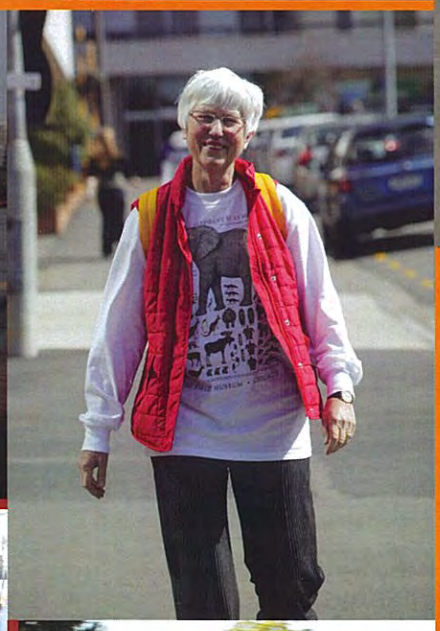
Attachment 1 to Report 08.780

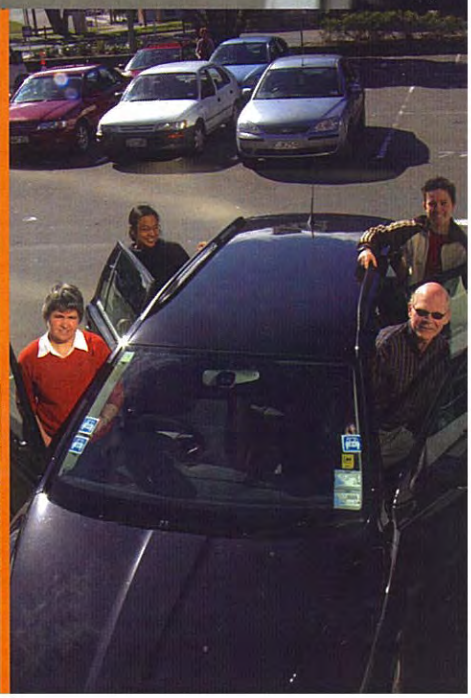
2007/2008 Annual Monitoring Report on the Regional Land Transport Strategy

October 2008

Quality for Life

greater WELLINGTON
REGIONAL COUNCIL | Transport





greater WELLINGTON
REGIONAL COUNCIL

2007/2008 Annual Monitoring Report on the Regional Land Transport Strategy

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Published October 2008
GW/TSD-G-08/155

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Executive summary

This report has been prepared in accordance with Section 83 of the Land Transport Management Act 2003 and reports progress in implementing the Wellington Regional Land Transport Strategy (RLTS) 2007 – 2016.

A wide range of performance indicators are used to measure progress against the outcomes and associated targets identified in the Wellington RLTS. Additional indicators provide comprehensive supporting information relevant to the region's transport network in sections titled 'environmental quality' and 'affordability', and in the appendices reflecting regional demographics and travel demand.

Further monitoring, investigation and development of new performance indicators is required to be able to measure progress against all RLTS outcomes to 2016. These are identified throughout this report. Work will continue in 2008/09 with the intention of the inclusion of these new indicators in the next report.

Key findings

Key findings across the various indicators include:

Road safety

☹ **Record high crash and casualty levels**

The highest number of injury crashes in ten years (1,212) was recorded for the Wellington region in 2007. This follows the trend since 2000 where total injury crashes have climbed strongly, indicating that current efforts to improve regional road safety require renewed focus.

Total casualties have also shown a steady increase in number since 2001 with a sharp increase in 2007. The number of casualties per 100,000 population rose above that of the Auckland region for the first time in 10 years but remained below the Canterbury region total.

Cyclist casualties

☹ **Record high casualty level**

Cyclist casualties increased to a total of 150 in 2007, reaching the highest number recorded since 1996.

Cyclist casualty numbers are required to halve if the RLTS target to 2016 of 'fewer than 75 cyclists injured in the region per annum' is to be reached. Only in 2000 and 2003 were cyclist casualties at a similar level to this target.

Fuel use and carbon dioxide emissions

☹ **Record high fuel use**

Diesel and petrol consumption and consequent CO_2 emissions for the region increased in 2007/08 exceeding RLTS targets. Fuel sales reached 463 million litres in 2007/08 (458 in 2006/07), 21 million litres over the target maximum of 442 million litres per annum. This increase has occurred despite the price of petrol reaching $2.00 per litre and diesel $1.75 per litre in June 2008.

The RLTS target of keeping annual transport generated CO_2 emissions to below 1,065 kilotonnes was exceeded by 48 kilotonnes in 2007/08 (up from 34 kilotonnes in 2006/07). Carbon dioxide emissions from land transport fuel combustion were 1,113 kilotonnes, an increase of 14 kilotonnes from 2006/07. Fuel use in the region is likely to grow with diesel sales forecast to increase dramatically.

Executive summary

Public transport patronage

😐 **Small increase in public transport**

The number of passenger trips made by public transport during the peak periods increased by just 35,000 in 2007/08 to a total of 17.6 million. Trips by bus in 2007/08 decreased by over 200,000 while train trips increased by 240,000. The harbour ferry also carried more passengers during 2007/08.

Off-peak public transport trips increased by half a million to 17.1 million trips in total during 2007/08. This increase was mainly due to passenger bus travel on off-peak services with both rail and harbour ferry passenger numbers rising also.

Road congestion

😐 **Slight worsening of congestion**

All day average congestion on the region's strategic roads was 24.6 seconds delay per kilometre travelled in March 2008, an increase of 21% from March 2007. Congestion increased during all periods of the day with the highest recorded delay in the inter-peak and PM peak periods, since surveys began in 2003. Delay experienced per kilometre travelled in the AM peak is the greatest of the three periods at 31 seconds.

The all day average congestion level was showing a decreasing trend towards the target from 2005 to 2007 but has exceeded it by almost five seconds in 2008.

However, fewer people reported perceptions of worsened congestion in 2008.

