

# **INFRASTRUCTURE** **EVIDENCE BASE** **2015 Refresh**

**Transport Sector**

**March 2015**



NATIONAL INFRASTRUCTURE UNIT

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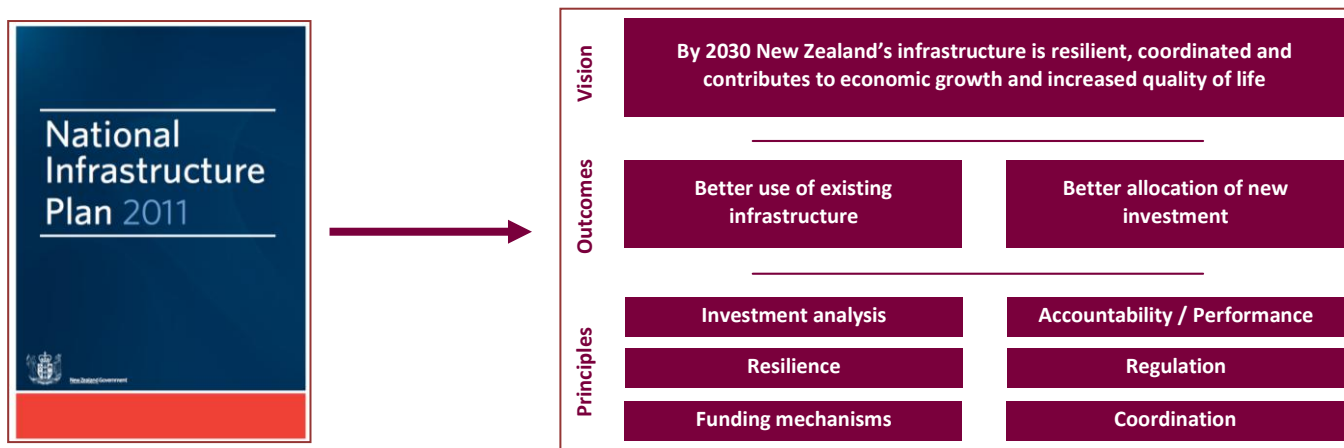
# EVIDENCE BASE

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## Introduction

Infrastructure is a crucial part of the New Zealand economy. It supports the day to day activities of New Zealanders, helps to improve living standards for all, and can be a driver for economic growth. As such, it is vital it is managed as well as possible. The National Infrastructure Plan 2011 sets out a long term vision for New Zealand's infrastructure and seeks to provide a common direction for how we plan, fund, build and use all economic and social infrastructure.



A significant constraint identified in the National Infrastructure Plan 2011 was the lack of information about asset condition and performance to allow more informed decisions and efficient and effective investment. A key part of the National Infrastructure Unit's (NIU) work programme over the past three years has been to develop a more robust Evidence Base to address this constraint. In particular, publishing the Evidence Base enables a discussion identifying the significant issues for New Zealand infrastructure and options to respond to these. Discussion of these will underpin the NIU's work programme, through to the release of the next National Infrastructure Plan in 2015.

This document provides an update to the 2014 Evidence Base, providing the latest in time series data where appropriate, and reiterating and evolving key messages where required. It draws together work on performance indicators (the current state of the infrastructure), scenario and trend analysis (the future pressures or drivers of demand), the national resilience picture, and the second 10-year Capital Intentions Plan (what is known about indicative future spend). As before, it has been compiled in collaboration with sector representatives and we believe is an accurate representation of the current state of New Zealand's infrastructure.

The timing of this iteration of the Evidence Base is aligned to provide a common understanding of the issues faced by New Zealand's infrastructure, to act as a strong platform for the next National Infrastructure Plan, due to be released later in 2015.

This document forms the substantive component of the Evidence Base for the transport sector, defined by NIU as road, rail, air (airports and air traffic infrastructure) and sea (ports). It follows from the overview document, which can be found on the NIU's [website](http://www.infrastructure.govt.nz). It draws information from the performance indicators, scenario and trend analysis, and resilience assessment.

Where data has been provided, this is publicly available information, and has been provided with permission of the information owner.



# EVIDENCE BASE 2015: TRANSPORT

## Overview messages

Transport asset quality and management practices are adequate across all modes. However, there is limited resilience and redundancy in some key assets and bottlenecks across roads, rail and ports. There are trade-offs, however, between addressing these areas and maximising existing network performance. We are interested in working with the sector to address these areas.

Investment funding varies across modes and consists of a mixture of Crown, local government, regional government, and private funding. In recent years, the Government has increased investment in key road and rail freight corridors to improve the flow of imports and exports across the country, and has targeted increased investment towards improvements in State Highways, local roads, cycleways and public transport.

The challenge now is to consolidate gains from completed and planned investment, across all modes and to maximise existing network performance. In Auckland, and elsewhere, investment analysis and the timing and phasing of project implementation will be critical to achieving network benefits. It will also be important to review how we consider and measure network performance.

It will be essential to balance the level of investment in new infrastructure and intelligent transport systems with spending on maintenance to achieve optimal performance of the transport network. Investment in safety initiatives, particularly in the road sector, is achieving positive results.

Another challenge will be to optimise the performance of the freight network, and to continue achieving productivity gains in the freight transport sector. This will involve ensuring that our freight transport and distribution assets are in the right place and support increasing international connectivity and a transition to an export driven economy. We would encourage more comprehensive analysis of the relative contribution of road and rail in managing current and future freight demand to help inform decisions on the appropriate level of investment in each.

Key parts of the network are congested during peak periods, mainly in the larger urban centres. Our cities show similar levels of urban roading congestion to cities in Australia, despite having lower populations. We consider that opportunities exist to improve asset performance, in the first instance by managing demand on the network to better utilise existing infrastructure, and through better allocation of investment to projects which generate the most benefits, by value of investment. Land use integration could be improved, with transport systems needing to be given fuller consideration when incorporated into urban design and planning regimes.

Demand forecasting across modes is challenging and a robust and consistent approach needs to be developed. Historic assumptions about future demand and future revenue growth from fuel taxes are being re-evaluated in light of uncertainty resulting from international trends such as youth driving less, variable fuel prices, e-commerce, increasing fuel efficiency and alternate fuels. The use of new technologies will continue to improve the use and management of our transport infrastructure. We encourage further analysis of the potential impact on demand and revenue from these longer term trends as well as consideration of alternative means to deliver improved network performance at less cost.

## Context

Transport is important to all New Zealanders. Strong links between road, rail, shipping, and aviation are vital for moving people and freight around the country and overseas and support our country's social and economic performance, and contribute to higher living standards.

The transport sector employs more than 85,000 people and accounts for about 5.2 percent of New Zealand's gross domestic product<sup>1</sup>. The transport sector also has strategically important assets of high value, such as the State Highway network, local roads, ports, airports and the rail network. The sector is extensively regulated by government to: protect and maintain the infrastructure; ensure the modes can be integrated, maintain safety; and meet international standards.



<sup>1</sup> Ministry of Transport, Statement of Corporate Intent 2014-18



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The strategic focus for transport is to ensure a well functioning network for the safe and efficient movement of people and freight, in order to maximise the economic contribution of investment in the sector.

There are many interdependencies within the transport sector and with other sectors. Examples of these include the inter-modal nature of freight transport and the reliance on the transport network to deliver fuel and maintenance materials for other sectors (i.e. construction and energy).

## What do we have?

Overall, New Zealand has a mature transport system with sufficient intra-urban and inter-urban connectivity which enables people and goods to get to their destinations.

### Road

New Zealand has approximately 63,000 kilometres of sealed and 32,000 kilometres of unsealed roads, owned by both local and central government.

The State Highway network links New Zealand's town and cities and provides access to key transport hubs such as ports and airports. It is managed by the New Zealand Transport Agency (NZTA) and consists of 11,000 kilometres of State Highways and over 4,000 bridges. The current State Highway network is valued at approximately \$29.2 billion<sup>2</sup>.

The local roading network consists of 66,000 kilometres of rural routes and 18,000 kilometres of urban routes. This network is valued at \$50 billion, excluding land values (based on an estimate by the Office of the Auditor General).

While the State Highway network accounts for only 11.6 percent of the total road network, almost half of all kilometres New Zealanders drive each year are on State Highways, signifying their contribution to the economy by enabling the mobility of freight and people.<sup>3</sup>

Bus public transport and cycling infrastructure also share the roading network. The government is investing \$100 million in urban cycleway networks and \$50 million in the New Zealand Cycle Trail in addition to investment allocated from local government and the National Land Transport Fund.

### Rail

New Zealand has approximately 4,000 kilometres of rail track, 1,656 bridges, and 1,400 public road level crossings. KiwiRail owns 189 mainline locomotives and 4,820 freight



<sup>2</sup> NZTA Annual Report 2013/14

<sup>3</sup> Data about travel on the roading network can be found here <http://www.nzta.govt.nz/planning/data/networks.html>

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wagons. The rail network and operations are valued at \$922 million, excluding the land beneath the rails which is valued at \$3.2 billion.<sup>4</sup>

KiwiRail operates the rail network and freight fleet, while local governments contract metro services and own the metro fleet. KiwiRail also operates passenger services through KiwiRail Scenic Journeys.

