructure, capacity and capability requirements needed to deliver consistent, high quality, and relevant customer outcomes across the journey management area of our business.

#### 8.4.2 National intelligent transport management system

We are investing in the development of a national intelligent transport management system, in collaboration with Auckland Transport, to integrate our approach in managing events on the transport network. Developing this system will also provide the opportunity to improve the productivity of the transport operations centres by reducing the number of systems used to manage events.

#### 8.4.3 Transport operations centre alignment

We aim to gain alignment of the transport operations centres to develop a national approach in making the best use of the national traffic management systems and existing network capacity. This work includes development of a business case to identify the necessary scope and efficiency of services required to achieve our desired outcomes.

#### 8.4.4 Targeted investment in roadside equipment

We will target investment in additional Intelligent Transport System (ITS) roadside equipment aimed at providing accurate and timely information where it is part of an integrated programme of network improvements that demonstrate value for money and strong alignment to our key strategic goals.

#### 8.4.5 Network improvement plan implementation

Continued investment in route optimisation programs and network operating plans will begin to address severe congestion at high priority sites and corridors already identified in the Auckland, Wellington and Christchurch regions.

### 8.4.6 Minor improvements – network optimisation

The nature of network optimisation means that often significant benefits can be gained from relatively small investments. Therefore we are proposing to invest in network optimisation programmes in Auckland, Wellington and Christchurch under the minor improvements work category. The types of activities that will be considered under this work category include intersection upgrades, optimisation of ITS including ramp signals and traffic signals, laining and signing changes, provision of additional ITS infrastructure to enhance monitoring and inform capability including variable messaging signs, and systems enhancements and additional tools where these are identified as a priority.

As this is a relatively new area, and as we begin to understand more fully the scale of programme and the directly attributable benefits that can be realised from the programme, it is proposed to limit the programme to between \$4-6 million per year.

### 8.4.7 Travel time information

We will explore further opportunities to assist people to make smart travel choices by considering the best approaches to providing travel time information data to customers and third-party providers, including channels such as the 0800 number, SMS, OnTheMove, email, smartphone applications, radio coverage, television coverage and social media.

### 8.4.8 Data quality

We will improve data integration, collection techniques and alternative data sources to better ensure quality, accuracy and reliability of data used to manage the network and inform our customers.

### 8.4.9 Programme costs

The indicative costs of the journey management programme in order to effectively operate the network are outlined in the table below.

#### Operations/journey management indicative programme costs

	Operational expenditure	Capital expenditure*
2015-2018	\$120m	\$17.5m
2018-2021	\$125m	\$25m
2021-2025	\$184m	\$15m

\*Including minor improvements

## 8.5 PROGRAMME OUTCOMES

On the basis of the above programme, investment in journey management will, over 2015–21, deliver on the following:

- improved effectiveness of our transport operating centres leading to a more consistent national approach
- improved travel time reliability and network resilience in Auckland, Christchurch and Wellington
- improved network efficiency in Auckland, Wellington and Christchurch
- improved data integration and quality of information sharing.

## 8.6 INVESTMENT RISKS AND OPPORTUNITIES

The risks in the proposed programme are common to most organisations investing in people, relationships, systems and processes. These include:

- a lack of commonality of standards and processes leading to sub-optimal operations activities
- inaccurate scope definition for the procurement of services and assets, leading to increased costs and/or no improvements in achieving the outcomes
- skill shortages in delivering the services required
- an increase in demand which outweighs our capacity to deliver
- a lack of integration and/or agreement with our local partners in the implementation of journey management
- inconsistency in the application of the services provided.

The investment program seeks to minimise these risks and presents a number of opportunities including:

- providing a fully integrated service offering within our current investment program
- minimising the need to expand resource capacity by moving towards full automated event or incident response, thus reducing workload on TOC operators.

The risks of investing in journey management are far outweighed by the benefits to our customers by operating the network effectively and efficient, improving the resilience and reliability of the network.

# 9. IMPROVING THE STATE HIGHWAY

## 9.1 OVERVIEW

The draft SHAMP 2015-18 seeks to target investment to specific journeys and geographical priorities where state highway network improvements can make the greatest impact.

We anticipate a significant level of financial commitment to ongoing work already underway to support economic growth and prosperity, including delivering the remaining six Roads of National Significance<sup>24</sup> and completing our investments in freight efficiency programmes<sup>25</sup>. We also have other programmes which optimise our investment in delivering outcomes to meet the government's direction and the strategic direction of the Transport Agency, including:

- delivering critical infrastructure replacements: We identify structural maintenance by inspection and prioritise deterioration into high, medium and low priority categories. Our structures are replaced when they are in very poor condition and the net present value of repairs is greater than the replacement cost. There may be other structural replacement projects in the programme; however, these are associated with improvements in levels of service such as additional lanes
- delivering on our commitments to regionally-funded<sup>26</sup> projects
- delivering on our *Safety Journeys*<sup>27</sup> activities
- improving the resilience of our network<sup>28</sup>: Recent seismic events in Canterbury have highlighted the need to ensure the resilience of the state highway network. We commit to improving our understanding of what resilience means in relation to the state highway network and sharpening our investment and planning tools to ensure we have the means to address it.

The Transport Agency expects that over 90 percent of available allocation for improving state highways will already be committed in the 2015-18 NLTP period. This will limit the discretionary funding available in the relevant state highway activity classes. New activities, at least in the first NLTP period, are unlikely to be significant in terms of programme size. However, there will be sufficient latitude to allow an element of dynamic programming to respond to revenue changes during the plan period.

## 9.2 PROGRAMME OPTIONS AND ALTERNATIVES CONSIDERED

Five broad state highway programmes have been developed and considered in reaching a consensus on the preferred programme contained within this draft SHAMP 2015-18. These have been tested for their effectiveness and efficiency in contributing to the draft GPS 2015 and Transport Agency's goals and desired outcomes using the performance measures described in section 5.

From this work the optimised preferred state highway programme has been identified as set out below and in appendix B. The alternative programmes considered are summarised in appendix C.

24 <http://www.nzta.govt.nz/network/rons/index.html>

25 <http://www.nzta.govt.nz/planning/process/freight.html>

26 <https://www.pikb.co.nz/home/nzta-investment-policy/funding-assistance-and-sources/>

27 <http://www.nzta.govt.nz/about/who-and-what/what-we-do/safer-journeys/index.html>

28 <http://hip.nzta.govt.nz/technical-information/resilience>

## 9.3 PROPOSED PROGRAMME

To effectively contribute to the objectives of the draft GPS 2015 and the Transport Agency's broader strategies our improvements programme is focused on five key areas of activity:

- reducing deaths and serious injuries
- reducing collective risk
- improving reliability
- better utilisation of existing capacity
- targeted improvements in journey time.

These performance areas align with our own *Statement of intent*. They address journey time gaps on the state highway through the ongoing RoNS programme and accelerated investment in the Auckland transport package. They also address congestion and improve travel times for freight and general traffic by increasing capacity on key routes which are under pressure. This is coupled with significant programme emphasis on reducing collective accident risk through our targeted investment in the ten-year *Safer Journeys* roads and roadsides programme.

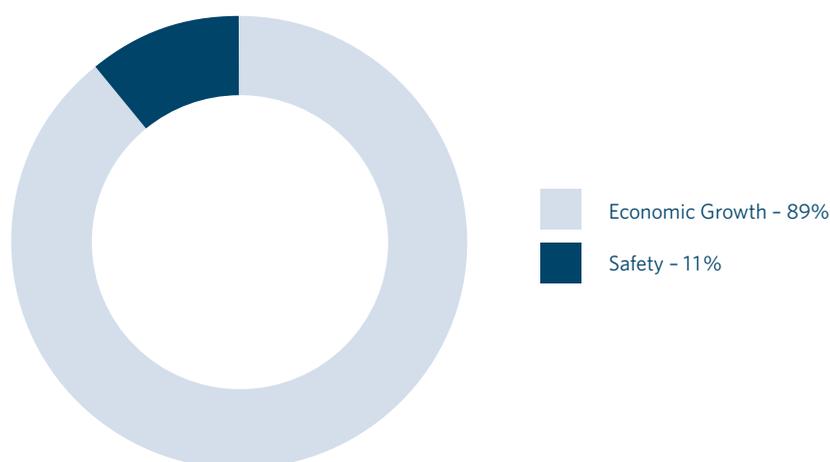
### 9.3.1 Commitments

We have a significant current programme of committed work including the RoNS, Auckland acceleration and our Safe System demonstration projects. This, coupled with a requirement to exhaust current R-funds (about \$100 million) and continue with the RoNS programme, means that for the next NLTP period it is expected that around \$70 million will be available for new commitments, later increasing to \$1.2 billion for the 2018-21 period and \$3.9 billion for 2021-25.

We ensure our programme prioritisation is managed in such a way that there is flexibility to react to changes such as allocation changes or project cost adjustments. For the draft SHAMP 2015-18, we are proposing a \$4.2 billion improvements programme and an additional \$260 million contingent programme. Incorporating a contingent programme of activities allows us to be agile in responding to cashflow and value for money opportunities as they arise. We have identified the contingent programme items in appendix B.

Our intention is to deliver a balanced state highway improvements programme with a significant emphasis on contributing to economic growth and prosperity, while delivering road safety outcomes. As such, we have examined the shape of our current improvements programme (see figure opposite) which suggests the emphases of our present investments are around 90:10 economic growth: safety.

## EMPHASIS OF OUTCOMES FROM THE COMMITTED LARGE ACTIVITY PORTFOLIO



Therefore, we have chosen to target the balance of any discretionary funding in the current draft GPS 2015 primarily towards a safety outcome to maintain an appropriate balance in our overall programme.

### 9.3.2 Essential infrastructure

We have identified up to 26 candidate structures for replacement over the next 10 years because these structures are at the end of their economic life and will start to cost more to maintain than to replace. This does not include bridges that may need to be replaced for functional reasons such as increased traffic demand. There is one bridge, the Mangahohi Bailey Bridge in Hawke's Bay, scheduled for replacement in the 2015-18 period.

The essential infrastructure replacements programme beyond 2018 is based upon qualitative engineering assessments to give an indicative replacement date. More detailed quantitative engineering investigations are then carried out together with a net present value analysis of maintenance versus replacement in order to confirm the next 3 year programme. Often this investigation and analysis demonstrates that it is more economical to retain the bridge until a later date. The forecasts in the following tables are therefore probably an upper estimate of future essential infrastructure demands.

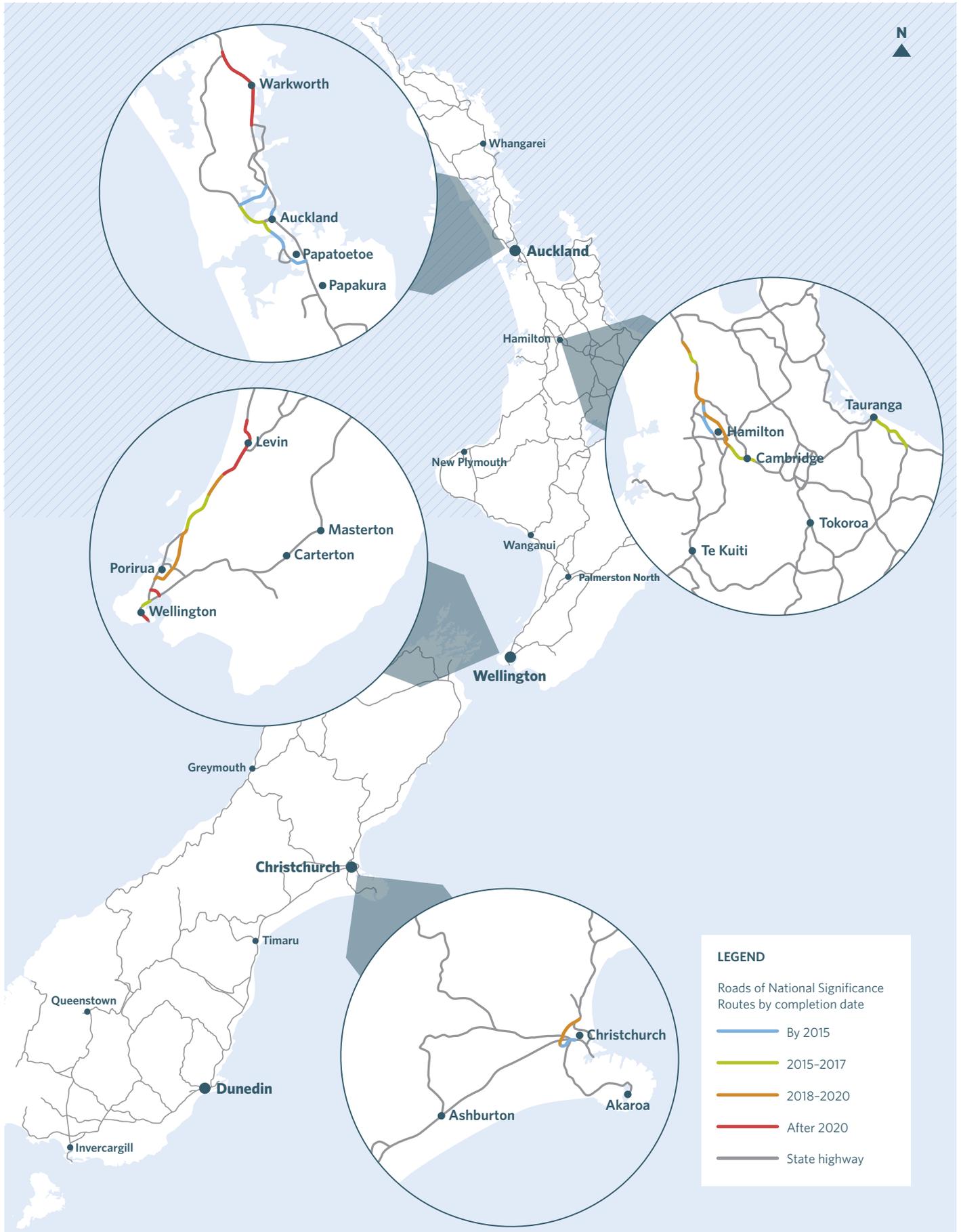
#### Schedule of essential infrastructure replacements

	No. replacements	Total estimated cost (\$m)
2015-2018	1	1
2018-2021	9	35
2021-2025	16	60

### 9.3.3 Roads of National Significance (RoNS)

Over the period of 2015-18, work will continue on the Roads of National Significance programme with the aim of delivering the programme to the schedule as set out in the figure below. Notably, it is anticipated that the Tauranga Eastern Link will be complete by 2016, all Christchurch motorways by 2019 and the entire length of the Waikato Expressway by the end of 2019. The majority of the Wellington Northern Corridor and all of the Western Ring Route will be complete by 2020.

## SCHEDULE FOR COMPLETION OF ROADS OF NATIONAL SIGNIFICANCE



### 9.3.4 Auckland accelerated programme

In June 2013 the Hon Prime Minister John Key announced to the Auckland Chamber of Commerce an accelerated package of transport infrastructure improvements for Auckland. The following state highway packages were included in the speech, as shown below:

- Northern Corridor (SH18/1 Constellation Road to Albany).
- Southern Corridor (SH20/1 to Papakura).
- SH20A/Kirkbride Road (Airport Access).
- East West Link.

#### AUCKLAND ACCELERATED STATE HIGHWAY PACKAGE



In May 2014, the government announced, as part of the Budget 2014, \$375m of capital funding (by way of an interest free loan) to the Transport Agency to accelerate the projects identified above, as shown in the table below. In its Budget Statement the government noted the forecast increases in freight demand around New Zealand, particularly in Auckland. This, combined with a growing population, necessitated the acceleration of these projects.

## SCHEDULE FOR COMPLETION OF AUCKLAND ACCELERATION STATE HIGHWAY PROJECTS

		GPS 2012-15 FY13/14	GPS 2015-18 FY14/15	GPS 2018-21 FY15/16
Northern Corridor improvements	Business case development	[Brown bar]		
	Pre-implementation	[Red bar]		
	Implementation		[Blue bar]	
Southern Corridor improvements	Business case development	[Brown bar]		
	Pre-implementation	[Red bar]		
	Implementation		[Blue bar]	
SH20A/Airport	Business case development	[Brown bar]		
	Pre-implementation	[Green bar]	[Red bar]	
	Implementation		[Blue bar]	
East West Connections (early deliverables)	Business case development	[Brown bar]		
	Pre-implementation	[Red bar]		
	Construction		[Blue bar]	

### 9.3.5 Future Investment Fund Programme

In June 2014, the government announced a \$212 million programme of regional state highway projects to be accelerated after the 2014 election. These will be advanced through funding drawn from the Future Investment Fund, which was set up to invest proceeds from the sale of some state assets.

Five projects have been given a high priority by the government and accelerated to construction:

- Kawarau Falls Bridge in Otago.
- Mingha Bluff to Rough Creek realignment in Canterbury.
- Akerama Curves realignment and passing lane in Northland.
- State Highway 35 slow vehicle bays in Gisborne.
- Normanby Overbridge realignment in Taranaki.

Six projects will receive funding to complete the business case and pre-implementation stages in preparation for construction:

- Whirokino Trestle Bridge replacement, in Manawatu/Wanganui.
- Motu Bridge replacement in Gisborne.
- Opawa and Wairau Bridge replacements in Marlborough.
- Taramakau road and rail bridge on the West Coast.
- Loop Rd north to Smeatons Hill safety improvements in Northland.
- Mt Messenger and Awakino Gorge corridor in Taranaki.

Three projects in Nelson (Nelson southern link), Hawke's Bay (a Port of Napier access package) and Bay of Plenty (Rotorua eastern arterial) will receive investigation and/or design funding.

Some of the projects provide benefits such as urban form and improved livability, and would not ordinarily be prioritised for funding over other National Land Transport Fund (NLTF) investments. Others on the list might be funded from the NLTF, under the new regional improvements activity class in the draft GPS 2015, once they've been accelerated through the investigation and consenting phases with the extra Crown funding.

### 9.3.6 Investing in safety

Some good road safety gains have been made over the last eight years, with many of these being on the state highway network. The Transport Agency believes further gains can be made in its commitment to *Safer Journeys* safe roads and roadsides action plans by taking a 'priority corridor' approach.

Over the last three years, the safety resources for state highways have been targeted towards high-risk sites in accordance with *Safer Journeys*. However, on average over the last three years (2010-12), we still had approximately 970 reported deaths and serious injuries on the state highway network with a total social cost of \$1.04 billion per year. Of these, 820 (85%) occurred on the rural state highway network and 840 (87%) were from head-on, run-off road, and intersection crashes.

A safety programme has been developed with the aim of:

- reducing the total state highway deaths and serious injuries (collective risk)
- increasing the percentage of the state highway network in the higher KiwiRAP rating bands.

The scope of the programme includes high risk state highway intersections and high and high-medium collective risk state highway corridors not otherwise addressed by our current programme of major projects.

The high-risk intersections identified were based on:

- state highway intersections on the top 100 intersections list compiled under the *Safer Journeys* action plan (2011-12)
- other state highway intersections not listed on the top 100 intersections list, but which are classified as high risk under the *High-risk intersection guide*<sup>29</sup> criteria and considered to be a high priority on the basis of local knowledge.

The high and high-medium risk rural corridors were identified for analysis on the basis of:

- state highways classified as high volume national strategic, national strategic or regional strategic with:
  - › agreed safe system transformation or safe corridor intervention philosophies
  - › greater than three fatal and serious injury crashes per five km per five years.
- state highways classified as regional connector and regional distributor with greater than three fatal and serious injury crashes per five km per five years.

In accordance with high-risk rural roads guidance<sup>30</sup>, adjacent lengths of state highway with similar characteristics, traffic volumes, environment and road use purpose were consolidated into a single corridor for purposes of the national programme.

The outcome of this is that, over 10 years, we aim to investigate 24 intersections and 66 corridors and invest around \$750 million with the aim of reducing deaths and serious injuries by around 1400 and improving the KiwiRAP rating of over 400 km of state highway.

In addition to this core programme we will continue to deliver safety projects, currently in development, that are aligned to the *Safer Journeys* ethos and which continue to offer value for money. Further, the draft SHAMP 2015-18 includes a number of programmed actions to continue to deliver Safe System signature projects.

Under *Safer Journeys* a number of programmes are emerging around safer speeds and further signature projects. As the scope of these programmes evolves and programmes of activity become clearer, it may be necessary to seek an amendment to RLTPs and the NLTP to accommodate these activities.

29 <http://www.nzta.govt.nz/consultation/high-risk-intersections-guide/docs/high-risk-intersections-guide.pdf>

30 <http://www.nzta.govt.nz/resources/high-risk-rural-roads-guide/docs/high-risk-rural-roads-guide.pdf>

## NORTH ISLAND HIGH RISK INTERSECTIONS AND HIGH RISK RURAL ROADS PROGRAMME



## SOUTH ISLAND HIGH RISK INTERSECTIONS AND HIGH RISK RURAL ROADS PROGRAMME



### 9.3.7 Minor improvements – safety

Minor safety projects primarily target works identified within the 'safety management' and 'safety maintenance' quadrants of the *High-risk rural road guide*. As part of the minor safety programme, stock underpasses, pedestrian facilities and improvements associated with area-wide pavement treatments are provided in addition to signage, delineation and road safety barrier works. The programme provides a cost effective means of incremental corridor improvement and generates very good safety investment returns as indicated by the METS<sup>31</sup> report.

The proposed minor works projects are regionally developed and then prioritised nationally using the Safety Works Investment Prioritisation Process tool. This ensures the initiatives in the programme are best value for money and selection is based on a nationally consistent application of proven countermeasures. As a result, we ensure targeted investment against an agreed safety metric of deaths and serious injuries saved over 10 years per \$100 million invested.

### 9.3.8 Increasing effectiveness of freight

Our proposed improvements programme explicitly focussed on increasing the effectiveness of freight is targeted in three areas:

- completing any remaining HPMV routes from tranche 1
- delivering *Weigh right* improvements
- investment in a second tranche of HPMV routes, including working with other road controlling authorities to ensure the first and last kilometres are covered.

*Weigh right* is a programme of investment aimed at reducing the impacts of illegal overloading in the context of supporting the wider HPMV programme. Where the Transport Agency has weigh in motion sites in operation, overloaded trucks accounted for about eight percent of the overall fleet. In 2012, around 267,000 trucks were observed as overloaded as compared to 232,000 in 2009. Reducing the impacts of illegal overloading will:

- improve truck safety
- contribute to fairer market conditions
- provide for better management of our pavements and bridges.

As part of *Weigh right*, a programme of physical works has been identified to target roadside facilities and further expand the network of facilities. The programme has been split into three priorities (see below) and will be delivered gradually over the ten years of this draft SHAMP 2015-18, subject to confirmed business cases.

#### **Weigh Right Programme**

Priority	Number of sites	Cost estimate (\$m)
1	10	11.5
2	22	42.0
3	7	10.0

Further HPMV investment routes are under investigation and part implementation of a second tranche is proposed in the 15-18 programme. The business case is still being finalised as the economic viability of introducing full HPMV vehicles to a route is very dependent on the effects of the increased loading on the infrastructure. The final programme will be confirmed by Spring 2014.

31 Developing Safety Levels of Service and Investment Strategies using the Macro Estimates for Target Setting model (Corben et al, Monash University Accident Research Centre, July 2011)

### 9.3.9 Improving reliability and resilience

The Transport Agency has developed a national resilience programme to provide a clearer picture of the risk and resilience profile of the state highway network from a national perspective. The programme will provide a nationally coordinated approach to progressively improving the resilience of the state highway network; its ability to withstand natural and man-made events, and recover quickly from road closures.

The programme will progressively enable regional teams to plan and improve our preparedness and capability to respond to events or, where appropriate, improve the robustness of a corridor or ensure there is a viable alternative route available.

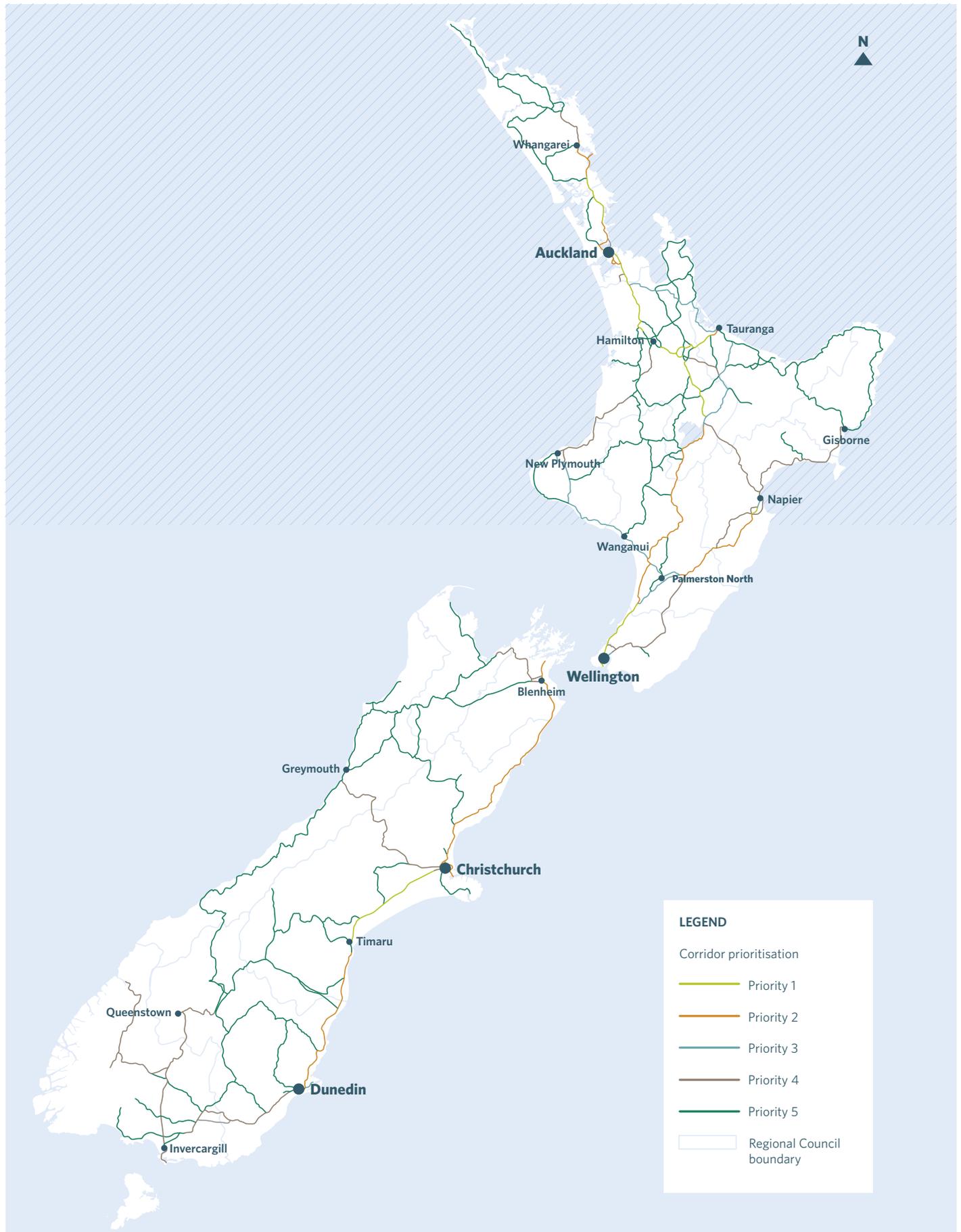
The programme has been developed to provide a clearer picture of the resilience risks to the state highway network from a national perspective. Events such as the Christchurch earthquakes have led to increased emphasis on resilience across many government agencies.