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 2007/08 year including:

Strategy

- adoption of the Wellington RLTS 2007 – 2016 (July 2007)
- completed the upgrade of the Wellington Transport Strategy Model in conjunction with 2006 Census
- completion of the Ngauranga to Airport Strategic Transport Study

Passenger transport

- new Wairarapa rail rolling stock delivered and in service (18 carriages)
- completed Wairarapa rail station upgrades
- awarded Matangi train (new electric multiple units) purchase contract to Rotem-Mitsui
- completion of a business case for Wellington regional passenger transport Real Time Information (November 2007)
- commenced investigation of bus priority measures in Wellington CBD.

Roading

- completed construction of the Centennial Highway median barrier (June 2008).

Travel demand management, walking and cycling

- commenced "Share the Road" cyclist and driver awareness campaign
- seven workplaces and eight schools fully adopted travel plans

The report also sets out major programmes and projects which are scheduled to be commenced or completed in the 2008/09 financial year and identifies known and potential obstacles to implementing the RLTS.

Executive summary

2008 Regional land transport report card

This report card sets out the new Wellington RLTS key outcomes, associated 2016 targets, and the 2007/08 result for those indicators which measure progress in achieving them.

An assessment of the trend in progressing towards the 2016 targets from the last available result is also provided where possible. In some cases, no previous result was available.

Measurement against the 2016 target for improved road safety (*There are no road crash fatalities attributable to roading network deficiencies*) is not yet available. Therefore total injury crash numbers are reported.

2007/08 Progress against Wellington RLTS key outcomes and 2016 targets

Key outcome	2016 Stretch target	2007/08 Result	Previous result	Trend
1.1 Increased peak period passenger transport mode share	Passenger transport accounts for at least 25 million peak period trips per annum	17.6 million in 2007/08 financial year	17.5 million in 2006/07 financial year	–
	Passenger transport accounts for at least 21% of all region wide journey to work trips	17% in 2006 census	16% in 2001 census	–
2.1 Increased mode share for pedestrians and cyclists	Active modes account for at least 15% of region wide journey to work trips	13% in 2006 census	12.6% in 2001 census	–
3.1 Reduced greenhouse gas emissions	Transport generated CO_2 emissions will remain below 1,065 kilotonnes per annum	1,113 kilotonnes in 2007/08 financial year	1,099 kilotonnes in 2006/07 financial year	✘
4.1 Reduced severe road congestion	Average congestion on selected roads will remain below 20 seconds delay per km travelled despite traffic growth	24.6 seconds in March 2008	20.4 seconds in March 2007	✘
5.1 Improved regional road safety	*There are no road crash fatalities attributable to roading network deficiencies.*	1,212 injury crashes in 2007 calendar year	991 injury crashes in 2006 calendar year	✘✘
6.1 Improved land use and transport integration	All large subdivisions and developments include appropriate provision for walking, cycling and public transport.	Some provision made	No result available	✔
7.1 Improved regional freight efficiency	Improved road journey times for freight traffic between key destinations.	Very little change	No result available	–

✔✔ strongly positive ✔ positive – neutral ✘ negative ✘✘ strongly negative ? insufficient information

Table 1: Progress towards RLTS key outcome targets to 2016

Introduction

Statutory context

Land Transport Management Act 2003

The Land Transport Management Act 2003[1] requires every regional council to establish a Regional Transport Committee (RTC). The primary responsibility of this committee 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 requires the preparation of a monitoring report which documents progress in implementing the RLTS. The report must be published at least every three years. It is intended to retain the annual process to ensure up to date information is available for related policy development work.

Government Policy Statement

The Minister of Transport is now required to issue a Government Policy Statement on Land Transport Funding (GPS) every three years which details national level short to medium-term priorities as well as funding ranges and targets. The RLTS is required to take the GPS into account. The current GPS came into effect on 1 July 2008, and is thus not considered in this report.

New Transport Agency

The amended Act also created the New Zealand Transport Agency (NZTA) by combining the functions of Land Transport New Zealand (LTNZ) and Transit New Zealand (Transit). This new Crown entity was inaugurated on 1 August 2008. LTNZ and Transit are still referred to in this report as the two remained separate entities throughout the reporting timeframe.

Wellington Regional Land Transport Strategy

The Wellington RLTS 2007 – 2016 was adopted in July 2007 following an extensive review and consultation process. It includes a new strategic framework for planning the region's transport network over the next ten years and longer.

The Wellington RLTS includes a long term vision, six objectives, and a comprehensive list of policies, desired outcomes and associated targets. The strategy outcomes have been given a hierarchical structure of 'key outcomes' and 'related outcomes' to clearly signal priorities for the strategy over the next ten years. 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 emission
- Reduced severe road congestion
- Improved regional road safety
- Improved land use and transport integration
- Improved regional freight efficiency.

The strategy targets were developed to signal the magnitude of the changes sought in relation to each strategy outcome. 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.

Content and structure

This report monitors trends in a range of indicators both within the region and across its boundaries. Extensive reporting on road and public transport network performance, and on environmental measures, provides a detailed picture of regional performance and sustainability from a transport perspective.

Where possible we are benchmarking ourselves against New Zealand's other two largest regions with significant transport issues: Auckland and Canterbury. This gives some indication of regional New Zealand transport issues. This allows us to see how well we are doing at a national level.

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

Regional perception surveys, first carried out in 2003, add further value to the largely objective data presented by offering an understanding of public perceptions of transport-related issues. The 1,000-person telephone survey was repeated by National Research Bureau Ltd in June 2004, 2006 and 2008. Auckland Regional Council (ARC) carries out a very similar two-yearly survey allowing further comparisons to be made between the two regions.

Regional level data from the New Zealand Household Travel Survey has been released by the Ministry of Transport for the first time in 2008. The survey is conducted annually and data for the period July 2003 to June 2007 is reported in the Road safety outcomes section under Relative risk by transport mode per million hours travelled (updated national data) and per million kilometres travelled (regional and national). Some sample sizes are too small at the regional level to enable reporting beyond the national level.