## Air

Air transport infrastructure comprises airports, aeroplanes, the air navigation system, and functions that support the movement of people and freight. There is an strong interdependency between travel and trade outcomes and air capacity and connectivity.

Airports vary considerably in scale and utilisation. New Zealand has eight civil airports designated by the Customs service to receive overseas flights, five of which have scheduled international services<sup>5</sup>. 26 airports receive scheduled domestic services from operators of aircraft of 19 seats or more.<sup>6</sup> Most airports are owned by local government, while some have part ownership by central government, private parties or shareholders (notably the largest airport, in Auckland). Airways New Zealand, a state-owned enterprise, provides air navigational infrastructure.

Aviation capacity is provided by the 26 domestic and 20 international passenger carriers which operate in New Zealand. This infrastructure is for the most part privately provided. Air New Zealand carries approximately 80 percent of domestic traffic and 40 percent of international traffic. About 95.6 percent of passenger seat hours are flown on large planes (greater than 30 seats) operated by airlines.<sup>7</sup> Total air capacity of 13.6 million domestic seats and 6.6 million inbound international seats were available in 2013.<sup>8</sup>

Air freight is predominantly low volume, high value and perishable product. Air freight carried 0.4 percent of New Zealand's exports by volume, and 12.9 percent by value in the year to December 2014. It also carried 0.5 percent of imports by volume and 19.8 percent of imports by value in the same year<sup>9</sup>.

## Sea

New Zealand has 16 ports servicing both international and domestic movements. Many are owned by local government, while some ports have part private ownership.

In total 37.7 million tonnes were exported from New Zealand by sea in the year to December 2014. By volume, 68.9 percent was bulk exports, and 31.1 percent was containerised. The value of sea exports was \$39.5 billion, in value terms, 80.2 percent was containerised and 19.8 percent was bulk export. 21.3 million tonnes were imported by sea in the year to December 2014. By value, imports by sea were worth \$48.2 billion.

There were 2.67 million shipping container movements in New Zealand during the year to December 2014. 1.94 million were made with full containers and 730,000 with empty containers. The median size of international container ships visiting New Zealand was approximately 2,800 TEU (twenty-foot equivalent units).

There were 230,000 domestic coastal containers carried in 2014, excluding import and export transshipments.<sup>10</sup>

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<sup>4</sup> KiwiRail Annual Report 2014 and NZRC Annual Report 2014, [www.kiwirail.co.nz](http://www.kiwirail.co.nz)

<sup>5</sup> A 6<sup>th</sup> International air service, from Rotorua to Sydney, ceases in April 2015.

<sup>6</sup> Note that only 5 airports currently receive international flights – Auckland, Christchurch (long-haul), Wellington, Queenstown and Dunedin. Air New Zealand has announced consolidation of services and will fly regular services to 26 domestic airports.

<sup>7</sup> Aviation Safety Summary April-June 2013, Civil Aviation Authority, [www.caa.govt.nz](http://www.caa.govt.nz).

<sup>8</sup> Tourism Industry Association, Tourism 2025 Analysis. 2013 is an estimate as at July 2013.

<sup>9 & 11</sup> Ministry of Transport, Freight Information Gathering System (FIGS) Report, December 2014

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A fleet of two rail-enabled ferries and three roll-on roll-off vehicle ferries link the North and South Islands. KiwiRail has signalled that it will move its ferry operations to road bridging in the near future and has made a decision to replace one rail enabled ferry with a roll-on roll-off vehicle ferry. Urban passenger ferries operate in the major coastal centres.

## Is it where it needs to be?

### *Road*

As noted above, the State Highway network links New Zealand's towns and cities and provides access to key transport hubs such as ports and airports. The local roading network meets local needs and often serves as the 'last mile' of freight and light vehicle journeys. Information on whether roads (built and maintained to the required specification for current and future demand) are in the right place is not readily available; however, a national road classification system is being implemented by the NZTA and local government which will improve the ability to define levels of service of roads appropriate to their use.

The NZTA and local government are also opening up routes for high productivity motor vehicles (HPMVs). The Agency's analysis, together with feedback from freight planning work, has shown that using these vehicles will provide significant long-term safety and productivity benefits and can be achieved relatively quickly and with modest investment in infrastructure and new vehicles, relative to the benefits. HPMVs will undertake 10-20 percent less travel to move the same amount of freight as standard trucks. This reduction in travel offers significant commercial benefits, such as reduced vehicle operating costs, driver hours and fuel.

### *Rail*

The maximum extent (5,656 kilometres) of the rail network was reached in 1953. Since that time, the network has evolved to link New Zealand's main industrial and agricultural centres and ports. As part of its commercial strategy, KiwiRail is identifying which parts of the existing network will remain viable in the longer term. As part of the process, to ensure resources are deployed to the most utilised parts of the network, KiwiRail has recently mothballed the Stratford-Ohakura and Napier-Gisborne lines and is investigating the viability of the North Auckland Line.

### *Air*

The Ministry of Transport estimates that 94 percent of people live within 50 kilometres of an airport with scheduled services. If the Air New Zealand services to Kaitiaki, Whakatane and Westport are not replaced by other operators this could bring the numbers down to 93 percent. In some instances New Zealanders might prefer to have more proximate direct connections to international or regional destinations. It falls to the airlines as the primary capacity providers to decide where the business case for direct services are most viable.

In the year to June 2013, 81 percent of export air freight and 92 percent of imports by volume was handled by Auckland Airport. Christchurch Airport was the second largest freight handling airport.<sup>11</sup>

### *Sea*

Ports are spread across the country with each port serving a hinterland (which requires effective road and rail connections) with many ports competing with each other for trade. The question of which ports the country chooses to operate is at the discretion of individual ports and international shipping companies.

Ports also serve the growing New Zealand cruise market. The number of cruise ships visiting New Zealand has grown from 96 in 2008 to a forecast of 124 in 2015. Over the same period, days in port have increased from 491 to 712 days, and passenger numbers have

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<sup>11</sup> Ministry of Transport, Freight Information Gathering System (FIGS) Report, June 2013.

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increased from 119,000 to 206,000. The cruise industry has an estimated value add of \$420 million to the economy.<sup>12</sup> The increased frequency of visits and increased size of cruise ships may require ports to invest in infrastructure to support the industry.

In New Zealand international vessels are tending to call at fewer ports to gain better asset utilisation. This trend places additional demands on the domestic transport system as freight has to be moved longer distances by road, rail or coastal shipping. The development of Inland Ports and feeder hub ports is a response to this trend and is a means of aggregating cargo to create the scale required to deliver a cost effective transport solution which has the potential to minimise the cost of hubbing. It is likely that more Inland Ports will develop over time to ensure that hinterlands retain access to ports selected for hubbing.

## What quality is it?

The World Economic Forum Global Competitiveness report 2014/15 also shows a small increase in the quality of New Zealand's overall infrastructure (including sectors other than transport) since the previous report in 2013/14. The infrastructure ranking used by the Forum combines a number of survey based elements with several data-based measures. It should also be noted that New Zealand's overall competitiveness ranking was reduced by a perceived constraint from inadequate supply of infrastructure (particularly road and rail), where New Zealand is rated as below the peer group mean. New Zealand is ranked 17th for overall competitiveness out of the 144 countries assessed, an improvement of one place since 2013/14.<sup>13</sup> The Global Competitiveness Report is a useful tool for benchmarking performance against other countries, but the limitations of the survey based approach should also be recognised.

**World Economic Forum Global Competitiveness Report 2014/15**

TYPE	SCORE 2012/13(MAX 7)	SCORE 2013/14 (MAX 7)	SCORE 2014/15 (MAX 7)	GLOBAL RANK 2012/13	GLOBAL RANK 2013/14	GLOBAL RANK 2014/15
Quality of Roads	4.9	5.0	4.9	41	37	35
Quality of Railways	3.6	3.7	3.7	41	39	39
Quality of port infrastructure	5.5	5.5	5.8	22	19	11
Quality of air transport infrastructure	6.2	6.0	5.9	12	17	14
<b>Overall Infrastructure</b>	<b>4.9</b>	<b>5.1</b>	<b>5.1</b>	<b>47</b>	<b>43</b>	<b>32</b>
<b>Overall Competitiveness</b>	<b>5.1</b>	<b>5.1</b>	<b>5.2</b>	<b>23</b>	<b>18</b>	<b>17</b>

Source: World Economic Forum

<sup>12</sup> Information supplied directly by Cruise New Zealand, February 2015.

