2012/13 Annual Monitoring Report on the Regional Land Transport Strategy

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Executive Summary

This report has been prepared in accordance with Section 83 of the Land Transport Management Act 2003[1] and reports progress in implementing the Wellington Regional Land Transport Strategy (RLTS) 2010–40.

A wide range of performance indicators are used to measure progress against the key outcomes and associated 2020 stretch targets identified in the Wellington RLTS. Further monitoring, investigation and development of new performance indicators is required to be able to measure progress against all RLTS key outcomes to 2020. These are identified in this report.

2011/12 Regional land transport report card

The report card below sets out the Wellington RLTS key outcomes, associated 2020 stretch targets and the 2012/13 results for those indicators which measure progress in achieving them. An assessment of the trend in progressing towards the 2020 targets from the last available result is also provided where possible.

Report card: 2012/13 progress against Wellington RLTS 2020 targets for each key outcome

Key outcome	2020 Stretch target	2012/13 result	Previous result	Trend
Increased peak period public transport mode share	Public transport accounts for at least 23 million peak period trips per annum	17.6 million in 2012/13 financial year	18.3 million in 2011/12 financial year	✖
	Public transport accounts for at least 21% of all region wide journey to work trips	Next update due 2013/14 financial year	16.9% in 2006 census	?
Increased mode share for pedestrians and cyclists	Increase active mode use to at least 30% of all trips in urban areas	27% of all trips were made by active modes in 2008-12	27% of all trips were made by active modes in 2007-11	–
	Active modes account for at least 15% of region wide journey to work trips	Next update due 2013/14 financial year	13.2% in 2006 census	?
Reduced greenhouse gas emissions	Transport generated CO_2 emissions will be maintained below year 2001 levels (1,065 kilotonnes in 2001)	1,061 kilotonnes in 2012/13 financial year	1,083 kilotonnes in 2011/12 financial year	✓
Reduced severe road congestion	Average congestion on selected roads will remain below year 2003 levels despite traffic growth	22.2 seconds in March 2013	22.2 seconds in March 2012	–
Improved regional road safety	There are no road crash fatalities attributable to roading network deficiencies	0 fatalities attributable to road factors in 2012 calendar year	0 fatalities attributable to road factors in 2011 calendar year	✓
	Continuous reduction in the number of killed and seriously injured on the region's roads	200 killed and/or seriously injured in 2012 calendar year	191 killed and/or seriously injured in 2011 calendar year	–
Improved land use and transport integration	All new subdivisions and developments include provision for walking, cycling and public transport, as appropriate	Some provision made	Some provision made	–
Improved regional freight efficiency	Improved road journey times for freight traffic between key destinations	24.8 minutes in March 2013	24.9 minutes in March 2012	–

✓ positive – neutral ✖ negative ? insufficient information

[1] Amendments to the Land Transport Management Act in 2013 have repealed Section 83 but this monitoring report covers the period prior to the amendments. Monitoring of the new Regional Land Transport Plan going forward is covered by Section 16(6)(e) of the Act.

Summary of progress

The report also includes an overall summary of progress in implementing projects, activities and actions identified within the various RLTS implementation documents. A number of milestones were recorded for the 2012/13 year including:

Strategy

- adoption of the updated Western Corridor Plan (August 2012)
- development of a new integrated Network Plan concept

Public transport

- all 96 new Matangi trains now in service (November 2012)
- signed contract for delivery of a second tranche of 70 Matangi trains (June 2013)
- four new bus shelters installed and 11 replaced across the region
- completed construction of the Tawa rail station upgrade (May 2013)
- completed Wairarapa public transport service review and implemented changes (September 2012)

Travel demand management, walking and cycling

- completed a pilot programme for scooter safety and rolled out programme to schools (December 2012)
- completed and published tests of new bike lights and reflective gear with Consumer Magazine
- expanded Let's Carpool nationally with Christchurch and Bay of Plenty joining

The report also sets out major programmes and projects which are scheduled to be commenced or completed in the 2013/14 financial year.

1. Introduction

1.1 Statutory context

Land Transport Management Act 2003

The Land Transport Management Act 2003[2] requires every regional council to establish a Regional Transport Committee (RTC). The primary responsibility of the RTC is to prepare a Regional Land Transport Strategy (RLTS) to set the strategic direction for a region's land transport network. Every RLTS must contribute to the overall aim of achieving an affordable, integrated, safe, responsive and sustainable land transport system.

Section 83 of the amended Land Transport Management Act 2003 requires the preparation of a monitoring report which documents progress in implementing the RLTS. The report must be published at least every three years.

Amendments to the Land Transport Management Act in June 2013 have repealed Section 83. However, this Annual Monitoring Report relates to the period up to end June 2013, therefore the statutory context referenced here is that prior to the June 2013 amendments to the Land Transport Management Act.

1.2 Wellington Regional Land Transport Strategy

The Wellington RLTS 2010–40 was adopted in September 2010 following an extensive review and consultation process. It includes a strategic framework for planning the region's transport network over the next 30 years.

The Wellington RLTS includes a long term vision, six objectives, and a comprehensive list of policies, desired outcomes and associated targets. The outcomes have been given a hierarchical structure of 'key outcomes' and 'related outcomes' to clearly signal priorities for the Strategy. The key outcomes in the Wellington RLTS are:

- Increased peak period passenger transport mode share
- Increased mode share for pedestrians and cyclists
- Reduced greenhouse gas emissions
- Reduced severe road congestion
- Improved regional road safety
- Improved land use and transport integration
- Improved regional freight efficiency.

The targets were developed to signal the magnitude of the changes sought in relation to each outcome in the Strategy. These targets provide a benchmark against which to measure progress. More ambitious 'stretch' targets have been set in relation to the Strategy's 'key outcomes' to signal the need for greater emphasis and progress in relation to these areas.

1.3 Content and structure

This report presents information on a range of indicators both within the region and across it's boundaries. If data is available, the report tracks the current condition (for the 2012/13 year) and monitors trends over time. This information is used to provide a picture of regional performance from a transport perspective.

Structure of the 2011/12 Annual Monitoring Report (AMR)

This AMR reports our progress on the key and related outcomes identified in the Wellington RLTS 2010–40. Progress against each outcome area and associated target(s) is measured with a series of indicators. The data represented by the indicator is analysed and some commentary is also provided.

An overall summary of progress in implementing the actions and projects, which sit alongside the RLTS in various corridor plans, implementation plans and the Regional Land Transport Programme 2012–15, are described in the RLTS implementation section.

Targets

The targets identified in the Wellington RLTS have been included on the indicator graphs in this AMR to demonstrate our progress towards the RLTS 2020 target.

[2] As amended by the Land Transport Management Amendment Act 2008.

Information availability

Agencies continue to supply information for the monitoring programme and Greater Wellington Regional Council (GWRC) gratefully acknowledges this.

Each AMR stands alone as information availability improves or data is replaced retrospectively. Therefore data presented in previous reports may not be entirely comparable to this report.

All reported data relates to the financial year ending at 30 June and is for the Wellington region unless otherwise stated.

1.4 The Regional Transport Network

The Wellington RLTS provides a development framework for the region's transport network and the AMR monitors a number of indicators to gauge the performance of the network. Wellington's regional transport network is shown in Figure 1.1.

State Highway 1 and the North Island Main Trunk rail line enter the region near Otaki on the Kapiti Coast and extend southwards through Porirua and the Northern Wellington suburbs to the Wellington City CBD. State Highway 1 then continues on to Wellington International Airport.

State Highway 2 and the Wairarapa rail line enter the region north of Masterton and extend south-west through Wairarapa, the Hutt Valley and on to merge with State Highway 1 at Ngauranga and the main trunk rail line at Kaiwharawhara.

State Highway 58 is a vital east-west link between State Highways 1 and 2. State Highway 53 connects Martinborough to the regional network at Featherston.

The regional transport network provides vital access for freight and passengers to key regional destinations including the Wellington City CBD and other regional centres, CentrePort (Wellington's sea port), Wellington International Airport and Wellington's regional hospital in Newtown. It also provides important access for local trips within communities.

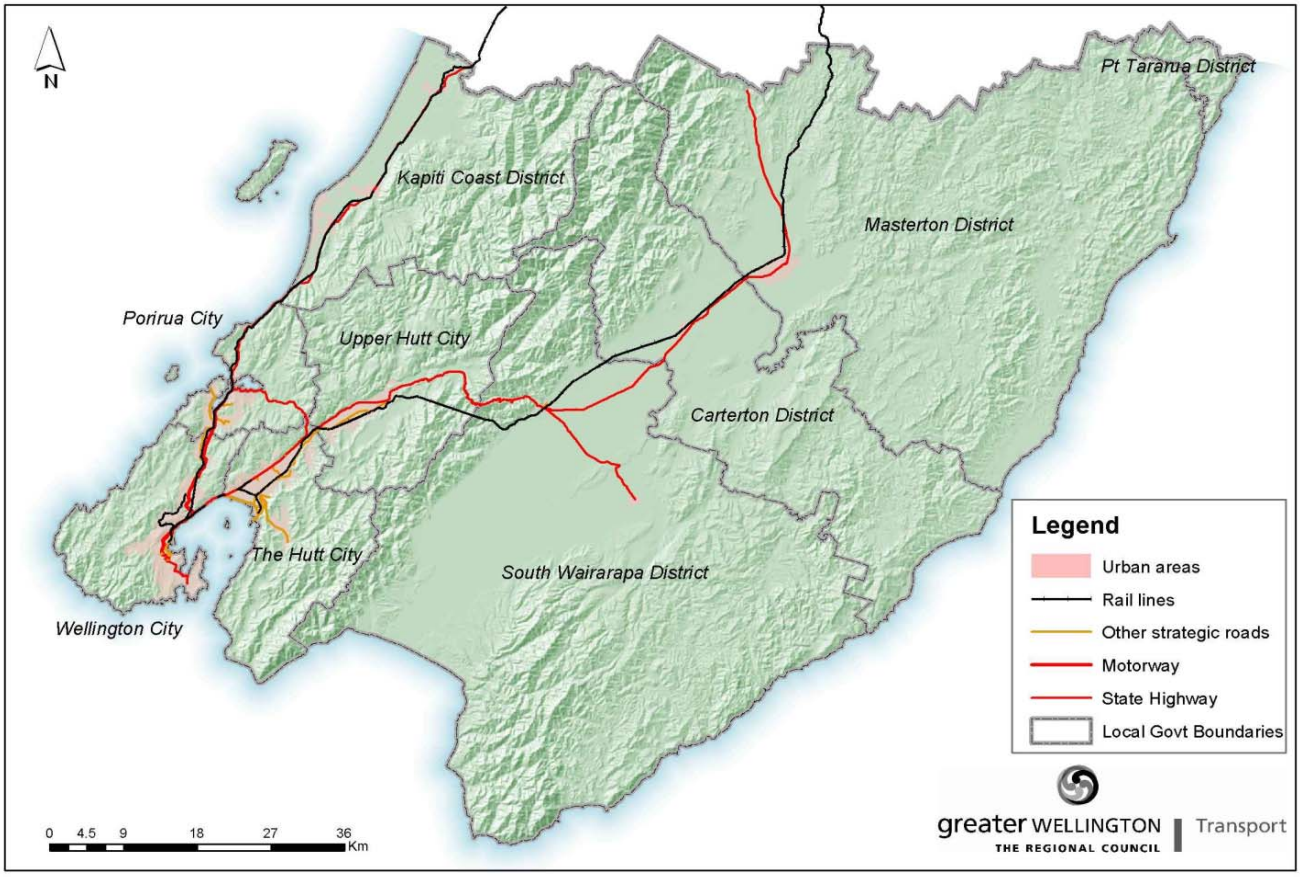

Figure 1.1: Wellington's regional transport network

2. Passenger Transport Outcomes

Introduction

This section discusses progress towards the RLTS passenger transport outcomes.

The following key outcome for passenger transport is sought for the region's land transport network:

- **Increased peak period public transport mode share**

The performance indicators associated with this key outcome are:

  - Peak trips by public transport
  - Mode of journey to work: public transport
  - Wellington CBD cordon mode share

The related outcomes and associated performance indicators for passenger transport are:

- **Increased off-peak period public transport mode share**
  - Off-peak trips by public transport
- **Increased public transport accessibility for all, including the transport disadvantaged**
  - Wheelchair accessible public transport services
  - Population proximity to public transport
  - Total Mobility Scheme patronage
- **Reduced public transport journey times compared to travel by private car**
  - Journey time comparison
  - Journey time by public transport
- **Increased public transport reliability**
  - Reliability of public transport services
  - Perceptions of public transport reliability

The terms 'passenger transport' and 'public transport' are often used interchangeably. However, when defined, they do have slightly different meanings. Passenger transport has a wider meaning and covers both scheduled public transport services and other passenger services (e.g. taxis and the Total Mobility Scheme).

The term 'passenger transport' is consistently used throughout the RLTS, however as some indicators within the AMR rely on data obtained in relation to scheduled public transport services only, the term 'public transport' is used where appropriate.

Key outcome

2.1 Increased peak period public transport mode share

Target: Public transport accounts for at least 23 million peak period trips per annum

Peak trips by public transport

Figure 2.1 presents the annual number of public transport trips taken by train, bus and ferry during the AM and PM peak periods.[3] It also illustrates the RLTS target of 23 million trips per annum by 2020. During 2013, 17.6 million peak period trips were made by public transport. Bus trips accounted for 57.8% of peak trips, rail accounted for 41.7%, and ferry trips made up 0.5%.

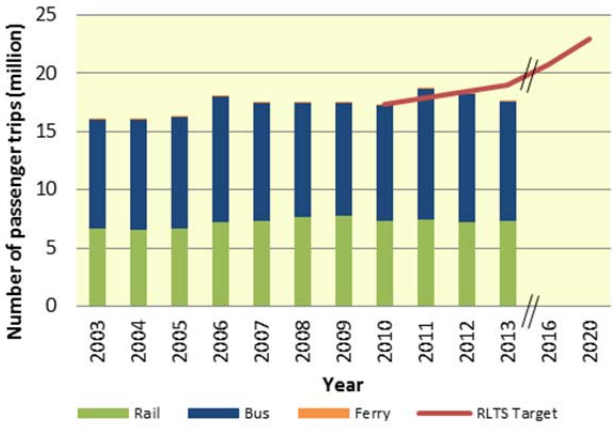

Figure 2.1: Public transport patronage: number of passenger trips by mode, combined peak periods. Source: GWRC

Peak bus patronage increased each year from 2009 to 2011, but has decreased over the last two years. In 2011 peak bus patronage was reported to be 11.3 million trips, this decreased by 2.6% to 11.0 million trips in 2012, and further decreased by 7.5% to 10.2 million trips in 2013. When viewing this data alongside that for off-peak bus patronage a decrease in total bus patronage is still observed, despite an increase in off-peak bus trips.

[3] During the 2011/12 financial year an operator reviewed their reporting process and this had the effect of changing the mix of peak and off-peak trips.

Peak period public transport trips by train have however increased by 1.3% over the last year. This is despite the lost passenger trips in June 2013 as a result of track washout and repairs following extreme weather conditions in the region. Although small in number peak ferry passenger trips have also increased over the last year (by 12.1%).

The total number of peak period public transport trips has decreased over the last year, due to the decrease in peak period bus trips. This has resulted in total number of peak period public transport trips falling below the scheduled RLTS target for 2013, which is based on uniform growth between 2010 and 2020.

Target: Public transport accounts for at least 21% of all region wide journey to work trips

Mode of journey to work: public transport

Data from the 2006 New Zealand census showed that 17% of journey to work trips across the region used public transport[4] as the 'main means of travel to work' (Figure 2.2). In 2006, rail mode share of journey to work trips was found to be 7%, and bus 10%.

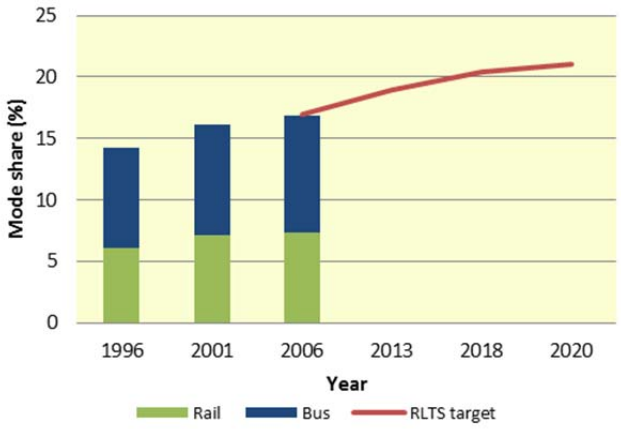

Figure 2.2: Public transport mode share of journey to work trips (%). Source: Statistics New Zealand

Journey to work trips made by public transport increased by about 4,400 trips between the 2001 to 2006 census periods. This followed an increase of around 3,800 trips over the prior census period. The increase in trips from 1996 to 2006 has resulted in the mode share of journey to work trips by public transport increasing from 14% to 17%. Further increases are required to achieve the RLTS target of 21% by 2020.

Public transport mode share of journey to work trips has increased in all territorial authority areas except Porirua over the last two census periods (Figure 2.3). Public transport mode share is greatest in Wellington City and lowest in Wairarapa, but Kapiti has seen the largest growth in public transport mode share across the last three census periods.

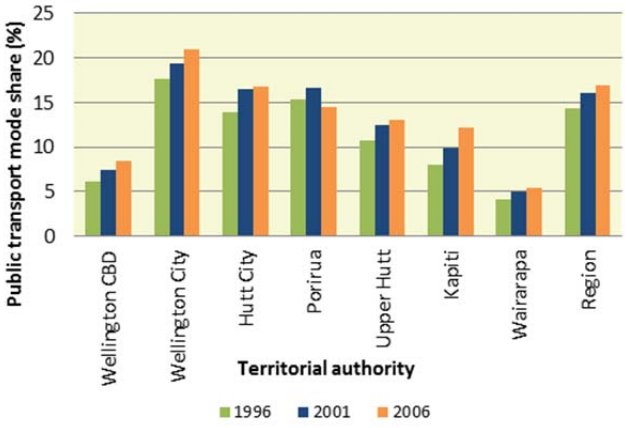

Figure 2.3: Public transport mode share of journey to work trips by territorial authority and Wellington CBD (%). Source: Statistics New Zealand

Wellington CBD cordon mode share

In March each year Wellington City Council commissions vehicle, pedestrian and cyclist counts during the morning peak period. During the same month GWRC commissions a survey to count the number of people entering the Wellington CBD by public transport[5] during the morning peak. Figure 2.4 shows the number of people travelling by public transport into the Wellington CBD[6] and the public transport mode share into Wellington CBD during the morning peak period.[7]

Public transport passenger numbers into Wellington CBD continued to increase over the last year, following increases over the previous two years. Over the last year, rail, ferry and cable car passengers all increased but there was a decline in the number of bus passengers.

[4] Public transport was defined as: travel by public bus or train. Travel by ferry is not included.

[5] Public transport includes: rail, ferry, cable car and bus travel.
[6] No data is available for the other territorial authority areas.
[7] Public transport surveys were not carried out in 2005.

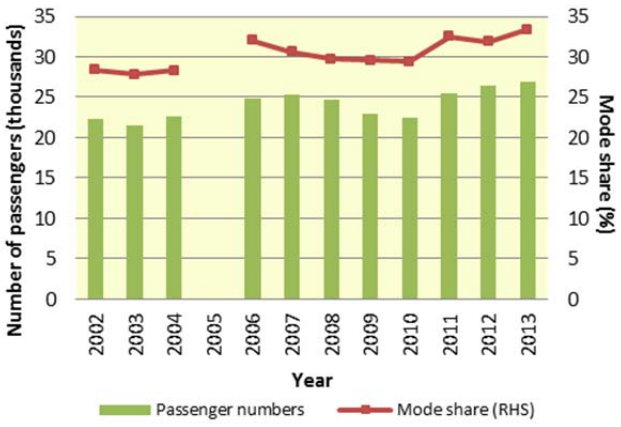

Figure 2.4: Number of people travelling into Wellington CBD by public transport and public transport mode share (%), AM peak. Sources: Wellington City Council; GWRC

Looking at trends since 2010, however, shows that public transport passenger numbers into Wellington CBD have increased by 19%. Rail passengers increased by 20% and bus passengers by 18%. Ferry and cable car passenger numbers have also increased, but they only account for a very small number of public transport passengers. Public transport mode share has also increased over the last few years, from 29% in 2010 to 33% in 2013.

Key outcome summary

The performance indicators for this key outcome show that, as a region, public transport use and mode share are higher than they were towards the beginning of the decade.

Regionally, public transport trips by bus are more prevalent than other public transport modes during the peak periods. However, over the last year it is the decrease in bus trips that accounts for the observed decrease in peak period (and combined peak and off-peak period) public transport trips. The number of train and ferry trips during the peak periods has increased over the last year.

Over the last year there has been a 3.9% decrease in peak period public transport trips, and a 1.2% decrease in total (peak and off-peak) public transport trips. The number of peak period public transport trips is below its scheduled RLTS target for 2013. Achieving the 2020 stretch target will be a significant challenge as a 30% increase from 2013 patronage levels is required.

Until the next census it is not possible to see whether the region is on track to achieve its other target of public transport accounting for at least 21% of all region wide journey to work trips. The next census update is not due until the 2013/14 financial year.

The Ministry of Transport uses results from its Household Travel Survey to work out mode share of journeys to work (for full-time workers aged 16+, journeys starting between 6am and 9.30am). Although it uses a different methodology, the 2008-12 survey found that 23% of journeys to work in the Wellington region used public transport.[8] This has gradually increased from 20% in the 2003-07 survey.

If a three percentage point increase in mode share of journeys to work using public transport is also assumed this would mean that public transport mode share would be around the scheduled RLTS target for 2013, meaning attaining the 2020 stretch target is on track.

Over the last year there were 17.6 million trips by public transport during the peak periods. This illustrates the importance of public transport to the region, and shows that public transport plays a significant role in transporting the region's commuters during the peak periods.

Public transport mode share has increased since the beginning of the decade. Although there was evidence that mode share declined for a time during the middle of the decade this trend has reversed, with gradual increases in public transport mode share observed over the last few years. Progress has been made towards this RLTS key outcome, however, achieving the 2020 stretch targets for this outcome pose real challenges to the region.

Related outcomes

2.2 Increased off-peak period public transport mode share

Target: Public transport accounts for at least 23 million off-peak period trips per annum

[8] Public transport trips are counted as those in the categories: Public transport or Public transport/walk; and Public transport/car or Public transport/car/walk.

Off-peak trips by public transport

Figure 2.5 presents the annual number of public transport trips taken by train, bus and ferry during the off-peak period;[9] and the RLTS target of 23 million trips per annum by 2020. In 2013, 17.6 million off-peak trips were made by public transport. Bus trips accounted for 76.5% of off-peak trips, with rail trips accounting for 22.9%, and ferry trips accounting for less than 1%. The total number of off-peak public transport trips increased over the last year but remains below the scheduled RLTS target for 2013.

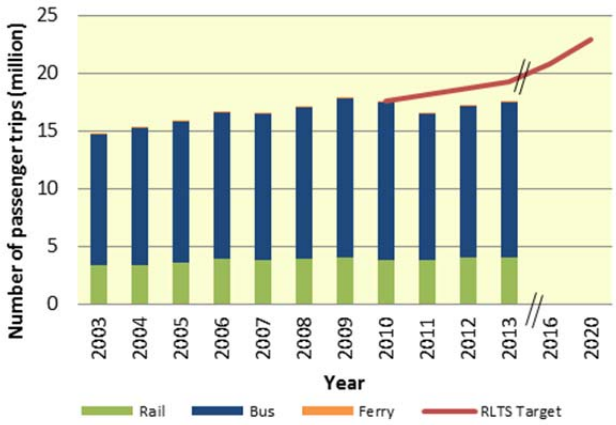

Figure 2.5: Public transport patronage: number of passenger trips by mode, off-peak period. Source: GWRC

Over the last year, total public transport trips during the off-peak period have increased by 1.7%. Off-peak bus trips have increased by 2.3% over the last year (whereas peak period bus trips have decreased), ferry trips have also increased (6.5%) but the number of train trips remained relatively unchanged.