The programme has three core elements as set out below:

Programme components	Scope/details
Resilience improvements - planning for priority corridors	Corridor strategic and programme business cases are proposed along priority corridors. Auckland, Wellington and Christchurch are the first, with the aim of greater understanding of the resilience risks and possible treatments. These corridor business cases will be developed during the NLTP period 2015-18.
Resilience improvements - spot treatments	Spot treatments include activities associated with scour, bridge seismic retrofit and rockfall programmes. The activity includes enhanced preventative maintenance and work funded under the minor improvements work category.
Resilience management and preparedness	This activity aims to improve emergency planning, incident planning, communications, alternative route planning and business continuity planning.

The activity includes enhanced preventative maintenance and work funded under the minor improvements work category which is proposed to be in the region of \$10-20 million per year.

## RESILIENCE HIGHEST PRIORITY ROUTES



### 9.3.10 Future planning

We also programme for transport planning activities to ensure an integrated approach to planning and to achieve priority outcomes. Future planning allows us to select the right things to do, to implement them in the right way, at the right time and for the right price.

For this draft SHAMP 2015-18 a significant amount of planning is proposed in support of both our National Roads and Roadsides programmes and our National Resilience Programme in addition to supporting joint planning activities with our partners in priority areas such as Auckland.

Optimising urban networks in Auckland, Wellington and Christchurch by way of network operating plans being developed with our partners continues. Over the period of this draft SHAMP 2015-18, the transition from network plans to improvement programmes to deliver on these plans is included. In future NLTP periods, we will look to expand this approach further to include Hamilton, Tauranga and Dunedin.

We propose a number of national planning activities to allow better coordinated delivery for our key priorities. This includes in the development of regional highway planning for future operation and optimisation of our major urban motorways, improved freight journeys, speed management, and our contribution to improving cycle facilities for vulnerable users. These will provide an overarching direction for regional delivery, similar to the national safer roads and roadsides and resilience business cases.

### 9.3.11 Walking and cycling

Walking and cycling provides a healthy, economic and environmentally friendly travel option for New Zealanders. Walking and cycling:

- alleviate congestion
- help improve travel times for all road users
- improve the reliability and resilience of the transport networks.

For these reasons, we're committed to planning and delivering safe and cost-effective pedestrian and cyclist facilities on state highways, especially where specific safety concerns exist and/or where state highways form part of the most appropriate route for these modes of travel. In the main, we do this as part of our state highways capital improvements programme. However, we also develop and deliver a programme of dedicated walking and cycling facilities as part of the programme of activities delivered from the Walking and Cycling Activity Class<sup>32</sup>.

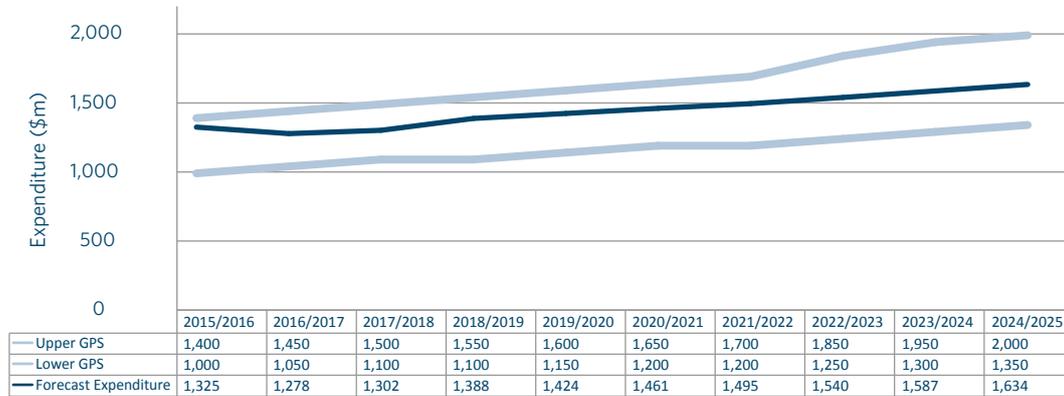
Our proposed programme is contained in Appendix B.

32 <https://www.pikb.co.nz/home/ao-local-transport-programme/ao-local-transport-programmes-process/5-draft-update-transport-programme-and-input-to-tio/walking-and-cycling-activity-class/walking-and-cycling-activity-class/>

### 9.4 PROGRAMME COSTS

The programme cost, shown within the draft GPS 2015 funding ranges for the state highway improvements activity class, is shown in the table below:

#### FORECAST ANNUAL EXPENDITURE - NEW AND IMPROVED STATE HIGHWAYS (\$M)

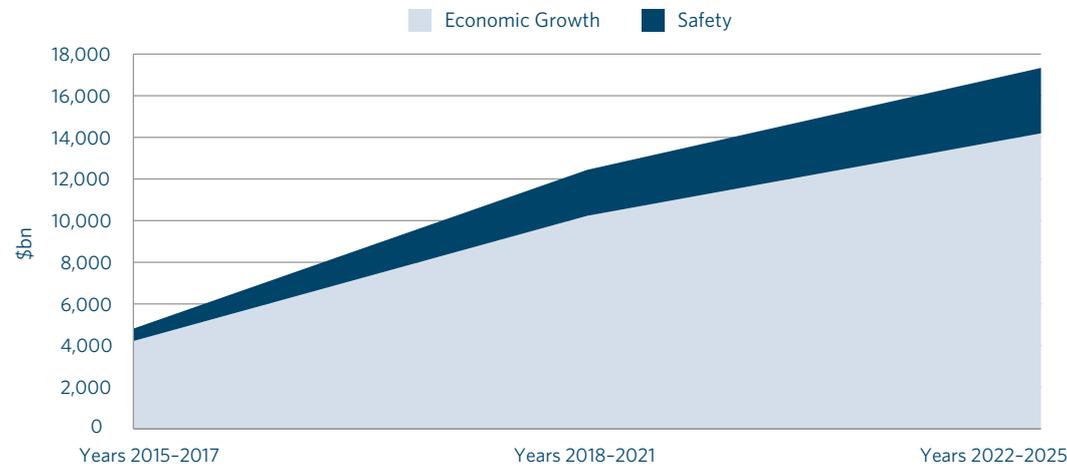


### 9.5 PROGRAMME OUTCOMES

In the short term, the scope for a significant change in direction has been limited by available uncommitted revenue. However, over the 10 years of the draft SHAMP 2015-18, an analysis of the programme shows that, while we maintain our focus on economic growth (including resilience of the network) we will have a growing emphasis on delivering on our safety objectives.

This is demonstrated in the figure below which shows the percentage of economic benefits gained from the proposed programme based on the *Economic evaluation manual* measures in dollar terms. The graph shows that, over the 10 years of 2015-25 we aim to treble the safety benefits from our programme and double those from our activities targeting economic growth. This means an overall change in the focus of our programme towards an 80:20 split of benefits between economic growth and safety, compared to the 90:10 split we have presently.

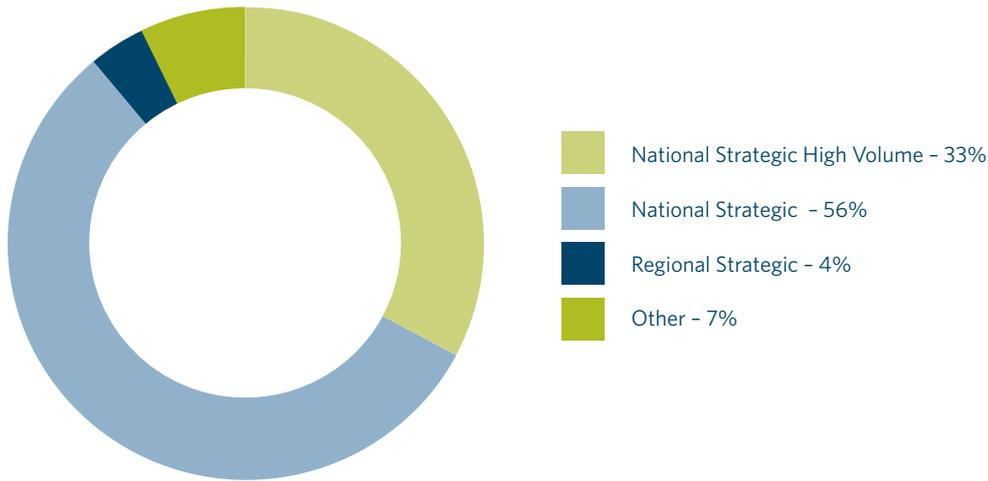
#### DISTRIBUTION OF MONETARY BENEFITS FROM SHAMP 2015-18 10-YEAR PROGRAMME (\$BN)



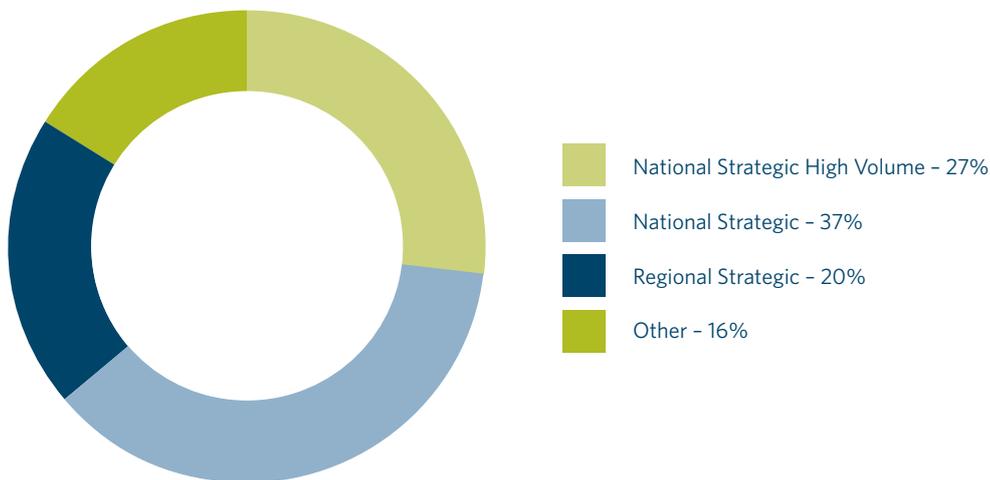
This is primarily achieved through investment in a national roads and roadside programme which, over 10 years, aims to improve 24 intersections and 66 corridors and invest around \$750 million with the aim of reducing deaths and serious injuries by around 1400 and improving the KiwiRAP rating of over 400km of state highway.

The figures below show the distribution of benefits by One Network Road Classification. This shows that the proposed programme continues to target our highest classification roads.

**DISTRIBUTION OF ECONOMIC GROWTH BENEFITS BY ROAD CLASSIFICATION**



**DISTRIBUTION OF SAFETY BENEFITS BY ROAD CLASSIFICATION**



## 9.6 INVESTMENT RISKS AND OPPORTUNITIES

There are a number of risks associated with the draft SHAMP 2015-18 which could impact the improvements programme and our ability to deliver the proposed programme. These are predominantly around either revenue certainty or overspend/underspend within the programme.

### 9.6.1 Revenue certainty

Revenue for the National Land Transport Fund (NLTF) comes from fuel excise duty, road user charges, motor vehicle registration and licensing fees and state highway property. The draft SHAMP 2015-18 has been developed on the basis that sufficient revenue will be made available to achieve the draft GPS 2015 expenditure targets. The Transport Agency monitors forecast and actual revenue on a regular basis and we adjust our programmes to remain within the actual revenue position.

### 9.6.2 Programme overspend/underspend

There are a number of opportunities which could enable us to deliver greater outcomes from the improvements programme as we continually strive for value for money. As we develop activities proposed in this draft SHAMP 2015-18, opportunities for savings will become apparent which will allow us to potentially deliver more activities for the same amount of money. In addition, increased revenue could allow the Transport Agency to fund higher within the funding ranges set by the draft GPS 2015. To prepare for such opportunities we develop and monitor a contingent programme which allows us the flexibility to respond to such opportunities.

We are able to identify and forecast any overspend or underspend early. Our procurement and project management teams balance available funding and project commencement to ensure our portfolio is managed dynamically.

### 9.6.3 Tolling

In accordance with the Transport Agency Statement of Intent's '*maximise returns for New Zealand*' goal, we are investigating possible revenue options that could be used to further supplement the National Land Transport Fund (NLTF). One of the revenue options identified within operational parameters is our ability to make further use of tolling new state highways. We will continue to investigate possible tolling opportunities.



# 10. IMPLEMENTING THE SHAMP 2015-18

## 10.1 PROCUREMENT

The Transport Agency has a state highway procurement strategy<sup>33</sup> which describes the procurement practices the Transport Agency uses in procuring suppliers, and in the delivery of services and products to achieve best value for money. It incorporates a proactive, future-oriented approach to implementing delivery of projects on the state highway network that take into account the specific characteristics of the particular activity or group of activities.

## 10.2 NETWORK OUTCOME CONTRACTS

The new Network Outcomes Contracts for maintenance and operations activities will ensure efficiency and effectiveness through strategic asset management and focused service delivery. As a single contract model (inclusive of physical works and network management functions) they are a combination of outcome and output performance based measures. These contracts are being phased in gradually and all will be in place before the end of 2016.

## 10.3 PROPERTY

In the process of developing and delivering our activities we are required to manage a programme of property purchase and disposal and a portfolio of accumulated property.

Our overall goal is to hold property for the shortest time period possible so our accumulated property portfolio is as small as practical at any point in time. This reduces holding and management costs and also allows us to focus on improving our income return.

Our property portfolio, held for future state highway projects, is presently valued at around \$1031 million.

We programme and buy property in advance of projects, with enough lead time to avoid the risk of holding up a project. We purchase under the Public Works Act 1981 (PWA), and work two to three years in advance of a construction start date. In part this time frame is determined by the compulsory purchase provisions of the PWA, and the time it can take to secure ownership of a property for the Crown.

Our disposal programme under the PWA allows us to sell the land which we identify as surplus from projects. It can take some years from purchase for us to be able to identify land as surplus; sometimes well after project construction has started and, in some cases, even after projects are completed. Overall our aim is to sell land as soon as possible, but in accordance with the detailed process to work through and many points where our programming can be impacted.

## 10.4 ANNUAL PLAN PROCESS

The three-yearly planning and development cycle aligns budgeting and planning through the Statement of Intent and NLTP. The result is then translated into an annual plan – a programme for implementation. The annual plan is an essential tool that provides certainty on activities to be implemented during the year, and the expenditure connected to it, and is the risk-based mechanism that allows us to respond to revenue and savings opportunities (or pressures) dynamically through each NLTP period to ensure our delivery programme is optimised.

33 <http://www.nzta.govt.nz/resources/state-highway-portfolio-procurement-strategy/>



# 11. AUDIT AND REVIEW

## 11.1 AUDIT

The Transport Agency is subjected to a variety of reviews and audits for reasons of compliance and business improvement.

An annual programme of audits and reviews is produced which covers most aspects of the business. The teams that carry out the audits can be external parties or comprise staff from the following, not mutually exclusive, expertise areas:

- lead auditor (who would normally have expertise in at least one of the following areas)
- contract management and administration
- operations, projects and/or asset management
- other areas as necessary and decided in consultation with the Business Services Manager.

Aside from the lead auditor, other members of the team need not necessarily be trained auditors but this is preferred. Auditors may be drawn from other Transport Agency offices (but not the office being audited) including National Office. The audits are business and risk focused.

## 11.2 REVIEW

### 11.2.1 Programme reviews

As mentioned in Section 10.4 above, the three-yearly planning and development cycle aligns budgeting and planning through the Statement of Intent and NLTP. It is on this three-yearly cycle that we review our direction and programme to assess performance against our key performance indicators proposed for the draft SHAMP 2015-18. Given the relatively long lead time for benefits to be realised, a three yearly planning cycle is considered appropriate, in conjunction with our annual planning process described in the previous section, to ensure that our programme is optimised.

### 11.2.2 Activity reviews

At the activity level the types of review that Transport Agency state highway activities are subjected to includes, but are not limited to:

- post approval reviews – to ensure ongoing confidence in, and consistency of, approvals for delegated projects in the NLTP
- post implementation reviews – to demonstrate whether our investment has been effective in delivering the expected benefits
- contract management reviews – to provide confidence that supplier management systems and practices are appropriate and are delivering contractual and legislative requirements
- lessons learnt reviews – learning from experience and identifying the successes and the areas for improvement, and how these can translate into improved contract delivery in the future
- review and prioritisation team process – reviews the proposed resurfacing and rehabilitation works in the annual plans, and incorporates any key findings into the programme.
- investment audits – provide assurance to the Transport Agency that our land transport investments are being well managed and providing value for money
- other external (Audit NZ; Office of the Auditor General; Gateway Reviews) – special purpose audits conducted within our operating framework, focussing on areas of interest.

### 11.2.3 Network Outcomes Contract audits

The Transport Agency has begun benchmarking analysis to gauge the comparative performance of the Network Outcome Contracts (NOC). This is currently focussed on service delivery and investment decision-making for reactive maintenance and renewals. This analysis compares the NOCs with respect to each other, to historic performance and to other road controlling authorities and international jurisdictions. This NOC benchmarking considers a range of dimensions, including costs, levels of service and treatment selection.



# APPENDIX A REGIONAL SUMMARIES

# Northland

## OVERVIEW

Northland plays a number of important functions and supports economic drivers for New Zealand. As a nationally significant tourism destination, the region attracts in excess of five million visitors annually.

The region is also a generator of key freight movements particularly to and from Northport, Marsden Oil Refinery and its many forestry sites.

Having a low population density dispersed over a relatively large area, the state highway network plays a vital and integral part of the Northland's transport network, providing the only link between a number of destinations within the region, Auckland and beyond.

## TRANSPORT NETWORK PRESSURES

### Network use pressures

Due to the relatively low population density in Northland, congestion is primarily focused around Whangarei during the morning and afternoon peak periods. With a high proportion of primary industries in the region, the network also accommodates a large number of freight vehicles access.

### Development pressures on the network

The Northland region currently has low population density with most development focused around the region's biggest town, Whangarei. The town is anticipated to grow in the next 30 years with development focused around the state highway network as access points.

There is also planned growth at the Marsden Point area adjacent to Northport over the next 30 years. Consisting of both residential and industrial area the link between State Highway 1 and State Highway 15A will have increased traffic pressure.

Other regional centres including Waipapa, north end of Kaitaia are also been identified in the regional plan to accommodate specific growth.

Forestry continues to grow. Primarily focused in the north and west of the region, much of this is transported to the rest of New Zealand or internationally via Northport. With this likely to increase exponentially in the coming years, this creates additional safety, capacity and maintenance pressures on the state highway network.

Northland continues to be a key tourism market for New Zealand, particularly around Paihia and the Bay of Islands area which is primarily serviced by State Highway 11. Currently the region attracts around five million visitors per year and as international and domestic tourism demand increases the pressure on the State Highway network is also likely to increase.

### Key journey

The Northland region contains part of the national identified critical journeys between Whangarei and Auckland.

## NETWORK PERFORMANCE

### Safety

The state highway network is ranked between 2 and 3 star Kiwirap rating.

Two roads under Transport Agency authority are listed in the 100 high risk intersections. Both schemes have had works complete or are currently underway.

### Efficiency

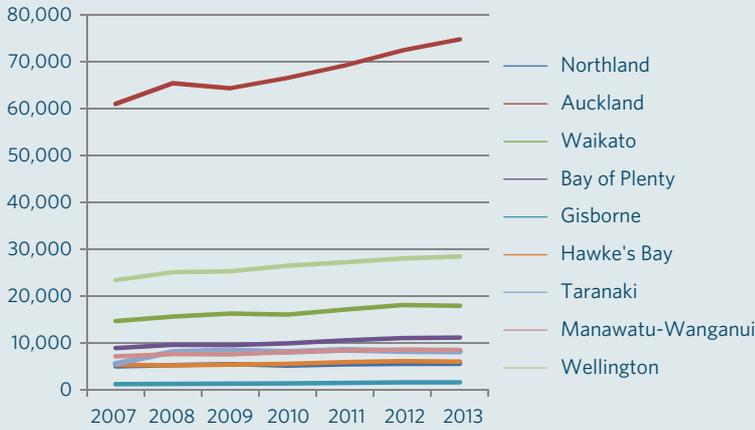
The majority of routes in the Northland region are classified as Regional Distributor with State Highway 1 between Whangarei and the Auckland region classified as National Strategic.

The state highway, throughout the region, supports a number of transport needs including local traffic movements, freight and tourism.

### Resilience

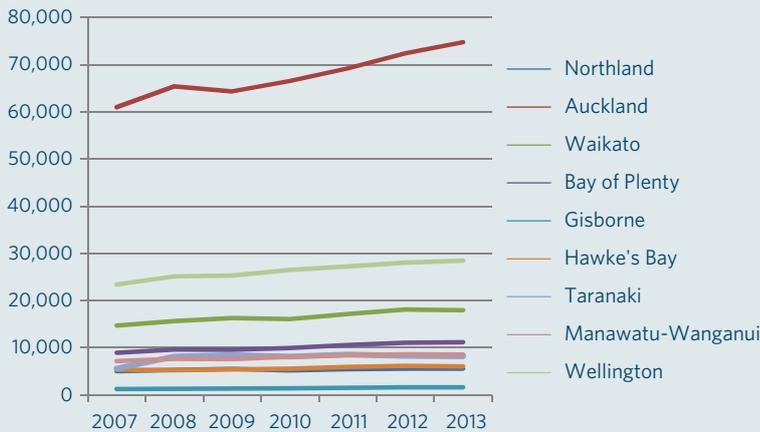
Resilience is a key issue for the Northland region. In many areas the state highway network provides the only practical connections for communities, freight and tourism. The Transport Agency is working to address known weak points. For example, the Transport Agency is working jointly with regional authorities to address flooding problems through the flood mitigation programme. Additionally, TPAC has been identified to progress resilience work between Whangarei and the Wellesford region boundary.

## REGIONAL MACRO TRENDS



### GDP

Regional GDP was approximately \$5.5 billion in 2013 with marginal growth between 2007 and 2013. Auckland has the highest GDP in New Zealand. More than a quarter of the GDP is made up by the manufacturing and agriculture sectors.



### Population

The Northland region's population has had steady growth since 2001, increasing by approximately 15,000 people.



### Employment

The employee count in Northland has continued to grow over the last 10 years currently at just under 75,000 employed across the region.

# Auckland

## OVERVIEW

According to Statistics NZ's medium growth projections, Auckland is expected to grow by approximately 480,000 people between 2011 and 2031 (from a base of 1.4 million).

The Auckland Plan anticipates that between 60-70 percent of this growth will be accommodated within the existing urban boundary, with the remaining 30-40 percent being located in new greenfield expansion areas to the south (Drury - Karaka - Pukekohe), north-west (Kumeu - Huapai) and north (Warkworth and Silverdale).

Auckland is the largest commercial and financial hub within New Zealand and Auckland International Airport is also the key gateway to the rest of New Zealand.

The state highway network is a vital and integral part of the Auckland transport network which supports the transport choices within the region including public transport and local roads.

The Transport Agency and Auckland Transport have adopted a 'one network' approach to managing and developing the transport system in Auckland with a view of optimising its use for all transport users.

## TRANSPORT NETWORK PRESSURES

### Network use pressures

Due to the diverse nature of land uses in Auckland, there are a number of network use issues across the regions. Within the urban area, a number of key interchanges and state highway links currently experience delays particularly on the Southern, Northern and North-Western motorways and the Central Motorway Junction.

### Development pressures on the network

The population of Auckland is anticipated to grow to two million people by 2040. This development, together with the associated employment and services, is likely to put substantial additional pressure on the state highway network.

As the main economic hub of New Zealand, the Auckland region accounts for nearly 50 percent of the total GDP output of the country. The region is home to the country's largest and primary international airport as well as the City of Auckland port. These, together with many inland industrial areas, result in a large amount of freight movements across the region. This is likely to increase over the next 30 years.

While the economy of Auckland is focused primarily on industry around the urban centre, there are also a small proportion of primary industries such as forestry in the rural hinterland.

The Western Ring Route which will provide a viable alternative to State Highway 1 and the Auckland Harbour Bridge is scheduled to be complete by 2020 with the main infrastructure linkage at the Waterview Tunnels opening in 2017. There is likely to be a substantial change in the network patterns across the region following this completion.