<sup>13</sup> <http://www.weforum.org/reports/global-competitiveness-report-2014-2015>



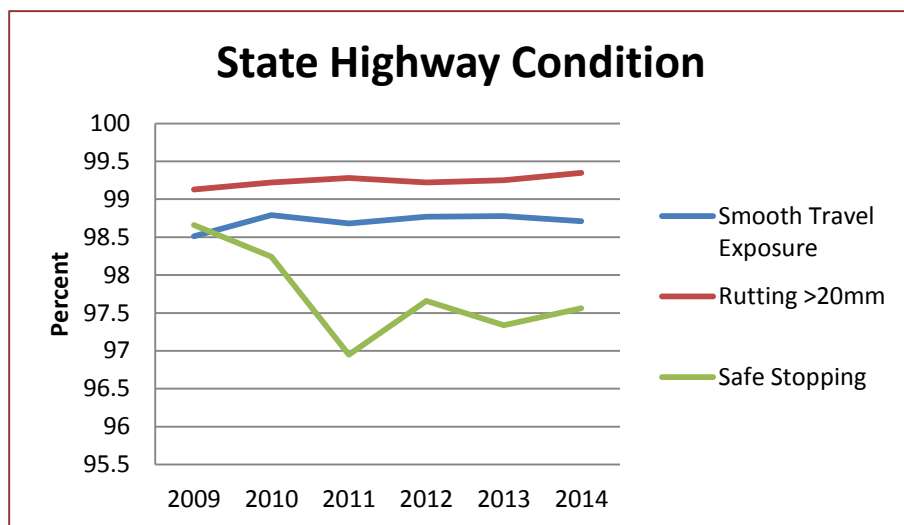
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## Roads<sup>14</sup>

### State Highway Network

The condition of the roads is assessed by the NZTA through a number of measures:

- ▶ Smooth ride: the percentage of travel on the network that is made on a surface smoother than a defined roughness standard.
- ▶ Rutting:<sup>15</sup> the proportion of rutting over the network that is deeper than 20mm.
- ▶ Skid Resistance: the percentage of travel on the network that is on a surface above a specified skid threshold based upon meeting surface texture standards.



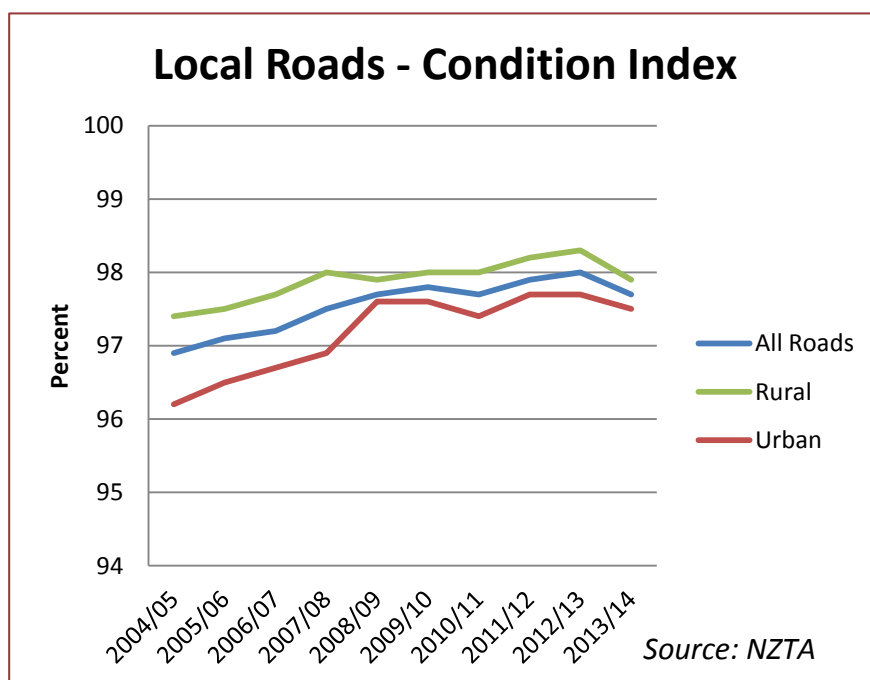
Source: NZTA

Most travel in New Zealand is made on surfaces that have a smooth surface and meet skid resistance standards. The level of rutting is one of the key indicators of the health of the underlying pavement and can reduce skid resistance. Over the past five years there has been a decrease of around 10 percent in the amount of rutting that exceeds the 20mm depth threshold.

### Local Roads

Information available on the condition of local roads shows that the condition and integrity of local roads has remained fairly constant over the period 2008/09 to 2013/14. This information is derived using a different method to the State Highway condition information, and therefore cannot be directly compared. We expect that the One Network Classification should assist in changing this to a functional approach to road condition (rather than reported by ownership status).

The One Network Road Classification (ONRC) involves categorising roads based on the functions they perform as part of an integrated national network. The classification will help local government and the Transport Agency to plan, invest in, maintain and operate the road network in a more strategic, consistent and affordable way throughout the country.<sup>16</sup>



Source: NZTA

<sup>14</sup> All information used in graphs in this section sourced from the NZTA. Note also that these are the observed measures according to type of road, not classification which is a finer level of disaggregation.

<sup>15</sup> Long shallow channels generally found in wheel paths.

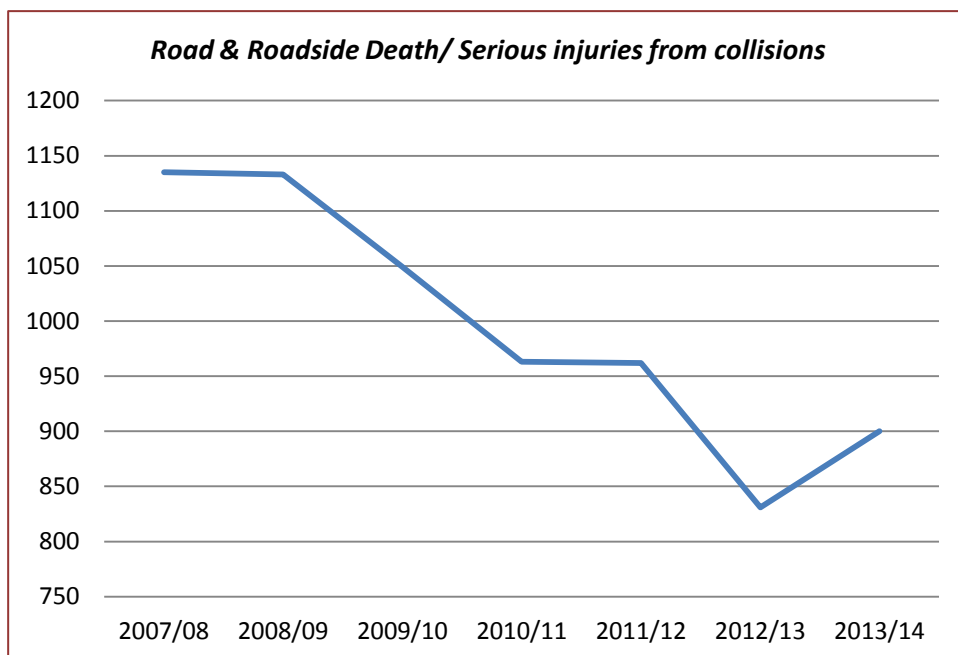
<sup>16</sup> <http://www.nzta.govt.nz/projects/road-efficiency-group/onrc.html>

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## Road Safety

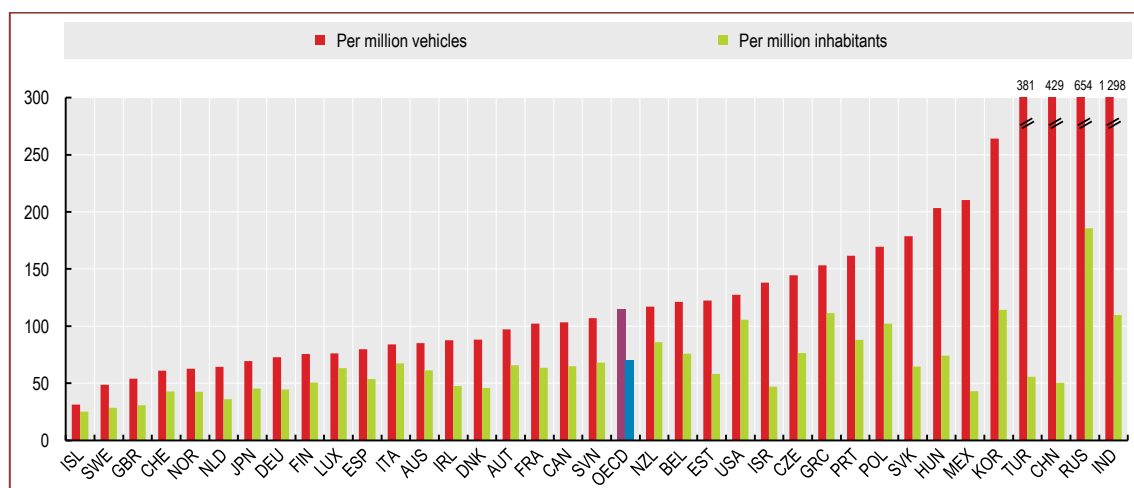
The level of fatalities or serious injuries in crashes provides a measure of how safe the road system is. While there are significant differences between regions in the levels of fatalities and deaths, overall there has been a declining trend over the past 10 years.