The Rugby World Cup in September/October 2011 resulted in more off-peak public transport trips than would have been expected in a normal year. This means that the increase in off-peak trips over the last year may be greater than reflected in the data, as patronage for the 2011/12 year may have been inflated due to increased trips as a result of the Rugby World Cup.

Although off-peak public transport trips increased over the last year they still remain below the scheduled RLTS target for 2013. An increase of 31% from 2013 off-peak passenger trip levels will be required if the RLTS target is to be achieved by 2020.

[9] During the 2011/12 financial year an operator reviewed their reporting process and this had the effect of changing the mix of peak and off-peak trips.

Related outcome summary

The performance indicator for this related outcome shows that some progress has been made, but the region remains below the 2013 scheduled RLTS target. If the RLTS target is to be achieved an increase of 31% in off-peak public transport trips is required from 2013 levels.

Off-peak travel in the region is most likely to be by bus, accounting for around 77% of off-peak trips. Although train trips are less likely to occur during the off-peak than the peak period, there has been a gradual increase in the total number (combined peak and off-peak periods) of public transport trips by train since 2010.

2.3 Improved public transport accessibility for all, including the transport disadvantaged

Target: 90% of public transport services are guaranteed to be wheelchair accessible

Wheelchair accessible public transport services

The term 'wheelchair accessible' is defined as 'vehicle accessible by wheelchair'. A vehicle in this indicator includes: cable car, bus, ferry and train unit.[10] Figure 2.6 shows the total percentage of public transport vehicles accessible by wheelchair across the region and the 2020 target of 90% of public transport vehicles being accessible by wheelchair.

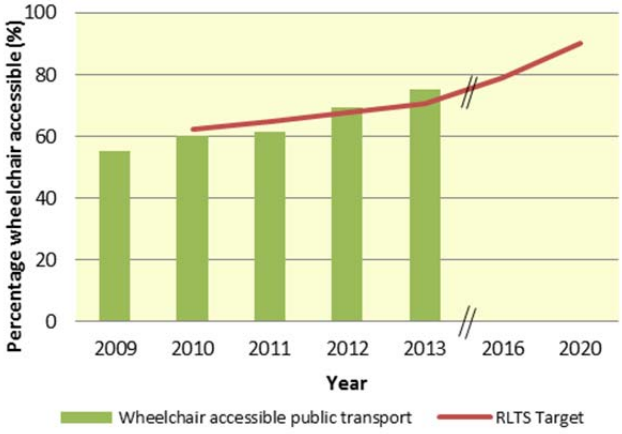

Figure 2.6: Accessibility of public transport vehicles by wheelchair (%). Source: GWRC

[10] A 'train unit' means a two car unit (composed of two cars). If one of the two cars is accessible by wheelchair, then this two-car unit is classified as vehicle accessible by wheelchair.

In 2013, 75% of public transport services were wheelchair accessible, which is above the scheduled RLTS target for the year. In 2013, all train, ferry and cable car services were wheelchair accessible and 71% of bus services were wheelchair accessible. The percentage of wheelchair accessible public transport services has increased over time, with a five percentage point increase observed over the last year. The increase over the last year is due to increases in the percentage of wheelchair accessible bus services.

Although all train services are wheelchair accessible it must be noted that only 65% of train stations are currently fully wheelchair accessible.

Target: 75% of people in the region live or work within 400 metres and 90% within 800 metres of a public transport stop with service throughout the day

Population proximity to public transport services

A reliable indicator to measure our progress towards the RLTS target for this related outcome remains under development. Available data cannot currently provide a reliable picture of where people live and work. However, we are able to measure whether people live within 400m or 800m of a public transport stop.

Figure 2.7 shows the percentage of the population that live within 400m and 800m of a public transport stop: all stops and stops with an average frequency of 30 minutes or better. Distance is measured along the roading network.

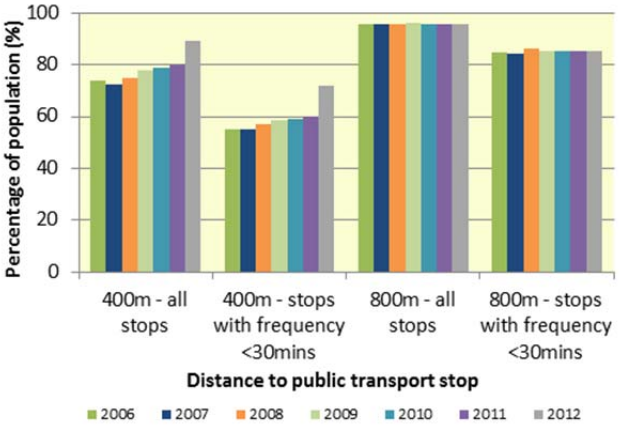

Figure 2.7: Percentage of the population living within 400m and 800m of a public transport stop: all stops; and stops with an average frequency of 30 minutes or better. Source: GWRC; Statistics New Zealand

In 2012, 89% of the region's population lived within 400m of a public transport stop and 96% lived within 800m. Whereas, 72% and 85% live within 400m and 800m of a public transport stop with an average service frequency of 30 minutes or better respectively.

There has been little change in the percentage of the population living within 800m of a public transport stop (all stops and stops with a service frequency of 30 minutes or better). However, the percentage of the population living within 400m of a public transport stop (all stops and stops with a service frequency of 30 minutes or better) has increased since 2006, with a large increase observed from 2011 to 2012. The observed increase over this period was mainly due to new stops in Porirua. These results suggest that it is likely that progress has been made towards the RLTS target for this related outcome.

Total mobility scheme patronage

The Total Mobility Scheme assists people who have difficulty, because of a disability, using public transport services by providing a 50% discount on taxi fares to people who meet certain eligibility criteria. The scheme is administered by GWRC and the annual mobility scheme patronage numbers are shown in Figure 2.8.

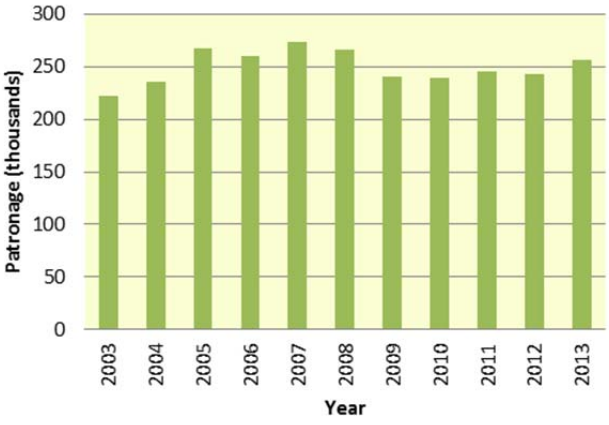

Figure 2.8: Total Mobility Scheme patronage Source: GWRC

At the end of June 2013 there were around 8,800 registered Total Mobility Scheme users.[11] Over the last year around 256,000 passenger trips

[11] It is not possible to determine how many registered users are current active users.

occurred under the scheme, an increase of 5.4% on the number of trips in the previous year.

Related outcome summary

The performance indicators for this outcome suggest that over the last couple of years, progress has been made against this related outcome of improved public transport accessibility for all, including the transport disadvantaged. The increasing trend in wheelchair accessible public transport services, increasing trips under the Total Mobility Scheme and the proportion of the population living within 400m of a public transport stop indicate improved public transport accessibility.

Progress has been made towards the RLTS target of 90% of public transport services are guaranteed to be wheelchair accessible. Currently 75% of public transport services are wheelchair accessible, which is above the scheduled RLTS target for 2013. If these gains can be maintained this target is on track to be achieved by 2020.

It is currently not possible to directly measure progress against the RLTS target of 75% of people in the region live or work within 400m and 90% within 800m of a public transport stop with service throughout the day. Information we have shows that the percentage of the population living within 800m of a public transport stop with service frequency of 30 minutes or better has remained relatively unchanged at around 85%, but the percentage of the population living within 400m has steadily increased up to 72%. From this information alone it suggests that progress has been made towards the 2020 RLTS target.

2.4 Reduced public transport journey times compared to travel by private car

Target: Continual reduction of peak period public transport journey times relative to a similar journey undertaken by a private car for key selected

Journey time comparison

This indicator is a comparison of the car travel times from the NZTA travel time surveys (March) and public transport journey times from timetables. The two key regional routes that are compared are described below:

- route 1 southbound (SB): Paraparaumu – Wellington Airport
- route 1 northbound (NB): Wellington Airport – Paraparaumu
- route 2 southbound (SB): Upper Hutt – Wellington Airport
- route 2 northbound (NB): Wellington Airport – Upper Hutt

The values given are the difference in minutes between using public transport and travelling by private car. A positive value means the journey takes longer by public transport than by private car, and the larger the value the greater the difference in travel time by public transport in comparison to private car. Figure 2.9 shows the difference in average travel time for both routes across three periods of the day.

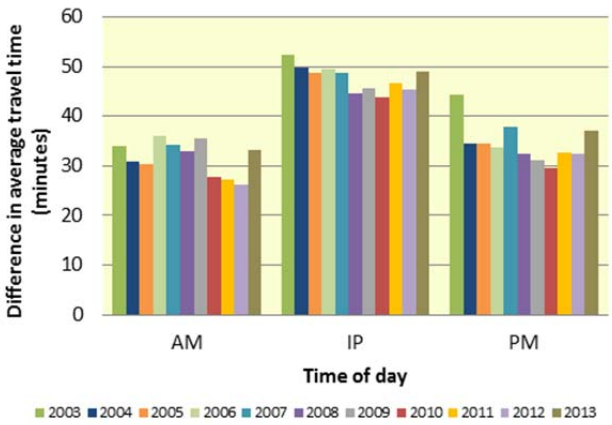

Figure 2.9: Comparison of average travel times (minutes) by public transport and by car on key routes. Sources: NZTA; GWRC

In the AM peak, the comparative travel time in the northbound direction, on both routes, is greater than the southbound direction due to the direction of travel of AM peak passengers (towards Wellington City). This is reversed during the PM peak.

In 2013, it took 33 minutes longer to travel on the two key regional routes by public transport than by private car during the AM peak, 49 minutes longer during the interpeak and 37 minutes longer during the PM peak.

Over the last year the difference in travel time between public transport and private car has increased at all three periods of the day, with an increase of seven minutes during both the AM peak, four minutes during the interpeak and five minutes during PM peak. These increases are a

result of decreased average car travel times at each period of the day and increased public transport journey times as a result of the altered airport flyer bus timetable.

Journey time by public transport

Figures 2.10 to 2.13 show the time taken to travel by public transport (bus and train) on the same key routes which feature in the above indicator with the addition of route 3 the 'Golden Mile' (between Lambton Interchange and Courtenay Place), during the AM, interpeak, PM peak and on Saturday respectively.

Travel times derive from timetables for routes 1 and 2. Traffic congestion on route 3 can render timetables to be unreliable. Information on this route extracted from bus Real Time Information data.

The routes covered and public transport modes for each are:

- route 1 southbound (SB): Paraparaumu – Wellington Airport (rail/bus)
- route 1 northbound (NB): Wellington Airport – Paraparaumu (bus/rail)
- route 2 southbound (SB): Upper Hutt – Wellington Airport (rail/bus)
- route 2 northbound (NB): Wellington Airport – Upper Hutt (bus/rail)
- route 3 southbound (SB): Lambton Interchange – Courtenay Place (bus)
- route 3 northbound (NB): Courtenay Place – Lambton Interchange (bus)

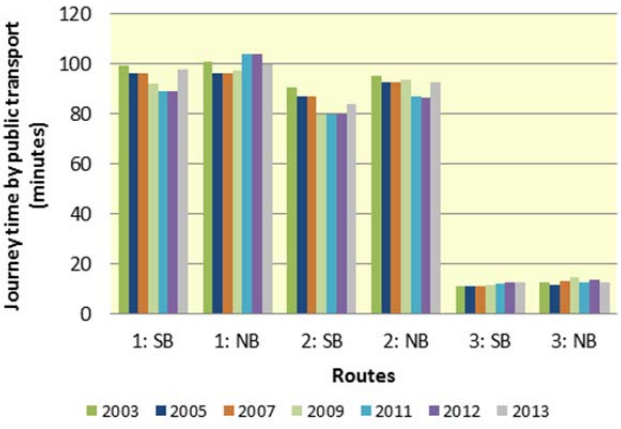

Figure 2.10: Public transport travel time (mins), AM peak. Sources: Metlink bus/rail timetables; RTI

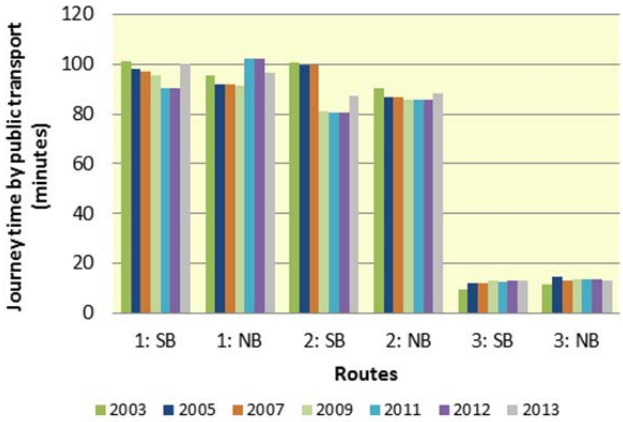

Figure 2.11: Public transport travel time (mins), interpeak. Sources: Metlink bus/rail timetables; RTI

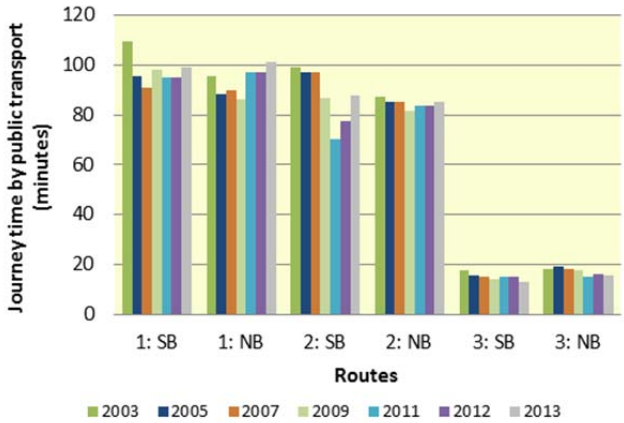

Figure 2.12: Public transport travel time (mins), PM peak. Sources: Metlink bus/rail timetables; RTI

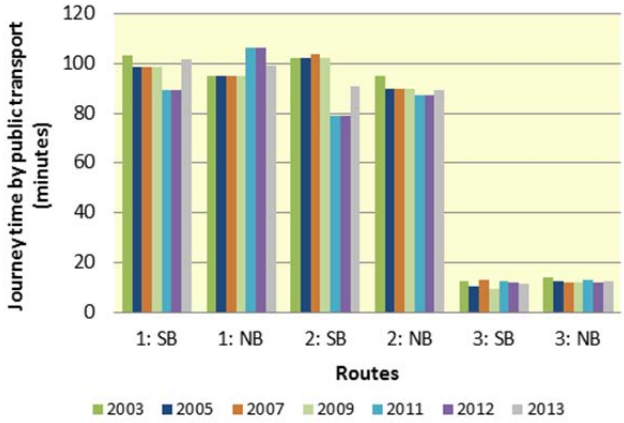

Figure 2.13: Public transport travel time (mins), Saturday. Sources: Metlink bus/rail timetables; RTI

During the AM peak, travel tends to take longer on all three routes in the northbound direction than the southbound direction. However, over the last year, journey times along all routes have increased in the southbound direction in the AM peak and decreased in the northbound direction except for route 2. Increases in transit times

(between rail and bus) and bus journey times have resulted in the observed increases during the AM peak on these routes.

Interpeak journey times have increased on route 1 and 2 southbound, route 2 northbound, and decreased on route 1 northbound and route 3 northbound and southbound. The routes with increases in travel time are once again due to increased transit and bus travel times.

During the PM peak, journey times increased on routes 1 and 2 in both directions and decreased on route 3 in both directions. Although the increases on routes 1 and 2 are due to both increases in transit times and bus travel times, increased bus travel times are the main factor on these routes in the southbound direction, whereas transit times are the main contributor on the southbound routes. The largest increase in travel time over the last year (10.4 minutes) is on route 2 southbound, this is due to a 5 minute increase in transit time and a 5 minute increase in bus travel time.

On Saturday's there has been little change in travel time over the last year on route 3 in both directions and route 2 northbound. There have, however, been quite large increases in travel times on routes 1 and 2 southbound. This is due to a doubling of the transit time from 7 to 14 minutes and increases in bus travel times of 5 minutes.

In general, across these three routes there has been little change in public transport travel time on route 3, but travel times are more likely to have increased on the other routes. There has been no change in travel time by rail, but transit times and bus travel times have tended to increase.

Related outcome summary

After a few years of making progress towards this related outcome, over the last year public transport journey times have increased compared to travel by private car. This trend needs to be reversed if the region is to get back on track to achieve the RLTS target.

The difference in public transport journey times compared to travel by car has increased at each period of the day. This is due to both a general decrease in travel time by private car and an increase in travel time by public transport across these routes. During the AM peak the average public transport travel times on the selected routes were 33 minutes slower than by private car, up from 26 minutes slower in 2012. The difference in the interpeak increased from 45 to 49 minutes and the PM peak increased from 32 to 37 minutes.

Based on overall journey time, public transport remains relatively uncompetitive compared to the private car. Making public transport travel times comparable to travel times by private car remains a significant challenge for the region.

2.5 Increased public transport reliability

Target: Continual improvement to bus and train services running to time

Reliability of public transport services

Figure 2.14 shows the percentage of bus and passenger rail services in the region which run to time.

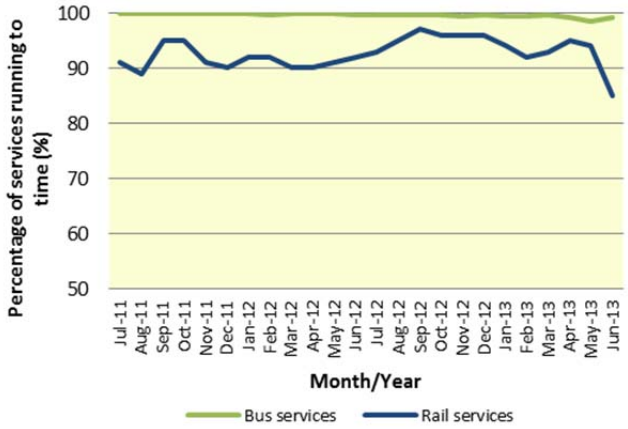

Figure 2.14: Bus and rail services running to time (%). Source: Public transport operators; GWRC

A bus service is defined as being 'on time' when it runs within 10 minutes of scheduled time at departure and its destination. A train which departs from or arrives at Wellington Railway Station within 5 minutes of scheduled time is defined as 'on time'. This data is currently self-reported by public transport operators.

Averaged across the 2012/13 financial year, 99.9% of bus services operated within 10 minutes of scheduled time, up from 99.8% in 2011/12. The percentage of rail services that arrived or departed Wellington Railway Station within 5 minutes of scheduled time increased from 91.8% to 93.9% over the last year. The decrease in train service reliability observed in June 2013 was a result of track washout and repairs on the Hutt

Valley Line following extreme weather conditions in the region.

Perceptions of public transport reliability

Data from the 2013 Metlink Public Transport Customer Satisfaction Monitor showed that 56% of respondents that had used the bus within the last three months believed bus services were reliable. Long-term trends suggest there has been a gradual decline in bus reliability ratings.

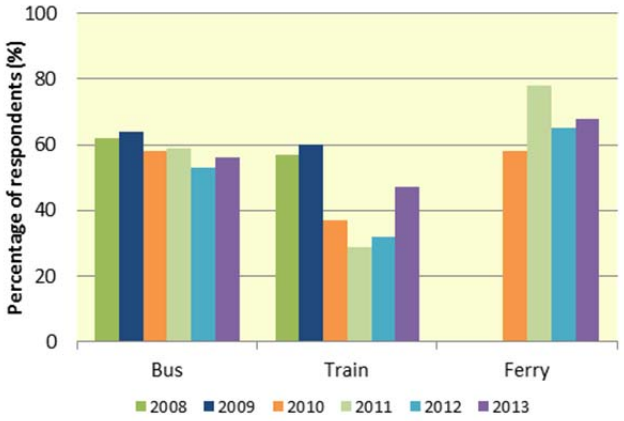

Figure 2.15: Reliability rating of bus, train and ferry services from people who have used these services within the last three months (%). Source: Metlink

The reliability rating of train services has constantly been below that for bus services over the measurement period. In 2013, 47% of respondents rated train services as reliable. Although this is still lower than reliability ratings of bus and ferry services it is a 15 percentage point increase from 2012.

Reliability ratings for ferry services have increased since 2010, with 68% of respondents rating them as reliable in 2013.

Related outcome summary

This performance indicator shows that the vast majority (99.9%) of bus services operate within 10 minutes of their scheduled time. Train service reliability has been increasing, and the average reliability across the year is higher than the previous year (93.9% compared to 91.8%). Although there is still room for improvement, progress has been made towards the RLTS target of a continual increase in bus and rail services running to time.

3. Active Mode Outcomes

Introduction

This section discusses progress towards the RLTS active mode outcomes.

The following key outcome for active modes is sought for the region's land transport network:

- **Increased mode share for pedestrians and cyclists**

The performance indicators associated with this key outcome are:

  - Overall active mode share
  - Mode of journey to work: active modes
  - Wellington CBD cycle and pedestrian counts
  - Active modes for short trips

There are also two related outcomes for active modes. These are shown below, along with the associated performance indicators:

- **Improved level of service for pedestrians and cyclists**

  - Perceptions of the level of service for pedestrians
  - Perceptions of the level of service for cyclists

- **Increased safety for pedestrians and cyclists**

  - Pedestrian casualties
  - Perceptions of pedestrian safety
  - Cyclist casualties
  - Perceptions of cyclist safety

Key outcome

3.1 Increased mode share for pedestrians and cyclists

Target: Increase active mode use to at least 30% of all trips in urban areas

Overall active mode share

The Ministry of Transport's Household Travel Survey began in 2003 and collects household and personal travel information to help monitor the travel patterns of New Zealanders.[12] The information is presented as five year averages in order to build statistically significant sample sizes for comparison.

The active mode[13] share of total trip legs[14] by residents (ages 5 and over) of main urban areas[15] in the Wellington region from the Household Travel Survey is shown in Figure 3.1. Active mode share of all trips within urban areas in the Wellington region was 27% in the 2008-12 survey period. Active mode share in the Wellington region has gradually increased from 23% since the first survey period in 2003-07.

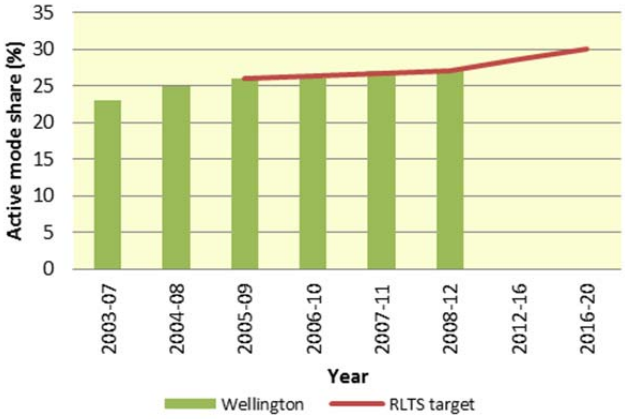

Figure 3.1: Active mode share of total trip legs (%) by residents of Wellington urban areas (ages 5 and over). Source: Ministry of Transport TMIF TP005

Target: Active modes account for at least 16% of region wide journey to work trips

Mode of journey to work: active modes

Data from the New Zealand census, in 2006, shows that 13% of journey to work trips across the region used active modes[16] as the 'main means of travel to work' (Figure 3.2). Walking mode share of journey to work trips was found to be 11%, with cycling at 2%.