A number of other major schemes including the Auckland Acceleration package of schemes, the Puhoi to Warkworth improvements and an additional crossing of the Waitamata Harbour are likely to influence development patterns across the greater Auckland region.

### Key journey

The Auckland contains three national identified key journeys:

- Whangarei to Auckland
- Auckland City Centre
- Auckland to Tauranga (via Hamilton)

## NETWORK PERFORMANCE

### Safety

The entire motorway network around Auckland urban area is 4/5 star Kiwirap rated. Routes outside the urban area are generally classified between 2 and 4 star Kiwirap.

Three roads under Transport Agency authority are listed in the 100 high risk intersections.

### Efficiency

State Highway 1, State Highway 18 and State Highway 20, together with the urban section of State Highway 16, are classed as National Strategic High Volume with the remaining routes (including SH22) classified as Regional Distributor or National Strategic.

### Resilience

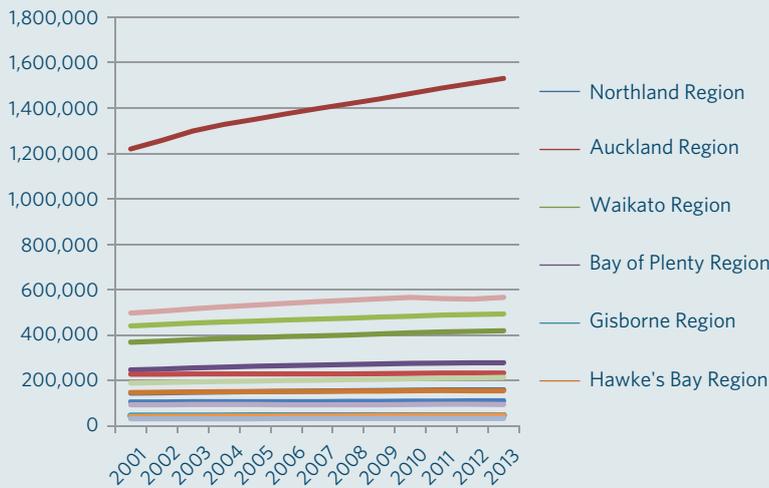
Due to high volume of traffic and the likely impact of long term closing, the sections of State Highway 1 between Upper Queen Street and Greville Road and Taupiri and State Highway 16 between Upper Queen Street and Hobsonville Road and Taupiri have been identified as medium resilience risk corridors.

## REGIONAL MACRO TRENDS



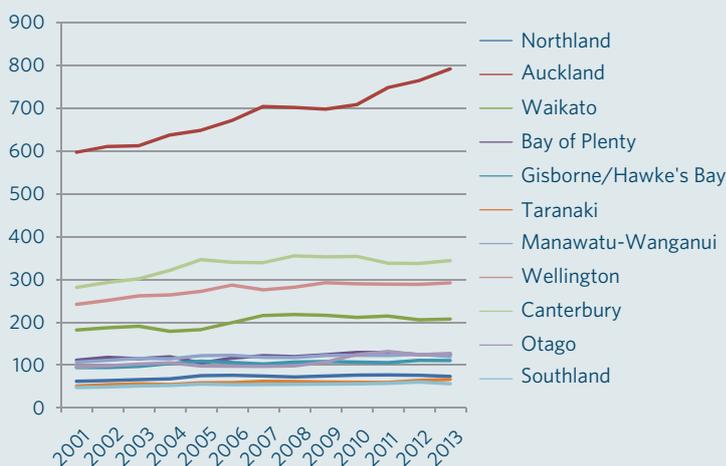
### GDP

Regional GDP was approximately \$75 billion in 2013 with significant growth between 2007 and 2013. Auckland has the highest GDP in New Zealand. More than a quarter of the GDP is made up by the manufacturing and service sectors.



### Population

The Auckland region's population has had substantial growth since 2001, increasing by over 200,000 people. It has the largest population in New Zealand.



### Employment

The employee count in Auckland has continued to grow over the last 10 years currently at just under 800,000 employed across the region.

# Waikato

## OVERVIEW

The Waikato represents 8.5% of the New Zealand economy. Principal employment within the region is within the dairy and agricultural industries although strong growth has been seen in the science and technology and health care sectors over the last 10 years.

The proportion of primary industries are significant, with 18% of all exotic tree plantations located in the Waikato and 13% of all New Zealand export logs being harvested here. The Waikato has half a million hectares of pasture which is home to 29% of the national dairy and 13% of beef herds.

## TRANSPORT NETWORK PRESSURES

### Network use pressures

The road network within the region is complex and extensive with over 1,700 km of road covering 24 individual state highways (23% of the all NZ state highways). 18% of all road freight travels through the Waikato, it is a key transport link between the Port of Tauranga and the rest of the Upper North Island. The region's state highways carry 16% of all traffic and 29% of freight vkt.

Freight volumes are expected to increase by 53% in the next 30 years adding around half a million truck movements to Waikato roads per year.

The Waikato also has major tourist destinations of Waitomo Caves (SH3, SH37), Taupo (SH1, SH5) and the Coromandel (SH25, SH25a), as well as high numbers of visitors travelling on our roads to reach other destinations such as Rotorua (SH5) and the ski fields at Ruapehu (SH4).

### Development pressures on the network

Moderate to high population growth is anticipated in Hamilton, with a long term population growth of 30%, urban congestion is anticipated to be a significant problem in the future. The continued expansion of Auckland has increased demand for housing in satellite communities to the north of the region.

The growth of dairy production in the Waikato has seen in excess of 27% of New Zealand's milk production located in the region. Effects on the land transport system from this growth include an increase in road freight, an increase in the amount of slow and oversized farm vehicles and tankers on the road. Forestry production is increasing, and timber processing is expecting to double production over the next decade (both sawn timber and in other products) which is all anticipated to go by road through Kinleith or Kawerau on its way to the Port of Tauranga for export. This is predicted to be a medium term peak in production which will decline to below current levels by 2030.

### Key journey

The Waikato has three key journeys:

- Journey 3 - Auckland to Tauranga via Hamilton
- Journey 4 - Bombay hills to Tauranga via Waihi
- Journey 5 - Hamilton to Wellington

## NETWORK PERFORMANCE

### Safety

The Waikato has a significant safety problem; with 30 percent of all DSI crashes for New Zealand, it has the worst safety performance of all regions. There are three corridors with high collective risk (SH1, SH2 and SH29) and 22 high risk intersections in the national top 100.

### Efficiency

State Highway 1 is the most significant of the corridors, being National High Volume, it is one of the busiest state highways outside of the major centres with in excess of 20,000 vpd. It is the primary link in between Auckland and the Upper North Island and suffers congestion through the urban centres.

There are a number of corridors that demonstrate a deficiency in travel times and reliability, most notably is SH29 linking Hamilton with the Port of Tauranga where it crosses the Kaimai Range.

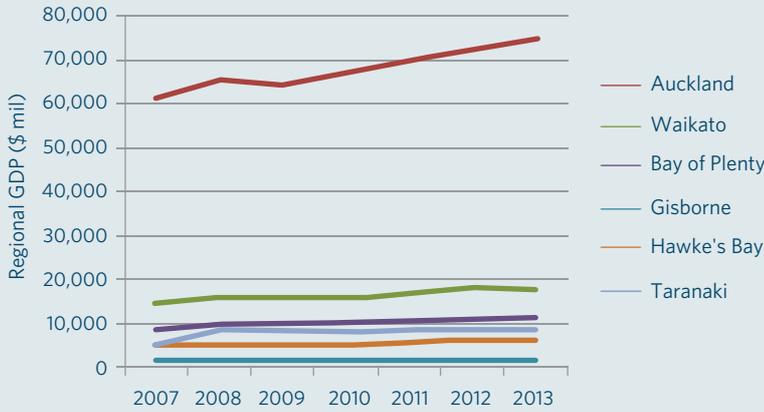
### Resilience

There are identified risks on a number of key SH corridors with long alternative routes:

- SH1 on the Central Plateau (winter conditions and volcanic activity)
- SH29 on the Western approach to the Kaimai Range (slips, crashes and weather conditions)
- SH2 in the Karangahake Gorge (flooding, crashes)
- SH3 between Te Kuiti and Urenui (slips and rock falls).

## REGIONAL MACRO TRENDS

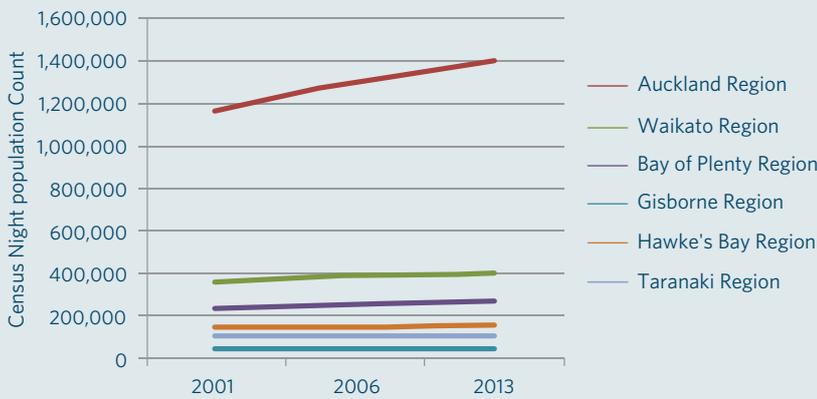
GDP by Region



### GDP

GDP was approximately \$18 billion in 2013, with an overall rise of 14 percent over the past five years. The above graph shows a high GDP in comparison to the adjacent regions which influence economic activity within the Waikato. Over 30 percent of the economy is related to agriculture (12%) manufacturing (11%) and the forestry, mining and energy sectors (10%).

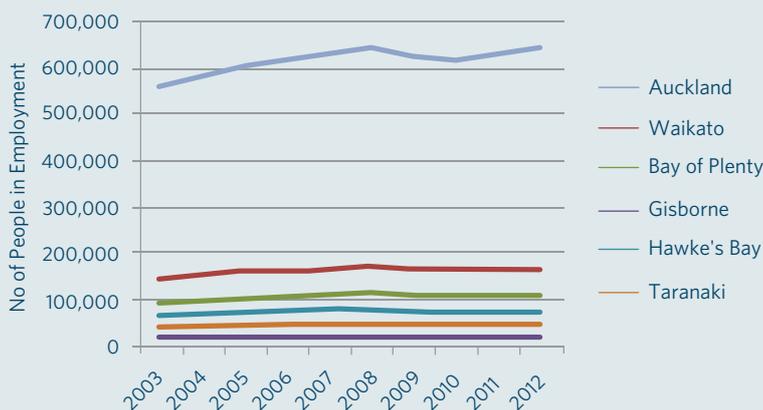
Usually Resident Population by Region



### Population

With a population of just over 400,000, the Waikato region has seen strong growth since the last census of six percent (0.7% higher than the NZ average). The population is predicted to grow by approx 14 percent by 2031 to around 470,000. There is an underlying trend of shift away from traditional rural living towards urbanisation. The proportion of people of retirement age will increase by over 80%. (StatsNZ)

Employees by Region



### Employment

Over 166,000 people are employed within the Waikato which represents 64 percent of the population. Over the last 10 years, growth in employment in the region has been marginally (1%) higher than the national average at 12.6 percent.

# Bay of Plenty

## OVERVIEW

The Bay of Plenty region has a strong primary sector base and growing urban population. It is a significant producer of basic commodities ranging from kiwifruit, dairy and forestry. Most of these are exported through the Port of Tauranga which also handles considerable volumes of export/import cargo for the nation generally.

Overall population growth is predicted at 0.9% per year, with an emerging trend of urbanisation across Tauranga and the Western Bay of Plenty and de-population of rural areas. Population growth of 1.9% per year and 1.2% per year if forecast for Tauranga and Western Bay of Plenty respectively, whilst eastern areas are likely to decline.

The region also has a concentration of employment in the primary sector above the national average, particularly in the Eastern Bay of Plenty and Central North Island. The workforce has started to diversify into secondary and tertiary industries, namely wood, paper and printing manufacturing, admin and support services and the healthcare and social assistance sector. The latter is experiencing the highest employment growth in the region over 2003-13 (as with national trends), consistent with the need to serve an aging population.

## TRANSPORT NETWORK PRESSURES

### Network use pressures

Urbanisation and rural de-population has increased network pressures in Tauranga and the Western Bay of Plenty. In particular, there is congestion in Tauranga around the central and eastern corridors (Papamoa to Paengaroa) and northern corridor between Bethlehem and Omokoroa.

### Development pressures on the network

The Port of Tauranga accounts for almost 25% of all imports and exports in New Zealand and around \$15 billion to the New Zealand economy (8.6% of GDP). Consequently, the region has the highest heavy vehicle weight intensity of all roads in the country.

Road freight is forecasted to increase by 86% by 2035 across the Upper North Island, centred on the Port of Tauranga, putting more pressure on SH2 & SH29. The Tauranga Eastern Link, to be completed 2015, will improve freight efficiency and support sub-regional growth on SH2.

There is a need to manage the efficiency of SH2 north and SH29 eastern corridors where demand for access from development competes with the need to maintain efficient freight access.

### Key journey

There are two key journeys in the Bay of Plenty region:

- Journey 3 - Auckland to Tauranga (via Hamilton)
- Journey 4 - Pokeno to Taupo via Tauranga

## NETWORK PERFORMANCE

### Safety

There are medium-high collective risk along SH2 between Waihi and Tauranga, along SH29 between Tauriko and Kaimai Ranges and several corridor sections in the Eastern Bay of Plenty.

There are five out of the top 100 high risk intersections in the region.

### Efficiency

Peak hour congestion occurs at some key urban locations in Tauranga, particularly along SH2 at Mount Maunganui, SH29 at Hairini and SH30 in Rotorua.

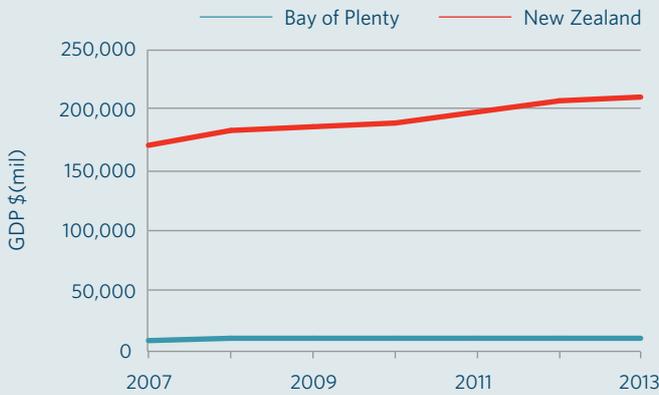
Works to strengthen pavement and bridges are planned along SH2/33/5 Tauranga to Taupo and SH29 Tauranga to Hamilton. This will enable HPMVs to run on the network and therefore deliver more freight on fewer trucks.

### Resilience

The state highway network is at risk of disruption from catastrophic events such as volcanic activity and tsunamis as well as more frequent events such as crashes, floods and slips.

## REGIONAL MACRO TRENDS

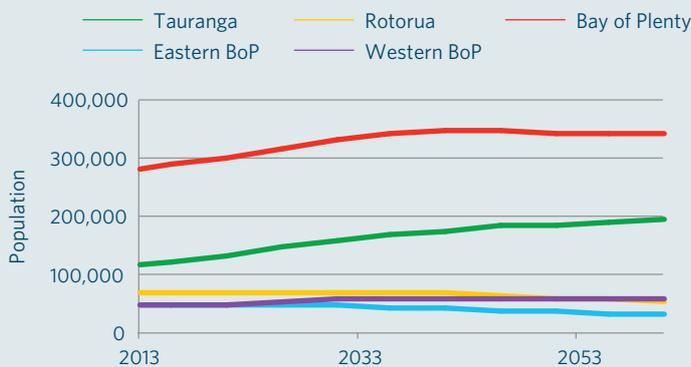
GDP, 2007-2013 - March Year



### GDP

The region contributes 5.3 percent of national GDP; 2007-13 regional GDP has increased to 25.7 percent, slightly more than the national average. Port of Tauranga is the largest New Zealand export port by volume with its activities contributing \$15 billion to the New Zealand economy, ie 8.6 percent of New Zealand's GDP.

Population, 2013-2061 (2014.NIDEA)



### Population

The region is home to 278,000 people, 6.2 percent of New Zealand's population, making it the fifth most populated region in the country. Projected population growth for 2013-2033 is 0.9 percent per year. The region's age profile is forecast to be one of the oldest, second only to Northland, by 2031.

Employment Rate, 2004-2014 - March Year



### Employment

The Bay of Plenty region accounts for 6 percent of national employment. In 2003-2013, employment growth was 1.7 percent compared to a national average of 1.5 percent.

# Gisborne

## OVERVIEW

Gisborne makes up one percent of New Zealand's economy in employment terms. It includes some of New Zealand's most remote areas, with mountainous topography and difficult transport routes. Gisborne also has a very different age and ethnic profile compared to the country as a whole. Nearly half the population is Māori (47 percent compared to 14 percent for New Zealand), and it is correspondingly younger than most other regions

The region's average household incomes are amongst the lowest in New Zealand, and the region experienced relatively low employment growth in the last decade. The region's population has been growing quite slowly, and despite having the highest proportion of children aged 0-14 of any region, it has been losing working-age people. Accordingly, the Gisborne region includes a high proportion of very young and older dependents.

The Gisborne region economy has strong comparative advantages in a number of export-intensive primary industries – forestry, sheep and beef farming and horticulture. Exports out of the region's port (Eastland Port) have increased by 100 percent over the last three years, on the back of these industries.

The majority of these exports are unprocessed or only semi-processed (for example, about four percent of logs grown in Gisborne are processed in the region).

Alongside the region's primary industry strengths, employment in public services such as early childhood, education, health care and social assistance is more important in the region than nationally.

Gisborne's population growth in the next two decades will be negligible. The region's most significant opportunities are its natural resources, including in the development of Māori natural resources, to provide employment for the region's young population

## TRANSPORT NETWORK PRESSURES

### Network use pressures

There are no significant network pressures for general traffic due to the low population and economic growth (historically and forecasted).

### Development pressures on the network

The Government announcement of the closure of the rail line from Napier to Gisborne will alter the transport patterns of goods and may place some pressure on the network. This will particularly impact forestry which is a key aspect of the economy and is expected to increase in the future. However forestry has been subject to high fluctuations in recent years due to international demand and prices.

A key issue relating to economic development is the state of the roads. The state of the roads is considered to be one of the most fundamental to the economic development of the region, and with the forecast increase in forestry the issue will be magnified. Further to this the current geometric status of SH35 is unsuitable for the current and predicted logging growth, and combined with the expected increase in tourism traffic.

Route security is a concern for the region with one route north and south through the region. Beyond Wairoa to the south the road is susceptible to slips and closures in heavy rainfall events. The difficult terrain, climatic issues (flooding, slips, earthquake prone), and dispersed rural population contribute to the resilience problem.

Sources: Regional Land Transport Strategy 2006–2016, East Coast Regional economic potential Study April 2014—MED

### Key journey

There are no key journeys in the region.

## NETWORK PERFORMANCE

### Safety

There are no medium or high collective risk routes, or any high risk intersections in Gisborne.

### Efficiency

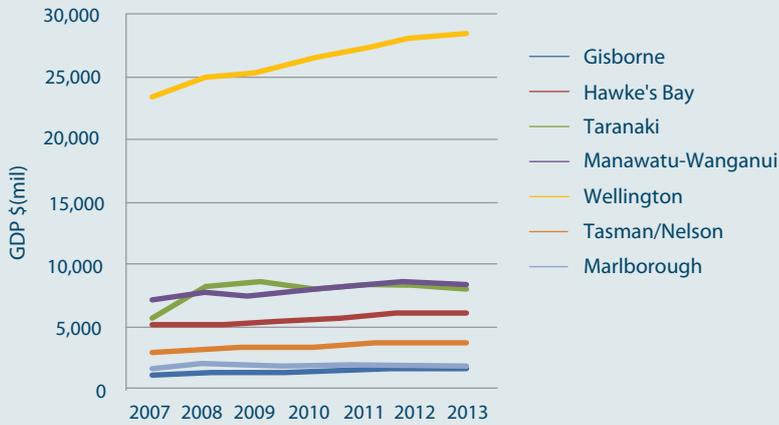
There are no Critical Journeys or nationally strategic routes in Gisborne. There is no congestion and low travel time variability. There are generally low average speeds but likely to be caused by topography rather than traffic congestion. There are three bridges with HPMV deficiency.

### Resilience

There is a low ranked resilience route around the East Cape, and nothing nationally significant.

## REGIONAL MACRO TRENDS

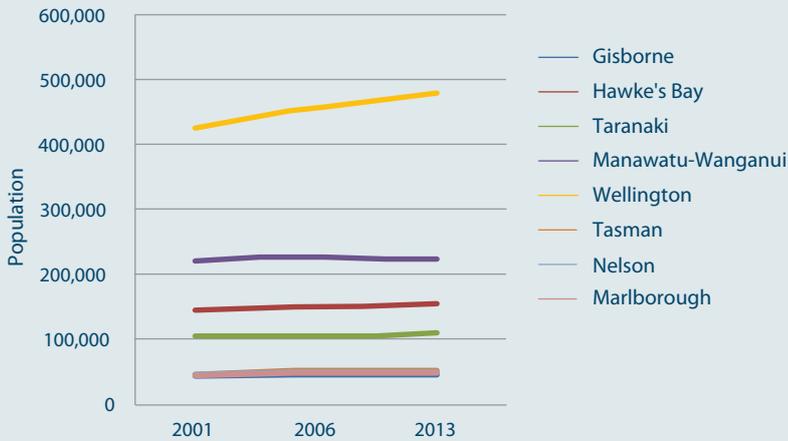
GDP by Region



### GDP

Gisborne's GDP has been relatively flat between 2007 and 2013. It has the lowest GDP in the central region. A third of regional GDP is associated with construction, horticulture, agriculture, viticulture and forestry and associated manufacturing. The GDP by person for the region is the lowest in the country at \$30,450 per year compared to the NZ average of \$43,660.

Night Population by Region



### Population

Gisborne's population forecast is to have very low growth (2006-2031), in low growth scenarios the population is in decline.

Employee Count by Region



### Employment

Gisborne has a small share of the National Employment base in the order of 1% with the lowest regional Low Income- Low Growth trend. The employment rate as a proportion of the working age population is currently equal to the NZ average.

# Hawke's Bay

## OVERVIEW

The Hawke's Bay region comprises about 4% of the New Zealand economy by employment. It is an export-oriented region with a very significant primary sector. However, household income levels are lower than the national average, and the region has been experiencing relatively slow employment growth over the last 10 years.

The Hawke's Bay region has a relatively high proportion of Māori (22% compared to 14% nationally). It also has a lower proportion of working-age residents and a higher proportion of both young and older dependents than the national average.

Like many New Zealand regions, its population profile is being affected both by ageing and outward migration. The region's overall population is not expected to grow much in the next two decades.

Over half of Hawke's Bay's total land area is dedicated to sheep and beef farming. It also has strengths in horticulture – which accounts for over a fifth of regional employment (including seasonal employment) – and forestry. The region's wine industry has expanded over the last decade, with growing expertise in red grape varieties and increased production.

While overall employment in manufacturing has contracted during the last decade, food processing is growing, with several international firms increasing their Hawke's Bay processing capacity in recent years.

These activities are highly export oriented. The Napier Port is important to the region's ability to transport primary produce to export markets. It is now the North Island's second largest export port by volume and New Zealand's fourth largest container terminal. Recent growth has been supported by increases in apples, logs and container shipping volumes and in passenger cruise ship berths.

Source: Regional Economic Activity Report 2013 MBIE

## TRANSPORT NETWORK PRESSURES

### Network use pressures

The rail network creates severance across the region's road network, in particular local roads. Napier City Council has approximately 19 crossing points including two along Prebenson Drive.

### Development pressures on the network

The Port of Napier is the second largest in the North Island, in terms of export volumes, and is continuing to grow. Access to the Port of Napier is constrained by competing land uses along the Ahuriri corridor which is part of the critical link between the growing freight distribution centre at Whakatu (the largest cold storage complex in the Southern Hemisphere).

Alongside of the Expressway at Prebenson Drive is a proposed 200ha business park zone which will create a high level of demand on a key freight route which will further reduce the efficiency of freight movements to the port.

The Hawke's Bay Regional Council is currently developing plans to construct the large scale Ruataniwha dam in the southern Hawke's Bay. This will provide significant growth in exports and investment in the region, doubling the amount of productive land, and will potentially increase freight volumes on the Hawke's Bay Expressway.

The Hawke's Bay Airport Company is planning to create a large scale business park around the airport. This park will complement the airport operations and provide land for commercial businesses. The airport is accessed by the Expressway, and will place more pressure on the network.

### Key journey

There is a key journey from Napier Port to New Plymouth Port, which includes SH2 and SH50 between Hastings and Napier Port.

## NETWORK PERFORMANCE

### Safety

There is a medium high collective risk route on SH2 from Hastings to Takapau, and a high collective risk on SH2 Coastal route. There are five high risk intersections in and around Napier and Hastings in the top 100 worst intersections.

### Efficiency

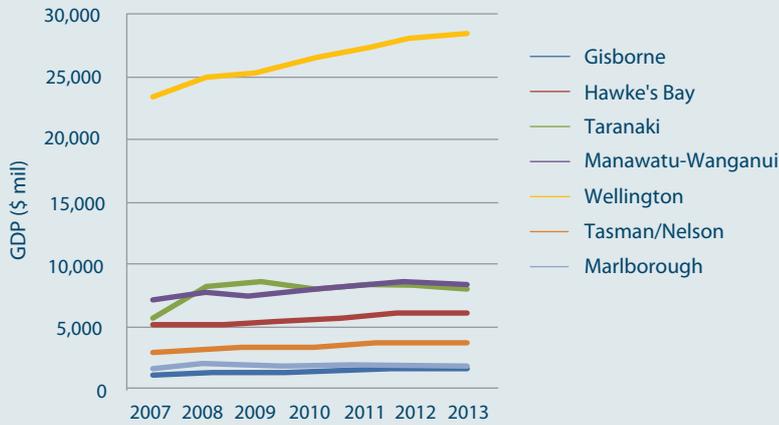
SH2 is a national strategic state highway, and SH50 is a national strategic high volume route. The Expressway from the south to the Port of Napier does not fully deliver the levels of services attributed to its classification which effects general traffic and freight. There is relatively minor peak hour flow congestion and journey time deficiency on SH50A Hawke's Bay Expressway. There are inefficient connections to Napier Port due to the adjacent land-use along the route between the SH and the port; there are also issues for freight around Pakowhai and Links Road. There is redundancy in the network with unnecessary parallel SH routes which unnecessarily spreads investment.