Management of the road network plays a significant part in road safety but it is not the only contributor to lower deaths and injuries. Compared globally, New Zealand ranks slightly above the OECD average for road fatalities per million vehicles and per million inhabitants.<sup>17</sup> The Safer Journeys strategy launched by the Government in 2010 focuses on creating a road system that is increasingly free of death and serious injury by creating safer roads and roadsides, safer speeds, safer vehicles and safer road use.



Source: NZTA

## Road Fatalities (2010 or latest available year)



Source: OECD

## Rail

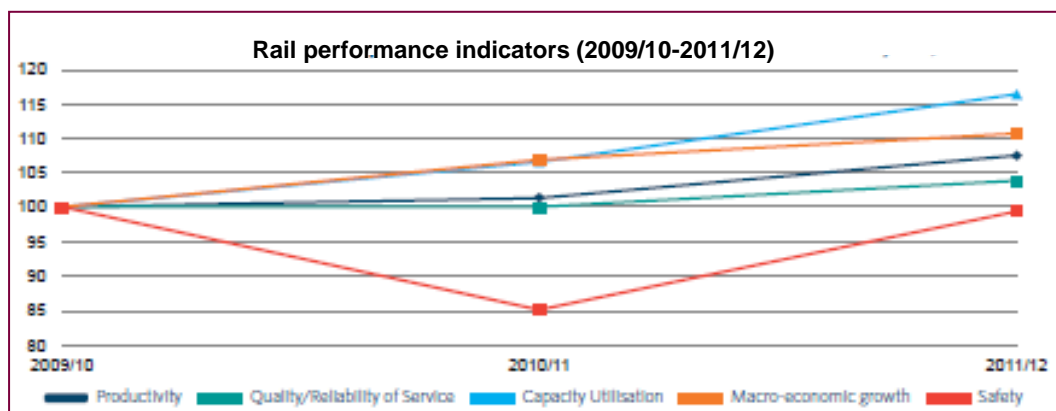
KiwiRail shows better than target results for delays to freight services, and for reducing shunting derailments as a result of infrastructure defects (an improvement of 30 percent between 2009 and 2012), although the Annual Safety Performance Report 2011/12<sup>18</sup> does note a small increase in overall shunting derailments for that year compared to the previous year. The same is true for

<sup>17</sup> OECD Factbook 2013: Economic, Environmental and Social Statistics, [www.oecd-ilibrary.org](http://www.oecd-ilibrary.org)

<sup>18</sup> [www.kiwirail.co.nz](http://www.kiwirail.co.nz)

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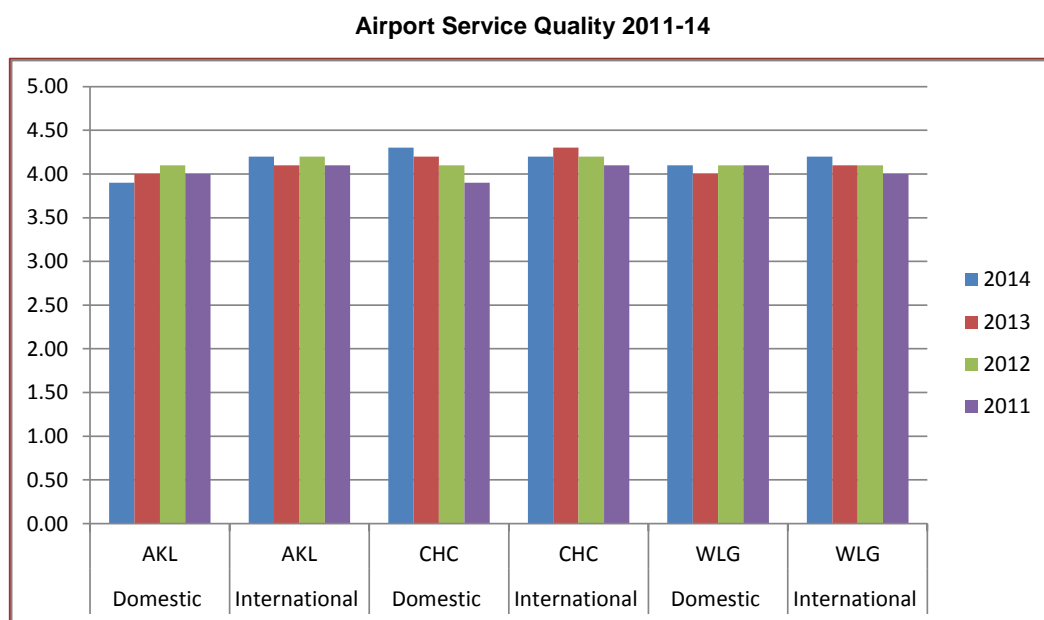
running derailments, although again these have decreased significantly over the longer period. Of the 26 running derailments in 2011/12, 15 were caused by track faults or rail vehicle defects.



Source: KiwiRail Annual Reports, Statistics New Zealand

## Air

There is a lack of published information on the condition of assets across all airports, although a range of metrics is reported annually for the three airports which fall under the Commerce Commission disclosure regime (Auckland, Wellington, and Christchurch) showing passenger satisfaction and reliability of assets. Auckland, Christchurch and Wellington Airport undertake an international "Airport Service Quality" survey with passengers on a quarterly basis, measuring satisfaction across a range of areas for domestic and international facilities. All three airports are reported by consumers to provide very good terminal facilities<sup>19</sup>.



Source: NZ Airports Association

<sup>19</sup> The five point scale is 1=poor, 2=fair, 3 = good, 4 = very good, 5 = excellent.

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Capacity utilisation and reliability is also reported across a range of airport facilities in Schedules 11 and 12 of the Regulatory Disclosures available on the airports' respective corporate websites. The quality of New Zealand's airport infrastructure was ranked 14th in the world in 2014/15 by the World Economic Forum.<sup>20</sup>

## Sea

Information is not readily available on the asset condition of ports. By volume, 99 percent of all import and export trade is shipped by sea through ports. The quality of New Zealand port infrastructure was ranked 11<sup>th</sup> in the world in 2014/15 by the World Economic Forum.<sup>21</sup>

The container handling statistics collated by the Ministry of Transport for New Zealand measure ship rate, crane rate, and vessel rate. The ship and vessel rate increased, but the crane rate fell in the quarter ending December 2014. The weighted average ship rate increased by 1.8 containers per hour, the average crane rate decreased by 0.6 containers per hour, and the weighted average vessel rate increased by 7.2 containers per labour hour. These statistics compare favourably with ports in Australia.<sup>22</sup>

## What capacity is it at?

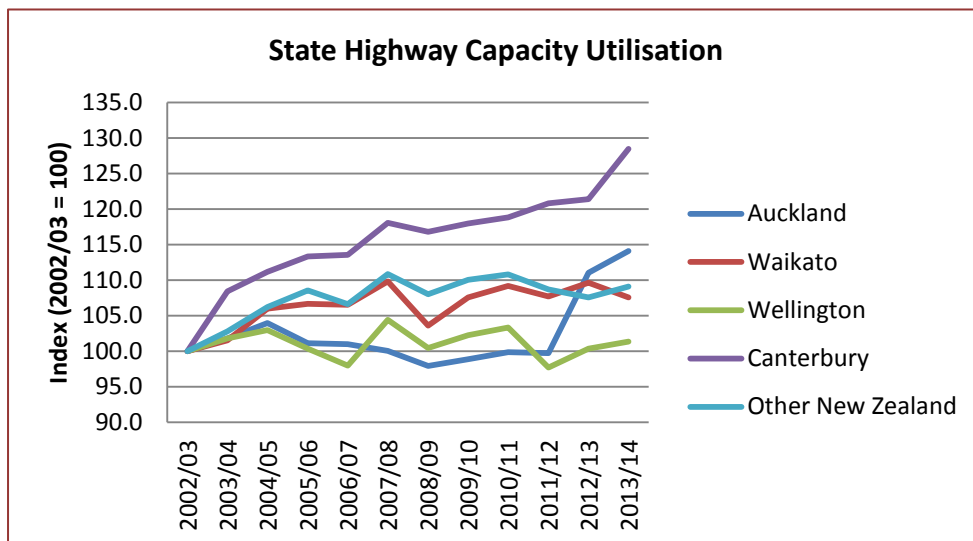
Some capacity issues apply to the transport network. As mentioned in the congestion section below, this is particularly the case for roading in the main urban centres (Auckland, Christchurch, Hamilton and Wellington).

## Road

The NZTA measures capacity, congestion, and morning and afternoon peak road productivity indicators, on both the state highway network and urban roads. All of this can be used to assess the capacity of the network. The sections below generally use State Highway information, as this is currently available. However we recognise that there are many local roads (in major cities) that will exceed the demand of most State Highways and future versions of the evidence base should look to incorporate more detail on local road performance.

### State Highway Capacity Utilisation

Pressure on the road network is obtained by assessing the total area of road in use compared with the level of traffic it has capacity for. The utilisation of this capacity can be measured through the number of vehicle kilometres travelled (VKT) per network kilometre of state highway. The index-based chart to the right shows an increase in utilisation over the past ten years across the State Highway Network, particularly in Auckland and Canterbury over the past two to three years.