Structure of the 2007/08 report

The 2007/08 report is structured around the key and related outcomes identified in the Wellington RLTS 2007 – 2016. This enables the indicators measuring progress against each outcome area and associated targets to be clearly identified.

A number of new indicators are included in this report. In some cases, indicators for some of the RLTS targets have not yet been fully developed and these are identified throughout the report for further work.

There are a number of indicators relating to environmental quality and affordability which do not directly measure a particular RLTS outcome but contribute to our understanding of the complete range of issues affecting our region's transport network. These indicators are included under sections titled *Environmental quality* and *Affordability*.

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 Transport Programme are described in the *RLTS implementation* section. Obstacles to implementing the strategy are also identified here.

Detailed reporting of progress for each action and project is no longer reported through the report, but instead is reported through the quarterly Agency Progress Reports to the RTC.

The appendices of the report include a number of indicators reflecting regional demographics and travel demand to provide some additional context for the report.

Targets

The targets identified in the Wellington RLTS, associated with the various strategy outcomes, have been included on the various indicator graphs in this report to demonstrate where we are at now compared to the RLTS 2016 target.

Targets with the following focus which are identified in the GWRC 2006 – 2016 Long-term Community Council Plan (LTCCP) in relation to transport sustainability are also included:

- Reduced road congestion (aligned with RLTS target)
- Increased active mode use for short trips
- Fuel consumption (aligned with RLTS target)
- Air quality

Information availability

Agencies continue to supply information for the monitoring programme and GWRC gratefully acknowledges this. Sometimes, however, information proved to be difficult to obtain. Only data that is made available can be reported.

Each report stands alone as information availability improves or data is replaced retrospectively. Therefore previous reports are not entirely compatible.

All reported data relates to the financial year ending at 30 June unless otherwise stated.

Introduction

The Regional Transport Network

The Wellington RLTS provides a plan for development of the region's transport network and the report monitors a number of indicators of the performance of the network. Wellington's regional transport network is shown in Figure 1 below.

State Highway 1 and the North Island Main Trunk (NIMT) rail line enter the region near Otaki and extend southwards through Kapiti Coast, Pukerua Bay, Porirua and Northern Wellington and through to the Wellington City Central Business District (CBD). State Highway 1 continues through to Wellington International Airport. State Highway 2 and the Wairarapa Line railway enter the region north of Masterton and extend south-west through Wairarapa, the Hutt Valley and on to merge with State Highway 1 and the NIMT line at Ngauranga. State Highway 58 provides a vital east-west link between State Highways 1 and 2. State Highway 53 links Martinborough to State Highway 2.

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

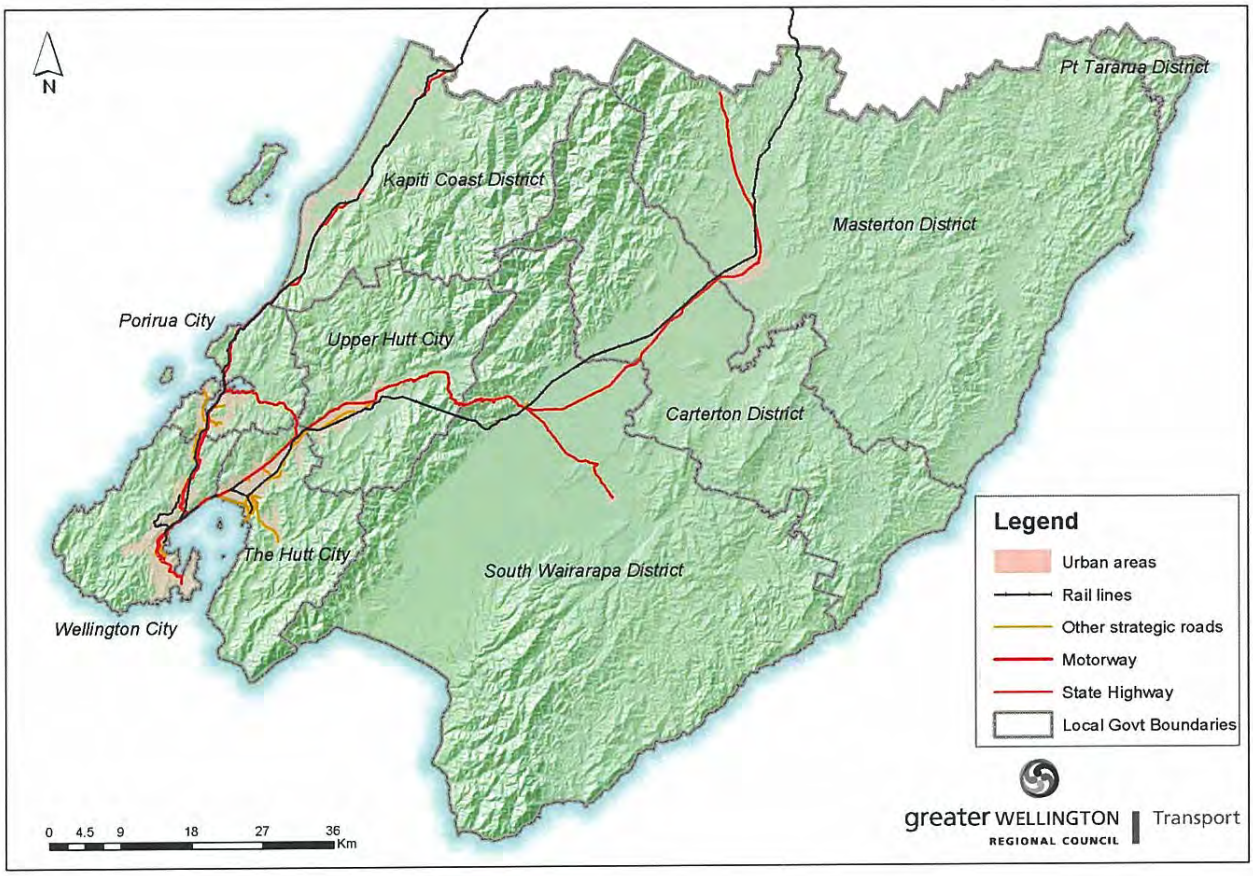

Figure 1: Wellington's regional transport network.