### Resilience

Connections to Palmerston North through Manawatu Gorge are subject to frequent slips and closures and detour routes are also at risk, noted as a medium risk resilience route, as is Napier to Gisborne.

## REGIONAL MACRO TRENDS

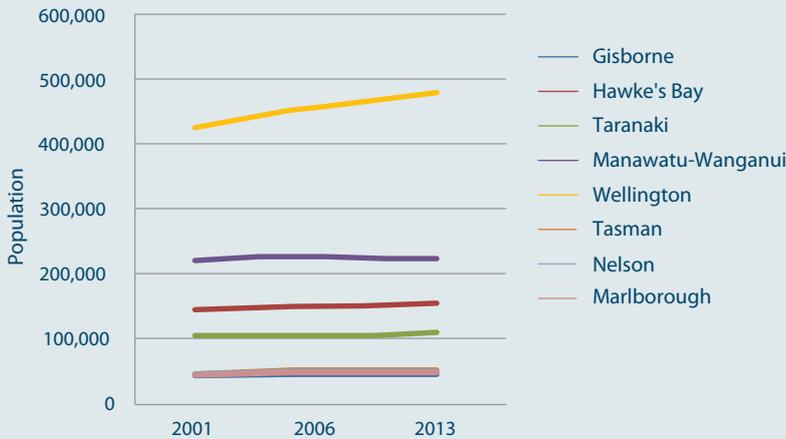
GDP by Region



### GDP

Hawkes Bay's GDP has been relatively flat with marginal average growth of one percent per year between 2007 and 2010. The above graph shows Hawkes Bay is in the middle of the pack for GDP in the Central region. A third of regional GDP is associated with horticulture, agriculture, viticulture and forestry and associated manufacturing.

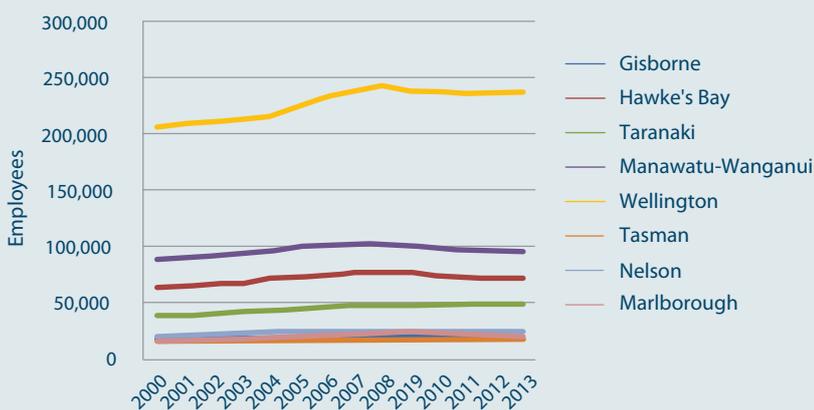
Night Population by Region



### Population

Hawkes Bay's population is relatively flat between 2001 and 2013. This trend is expected to continue. In low growth models population growth is predicted to slightly decline.

Employee Count by Region



### Employment

Hawkes Bay has a small share of the national employment base at 3.8 percent with a low income-low growth trend. The employment rate as a proportion of the working age population is slightly above New Zealand average.

# Manawatu

## OVERVIEW

The Manawatu-Wanganui region accounts for 5% of the NZ economy in employment terms. There are two urban centres in the region: Wanganui city and Palmerston North city, the remainder of the region is rural.

Overall, the region has experienced the lowest level of employment growth in New Zealand in the last decade and has low average incomes. Parts of the region have a large seasonal workforce, and young people in the Wanganui district have lower levels of qualifications. Primary sector employment has been falling as these sectors become more capital intensive and productive.

However, the region has a comparative advantage in R&D, with Massey University, the Riddet Institute Centre of Research Excellence (food and digestion science) and Fonterra's research and development centre all located in Palmerston North. Together, these institutions provide strong research

and development specialities in biotechnology, agricultural technology, animal health, food and human wellbeing.

Outside of the cities, a substantial primary industries base dominates, specialising in sheep, beef and increasingly dairy farming (which earns higher returns). However, farmers are now facing constraints to further converting land to dairy. Freshwater supplies have been compromised and now have some of the highest nutrient concentrations in the country.

The challenges and opportunities for the Manawatu-Wanganui region in the future will include finding ways to balance greater agricultural specialisation within current resource constraints (especially water quality), continuing to commercialise ideas from the region's extensive science and research base and developing the region's higher-value industries to create an enduring range and depth of new job opportunities.

Source: Regional Economic Activity Report 2013 MBIE

## TRANSPORT NETWORK PRESSURES

### Network use pressures

With the exception of Palmerston North and Manawatu, all the territorial authorities within Manawatu-Wanganui are expected to experience population decline. The region has an ageing population aged 65 and household sizes will continue to decline.

### Development pressures on the network

Between 2000 and 2008 the number of people employed in the logistics sector in Palmerston North City and Manawatu District increased from about 4000 in 2000 to 5830 in 2009. Large scale operators like Foodstuffs, Progressive Enterprises and Ezibuy have all expanded the volumes of goods passing through their distribution centres. Employment projections to 2031 suggest that the logistics sector will have the strongest growth rate of any sector in Palmerston North City.

Farming intensification is likely to result in increasing numbers of heavy vehicles servicing these industries. Long-term projections to 2026 of employment and GDP generation for the primary sector show that both will grow during this timeframe.

Wanganui District Council has estimated that more than 50 percent of the district's forest estate will reach harvestable age in the period 2020-2030. This is anticipated to generate approximately 270,000 truckloads of logs over this period with most of these movements on low volume rural roads en route to SH1, SH3 and SH4.

Source: Horizons Regional Land Transport Strategy 2010 — 2040

### Key journey

Manawatu-Wanganui includes portions of the key journey between Hamilton and Wellington, and the key journey between New Plymouth Port and Napier Port.

## NETWORK PERFORMANCE

### Safety

SH3 (Wanganui-Palmerston North-Woodville), SH54 (Palmerston North to Fielding), SH57 (Levin to Palmerston North) and SH56 (SH57 to Awapuni) are medium high collective risk. There are also several high risk intersections on state highways in the vicinity of Palmerston North (SH3/SH54 intersection, SH1/SH57 and SH57/Queen Street intersections).

### Efficiency

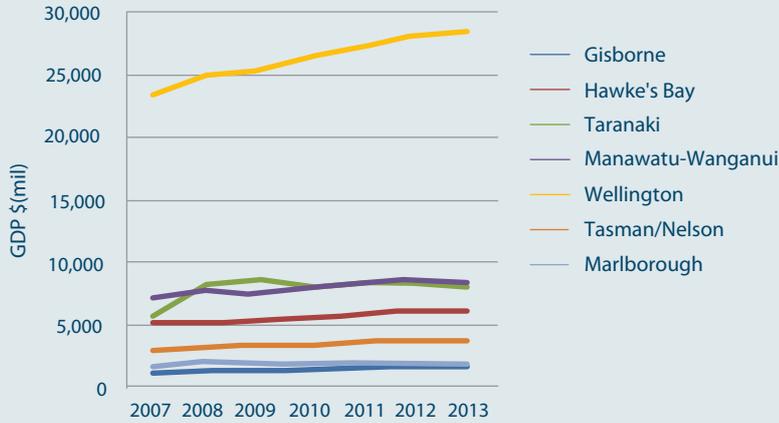
Improving efficiency and decreasing travel time variability is a strategic priority. There is minimal congestion (other than minor congestion in major town centres), and minimal journey time deficiency for these critical journey passing through East-Wanganui area.

### Resilience

SH3 (Manawatu Gorge) is categorised as a medium risk resilience route. Shannon-SH56-Awapuni and SH1 (Levin to Sanson), are low risk resilience corridors.

## REGIONAL MACRO TRENDS

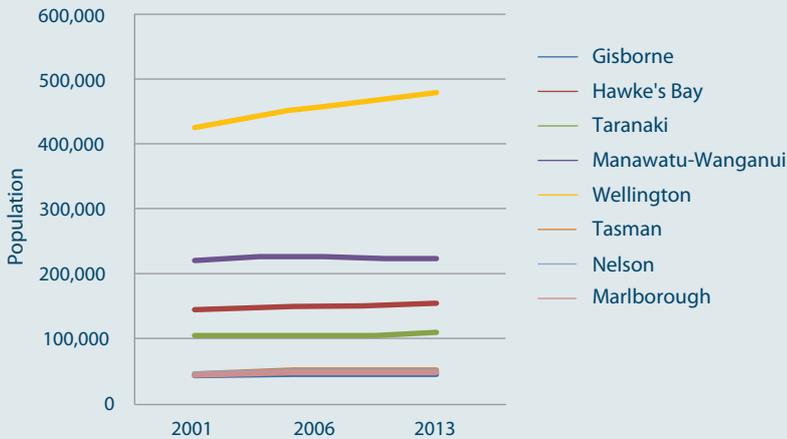
GDP by Region



### GDP

Regional GDP was approximately \$8.5bn in 2013 with marginal growth since 2007. The primary sector is the largest contributor (about 25%) to GDP.

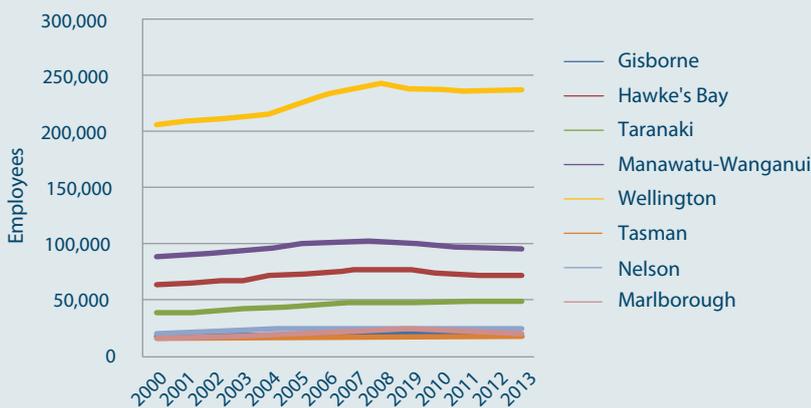
Night Population by Region



### Population

Manawatu-Wanganui population is currently 232,700 and growing at 0.2% pa. According to Statistics NZ's medium growth projections, Wellington is expected to continue to grow at this rate.

Employee Count by Region



### Employment

Employment in Manawatu-Wanganui experienced marginal growth between 2000 and 2005, and since has remained steady at about 100,000.

# Taranaki

## OVERVIEW

Taranaki comprises nearly three percent of the New Zealand economy in terms of employment. The region has relatively high incomes, and employment has grown strongly over the last decade. The unemployment rate is one of the lowest in New Zealand, while labour participation rates are relatively high.

The region's strong economic performance is underpinned by two high-income, export-oriented sectors – oil and gas – and dairy farming. The region has successfully built a hub of related industries on this base. There is a diverse range of manufacturing and engineering businesses that provide inputs to both the oil and gas industry and to dairy farming and undertaking unrelated activities.

Taranaki's regional innovation links appear to be strong, for example, through the region's oil and gas companies

and the specialist support firms clustered in the region, despite the absence of a university or other formal research and development infrastructure. The Taranaki region has also been proactive in sharing its knowledge and experience of leveraging key industries with other New Zealand regions.

Taranaki is strongly export oriented, and its key industries are very internationally connected. The region's port is a key asset, alongside roads that connect the region to people and markets in larger urban centres.

Connectivity to other places in New Zealand, along with Taranaki's small size, may continue to be a constraint on the region's growth. Taranaki's population is projected to hardly grow over the next 20 years. The region's school leavers achieve similar NCEA level 2 or above qualifications as the national average, but many will leave for education and employment opportunities elsewhere.

Source: Regional Economic Activity Report 2013 MBIE

## TRANSPORT NETWORK PRESSURES

### Network use pressures

There are no significant congestion issues on the network, with the exception of general traffic delay around New Plymouth at commuting times.

### Development pressures on the network

Port Taranaki is the only deep water port on the western coast of New Zealand, 85 percent of exports by value are oil and gas related.

Rezoning of substantial areas of greenfield site east of New Plymouth to residential & industrial will create additional traffic demand along SH3 east and may exacerbate safety issues along this corridor. Fonterra is set to expand its dry distribution centre in Taranaki, reducing the freight demand on the network.

Within both the dairying industry and sheep/beef industry, amalgamation trends have resulted in a concentration of the processing facilities which has significantly altered the pattern of heavy traffic road use involved in these industries.

There is an increase in exotic forest plantations in the region from 9,700 hectares in 1990 to an estimated 26,044 hectares in 2007. As a consequence a significant tonnage of logs will require transportation to user plants or ports for export (including to other regions such as the Kinleith Pulp and Paper Mill in Tokoroa).

Taranaki is recognised as New Zealand's premier engineering region, particularly for mechanical and electrical fabrication, engineering design and project management.

### Key journey

A portion of the key journey between Hamilton and Wellington and a portion of the key journey between New Plymouth Port to Napier Port are in the region.

## NETWORK PERFORMANCE

### Safety

There are no high collective risk corridors. SH3 (Hawera to New Plymouth) is categorised medium high collective risk corridors. There are several high risk intersections along SH3. They are SH3/Mangati Road, SH3/Princess St and SH3/Raleigh Street intersections.

### Efficiency

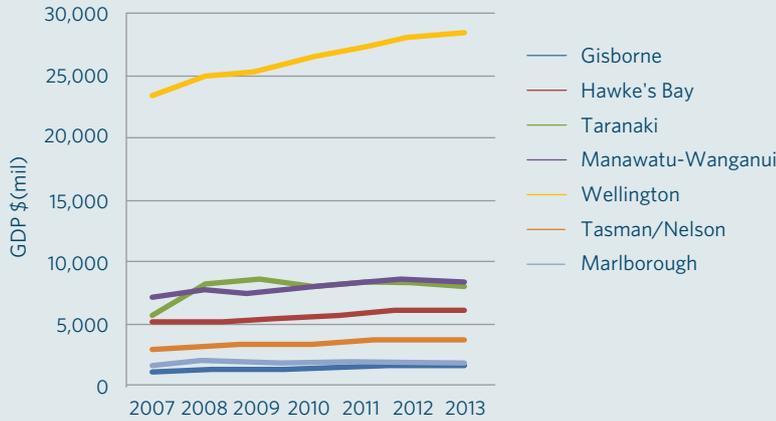
Improving efficiency and decreasing travel time variability is a strategic priority for NZTA. There are a few bridges with HPMV or 50 Max deficiencies on Critical Journeys and HPMV investment routes (SH3). Some deficiencies are also noted in non HPMV investment routes (ie SH4). There is minimal congestion (other than minor congestion in major town centres), and minimal journey time deficiency.

### Resilience

SH3 (Urenui to Mokau), SH 3 near Fitzroy and SH 1 near Waiouru are low risk resilience routes. The main resilience issues facing the region are events causing slips and rock falls and road closures, and the network effects from crashes.

## REGIONAL MACRO TRENDS

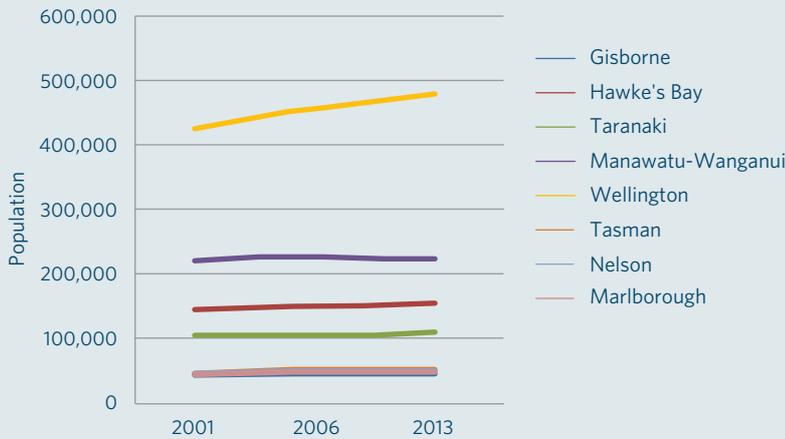
GDP by Region



### GDP

GDP grew rapidly from 2007 to 2008 (\$5.4B to \$7.9bn) due to the Petrochemical industry, and has remained reasonably consistent. The comparative GDP per person of \$74,341 (2013) is significantly greater than the NZ average of \$47,532. Approximately 40% of the regional GDP is associated with Petrochemical industry (published in the forestry, fishing, mining, electricity, gas, water, and waste services industry grouping). Taranaki's reliance on mining makes it one of the least diversified regional economies, although it has a strong agriculture industry.

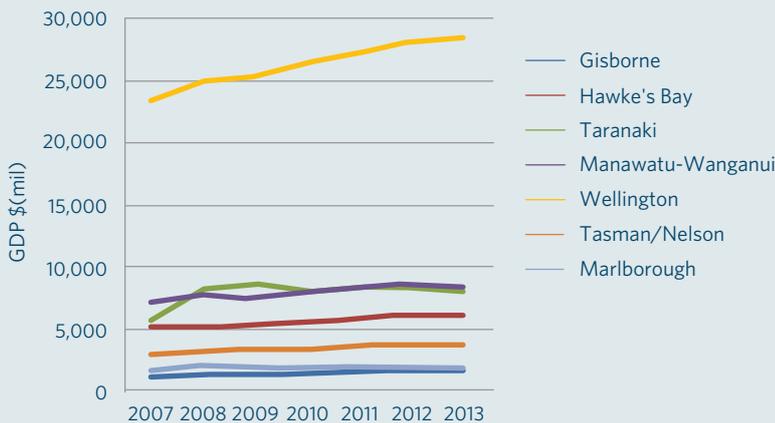
Night Population by Region



### Population

Taranaki's population forecast to have low to moderate growth (2006-2031). The greater West Wanganui area is forecast to have flat growth 165,310 (2001) 164,070 (2031). The region is not attracting a great number of migrants and average annual net migration from the area is slightly negative.

GDP by Region



### Employment

Taranaki has a small share of the National Employment base at 2.6% with a High Income- High Growth trend. The employment rate as a proportion of the working age population is above the NZ average. Growth in employment increased from 2001 to 2007, then has remained static/slightly negative since 2008. Much of the employment growth in the region is based mainly around New Plymouth City, with in the order of half the employed population of the West Wanganui area being within the New Plymouth City Council area.

# Wellington

## OVERVIEW

The Wellington region accounts for 12% of the NZ economy and in employment terms it is similar to Canterbury. Wellington is urban – the exception being the rural area in Wairarapa.

Wellington has a range of important national functions in line with its role as a capital city, including providing institutional connections with the rest of the world. It is home to the head offices of many firms in the information communications and technology, finance and insurance, and business services sectors.

The region has high average household incomes (and when housing costs are considered, residents have the highest incomes in New Zealand). There are also low levels of unemployment.

Tourism is growing in Wellington with the fourth highest international visitor spend of any region.

To build resilience in the Wellington economy, there are opportunities to internationalise Wellington's professional business service firms; continue to improve tourism takings; and commercialise science and research and development.

Regional Economic Activity Report 2014 MBIE

## TRANSPORT NETWORK PRESSURES

### Network use pressures

As a result of the location and type of employment in Wellington, network congestion regularly occurs when commuters travel to and from Wellington city. There is high dependency between road and public transport travel during these times and network shocks, such as severe weather and road crashes, can cause severe delays and result in economic loss.

### Development pressures on the network

The Wellington Regional Strategy identifies a likely growth path for the Wellington region that includes export of knowledge industries such as professional and financial services, ICT, product design, high-end food and wine.

The Wellington International airport is planning to double passenger throughput to over 10 million per year by 2030. Centreport, Wellington's inland port, is planning to cater for increased freight movements as a result of alliances with Kiwirail and the lack of freight storage elsewhere in the region. Both the airport and the port are geographically constrained, and these growth plans will increase network pressures, particularly on SH1 between Mt Victoria and Terrace Tunnel and at the Ngauranga interchange.

Large mixed use developments are proposed at Lincolnshire Farms (between Lower Hutt and Porirua), near Paraparaumu Airport, and in Miramar. Also significant developments are proposed including a redeveloped retail centre in Johnsonville, two new hotels – one with a conference facility catering up to 2,500 guests.

### Key journey

Wellington includes the key journey of the Wellington city centre and a portion of the key journey between Hamilton and Wellington.

## NETWORK PERFORMANCE

### Safety

Over 60% of the State Highway network in Wellington is 2/3 star Kiwirap rated. SH58, SH2 (Silverstream to Featherston) and SH 1 (Nikau Reserve to Levin) have high collective risk. There are also high risk intersections on the state highway and within Wellington city.

### Efficiency

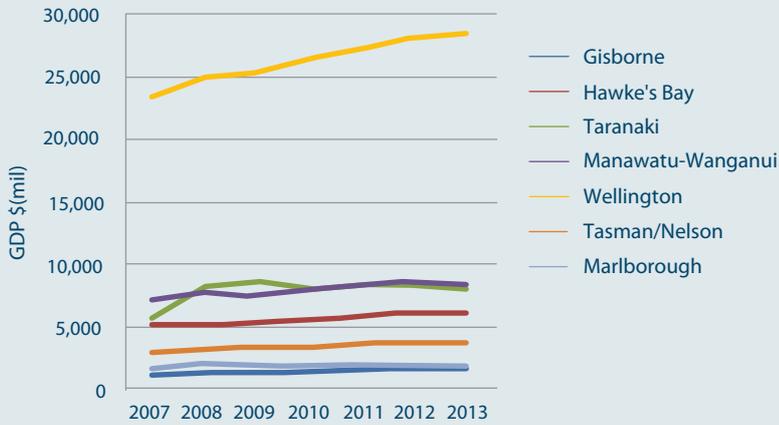
SH1 between the Wellington International Airport and Levin is classed as National Strategic High Volume. This portion of SH1 experiences unreliable travel times and congestion during commuter times, and the urban parts throughout the weekend days.

### Resilience

Resilience is a key issue for the Wellington region with dependence on SH1 for access to and from Wellington city. The urban motorway portion of SH1 and SH2 adjacent to the harbour and the Wairarapa and Hutt rail lines are high risk resilience corridors.

## REGIONAL MACRO TRENDS

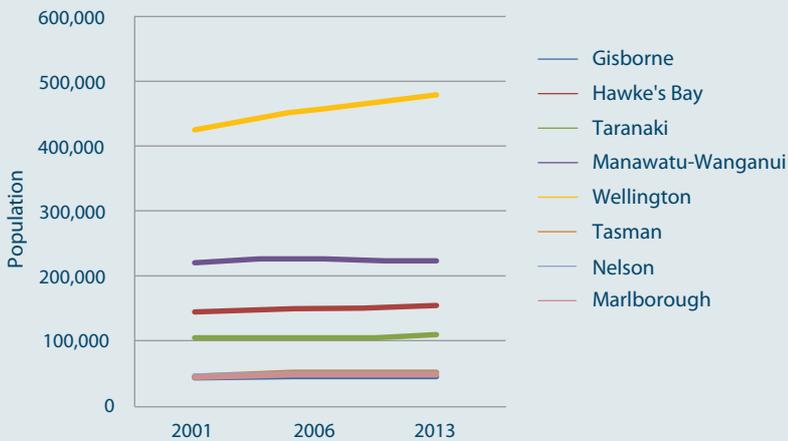
GDP by Region



### GDP

Regional GDP was approximately \$28.5bn in 2013 with moderate growth since 2007. Just under half of the GDP is made up of professional services encompassing financial, ICT, public administration and R&D.

Census Night Population by Region



### Population

Wellington's population is currently 480,000 and growing at about 1% pa. According to Statistics NZ's medium growth projections, Wellington is expected to continue to grow at this rate.

Employee Count by Region



### Employment

Between 2008 and 2013 the employee count in Wellington was steady at about 240,000. Before 2008, employment was experiencing growth of about 3% pa.

# Marlborough

## OVERVIEW

Marlborough makes up just over one percent of the economy. It is a highly export focussed producer of primary products, with some similarities to Tasman. Marlborough has been growing faster and has relatively high incomes. Retired people are attracted to the regions climate and natural amenities and it not has the highest proportion of people over 65 of all regions.

Marlborough Port, in the Marlborough Sounds, is the main portal for freight and tourists travelling between the North and South Islands.

Employment growth in Marlborough appears to have been driven by productivity improvements obtained from changing land uses and population inflows to the region.

A fifth of Marlborough's workforce is employed in the primary sector. However, over the last decade, the region has successfully converted most of the land formerly dedicated to cropping and stone fruit orchards to viticulture so that Marlborough is now New Zealand's largest wine-growing region.

It has also diversified into manufacturing and services businesses that leverage off primary sector activities. There has been an increase in technology-based and consultancy businesses providing services to farming and in forestry processing. Aquaculture, aviation and tourism are also important sectors in Marlborough. Construction and services have been growing with the population.

Marlborough's economic activities are quite reliant on seasonal labour and are highly export oriented.

Source: Regional Economic Activity Report 2013 MBIE

## TRANSPORT NETWORK PRESSURES

### Network use pressures

The relatively low growth and population of the Marlborough region means there is no significant congestion issues on the network. The road network is generally in reasonable condition both from a safety and capacity perspective.