Source: NZTA

20, 21 <http://www.weforum.org/reports/global-competitiveness-report-2014-2015>

22 Ministry of Transport, FIGS Report December 2014, [www.transport.govt.nz](http://www.transport.govt.nz)

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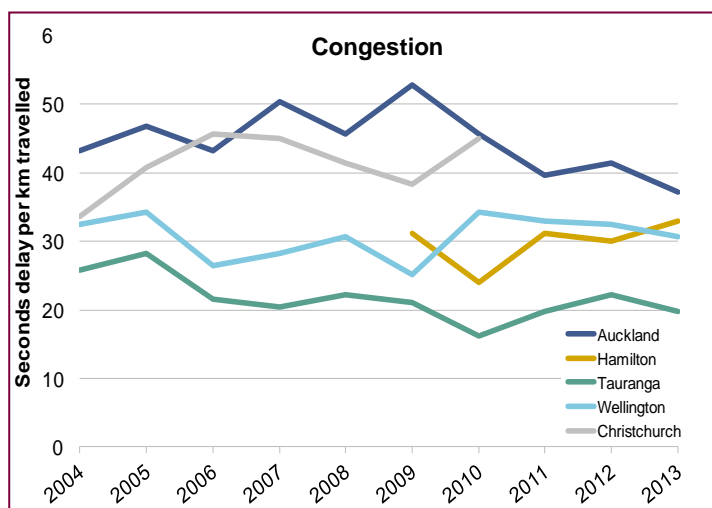
## Congestion

Congestion also provides a reflection of the ability of the road network to meet traffic demand pressures. The NZTA measures congestion levels in the five major metropolitan areas – Auckland, Hamilton, Tauranga, Wellington and Christchurch - based on seconds of delay, per kilometre travelled.<sup>23</sup> These measurements include State Highways and local roads during the morning peak period.

Over the past ten years, there have been fluctuations across the five areas. There has been notable progress in Auckland since 2009, which shows evidence of improvement in travel times during the morning peak period, despite population increases.

New Zealand cities show similar levels of overall congestion as cities in Australia.<sup>24</sup> Sydney is the most congested, with Auckland and Christchurch ranked 2<sup>nd</sup> and 3<sup>rd</sup>. Sydney and Auckland rank 14<sup>th</sup> and 15<sup>th</sup> against all cities globally. We note that the population of Auckland is 1.4 million and Sydney is 4.7 million, and the congestion rating is only slightly higher in Sydney.

Consistent with the congestion data above, the morning peak congestion component of this indicator has generally declined for Auckland, Christchurch and Wellington over the period observed, although overall congestion has increased.



Source: NZTA

## Road Congestion in Australasian Cities 2012-14

CITY	POPULATION (MILLION)	RANKING 2014	CONGESTION PERCENT 2014	CONGESTION PERCENT 2012	PERCENT CHANGE 2012-2014
Sydney	4.7	1	34	33	1
Auckland	1.4	2	29	28	1
Wellington	0.4	3	28	24	3
Melbourne	4.2	4	27	28	-1
Perth	1.9	5	27	30	-3
Christchurch	0.35	6	26	28	-2
Adelaide	1.3	7	25	28	-3
Brisbane	2.2	8	23	25	2
Canberra	0.4	9	17	18	-1

Source: TomTomTraffic Index

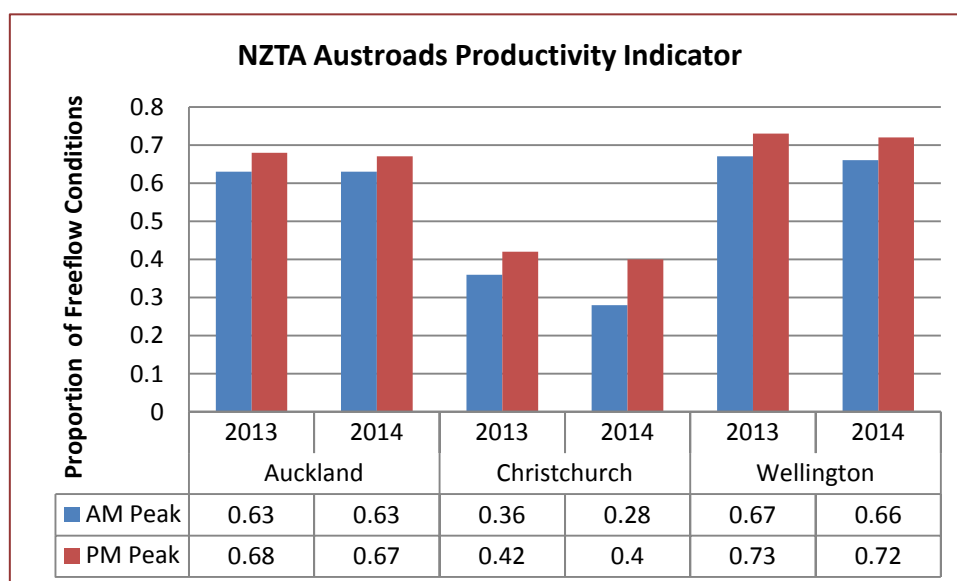
23 This is based on the NZTA annual March surveys of morning peak periods. This measure has not been applied to Christchurch subsequent to the earthquakes.

24 TomTom Traffic Index Q2 2013 – a report comparing congestion levels in over 169 cities across six continents.  
[http://www.tomtom.com/en\\_nz/trafficindex/](http://www.tomtom.com/en_nz/trafficindex/)



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## Road Productivity



Source: NZTA

Roads in Auckland and Wellington operate about a third below free flow conditions, and the network in Christchurch is currently operating at only 28 to 40 percent of free flow conditions in the peak periods.

A multi-faceted approach of demand management of the existing network (including intelligent transport systems), regulatory reforms within the transport-using sector as well as new investment in public transport and road capacity, has been adopted by the NZTA to manage the network in New Zealand.

In general, land use integration could be improved, with transport systems needing to be given fuller consideration when incorporated into urban design and planning regimes.

## Rail

Metro rail passenger boardings per year have increased from 12.2 million passengers to 21.4 million passengers over the period 2000 to 2013.<sup>25</sup> The majority of increased boardings have been in Auckland, reflecting the significant metro rail investment by the Government and resulting service improvements and capacity.

As shown in the rail section above, capacity utilisation on the rail freight network has improved by 15 index points since 2009/10.



Source: Ministry of Transport

<sup>25</sup> Ministry of Transport, Transport Monitoring Indicator Framework, [www.transport.govt.nz](http://www.transport.govt.nz)

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## Air

A process of independent 'slot scheduling' applies to international airline arrivals and departures at Auckland, Wellington and Christchurch Airports, and domestic and international movements at Queenstown Airport. Internationally accepted practices are applied to resolve potential runway and terminal congestion that might otherwise arise at peak times, and to ensure arrivals and departures in New Zealand coordinate with airport slot availability at the overseas origin/destination.

## Freight

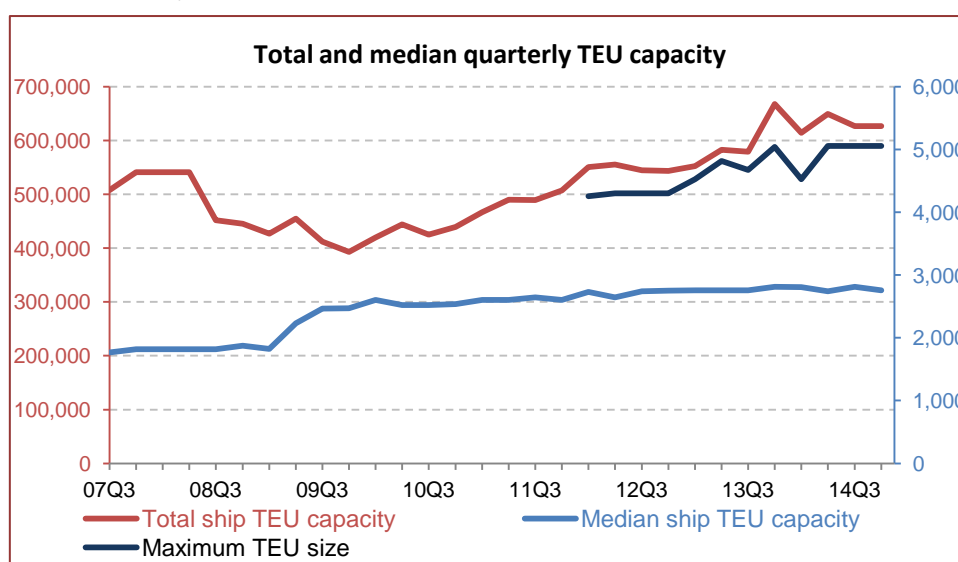
In addition to the data above, the Ministry of Transport conducted a study in 2014 into freight demand; "The National Freight Demand Study". For the 30 years from 2012 freight tonnes are expected to increase by 58 percent and freight tonne-kilometres are expected to increase by 48 percent. In order to lead a transition to an export lead economy, the transport sector will need to respond to the challenge of increasing domestic and export volumes if the current range of export freight products remains the same. A change in the mix of export freight products may be required to achieve this. For example, in the year to December 2014, forestry products made up about 58 percent of New Zealand's sea exports by volume and only 11 percent of sea exports by value. The export value of logs was about \$129 per tonne, processed timber \$752 per tonne and pulp and paper product \$445 per tonne. By comparison, the average value per tonne of export air freight was \$59,601 in the year to June 2013.