Passenger transport outcomes

Introduction

This section discusses items relating to the RLTS passenger transport outcomes.

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

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

The performance indicators associated with this key outcome are:

  - Peak trips by public transport
  - Peak passenger kilometres by public transport
  - Peak average trip length by public transport
  - Mode of journey to work: public transport
  - Wellington CBD cordon mode share

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

- **Increased off-peak passenger transport use and community connectedness**
  - Off-peak trips by public transport
  - Off-peak passenger kilometres by public transport
  - Off-peak average trip length by public transport
- **Improved passenger transport accessibility for all, including disabled people or from low income groups**
  - Wheelchair accessible public transport services
  - Perceptions of the level of access for mobility restricted public transport users
  - Population proximity to public transport
  - Affordability of passenger transport services
  - Public transport user costs
  - Perceptions of public transport user costs
  - Perceptions of public transport safety
  - Total Mobility Scheme patronage
- **Reduced passenger transport journey times compared to travel by private car**
  - Journey time comparison
  - Journey time by public transport
- **Increased passenger transport reliability**
  - Reliability of public transport services

The terms 'passenger transport' and 'public transport' are often used interchangeably, however, they do have slightly different meanings. Public transport refers to scheduled public transport services which include bus, train, harbour ferry and cable car. 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 and Passenger Transport Plan and also features in this report. However, as some indicators within the report rely on data obtained in relation to scheduled public transport services only, the term 'public transport' is used where appropriate.

Key outcome

1.1 Increased peak period passenger transport mode share

Target: Passenger transport accounts for at least 25 million peak period trips per annum

Peak trips by public transport

Definition: The graph presents the number of passenger trips taken by train, bus and ferry during the AM and PM peak periods. The RLTS target of 25 million trips per annum by 2016 is also shown.

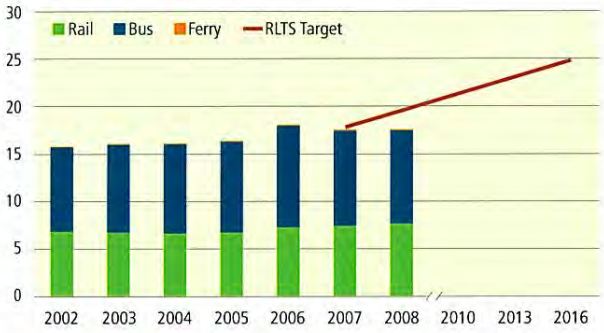

Figure 2: Public transport patronage: number of passenger trips (M), by mode, combined peak periods. Source: GWRC

Interpretation: The total number of peak passenger trips by public transport increased by 0.2% or just under 35,000 in 2008, following a decrease of approximately half a million trips in 2007.

Passenger trips by bus decreased by over 200,000 (2.1%) while train trips increased by 240,000 (3.3%). Ferry passenger trips increased by 10% during the peaks, numbering more than 8,000.

Passenger transport outcomes

Comments: At 17.6 million peak period passenger trips in 2008, a considerable increase is required to meet the target of 25 million passenger trips per annum by 2016. The commencement of the Seatoun commuter service in March 2008 accounts for one-quarter of the increase in peak passenger numbers travelling by ferry.

As fuel prices increased considerably during 2008 some commuters may have chosen to travel by public transport rather than private vehicle during peak periods. (See the indicator: *Fuel price index* in the section: *Environmental outcomes*).

Buses consistently account for most journeys by public transport during the combined peak at almost 60% of total passenger trips since 2002. However, rail trips are typically three to four times longer so account for most passenger kilometres (over 70% in peak periods) - see the following indicators in this section: *Peak/off-peak passenger kilometres by public transport and Peak/off-peak average trip length by public transport.*

Peak passenger kilometres by public transport

Definition: The graph shows the total distance passengers travelled by train, bus and ferry during the AM and PM peak periods.

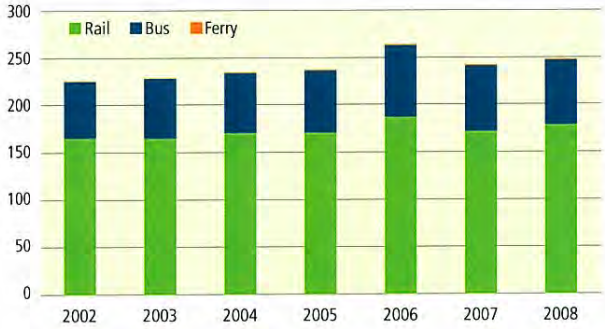

Figure 3: Passenger km (M) by public transport mode, combined peak periods. Source: GWRC

Interpretation: Combined peak period passenger kilometres travelled increased to almost 248 million in 2008, 2.4% more kilometres than 2007.

In 2008 peak period bus travel reduced by approximately 950,000 kilometres (1.4%) while passenger rail kilometres travelled increased by 6,800,000 (3.9%).

Comments: The trend is an overall increase in passenger travel distance at peak times since 2002.

Peak average trip length by public transport

Definition: The graph shows the average length of trip taken by passengers travelling by train, bus and ferry during the AM and PM peak periods.

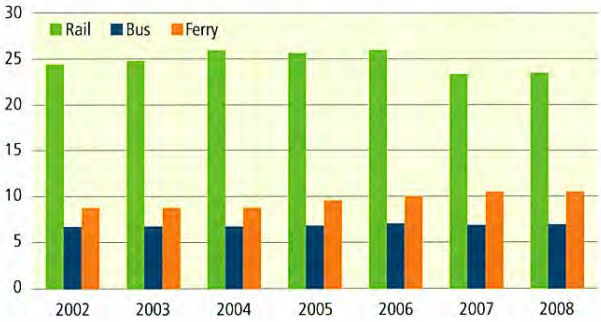

Figure 4: Average trip length (km) by public transport mode, combined peak periods. Source: GWRC

Interpretation: An overall increase of 2.2% in the average public transport trip length occurred in 2008. Bus trips increased by 0.8% in length and average trip length by rail rose by 0.7%. There was no change in length of trip by ferry.