### Development pressures on the network

The rapid growth of viticulture in Marlborough has seen in excess of 50% of New Zealand's grape production located in the region. Effects on the land transport system from this growth includes an increase in road freight, an increase in the amount of slow and oversized farm vehicles on the road, and a change in settlement patterns with vineyard workers seeking accommodation close to vineyards.

Forestry production is increasing, and sawmills are expecting to double production in the next five years. This is all likely to go through either Nelson or Picton Ports. Trans-Tasman shipping from Picton could become a reality.

Dairying is likely to continue to expand, particularly if vineyards retreat. This is most likely to occur in Wairau Valley where there is a natural conversion of the marginal areas. This could lead to a change in the current dewatering process that occurs with milk at Tuamarina, altering the frequency and routes for milk tankers.

A central government shift to increase aquaculture activities, will lead to an increase in the size of the factory like at Havelock (Sanfords) and likely that King Salmon will quadruple production with an option for a plant in Picton as a result.

The Government's decision to not proceed with a Port at Clifford Bay gives certainty to existing freight route between Picton and Blenheim, and gives development certainty for Picton.

Sources: Marlborough Regional Land Transport Strategy 2012—2022, Blenheim and Wairau Plains Strategy Study 2008

### Key journey

The Marlborough region contains a portion of critical journey from Picton to Christchurch.

## NETWORK PERFORMANCE

### Safety

There are medium high collective risk corridors along SH1 between Picton and Blenheim, and along SH6 from Havelock to Nelson. There is a high risk intersection at SH1/SH62 Spring Creek Intersection which is in the country's top 100 worst intersections.

### Efficiency

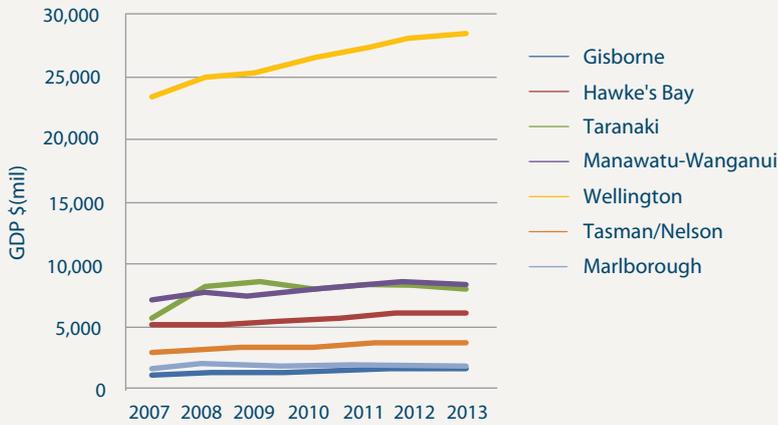
SH1 is a national strategic route, and part of the critical journey from Picton to Christchurch. Most of the network has an AADT lower than 6000, with the exception of arterials in Blenheim which are closer to 10,000. There is not considered to be any congestion issues on the network. There are several bridges with HPMV deficiency along SH1, and along SH63. There are moderate HCV traffic volumes between Picton and Blenheim (1,500—2,000 AADT). HCV night time speeds show there is generally low travel time variability. Lower speeds are generally caused by difficult topography and urban speed limits rather than a congested network.

### Resilience:

Picton to Kaikoura has a medium ranking it has very high detour route lengths.

## REGIONAL MACRO TRENDS

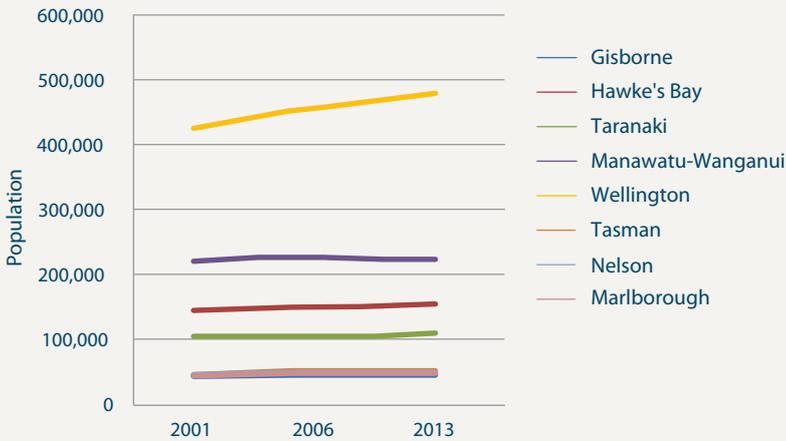
GDP by Region



### GDP

Regional GDP was approximately \$2bn in 2013 with marginal growth between 2007 and 2013. The above graph shows a low GDP in comparison to the rest of the central region. A third of regional GDP is associated with horticulture, agriculture, viticulture and forestry and associated manufacturing.

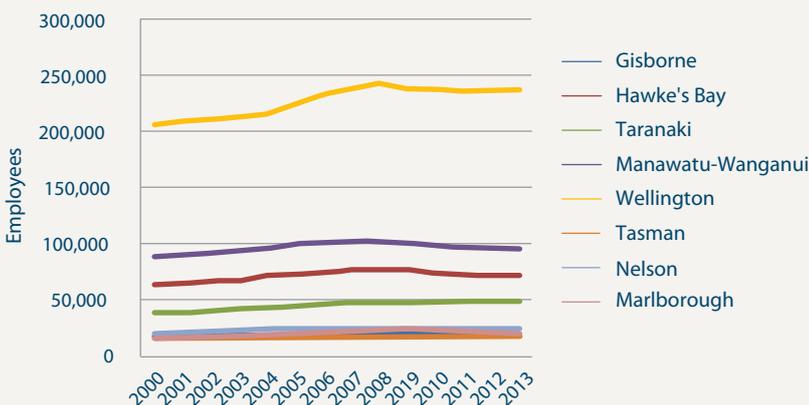
Night Population by Region



### Population

The Marlborough Region's population has had marginal growth between 2001 and 2013. It has one of the smallest populations in the central region. The region's age profile is changing and is noted as forecast to be one of the oldest, by median age, by 2031 (50.6 compared to 42.8 in Hawkes Bay).

Employee Count by Region



### Employment

The employee count in Marlborough continues the same trend, of low growth and the lowest in the central region.

# Nelson/Tasman Bay

## OVERVIEW

Nelson Tasman makes up less than two percent of the economy. Nelson is predominantly urban, while Tasman (similar to its neighbour Marlborough) is predominantly rural. Nelson has high household incomes while Tasman has most of its work force in the primary sector. Tasman is highly export focussed and relies on the factories, manufacturing and ports in both Nelson and Tasman for export.

The Nelson region is the smallest of New Zealand's regions (by population and land area). It is really a city, with the Tasman and Marlborough regions providing its hinterland. Although it is small, Nelson has developed economic activity in diverse sectors as well as some specialisations. It provides services for Tasman and Marlborough people and businesses and has particular strengths in marine construction and aviation manufacturing and almost one-third of New Zealand's fishing and aquaculture.

Like Tasman and Marlborough, Nelson has opportunities to add value to primary products and for smaller-scale enterprises to work together to grow and to export.

There are encouraging signs of this between the natural products and nutraceutical contract manufacturers and extraction companies that operate in the region.

Over half of Tasman's primary sector employment is in horticulture and fruit growing, with forestry and fishing also being important. Tasman's household incomes are relatively low because of the dominance of primary industries and other activities that employ high proportions of labour with elementary skills.

Current water resources are over-allocated in the Waimea basin, and water rationing has been a constraint on the local economy. The local council is planning a major investment in the Lee Valley dam to address this.

There are also opportunities for tourism and services to contribute more to the economy, for consolidation and cooperation across small-scale enterprises and for increased forestry productivity through mechanisation, improved harvest methodologies and value-added manufacturing.

Source: Regional Economic Activity Report 2013 MBIE

## TRANSPORT NETWORK PRESSURES

### Network use pressures

The two major industries in the region, horticulture and tourism, have large fluctuations in activity throughout the year, and have corresponding variations in the traffic volumes on the road network.

Tasman has experienced a large increase in Richmond population over the last ten years, however in recent times the rate of growth has declined.

### Development pressures on the network

The region has one of the highest export road freight levels in the country per its population. With close to 30% of the region's GDP generated from bulk commodity production, road transport, in the absence of a regional rail network, is the only means of getting export product to the port and airport.

Growth will focus on both Nelson and Richmond with Richmond experiencing the highest number of new jobs. Furthermore Nelson Airport, Annesbrook and Port Nelson will remain high employment areas. Further diversity in the economy is expected and growth in the tourism sector in particular is expected to be strong.

Sources: Connecting Tasman – the Regional Land Transport Strategy, Tracking the Nelson Regional Economy 2013, Nelson Tasman Regional Economic Development Strategy 2007, Nelson City Council Regional Land Transport Strategy

### Key journey

There are no key journeys in the region.

## NETWORK PERFORMANCE

### Safety

There are neither high collective risk corridors nor high risk state highway intersections. However, SH6 (between Havelock to Nelson) is listed as medium high collective risk corridors.

### Efficiency

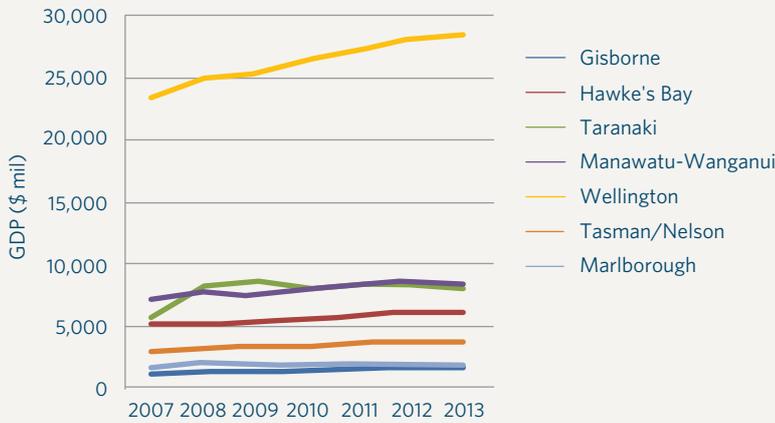
Improving efficiency and decreasing travel time variability is a strategic priority for NZTA. There is minimal congestion (other than minor congestion in major town centres), and minimal journey time deficiency.

### Resilience

SH60 (Motueka to Renwick), SH65 (from SH6 to SH1), and SH6 (Nelson to Havelock) are categorised as low ranked resilience route.

## REGIONAL MACRO TRENDS

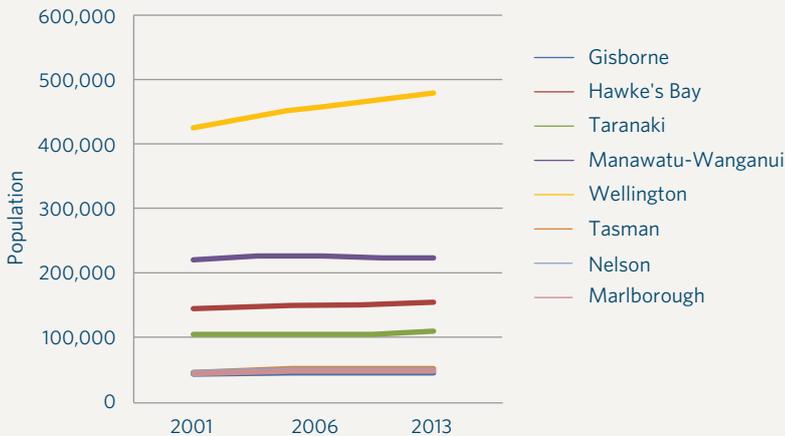
GDP by Region



### GDP

Regional GDP was approximately \$3.8bn in 2013, and has experienced moderate annual growth of approximately 4% (2007-2013). However GDP is still amongst the lowest for the central region. A third of regional GDP is associated with horticulture, agriculture, viticulture and forestry and associated manufacturing. However, GDP from construction and retail has recently grown more than that from agriculture.

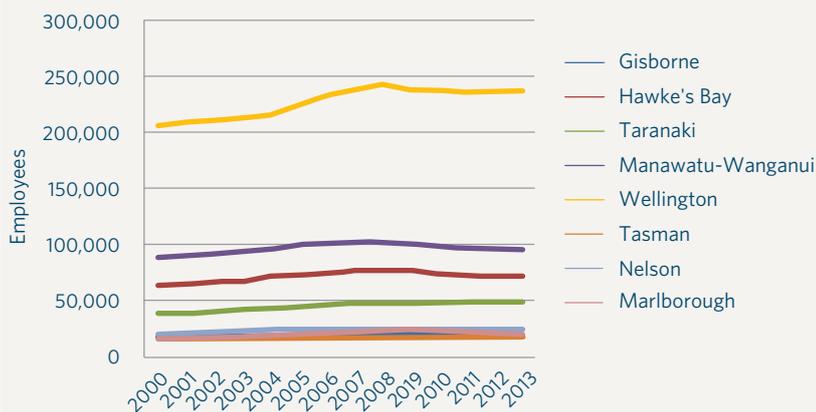
Night Population by Region



### Population

The Nelson/Tasman's region's population is low compared to the rest of the central region. The region is not attracting a great number of migrants and the interregional labour migration is slightly negative.

Employee Count by Region



### Employment

The employee count follows the same trend as economy and population, being low with little growth between 2000 and 2013.

# West Coast

## OVERVIEW

The West Coast makes up less than one percent of New Zealand's population and workforce. The region spans the greatest length in New Zealand, equivalent to the distance from Auckland to Wellington. 85 percent of its land is part of the National Conservation Estate and not available for commercial use.

Over the last decade, average household incomes on the West Coast have grown so that they are now among the highest in New Zealand. The region has experienced significantly higher than average growth in jobs but this growth has now declined in the recent years.

The West Coast economy is driven by mining, dairying and tourism. Mining directly employs about 10 percent of the region's workforce and dairying about six percent,

but together, these high-value, capital-intensive activities generate over half of the region's income.

These businesses make the West Coast highly export orientated. High world prices for minerals and dairy milk have so far protected the West Coast region from the effects of the global financial crisis.

The West Coast is likely to remain a small and relatively isolated region with some natural resource advantages. It has a low proportion of people under 40, and the population is forecast to grow only slightly by 2031. The region's secondary school education rates are also the lowest in New Zealand.

To offset this and build resilience to external shocks on the local economy, the challenge for the West Coast is to diversify economic activity.

Regional Economic Activity Report 2013 MBIE Transport network pressures

## TRANSPORT NETWORK PRESSURES

### Network use pressures

The road network is generally in reasonable condition both from a safety and capacity perspective. The low growth and population of the West Coast region means no significant congestion on the network.

### Development pressures on the network:

Tourism is one of the key contributors to the West Coast economy, with many tourists passing through as part of the loop of the South Island. The most popular destinations in the West Coast are the glacier country encompassing Franz Josef and Fox glaciers, and the South Westland World Heritage Area. The second most visited area is Punakaiki, between Westport and Greymouth. This industry relies heavily on the availability of, and ease of access to, the roading network. There are signs of growing cycling tourism in the region, leading to new infrastructure demands.

Mineral extraction is the largest single contributor to the region's GDP and is expected to continue to expand in the next 10 years. In 2008, mining production accounted for 70 percent of the primary sector exports and 92 percent of the total sales made in the region. Coal is the primary mineral extracted and relies on local roads and state highways within the region for transport of material to rail heads, and the rail network for export to markets through Lyttelton.

Agriculture is dominated by dairying. It has a heavy reliance on the roading network for the transport of milk product from farms and factories spread throughout the region. Westland's factories are spread across the West Coast, processing around 500 million litres of milk annually. The industry has experienced rapid growth over the past 10 years. Finished product is railed out of the region to be exported from Lyttelton.

Forestry has declined in recent years but still remains an important industry on the West Coast. Local roads and state highways provide important linkages between forests, mills, and to market (or rail heads) throughout the region.

### Key journey

The West Coast region does not contain any key journeys.

## NETWORK PERFORMANCE

### Safety

The corridors have low collective risk throughout the West Coast region. There is high personal risk south of Haast River Bridge, medium-high north of Greymouth, and medium to low risk otherwise. All corridors are 2 and 3 star rated.

### Efficiency

There are low traffic volumes, less than 2000 vpd, throughout most of the region, although there are up to 9,000 vpd around Greymouth and 5,000 vpd near Hokitika. The travel time variability is low, with some winding sections to keep speeds lower.

There is no congestion although there are areas of limited and poor passing opportunities and many one lane bridges, especially south of Hokitika.

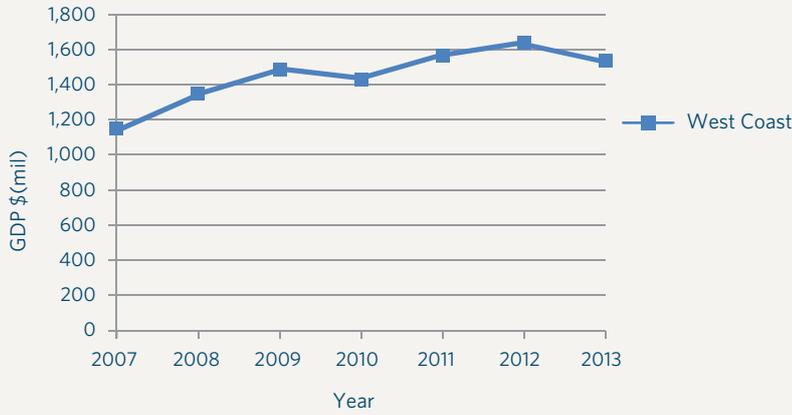
There is not a current HPMV investment route although there are three bridges with 50MAX restrictions.

### Resilience

There are a high number of disruptions south of Haast River Bridge and northern parts of the region. There are very high detour lengths south of Mahinapua, medium and low elsewhere. Risks of road closure across the region are mostly from slips/rock fall, crashes, flooding, as well as snow in the passes.

## REGIONAL MACRO TRENDS

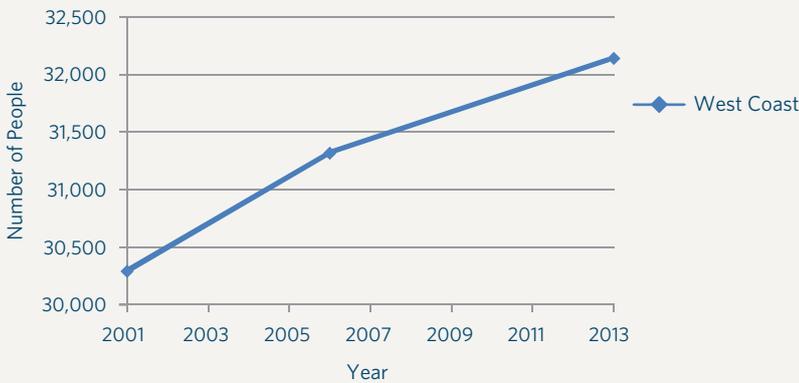
West Coast GDP



### GDP

Regional GDP was 0.7 percent of national GDP at \$1.5bn in 2013, with a growth of 33.4 percent between 2007 and 2013. 40 percent of regional GDP is associated with the forestry, fishing, mining, electricity, gas, water, and waste services; manufacturing; and agriculture sectors.

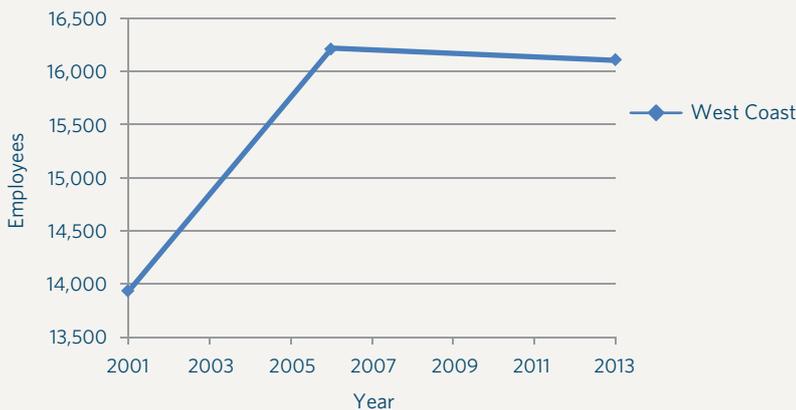
Estimated Usually Resident Population, West Coast, 2001-2013



### Population

The West Coast region's population has had slow growth between 2001 and 2013 of 0.5 percent per year. It has the smallest population in New Zealand.

Employee Count



### Employment

The employee count in the West Coast has had a slight decline in the most recent years.

# Canterbury

## OVERVIEW

Canterbury is New Zealand's largest region by area. Christchurch is home to nearly three-quarters of the region's people and a hub for the South Island. The Christchurch earthquakes rebuild, which is estimated to cost \$30bn, has had a national as well as regional economic impact. For most of the last decade, average household incomes in Canterbury have been slightly higher than the national average, and employment has grown strongly.

Canterbury is New Zealand's second biggest economy at 13.2 percent of GDP with economic activity evenly distributed between the agriculture, manufacturing, and services sectors. There has been a rapid conversion of land to dairy farming in the region over the last decade, and Canterbury now has the highest average dairy herd size in New Zealand and correspondingly high productivity levels. Sixty eight percent of New Zealand's freshwater is located in Canterbury. However, increased irrigation and management of nutrient runoff will be required to support further growth in dairy farming.

Regional Economic Activity Report 2013 MBIE

## TRANSPORT NETWORK PRESSURES

### Network use pressures

There are no significant congestion issues on the rural network but there are congestion issues in and around the urban areas of Christchurch, Ashburton, and Timaru. The road network is generally in reasonable condition both from a safety and capacity perspective.

### Development pressures on the network

Canterbury is known as one of the most productive areas for dairy farming in New Zealand. Fonterra's dairy factory at Clandeboye generates over 300 milk tanker movements on the network every day at peak production to take product for processing. Clandeboye processes up to 12 million litres of milk daily. Fonterra's Darfield Factory processes up to 6.6 million litres of milk daily. Fonterra's factory at Studholme near Waimate is putting increasing pressure on southern part of the network, with over 160 million litres of milk processed every year. There was a sharp increase of 19 percent dairy cattle between 2011 and 2012; this growth drives an increase in freight. Statistics New Zealand

The construction industry has increased due to the demands of the Canterbury rebuild following the Canterbury earthquakes in 2010/11. More than 8,000 dwellings will need to be replaced completely and many thousands more need repairing to various degrees.

Over 1200 buildings in the CBD have been demolished, along with many other commercial buildings throughout the city. Demolition, repairs, and construction of civil infrastructure, new dwellings and commercial buildings will result in a period of heightened activity. The sector is supported by a complex supply chain of mainly domestic manufacturers. (CDC, 2014)

### Key journey

The Canterbury region contains a portion of key journey 8 from Picton to Invercargill. Key journey 9 occurs within Christchurch.

## NETWORK PERFORMANCE

### Safety

Most of roads in the region are 2-3 star rating. SH1 between Waipara and Ashburton is rated as med-high collective risk and the balance of SH1 between Kaikoura and Oamaru is medium risk. There are 16 high risk intersections within the region.

### Efficiency

SH1 is a National Strategic Highway with sections of high volume. SH73 is a Regional Strategic highway outside Christchurch. Most state highway traffic volumes are low-moderate. SH1 between Waipara and south of Timaru has over 6000 vpd, with higher volumes in the urban areas. Traffic volumes are very high on RoNs corridors in Christchurch, where volumes can exceed the road capacity. There are varying urban congestion problems in Christchurch, Ashburton, and Timaru. There is low travel time variability over the most of the network, although medium-high in parts of Christchurch.

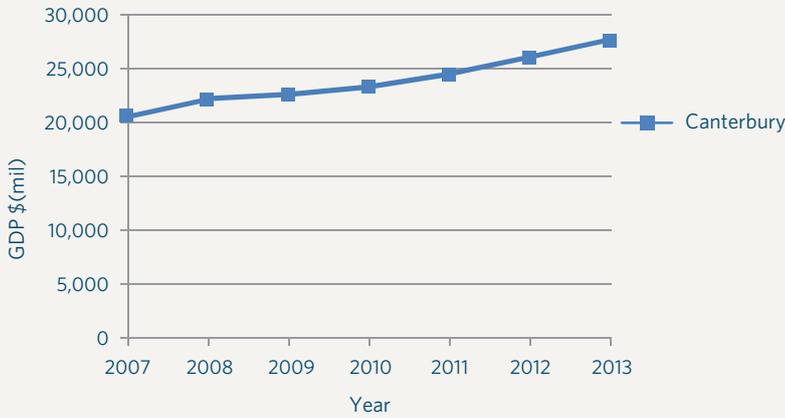
There are moderate HCV traffic volumes along SH1 (800-1500 HCV/day) with high HCV volumes in Christchurch. Brougham Street as the freight route to Lyttelton port carries 4300 trucks per day in highly congested conditions. SH79 is an HPMV investment route with some bridges with HPMV restrictions. SH 1 is an HPMV investment route with bridge monitoring at Rakaia and Rangitata rivers and up to nine sites near Kaikoura.

### Resilience

There is high risk to network availability at the Tunnel Motorway/ Lyttelton Tunnel, and medium risk for Springfield-Arthurs Pass and around Kaikoura. There are very high detour distances for the Otira and Arthurs Passes, and high north of Kaikoura and at Rakaia Bridge. There are risks of road closure from flooding, slips and crashes along State Highway 1, with risks from snow and slips/rock fall, through the Alpine Passes.