The NZTA is coordinating a series of 'Freight Stories', bringing together government, regional and private interests, to identify opportunities to improve the performance of the freight network (road, rail, air and sea).<sup>26</sup>

Current policy settings allow the market to decide what the best combination of ports and airports is for New Zealand. Improving the evidence base will help to inform whether these policy settings are appropriate.

Market decisions on which ports and airports to use (particularly ports) have flow on implications for road and rail network requirements. This may be especially so if bigger container ships (i.e. 6000 container capacity plus) begin to service the New Zealand market, with corresponding demand for more capacity on the road and rail systems connecting the ports.

The graph below shows total and median capacity of container ships visiting New Zealand between 2007 and 2014. Following a decline in total capacity after the Global Financial Crisis in 2008, total quarterly container vessel capacity visiting New Zealand has recovered to more than 600,000 twenty-foot equivalent containers (TEU).



Source: Ministry of Transport

<sup>26</sup> <http://www.nzta.govt.nz/planning/process/freight.html>

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The median capacity (indicating size) of ships has grown to about 2,800 TEU, with the frequency of visits by vessels over 4,000 TEU increasing. At present the largest container ships visiting New Zealand on a regular basis have capacity of about 4,500 TEU, about 41 percent of containers are now carried on ships greater than 4,000 TEU<sup>27</sup>. By comparison, the latest generation container ships running on key trade routes between Asia, North America and Europe have capacities of up to 20,000 TEU.

However, the largest containers ships visiting New Zealand in 2014 had increased to up to 5,000 TEU. This size of vessel is close to the limit of existing port capacity in New Zealand and, in general, international liner companies are increasing the size of vessels coming to New Zealand. Port capacity is driven by a combination of factors including shipping channel depth, the size, type and number of land-side cranes, port land area, and the capacity of land-side transport links. Port capacity will need to adapt to handle these larger vessels and this may have flow on impact on the land-side infrastructure and transport connections that could need to be addressed.

Finally, discussions with stakeholders have identified a number of specific challenges in managing New Zealand's freight task:

- ▶ Freight routes in South Auckland – these issues are being investigated as part of the East West Connections project.<sup>28</sup>
- ▶ Availability of high quality rail rolling stock – this is being addressed through investment in KiwiRail<sup>29</sup>.
- ▶ Conflict of freight and commuter rail – this is a potential issue in Auckland and Wellington as converging commuter and freight routes become more congested.
- ▶ Availability of cargo space for air freight – this is interdependent with growth in air passenger services (as some space on these services is allocated to cargo).
- ▶ Freight routes connecting major ports and inland ports in urban centres – a key challenge for the sector, particularly as freight volumes grow and in the event that bigger ships come to New Zealand.
- ▶ Availability of land for marshalling and storage space at ports – some major ports are currently constrained by the area available to them resulting in the implementation of demand management practices, the development of inland port options and/or area expansion through land reclamation.
- ▶ Space for high seasonal freight volumes on domestic and international shipping routes – due to the seasonal nature of many of New Zealand's key agricultural exports, export capacity is at a premium in the productive season. Smoothing the availability of export services to meet demand is a continuing challenge for the sector.<sup>30</sup>

## How resilient is it?

Resilience is a key issue for the transport network. Disruption in one area of the network (e.g. Manawatu Gorge or inter-island ferries) can have significant knock-on effects further along the network and create impediments to freight and population mobility with economic and social consequences.

A network wide view that considers the most efficient and effective means of providing an appropriate level of resilience needs to be developed. The Ministry of Transport and NZTA have a number of initiatives underway to develop a resilience evidence base. The NZTA has undertaken a preliminary review of the road transport sector and have published a research project entitled "Measuring the Resilience of Land Transport".<sup>31</sup>

In addition, KiwiRail, NZTA and Transpower have developed a Joint Resiliency Operating Framework and are continuing to apply this.

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<sup>27</sup>, <sup>30</sup> Ministry of Transport, FIGS Report December 2014, [www.transport.govt.nz](http://www.transport.govt.nz)

<sup>28</sup> [www.aucklandtransport.govt.nz/improving-transport/east-west-link/Pages/default.aspx](http://www.aucklandtransport.govt.nz/improving-transport/east-west-link/Pages/default.aspx)

<sup>29</sup> <http://www.kiwirail.co.nz/media/publications.html>

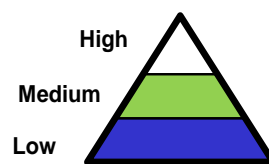
<sup>31</sup> <http://nzta.govt.nz/resources/research/reports/546/index.html>

# EVIDENCE BASE 2015: TRANSPORT

In the table to the right resilience expectations from a national perspective are identified as low medium or high. The table was compiled by the National Infrastructure Unit following sector consultation. When making these judgements a wide range of aspects require consideration. To demonstrate; under Local Roads “Strategic freight routes” are those routes generally to and from airports and ports generally with a very high economic value associated with them and generally carrying freight of a time critical nature. Also, generally throughout the country these are identified routes to better manage heavy vehicles particularly through the urban areas with associated safety and urban amenity values. A high level of “Resilience Expectation” is therefore attributed to them. An “Assessed Resilience” of medium reflects the significant vulnerabilities of some of these routes both from limited alternate options and urban pressures, for example. In contrast “Suburban roads” have a low “Resilience Expectation” in part due to the relatively low economic value associated with them and also the generally large number of alternate access options. “Suburban roads” are also a good example of the level of resilience being dependent on your perspective; if you reside on a particular suburban road you are likely to expect a high level of resilience and in many cases this probably exists.

Ports have been the subject of specific attention recognising their critical importance to New Zealand’s productive economy. The University of Auckland and others have been undertaking research considering tsunami vulnerabilities to port network operations and structures. The Port of Lyttelton, and the strategic freight routes servicing it, is a particular case in point as it looks to recover from damage sustained during the earthquake events.

The assessment included here has been created by the National Infrastructure Unit, taking a national level perspective, and thus may differ from other perspectives. Further work is needed to develop this with robust supporting evidence; however, this does provide a starting point for prioritising efforts. Based on this assessment, key areas of attention are; Strategic freight routes, National Roads with no reasonable alternate routes, Rail and Ports.



Key: Levels of Resilience

Transport	Resilience Expectations	Assessed Resilience	Desired Movement
<b>Local Roads</b>			
Suburban	Low	Low	–
Main arterial with alternate	Medium	Medium	–
Main arterial – no alternate	Medium	Medium	–
Strategic freight routes	High	Medium	↑
<b>National Roads</b>			
National with alternate	Medium	Medium	–
National – no alternate	High	Medium	↑
<b>Road/Rail Link Span</b>			
Cook Strait ferries & terminals	Medium	Medium	–
<b>Rail</b>			
Suburban (incl rolling stock)	Medium	Low	↑
National (incl rolling stock)	High	Medium	↑
National Train Control Centre	High	Low	↑
<b>Ports</b>			
Individual Ports	Medium	Medium	–
Ports with specialist facilities	High	Medium	↑
Ports Network	High	Medium	↑
<b>Airports</b>			
Regional airports	Medium	Medium	–
Airways NZ	High	High	–

## What are we investing?

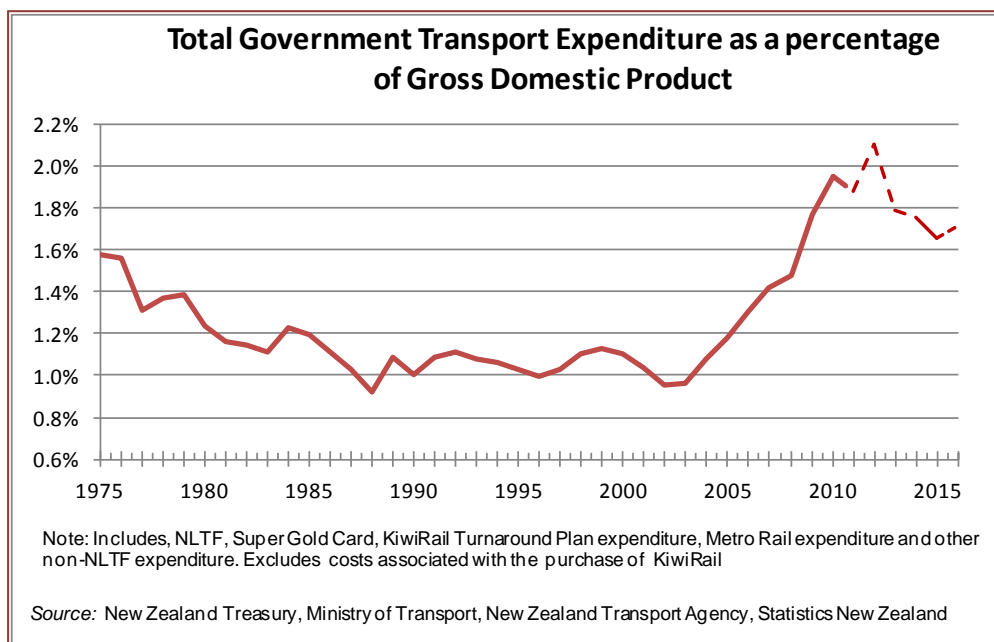
A key principle underlying the funding of transport infrastructure is that the cost of providing the infrastructure should be borne by those that use it as far as possible.