The total number of active mode journey to work trips increased by just over 3,500 from 2001 to 2006, which equates to a 17% increase in active

[12] For more information on the survey see *www.transport.govt.nz/research/travelsurvey/*
[13] Walking and cycling combined are considered active modes of transport.
[14] A "trip leg" is a surveying unit of non-stop travel by a single mode for a single purpose.
[15] A main urban area is a population centre of at least 30,000 people as defined by Statistics New Zealand.
[16] Active mode was defined as: 'walked or jogged, bicycle'.

mode trips to work. This involved a 5% decrease in the number of cycle trips to work but a 22% increase in the number of walking trips.

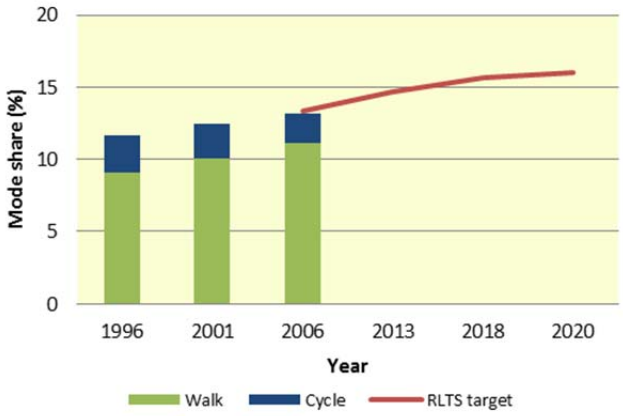

Figure 3.2: Walking and cycling mode share of journey to work trips (%). Source: Statistics New Zealand

Active mode share of journey to work trips differs greatly across the region (Figure 3.3). There are nearly 70% and 20% of journey to work trips using active modes in Wellington CBD and Wellington City respectively, but less than 10% in all other territorial authority areas. The active mode share in Wellington CBD and Wellington City also shows an increasing trend over time, whereas a decreasing trend is observed for the other territorial authority areas.

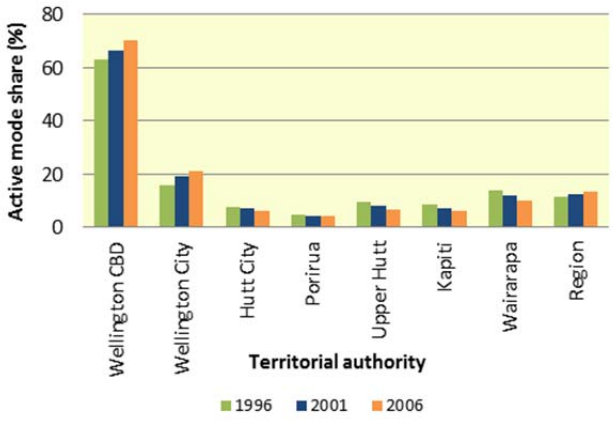

Figure 3.3: Active mode share of journey to work trips by territorial authority and Wellington CBD (%). Source: Statistics New Zealand

Wellington CBD cycle and pedestrian counts

Wellington City Council[17] undertakes surveys in March each year that count:

- pedestrians into and out of the central city during the morning peak period (AM cordon)
- cyclists into and out of the central city during the morning peak period (AM cordon)
- cyclists at suburban locations during the morning peak period: Newtown, Kilbirnie, Kelburn, Thorndon, Ngauranga (AM commuter).

The count data is averaged over the weekday AM peak two-hour period and is shown in Figure 3.4. It should be noted that cycle and pedestrian counts vary widely according to the weather conditions at the time of the survey. The 2013 surveys were conducted in fine and dry conditions.

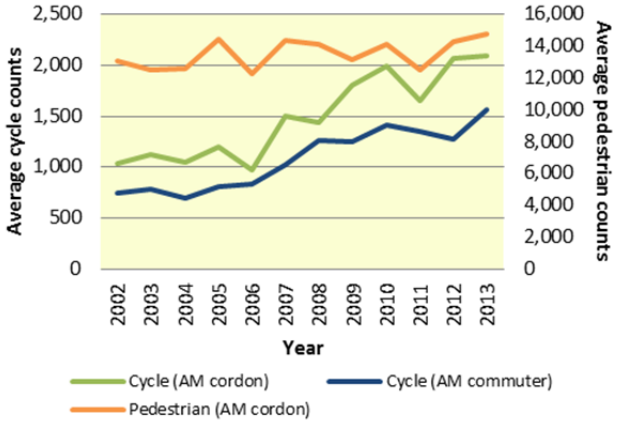

Figure 3.4: Average weekday AM peak two-hour period Wellington CBD cycle and pedestrian counts. Source: Wellington City Council

In the 2013 morning peak there was an average of 2,091 cyclists and 14,754 pedestrians crossing the CBD cordon, and 1,569 commuter cyclists that travelled across the Wellington suburban survey locations (commuter cordon).

The average number of cyclists crossing the CBD and suburban survey locations has been steadily increasing over the last decade or so. Focusing on the last five years, the average number of cyclists crossing the CBD cordon during the morning peak has increased by 16%, and those crossing the suburban survey locations increased by 26%. Over the same period the average number of pedestrians crossing the CBD cordon has increased by 12%.

Active modes for short trips

Figure 3.5 shows the percentage of road-based trip chains of less than 2km carried out on foot and less than 5km by bicycle. In the 2008-12 survey period 48% of trips less than 2km in length

[17] No data is available for other territorial authority areas.

were walked. The percentage of trips less than 2km carried out on foot has gradually increased from 41% since the first measurement in 2004-08.

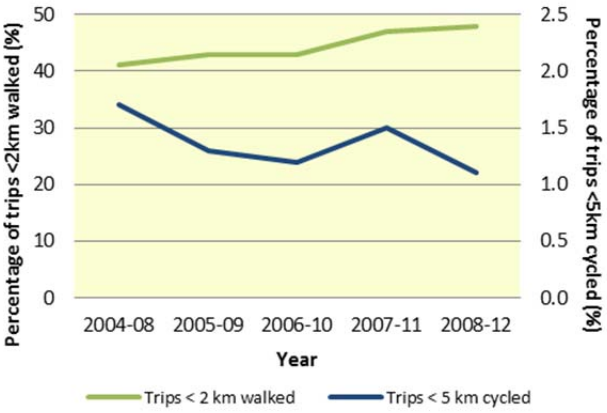

Figure 3.5: Trips of less than 2km walked and less than 5km cycled (%). Source: Ministry of Transport TMIF TP008 and TP009

The percentage of trips less than 5km by bicycle is low at 1.1% in 2008-12. Long term trends also indicate a slight decline in bicycle use for trips less than 5km in length.

Key outcome summary

The performance indicators for this key outcome show that, as a region, the pedestrian and cycle mode share has increased over time. The increase in active mode use over the last few years, alongside the observed longer-term trend increases indicates that progress has been made towards the RLTS target of increasing active mode use to at least 30% of total trips in main urban areas. Continued growth is required however, if the 2020 RLTS target is to be achieved.

The majority of active mode trips in the region are walking trips. From the 2008-12 Household Travel Survey, walking trips accounted for 25% of total trips and cycling trips accounted for 1%. From the 2006 census walking mode share made up 11% of journey to work trips with cycling accounting for 2% of journey to work trips. Wellington CBD cycle and pedestrian counts during the morning peak also show higher numbers of walkers than cyclists, but cyclist numbers have been increasing at a greater rate.

Census data has shown that active mode share of journey to work trips has been increasing. In 2006 the active mode share of journey to work trips was only three percentage points short of the 2020 RLTS target of at least 16% of region wide journey to work trips will be by active mode. As the next census data release will not be until the 2013/14 financial year it is not possible to tell whether the region has made any further progress at achieving this target since 2006.

Although a different methodology, the Ministry of Transport uses results from its Household Travel Survey to work out mode share of journeys to work (for full-time workers aged 16+, journeys starting between 6am and 9.30am). The 2008-12 survey found that 12% of journeys to work in the Wellington region used active modes.[18] This has steadily increased from 6% in the 2003-07 survey. If a similar percentage point increase is assumed with the census data in Figure 3.2 it would mean that active mode share of journey to work would be around 19%, which is above the 2020 stretch target for this outcome.

Related outcomes

3.2 Improved level of service for pedestrians and cyclists

Target: 95% of people report a 'good' or 'neither good nor bad' level of service for the strategic pedestrian network

Perceptions of the level of service for pedestrians

Findings from the 2012 GWRC Transport Perceptions Survey showed that 71% of respondents rated the level of service for pedestrians in the Wellington region as good, 9% rated the level of service as poor, 19% rated the level of service as neither good nor bad and 1% had no impression (Figure 3.6).

In 2012, 90% of respondents rated the level of service for pedestrians as either 'good' or 'neither good nor bad'. This has increased slightly from 88% in the previous survey and an increasing percentage of respondents are rating the level of service for pedestrians as 'good'. While these results are encouraging, the RLTS target has not yet been achieved.

[18] Active mode trips are counted as those in the categories: walk only and cycle.

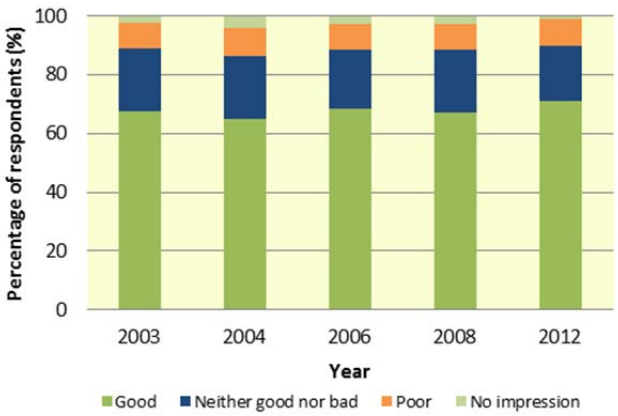

Figure 3.6: Perceptions of level of service for pedestrians (%). Source: GWRC transport perceptions surveys

Target: 70% of people report a 'good' or 'neither good nor bad' level of service for the strategic cycle network

Perceptions of the level of service for cyclists

In 2012, 50% of respondents to the GWRC Transport Perceptions Survey rated the level of service for cyclists as 'good' or 'neither good nor bad' (Figure 3.7). This is significantly below the RLTS target of 70% for this related outcome. Although the combined percentage of respondents rating the level of service for cyclists as 'good' or 'neither good nor bad' is similar to the result from the previous survey in 2008, in 2012 respondents were less likely to rate the level of service for cyclists as 'good'.

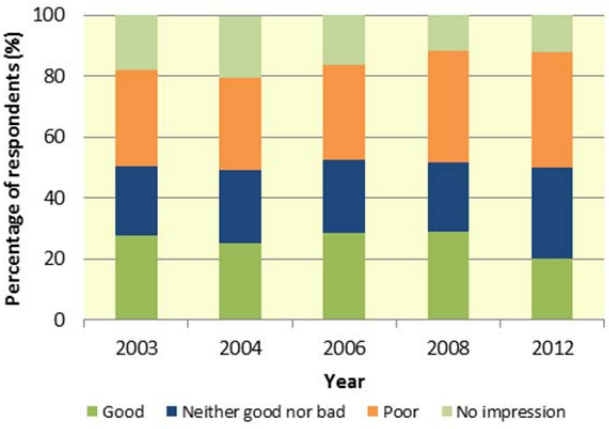

Figure 3.7: Perceptions of level of service for cyclists (%). Source: GWRC transport perceptions surveys

There were also 38% of respondents that rated the level of service for cyclists as 'poor'. This has increased from 36% in the previous survey and has also been gradually increasing since the survey began in 2003.

Related outcome summary

Wellington residents perceive the level of service of pedestrians to be much greater than the level of service for cyclists in the region. This disparity has increased over time.

The performance indicators for this outcome show that the RLTS targets have not been met. While there is still the need for improvement in the level of service for pedestrians if the target is to be met, some progress has been made. No progress has been made toward the level of service RLTS target for cyclists. Work focused on improving the level of service for cyclists across the region is required to make greatest progress on this outcome.

3.3 Increased safety for pedestrians and cyclists

Target: A reduction in the number of pedestrian casualties to no more than 125

Pedestrian casualties

The number of pedestrian[19] casualties[20] in the region, as reported in NZTA's Crash Analysis System (CAS),[21] is shown in Figure 3.8.

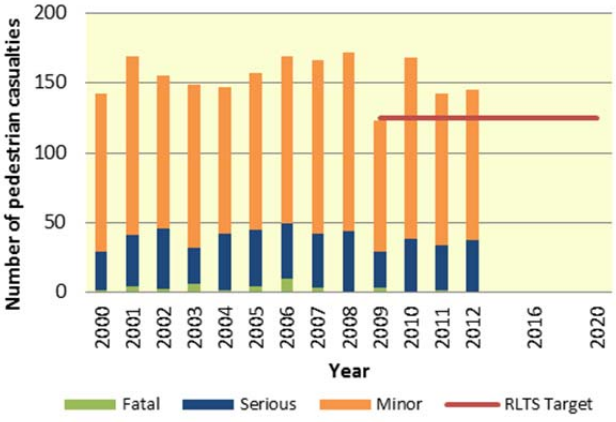

Figure 3.8: Pedestrian casualties by injury severity. Calendar year. Source: CAS

Fatal and serious injury pedestrian casualties have fluctuated over the measurement period, but in

[19] Includes road users in the categories: pedestrian, skateboard, and wheeled pedestrian.
[20] It is likely that there will be some under-reporting of serious injuries but we are assuming this remains reasonably consistent year-on-year.
[21] CAS is a tool that manages, analyses and maps traffic crash and related data.

general minor injury casualties have decreased. In 2012 there was one pedestrian fatality, 37 serious injuries and 107 minor injuries across the region. There has been little progress made over the last year, so the region remains above the RLTS target of no more than 125 pedestrian casualties per annum.

The number of pedestrian casualties in each territorial authority area, over the last three years, is shown in Figure 3.9. The largest number of pedestrian casualties occurs in Wellington City but these have declined over the last three years. Porirua and Wairarapa are areas that have experienced increases in pedestrian casualties over the last three years.

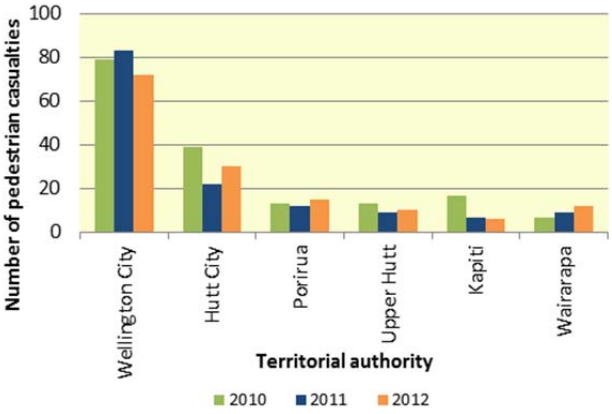

Figure 3.9: Pedestrian casualties by territorial authority. Calendar year. Source: CAS

It is important to note that the relative risk of pedestrians being injured remains low nationally and within the region, compared to other transport modes.

Perceptions of pedestrian safety

The GWRC transport perceptions survey showed that 72% of respondents felt safe, 18% felt neither safe nor unsafe and 9% felt unsafe when walking around the Wellington region in 2012 (Figure 3.10). Since the first survey in 2003 there has been little change in resident's perceptions of pedestrian safety.

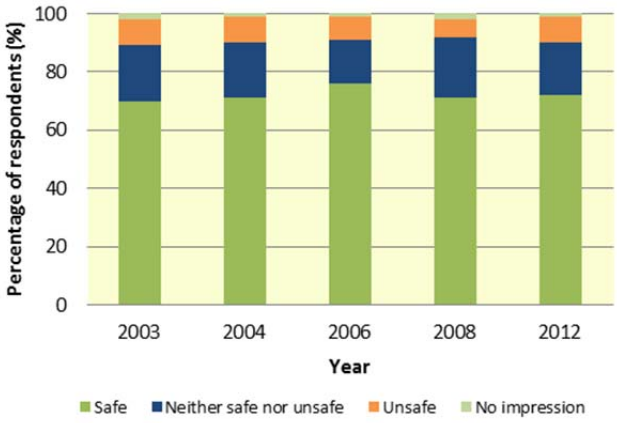

Figure 3.10: How safe do you think people are when walking? (%). Source: GWRC transport perceptions surveys

Target: A reduction in the number of cyclist casualties to no more than 110

Cyclist casualties

The number of cyclist casualties[22] in the region is shown in Figure 3.11. In 2012 there was one cyclist fatality, 33 serious injuries and 91 minor injuries across the region.

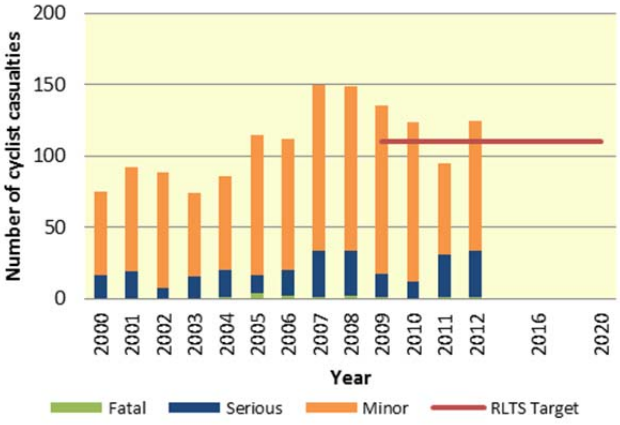

Figure 3.11: Cyclist casualties by injury severity. Calendar year. Source: CAS

Fatal and serious injury cyclist casualties gradually increased from 2002 to 2008, then decreased each year from 2008 to 2010. This decreasing trend has not been observed over the last two years, with a concerning increase in fatal and serious injury casualties being observed. Minor injuries gradually increased from 200 to 2007 but have, in general, decreased since this time.

[22] It is likely that there will be some under-reporting of serious injuries but we are assuming this remains reasonably consistent year-on-year.

Cyclist casualties are disproportionately high given the low number of cycle trips in the region (see section 3.1). Also the relative risk of cyclists being injured is high compared to other transport modes.

Figure 3.12 shows the number of cyclist casualties that occurred in each territorial authority area over the last three years. The largest number of cyclist casualties occurred in Wellington City followed by Hutt City. The number of cyclist casualties has increased or stayed the same in each territorial authority area over the last year.

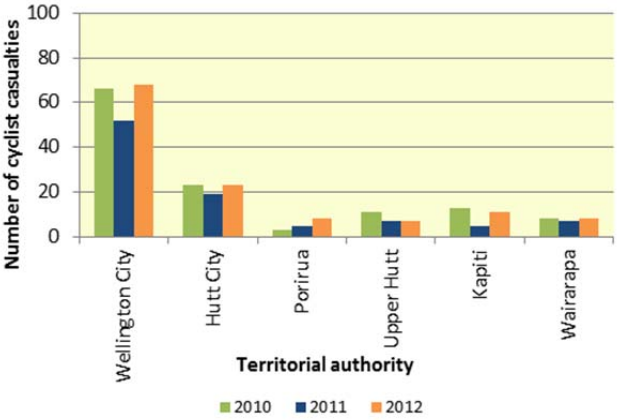

Figure 3.12: Cyclist casualties by territorial authority. Calendar year. Source: CAS

The number of cyclist casualties in 2012 is above the RLTS target of no more than 110 cyclist casualties per annum. Cyclist safety remains a challenge for the region. Further work to support and promote cyclist safety is required, this will be especially important to reduce fatal and serious cyclist casualties in the region.

Perceptions of cyclist safety

The GWRC transport perceptions survey in 2012 showed that 22% of respondents thought that cycling around the Wellington region was safe, 24% thought it was neither safe nor unsafe, 49% thought it was unsafe and 5% had no impression (Figure 3.11).

Since the first perceptions survey in 2003 there has been a gradual decrease in the percentage of respondents that think people are safe when cycling around the Wellington region and a gradual increase in the percentage thinking it is unsafe.

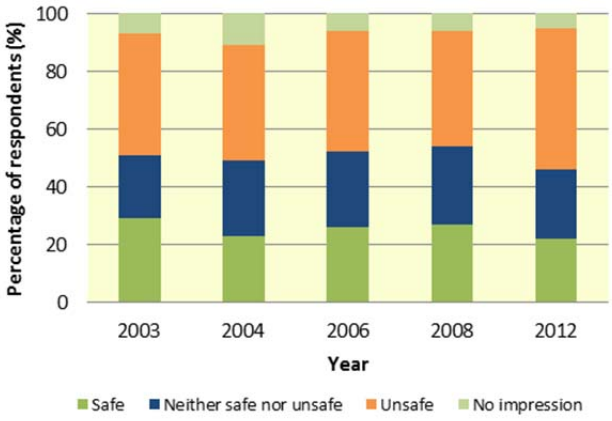

Figure 3.11: How safe do you think people are when cycling? (%). Source: GWRC transport perceptions surveys

Related outcome summary

The performance indicators show that the region has not made progress towards this related outcome and its associated targets. Pedestrian and cyclist casualties are much lower than they were in 2008, but there has been little change over the last couple of years. Of concern is the increase in the number of fatal and serious injury cyclist casualties since 2010.

Over the last few years there has been a concerted effort by a number of parties, including GWRC, to support and promote pedestrian and cyclist safety. There is still much room for improvement across the region, and a continued focus on pedestrian and cyclist safety will be needed to achieve the RLTS targets for this related outcome.

4. Environmental Outcomes

Introduction

This section discusses progress towards the RLTS outcomes with an environmental focus.

The following key outcome is sought for the region's land transport network:

- **Reduced greenhouse gas emissions**

The performance indicator associated with this key outcome is:

  – Carbon dioxide emissions

The related outcomes and associated performance indicators are:

- **Reduced private car mode share**
  – Mode of journey to work: motor vehicle
  – Wellington CBD cordon vehicle counts
- **Reduced fuel consumption**
  – Fuel consumption
- **Increased private vehicle occupancy**
  – Vehicle occupancy

Key outcome

4.1 Reduced greenhouse gas emissions

Target: Transport generated CO_2 emissions will be maintained below year 2001 levels

Carbon dioxide emissions

Carbon dioxide is the most abundant greenhouse gas formed from the combustion of fossil fuels.[23] Figure 4.1 shows the transport generated CO_2 emissions for the region, which have been calculated from fuel consumption information.[24]

In 2013, land transport fuel combustion produced 1,061 kilotonnes of CO_2 in the Wellington region. This is a decrease from 1,083 kilotonnes in 2012.

This is the first year that CO_2 emissions have fallen below 2001 levels, and this has been achieved despite a growing population. This result is very encouraging and if this can be maintained the region will remain on track to achieving the RLTS target.