Comments: No major change in average trip length by public transport is evident in 2008. Of the two major public transport modes, the average length of passenger trip by rail during the combined peak is over three times the length of trips by bus. A slight increase in average trip length by both bus and train was noted in 2008.

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

Mode of journey to work: public transport

Definition: The graph uses New Zealand Census data to show the mode share of public transport for the region's 'main means of travel to work'. The RLTS target of 21% of all region wide trips by 2016 is also shown.

Public transport was defined as travel by public bus or train. Ferry travel was not included as it featured under the 'other' category in the census (along with taxi and plane). As the census is conducted five-yearly this indicator will next be updated in 2012.

Figure 5: Public transport mode share of journey to work (%). Source: Statistics New Zealand

Interpretation: The public transport mode share of journey to work was 17% in 2006. An increase in mode share of approximately 16% was shown for public transport in both 2001 and 2006. This equated to just over 4,000 more trips by either public bus or train on census days.

Comments: A moderate increase in the journey to work commute by public transport has taken place over the past two census periods. Public transport as mode of choice will be required to increase by 4% to reach the 2016 RLTS target of 21% of all region wide journey to work trips.

Wellington CBD cordon mode share

Definition: The graph shows selected results from surveys of the number of people travelling by public transport into the Wellington City CBD and by motor vehicle across Wellington City traffic screenlines during the two-hour AM peak period. GWRC and Wellington City Council undertake the surveys annually in March. Public transport data is not available for 2005.

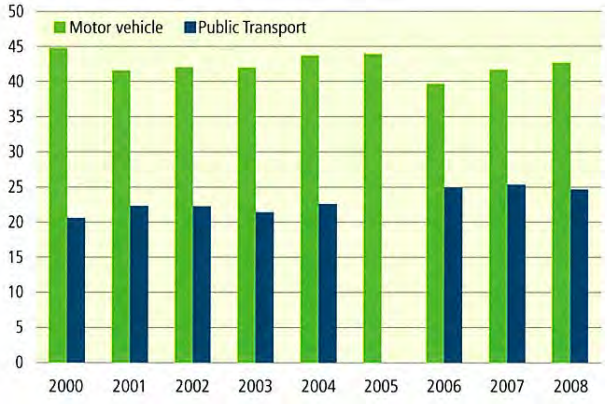

Figure 6: Number of people travelling into Wellington CBD (000) by motor vehicle and public transport, AM peak. Sources: Wellington City Council; GWRC

Interpretation: In 2008, passenger transport accounted for 30% of total mode share (all modes) for those people travelling into the Wellington CBD during the AM peak. The number of people travelling by public transport fell by 2.8% between 2007 and 2008 while motor vehicle occupants rose by 2.4% over the year.

Since 2000 the public transport mode share has averaged 29%. Motor vehicle mode share was over 50% (averaging 53% from 2000-2008).

Comment: The results show a variation in motor vehicle and public transport mode share over time. The public transport network continues its significant role in transporting the region's commuters into the Wellington CBD during the morning peak period.

Related outcomes

1.2 Increased off-peak passenger transport use and community connectedness

Target: Passenger transport accounts for at least 25 million off-peak period trips per annum

Off-peak trips by public transport

Definition: The graph presents the number of passenger trips taken by train, bus and ferry during the off-peak period. The RLTS target of 25 million trips per annum by 2016 is also shown.

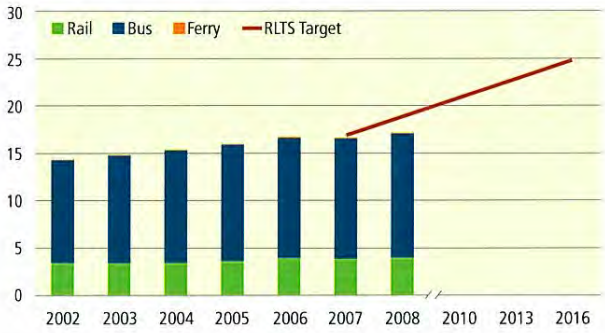

Figure 7: Public transport patronage: number of passenger trips (M), by mode, off-peak period. Source: GWRC

Note: Ferry patronage data prior to 2007 excludes the weekend Harbour Explorer Excursion service.

Passenger transport outcomes

Interpretation: Total off-peak passenger trips increased by half a million (3.2%) in 2008 led mainly by a 3% (over 380,000) increase in bus trips. The number of rail passenger trips increased by 136,000 (3.6%). Off-peak passenger trips by harbour ferry increased by more than 12,000 in 2008, which represents a 16.5% rise from 2007. More than 10,000 of these trips were on the Harbour Explorer Excursion service.

Comments: An increase in off-peak passenger trips by public transport is evident in 2008 continuing the overall rising trend. At 17.1 million passenger trips in total, the RLTS target of 25 million off-peak trips per annum is yet to be achieved.

Off-peak passenger kilometres by public transport

Definition: The graph shows the total distance passengers travelled by train, bus and ferry during the off-peak period.

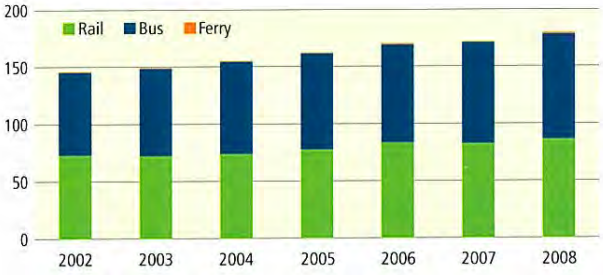

Figure 8: Passenger km (M) by public transport mode, off-peak period. Source: GWRC

Note: Ferry patronage data prior to 2007 excludes the weekend Harbour Explorer Excursion service.