## REGIONAL MACRO TRENDS

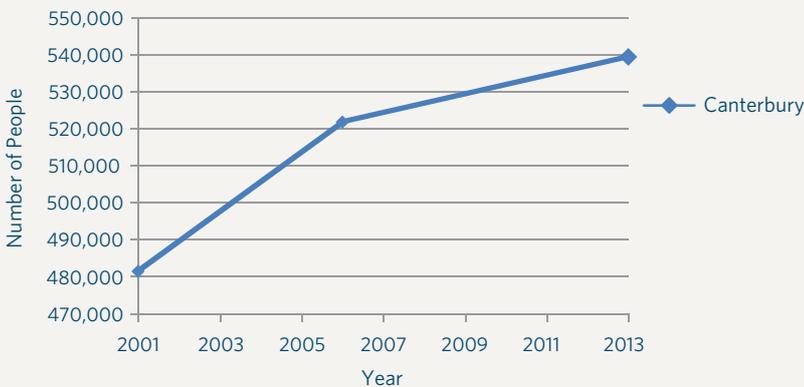
Canterbury GDP



### GDP

Regional GDP was 13.2 percent of National GDP at \$27.8bn in 2013, with a growth of 33.5 percent between 2007 and 2013. Canterbury's increase in GDP was led by the Christchurch Rebuild with the construction industry the leading contribution. The above graph shows a steady growth in GDP. A third of regional GDP is associated with manufacturing, agriculture and professional services sectors.

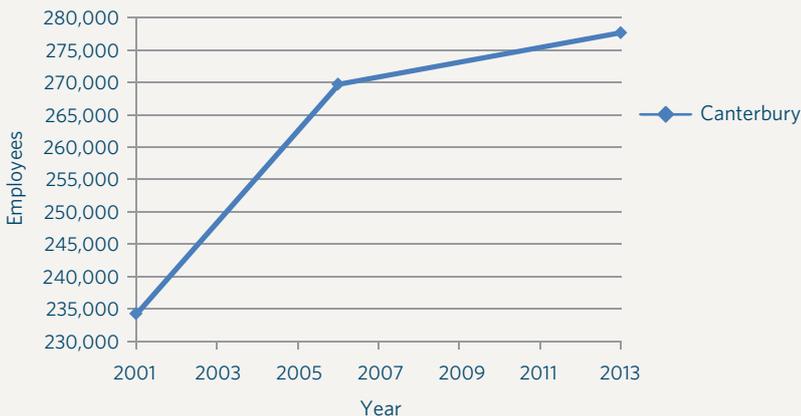
Estimated Usually Resident Population, Canterbury, 2001-2013



### Population

The Canterbury region's population grew by an average of 0.7 percent each year between 2001 and 2013, compared to the national average of 1.0 percent. With 13 percent of New Zealand's population, it is the second most populous region following Auckland.

Employee Count



### Employment

The employee count in Canterbury continues the same growth trend as general population.

# Otago

## OVERVIEW

The Otago region has a diverse economy with strengths in education, tourism and agriculture. The Region contributes 4.3% of national GDP, provides 5% of national employment and is home to 4.8% of New Zealand's population.

Over the last 10 years, population growth in Queenstown Lakes and Central Otago has been among the highest in New Zealand. Population growth in the rest of the region has been slower. In the last five years, the region has experienced the second-highest positive net migration in the country.

Otago has significant employment in sheep, beef cattle and grain farming, with activity primarily concentrated in Waitaki and Clutha, and significant employment growth in

dairy farming. Central Otago has strengths in stone and pip fruit, grape growing and wine production. Tourism activity is concentrated in the Queenstown Lakes District and generates a very high share of regional GDP, which has shown solid growth over the last five years. Professional, scientific and technical services experienced 4% annual average employment growth over the last decade, while education and training employment grew 2.1% over the same period, reflecting the strong tertiary education and research activity in Dunedin.

The region's average annual household income and GDP per capita sit below the national average. This is likely to be partially driven by the region's high share of tertiary students and seasonal workers earning part-time wages.

## TRANSPORT NETWORK PRESSURES

### Network use pressures

The large state highway network combined with relatively low population density of the Otago region means there is no significant congestion issues on the network with the exception of Queenstown. The network is generally in reasonable condition both from a safety and efficiency perspective.

### Development pressures on the network

The Queenstown Lakes District is one of the fastest growing districts in New Zealand. In the last seven years Queenstown Lakes District has grown at 23%, increasing the demand for residential housing and accommodation. This has placed significant pressure on the transport network. This rapid growth has created problems unique to the Queenstown area. Congestion is a growing issue with Frankton Road (SH6A) and SH6 in Frankton experience significant peak hour delays. The network also suffers from significant seasonal peaks. The peak seasons are December to March and July and August, where self-drive tourists significantly add to the congestion on the network.

Over the last decade there has been a significant increase in the area of irrigated land across the region to support dairy conversions. Similar growth has also been seen with forestry. This has resulted in an increase in the number of heavy vehicles (including HPMV) on the network which causes additional damage to pavements and bridges requiring more maintenance investment.

### Key journey

The Otago region contains a portion of key journey 8 which runs from Wellington to Invercargill. The Otago section is on SH1 between the Waitaki River and the Otago/Southland boundary near Clinton.

## NETWORK PERFORMANCE

### Safety

The area has a high personal risk safety record, particularly on tourist routes, such as SH6 Wanaka to Haast.

Dunedin's central city has a history of fatal and serious injury cyclist and pedestrian crashes. Since 2003 there have been several cycle crashes in central Dunedin, including three fatalities, two of these were in 2011 and 2012. There is a high risk intersection in Dunedin on SH1, the intersection of Pine Hill Rd and Great King St.

### Efficiency

Overall the efficiency of the region is good, apart from a few isolated areas, i.e. SH6 and SH6A leading into Queenstown.

### Resilience

The state highway network across the region is subject to winter road conditions with the associated resilience issues. Rock falls can have detrimental impact on the region, severing life lines for rural communities, affecting tourism and the movement of freight for primary and other industry. On SH1 between Dunedin and Waitaki River there are a number of locations that are regularly closed due to flooding.

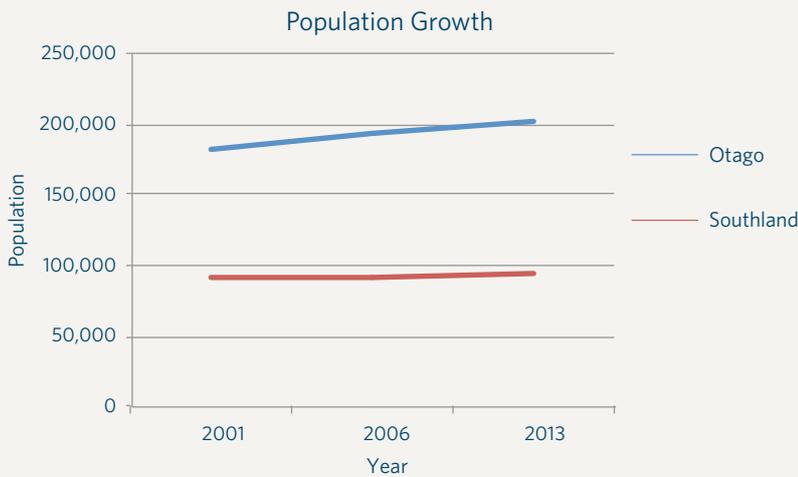
## REGIONAL MACRO TRENDS



### GDP

From 2007-2013 Otago's GDP increased by 26%, slightly above the national increase.

The main industries are primary industries followed by tourism, health care and social assistance.



### Population

Half of Otago's population live in Dunedin. While the region's overall population is project to grow only slowly in the coming decades, Queenstown and Central Otago are amongst the fastest growing sub-regions in New Zealand, in both population and economic terms.



### Employment

The region's employment rate is above the national average and the people have high levels of education attainment and skills. The region also enjoys a below average unemployment rate and low youth NEET (not in employment, education or training) rate.

# Southland

## OVERVIEW

Southland is a small to medium-sized economy with a strong agriculture and manufacturing base. In 2013, Southland contributed 2.4% to national GDP, 2.3% of national employment, and 2.1% of the national population. Southland has many attributes which make it a solid regional performer, as measured by a range of economic indicators.

The region's economy relies extensively on its natural resources. Both the dairy industry and the Tiwai Point Aluminium Smelter, which are large employers and generators of income, are dependent on freshwater. The dairy industry relies on the reliable rainfall for growing grass and Tiwai Point uses the power generated from the Manapouri hydro power station.

Southland has a significant amount of employment in export-focused agri-business, with the sheep, beef, grain farming, and dairy sectors representing 13.7% of total employment in the region. The dairy sector also exhibited strong annual employment growth from 2003–2013. From 2007–2013 Southlanders report the highest living satisfaction of anywhere in New Zealand. Southland also has the lowest median house price (\$190,000), and rental cost per annum (\$11,000).

The Southland region has opportunity to increase economic outputs by continuing to raise productivity in areas of traditional strengths such as sheep and beef farming, dairy and aquaculture. Other activities include tourism, information technology, manufacturing (pharmaceuticals and electronics), the Awarua Earth Observation system and international education.

## TRANSPORT NETWORK PRESSURES

### Network use pressures

The relatively low growth and population of the Southland region means there is no significant congestion issues on the network.

Similarly, the road network is generally in reasonable condition both from a safety and capacity perspective.

### Development pressures on the network

Over the last decade there has been a significant increase in the area of irrigated land across the region which supports the growth in conversion of farms from sheep and beef to dairying. Similar growth has also been seen with forestry. This has resulted in an increase in the number of heavy vehicles (including HPMV) on the network which causes additional damage to pavements and bridges requiring more maintenance investment to keep these routes to an acceptable level of service. There are number of older bridges and culverts in the region which are susceptible to damage from these increased loadings with some bridges requiring significant upgrading.

### Key journey

The Southland region contains a portion of key journey 8 which runs from Wellington to Invercargill. The Southland section is on SH1 between the Otago/Southland boundary and Invercargill

## NETWORK PERFORMANCE

### Safety

The area has a high personal risk safety record, particularly on tourist routes, such as SH94 Te Anau to Milford.

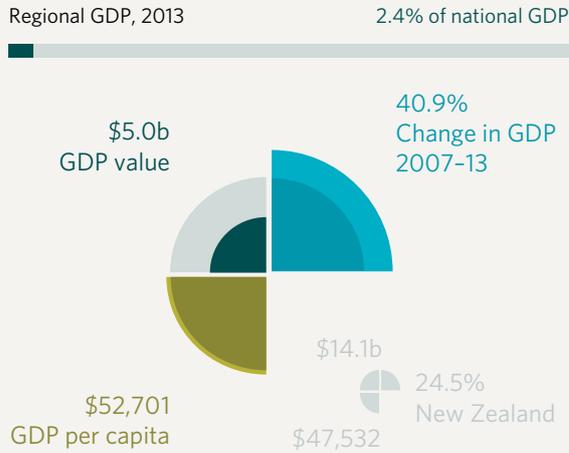
### Efficiency

Overall the efficiency of the region is good, apart from a few isolated areas.

### Resilience

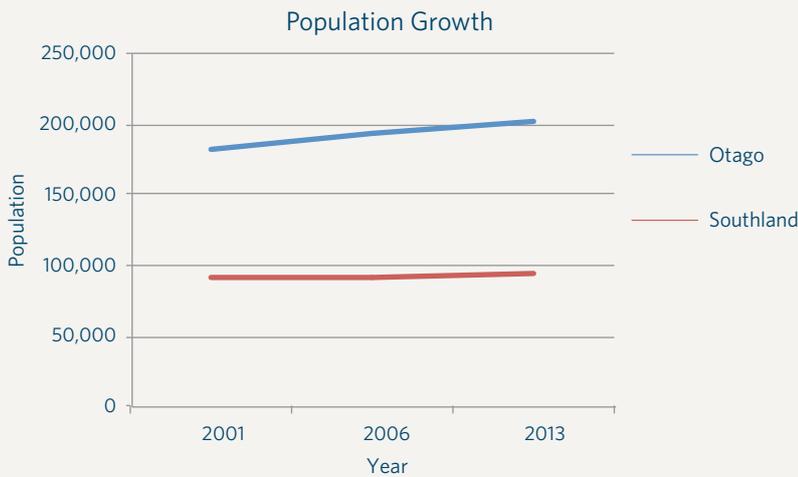
The state highway network across the region is subject to winter road conditions with the associated resilience issues. Rock falls can have detrimental impact on the region, severing life lines for rural communities, affecting tourism (particularly on SH94) and the movement of freight for primary and other industry. There are a number of locations around the region that are regularly closed due to flooding.

## REGIONAL MACRO TRENDS



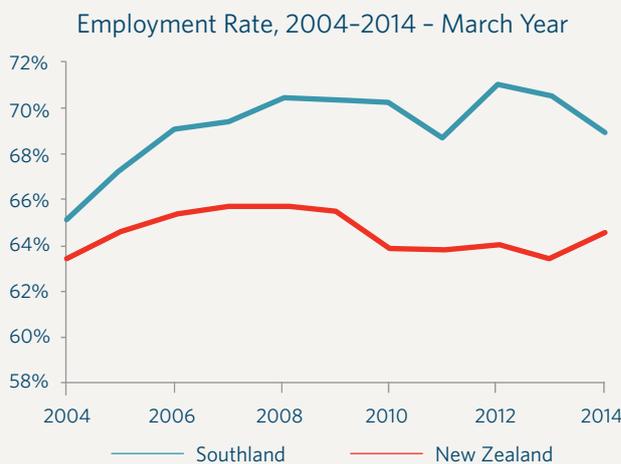
### GDP

Southland's GDP increased by 41%, well ahead of the national increase. From 2007-2011 this was driven by large increases in agriculture, especially dairy farming, and in 2012 increased due to sheep and beef farming and manufacturing industries.



### Population

Long term, the biggest constraint for Southland is its stagnant population growth and aging population. There is no population growth projected for the region through to 2031, which is the lowest of any region in New Zealand.



### Employment

Southland has one of the highest employment rates in the country and a low unemployment rate. Southland's economy has been generating new employment opportunities faster than the population is able to grow.



# **APPENDIX B**

# **DETAILED NATIONAL PROGRAMME**

## IMPROVEMENTS PROGRAMME

### FUNDED COMMITMENTS 2015-18

Key: ◐ - Development ◑ - Construction ◒ - Development & Construction

Region	Activity Name	Profile	Priority Rank	Phase
Auckland	Western Ring Route RONS	HMM	2	◒
Auckland	Main Highway - Ellerslie Highway Northbound auxilliary lane	HMH	2	◑
Canterbury	CHCH Southern Motorway - Halswell Junction Road to Waterholes (Stage 2)	HMM	2	◐
Canterbury	CHCH Northern Arterial Rural with QE2	HMM	2	◐
Canterbury	Western Airport bypass enabling works (Barbers Broughs)	HMM	2	◒
Taranaki	Vickers Road to New Plymouth City	MHH	2	◑
Waikato	SH2 Pokeno to Mangatarata Safe System Demonstration Project: Section A	HMM	2	◑
Auckland	Manukau Harbour Crossing including Old Mangere Bridge	HMM	3	◑
Auckland	Waitemata Harbour Crossing	HHL	3	◐
Bay of Plenty	Route K - conversion to ETC	HHL	3	◑
Bay of Plenty	SH 2 Northern Corridor Safe System Programme	HMM	3	◑
Bay of Plenty	TEL Tauranga Eastern Link	HHL	3	◑
Hawkes Bay	HB Expressway Southern Extension	HHL	3	◑
Manawatu-Whanganui	Wellington RoNS - 9. Otaki to Levin	HHL	3	◐
Manawatu-Whanganui	Whakaruatapu Stream Bridge Replacement & Realignment	HMM	3	◑
Northland	Loop Road North to Smeatons Hill Safety Improvement	HMM	3	◑
Northland	SH1 Corridor Improvements - Whangarei	HMM	3	◒
Waikato	Cambridge Section	HHL	3	◑
Waikato	Ngaruawahia Section	HHL	3	◑
Waikato	Rangiriri Section	HHL	3	◑
Wellington	SH1/2 Petone to Grenada (Ngauranga to Linden (P2G))	HHL	3	◐
Wellington	Wellington RoNS - 1. Airport to Mt Victoria tunnel	HHL	3	◐
Wellington	Wellington RoNS - 3. Terrace Tunnel Duplication	HHL	3	◐
Wellington	Wellington RoNS - 4. Ngauranga to Aotea Quay	HHL	3	◑
Wellington	Wellington RoNS - 5. Transmission Gully	HHL	3	◑
Wellington	Wellington RoNS - 6. Mackays to Peka Peka	HHL	3	◑
Wellington	Wellington RoNS - 7. Peka Peka to Otaki	HHL	3	◐
Wellington	Wellington RoNS (2) - Tunnel to Tunnel	HHL	3	◒
Auckland	Warkworth Stage 1	MMH	4	◑
Bay of Plenty	Hairini Link - Stage 4	MHM	4	◒
Otago	Caversham Highway Improvements: Stage 2	HML	5	◑
Auckland	Hobsonville Deviation	MMM	6	◑
Bay of Plenty	Rotorua Eastern Arterial	MMM	6	◐
Manawatu-Whanganui	Corby Road South Curves	MMM	6	◑
Bay of Plenty	Tauriko Upgrade	HLL	8	◐
Southland	Woodlands Passing Lanes	MLM	8	◑

## PLANNED 2015-18

Key: ◐ - Development ◑ - Construction ◒ - Development &amp; Construction

Region	Activity Name	Profile	Priority Rank	Phase
Waikato	SH2 Pokeno to Mangatarata Safe System Demonstration Project: Section B	HHH	1	◑
Waikato	SH2 Pokeno to Mangatarata Safe System Demonstration Project: Section E	HHH	1	◑
Auckland	East West Link	HHH	1	◐
Auckland	SCI - Takanini North	HHH	1	◒
Auckland	SH1 Upper Harbour Highway to Greville NBD 3-laning	HHH	1	◑
Auckland	SCI - Takanini South	HHH	1	◒
Canterbury	Brougham Street Corridor Improvements	HHH	1	◒
Wellington	SH2 Melling Efficiency and Safety Improvement	HHH	1	◒
Auckland	Northern Corridor Initiative - Project Development	HMM	2	◐
Nelson	SH6 Rai Saddle Second Curve Realignment	MHH	2	◑
Canterbury	CHCH Northern Arterial Rural with QE2	HMM	2	◑
Canterbury	Western Belfast By-Pass	HMM	2	◑
Canterbury	Groynes to Sawyers Arms 4L	HMM	2	◑
Canterbury	Harewood Rd to Yaldhurst Rd	HMM	2	◑
Canterbury	Christchurch Southern Motorway (Stage 2)	HMM	2	◑
Wellington	SH58 Grays Road to SH2	HMM	2	◒
Canterbury	Lyttelton Tunnel Safety Retrofit	HMH	2	◑
Bay of Plenty	Maunganui-Girven Rd Intersection Improvement (MGI)	HMM	2	◒
Waikato	SH1 (Cambridge to Piarere), NSRRP	HMH	2	◒
Bay of Plenty	SH2 Northern Corridor Safe System Programme	HMH	2	◒
Auckland	NCI - SH1 Greville Rd Interchange Upgrade	HMM	2	◒
Auckland	NCI - SH1/18 Interchange Upgrade	HMM	2	◒
Auckland	NCI - SH18 Intersection Improvements	HMM	2	◒
Canterbury	Ashley to Belfast Safety Improvements	HMH	2	◒
Canterbury	Pineacres Safety Improvements	HMH	2	◒
Hawkes Bay	SH2 Napier Road Intersection	HMH	2	◒
Bay of Plenty	SH2/Wainui Rd-Matekerepu Intersection Route Security	MHH	2	◒
Waikato	SH3/Waitomo Road Intersection NSRRP	HMH	2	◒
Bay of Plenty	SH5/SH30 Hemo Road/Old Taupo Road Safety Improvements	HMH	2	◒
Otago	Glenda Drive	HMH	2	◒
Waikato	SH1 (Puketarata to Manawatu Bndy), NSRRP	HMH	2	◒
Waikato	SH1 (Putaruru to Tokoroa), NSRRP	HMH	2	◒
Waikato	SH1 (Upper Atiamuri to Wairakei), NSRRP	HMH	2	◒
Waikato	SH1 (East Taupo Arterial), National Safety Roads & Roadside Programme	HMH	2	◒
Waikato	SH3 (Hamilton to Ohaupo), National Safety Roads & Roadside Programme	HMH	2	◒
Waikato	SH3 Te Awamutu to Otorohonga Imp National Safety Roads & Roadside Programme	HMH	2	◒
Manawatu-Whanganui	Wanganui-Whangaehu Safety Improvements	HMH	2	◒
Waikato	SH1B (Taupiri to Gordonton), National Safety Roads & Roadside Programme	HMH	2	◒
Waikato	SH27 (SH26 to SH24), National Safety Roads & Roadside Programme	HMH	2	◒

## PLANNED 2015-18

Key: ◐ - Development ◑ - Construction ◒ - Development &amp; Construction

Region	Activity Name	Profile	Priority Rank	Phase
Bay of Plenty	SH2: Wainui Rd to Opotiki, National Safety Roads & Roadside Programme	HMH	2	◒
Waikato	SH29 (Bay of Plenty boundary to SH24), National Safety Roads & Roadside Programme	HMH	2	◒
Wellington	SH2/58 Intersection Improvement	HMM	3	◒
Wellington	Wellington Port Access Improvements	HMM	3	◒
Wellington	Wellington RoNS (7) - Peka Peka to Otaki Expr	HHL	3	◑
Manawatu-Whanganui	Wellington RoNS - 9. Otaki to Levin	HHL	3	◑
Waikato	SH1 Waikato Expressway Long Swamp Section	HHL	3	◑
Waikato	SH1 Waikato Expressway Huntly Section	HHL	3	◑
Waikato	SH1 Waikato Expressway Hamilton Section	HHL	3	◑
Northland	Springfield to Mata Median Barrier	HMM	3	◑
Bay of Plenty	Tauranga Northern Link	HMM	3	◐
Canterbury	Woodend Corridor Safety Improvements	HMM	3	◒
Marlborough	SH1 Weld Pass Realignment	HMM	3	◐
Auckland	Brigham Creek-Railway Rd Median Barrier	HMM	3	◒
Auckland	SH20A to Auckland Airport	HMM	3	◒
Canterbury	Brougham/Burlington Intersection	HMM	3	◒
Canterbury	Carmen/Main South Minor Intersection Improvements	HMM	3	◒
Northland	Springfield to Mata Median Barrier	HMM	3	◑
Canterbury	Rakaia to Ashburton Safety Improvements	HMM	3	◒
Canterbury	SH1 - Rolleston Intersection Improvements	HHL*	3	◒
Marlborough	SH1 SH62 Spring Creek Intersection RAB	HMM	3	◒
Gisborne	Eastland Port Access	HMM	3	◒
Hawkes Bay	SH2 Watchman Rd, HB Airport Intersection	HMM	3	◒
Auckland	Improved Incident and Event Management	HHL*	3	◒
Bay of Plenty	Minden Te Puna Intersection Improvements	HMM	3	◒
Wellington	SH2 Guardrails on Rimutaka Hill	HMM	3	◒
Manawatu-Whanganui	SH57: SH1 to Shannon Safety Improvements	HMM	3	◒
Taranaki	Waitara to Bell Block Route Improvements	HMM	3	◒
Waikato	SH1 (Hatepe to Turangi), National Safety Roads & Roadside Programme	HMM	3	◒
Waikato	SH2/25 intersection upgrade	HMM	3	◒
Southland	Invercargill - Moto Rimu Rd Safety Improvements	HMM	3	◒
Southland	Longbush - Invercargill Safety Improvements	HMM	3	◒
Auckland	Ngakoroa Realignment & Passing Lane	HLH	4	◐
Canterbury	Halswell Rd 4-Laning	MHM	4	◐
Auckland	Muriwai Rd Intersection Improvement	HLH	4	◑
Hawkes Bay	Pakowhai & Links Rd Intersection Improvement	MMH	4	◑
Wellington	RH: Two Bobs Corner Realign	MMH	4	◒
Hawkes Bay	Mangahohi Bridge Replacement	MMH	4	◒
Hawkes Bay	SH2/SH50A Pakipaki Junction	MMH	4	◒

## PLANNED 2015-18

Key: ◐ - Development ◑ - Construction ◒ - Development &amp; Construction

Region	Activity Name	Profile	Priority Rank	Phase
Hawkes Bay	Wairoa Stock Effluent Disposal Facility	MMH	4	◒
Manawatu-Whanganui	Rangitikei/Tremaine Intersection Imp.	MMH	4	◒
Manawatu-Whanganui	Waiouru Stock Effluent Disposal Facility	MMH	4	◒
Southland	Gore to Mataura Stock Effluent Disposal Site	MMH	4	◒
West Coast	Jacksons Stock Truck Effluent Disposal	MMH	4	◒
Hawkes Bay	Karamu Creek Bridge Replacement	MMH	4	◒
Manawatu-Whanganui	SH1 Waiouru to Foxton Passing Improvement	HML	5	◐
Wellington	SH2 Rimutaka Programme	HML	5	◐
Otago	Pine Hill Rd/Gt King St Intersection Improvements	HML	5	◒
Hawkes Bay	Corkscrew Gully N&S PL	HML	5	◒
West Coast	SH7 Stoney Creek Bridge	LHH	5	◒
Southland	Visiting Driver Signature Project - Southland	HML	5	◒
Auckland	SH1: Wellsford to Warkworth	MMM	6	◑
Northland	SH1: Ohaewai to Whangarei	MMM	6	◑
Hawkes Bay	Pakipaki to Waipukurau	HLM	6	◐
Southland	Edendale Realignment	MMM	6	◑
Northland	SH1: Whangarei to Brynderwyn	MMM	6	◑
Canterbury	Curletts Rd Improvements	MMH	6	◒
Waikato	SH3/SH21 Intersection Impt, NSRRP	MHL	6	◒
Southland	Elles Road Roundabout	MMM	6	◒
Southland	Falls Creek Bridge	MMM	6	◒
Wellington	RH: Jims Corner	MLH	7	◒
West Coast	Franz Josef to Fox Glacier Short Vehicle Bay's	MLH	7	◒
West Coast	Inangahua Junction to SH67 Short Vehicle Bay's	MLH	7	◒
West Coast	Springs Junction to Reefton Short Vehicle Bay's	MLH	7	◒
Southland	Milford Rockfall/Avalanche Protection	MML	8	◐
West Coast	Taramakau Bridge Safety Improvement	MLM	8	◒
Wellington	SH2 Buchanan/Ngaumutawa Int (Masterton)	MLM	8	◒
Otago	Nevis Bluff Rockfall Protection	MML	8	◒
Canterbury	Barbers/Main Sth intersection	MML*	8	◒
Wellington	SH2 Moonshine - Gibbons Safety Improvmts	MLM	8	◒
West Coast	SH6 Resilience Project	MML*	8	◒
Southland	Mataura Intersection Improvement	MML	8	◒
Waikato	SH26 Kirikiri Stream Bridge Replacement	MLL	10	◐
Nelson	SH6 Quarantine Road I/S	MLL	10	◒
Southland	Wilsons Crossing Passing Lanes	LLM	10	◒
Gisborne	Panikau Hill Slow Vehicle Bays	LLL	11	◒
Gisborne	SH35 Slow Vehicle Bays Stage 1	LLL	11	◒
Gisborne	SH35 Slow Vehicle Bays Stage 2	LLL	11	◒