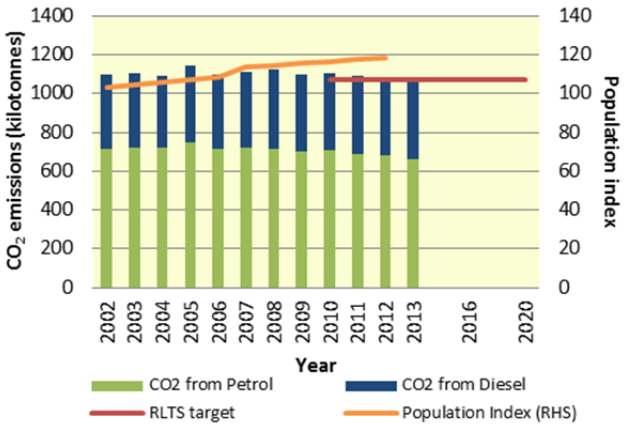

Figure 4.1: Transport generated CO_2 (kilotonnes). Sources: local authorities; Ministry of Economic Development

Key outcome summary

Carbon dioxide comprises the bulk of greenhouse gas emissions from transport, and 18% of New Zealand's total greenhouse gas emissions are from the transport sector.[25] Without intervention, these emissions are predicted to grow by 35% over the next quarter century.[26] A reduction in transport sector emissions will therefore significantly impact overall greenhouse gas levels.[27]

The performance indicator for this key outcome shows that, as a region, our transport-generated CO_2 emissions have gradually decreased over the last few years, despite population growth. It is likely that increased fuel prices, together with increased vehicle fleet efficiency, and the economic recession have assisted in curbing fuel sales, and hence transport-generated CO_2 emissions.

For the first time the region's transport generated CO_2 emissions are below the RLTS target for this outcome. Work to reduce transport-generated CO_2 emissions, which could include reducing the need to travel, improving the efficiency of the transport network, and promoting the use of active

[23] Ministry of Transport (2008). *The New Zealand Transport Strategy 2008*. Ministry of Transport, Wellington, p. 95.
[24] Carbon dioxide emission levels for the region have been calculated from fuel consumption data using production rates from the Ministry of Economic Development greenhouse gas emissions report (2010). The factors are: 2.31 kg/L of CO_2 per litre of petrol and 2.64 kg/L for diesel.
[25] Ministry of Transport (2008). *The New Zealand Transport Strategy 2008*. Ministry of Transport, Wellington, pp. 23.
[26] Ministry for the Environment (2007). *Understanding Climate Change. Get a Grasp of the facts*. Ministry for the Environment, Wellington, p. 7.
[27] Ministry of Economic Development (2007). *New Zealand Energy Strategy to 2050*. Ministry of Economic Development, Wellington, p. 34.

modes and public transport, appears to be having an impact, and this will need to be continued if the region's transport generated CO_2 levels are to be maintained.

Related outcomes

4.2 Reduced private vehicle mode share

Target: Private vehicles account for no more than 61% of region wide journey to work trips

Mode of journey to work: motor vehicle

Data from the 2006 New Zealand census shows that 69% of journey to work trips in the region were by motor vehicle[28] (Figure 4.2). This needs to be reduced if the RLTS target of 61% is to be achieved by 2020.

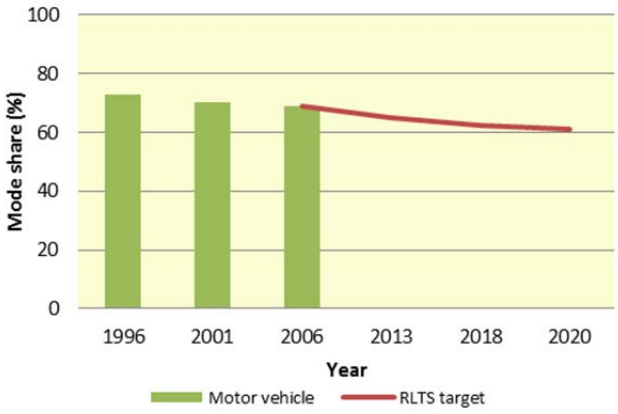

Figure 4.2: Motor vehicle mode share of journey to work trips (%). Source: Statistics New Zealand

Although the motor vehicle mode share of journey to work trips has decreased slightly since the 2001 census, the total number of motor vehicle journey to work trips increased by 10,311. This equates to a 9% increase in motor vehicle trips to work.

Mode share of journey to work trips by motor vehicle differs across the region (Figure 4.3). Wellington CBD and Wellington City have the lowest motor vehicle mode share at 20% and 56% respectively, and both areas have seen a steady decline in motor vehicle mode share since the 1996 census. The decline in motor vehicle mode share in Wellington City, including Wellington CBD, accounts for the observed decrease in motor vehicle mode share across the region, as all other territorial authority areas have seen little change in motor vehicle mode share across the three census cycles. To reduce motor vehicle use for journey to work trips in these territorial authority areas improved provision and encouragement to use other forms of transport must continue.

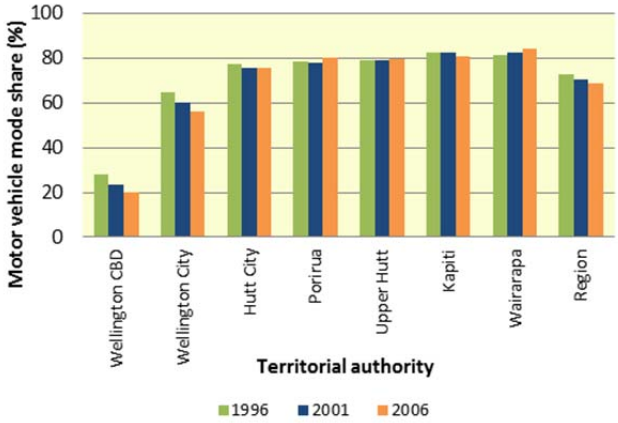

Figure 4.3: Motor vehicle mode share of journey to work trips by territorial authority and Wellington CBD (%). Source: Statistics New Zealand

Wellington CBD cordon vehicle counts

Wellington City Council commissions classified cordon vehicle counts in March each year. The number of vehicles entering the Wellington CBD cordon during the two-hour morning commuter peak period is shown in Figure 4.4.

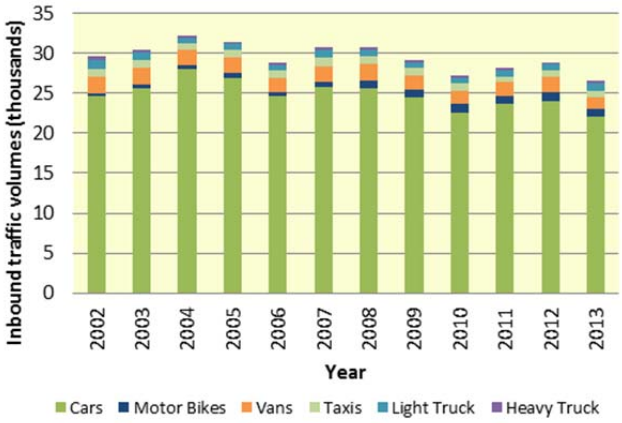

Figure 4.4: Wellington CBD cordon inbound traffic volumes (thousands), weekday AM two-hour peak, March. Source: Wellington City Council

In 2013 the total number of vehicles entering the cordon was just over 26,400, of which 83% were cars. The total number of vehicles entering the cordon has decreased by 8% over the last year, with reductions in all vehicle types except light

[28] Motor vehicle includes: drove a private car, truck or van; drove a company car, truck or van; passenger in a car, truck or van; and motorcycle or powercycle.

and heavy trucks. The number of vehicles entering the cordon has fluctuated over the last decade or so, but in general traffic volumes are lower now than they were towards the start of the millennium.

Related outcome summary

Census data has shown that motor vehicle mode share of journey to work trips has decreased over the last three census periods, although the total number of motor vehicle journey to work trips has increased over this time. As of 2006, the motor vehicle mode share was 69%, eight percentage points above the 2020 RLTS target.

The next census data release will not be until the 2013/14 financial year so it is not possible to tell whether the region has made any further progress towards the RLTS target since 2006. Although a different methodology, the Ministry of Transport uses results from its Household Travel Survey to work out mode share of journeys to work (for full-time workers aged 16+, journeys starting between 6am and 9.30am). The 2008-12 survey found that 64% of journeys to work in the Wellington region used motor vehicles.[29] This has decreased from 72% in the 2003-07 survey. If a similar percentage point decrease is assumed with the census data in Figure 4.2 it would mean that motor vehicle mode share of journey to work would be around 61%. Data from the Wellington CBD cordon survey also shows that the number of cars entering the cordon has also declined over the last decade. Findings from all these data sources indicate that the region is on track to achieve the RLTS target for this related outcome.

4.3 Reduced fuel consumption

Target: Petrol and diesel used for transport purposes per annum will remain below year 2001 levels

Fuel consumption

The quantity of petrol and diesel sold in the Wellington region provides a measure of fuel use in the region. Although some non-retail sales occur, and some fuel is purchased outside the region but used in it (and vice versa), this is the best measure of total regional fuel consumption currently available.

[29] Motor vehicle trips are counted as those in the categories: drive; drive + walk; passenger; and passenger +walk.

Total regional fuel sales decreased 1.9% over the last year, from 444 million litres in 2012 to 435 million litres in 2013 (Figure 4.5). Over this period both petrol and diesel sales decreased, with petrol sales decreasing by 2.1% and diesel sales decreasing by 1.9%. Petrol sales continue to account for the majority of fuel sales in the Wellington region, comprising 66% of all fuel sales in 2012/13.

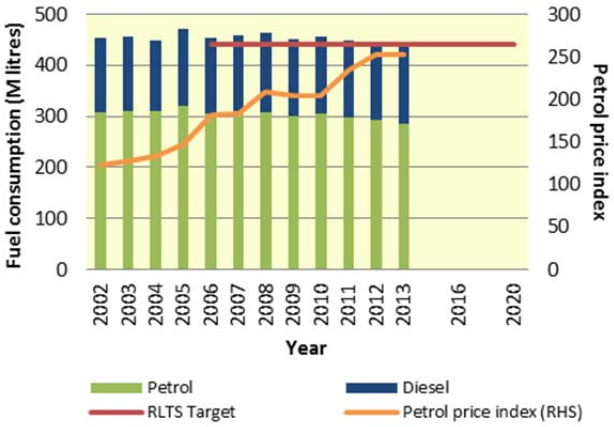

Figure 4.5: Fuel (diesel and petrol) consumption (million litres).
Source: local authorities

Since 2002, the Wellington region's population has increased by around 14%, but fuel sales are nearly 4% lower than they were in 2002, indicating that fuel use per capita has decreased. The steady increase in fuel price over this time is likely to be one of the reasons why fuel sales have decreased over time.

There are a number of measures that are outlined in the Regional Travel Demand Management Plan (2009) to reduce fuel use that may have also contributed to the lower growth in fuel sales. To bring about long lasting behaviour change and continue achieving the RLTS target continued effort is needed.

Related outcome summary

The performance indicator shows that, for the first time, fuel sales are slightly below the RLTS target for this related outcome. Fuel sales have been gradually decreasing over the last few years despite an increase in the region's population.

It is likely that increased fuel prices have assisted in curbing fuel sales together with increased vehicle fleet fuel efficiency, and the current economic climate. If the region is to maintain or continue to reduce its fuel sales in order to achieve the RLTS target in future years, continued

effort is needed. The key tools for influencing this target at a regional level include promotion of good public transport, walking and cycling networks, efficient land use and transport network and travel behaviour change programmes that reduce dependency on vehicle use and thus impact fuel use.

4.4 Increased private vehicle occupancy

Target: Vehicles entering the Wellington CBD during the 2 hour AM peak contain on average at least 1.5 people per vehicle

Vehicle occupancy

Figure 4.6 shows the average occupancy of vehicles entering the Wellington CBD. Only traffic heading into the city is counted during the two-hour morning commuter peak, and buses are not included.

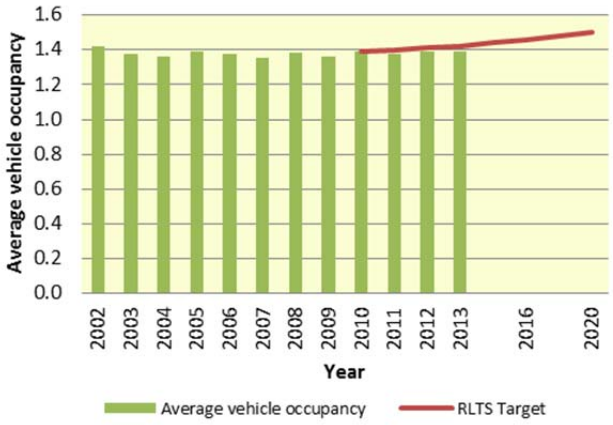

Figure 4.6: Wellington CBD cordon inbound vehicle occupancy, weekday AM two-hour peak, March. Source: Wellington City Council

In 2013, the average vehicle occupancy of vehicles entering the Wellington CBD was 1.39 persons. There has been little change in average vehicle occupancy over the last few years. A decade ago it appeared that there was a gradual decrease in vehicle occupancy but vehicle occupancy has plateaued since this time. To achieve the RLTS target by 2020, more progress towards increasing vehicle occupancy is needed by encouraging carpooling or ridesharing.

Related outcome summary

Data available on the average vehicle occupancy entering the Wellington CBD during the AM peak shows that much more effort is needed to increase vehicle occupancy if the RLTS target is to be achieved by 2020.

Vehicle occupancy is currently at 1.39 people per vehicle and has seen little change over recent years. Work in the region to encourage carpooling[30] has shown some encouraging results over the last couple of years, however to get the larger shifts required to meet the RLTS target by 2020, it is likely that deterrents for driving a single occupancy vehicle may also be required.

[30] See www.letscarpool.govt.nz

5. Road Network Efficiency Outcomes

Introduction

This section discusses progress towards the RLTS road network efficiency outcomes.

The following key outcome for road network efficiency is sought for the region's land transport network:

- **Reduced severe road congestion**

The performance indicator associated with this key outcome is:

  – Carbon dioxide emissions

Related outcomes and associated performance indicators for road network efficiency are:

- **Maintained vehicle travel times between communities and regional destinations**

  – Key route travel speed by road

- **Improved reliability of the strategic roading network**

  – Total incident hours

  – Reliability of travel time by road

Key outcome

5.1 Reduced severe road congestion

Target: Average congestion on selected roads will remain below year 2003 levels despite traffic growth

Average road congestion

Travel time performance is monitored by the NZTA in March and November of each year on the following Wellington region strategic routes:

- Route 1: Waikanae – Wellington airport
- Route 2: Upper Hutt – Wellington Railway Station
- Route 3: Porirua – Seaview (via SH58)
- Route 4: Karori – Island Bay.

These routes can be seen on the map in Figure 5.1. This information yields a measure of congestion (time delay per kilometre travelled) for the morning peak period (AM), interpeak period (IP) and afternoon peak period (PM). These are then used to calculate an all day average. Data is susceptible to day-to-day variations in network performance caused by incidents such as crashes, breakdowns and road works.

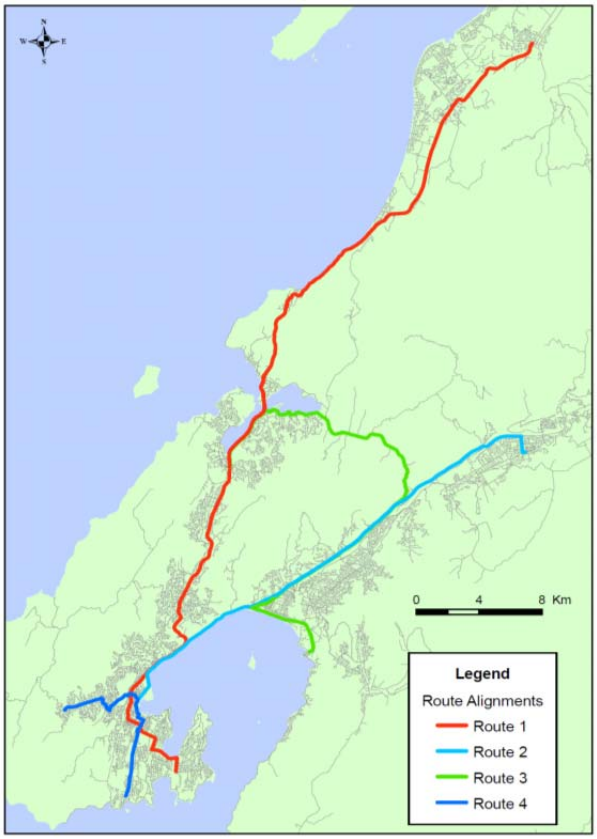

Figure 5.1: Greater Wellington region travel time performance monitoring network. Source: NZTA

Information from NZTA's March travel time surveys are used to determine the all day average congestion on a selection of the region's strategic road network (Figure 5.2). In 2013, the all day average congestion was 22.2 seconds delay per km travelled. Long-term trends indicate that all day average congestion has gradually increased since 2003.

Comparing congestion levels across different periods of the day shows that AM congestion levels are consistently higher than PM congestion levels, which in turn are higher than IP congestion levels.

Over the last year, AM peak congestion decreased from 32.4 to 30.6 seconds delay per km travelled. Interpeak congestion remained unchanged at 12.0 seconds delay per km travelled, and PM peak congestion increased from 19.2 to 21.0 seconds delay per km travelled.

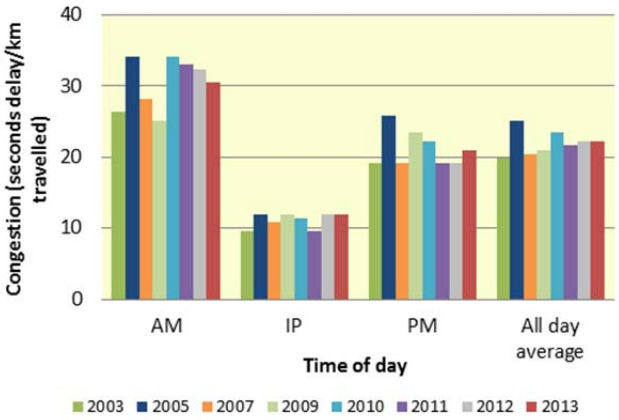

Figure 5.2: Average road congestion (seconds delay/km travelled) by time of day, March. Source: NZTA

The all day average congestion level remains above the RLTS target. Although the AM peak congestion rate has gradually decreased over the last few years, it still remains four seconds higher than it was in 2003. The high congestion rate during the AM peak means that the congestion rate currently exceeds the RLTS target by two seconds.

Key outcome summary

In the Wellington region, congestion is higher in the morning peak than the afternoon peak, which in turn is higher than the interpeak period. The afternoon congestion rate in 2013 increased over the last year, which is the first observed increase in afternoon congestion rates since 2008. Interpeak congestion rates remained unchanged and have fluctuated around 11 seconds delay per km travelled since measurements began. While it is encouraging that the morning peak congestion rate has decreased gradually over the last few years it remains around four seconds higher than the 2003 congestion level.

Over the last year there has been no change in the all day average congestion rate, meaning congestion rates continue to remain above the RLTS target of 20.0 seconds delay per km travelled. If the target is to be achieved, the level of demand on the transport network and day-to-day variations in network performance need to reduce, especially during the morning peak.

Related outcomes

5.2 Maintained vehicle travel times between communities and regional destinations

Target: Average vehicle journey 'speeds' shown in travel time surveys for selected key routes will remain at or above year 2003 levels

Key route travel speed by road

Information from the NZTA's March travel time surveys are used to calculate the average vehicle speed for the road network. This is calculated by dividing the surveyed actual travel time by the length of the road network. Figure 5.3 shows the average vehicle speed on a selection of the region's strategic road network by time of day. In 2013, the all day average vehicle speed on the region's roads was 53km/h. This is unchanged from 2011 and 2012 and below the RLTS target of 55km/h.

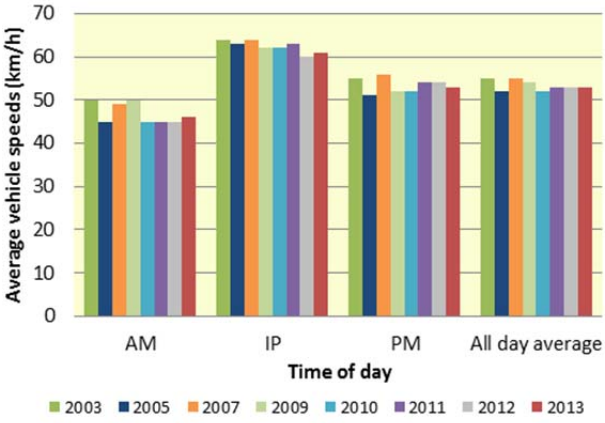

Figure 5.3: Road network average vehicle speeds (km/h) by time of day, March. Source: NZTA

The all day average vehicle travel speed across three different periods of the day show that travel speeds are consistently slowest during the AM peak and fastest during the interpeak. Although travel speeds are slowest during the AM peak they have remained unchanged over the last few years. Interpeak travel speeds however have gradually declined over time, whereas PM peak travel speeds have shown a very gradual increasing trend since 2008.

Related outcome summary

Assuming traffic volumes remain unchanged, increases in travel speed should lead to a general

reduction in travel time on the region's roads and reflect an improved overall level of service on the road network. The all day average travel speed has remained unchanged over the last few years at 53km/h. This is below the RLTS target of at or above 2003 levels (55km/h).

Average travel times at each period of the day also sit below the RLTS target of at or above 2003 levels. Morning peak travel speeds have been maintained over the last few years but they remain 4km/h lower than 2003 levels. It is encouraging to see a very gradual increase in afternoon peak travel speeds since 2008 and travel speeds are only 2km/h below 2003 levels. Travel speeds are consistently fastest during the interpeak, but have gradually decreased and in 2013 they were 3km/h below 2003 levels.

5.3 Improved reliability of the strategic roading network

Target: Continual reduction in total incident hours

Total incident hours

Data from the Communications and Resource Deployment (CARD) system showed that, in 2012, Police were in attendance at road traffic incidents[31] in the Wellington Police District for 3,083 hours (Figure 5.4). This is a reduction of 44 hours over the previous year.

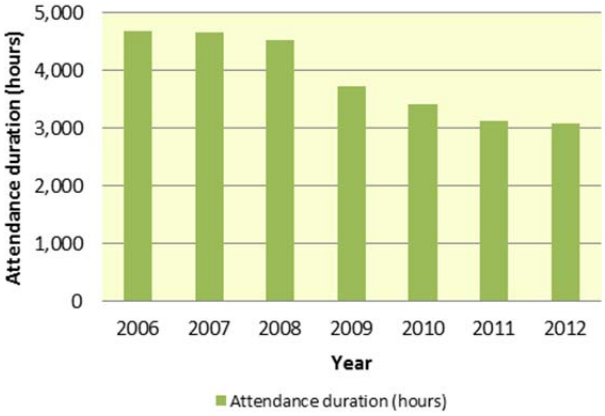

Figure 5.4: Police attendance time at road traffic incidents across the region. Calendar year. Source: Police

Police attendance hours at road traffic incidents have decreased each year since our first measurement in 2006. This continual reduction in Police incident hours means that the RLTS target is currently being met.

Reliability of travel time by road

Travel time variability is a measure of the reliability or certainty of travel times by road. The percentage variability in travel time by time of day, from NZTA's travel time surveys, is shown in Figure 5.5.

In 2013, the all day average travel time variability was found to be 15%, with 20% variability in the AM peak, 17% in the PM peak and 6% in the interpeak.

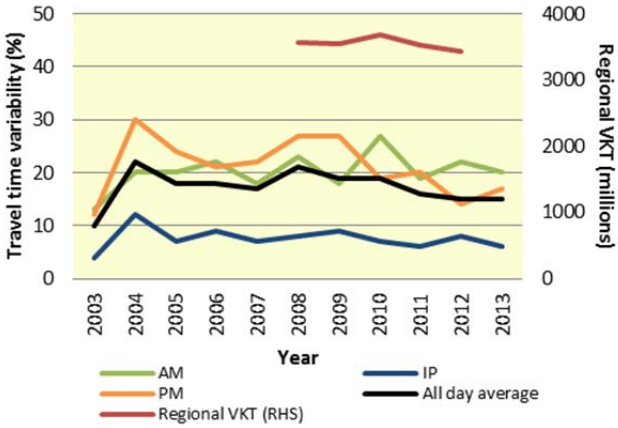

Figure 5.5: Travel time variability by road (%) by time of day, March. Source: New Zealand Transport Agency

The all day average percentage uncertainty in travel time has gradually decreased since 2008, and is 29% lower in 2013 than 2008. Regional vehicle kilometres travelled also decreased over the same period, but only by 3%.