Investment funding varies across modes via a mixture of Crown, local and regional government, and private funding. In recent years, the Government has increased investment in key road and rail freight corridors to improve the flow of imports and exports across the country. It has also increased overall investment in State Highways, local roads, cycleways and public transport.

### Land Transport Investment

The majority of Crown funding for land transport infrastructure investment in roads is hypothecated through Fuel Excise Duty, Road User Charges and Motor Vehicle Registration fees to the National Land Transport Fund (NLTF). The NZTA is charged with assessing which projects should be progressed and allocating funds accordingly. Further Crown funds are appropriated to land transport outside of the NLTF by Cabinet on a case by case basis to meet Government priorities. Ports, airports and the rail freight network operate largely on a commercial basis.

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The 2012-15 National Land Transport Programme represents a \$15.3 billion investment made up of the NLTF (55 percent), subsidised and unsubsidised local government expenditure (30 percent), and direct Crown and other funding (15 percent). Priority is given to activities that advance the strategic direction of the Government Policy Statement on Land Transport – economic growth and productivity, road safety and value for money.

## Investment in Cycling Infrastructure

- In 2014, the Government announced a five year, \$100 million programme of investment in Urban Cycleway infrastructure. Over the last three years the National Land Transport Fund has provided around \$80 million for dedicated walking and cycling facilities, and an additional \$80 million of investment which has delivered significant cycling benefits, including cycle lanes on new highways, road safety initiatives, wider shoulders and better marking on local roads.
- The Government Policy Statement on land transport 2015/16-2024/25 (the GPS 2015) proposes up to \$103 million be available for walking and cycling projects (including cycleways) over the next three years. This investment will be complemented with funding from local government, and is in addition to Urban Cycleways funding.
- The GPS 2015 increases the annual maximum available funding for walking and cycling projects by 3.5 per cent per annum (compared to 1.9 percent under GPS 2012). This reflects opportunities to provide more options for active modes of transport.
- There will also be further funding through the National Land Transport Fund for cycling facilities which are built as part of new and improved State highways and local roads.



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## *Rail*

The rail network continues to undergo a significant investment programme. In total, over \$2 billion has been invested in the metro and freight rail networks since 2011. Through the Turnaround Plan, the Government has made a significant investment to support KiwiRail in repositioning itself to operate as a successful business. The Government has also provided separate capital investments in Auckland and Wellington to support metro rail improvements (examples of this are the Auckland electrification project and the Wellington Metro Rail Package).

## *Air and Sea*

Central government makes a much more limited investment in aviation and maritime infrastructure, which is generally provided at cost to users. In the past there have been some Crown contributions to joint venture airports and Crown entities (e.g. Maritime New Zealand). Recent and ongoing funding reviews by the Civil Aviation Authority and Maritime New Zealand are providing greater clarity around appropriate price adjustments to user charges, balanced against the cost incurred by agencies to deliver services. Airways is planning significant air navigation infrastructure upgrades. As a state owned enterprise it will be funded by user charges.

## How productive is it?

As with all sectors, data on the transport sector's overall productivity is incomplete; however, there is information in the public domain, such as the information published by airports under the Commerce Commission disclosure regime (Auckland, Wellington and Christchurch).

In addition, in 2012 the New Zealand Productivity Commission published the findings of its inquiry into International Freight Transport Services.<sup>32</sup> The key findings were:

- ▶ Productivity in New Zealand's transport and storage industry grew strongly in the 1990s, but hardly at all in the 2000s.
- ▶ Productivity measures indicate that New Zealand ports and airports compare favourably with Australian counterparts. International comparison shows that New Zealand customs services are efficient.
- ▶ Container productivity indicators show considerable variation in the performance of New Zealand's ports, with Tauranga the strongest performer. There may be opportunities to either lift the performance of the lower performers or to shift freight towards the top performers.
- ▶ Compared internationally, New Zealand has low volumes of freight per kilometre of rail, and smaller trains and trucks.
- ▶ There is little information about the productivity of freight handling at airports. Auckland Airport's overall productivity (passenger and freight) compares favourably with other Asian and Pacific airports, while Christchurch is average.
- ▶ Ad valorem sea freight costs (measured as the price paid for freight relative to the value of the goods being transported) have been coming down over the last 20 years, although the rate of improvement slowed in the 2000s. However, after accounting for compositional factors, ad valorem sea freight costs are about 21 percent higher in New Zealand than in Australia. Given that a high proportion of New Zealand's exports are shipped by sea, this is a considerable cost difference. The onshore components of New Zealand's air and sea freight costs, particularly its port handling costs, compare favourably with Australia and other OECD countries.

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<sup>32</sup> Source: NZ Productivity Commission, International Freight Transport Services Inquiry, April 2012.

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The following is a summary of the Government's response to the New Zealand Productivity Commission's 2012 International Freight Transport Services Inquiry:

The Commission identified five opportunities for improving the international freight system, which it considers would make the largest difference to New Zealand's future economic performance and prosperity. The Government agrees with the Commission about the importance of these opportunities and intends to make progress against them all:

## *1. Lift the quality of infrastructure planning and coordination*

The Government intends to make more use of 'facilitated discussion' models of cooperation in coordinating investment planning. The New Zealand Transport Agency is currently initiating facilitated freight planning processes, which will include representatives from the Government, councils, freight producers, and transport operators. The Government is also currently progressing reforms to improve the planning and coordination of infrastructure investment through the Better Local Government reform programme and phase two of the Resource Management Act reforms. The Commission has made a number of useful recommendations that will inform this work.

## *2. Better governance of ports and airports*

The Government will work together with councils to clarify the objectives of port ownership, to better manage conflicts of interest, and to improve monitoring and information in order to support better decision making. Part of this work will be progressed through the Better Local Government reform programme.

## *3. Make competition regimes for freight more pro-competition*

The Government is currently progressing the Commerce (Cartels and Other Matters) Amendment Bill, which is designed to encourage pro-competitive collaborations between businesses, while at the same time deterring anti-competitive cartel behaviour, by narrowing the exemptions from competition law.

## *4. Build more productive workplaces at ports*

Good workplace relationships between employers and employees are essential for developing high-productivity workplaces. The Government supports the proposed improvements to governance and information infrastructure, a number of which are for local authorities and port companies to consider. Recent changes to the Employment Relations Act have also been designed to encourage more productive employer and employee relations in all workplaces.

## *5. Develop a richer information infrastructure*

The Government intends to develop more comprehensive systems for gathering and disseminating freight data in order to support better individual and co-ordinated decision making, monitoring and policy development. In designing these systems, the Government will seek to minimise compliance costs imposed on the freight services sector.

The full government response to the Productivity Commission's inquiry into International Freight Transport Services can be found at <http://www.treasury.govt.nz/publications/informationreleases/transport>.

An area for further investigation is the performance and productivity of the transport construction sector. Recent measurement adjustments by Statistics New Zealand<sup>33</sup> have revised the picture of declining productivity in the construction sector. While it is a challenging area to measure, it appears that productivity performance of the sector has flat-lined for 20 years and there is a growing productivity deficit relative to Australia.. In the transport construction space, productivity performance may be due to a range of systemic issues, rather than under-investment in capital. The civil construction sector is closely coupled to government as central and local governments are by far the major purchasers of civil works. Government policies, regulations and procurement systems influence the productivity performance of the sector. Improving performance therefore requires a coordinated approach between government and industry. The NZTA has set up the Road Efficiency Group (REG) in collaboration with local government and industry to begin to address these challenges.

<sup>33</sup> Industry Productivity Statistics 1978-2008 (2010), Statistics New Zealand

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## How well are we managing it?

### *Land transport*

The Government Policy Statement on land transport (GPS) is the main way the Government signals what it wants land transport investment to achieve. The GPS sets out how much revenue will be raised from road users, what the Government wants the funding to achieve over a ten-year period (results), and how funding will be allocated between activity classes (for example, local roads, public transport).<sup>34</sup> The NZTA gives effect to the GPS through the National Land Transport Programme (NLTP). The NLTP has a 10 year outlook and lists transport activities and packages of activities which are expected to be considered for funding over the next three years. The NZTA uses a three factor assessment framework for investing National Land Transport Fund revenue. These are:<sup>35</sup>

- ▶ Strategic fit – how an identified problem, issue or opportunity aligns with GPS results.
- ▶ Effectiveness criteria – how well the proposed activity will deliver the desired results, while considering integration, and whether the solution has been correctly scoped, is affordable, timely and manages risk.
- ▶ Benefit and cost appraisal – how well the proposed solution maximises the value of what is produced from the resources used, and the timeliness of intervention.