Interpretation: Off-peak passenger kilometres travelled by bus increased by 3.5 million (3.9%) in 2008 and rail kilometres rose by over 3.7 million (4.5%). Ferry travel also increased during the off-peak by 54%, or over 350,000 kilometres (250,000 of which are due to the Harbour Explorer Excursion service). The overall result was an increase of 7.5 million kilometres (4.4%) travelled by off-peak passengers.

Comments: A significant rise in total off-peak passenger kilometres by public transport continues the upward trend shown since 2002.

Off-peak average trip length by public transport

Definition: The graph shows the average length of trip taken by passengers travelling by train, bus and ferry during the off-peak period.

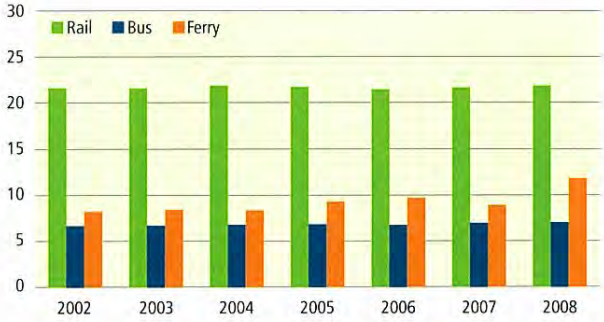

Figure 9: Average trip length (km) by public transport mode, off-peak period. Source: GWRC

Note: Ferry patronage data prior to 2007 excludes the weekend Harbour Explorer Excursion service.

Interpretation: Overall average trip length across all modes increased by 1.2% (0.12 kilometres) in 2008. Ferry trips increased by 2.9 kilometres on average (32%), two-thirds of which are attributable to the Harbour Explorer Excursion service. Both bus and rail trip lengths rose by almost 1% on average.

Comments: With the exception of the harbour ferry, off-peak average trip length has been relatively static over recent years. As with the peak period, the average length of passenger trip by train during the off-peak is approximately three times the length of trips by bus.

1.3 Improved passenger transport accessibility for all, including disabled people or from low income groups

Target: 80% of passenger transport services are guaranteed to be wheelchair accessible

Wheelchair accessible public transport services

Definition: The graph shows the total percentage of public transport services across the region that are accessible by wheelchair. The 2016 target of 80% of passenger transport services being accessible by wheelchair is also shown.

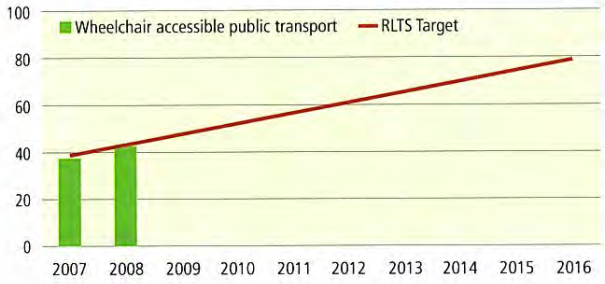

Figure 10: Accessibility of public transport services by wheelchair (%). Source: GWRC

Interpretation: There is considerable variation in wheelchair accessibility between public transport modes. The Wellington Cable Car is 100% wheelchair accessible (both cable cars). Forty percent of buses currently operating within the region can accommodate wheelchairs (c.f. 34% in 2007) while neither of the two Harbour ferries are fully wheelchair accessible.

On the regional commuter rail network, all of the Ganz Mavag units are wheelchair accessible. All three Wairarapa trains are accessible by wheelchair while none of the older Electric Multiple Units (EMU) are, resulting in 60% wheelchair accessibility of the region's trains. Overall, 43% of the region's public transport vehicles in 2008 are wheelchair accessible (38% in 2007).

Comments: Much work is currently underway to address the accessibility of the Metlink public transport network. The new Matangi trains, scheduled to be operational from 2010, will be fully wheelchair accessible. Replacement of the regional bus fleet with fully accessible vehicles is ongoing.

Perceptions of the level of access for mobility restricted public transport users

Definition: The graph shows how respondents rate the level of access for mobility restricted public transport users in the Wellington region.

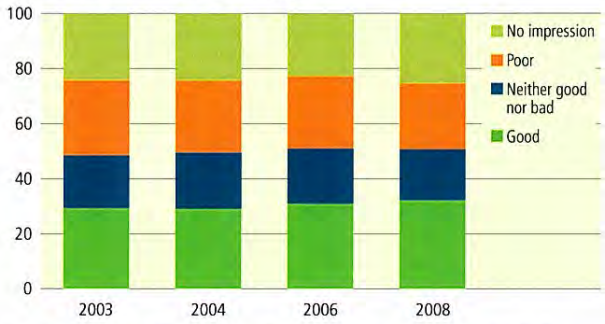

Figure 11: Perceptions of level of access for mobility restricted public transport users (%), Wellington region. Source: GWRC perception surveys

Interpretation: In 2008, 32% of respondents rated the level of access provided in the region for mobility restricted public transport users as 'good' while 24% felt access was 'poor'. Nineteen percent were ambivalent and 25% had no impression.

Comments: Nearly one-third of surveyed Wellington region residents felt there was a good level of access for mobility restricted public transport users which represents a slight increase over the period of the surveys. Almost one-quarter of those surveyed rated access as poor representing a decrease of 3% from 2003.

It appears that some perceptions of progress in the level of service for mobility restricted public transport users are improving, in line with public transport accessibility improvements in the region. (See *Wheelchair accessible public transport services above*).

Target: Most of the region's residents live within 400 metres (5 minutes walk) of a bus stop or train station with a service frequency of at least 30 minutes

Population proximity to public transport

Definition: The graph shows the change in the proportion of the population over time that live within 400 metres of a public transport stop. Population is the average usually resident population on census night 2006. Distance is measured along the roading network. All public transport stops with a regular service are shown as well as those with an average service frequency of 30 minutes or better.