Peak travel time variability is considerably higher than interpeak variability suggesting that peak loading is having an influence on the reliability of travel times during peak periods. However, the AM peak variability has remained relatively consistent around 20% since 2004, whereas interpeak and PM peak variability have gradually decreased.

Related outcome summary

Police attendance time at traffic incidents has decreased each year since 2006. Attendance time in 2012 was 3,083 hours which is a 34% reduction from 4,680 hours in 2006. This continual reduction in Police incident hours is encouraging and means the RLTS target is currently being met.

[31] Road traffic incidents include: breakdowns, blockages and vehicle collisions.

This downward trend needs to be maintained to achieve the RLTS target by 2020.

Peak period travel time variability is considerably higher than interpeak variability suggesting that peak loading is having an influence on the reliability of travel times during peak periods. The all day average travel time variability has gradually decreased since 2008, with AM peak variability remaining relatively unchanged, but interpeak and PM peak variability gradually decreasing.

The continued reduction in in Police incident hours and the gradual decline in travel time variability is encouraging is and means that the region has made progress towards this related outcome and the RLTS target is currently being met. This downward trend needs to be maintained to achieve the RLTS target by 2020.

6. Road Safety Outcomes

Introduction

This section discusses progress towards the RLTS road safety outcomes.

The following key outcome for road safety is sought for the region's land transport network:

- **Improved regional road safety**

The performance indicators associated with this key outcome are:

  - Road crash fatalities
  - Killed and seriously injured
  - Injuries by district

There are no related outcomes for road safety.

Key outcome

6.1 Improved regional road safety

Target: There are no road crash fatalities attributable to roading network deficiencies

Road crash fatalities

The total number of regional road crash fatalities[32] and the number of fatalities attributable to road factors[33] as reported by the Police to NZTA can be accessed via the Crash Analysis System (CAS).[34] Information from CAS found that, in 2012, no road crash fatalities were attributable to road factors. The last time that a road crash fatality in the region was attributable to road factors was in 2004.

Target: Continuous reduction in the number of killed and seriously injured on the region's roads

Killed and seriously injured

Figure 6.1 shows the number of fatal[35] and serious[36] injury casualties across all road user types in the Wellington region as reported by the Police to NZTA via CAS.

Figure 6.1: Total fatal and serious injury casualties, Calendar year. Sources: CAS

In 2012 there were 11 fatal and 189 reported[37] serious injury casualties. Total fatal and serious injuries increased from 2002 to 2007, and then decreased each year from 2008 to 2011. However, over the last year total fatal and serious injuries have increased slightly from 191 to 200, with fatalities decreasing by two and serious injuries increasing by nine.

Although there has been a slight increase in fatal and serious injuries over the last year, the general decreasing trend in serious injuries, and the halving of the number of fatalities over the last decade remain very positive outcomes in terms of the region's road safety record.

Reducing road crash fatalities and injuries is a priority for the region. The encouraging results over the last few years are all the more encouraging as both car ownership and car usage within the region have increased over this time. A continued focus in this area will be needed to ensure the region continues to make progress.

Injuries by district

Figure 6.2 shows total recorded minor, serious and fatal injury across all road user types in the Wellington region by district as reported by the Police to NZTA via CAS. The injuries per capita for 2011 and 2012, for each district, are also shown.

[32] Injuries that result in death within 30 days of a crash.

[33] To be able to monitor our performance against the RLTS target, we have taken the road factor category reported in the Crash Analysis System to be a proxy measure for road network deficiencies. Road factors include the categories: slippery, surface, obstructed, visibility limited, signs and signals, markings, street lighting and raised islands and roundabouts.

[34] The severity of a crash is determined as the most severely injured casualty in the crash.

[35] Fatal = injuries that result in death within 30 days of a crash.

[36] Serious = fractures, concussion, internal injuries, crushing, severe cuts and lacerations, severe general shock necessitating medical treatment, and any injury involving removal to and detention in hospital.

[37] It is likely that there will be some under-reporting of serious injuries but we are assuming this remains reasonably consistent year-on-year.

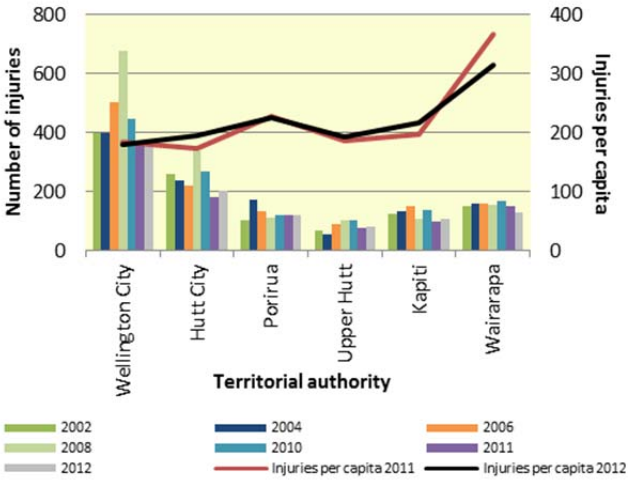

Figure 6.2: Total injury casualties by district. Calendar year. Source: CAS

There were 999 injuries across the region in 2012, a slight increase from the 990 recorded in 2011. The number of injuries in 2012 was highest in Wellington City (n=363), followed by Hutt City (n=200), Wairarapa (n=128) and Porirua (n=120).

When looking at injuries per capita a slightly different pattern is observed. As a region there were 204 injuries per capita in 2012, little change from 203 per capita in 2011. Injuries per capita vary across the districts, with the highest rate of injuries per capita recorded in Wairarapa in 2012, at 315 injuries per capita. This was followed by 226 injuries per capita in Porirua, 216 per capita in Kapiti and 195 per capita in Hutt City.

Over the last year the number of injuries per capita in Wairarapa has decreased by 14%, and was 27% lower than it was a decade ago in 2002. Although lower than they were a decade ago, the number of injuries per capita increased in Hutt City (from 174 to 195 injuries per capita) and Kapiti (from 197 to 216 injuries per capita) over the last year.

Key outcome summary

The performance indicators for this key outcome show that the region's road crash fatalities, which are rarely attributable to road network deficiencies, have decreased since 2000. Serious injury casualties which increased steadily earlier in the decade are now also seeing some encouraging results.

There are a number of notable differences by district. Wellington City has the highest number of injuries of all territorial authority areas in the region, but these have decreased substantially over the last few year. Although injury numbers in Wairarapa are much lower than those observed in Wellington City, Wairarapa has the highest injury rate per capita in the region. The injury rate per capita in the Wairarapa has decreased over the last year but it remains above the regional average. The injury rate per capita also exceeds the regional average in Porirua and Kapiti.

The RLTS target of no road crash fatalities attributable to roading network deficiencies has been met over the last year. Police data shows that the other RLTS target of a continual reduction in the number of killed and seriously injured on the region's roads has not been met over the last year, as although the number of fatalities decreased, the number of serious injuries increased over the last year.

While some progress has been made towards the key outcome of improving regional road safety, especially when compared to a few years ago, fatalities and casualties are still occurring on the region's roads and therefore remain an issue for the region. If road safety is to be significantly improved, more intervention, as outlined in the governments Safer Journeys Road Safety Strategy,[38] and cross-agency effort is required.

[38] Ministry of Transport (2010). *Safer Journeys: New Zealand's Road Safety Strategy 2010-2020*. Ministry of Transport, Wellington.

7. Land Use and Transport Integration Outcomes

Introduction

This section discusses progress towards the RLTS land use and transport integration outcomes.

The following key outcome for land use and transport integration is sought for the region's land transport network:

- **Improved land use and transport integration (in line with the WRS and local authority urban development strategies)**

Currently there are no specific performance indicators that provide adequate information to measure progress towards this key outcome and its related target.

There are two related outcomes for land use and transport integration. These are shown below, along with the associated performance indicators:

- **Improved integration between transport modes**
  - Public transport services with integrated fares and ticketing
  - Cycle storage and park 'n' ride facilities
- **Sustainable economic development supported (in line with the WRS)**
  - State highway vehicle kilometres travelled per GDP

Key outcome

7.1 Improved land use and transport integration (in line with the WRS and local authority urban development strategies)

Target: All new subdivisions and developments include provision for walking, cycling and public transport, as appropriate

There are no specific performance indicators that provide adequate information to measure progress towards this key outcome and its related target. However, Councils have indicated that they consider specific provisions for walking, cycling and public transport when preparing consent decisions on a case by case basis. The consideration is generally subjective. There are no specific thresholds, criteria, or data collected by councils on this, other than in specific subdivision and project files.

Council feedback is in line with findings from a previous review[39] of territorial authority procedures that identified that there was some consideration of active modes and public transport in all district plan policies.

Related outcomes

7.2 Improved integration between transport modes

Target: The majority of public transport services are covered by integrated ticketing

Public transport services with integrated fares and ticketing

An integrated, electronic ticketing system across public transport modes and operators is increasingly regarded as a fundamental component of a modern and flexible public transport network, and therefore continues to be sought by the RLTS.

Currently, no overall system of fares or ticketing integration is operational in the Wellington region. Some manually based integrated ticketing arrangements exist within the region, for example the 'Hutt Plus' bus/rail transfer tickets. Two major bus operators provide contactless payment card solutions, which cannot be used reciprocally, and rail ticketing is entirely manually-based.

The first phase of the Wellington Integrated Fares and Ticketing project is an investigation being led by GWRC in partnership with the New Zealand Transport Agency. The investigation will:

- test the business case for the development of integrated fares and ticketing in Wellington;
- determine the most effective and efficient way to deliver an integrated fares and ticketing solution for the Wellington region that meets the regional and national public transport objectives; and
- identify critical success factors to enable the project to be delivered successfully.

[39] Greater Wellington Regional Council. (2008). *Land use & Transport integration: Assessment report*, p16.

It builds on the work undertaken in the Wellington Fare Structure Review and in the development of the National Integrated Ticketing Interoperability Standard (NITIS). This standard underpins the National Ticketing Approach, which has initially been applied in Auckland, but which will also strongly influence integrated fares and ticketing in Wellington.

Target: Continued improvement in walking, cycle and park 'n' ride facilities at and around public transport interchanges

Cycle storage and park 'n' ride facilities

In 2013 there were a total of 5,253 park 'n' ride carparks and 294 cycle storage spaces available to commuters at railway stations across the region.[40] Park 'n' ride carparks and cycle storage spaces at railway stations have increased steadily over the last few years. Since 2009, park 'n' ride carparks have increased by around 11% and cycle spaces have more than doubled going from 132 to 294 spaces.

The increase in park 'n' ride facilities was due to increased carparks at Carterton station. The small increase over the last year in cycle facilities was due to changing cycle storage at Wellington station from a double box (which could hold 12 cycles) to a shelter (which can hold 20 cycles).

Related outcome summary

As many journeys are multi-modal, a good level of integration between different transport modes is sought by the RLTS. The current indicators show that some progress has been made toward the RLTS outcome of improved integration between transport modes. There are increasing numbers of park 'n' ride carparks and cycle storage spaces available at railway stations. However, no data is currently available relating to walking facilities or facilities around other public transport interchanges.

There has been little progress made toward the RLTS target of the majority of public transport services are covered by integrated ticketing, with the project just entering the investigation phase.

[40] Note that no data is currently available relating to walking facilities or facilities at bus interchanges.

7.3 Sustainable economic development supported (in line with the WRS)

Target: Continual reduction in vehicle kilometres travelled per GDP

State highway vehicle kilometres travelled, per GDP

Figure 7.1 shows the ratio of vehicle kilometres travelled (VKT) on the state highway network per GDP (Gross Domestic Product) for the region, indexed to 2006. State highway VKT per GDP decreased each year from 2006 to 2010, then spiked in 2011, but decreased over the last year. Longer term trends indicate that the region has made progress towards achieving the RLTS target.

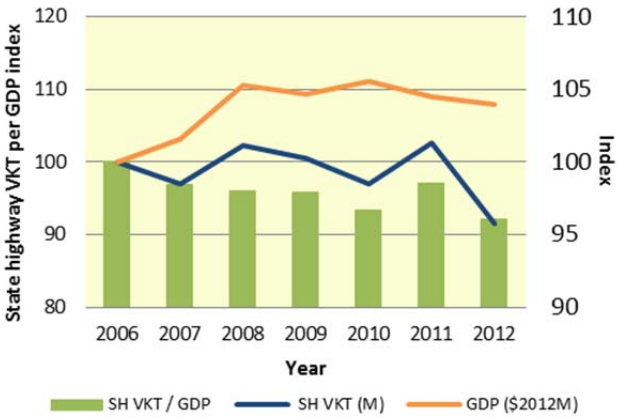

Figure 7.1: State highway VKT per GDP. 2006 = 100. Source: NZTA and BERL

Gross Domestic Product is an indicator of economic growth; therefore the relationship between economic growth and transport activity can be studied by comparing trends in both the region's real GDP and VKT. State highway VKT has fluctuated over the measurement period but shows a decrease over time. GDP has also fluctuated but has generally increased over time.

Related outcome summary

The performance indictor for this related outcome shows that progress has been made toward the RLTS target. Over the last year state highway VKT per GDP has decreased, mainly due to a large decrease in state highway VKT, although there has also been a slight decrease in GDP. This means there is less traffic on the region's state highway network for each unit of GDP.

8. Freight Outcomes

Introduction

This section discusses progress towards the RLTS freight outcomes.

The following key outcome for freight is sought for the region's land transport network:

- **Improved regional freight efficiency**

The performance indicator associated with this key outcome is:

  – Journey times for road freight between key destinations

The related outcome and associated performance indicator for freight is:

- **Improved inter-regional freight efficiency**

  – Removal of rail freight infrastructure constraints

  – Inter-regional freight movements

Key outcome

8.1 Improved regional freight efficiency

Target: Improved road journey times for freight traffic between key destinations

Journey times for road freight between key destinations

NZTA travel time survey data was used to create route travel times by combining sections of the regional routes described in Chapter 5 (Reduced severe road congestion). Representative routes for heavy goods movement are shown in Figure 8.1 and include:

- route 1: Seaview - Porirua via SH58
- route 2: Seaview - Porirua via SH1 and SH2
- route 3: Seaview – CentrePort

These routes represent typical road freight movements across the region.

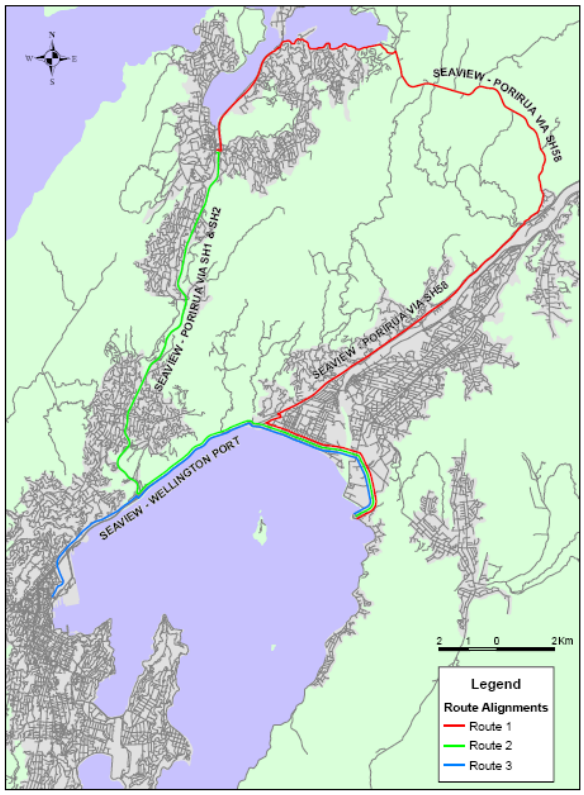

Figure 8.1: Representative regional road freight routes. Sources: NZTA; GWRC

Figures 8.2 to 8.4 show the all day average travel time in minutes for routes 1 to 3 respectively. In 2013 the all day average time taken to travel between Porirua and Seaview (eastbound) via State Highway 58 was 35.47 minutes. There has been little change in the all day average travel time for this route over the last year, although the travel time is lower that it was a decade ago. Travel time is still highest during the AM peak, but a decrease in travel time has been observed over the last year. A slight decrease in travel time was observed for the PM peak but the interpeak travel time increased slightly. All day average travel time on the westbound route, between Porirua and Seaview via State Highway 58, has fluctuated around 33 minutes over the measurement period.

Travel between the same locations (Seaview and Porirua) via State Highways 1 and 2 have consistently had a lower all day average travel time than travel via State Highway 58, which is not surprising considering the shorter distance. Over time there has been a gradual increase in all day travel time in the westbound direction for this route. The all day average travel time also increased in the eastbound direction from 2003 to 2011, but decreases have been observed over the

last two years. In the eastbound direction it is the decrease in AM peak travel time that has resulted in the observed decrease in all day average travel time over the last few years, whereas in the westbound direction the AM peak travel time has increased resulting in the increased day average travel time.

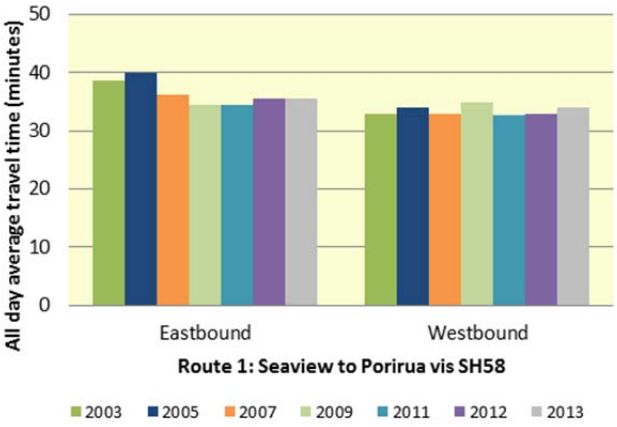

Figure 8.2: All day average travel time (mins) on road freight route 1, March. Sources: NZTA; GWRC

The difference in eastbound and westbound travel time between route 1 and route 2 has decreased over time. For example, eastbound travel via State Highway 58 was around 17 minutes slower than travel via State Highways 1 and 2 in 2003, but in 2013 this had decreased to around 13 minutes. In comparison, the decrease in the westbound direction is much smaller from 14 minutes in 2003 to 13 minutes in 2013.

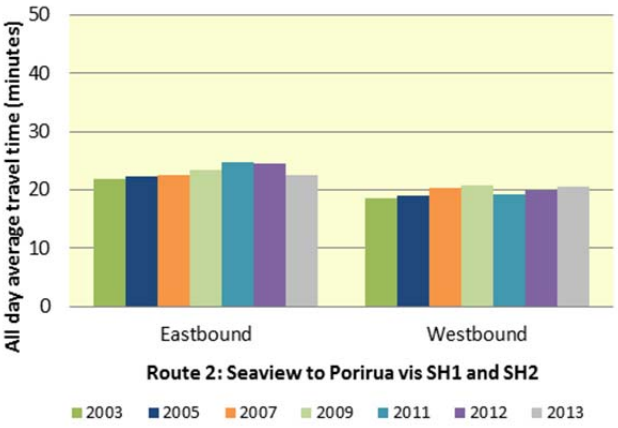

Figure 8.3: All day average travel time (mins) on road freight route 2, March. Sources: NZTA; GWRC

The all day average travel time between Seaview and CentrePort was just under 18 minutes in the eastbound direction and just under 19 minutes in the westbound direction in 2013. There has been a gradual increase in all day travel time both eastbound and westbound since the surveys began in 2003, but travel times have remained relatively static over the last few years.

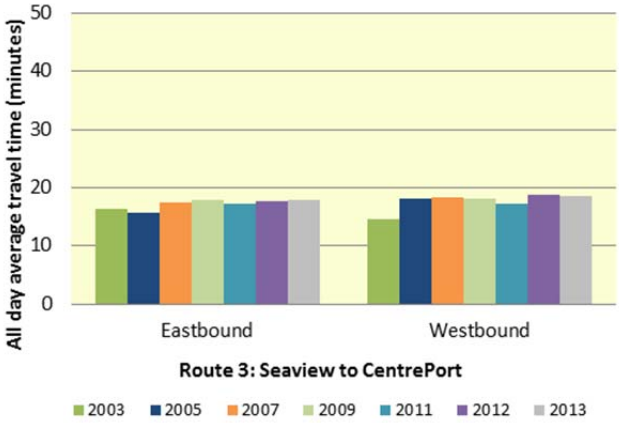

Figure 8.4: All day average travel time (mins) on road freight route 3, March. Sources: NZTA; GWRC

Key outcome summary

As heavy vehicle traffic is closely related to economic activity, it is important that freight can be efficiently moved between key destinations in the region. In general the all day average travel time in the eastbound direction on the Seaview and Porirua via SH58 freight route has decreased over time. In the westbound direction the all day average travel times are similar now to what they were when measurements began in 2003.

In general the all day average travel times on the other two freight routes have increased over time. These increases tend to be due to large increases in travel times during the AM peak, whereas the PM peak and interpeak travel times have either decreased or remained relatively unchanged. However, over the last couple of years all day average travel times have decreased in the eastbound direction on the Seaview to Porirua route via SH1 and SH2, so measurements over the next few years will establish whether this is an on-going trend.

The all day average travel time decreased in the eastbound direction but increased in the westbound direction on all three routes. This means that little progress has been made towards the RLTS key outcome and stretch target.

A limitation of the current indicators is that they do not show what time of day freight traffic moves around the region. For example, if freight traffic is increasingly avoided travel during the AM peak, then it is possible that more progress

towards this RLTS outcome would have been achieved.

Related outcome

8.2 Improved inter-regional freight efficiency

Target: Infrastructure constraints to rail freight movements are removed

Removal of rail freight infrastructure constraints

KiwiRail highlighted three key areas where infrastructure constraints limited the movement of rail freight through the region. These areas were:

- Kaiwharawhara throat
- North-South junction[41]
- Paekakariki to Waikanae

All three areas of infrastructure constraint have now been addressed by KiwiRail. The work at Kaiwharawhara throat has addressed merging and capacity issues, and the work carried out at North-South junction[42] and between Paekakariki to Waikanae has been to reduce delays and the conflicts experienced between commuter and freight services.

Inter-regional freight movements

Freight is measured in a range of non-comparable units, and some data is commercially sensitive, so absolute numbers are not presented in this indicator. An index of freight movement has been created and this is shown in Figure 8.5. The total is an aggregate measure based on several assumptions and is for indicative purposes only.

It must be noted that much recorded freight does not have a regional origin or destination and is counted twice. For example a container of logs may enter the region by road and leave by sea. Air freight figures are unavailable.

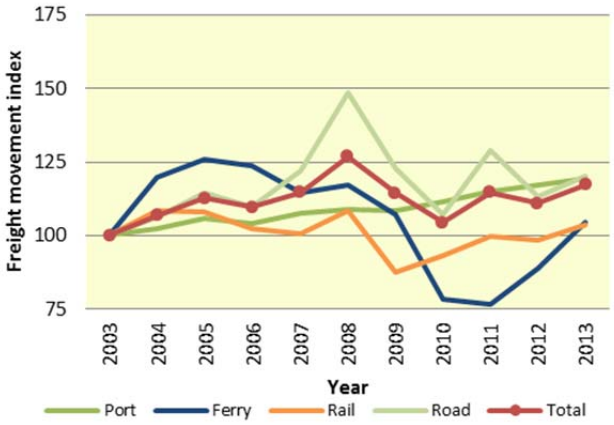

Figure 8.5: Inter-regional freight movements. 2003 = 100. Sources: CentrePort; Strait Shipping; Interislander; NZTA;KiwiRail

Note: Road freight refers to the previous calendar year.