## CONTINGENT PROGRAMME 2015-18

Key: ◐ - Development ◑ - Construction ◒ - Development &amp; Construction

Region	Activity Name	Profile	Priority Rank	Phase
Nelson	HPMV T2 Greymouth to Nelson	HMM	2	◒
Nelson	HPMV T2 Nelson to Lyttleton	HMM	2	◒
Nelson	HPMV T2 Takaka to Nelson	HMM	2	◒
Nelson	HPMV T2 Westport to Nelson	HMM	2	◒
Northland	Minor Improvements	HMH	2	◑
Auckland	Minor Improvements	HMH	2	◑
Waikato	Minor Improvements	HMH	2	◑
Bay of Plenty	Minor Improvements	HMH	2	◑
Gisborne	Minor Improvements	HMH	2	◑
Hawkes Bay	Minor Improvements	HMH	2	◑
Manawatu-Wanganui	Minor Improvements	HMH	2	◑
Taranaki	Minor Improvements	HMH	2	◑
Wellington	Minor Improvements	HMH	2	◑
Nelson	Minor Improvements	HMH	2	◑
Marlborough	Minor Improvements	HMH	2	◑
Tasman	Minor Improvements	HMH	2	◑
Canterbury	Minor Improvements	HMH	2	◑
West Coast	Minor Improvements	HMH	2	◑
Otago	Minor Improvements	HMH	2	◑
Southland	Minor Improvements	HMH	2	◑
Hawkes Bay	HPMV T2 HB HNO Napier Port to Sth Bdy	HMM	2	◒
Hawkes Bay	HPMV T2 HB HNO Napier Port to Gis	HMM	2	◒
Wellington	SH1 Resilience - Ngauranga to Airport	HHL	3	◒
Wellington	SH1 Resilience - Ngauranga to SH58	HHL	3	◒
Wellington	SH2 Resilience - Ngauranga to SH58	HHL	3	◒
Waikato	HPMV SH27 from Morrinsville to SH29	HHL	3	◒
Canterbury	HPMV T2 Darfield to Lyttelton	HHL	3	◒
Waikato	HPMVa: SH26/SH2 Hamilton to Paeroa	HHL	3	◒
Waikato	HPMVa: SH30/SH34 Te Kuiti to Whakatane	HHL	3	◒
Waikato	HPMVb: SH2 Paeroa to Waihi	HHL	3	◒
Waikato	HPMVb: SH32: SH30 to SH1	HHL	3	◒
Waikato	HPMVb: SH38 Murupara to SH5	HHL	3	◒
Bay of Plenty	HPMV - SH2 Waihi to Port of Tauranga	HHL	3	◒
Otago	Deborah Realignment	HML	5	◐
Bay of Plenty	HPMV T2 SH30/SH34 Te Kuiti to Whakatane	MHL	6	◒
Bay of Plenty	HPMV T2 SH2 Edgecumbe to Opotiki	MHL	6	◒
Gisborne	HPMV T2 Gis HNO Te Araroa to Tologa	MMM	6	◒
Auckland	Weigh Facility Auckland	HML*	3*	◒
Waikato	Weigh Facility Waikato	HML*	3*	◒

## CONTINGENT PROGRAMME 2015-18

Key:  - Development  - Construction  - Development & Construction

Region	Activity Name	Profile	Priority Rank	Phase
Hawkes Bay	Weigh Facility Hawkes Bay	HML*	3*	
Manawatu-Whanganui	Weigh Facility Manawatu/Wanganui	HML*	3*	
Wellington	Weigh Facility Wellington	HML*	3*	
Canterbury	Weigh Facility Canterbury	HML*	3*	
Waikato	Enhanced Network Resilience Waikato	HLL*	8*	
Bay of Plenty	Enhanced Network Resilience Bay of Plenty	HLL*	8*	
Northland	Enhanced Network Resilience Northland	HLL*	8*	
Auckland	Enhanced Network Resilience Auckland	HLL*	8*	
Taranaki	Enhanced Network Resilience Taranaki	HLL*	8*	
Nelson	Enhanced Network Resilience Nelson	HLL*	8*	
Marlborough	Enhanced Network Resilience Marlborough	HLL*	8*	
Gisborne	Enhanced Network Resilience Gisborne	HLL*	8*	
Hawkes Bay	Enhanced Network Resilience HB	HLL*	8*	
West Coast	Enhanced Network Resilience West Coast	HLL*	8*	
Southland	Enhanced Network Resilience Southland	HLL*	8*	
Manawatu-Whanganui	Enhanced Network Resilience Man-Wan	HLL*	8*	
Wellington	Enhanced Network Resilience Wellington	HLL*	8*	
Tasman	Enhanced Network Resilience Tasman	HLL*	8*	
Canterbury	Enhanced Network Resilience Canterbury	HLL*	8*	
Otago	Enhanced Network Resilience Otago	HLL*	8*	

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Key:  - Development  - Construction  - Development & Construction

Region	Activity Name	Profile	Priority Rank	Phase
Auckland	SCI - Takanini South	HHH	1	
Wellington	SH2 Melling Efficiency and Safety Improvements	HHH	1	
Bay of Plenty	TGA East Urban Corridor Optimisation	HHH	1	
Wellington	SH 2 Corridor Improvements	HHM	2	
Auckland	(ac) Western Ring Route - RONS	HHM	2	
Auckland	Silverdale I/C Upgrade	HMH	2	
Auckland	NCI - SH1 Greville Rd Interchange Upgrade	HHM	2	
Auckland	NCI - SH1/18 Interchange Upgrade	HHM	2	
Bay of Plenty	SH2 Route Security Kukumoa Road Improvements	MHH	2	
Bay of Plenty	SH2/Wainui Rd-Matekerepu Intersection Route Security	MHH	2	
Nelson	HPMV T2 Greymouth to Nelson	HHM	2	
Nelson	HPMV T2 Nelson to Lyttleton	HHM	2	
Wellington	SH58 Grays Road to SH2	HHM	2	
Bay of Plenty	SH29 Tauriko to Waikato Boundary, National Safety Roads & Roadside Programme	HMH	2	
Waikato	SH1 (Three Sisters), NSRRP	HMH	2	
Waikato	SH2 (Paeroa to Waihi), NSRRP	HMH	2	

## PLANNED 2018-21

Key: ◐ - Development ◑ - Construction ◒ - Development &amp; Construction

Region	Activity Name	Profile	Priority Rank	Phase
Bay of Plenty	SH33: Te Ngae Junction to Sun Valley North , National Safety Roads & Roadside Programme	HMH	2	◒
Bay of Plenty	SH5: Ngongataha-FairySprings Rd, National Safety Roads & Roadside Programme	HMH	2	◒
Waikato	SH3 (SH37 to Te Kuiti),NSRRP	HMH	2	◒
Bay of Plenty	SH30: Te Teko to Awakeri, National Safety Roads & Roadside Programme	HMH	2	◒
Bay of Plenty	SH34: SH30 Kawerau, NSRRP	HMH	2	◒
Bay of Plenty	SH2 Hewletts Rd Flyover-Bayfair,	HMH	2	◒
Bay of Plenty	SH30: Owata to Te Ngae Junction, National Safety Roads & Roadside Programme	HMH	2	◒
Waikato	SH23 (Hamilton to Whatawhata), National Safety Roads & Roadside Programme	HMH	2	◒
Waikato	SH23 (Te Uku to Raglan), National Safety Roads & Roadside Programme	HMH	2	◒
Waikato	SH37 ( SH3 to Waitomo), National Safety Roads & Roadside Programme	HMH	2	◒
Canterbury	Western Corridor Improvements	HMM	2	◒
Bay of Plenty	SH2 Takitimu Dr Elizabeth St Intersection Improvement Interim	HMH	2	◒
Bay of Plenty	SH29 Stock Effluent Disposal Facility	HMH	2	◒
Bay of Plenty	SH2/ Welcome Bay Road	HMH	2	◒
Hawkes Bay	HB Expressway Kennedy Rd to Meeanee Rd	HMH	2	◒
Bay of Plenty	Maketu/Rangiuru Intersection Upgrade	HMH	2	◒
Wellington	Mt Victoria Tunnel - Resilience Retrofit	HMH	2	◑
Wellington	Wellington Port Access Improvements	HMM	3	◒
Wellington	Wellington RoNS (3) - Terrace Tunnel Duplication	HHL	3	◒
Wellington	Wellington RoNS (4) Ngauranga-Aotea Quay: Active Traffic Management	HHL	3	◑
Wellington	Wellington RoNS (5) - Transmission Gully	HHL	3	◑
Manawatu-Whanganui	Wellington RoNS - 9. Otaki to Levin	HHL	3	◑
Auckland	SH20A to Auckland Airport	HMM	3	◑
Waikato	SH1 Waikato Expressway Cambridge Section	HHL	3	◑
Northland	Loop Rd Nth to Smeatons Hill SI	HMM	3	◒
Bay of Plenty	Tauranga Northern Link	HMM	3	◒
Auckland	Additional Waitemata Harbour Crossing	HHL	3	◐
Auckland	Brigham Creek-Railway Rd Median Barrier	HMM	3	◑
Canterbury	Main South/Aylesbury Intersection	HMM	3	◒
Canterbury	Walnut Avenue Intersection Improvements	HMM	3	◒
Northland	Puketona SH11 Intersection. Improvements	HMM	3	◒
Otago	Waitati Curve Realignment	HMM	3	◒
Waikato	HPMVa: SH30/SH34 Te Kuiti to Whakatane	HHL	3	◒
Waikato	HPMVb: SH2 Paeroa to Waihi	HHL	3	◒
Waikato	HPMVb: SH32: SH30 to SH1	HHL	3	◒
Bay of Plenty	HPMV - SH2 Waihi to Port of Tauranga	HHL*	3	◒
Canterbury	Marshlands to Burwood Median Barrier	HMM	3	◒
Waikato	SH1 (Piarere to Tirau), NSRRP	HMM	3	◒
Waikato	SH2 Pokeno to Mangatarata Safe System Demonstration Project: Section C	HHL	3	◒

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Key: ● - Development ◐ - Construction ● - Development &amp; Construction

Region	Activity Name	Profile	Priority Rank	Phase
Waikato	SH2 Pokeno to Mangatarata Safe System Demonstration Project: Section D	HHL	3	●
Auckland	Ngakoroa Realignment & Passing Lane	HLH	4	●
Wellington	SH2 Active Traffic Management System - Ngauranga - SH58	MHM	4	●
Bay of Plenty	Hairini Link - Stage 4	MHM	4	◐
Otago	Beaumont Bridge Replacement	MMH	4	●
Canterbury	Leadleys Road Right Turn Bay	MMH	4	●
Marlborough	SH6 Bells Road/St Leonards Road Intersection	MMH	4	●
Hawkes Bay	Mangahohi Bridge Replacement	MMH	4	●
Waikato	SH26 (Onetai Stream) Bridge Replacement	MMH	4	●
Bay of Plenty	Forest Passing Lane (SH33) & Alignment	HLH	4	●
Canterbury	ChCh to Rolleston Alternative Route	MHM	4	●
Otago	Albert Burn Bridge Replacement	MMH	4	●
Waikato	Waikato SEDF	MMH	4	●
Northland	SH15A/McCathie Road Intersection Upgrade	MMH	4	●
Canterbury	SH77/Park St int TS	MMH	4	●
Taranaki	Normanby Overbridge Realignment	MMH	4	◐
Northland	Akerama Curves Realign & Passing Lane	HLH	4	◐
Manawatu-Whanganui	SH1 Waiouru to Foxton Passing Improvement	HML	5	●
Otago	Visiting Driver Signature Project Otago	HML	5	●
Waikato	SH1/26 Intersection Improvements	HML	5	◐
Wellington	SH2 Rimutaka Programme	HML	5	●
Auckland	Puhoi to Warkworth RoNS - Design & Construction	HML	5	◐
Auckland	Warkworth to Wellsford Roads and roadside improvements	HML	5	●
Auckland	Drury-Glenbrook Wire Rope MB	HML	5	●
Manawatu-Whanganui	SH1 Corridor Safety Management Improvements	HML	5	●
Bay of Plenty	Pah Road I/S Improvement Te Puke	HML	5	●
Otago	Pine Hill Rd/Gt King St Int Improvements	HML	5	●
Canterbury	SH82 Elephant Hill Stream Bridge	LHH	5	●
Otago	Mosgiel - Balclutha Safety Improvements	HML	5	●
Waikato	SH5 (Mihi to Wairakei), National Safety Roads & Roadside Programme	HML	5	●
Otago	Dunedin - Fairfield Safety Improvements	HML	5	●
Auckland	Weigh Facility Auckland	HML*	5	●
Waikato	Weigh Facility Waikato	HML*	5	●
Bay of Plenty	Weigh Facility Bay of Plenty	HML*	5	●
Otago	Weigh Facility Gisborne	HML*	5	●
Hawkes Bay	Weigh Facility Hawkes Bay	HML*	5	●
Taranaki	Weigh Facility Taranaki	HML*	5	●
Manawatu-Whanganui	Weigh Facility Manawatu/Wanganui	HML*	5	●
Wellington	Weigh Facility Wellington	HML*	5	●
Marlborough	Weigh Facility Marlborough	HML*	5	●

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Key:  - Development  - Construction  - Development & Construction

Region	Activity Name	Profile	Priority Rank	Phase
Nelson	Weigh Facility Nelson	HML*	5	
Tasman	Weigh Facility Tasman	HML*	5	
West Coast	Weigh Facility West Coast	HML*	5	
Otago	Weigh Facility Otago	HML*	5	
Otago	Big Kuri Creek Flood Mitigation	HML	5	
Otago	Hilderthorpe Straight Flood Mitigation	HML	5	
Otago	Katiki Erosion Protection	HML	5	
Otago	Maheno Flood Mitigation	HML	5	
Canterbury	SH15 Kaikoura Coast Resilience Project	HML	5	
Otago	Waikouaiti Flood Mitigation	HML	5	
Waikato	SH1/Gallagher Drive Intersection Improvements	HML	5	
Otago	Andersons Bay Rd/Caversham Motorway	HML	5	
Otago	St Andrew St Anzac Ave Intersection	HML	5	
Otago	Deborah Realignment	HML	5	
Otago	Oamaru - Dunedin Safety Improvements	HML	5	
West Coast	Ahaura Bridge Replacement	LHH	5	
Auckland	SH1: Wellsford to Warkworth	MMM	6	
Northland	SH1: Ohaewai to Whangarei	MMM	6	
Auckland	Bridge Side Screen Protection	MMM	6	
Otago	Kakaho Creek Realignment	MMM	6	
Waikato	SH3/SH21 Intersection Improvements, National Safety Roads & Roadside Programme	MHL	6	
Bay of Plenty	HPMV T2 SH2 Edgecumbe to Opotiki	MHL	6	
Northland	Waiotu North NB	HLM	6	
Bay of Plenty	Banksia Place Northbound PL	HLM	6	
Bay of Plenty	Tuapiro Rd PL	HLM	6	
Canterbury	West Melton to Darfield Passing Opp.	MMM	6	
Canterbury	Dyers Road Improvements	MMM	6	
Canterbury	Yaldhurst to West Melton Passing Opp.	MMM	6	
Canterbury	Ashburton Intersection Improvements	MMM	6	
Canterbury	Bridge St to Waimataitai St 4L	MMM	6	
Canterbury	Hilton Highway 4 Laning	MMM	6	
Canterbury	Timaru Intersection Improvements	MMM	6	
Canterbury	Waimataitai to Te Weka 4L	MMM	6	
Otago	Kawarau Falls Bridge	MHL	6	
Auckland	McKinney/Wech Dr Intersection Project	MLH	7	
Northland	Snake Hill Realign	MLH	7	
Bay of Plenty	SH2 Western Drain Bridge Replacement	LMH	7	
Bay of Plenty	Te Rahu Canal Bridge Replacement	LMH	7	
Northland	Wallis Rd SW and Realignment	MLH	7	
Bay of Plenty	Bridgman Lane Passing Lane	HLL	8	

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Key:  - Development  - Construction  - Development & Construction

Region	Activity Name	Profile	Priority Rank	Phase
Bay of Plenty	Tauriko Upgrade	HLL	8	
Auckland	Drury-Glenbrook RTB Treatments	HLL	8	
Nelson	SH6 Cable Bay Road Intersection	MLM	8	
Auckland	Wharehine Rd Realignment	MLM	8	
Otago	Nevis Bluff Rockfall Protection	MML	8	
Northland	Salesyards Rd Intersections Improvements	HLL	8	
Bay of Plenty	Kauri Point PL	HLL	8	
Bay of Plenty	SH2 Matata Straights (resilience)	MML	8	
West Coast	SH7 Resilience Project	MML	8	
West Coast	SH73 Resilience Project	MML	8	
Otago	Grant Rd to KF Bridge Improvements	MML	8	
Otago	Stanley St Corridor Improvements	MML	8	
Otago	Cromwell Intersection Improvement	MML	8	
Otago	Ladies Mile Corridor Improvements	MML	8	
Otago	North Oamaru Corridor Improvements	MML	8	
Otago	Roaring Meg Bridge Widening	MML	8	
Bay of Plenty	SH5 Rotorua Western Corridor, RINS	MML	8	
Otago	SH6A Corridor Improvements	MML	8	
Canterbury	SH74/Scruttons Intersection	MML	8	
Canterbury	Washdyke Creek Bridge	MML	8	
Auckland	Noise Improvement Programme	LMM	9	
Waikato	SH1 Tirau to Taupo Improvements	MLL	10	

## TRANSPORT PLANNING ACTIVITY CLASS

### PLANNED ACTIVITIES 2015-18

Region	Activity Name	Profile	Priority Rank
National	National business case for speed management implementation	HH	1
Auckland	SH1 Wellsford to Warkworth (NRR2)	HM	1
Northland	SH1 Whangarei to Brynderwyn (NRR3)	HM	1
Manawatu	Waitara to Bell Block Route Improvements (NRR6)	HM	1
Northland	SH1 Ohaewai to Whangarei (NRR7)	HM	1
Waikato	SH2: SH1 to SH27 (NRR9)	HM	1
Auckland	Resilience Auckland – Programme Business case	HM	1
Wellington	Resilience Wellington – Programme Business Case	HM	1
Auckland	SH16 Brigham Creek to Waimauku (NRR11)	HM	1
Canterbury	SH1 ChCh to Dunedin Corridor (ChCh Section) (NRR21)	HM	1
Canterbury	SH1 and 71 Picton to ChCh (NRR22)	HM	1
Marlborough	SH1 and 71 Picton to ChCh (NRR22)	HM	1
Waikato	SH3 (Ohaupo to Te Kuiti) Improvements TPAC (NRR27,71)	HM	1
Manawatu	SH3 Wanganui to Whangaehu Route Improvements (NRR28)	HM	1
Northland	SH12 Dargaville to Tokatoka (NRR29)	HM	1
Waikato	SH1B: Taupiri to Gordonton (NRR33)	HM	1
Waikato	SH27: SH26 to SH24 (NRR34)	HM	1
Bay of Plenty	Wainui Road to Opotiki (NRR35)	HM	1
Bay of Plenty	SH29 Tauranga to Hamilton PBC (Bay of Plenty Section) (NRR36)	HM	1
Auckland	SH22 – SH1 to Glenbrook Road (NRR37)	HM	1
Auckland	SH20B – Manukau Gardens to Airport (NRR38)	HM	1
Otago	SH1 ChCh to Dunedin Corridor PBC (Otago Section)(NRR43)	HM	1
Bay of Plenty	SH2 Paeroa to Tauranga PBC (NRR5,48)	HM	1
Waikato	SH2 (Paeroa to Waihi), NSRRP TPAC (NRR48)	HM	1
National	Automated optimisation, compliance and enforcement of the Motorway network	HH	2
National	Improving delivery for State Highway Operations	HH	2
National	Improving delivery for State Highway Optimisation	HH	2
National	Integrated Freight Transport Requirements	HH	2
Auckland	Responding to changes in the Auckland City Centre	HH	2
Auckland	Responding to Auckland Growth Areas – North West	HH	2
Auckland	Responding to Auckland Growth Areas – Silverdale	HH	2
Auckland	Responding to Auckland Growth Areas – South	HH	2
Canterbury	Christchurch Network Operating Plan Implementation	HH	2
Canterbury	SH73/76 West Melton – Tunnel	HH	2
Canterbury	SH75 Halswell Road Corridor	HH	2
Auckland	Auckland Network Operating Plan Implementation	HH	2
Wellington	SH2 Corridor Improvements	HH	2

## PLANNED ACTIVITIES 2015-18

Region	Activity Name	Profile	Priority Rank
Wellington	Wellington Port Access	HH	2
Wellington	Wellington Network Operating Plan Implementation	HH	2
National	Improving delivery for the upgrade and replacement of state highway structures	HM	2
Bay of Plenty	Tauriko Network Plan	HM	2
National	National LED Lighting for State highways	HM	2
Otago	Central Queenstown Optimisation Plan	HM	2
Otago	Queenstown Frankton Flats Growth Area	HM	2
Waikato	SH1 Bombay to Long Swamp	HM	2
Waikato	Hamilton Urban Optimisation	HM	2

## CONTINGENT PROGRAMME 2015-18

Region	Activity Name	Profile	Priority Rank
Waikato	SH5 (Tirau to Taupo) via Rotorua TPAC(NRR49,51,56)	HM	1
Otago	SH1: Mosgiel to Balclutha (NRR53)	HM	1
Wellington	SH2 Rimutaka Hill Curves (NRR54)	HM	1
Manawatu	Hawera to New Plymouth (NRR55)	HM	1
Bay of Plenty	SH30: Te Teko to Awakeri (NRR59)	HM	1
Otago	SH1 Dunedin to Invercargill PBC (NRR58,77)	HM	1
Northland	SH11 Airfield to Lilly Pond (NRR60)	HM	1
Bay of Plenty	SH34: SH30 to Kawarau (NRR61)	HM	1
Northland	SH1: SH12 to Wellsford (NRR68)	HM	1
Marlborough	SH6 Renwick to Hira (NRR72,74)	HM	1
Hawkes Bay	Hawkes Bay Network Plan and optimisation	MM	3
National	National business case for improving walking and cycling for schools adjoining or close to the state highway	ML	3
Northland	Supporting the Waipapa Growth Area	ML	3
Otago	Strategic Transport Model Updating	MM	3
Canterbury	Strategic Transport Model Updating	MM	3
Waikato	Waikato Regional Transport Model Update	MM	3
Bay of Plenty	Tauranga Transport Model Rebuild	MM	3

## TPAC ACTIVITIES FOR 2018-21

Region	Activity Name	Profile	Priority Rank
Waikato	SH5 (Mihi to Wairakei) (NRR73)	HM	1
Waikato	SH23 Hamilton to Whatawhata (NRR80)	HM	1
Waikato	SH23 (Te Uku to Raglan), NSRRP TPAC (NRR81)	HM	1
Waikato	SH37 (SH3 to Waitomo), NSRRP TPAC (NRR82)	HM	1
Southland	SH1: Invercargill to Moto Rimu Rd (NRR76)	HM	1
Waikato	SH37: SH3 to Waitomo (NRR82)	HM	1
Northland	Resilience Northland - Programme Business case	HM	1
Waikato	SH5 Taupo to Napier	HM	2
Otago	Dunedin Central City Optimisation Plan	HM	2
Otago	Network Operating Plan - Dunedin	MM	3
Bay of Plenty	SH2 Tauranga East Urban Corridor Programme	MM	3
Bay of Plenty	South Urban Corridor, TTS	MM	3
Bay of Plenty	Rotorua Eastern Corridor, RINS	MM	3
Bay of Plenty	SH30A Urban Revitalisation, RINS	MM	3
National	Providing walking and cycling opportunities for schools	ML	3
Gisborne	Gisborne Network Plan and Optimisation	LL	3
Hawke's Bay	Hawke's Bay Network Plan and optimisation	ML	3
National	Providing walking and cycling opportunities for schools	ML	3
Northland	Supporting the Waipapa Growth Area	LL	3
Gisborne	Gisborne Network Plan and Optimisation	LL	3

## WALKING AND CYCLING

Initiative Name or Short Text	Region	Assessment Profile	Priority Ranking
Dunedin One Way Pair Cycle Lanes	Otago	HMM	2
Kahikatea Dr Greenwood Walking & Cycling	Waikato	HMH	2
SH 88 Cycling and Pedestrian Facilities	Otago	MHH	2
Ngauranga to Petone Cycleway/walkway	Wellington	HMM	3
SH3 Ohaupo Rd W&C (Lorne to Dixon)	Waikato	MMH	4
State Highway Model Communities Connection	Hawkes Bay	MHM	4
AKL East Corridor/Meadowbank-Glen Innes	Auckland	HML	5
SH1 (Cobham Drive) Pedestrian Facility	Waikato	HML	5
Gentle Annie Shoulder Widening	Nelson	HML	5
Nelson Street offramp Cycling Imps	Auckland	HML	5
SH1 Northern Motorway Cycleway	Auckland	HLM	6
Mourea Bridge Pedestrian Cycleway	Bay of Plenty	MMM	6
Poike Road Pedestrian & Cycle Facility	Bay of Plenty	MMM	6
Gisborne - Wainui Cycleway SH 35	Gisborne	MMM	6
SH6 Rocks Rd Offroad Shared Pathway	Nelson	MMM	6
SH1 Southern Motorway Cycleway	Auckland	HLL	8
SH20B Puhinui Road	Auckland	HLL	8
Bethlehem to Wairoa Ped/Cycle Facilities	Bay of Plenty	MML	8
Taramakau Bridge Safety Improvement	West Coast	MLM	8
Walking and Cycling connectivity	Gisborne	LLM	10

A group of children in school uniforms are sitting on a wooden floor around a large table. The table is covered with a map and numerous colorful sticky notes (yellow, pink, green, blue). The children appear to be engaged in a collaborative activity, possibly a brainstorming session or a workshop. A large white circle is overlaid on the center of the image, containing the title text.