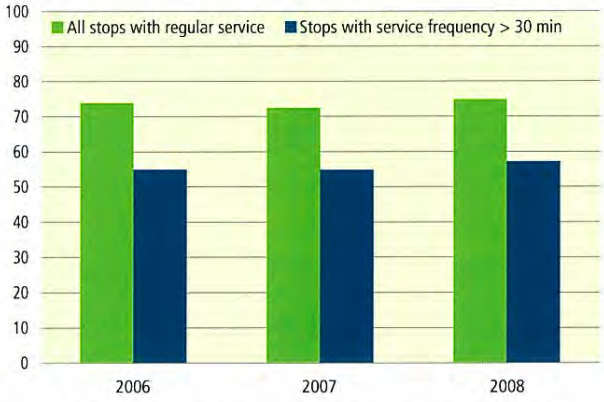

Figure 12: Percentage of the population living within 400m of a public transport stop, all stops; and stops with an average service frequency of 30 minutes or better. Sources: GWRC; Statistics New Zealand.

Passenger transport outcomes

Interpretation: In 2008, 75% of the region's population lived within 400 metres of a public transport stop with a regular service (a 2.4% increase from 2007) and 57% from a stop with an average service frequency of 30 minutes or better (which also represents a 2.4% increase from 2007).

Comments: An increase in resident population within 400 metres (five minutes walk) of public transport has occurred between 2007 and 2008. It is questionable that this meets the RLTS target of: *most of the region's residents live within 400 metres (5 minutes walk) of a bus stop or train station with a service frequency of at least 30 minutes.*

Target: Passenger transport services in the highest deprivation areas are more affordable

Affordability of passenger transport services

Definition: The graph shows the average public transport fare **from regional areas to the Wellington City CBD**. Regional areas with no public transport connection are excluded. Travel within the regional centres (including Wellington CBD) is excluded.

'Deprived areas' are defined as those with a deprivation index (based on the Social Deprivation Index) decile value of 8, 9 or 10. The remaining areas are classified as 'other'.

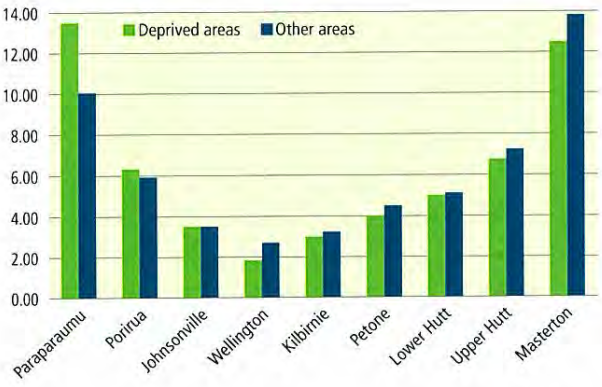

Figure 13: Average total adult cash fares (September 2006, $) for travel by public transport from regional areas ('deprived', 'other') to the Welllington CBD. Sources: GWRC; Statistics New Zealand

Interpretation: The cost of travel from deprived areas to the Wellington CBD is less than the cost of travel from other areas in 67% of the regional areas. The cost is the same in only one of the regional areas, and more in two (22%) of the regional areas. The regional areas of Paraparaumu and Masterton cover a large geographical area. The deprived areas of Paraparaumu are located further away from the Wellington CBD (resulting in higher public transport fares) than the other areas. The reverse is true for the Masterton regional area where the deprived areas are located closer to Wellington CBD.

Comments: Travel to the Wellington CBD is more affordable from deprived (rather than other) areas in the majority of regional areas. It is questionable that this meets the RLTS target of: *passenger transport services in the highest deprivation areas are more affordable.*

Definition: The graph below shows the average public transport fare **from regional areas to the nearest regional centre**. Regional areas with no public transport connection are excluded. Travel within the regional centres (including Wellington CBD) is excluded.

'Deprived areas' are defined as those areas with a deprivation index (based on the Social Deprivation Index) decile value of 8, 9 and 10. The remaining areas are classified as 'other'.

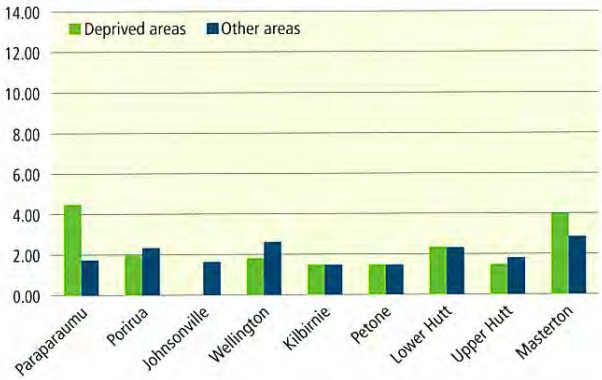

Figure 14: Average total adult cash fares (September 2006, $) for travel by public transport from regional areas ('deprived', 'other') to the nearest regional centre. Sources: GWRC; Statistics New Zealand

Interpretation: The cost of travel from deprived areas to the nearest regional centre is less than the cost of travel from other areas in 33% of the regional areas. The cost is the same in 22% (two) of the regional areas, and more in 33% of the regional areas. There are no deprived areas with a public transport service in Johnsonville. The cost of travel from deprived areas to the town centres of Paraparaumu and Masterton is greater due to the large geographical area that these regional areas cover.

Comments: For most regional areas, the cost of travel by public transport from deprived areas to the nearest regional centre is much the same or less than the cost of travel from other areas. It is questionable that this meets the RLTS target of: *passenger transport services in the highest deprivation areas are more affordable.*

Definition: The graph below shows the **ratio** (deprived areas to other areas) of **total average public transport fares** for travel **from regional areas to the nearest regional centre, and to the Wellington CBD**. The red line represents the level at which the fares from deprived areas equal the fares from other areas. Above the line, the fares from deprived areas are higher than the fares from other areas, and below the line, the fares from deprived areas are lower the fares from other areas (consistent with the RLTS target: *passenger transport services in the highest deprivation areas are more affordable*).