An increase in inter-regional freight movement has occurred since 2010, after a steady decrease in freight movement between 2008 and 2010. In 2013, inter-regional freight movement was 17% higher than that observed in 2003. Freight movement has increased by each transport mode over the last few years, and although there have been fluctuations over the measurement period each mode has a higher freight movement in 2013 than 2003. Freight movement by ferry has seen the largest growth over the last year at 18%.

In 2013, as in previous years, the port and road network accounted for the largest inter-regional freight movements. This reinforces the need to maintain and improve the quality and reliability of the road network and port accessibility.

Related outcome summary

Inter-regional freight movement has increased by 17% over the 2003 to 2013 period, with a peak in freight movement observed in 2008. The majority of inter-regional freight is moved by road or through the port.

Three areas where rail freight infrastructure was constrained have previously been identified by KiwiRail. Over the last few years KiwiRail have removed most of the identified infrastructure constraints. This means that the RLTS target for this related outcome has been largely achieved.

The performance indicators however, do not provide sufficient information to accurately reflect progress towards the related outcome of improved inter-regional freight efficiency.

[41] The section of railway between Pukerua Bay and Paekakariki.
[42] There is still some constraint at North-South junction due to single tracking in the tunnels. Addressing this issue will involve significant cost.

9. RLTS Implementation

9.1 Overall progress achieved in 2012/13

Highlights of the 2012/13 year include:

- approximately 35.2 million passenger trips by public transport
- approximately 0.3 million passenger trips using the Total Mobility Scheme
- completed conversion of SE carriages for use on Wairarapa line (June 2013)
- all 96 new Matangi trains now in service (November 2012)
- signed contract for delivery of a second tranche of 70 Matangi trains (June 2013)
- signed 85 year Track Access Agreement with KiwiRail (June 2013)
- Porirua Railway Station land purchased from NZTA to secure up to 300 park and ride spaces (June 2013)
- four new bus shelters installed and 11 replaced across the region
- completed construction of the Tawa rail station upgrade (May 2013)
- Ganz Mavag train fleet sold (June 2013)
- completed construction of a cycle cage at Wellington Railway Station (June 2013)
- preferred public transport fare structure approved by Council (June 2013)
- completed Wairarapa public transport service review and implemented changes (September 2012)
- launched *Your Transport Today* and *It's your Transport* marketing campaign (March 2013)
- produced Asset Management Plans for public transport assets (February 2013)
- completed the Paekakariki Hill Road intersection improvements (March 2013)
- eleven new schools enrolled in the school travel plan programme with 70 now participating
- completed a pilot programme for scooter safety and rolled out programme to schools (December 2012)
- completed the annual workplace active commute programme *Active a2b* (May 2013)
- expanded *Let's Carpool* nationally with Christchurch and Bay of Plenty joining
- completed and published tests of new bike lights and reflective gear with Consumer Magazine
- held the Car-Free Comedy Showdown at Soundings Theatre, Te Papa (September 2012)
- completed the Wellington Transport Strategic Model upgrade (December 2012)
- completed development of the Wellington Public Transport Model (December 2012)
- development of a new integrated Network Plan concept
- adoption of the updated Western Corridor Plan (August 2012)

9.2 Major 2013/14 actions programmed

Major programmes and projects anticipated to **be completed** in 2013/14 include:

- Completion of the post-implementation reviews of public transport service changes in Porirua (July 2013)
- completion of Real Time Information display installation programme (Wellington CBD)
- completion of Real Time Information rollout on rail services
- completion of public transport service review for Wellington City
- completion of the updated Transport Procurement Strategy
- completion of post-implementation reviews of public transport service changes in Kapiti and Wairarapa
- completion of the Wellington Public Transport Spine Study
- completion of the PT Spine Alternative Funding Study

Major programmes anticipated to **commence or continue** in 2013/14 include:

- continue support for bus priority measures in Wellington CBD

- commence the development of a new Regional Public Transport Plan
- continue investigation of integrated ticketing and fares in the Wellington region
- continue the Wellington City school bus review
- continue the Hutt Valley public transport service review
- commence the post-implementation review of the February 2011 rail timetable changes
- commence development, with KiwiRail, of the rail Network Management Plan
- commence review of the future of the Kaiwharawhara rail station
- continue to monitor and adjust noise mitigation measures on the Johnsonville line
- continue Transmission Gully preparation activities
- continue the development of the Mackays to Peka Peka Expressway project
- continue the development of the Basin Reserve, Mount Victoria Tunnel duplication and Ruahine Street project
- continue the development of the Ngauranga to Aotea Quay project
- continue the development of the Peka Peka to Otaki project
- commence construction of the Buckle Street Underpass at Memorial Park
- continue the *Last Choice* and *Mind the Gap* road safety campaigns
- commence trial of carpooling software for school commutes
- continue *School Travel Plan programme* and *Movin'March* in partnership with TAs
- continue *Be Safe – Be Seen* road safety campaign
- continue *Active a2b* programme
- continue motorcycle safety initiatives in partnership with TAs and Police
- continue quarterly Regional Road Safety Coordinator Forums
- continue cyclist skills training programme *Pedal Ready* supported by Road Safety Trust and KiwiSport
- continue bus drivers/cyclists workshops with Cycling Advocates' Network and bus operators
- continuing the Cycling and Walking Journey Planner and Let's Carpool website
- coordinate *Spring to the Street* commute challenge
- commence development of the integrated Regional Land Transport Plan

Appendix 1 – Regional Demographics

Introduction

The indicators in this section provide some additional context for the AMR and present trends in regional demographic variables driving transport demand. The following indicators are described:

- Population
- Population age distribution
- Occupied dwellings
- Unemployment
- Economic activity
- Building activity
- Vehicle ownership per household
- Vehicle fleet age
- Car registrations
- Motorcycle registrations

Indicators

Population

The population of the Wellington region by district is shown in Figure I.1. Information to 2006 is actual census data, and beyond this date population projection estimates are shown. The 2006 census counts found that around 449,000 people lived in the Wellington region, with 40% living in Wellington City, 22% in Hutt City, 11% in Porirua City, 10% in Kapiti District, 8% in Upper Hutt City and 9% in Wairarapa.

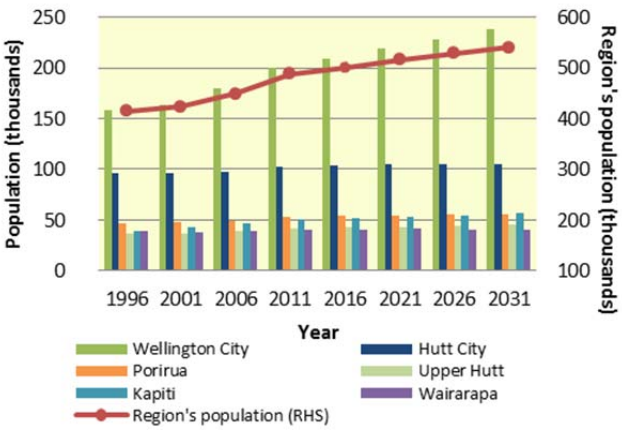

Figure I.1: Population, census and projected, by district. Source: Statistics New Zealand

Note: Projections are based on estimated population at 30 June 2006 as a base, from the October 2012 medium projection series.

The population change by district, in five year intervals, between the 1996 and 2006 census years is shown in Table I.1. Relatively modest regional population growth is evident from census data. From 1996 to 2001 there was 2% population growth across the region with the majority of growth in Wellington City and Kapiti Coast District. Over the five years from 2001 to 2006, all areas of the region experienced population growth with Wellington City and Kapiti Coast District once again experiencing the largest growth at 10% and 9% respectively. The overall population growth rate for the region was 6% or 25,200, a higher rate than previous census period. This growth is mainly due to Wellington City's population increase of about 15,600.

District	1996 to 2001		2001 to 2006	
	Actual change	% change	Actual change	% change
Wellington City	6,100	4%	15,600	10%
Kapiti Coast District	3,900	10%	3,800	9%
Upper Hutt City	-300	-1%	2,000	6%
Porirua City	700	2%	1,200	2%
Hutt City	400	0%	2,200	2%
Wairarapa	-300	-1%	400	1%
Wellington Region	**9,700**	**2%**	**25,200**	**6%**

Table I.1: Census population growth rates, by district. Source: Statistics New Zealand

Note: Numbers have been rounded to the nearest hundred

The projected population change for the region to 2031 shows 20% growth from the 2006 census population to a total of 539,610. Wellington City and Kapiti Coast District are projected to have the most growth at 32% (approximately 58,100) and 22% (approximately 10,100) respectively. Porirua City's population is projected to increase 14% (approximately 6,850) by 2031. The projected increase of 8% in Hutt City and 16% in Upper Hutt would result in population growth of almost 14,000 in the Hutt Valley. The population in the Wairarapa area is projected to have a 4% increase in population by 2031.

The projections indicate that by 2031, 44% of the region's population will be in Wellington City, an increase from the 40% in 2006. All other areas show a slight decline in the proportion of the region's population in that area from 2006 to 2031.

Population age distribution

The population distribution by broad age group in the Wellington region is shown in Figure I.2. Information to 2006 is actual census data and beyond this date population projections based on estimates are shown.

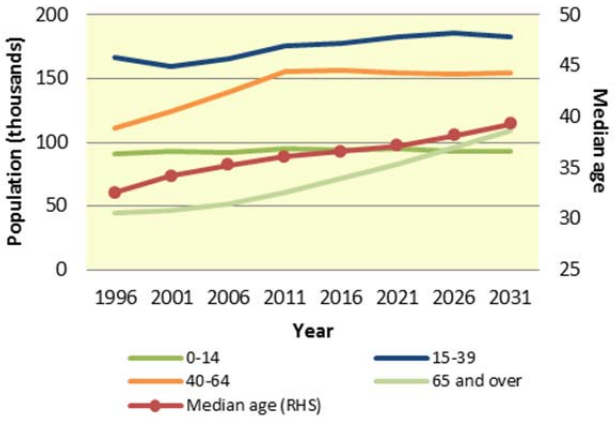

Figure I.2: Population age distribution, census and projected. Source: Statistics New Zealand

Note: Projections are based on estimated population at 30 June 2006 as a base, from the October 2012 medium projection series.

Statistics New Zealand projections indicate that by 2031, the population of the 0-14 year age group will increase by less than 1% from that of the same group in 2006, the 15-39-64 age group will increase by 11% over the same period, and the 65 and over age group will have the largest increase at 113%. This means that in 2031, the 65 and over age group will make up around 20% of the region's population, compared to only 11% in 2006. These changes to the age distribution of the region's population result in the median age increasing from 35.3 years in 2006 to 39.3 years in 2031.

Although the population of the working age groups (15-64 years) is forecast to increase by 11% between 2006 and 2031, the percentage of this group in the region's population decreases from 68% to 63%. In particular the proportion of 15-39 year olds is projected to decrease from 36% to 34%. This age group includes much of the talent that drives economic growth. Therefore, the decline in the proportion of the working age population will significantly impact on the labour force, demand for various goods and services and the region's economic growth.

Occupied dwellings

The number of occupied dwellings by district, collected in the New Zealand census, is shown in Figure I.3. The total number of occupied dwellings in the region was found to increase by over 7% from the 2001 to 2006 census. This followed increases of around 5% from the previous census period.

From 2001 to 2006, Kapiti Coast District and Wellington City experienced 11% and 10% growth in occupied dwellings respectively. The increase in occupied dwellings in these two areas accounts for just over 70% of the growth in occupied dwellings across the region.

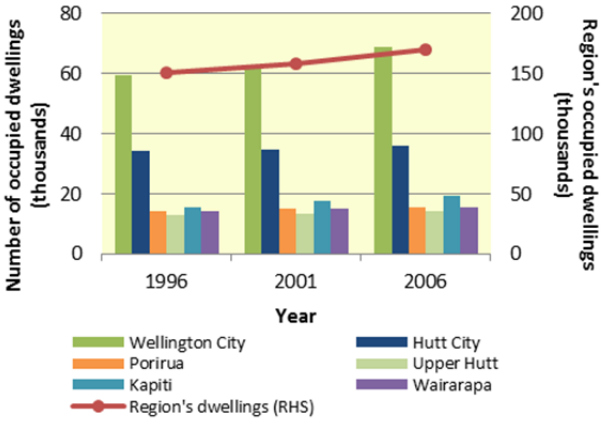

Figure I.3: Occupied dwellings by district, census. Source: Statistics New Zealand

The average number of people per occupied dwelling over the past three census periods is shown in Table I.2. In 2006 the average number of persons per occupied dwelling was 2.7, the same as in 2001. The average number of people per occupied dwelling has consistently been highest in Porirua City area and lowest in Kapiti Coast District. The latter reflects the large retirement-aged population living in Kapiti Coast District.

District	Number of persons per occupied dwelling		
	1996	2001	2006
Wellington City	2.7	2.6	2.6
Kapiti Coast District	2.5	2.4	2.4
Upper Hutt City	2.9	2.7	2.7
Porirua City	3.3	3.2	3.1
Hutt City	2.8	2.8	2.7
Wairarapa	2.7	2.6	2.5
Wellington Region	**2.8**	**2.7**	**2.7**

Table I.2: Average number of persons per occupied dwelling, by district. Source: Statistics New Zealand

Unemployment

Figure I.4 shows the unemployment rate as a percentage of labour force population for the census usually resident population count aged 15 years and over, by district. When compared with figures from the 1996 and 2001 census, unemployment rates in 2006 have fallen markedly in all districts across the region, most noticeably in Wairarapa and Porirua. The regional unemployment rate in 2006 was 5.2%, down from 7.5% in 1996.

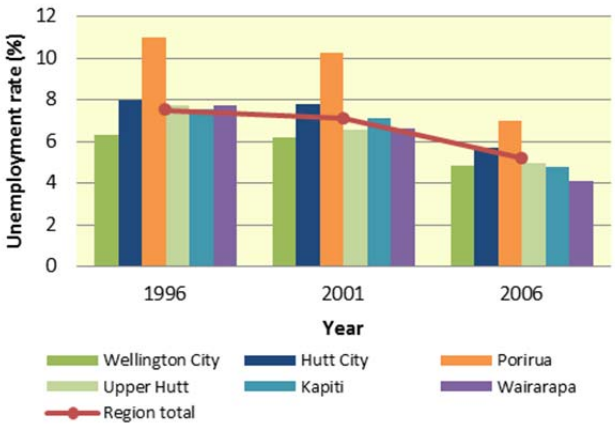

Figure I.4: Unemployment rate (%) by district, census. Source: Statistics New Zealand

Porirua City's unemployment rate of 7.0% continues to remain the highest in the region. Wellington City had the lowest unemployment rate in 1996 and 2001, but in 2006 Wairarapa experienced the lowest rate at 4.1%.

The economic down turn over the last few years will have had a huge impact on the demand for labour force and therefore the region's unemployment rate. As the most recent census data dates back to 2006, the impact of the recession on the labour market is not reflected in Figure I.4. However, regional data available through the Household Labour Force Survey indicates that the unemployment rate in the Wellington region decreased from 2006 (4.5%) to 2008 (3.6%), but has steadily increased since this time up to 6.4% in 2012.

Economic activity

Figure I.5 shows a composite measure of economic activity that includes: business and consumer confidence; retail sales; new motor vehicle registrations; regional exports; registered unemployment; building consents; real estate turnover; job advertisements; accommodation; and results from the Household Labour Force Survey.

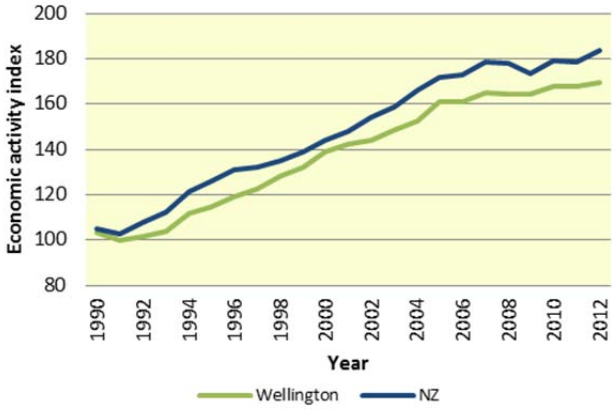

Figure I.5: Economic activity by region. March quarter. Index: 1990 = 100. Source: National Bank (now ANZ)

The Wellington region experienced an increase in economic activity of 0.7% for the year ending on 31 March 2012, following no change the previous year. Economic activity for New Zealand as a whole increased by 2.7% over the last year, following a 0.3% decrease the previous year.

Despite increased economic activity in the Wellington region over the last two decades, the Wellington region has experienced lower growth in economic activity than New Zealand.

Building activity

Figure I.6 shows the number of new residential and non-residential buildings in the region, and their total construction value (base year = 2013). The total number of building consents issued in the year ended March 2013 increased by 1% following a decrease of 16% the previous year. Over the last year, the number of residential consents increased by 3% whereas the number of non-residential consents decreased by 8%. The total number of building consent issued in 2013 (n=1,470) was the second lowest recorded this millennium, with the lowest being recorded in 2012.

Although there was a very small increase in the number of building consents over the last year, the real value of construction decreased by 7%, meaning that the building consents were for lower value constructions. Whilst the value of construction is a useful measure of total construction activity, it should be noted that this is susceptible to variation in the unit costs associated with the construction sector.

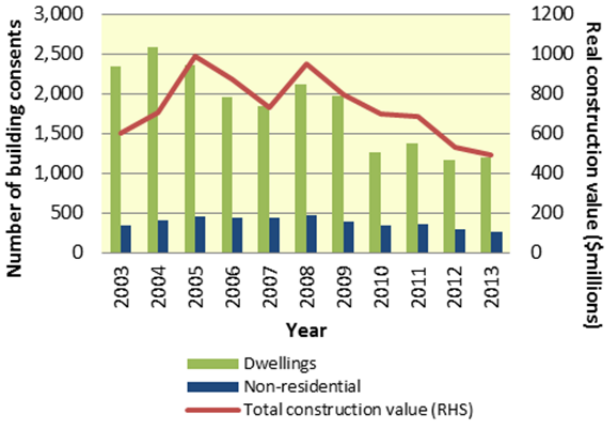

Figure I.6: Building activity (number of consents) and real construction value, year ended March. Construction value base year = 2013. Source: Statistics New Zealand

Vehicle ownership per household

Figure I.7 shows the average number of cars per household taken from the New Zealand census, by district. The average number of cars per household in the region has grown steadily from 1.37 to 1.44 to 1.50 across the last three census periods. In 2006 households in Wairarapa had the highest car ownership rates at 1.66, followed by Porirua (1.62) and Upper Hutt (1.61). Households in Wellington City have the lowest car ownership at 1.39 cars per household.

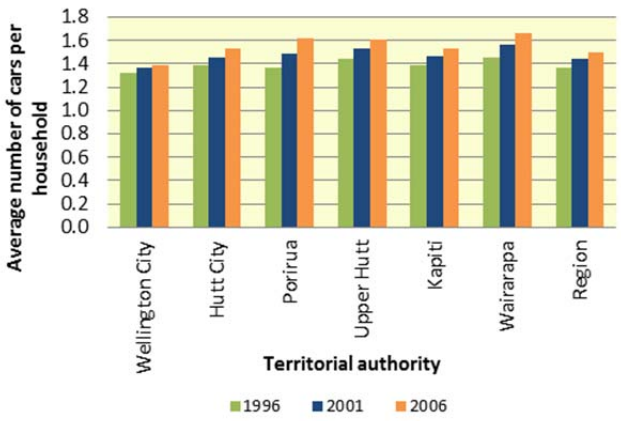

Figure I.7: Average car ownership per household, by district, census. Source: Statistics New Zealand

Average car ownership per household has grown in every district across each census period, with Porirua experiencing an 18.8% increase in the average number of cars per household from 1996 to 2006. This increase was a result of a 8.8% increase between the 1996 and 2001 census, and then a further 9.2% increase between the 2001 and 2006 census. The rate of growth in the average car ownership per household decreased slightly over the last census period, with Wellington City and Kapiti experiencing the largest decreases in growth. The growth in average car ownership is lowest in Wellington City with 3.8% growth observed between 1996 and 2001 followed by 1.5% growth between 2001 and 2006.

Levels of car ownership correlate inversely with urban density. The lower rate of car ownership by household in Wellington City reflects a trend for inner-city living and proximity to employment. However, as a region the increasing vehicle ownership rates will impact on the transport network.

Vehicle fleet age

Figure I.8 shows the average vehicle fleet age of heavy vehicles and light vehicles in the Wellington region. The average fleet age for heavy vehicles in the Wellington region was 14.5 years in 2012, and has steadily increased from 12.2 years in 2005.

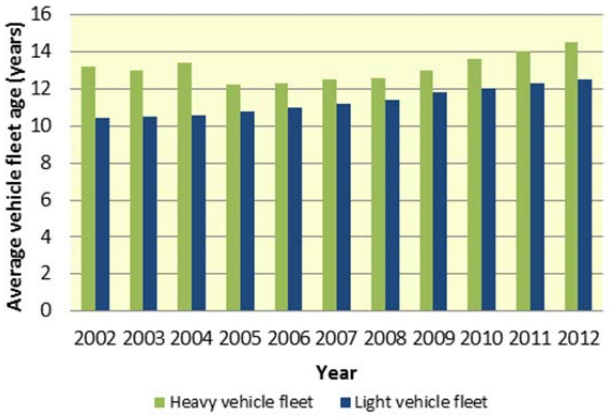

Figure I.8: Average vehicle fleet age. Source: Ministry of Transport TMIF TV006

The average light vehicle fleet age is slightly lower than that for heavy vehicles and was found to be 12.5 years in 2012. The average age of the light vehicle fleet in the Wellington region has gradually increased from 10.4 years in 2002.

The average vehicle fleet age has not increased significantly over the last decade, with heavy vehicles being 1.3 years older and light vehicles 2.1 years older. This indicates that turnover rates for the region must be relatively high. This is important as it has implications for road safety, fuel economy and vehicle emissions.

Car registrations

Figure I.9 shows licensed car numbers in Wairarapa and the rest of the region

('Wellington') recorded on the NZTA transport register. The total number of licensed cars in the region was 242,019 in 2012, up 0.2% on the previous year. Since 2003 there has been an 11% increase in licensed car numbers across the region, with nearly all this growth occurring between 2003 and 2007.

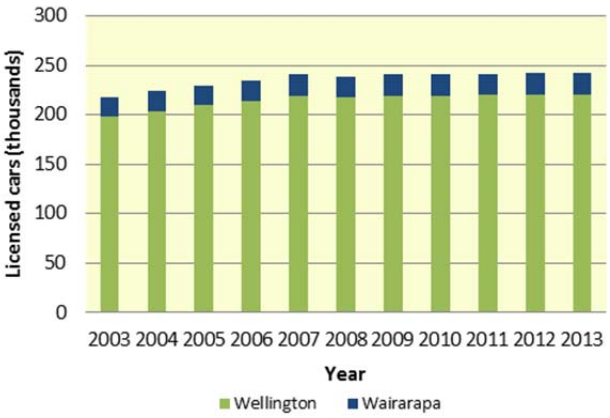

Figure I.9: Licensed cars. Source: New Zealand Transport Agency

It is also worth noting that all territorial authorities across the region have experienced slight increases in licensed car numbers over the last few years, except for Hutt City, Upper Hutt City and Carterton.

The availability of private cars influences car use, demands on the road network and pressure on the environment.

Motorcycle registrations

Figure I.10 shows the number of licensed motorcycles in Wairarapa and the rest of the region ('Wellington') recorded on the NZTA transport register.