The NZTA currently considers all three of the above criteria in its decision-making process for transport projects and programmes. Therefore, cost-benefit analysis is at present only one factor in the project prioritisation process. We encourage consideration of more comprehensive use of cost-benefit analysis, with a view to consistently accounting for effectiveness, efficiency and strategic criteria, thereby improving transparency and confidence that the highest value projects are being prioritised.

The accuracy of the NZTA's demand forecasting is generally good, however this is a challenging area and robust techniques need to be further developed. It is the role of the Ministry of Transport to forecast revenue. Historic assumptions about revenue growth from fuel taxes are being tested in light of international trends such as youth driving less, variable fuel prices, e-commerce, increasing fuel efficiency and alternate fuels. The Ministry of Transport reviewed and redesigned its revenue forecasting model in 2014 to recognise the latest revenue and travel data trends, and continually monitors further developments.

The Government Policy Statement 2015 was prepared during a period when vehicle kilometres travelled has been flat. Vehicle travel is forecast to grow again, albeit at a lower rate than previously experienced, with factors such as the rate of economic growth, energy costs, travel preferences, and changing demographics continuing to create uncertainty.<sup>36</sup>

There is some debate as to whether this reduction in the rate of increase of vehicle kilometres travelled is the result of economic factors or a more structural shift in attitudes towards personal transportation. The fact that this trend emerged before the onset of the global financial crisis gives cause to believe that social, behavioural and lifestyle factors (such as the proliferation of smart phones, social media, online shopping and video conferencing) may also be having an influence. A related trend is a reduction in the number of driver licences being issued. In particular, fewer young people are choosing to drive. This suggests that in some groups, the perceived merit of car ownership and use may be declining.

Strong population growth means that overall demand for transport across all modes will continue to increase. Motor vehicles are and will continue to be the predominant mode of transportation in New Zealand for the foreseeable future. However, the rate of growth in motor vehicle travel seen in the twentieth century is unlikely to continue. An ageing population, rising fuel prices, increasing urbanisation, improved mobility and accessibility options, growing health and environmental concerns, and changing consumer preferences all appear to be contributing to reduced per-capita travel in motor vehicles and an increase in demand for alternative transport options.<sup>37</sup>

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<sup>34</sup> The Government's investment strategy, set out in the GPS, must be reviewed at least once every three years.

<sup>35</sup> <https://www.pikb.co.nz/assessment-framework>

<sup>36</sup> Government Policy Statement on Land Transport 2015/16 – 24/25

<sup>37</sup> Ministry of Transport Briefing to Incoming Minister 2014

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## Intelligent Transport Systems

- The increasing application of technology is already impacting on the design, operation and maintenance of transport infrastructure. In 2014, the Ministry of Transport launched the governments Intelligent Transport Systems Action Plan.<sup>38</sup>
- Intelligent transport systems (ITS) are those in which information, data processing, communication, and sensor technologies are applied to vehicles (including trains, aircraft and ships), transport infrastructure and users. New Zealand already has many examples of ITS in operation. For example, real-time systems to tell public transport users when their bus or train can be expected to arrive; variable message signs and ramp signalling on motorways; advanced driver assistance systems, such as automated parking and blind spot warning systems; and systems to help aircraft follow safe routes to and from airports.
- As computer technology becomes both cheaper and more powerful, there are also new and emerging ITS technologies that the government expects to see deployed in New Zealand in the future. It is important that the government is prepared for these technologies, and is future-proofing our regulatory environment to ensure New Zealand does not miss out on benefits ITS can provide. Examples of where this may be important in the future include autonomous car, truck and aircraft technologies.
- Some technologies in the ITS sector are designed and marketed by manufacturers and their uptake driven by consumer demand. Where this is the case, there may be only a limited role for the government.
- However, there are a number of areas where the government has an essential role to play in the development and deployment of ITS technologies. These include providing strategic leadership, providing a supportive regulatory environment, funding and procuring infrastructure or services, influencing others within and outside of New Zealand, and informing users about ITS developments.
- Examples of ITS in use in New Zealand include:
  - advanced driver assistance systems, such as automated parking and blind spot warning systems
  - real-time information for public transport users and State highway travellers
  - congestion management of the highway network
  - infrastructure planning and management
  - air traffic control.

## Rail

KiwiRail is operating in a commercial environment as a State Owned Enterprise. Capital investment through the plan is focused on improving key freight services and maintaining the reliability and safety of the rail network. Revenue growth has been positive but it is less than originally forecast in the Plan, though volumes are increasing. Rail continues to provide for the high bulk, less time sensitive sector of the freight market and complements road in managing New Zealand's overall land freight task. We would encourage more comprehensive analysis of the relative contribution of sea, road and rail in managing current and future freight demand to help inform decisions on the appropriate level of investment in each.

## Sea and Air

The Port Companies Act and Airport Authorities Act assign a commercial focus to port and airport companies. The principal purpose of a port company, specified in the Port Companies Act, is to operate as a successful business. Similarly the Airport Authorities Act specifies that an airport company is to be managed as a 'commercial undertaking', which has been interpreted in case law to mean

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<sup>38</sup> ITS Action Plan, Ministry of Transport

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maximising the commercial value of the company over time. By and large this model operates effectively although improved governance arrangements could, in some cases, improve the sector's overall efficiency.

Regional Councils and Unitary Authorities, through their harbourmasters, are responsible for operating 24-hour harbour communication stations, operating and maintaining navigation aids and mooring areas, as well as responding to marine oil spills

## Sector-wide View

The Office of the Auditor General (OAG) recently published an overview of its work in the transport sector. The key findings were:

- ▶ Central government transport entities have good systems and controls. These entities have improved the quality of their service performance reporting in recent years.
- ▶ The OAG found that some local authorities' service performance reporting has improved through explaining their longer-term results.
- ▶ In 2010 and 2011, OAG completed two performance audits into how NZTA is maintaining and renewing the State Highway network. The audits found that, overall, the NZTA effectively and efficiently maintain the State Highway network to the required condition by ensuring that quality and timely maintenance and renewal work is completed on the network.
- ▶ OAG's 2011/12 annual audit of KiwiRail found that it is making steady progress to improve its asset management and recommended where further attention is required.
- ▶ OAG's audits of local authorities' 2012-22 long-term plans found that local authorities face many challenges planning transport activities – these include how best to replace ageing infrastructure, responding to changing land use, and managing higher input costs. There is evidence that local authorities are well placed for long-term sustainability of transport assets because of forecast investment and reinvestment. However, the investment forecast relies on good asset management planning.<sup>39</sup>

### Looking Ahead: the Ministry of Transport Strategic Policy Programme<sup>40</sup>

In 2014, the Ministry of Transport investigated the following three future focused transport questions to stimulate debate on the future of our transport system:

1. How will New Zealand's economy perform in the future, and what are the implications for transport?
2. How could or should our transport system evolve in order to support mobility in the future?
3. How could or should we fund our transport system in the future?

The key findings of the research were:

#### *We are well placed*

- New Zealand has a good transport system that is largely meeting demand. The current system provides New Zealanders with good levels of accessibility and contributes towards conditions for good economic growth. The funding system works, hypothecation (ring fencing transport funding) allows certainty for planning, and we have good and effective revenue tools for our current conditions. We can expect that these will continue to perform well for the short to medium term.
- Transport infrastructure lasts far longer than the short to medium term, and we need to ensure we are providing a system that is flexible and responsive to support changes in user demand, means of access and funding channels. The work shows that most of the land transport network is currently sufficient.

<sup>39</sup> Office of the Auditor General, Transport Report 2013, <http://www.oag.govt.nz/2013/transport-audits>

<sup>40</sup> Strategic Policy Programme, Ministry of Transport



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## *... but there are challenges ahead*

- While we have seen a flattening of demand, the location of that demand is changing, increasing pressure on cities without increasing the revenue base to support changes to the shape of the network.
- Although demand has been flattening, we must consider the effect of demand returning to a growth pattern. This would create new pressures for the transport system.
- The cost of maintaining the system continues to rise at a rate which is faster than the economy is growing. This adds to the importance of making sure new investments in infrastructure can be strongly justified.
- Historically we have seen vehicle kilometres travelled increase in line with GDP, providing a clear basis for investment where there is constrained capacity on our roads. This relationship is no longer as clear. It may be that virtual access is replacing physical access in some areas.
- Wider benefits for regions are a good justification for investments to be made in transport infrastructure in the regions. However, our work has found that without other investments in the region, transport investments alone are unlikely to drive regional economic growth.
- Fairness in funding is a matter that will come into the spotlight. The current land transport funding regime remains an effective way of raising revenue. But increases in petrol excise duty (at some point in the future) to compensate for increased vehicle efficiency will mean an increasing disparity of contribution between those with efficient and those with non-efficient vehicles.

# EVIDENCE BASE 2015: TRANSPORT

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