# APPENDIX C

## IMPROVEMENTS PROGRAMME DEVELOPMENT

## INTRODUCTION

This section of the draft SHAMP 2015-18 outlines the work undertaken to develop and consider alternative improvement programmes in order to reach a recommended programme.

## PROGRAMME INPUTS AND CONSTRAINTS

The starting point for the improvement programme was activities or emergent programmes from regional planning activities or national programmes. In response to the Transport Agency's investment signals<sup>33</sup> each of our regions has considered the regional context to the national investment signals and identified the key level of service gaps that needed to be addressed to align with those signals. Our regions work closely with each other and so, while our structures are regional, the programmes submitted were integrated with each other to ensure proposed improvements took cognisance of journeys on the network to ensure there were consistent levels of services across boundaries.

In total some 429 activities totalling \$9.3 billion were submitted for consideration for inclusion in the draft SHAMP 2015-18.

There were two key constraints to programme development:

- forecast available funding
- existing commitments.

We have a significant current programme of committed work including the RoNS, Auckland acceleration and our Safe System demonstration projects. This, coupled with a requirement to exhaust current R-funds (about \$100 million) and continue with the RoNS programme, means that for the NLTP period 2015-18 it is expected that around \$70 million will be available for new commitments, increasing to \$1.2 billion for 2018-21 and \$3.9 billion for 2021-25.

## PROGRAMME OPTIONS CONSIDERED

Most of the activities undertaken in improving the State Highway can be grouped into broad programmes of work which, in themselves, align to our strategic priorities or fit within broad portfolios of work. In developing programme options we therefore considered the programme in nine broad areas:

- commitments: we have a significant programme of activity funded and which will continue into the next GPS
- implicit commitments: while not committed, we have a number of activities where phases have been complete and for which future phases are ready to commence, or for which announcements have been made of our intent to deliver subsequent phases. Examples include future phases of RoNS, the Auckland acceleration programme and Future Investment Fund programme activities
- critical infrastructure: this is a programme of improvements to replace infrastructure at the end of its economic life
- R-fund activities: regionally distributed funds which are available for investment in activities that demonstrate the highest value for money priority within regions for activities which might not otherwise be funded are due to expire in 2018. We have an identified programme of around \$100 million of investment to meet our commitment to use this fund by the deadline
- National Roads and Roadsides Programme (NRRP): a national programme of investment over ten years targeted at Safer Journeys Roads and Roadsides goals
- resilience activities: activities aligned to our national resilience programme
- HPMV: activities related to improving the efficiency of freight, including HPMV investment routes and Weigh Right activities
- efficiency investment: programmes of activity targeting improved network efficiency.

33. <http://www.nzta.govt.nz/planning/nltp-2015-2018/index.html>

Dependent on the degree to which the above programmes were combined and emphasis given, it is possible to formulate different improvement programmes.

In developing the draft SHAMP 2015-18, five broad programmes were considered:

- deliver what we started and safety
- primarily safety
- priority order
- safety and efficiency
- priority programmes.

Common to all five programmes was a focus on our commitments and an on-going commitment to a minor improvements programme. The particular emphasis of the programmes is shown in the table below and each explained further:

## SHAMP ALTERNATE PROGRAMMES CONSIDERED

THEME	Commitments	Complete 12/15 Activities	NRRP (Year1-3)	NRRP (Year4-10)	Resilience & HPMV	Efficiency Corridors	Minor Improvements (Safety)	Minor Improvements (Operations)	Minor Improvements (Other)
1 Deliver what we started and safety	1	2	3	5	4	6	\$15m-\$25m	\$4m-\$6m	\$10m-\$20m
2 Safety, safety, safety	1	3	2	3	5	6			
3 Prioritised activities (traditional approach)	1	2	2	6	2	2			
4 Safety and efficiency	1	4	2	5	5	2			
5 Deliver on HNO priority programmes	1	2*	2	5	4	5			

2\* - Future phases of activities that align with NRRP/Resilience & HPMV only.

**Deliver what we started and safety:** This programme would have delivered HNO activities where previous phases had been funded, followed by Roads and Roadsides programme activities.

**Primarily safety:** this programme would have been heavily weighted towards delivering on our Roads and Roadsides programme.

**Priority order:** This approach was agnostic to any broad strategic direction or desired emphasis and simply prioritised activities in Investment Assessment Framework priority order.

**Safety and efficiency:** This programme aimed to continue to invest equally in efficiency and safety related activities.

**Priority programmes:** This programme was a modified version of programme 1 (deliver what we started and safety) in that it recognised that we would wish to continue delivering on activities which are strongly aligned to our desired Roads and Roadside and Resilience goals, but that we would not want to necessarily pursue all previously developed activities equally. This programme aimed to signal a change towards a more strategically aligned approach.

## PROGRAMME ASSESSMENT

A qualitative assessment of the five programme options against the five SHAMP key performance indicators was undertaken. The summary of the assessment is shown in the table below.

		KPI (SCORE: 0-3)					
THEME		Better Utilisation of Capacity	Reduced Travel Time	Improved Reliability	Reduction in DSI	Reduced Collective Risk	COMMENT
1	Deliver what we started	1	1	1	1	1	This programme contributed to most KPIs but did not lead to the desired realignment of our economic growth and safety focus.
2	Primarily safety	0	0	0	3	3	Safety is extremely important but is not the only priority for the Agency. As articulated in the national business cases, the three priorities are safety, freight and resilience. This programme did not recognise the expectation generated by projects that are currently in design or investigation.
3	Priority order	0	2	1	1	0	Prioritisation by project profile order is the method that has traditionally used to develop the programme because generally the NLTP had implicitly assumed a funding level below which funds would not be allocated. This approach does not necessarily reflect the intent of the strategic direction of the SHAMP nor recognise the planning importance of the national programmes of activity.
4	Safety and efficiency	2	2	0	2	0	This programme did not address the key freight efficiency issues or respond to the wide range of resilience challenges on the network.
5	Priority programmes	2	2	2	2	2	The programme sufficiently balanced the desire to continue to invest in projects which align well to our strategic direction but provided enough flexibility for a change in direction towards nationally planned programmes with the overall aim of giving optimum effect to our strategic goals.

On balance, programme approach 5 (priority programmes) was considered to best align with the Transport Agency's overall strategic direction.

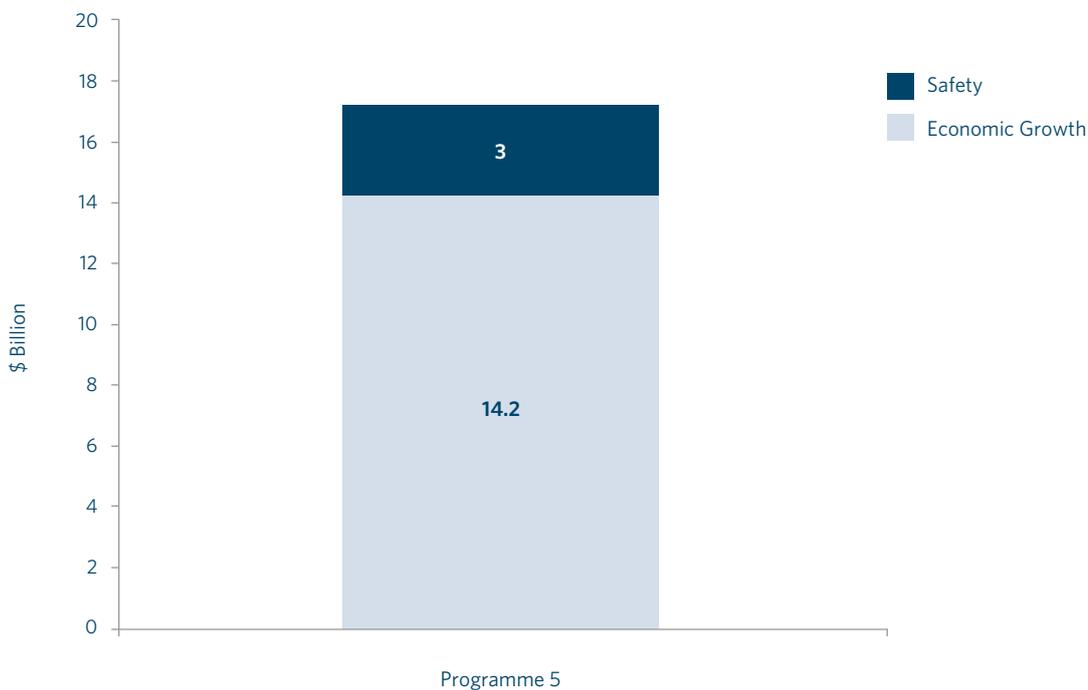
The final principles for prioritising the available projects, and taking into account the various national programme business cases, was therefore as follows:

Priority	Description	Narrative
1	Commitments	Complete funded phases of projects, implicit commitments to future RoNS phases, critical infrastructure and eligible R <sup>1</sup> Fund activities.
2	Finish activities which align with our direction and Minor Improvements Programmes	For current activities in the 12/15 programme which align with the NRRP, HPMV or Resilience goals we will prioritise investment in subsequent phases to see them through to completion.
2	Safer Journeys - Roads and Roadsides	We will deliver the NRRP Programme Year 1-3.
4	Other National Priorities Programmes	We will progress development of resilience programmes and invest in a smaller HPMV programme and other Safer Journeys initiatives.
5	Safer Journeys - Roads and Roadsides	We will deliver on the NRRP Programme Year 4-10.
5	Other (including Future R-Funds)	Other activities including obligations for R <sup>2</sup> .

## QUANTITATIVE PROGRAMME PERFORMANCE

We have compared the outcomes achieved under programme 5 with the traditional approach under programme 3<sup>34</sup>. Programme 5 above generated the following balance of EEM outcomes over the 10 year portfolio:

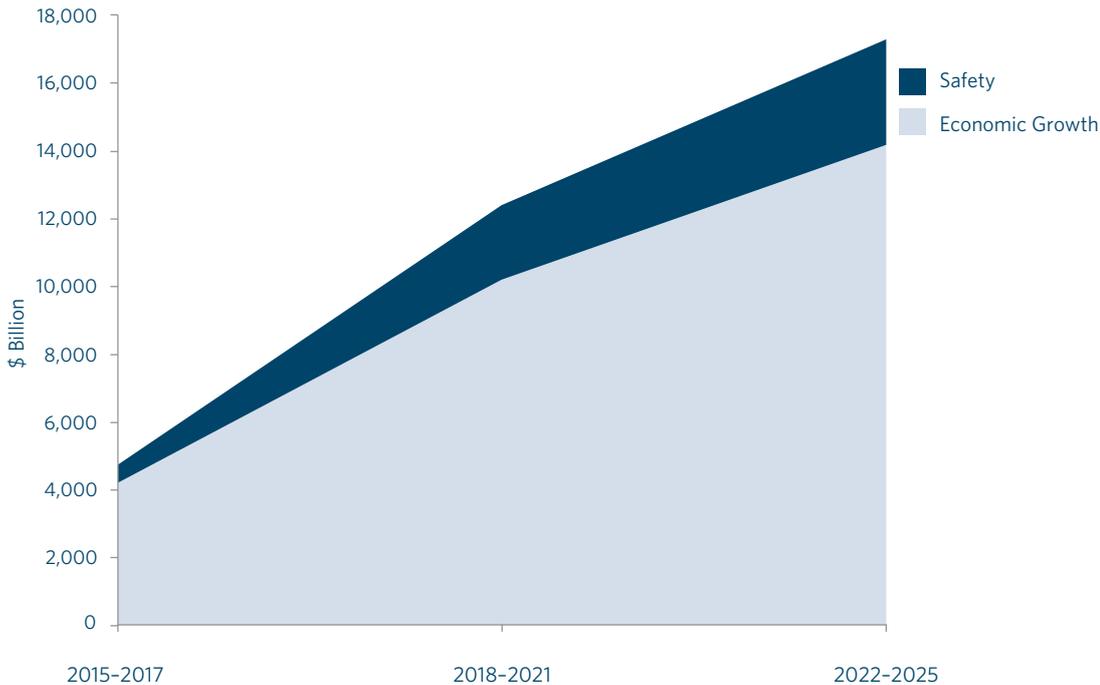
### DISTRIBUTION OF MONETARY BENEFITS FROM PROGRAMME 5 (\$BN)



34. It should be noted that in making this comparison we have not refined the activity economic assessments to reflect different opening years associated with the two programme options.

This assessment of the EEM benefits over the 10 years masks the emphasis over the three NLTP periods that make up the 10 years. Programme 5 would place an emphasis on safety over the first three years of the 10 year programme. That is, the proposed additional activities over and above the committed and implied committed activities for 2015-2018, would have a safety outcome emphasis. This is illustrated by the graph below that shows the gradual increase in monetised safety benefits over the 10 year period as the safety activities started in the first three years have an impact on outcomes.

### CUMULATIVE BENEFITS FROM SHAMP (\$BN)



Under programme 3, activities would be prioritised based on their profile. Overall the result for the 10 years turned out to be similar, but the set of feasible activities in the first three to six years would have less of a safety emphasis, and New Zealanders would not benefit from safety returns which are otherwise realised earlier on in the programme under programme 5.



# APPENDIX D

## ASSET LIFECYCLE PLANNING & VALUATION

Detailed lifecycle asset management plans (LAMPs) have been produced to support this plan. The LAMPs provide guidance on how State Highway assets should be maintained and renewed. They document a clear link between One Network Road Classification levels of service, lifecycle management needs and costs as shown in the figure below:

## LIFECYCLE ASSET MANAGEMENT PLAN CONTENT

Section	Questions	Information provided
Asset overview	What is the scale of the assets and what does it cost?	The extent and distribution of the asset type: <ul style="list-style-type: none"> <li>quantities and location</li> <li>valuation</li> <li>current spend</li> <li>current depreciation.</li> </ul>
Operation and maintenance of existing assets		
Condition	What state are the assets in?	<ul style="list-style-type: none"> <li>the performance and condition of the asset type and the distributions of these across the sub-types by area and quantity</li> <li>comparison of current VFM with trend and peers</li> <li>opportunities for effectiveness, efficiency and economy improvements.</li> </ul>
Renewals of existing assets*	What requires the assets to be maintained and replaced?	<ul style="list-style-type: none"> <li>the factors affecting condition and their forecast change</li> <li>the past rate of decay and the forecast future rate of decay given the forecast factors play out.</li> </ul>
	What intervention strategy is used to maintain and renew the infrastructure to keep services going, address risks for the least long term cost?	<ul style="list-style-type: none"> <li>the approach used to trigger maintenance and why, and to trigger renewal (and why)</li> <li>the feedback loop to technical levels of service, or investigatory or trigger levels</li> <li>the uncertainties ahead and how this may affect outcomes.</li> </ul>
Changes in levels of service *	Why have the asset type – what services or levels of service do customers get from it?	<ul style="list-style-type: none"> <li>levels of service provided by this asset type</li> <li>the relationship between customer and technical levels of service, and condition.</li> </ul>
	What programme of works is proposed to implement to ensure service levels are met having applied the intervention strategy?	<ul style="list-style-type: none"> <li>the quantity of reactive, planned and preventive maintenance</li> <li>the quantity of preventive works and planned renewals.</li> </ul>
	What will the programme achieve in terms of the service level provided and the change in asset condition?	<ul style="list-style-type: none"> <li>the forecast gap between expected service levels and targets</li> <li>the change in asset condition forecast and the impact on future work programmes.</li> </ul>
Public health and environmental outcomes*		
Resilience of infrastructure assets*	What are the risks from asset failure?	<ul style="list-style-type: none"> <li>what assets are critical and why they require 'special' treatment</li> <li>what are the risks and how does this affect the work required to deliver services?</li> </ul>
Summary of issues	What could alternative programmes deliver?	<ul style="list-style-type: none"> <li>the quantity of works of each type</li> <li>the expected service levels and condition change</li> <li>costs and risks.</li> </ul>
Summary of expenditure	What are the financial requirements for delivering this programme?	<ul style="list-style-type: none"> <li>revenue and capital requirements</li> <li>related depreciation.</li> </ul>

## ASSET GROUPS AND CLASSES

Separate lifecycle management plans have been produced for each of the asset groups shown below. The plans can be viewed at: <http://hip.nzta.govt.nz/processes/maintain-and-operate/lifecycle-asset-management-plans/>

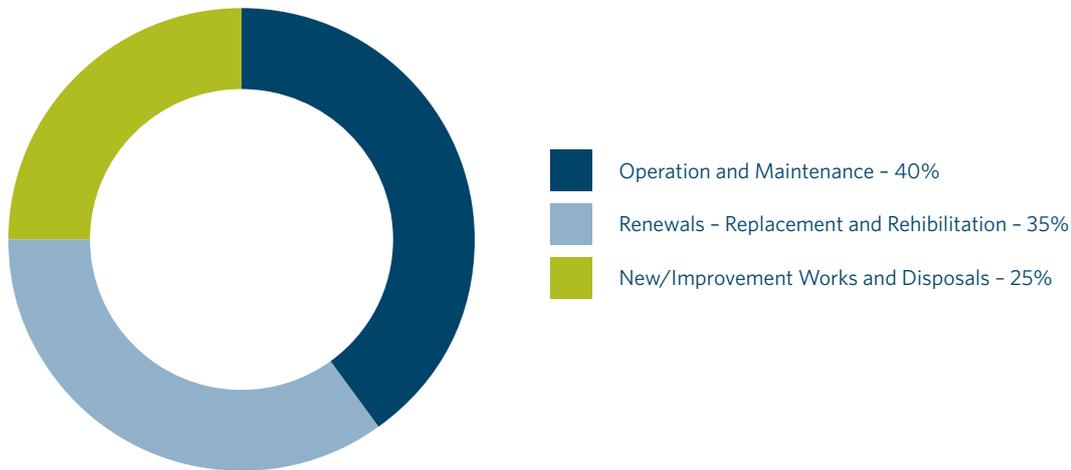
### STATE HIGHWAY ASSET GROUPS

	Asset Groups	Asset Classes
1	Pavement	<ul style="list-style-type: none"> <li>▪ formation</li> <li>▪ road bases</li> <li>▪ surfacing</li> </ul>
2	Drainage	<ul style="list-style-type: none"> <li>▪ subsurface (pits and pipes)</li> <li>▪ surface (kerbs and channels)</li> </ul>
3	Structures	<ul style="list-style-type: none"> <li>▪ bridges</li> <li>▪ bailey bridges</li> <li>▪ major culverts</li> <li>▪ underpasses</li> <li>▪ retaining walls</li> <li>▪ gantries</li> <li>▪ sea and river protection</li> <li>▪ tunnels (excluding M&amp;E)</li> <li>▪ rock fall netting and fords</li> <li>▪ weigh stations</li> </ul>
4	Signs & roadmarking	<ul style="list-style-type: none"> <li>▪ signs</li> <li>▪ visual marking signs</li> <li>▪ marker posts</li> </ul>
5	Traffic guidance structures	<ul style="list-style-type: none"> <li>▪ guardrails</li> <li>▪ barriers</li> <li>▪ traffic islands</li> </ul>
6	Street lighting	<ul style="list-style-type: none"> <li>▪ columns, brackets, luminaires, control equipment</li> </ul>
7	ITS (infrastructure assets)	<ul style="list-style-type: none"> <li>▪ ITS infrastructure:</li> <li>▪ camera</li> <li>▪ detection devices (non camera)</li> <li>▪ electronic barriers</li> <li>▪ electronic signs</li> <li>▪ emergency phone</li> <li>▪ environmental monitoring</li> <li>▪ traffic signals</li> <li>▪ tolling</li> <li>▪ support infrastructure</li> </ul>
		<ul style="list-style-type: none"> <li>▪ tunnel M&amp;E services:</li> <li>▪ fire fighting</li> <li>▪ ventilation</li> <li>▪ lighting</li> </ul>
		<ul style="list-style-type: none"> <li>▪ journey management:</li> <li>▪ traffic operation centres</li> <li>▪ traveller information management</li> <li>▪ real-time journey management</li> </ul>
8	Roadside vegetation management	<ul style="list-style-type: none"> <li>▪ urban and rural roadside vegetation and gardens</li> </ul>
9	Roadside furniture and rest areas	<ul style="list-style-type: none"> <li>▪ seats, tables, bins, rest area assets</li> </ul>
10	Network management	<ul style="list-style-type: none"> <li>▪ network management planning &amp; systems</li> <li>▪ asset management planning &amp; systems</li> </ul>

## EXPENDITURE CATEGORIES

State Highway assets can be categorised into three main expenditure categories, the approximate percentage of expenditure of which is demonstrated in the figure below.

### PERCENTAGE EXPENDITURE FOR EACH LIFECYCLE MANAGEMENT CATEGORY



The expenditure categories are discussed below (not mapped to work categories for Funding Assistance Rates):

### Operations and maintenance

Operation is the active process of utilising the asset which will consume resources such as manpower, energy, chemicals and material. Maintenance is all actions necessary for retaining an asset as near as practicable to its original condition (including repairs) but excluding rehabilitation or renewal. Maintenance slows down deterioration and delays when rehabilitation or replacement is necessary so that the full 'useful life' can be achieved. The different types of maintenance are summarised below.

### MAINTENANCE TYPES

Type	Description
Routine maintenance	Routine maintenance is the regular on-going day-to-day work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again.
Proactive maintenance	Proactive inspection and maintenance works planned to prevent asset failure.
Reactive maintenance	Reactive action to correct asset malfunctions and failures on an as required basis.

## Renewal

This covers the replacement or rehabilitation of assets to restore the asset to its original level of service. The different types of renewal are summarised below.

### TYPES OF RENEWALS

Type	Description
Replacement	Replacement involves renewing an asset by replacing it on a like with like basis. The deteriorated asset is removed and an equivalent asset replaced.
Rehabilitation	Rehabilitation is the process of renewing major elements of the assets by modifying or rejuvenating them so as to render them able to deliver the original level of service.

## New/improvement works or disposals

This covers the creation of new assets or works which upgrade or improve an existing asset beyond its current capacity or performance. The different types of asset development are summarised below:

### ASSET DEVELOPMENT REASONS

Reason	Description
Growth	Any asset development that is required as a result of growth.
Levels of service	Any asset development that is required as a result of a change in service levels.
Legislative	Any asset development out of legislative requirements.
Public health or environmental risk	Any asset development to achieve outcomes for public health or environmental risk.
Resilience	Any asset development to achieve outcomes for resilience against the risks of civil defence emergency events.
Vested	Any asset that is vested to NZ Transport Agency by others or that is vested to others by the Transport Agency.
Disposal	This covers the disposing of assets when they reach the end of their useful life, are no longer viable, fail to deliver the level of service required or become surplus to requirements.
Growth	Any asset development that is required as a result of growth.

For each asset group and class, the 2013 replacement cost, depreciated replacement cost and annual depreciation are set out in the figure below.

## STATE HIGHWAY ASSET CLASSES AND 2013 VALUATIONS

Asset Group	Asset Class	Replacement Cost (\$M)	Depreciated Replacement Cost (\$M)	Annual Depreciation (\$M)
1 Pavement	<ul style="list-style-type: none"> <li>Formation</li> <li>Road bases</li> <li>Surfacing</li> </ul>	\$17,407	\$16,402	\$40
2 Drainage	<ul style="list-style-type: none"> <li>Subsurface (pits and pipes)</li> <li>Surface (kerbs and channels)</li> </ul>	\$2,275	\$1,002	\$31
3 Structures	<ul style="list-style-type: none"> <li>Bridges</li> <li>Bailey bridges</li> <li>Major culverts</li> <li>Underpasses</li> <li>Retaining walls</li> <li>Gantries</li> <li>Sea and river protection</li> <li>Tunnels (excluding M&amp;E)</li> <li>Rock fall netting and fords</li> <li>Weigh stations</li> </ul>	\$7,969	\$4,598	\$390
4 Signs and roadmarking	<ul style="list-style-type: none"> <li>Signs</li> <li>Visual marking signs</li> <li>Marker posts</li> </ul>	\$232	\$116	\$14
5 Traffic guidance systems	<ul style="list-style-type: none"> <li>Guardrails</li> <li>Barriers</li> <li>Traffic Islands</li> </ul>	\$617	\$309	\$27
6 Street lighting, roadside vegetation and furniture	<ul style="list-style-type: none"> <li>Poles (columns), brackets, luminaries, control equipment</li> <li>Urban and rural roadside vegetation and gardens</li> <li>Seats, tables, bins, rest area assets</li> </ul>	\$667	\$334	\$31
7 ITS (infrastructure assets)	<ul style="list-style-type: none"> <li>ITS infrastructure</li> <li>Tunnel M&amp;E services</li> <li>Journey management</li> </ul>	\$281	\$193	\$12
<b>Total</b>		<b>\$29,448</b>	<b>\$22,954</b>	<b>\$545</b>

## ASSET VALUATION

A valuation of the State Highway is incorporated in the NZ Transport Agency annual reports and statement of performance expectations which can be found at: <http://www.nzta.govt.nz/about/who-and-what/what-we-do/measuring-performance.html>

Further asset valuation information can be found in the lifecycle asset management plans at: <http://hip.nzta.govt.nz/processes/maintain-and-operate/lifecycle-asset-management-plans/>