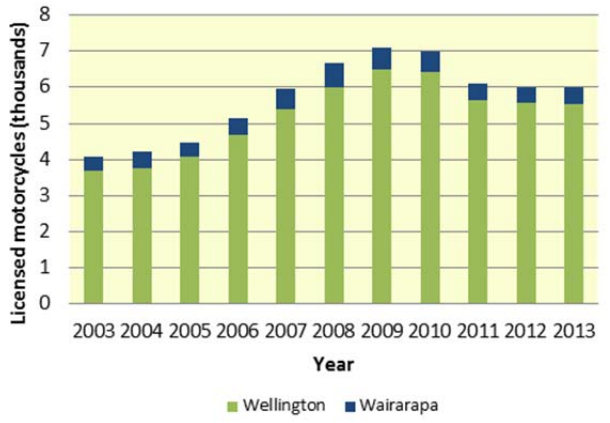

Figure I.10: Licensed motorcycles. Source: New Zealand Transport Agency

Motorcycle registrations steadily increased from 2003 to 2010. From 2010 to 2011 there was a 13% decrease in licensed motorcycles in the region, which was made up of a 19% decrease in the Wairarapa and a 12% decrease across the rest of the region. There has been little change in licensed motorcycles since 2011.

Summary

Over recent years transport demand in the region has increased, driven by increases in car ownership, and modest growth in the region's population and economic activity. Travel demand is predicted to rise markedly over the next 20 years but the type of travel and the travel destinations may be a lot different to what they are now due to changes in the regional demographics.

The population of the Wellington region is projected to grow by approximately 20% over the next 20 years, with the majority of the region's population growth centred in Wellington City and Kapiti Coast District. The age distribution of the population in the region is also projected to change dramatically over this time. In particular, it is projected that the population aged 65 and over will increase by around 110%, resulting in this age group making up around 20% of the region's population, compared to only 11% in 2006. The proportion of the region's population of working age (15-64 years) is also predicted to decrease from 68% to 63% over the next 20 years. These changes will significantly impact on the labour force, demand for goods and services, and the region's economic growth, which in turn will impact on the region's travel behaviour and demand.

Appendix 2 – Regional Travel Demand

Introduction

The indicators in this section provide context for the AMR and present trends in regional travel demand variables affecting the transport network. The following indicators are described:

- Mode share of trip legs
- Mode of journey to work (all modes)
- Inter-regional passenger movements
- State highway traffic volumes
- State highway hourly traffic profiles: Ngauranga
- State highway vehicle kilometres travelled
- Work from home

Indicators

Mode share of trip legs

Figure II.1 shows the mode of travel for journeys in the Wellington region between 2008 and 2012. A journey or 'trip leg' is a unit of non-stop travel by a single mode for a single purpose[43]. For example, walking to work with a stop at the shop is two trip legs.

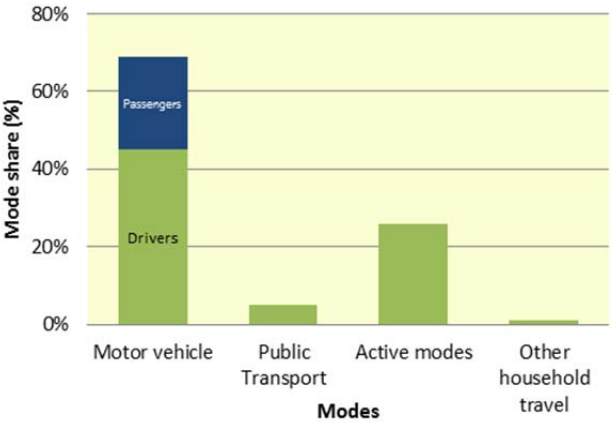

Figure II.1: Mode share of trip legs 2008-2012. Source: Ministry of Transport TMIF TP002

The predominant mode of travel for all trip legs in Wellington region is by motor vehicle (69% of all trip legs), with drivers accounting for 45% and passengers accounting for 24%. Active modes comprise 26% of all trip legs (pedestrians 25% and cyclists 1%), 5% is attributable to public transport, and 1% to other household travel.

Travel behaviour has changed slightly since the 2004-2009 survey. Since this time motor vehicle mode share has decreased, whereas public transport and active modes have increased.

Mode of journey to work (all modes)

Figure II.2 shows the 'main means of travel to work' across all modes for the regional population on census day. The following definitions of modes have been collated from the New Zealand census categories:

- Motor vehicle: 'drove private car, truck or van; drove company car, truck or van; passenger in car, truck or van or company bus; motorcycle or powercycle'
- Public transport: 'public bus; train'
- Active modes: 'walked or jogged; bicycle'
- Other: 'e.g. taxi, ferry, plane'

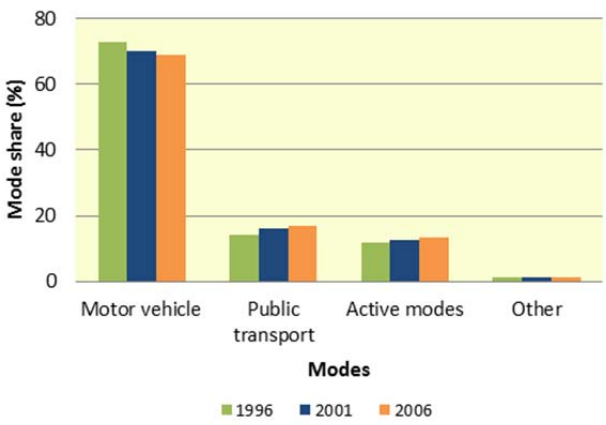

Figure II.2: Travel to work mode share (%). Source: Statistics New Zealand

Over the 1996 to 2006 ten year period, motor vehicle mode share has decreased from 73% to 69% but approximately 10,000 more trips were made by motor vehicles in 2006 compared to 1996. Both active mode and public transport mode share increased over the 1996 to 2006 period. Active mode share increased from 12% to 13%, with active mode trips increasing by around 5,600 over this time. The observed increase in active mode trips is due to increases in the number of trips walked or jogged, whereas the number of trips by bicycle has decreased slightly. Public transport increased from 14% to 17%, with the number of trips increasing by around 8,200. The number of trips by both public bus and train

[43] It excludes trips under 100 metres, off-road travel and travel on private property (e.g. farms, malls).

increased over this time, 33% and 38% respectively.

For analysis of each mode share result see the associated RLTS outcome sections:

- Motor vehicle – Figure 4.2 in Environmental Outcomes
- Public transport – Figure 2.2 in Passenger Transport Outcomes
- Active modes – Figure 3.2 in Active Mode Outcomes

While it is encouraging that the share of sustainable transport modes has increased and that of motor vehicles has decreased, travelling to work by motor vehicle remains the outstandingly prevalent travel mode of choice in the Wellington region, and the number of trips made by motor vehicles has increased by approximately 10,000 over the last three census periods.

Inter-regional passenger movements

Figure II.3 shows an inter-regional passenger movement index. It relates to the number of people crossing regional boundaries[44] by air,[45] sea (inter-island ferries only), rail[46] or road.[47] Buses are excluded as no information is available. As some data is commercially confidential, absolute numbers are not given.

Inter-regional passenger movements are 7% higher than they were in 2003, with a peak in inter-regional passenger movements in 2012.

Passenger movement by road is the most dominant transport mode for inter-regional passenger movements, accounting for 62% of inter-regional passenger movements in 2013. Domestic air travel is the second largest inter-regional passenger mover, representing 28% of inter-regional passenger movements in 2012

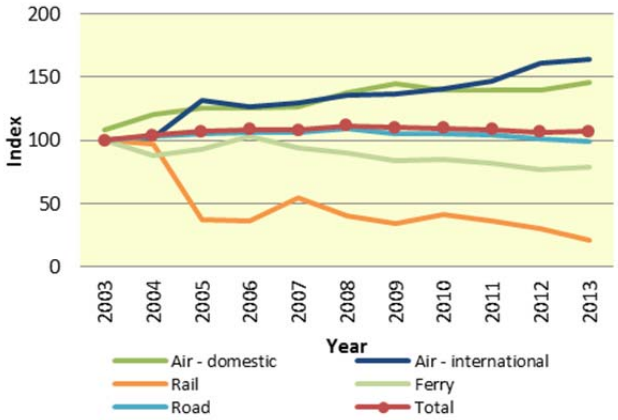

Figure II.3: Inter-regional passenger movements. Index: 2003 = 100. Sources: Wellington International Airport; KiwiRail; Strait Shipping; Interislander; New Zealand Transport Agency

Note: Air passenger figures refer to year ended March. Rail passengers relate to The Northern Explorer service (previously the Overlander service until July 2012). Passengers by road refer to the previous calendar year. The Interislander Lynx service terminated in May 2005.

Passenger movements by air (domestic and international) have increased from 2003 to 2013, whereas passenger movements by rail, ferry and road have decreased from 2003 levels. International air travel is the biggest growth area for passenger movements, with an increase of 64% observed from 2003 to 2013. Over this time domestic air passenger movements have also experienced good growth at 35%.

State highway traffic volumes

Figures II.4 to II.6 show annual average daily traffic (AADT) volumes[48] at all sites in the region, sites in the western parts of the region and sites in the eastern parts of the region respectively.[49]

The annual average daily traffic volumes were 1.3% higher in 2012 than 2002, and other than a decrease in 2010 there has been relatively little change over this measurement period.

Of all state highway sites monitored, the State Highway 1 and State Highway 2 site at Kaiwharawhara has continually had the highest traffic volumes, followed by State Highway 2 north of Ngauranga. However, these sites have experienced a decrease in traffic volume from 2002 to 2012. All other sites have experienced traffic volume growth, with the largest growth in state highway traffic volume from 2002 to 2012 at the eastern region sites of State Highway 58 east

[44] Some double counting of passenger movements is unavoidable e.g. passengers may arrive in the region by car and leave by ferry.
[45] Wellington airport's function as a domestic network hub results in many movements not destined for, or originating in, the region but counted as crossing regional boundaries.
[46] Inter-regional rail passenger numbers are likely to be under-represented as Northern Explorer journeys that do not start or finish at Wellington railway station are not counted.
[47] An average vehicle occupancy factor of 1.7 has been applied to road traffic counts.

[48] AADT volumes are derived from automatic counters operating on each road section.
[49] Results should be treated with care as many vehicles are counted several times depending on their route through the network.

of Pauatahanui (10%) and State Highway 2 south of Akatarawa (11%).

Figure II.4: Annual average daily traffic volumes, all sites. Index: 2002 = 100. Calendar year. Source: New Zealand Transport Agency

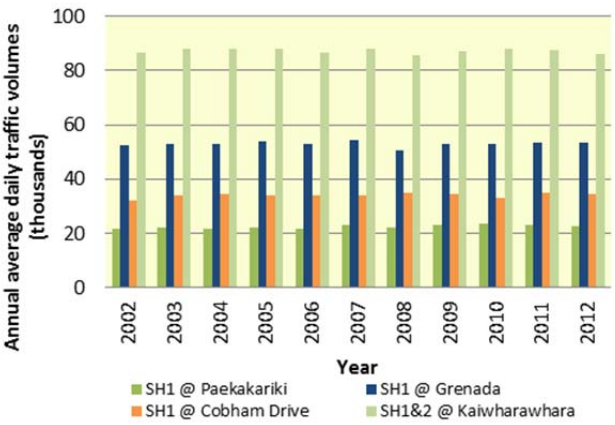

Figure II.5: State highway annual average daily traffic volumes, western region. Calendar year. Source: New Zealand Transport Agency

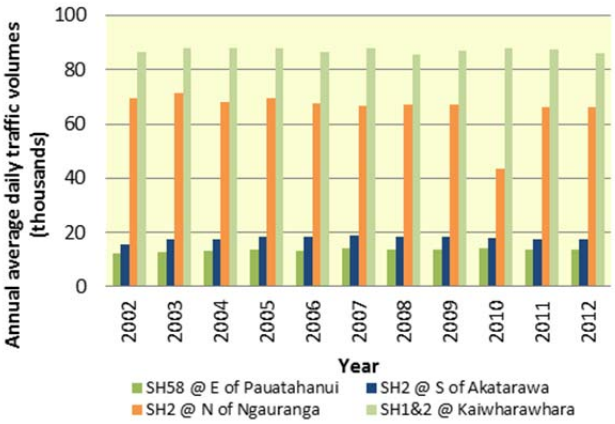

Figure II.6: State highway annual average daily traffic volumes, eastern region. Calendar year. Source: New Zealand Transport Agency

State highway hourly traffic profiles: Ngauranga

Figure II.7 shows hourly traffic flow distribution (combined two-way traffic volumes) on State Highway 1 and State Highway 2 at Ngauranga over the course of an average weekday, Saturday and Sunday, in March and October 2012. On a weekday it can be seen that two very pronounced increases in traffic volumes occur at Ngauranga during the morning and afternoon peak periods. At the weekend a single broad peak occurs across the middle of the day with Sunday's profile slightly narrower than that of Saturday.

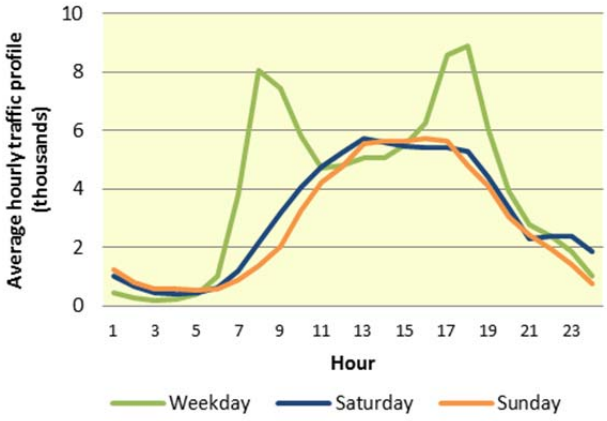

Figure II.7: Average hourly traffic volumes at Ngauranga, combined directions, 2009. Source: New Zealand Transport Agency

Figure II.8 shows a comparison of average weekday hourly traffic volumes at the same location, State Highway 1 and State Highway 2 at Ngauranga, in March and October 1999, 2005 and 2012.

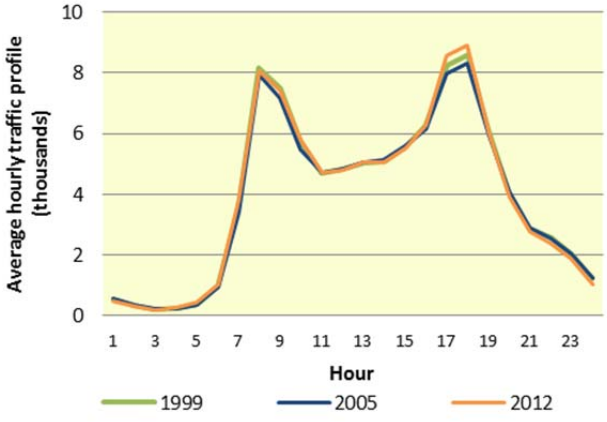

Figure II.8: Average weekday hourly traffic volumes at Ngauranga, combined directions. Source: New Zealand Transport Agency

The three profiles have a similar overall shape. Traffic builds up rapidly in the morning as is shown by the sharply increasing profile between

6.00am and 8.00am. The volume of traffic then drops off between 8 and 11am. Traffic then increases gradually up to 4pm then rapidly from 4pm to 6pm, after which traffic volumes decrease at a lesser rate than the profile shows at the beginning of the day. This may be due to commuters timing their journey home to avoid high volumes of traffic.

There has been little change in average traffic volumes during the morning peak (7am to 9am) in 2012 compared to 1999 (200 more vehicles in 2012). However, there are on average around 2,600 more vehicles during the afternoon peak (4pm to 6pm) in 2012 compared to 1999.

State highway vehicle kilometres travelled

In 2012, the road network in the Wellington region was 4,195km in length. The majority of the region's roads are classified as local roads with only 6% (235km) of the road length classified as state highway. Figure II.9 shows the vehicle kilometres travelled (VKT) on the state highway and local road network in the Wellington region. Over the monitoring period there was a very gradual increase in VKT from 2006 to 2010, but VKT has decreased slightly each year since this time.

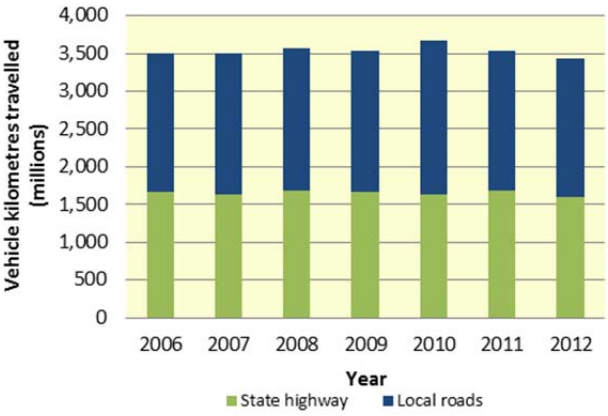

Figure II.9: VKT on state highway and local roads. Source: Ministry of Transport TMIF TV001

In 2012, VKT on the state highway network was 1,589 million kilometres, and made up 46% of the total VKT on the region's road network. State highway VKT has consistently made up around 45% of total VKT since 2006, even though only 6% of the road network is state highway. This indicates that state highway network loadings are much greater than local roads and are vital to road-based travel in the region.

Work from home

Figure II.10 shows the percentage of people in employment who worked from home on census day, by territorial authority area. In 2006, 6.4% of the region's population who worked on census day worked from home, this is a slight decrease from 6.8% in 2001.

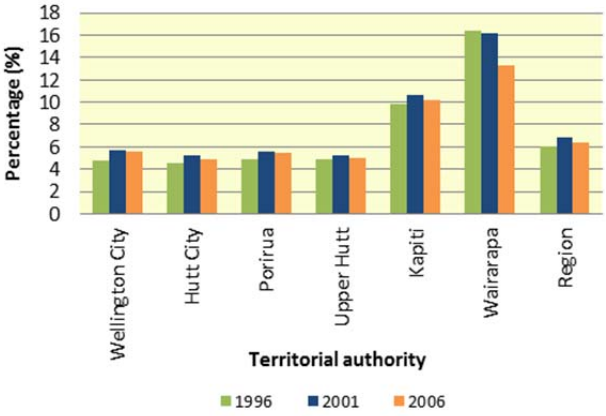

Figure II.10: People working, who work from home, by territorial authority area. Source: Statistics New Zealand

Wairarapa and Kapiti have the largest proportion of workers working from home at 13.3% and 10.2% in 2006 respectively. The region and each territorial authority area have seen a decline in the proportion of workers working from home between the last two census periods. This contrasts with an increase across the region (except Wairarapa) between the 1996 and 2001 census.

Summary

Travel in the Wellington region is dominated by motor vehicle trips, accounting for 69% of all trips. The mode of transport used for residents journeys to work, is slightly different to overall travel patterns. Whilst residents are just as likely to use a motor vehicle for journey to work trips, they are more likely to use public transport and less likely to use active modes for journey to work trips compared to overall travel behaviour.

Traffic volumes on the region's strategic roads have remained relatively unchanged from 2002 to 2012 (1.3% increase). However, peak loadings are observed which reduces the level of service offered by the region's road network during peak hours.

Passenger movement to and from the region has increased by 7% from 2003. Motor vehicle is the

primary transport mode for passenger movements across regional boundaries, but after a period of growth up to 2004 passenger movement by road have decreased slightly. State Highway 1 is the main route into the region and accounts for over 80% of inter-regional passenger movement by road, highlighting its national importance.

Growth in inter-regional passenger movements by air, both domestic and international, has been significant for the region. Other changes over recent years include a decrease in inter-regional passenger movements by rail and ferry as a result of a number of services being discontinued. These changes in travel behaviour need to be considered when looking at the region's future travel demand.

Appendix 3 – Environmental Quality

Introduction

The indicators in this section, in addition to other sustainability indicators elsewhere in the report, provide some additional context for the AMR and contribute to objective 5 of the RLTS:

Ensure environmental sustainability

Improve the environmental performance of the transport network and avoid, to the extent reasonable in the circumstances, adverse effects of transport on the environment (in line with the RPS) and communities. This includes, but is not limited to: increased use of public transport, cycling and walking; reduced use of private and company cars; increased energy efficiency of the vehicle fleet; reduced greenhouse gas emissions; a high standard of environmental design of transport infrastructure; recycling of materials.

The following indicators are described:

- Air quality: particulate matter (PM_{10})
- Air quality: particulate matter (CO)
- Air quality: particulate matter (NO_2)
- Surface water quality

Indicators

Air quality

GWRC operates a transport ambient air quality monitoring programme. The programme collects air quality information from urban locations likely to be affected by emissions from transport. Data is collected and reported in a way that allows comparison with national guidelines and standards as well as assessment of the effectiveness and appropriateness of GWRC's objectives and targets concerning air quality in the RLTS 2010-40.

The contaminants monitored are particulate matter (PM_{10}), carbon monoxide (CO) and nitrogen dioxide (NO_2). These contaminants are by-products of fuel combustion and all have known adverse human health effects when their concentrations in air exceed standards and guidelines. Meteorological monitoring instruments are co-located at each monitoring site to assist with the interpretation of air quality data.

In the region there is only one permanent transport air quality monitoring station which is located in Wellington CBD at the corner of Vivian and Victoria Streets (Corner V).[50] Hourly traffic counts from Wellington City Council's traffic management system (SCATS) found that approximately 30,000 to 35,000 vehicles passed through the Vivian and Victoria Street intersection daily in 2009.[51]

All three contaminants are continuously monitored at the Corner V site with instruments connected by digital interface dataloggers. All logged data are stored as 5 or 10 minute averages. Monitoring data, from the Corner V monitoring station, are reported in the following sections and follow the format recommended by the Ministry for the Environment's good practice guide.[52]

Particulate matter (PM_{10})

The ambient air quality WRC operates a transport ambient air quality monitoring programme. The programme collects

The ambient air quality monitoring results for PM_{10} from 2005 to 2012 at the Corner V monitoring station are shown in Table III.1. The maximum 24-hour average PM_{10} concentration reached in 2012 was 34 µg/m^3, which is also below the national environmental standard for PM_{10} of 50 µg/m^3. Since monitoring began, the national environmental standard has only been exceeded in 2008, when the PM_{10} concentration levels reached a 24-hour average of 60 µg/m^3. This exceedance was only observed on one day during 2008, with PM_{10} levels remaining below the national environmental standard throughout the rest of the year.

Year ending June	24-hour average (µg/m^3)			
	Maximum	95th percentile	Mean	Median
2005	49	25	17	16
2006	30	22	15	15
2007	37	22	14	14
2008	60	23	14	14
2009	32	20	13	12
2010	31	19	13	12
2011	32	21	13	13
2012	34	20	13	12

Table III.1: Descriptive statistics for PM_{10} µg/m^3 (24-hour average). Source: GWRC

[50] Temporary sites at Ngauranga and Melling were decommissioned in 2008 and 2010 respectively. Historical data from these sites is not included as it will not be updated.
[51] Traffic counts are typically underestimated and are about 95% accurate.
[52] Ministry for the Environment (2009). Good practice guide for air quality monitoring and data management (2009).

The mean and median 24-hour average PM_{10} concentration was 13 and 12 µg/m^3 respectively in 2012, and both have been gradually decreasing since 2005.

Ambient PM_{10} 24-hour average concentrations by percentage of days per year in each air quality category (see Table III.2) are shown in Figure III.1. In 2012, the PM_{10} levels at Corner V were 'acceptable', or 'good' on 98.9% of days, with levels at 'excellent' on 0.8% of days and at 'alert' on 0.3% of days.

Category	Measured values	Comment
Action or exceed	Exceed guideline/standard	Completely unacceptable by national and international standards.
Alert	Between 66% and 100% of the guideline/standard	A warning level which can lead to guidelines being exceeded if trends are not curbed.
Acceptable	Between 33% and 66% of the guideline/standard	A broad category, where maximum values might be of concern in some sensitive locations, but are generally at a level that does not warrant dramatic action.
Good	Between 10% and 33% of the guideline/standard	Peak measurements in this range are unlikely to affect air quality.
Excellent	Less than 10% of the guideline/standard	Of little concern.

Table III.2: Air quality categories for reporting monitoring results. Source: GWRC

The PM_{10} levels improved from 2005 to 2009, with the percentage of days where levels are 'good' increasing and the percentage of days were levels are 'acceptable' decreasing. Since this time PM_{10} levels have remained relatively unchanged.

Average PM_{10} concentrations vary considerably by time of day, day of the week and by month of the year. During the day PM_{10} concentrations increase steadily, peaking at around 5pm. Weekday patterns show an increase in PM_{10} levels from Monday to Thursday, Friday levels remain high, then PM_{10} levels rapidly decrease to the lowest concentrations on Sundays. Monthly patterns show a very prominent peak in PM_{10} levels in November. This may be related to the high winds observed during November resulting in a greater presence of non-combustible sources (e.g. sea-salt and soils) in the air, this is not directly attributable to transport emissions.

Figure III.1: Ambient PM10 24-hour average concentrations by percentage of time per year in each air quality category (%). Source: GWRC

Carbon monoxide (CO)

The ambient air quality monitoring results for CO from 2005 to 2012 at the Corner V monitoring station are shown in Table III.3. The national environmental standard of 10 mg/m^3 (8-hour moving average) for CO was not exceeded in 2012, and has not been exceeded at any stage since monitoring began.

Year ending June	8-hour moving average (mg/m^3)			
	Maximum	95th percentile	Mean	Median
2005	4.2	2.1	0.9	0.7
2006	3.3	1.8	0.7	0.5
2007	3.7	1.6	0.6	0.4
2008	3.3	1.6	0.6	0.4
2009	3.0	1.6	0.7	0.5
2010	3.0	1.5	0.6	0.5
2011	3.2	1.5	0.6	0.5
2012	2.0	1.1	0.5	0.4

Table III.3: Descriptive statistics for CO mg/m^3 (8-hour moving average). Source: GWRC

Ambient CO 8-hour moving average concentrations by percentage of hours per year in each air quality category (see Table III.2) are shown in Figure III.2. The CO levels at the Corner V site have always been 'acceptable' or better and since 2008 they have been 'good' or

better. CO levels have been improving over time. In 2012, CO levels were 'excellent' 93% of the time, compared to 67% of the time in 2005.

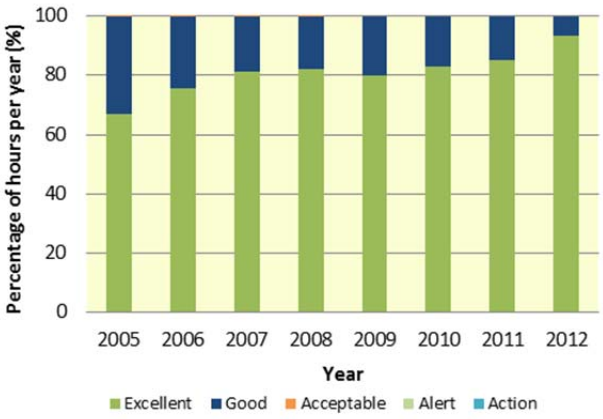

Figure III.2: Ambient CO 8-hour moving average concentrations by percentage of time per year in each air quality category (%).
Source: GWRC

Average CO concentrations vary considerably by time of day, day of the week and by month of the year. During the weekday there are two distinct peaks in CO levels coinciding with AM and PM peak traffic volumes – the PM peak being noticeably higher. The weekend CO levels are much flatter than those observed on weekdays. Average CO levels also show a distinct seasonal effect, being higher May through to July. It is likely that the lower wind speeds at this time of year result in less efficient dispersion of pollutants, and thus observed levels of CO are higher.

Nitrogen dioxide (NO_2)

The ambient air quality monitoring results for NO2 from 2006 to 2012 at the Corner V monitoring station are shown in Table III.4. The national environmental standard of 200 µg/m^3 (1-hour average) for NO_2 was not exceeded in 2012, and has not been exceeded at any stage since monitoring began.

The mean and median 1-hour average NO_2 concentration was 23.2 and 21.4 µg/m^3 respectively in 2012, and both have been steadily decreasing since 2006.

Year ending June	1-hour average (µg/m^3)			
	Maximum	95th percentile	Mean	Median
2006	135.8	72.7	33.6	30.0
2007	141.9	67.1	33.3	30.5
2008	95.7	63.9	33.6	31.6
2009	100.7	65.3	32.7	30.2
2010	95.5	55.1	25.6	23.2
2011	105.4	55.2	25.0	22.4
2012	93.7	49.2	23.2	21.4

Table III.4: Descriptive statistics for NO_2 µg/m^3 (1-hour average).
Source: GWRC

Ambient NO_2 1-hour average concentrations by percentage of hours per year in each air quality category (see Table III.2) are shown in Figure III.3. The NO_2 levels at the Corner V site have always been 'acceptable' or better. Over time the percentage of hours per year that NO_2 levels are 'acceptable' or 'good' has been decreasing, and the percentage of hours levels are 'excellent' has been increasing. In 2012, NO_2 levels were 'good' or 'excellent' 99.3% of the time.

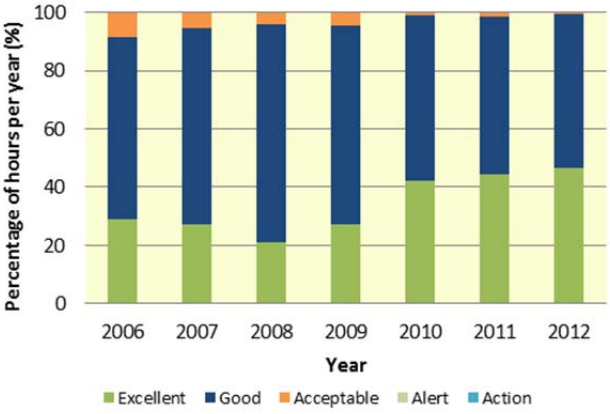

Figure III.3: Ambient NO_2 1-hour moving average concentrations by percentage of time per year in each air quality category (%).
Source: GWRC

Average NO_2 concentrations vary considerably by time of day, day of the week and by month of the year. The pattern of NO_2 concentrations is very similar to that observed for CO, with two distinct peaks in NO_2 levels occurring during the weekdays, with the weekend NO_2 levels being much flatter. Average NO_2 levels also show a distinct seasonal effect, being higher May through to July. It is likely that the lower wind speeds at this time of year result in less efficient dispersion of pollutants, and thus observed levels of NO_2 are higher.

Surface water quality

Contaminants in discharges from the national road network include fuels, additives, oil, grease and brake and tyre residues. These contain a variety of toxic and eco-toxic components, including heavy metals and organic compounds. Research indicates that environments such as enclosed harbours and estuaries are most susceptible to adverse effects of road runoff. Evidence also exists that the cumulative effects of discharges from road networks can adversely impact on certain types of streams, wetlands and lakes. New highway construction and traffic growth is expected to exacerbate this situation.[53]

GWRC operates a surface water quality monitoring programme. This programme is not designed specifically to isolate the impacts of road network runoff, but the monitoring information is used here to help inform on the impact road runoff has on surface waters in the Wellington region.

In recent years GWRC has undertaken sediment quality sampling in both Porirua Harbour and Wellington Harbour – which are natural 'sinks' for contaminants in stormwater and road runoff – and is seeking to implement long-term monitoring programmes in both of these coastal receiving environments. Results of subtidal sampling to date have confirmed the presence of elevated concentrations of some contaminants in surface sediments (notably zinc, copper and polycyclic aromatic hydrocarbons) derived from urban stormwater, including road runoff.

GWRC has also undertaken various stormwater-related investigations, and routinely monitors water quality and ecological health at 55 sites across the region. Since early 2008, suspended solids and heavy metals – common contaminants found in urban road runoff – have been tested in water samples from urban stream monitoring sites. Results to date confirm the presence of dissolved metals in many urban streams, with some concentrations above national water quality guidelines.

Summary

The national environmental standards for the transport-generated air contaminants - particulate matter, carbon monoxide and nitrogen dioxide - were not exceeded at any time during 2012 at the Wellington CBD monitoring site, and are therefore not of concern to human health or the environment.

Concentrations of nitrogen dioxide and carbon monoxide were well within national standards and have been at 'acceptable' levels or better throughout the monitoring period. Particulate matter concentrations have exceeded the national standard, but only on one day during the entire 8 year monitoring period. At all other times levels have remained below the national standard.

Pollutant concentrations have been found to vary considerably by time of day, day of the week and month of the year. Maximum daily levels of carbon monoxide and nitrogen dioxide coincide with the peak periods of traffic intensity. More traffic data is required in order to fully explore the relationship between pollutant concentrations, meteorology and vehicle counts.

It is currently not possible to specifically isolate the impacts of road network runoff on the environment. However, sediment quality, water quality and ecological health monitoring around the Wellington region indicate that some contaminants, which may be derived from road runoff, are present at elevated concentrations.

To reduce the impact of land transport activity on human health and the environment, measures to reduce overall car use and improve travel efficiency need to be encouraged.

[53] Gardiner, L. & Armstrong, B. (2006). *Identifying sensitive receiving environments at risk from road runoff.* Proceedings of the NZWWA Stormwater Conference, Rotorua, New Zealand, 4-5 May 2006.

Appendix 4 – Affordability

Introduction

The indicators in this section provide some additional context for the AMR and contribute to objective 6 of the RLTS:

Ensure that the Regional Transport Programme is affordable for the regional community.

Take account of funding likely to be available, economic efficiency, and the impact of funding options on regional communities when considering transport packages. Consider the affordability of transport options for all members of the community, including low income groups.

The following indicators are described:

- Maintenance expenditure: roading
- Capital expenditure: roading
- Public transport operating expenditure
- Total Mobility Scheme expenditure
- Public transport improvements expenditure
- Household travel expenditure
- Car operating costs
- Perceptions of private transport user costs

Indicators

Maintenance expenditure: roading

Figure IV.1 shows total annual expenditure on maintenance works[54] associated with the road network, by road-controlling authority (RCA). Total maintenance expenditure increased steadily from 2003 to 2007, decreased in 2008, then continued to increase, with total maintenance expenditure (real value) increasing by 5% from 2008 to 2012.

All RCAs except Hutt City, increased their roading maintenance expenditure over the 2008 to 2009 period. Kapiti and Wairarapa had the largest increases in maintenance expenditure on roading over the last year, although NZTA and Wellington City have the highest maintenance expenditure on roading. Wellington City and Porirua had a slight decrease in decrease in maintenance expenditure (real value) on roading over the last year.

[54] Road maintenance and operation and renewals.

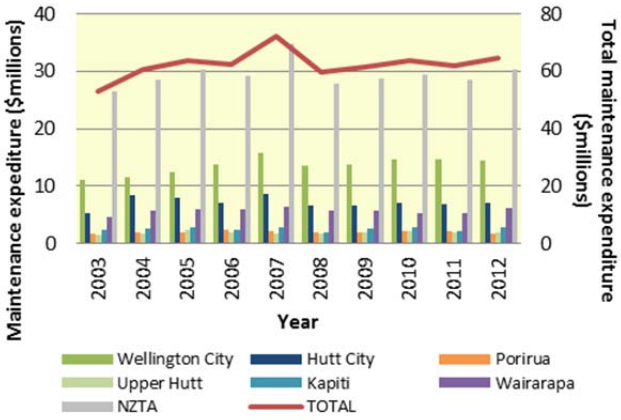

Figure IV.1: Maintenance expenditure ($millions, real value) by RCA. Real value base year = 2012. Source: New Zealand Transport Agency

Capital expenditure: roading

Figure IV.2 shows total annual expenditure on capital works[55] associated with the road network, by road-controlling authority (RCA).[56] Total capital expenditure has generally increased over the measurement period and is 68% higher in 2012 than 2003, although there was a spike in expenditure in 2009 followed by a decrease in 2010.

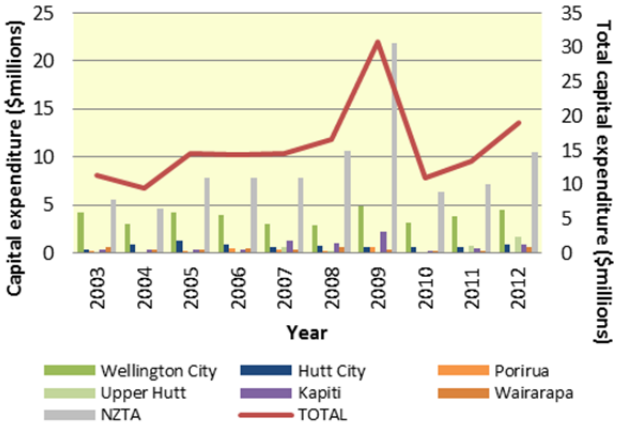

Figure IV.2: Capital expenditure ($millions, real value) by RCA. Real value base year = 2009. Source: New Zealand Transport Agency

Over the last year total capital expenditure (real value) increased by 43%. Over this time all RCAs, except Porirua, increased their capital expenditure on roading.

Public transport operating expenditure

Figure IV.3 shows the public transport combined GWRC and NZTA financial contributions to

[55] Roads new and improved infrastructure.
[56] NZTAs expenditure includes property purchases for new roading developments.

contracted services for public transport operating costs. The total public transport expenditure on contracted services has steadily increased over the last decade, although there has been little change over the last few years. The increase in cost contributions from GWRC and NZTA to public transport over time are mainly related to increases in services.

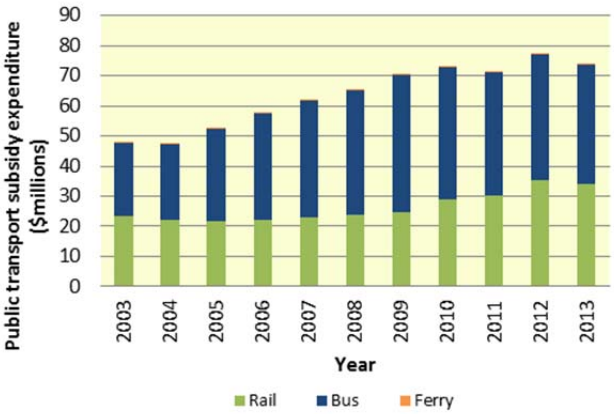

Figure IV.3: Public transport operating expenditure on contracted services ($millions, real value). Real value base year = 2012. Source: GWRC

In 2013, public transport expenditure on contracted services was $74.0 million, with rail services accounting for 46% ($34.2 million), bus services 53% ($39.5 million) and ferry services less than 1% ($0.3 million).

Expenditure on rail services started to increase significantly from 2009, whereas bus service expenditure increased significantly from 2005 with little change in expenditure (real value) over recent years. Although ferry service expenditure has gradually increased since 2010 the total expenditure is significantly lower than that on rail and bus contracted services.

Total Mobility Scheme expenditure

The Total Mobility Scheme assists people who have difficulty using public transport services by providing a 50% discount on taxi fares to people who meet certain eligibility criteria. The scheme is administered by GWRC and the total GWRC and NZTA expenditure on the Total Mobility Scheme is shown in Figure IV.4.

Total Mobility Scheme expenditure in 2012 was just under $2.5 million. Expenditure has remained relatively unchanged since 2008, following a large increase in expenditure from 2005 to 2006 due to increased taxi fares as a result of the rising cost of fuel.

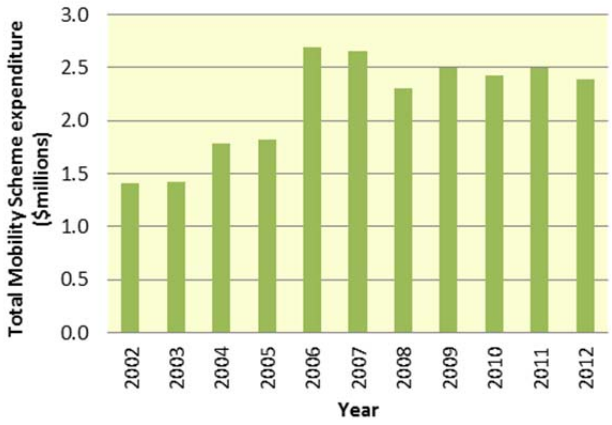

Figure IV.4: Total Mobility Scheme expenditure ($millions, real value). Real value base year = 2012. Source: GWRC

Public transport improvements expenditure

This indicator comprises expenditure on enhancements to public transport infrastructure and rail rolling stock. In 2012/13 GWRC invested $35.1 million in improvements to public transport, a decrease from the previous year ($127.0 million). Although expenditure was primarily on the new Matangi trains this was just some residual cost as all the trains are now in service.

Household travel expenditure

The average weekly household expenditure on transportation[57] and other costs collected through the Household Economic Survey is shown in Figure IV.5. Data for New Zealand is shown for the 2001, 2004, 2007 and 2010 surveys; however Wellington regional data is only available for the 2007 and 2010 surveys.

In 2010, the total average weekly household expenditure was $1,256 in Wellington with $152 relating to transportation expenditure (12.1%). In New Zealand total average weekly household expenditure ($1,010) and transportation expenditure ($131) is lower than for Wellington, but transportation costs accounted for 13.0% of total weekly household expenditure.

In the Wellington region total average weekly household expenditure has increased over the last two surveys. From 2007 to 2010 transportation costs increased by 8% and other costs also increased by 8%.

[57] Transportation costs relate to domestic travel only.

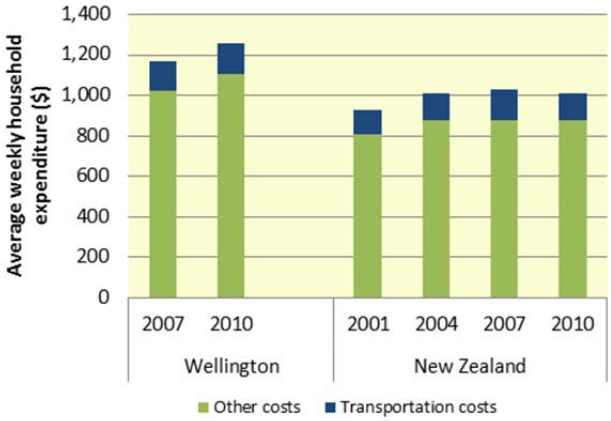

Figure IV.5: Average weekly expenditure per household ($, real value). Base year for real value = 2010. Wellington and New Zealand. Source: Statistics New Zealand

Note: Wellington region data not available for 2001 and 2004.

Car operating costs

Figure IV.6 shows vehicle operating costs per kilometre for a petrol-engine compact car[58] driven 14,000km a year. Costs are broken down into fixed (unrelated to vehicle use) and running (proportional to use).[59]

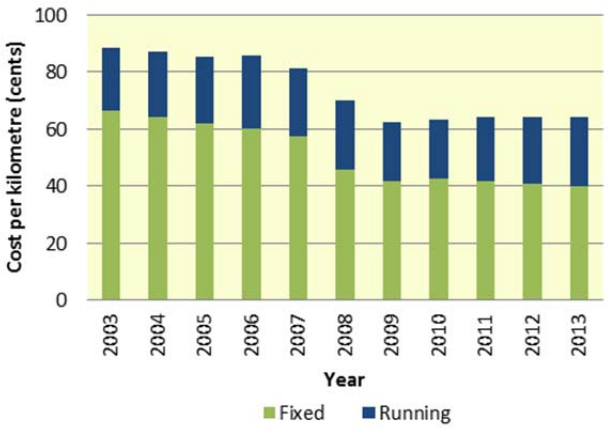

Figure IV.6: Petrol driven car operating cost per kilometre (cents, real value). Real value base year = 2012. New Zealand. Source: Automobile Association of New Zealand

Note: 2002-2007 is for a 1601-2000 cc car driven 14,000 km/yr, from 2008: it is for a 1500-2000 cc car driven 14,000 km/yr.

The total cost of operating a compact car in 2012 was 64 cents per kilometre. This has remained relatively unchanged over the last few years, although running costs have increased, fixed costs have decreased.

Fixed costs accounted for 62% of car operating costs in 2012, and have accounted for the majority of car operating costs over the measurement period. The slight increase in running costs coincides with an increase in the price of petrol,[60] which is a prominent consideration in travel mode choice, although petrol price is found to have little effect on overall cost.[61]

Perceptions of private transport user costs

Findings from the 2012 GWRC transport perceptions survey show that 38% of respondents considered cost to be a barrier to their use of private transport (Figure IV.7).

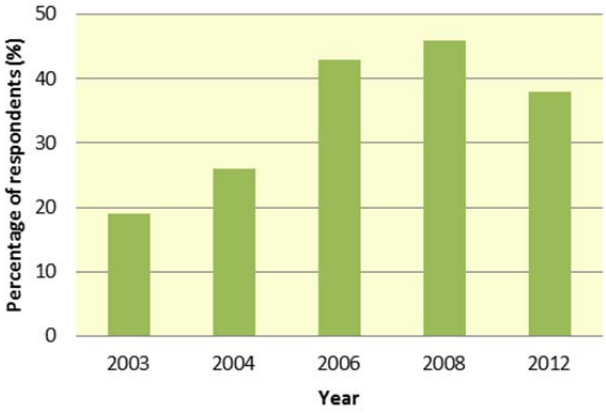

Figure IV.7: Private transport costs as a barrier to use (%). Source: GWRC transport perception surveys

Since surveys began in 2003 the percentage of respondents perceiving the cost of using a private vehicle hindered their use of one increased (19% in 2003 compared to 38% in 2012), although there has been a slight decline over the last survey cycle. It is likely that increased fuel prices from 2006 have contributed to the observed survey results.

Summary

Despite the economic downturn in recent years, the Road Controlling Authorities of the Wellington region and GWRC continue to invest heavily in transport infrastructure and services.

Compared to a decade ago, increased proportions of Wellington residents perceive that costs are a barrier to their use of private transport, even though there has been little change in car operating costs over recent years. Petrol price over this time has increased, suggesting that petrol

[58] From 2002-2007 a compact car was classed as 1601-2000cc, in 2008 it was lowered to include cars of 1500-2000cc
[59] Parking charges are not included.

[60] In 2008, the average petrol price per litre was $2.15, in 2010 it was $1.70, in 2012 it was $2.10 and in 2013 it was $2.20.
[61] Automobile Association of New Zealand (2006). Car costs: What does it cost to drive for a year? In AA Directions.

price is a prominent consideration in travel mode choice and its perceived affordability. This is despite a study showing that petrol price has little effect on the overall operating costs of private transport.

Public transport operating expenditure on contracted services, subsidised by GWRC and NZTA, has steadily increased since 2003, with expenditure on rail driving the increases over recent years. This responds to the need to keep investing in public transport to ensure it provides a reliable, attractive, feasible transport option that is affordable for the community.

Glossary

AM	Morning
AMR	Annual Monitoring Report
BERL	Business and Economic Research limited
CARD	Communications and Resource Deployment system
CAS	Crash Analysis System
CBD	Central Business District
CO_2	Carbon dioxide
FAR	Funding Assistance Rates
GPS	Government Policy Statement
GWRC	Greater Wellington Regional Council
IP	Interpeak
km	Kilometres
km/h	Kilometre per hour
mins	Minutes
NITIS	National Integrated Ticketing Interoperability Standard
NLTP	National Land Transport Programme
NZTA	New Zealand Transport Agency
PM	Afternoon
Police	New Zealand Police
RHS	Right hand side
RLTS	Regional Land Transport Strategy
RPS	Regional Policy Statement
RTC	Regional Transport Committee
SH	State highway
TAs	Territorial Authorities
TMIF	Transport Monitoring Indicator Framework
VKT	Vehicle Kilometres Travelled
WCC	Wellington City Council
WRS	Wellington Regional Strategy