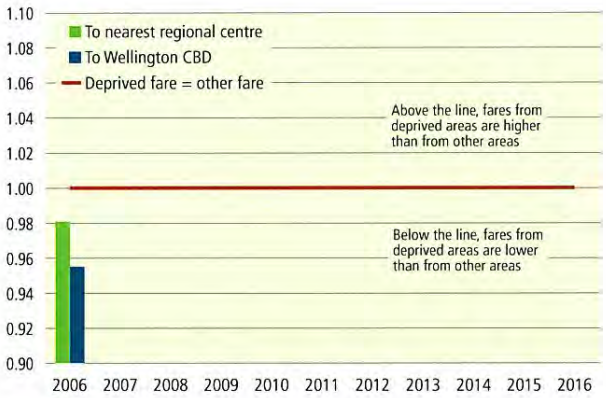

Figure 15: Ratio of the total average adult cash fares (September 2006, $) from regional areas to nearest regional centre, and to Wellington CBD; deprived areas and other areas. Sources: GWRC; Statistics New Zealand

Interpretation: The ratio shows the difference between travel to the regional centres and to the Wellington CBD as approximately 0.98 and 0.96 respectively. For both destinations, the total average fare from the deprived areas is slightly lower than from other areas.

Comments: Travel by public transport from deprived areas in the region to both the nearest regional centre and to the Wellington CBD is very slightly cheaper than from other areas. It is questionable that this meets the RLTS target of: *passenger transport services in the highest deprivation areas are more affordable.*

Public transport user costs

Definition: The graph shows single adult fares (as at March) in the morning commuter peak period, by the modes shown and on the following key routes:

- Wellington – Paraparaumu (rail)
- Wellington – Upper Hutt (rail)
- Wellington – Johnsonville (rail)
- Courtenay Place – Johnsonville (bus)
- Wellington Railway Station – Wellington Airport (bus)
- Wellington Railway Station – Victoria University, Kelburn (bus)
- Wellington Railway Station – Island Bay (bus).

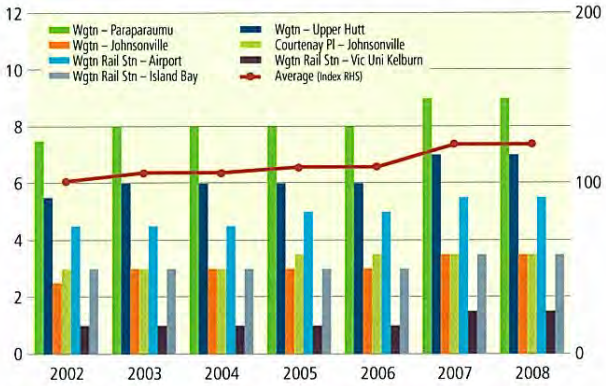

Figure 16: Public transport user costs ($), March. Index: 2002 = 100. Sources: Metlink; bus/rail operators

Interpretation: There were no changes in public transport fares on the routes shown in 2008. New Metlink fares and zones took effect in September 2006 accounting for an almost 14% rise in fares in 2007.

Comments: Public transport must be a competitively priced mode choice to attract travellers away from private car use, especially for peak-period journeys to work. Fares are one element in this comparison, along with perceived service quality, reliability and convenience.

Perceptions of public transport user costs

Definition: The graph shows the percentage of people in both the Auckland and Wellington regions who stated that cost affected their use of public transport.

Passenger transport outcomes

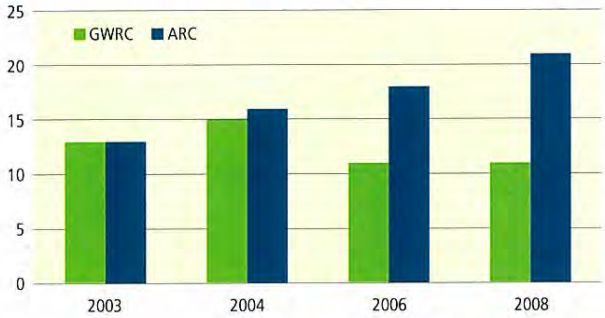

Figure 17: Public transport costs as a barrier to use (%), Wellington and Auckland regions. Source: GWRC and ARC transport perceptions surveys

Interpretation: Eleven percent of those Wellington region residents surveyed in 2006 and 2008 considered the cost of public transport services to be a hindrance to their use of it (a decrease of 4% from 2004). By comparison, 21% of respondents in the Auckland region had the same perception in 2008 (18% in 2006, and 16% in 2004).

Comments: The perception that cost is a barrier to the use of public transport has decreased over time in the Wellington region but risen in Auckland. However, cost is not a major barrier to public transport as the travel mode of choice. Other factors such as convenience and irregularity of service which are not reported here are more dominant reasons that people avoid using public transport more often.[1]

Perceptions of public transport safety

Definition: The graph shows respondents' perceived safety when using public transport in the Wellington and Auckland regions.

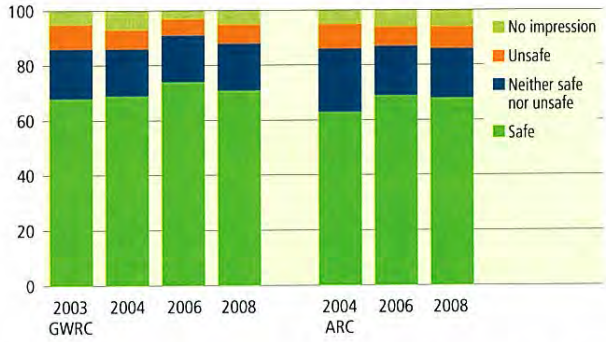

Figure 18: How safe do you feel when using public transport? (%) Sources: GWRC and ARC perception surveys

Interpretation: In the Wellington region 71% of respondents said they felt 'safe' when using public transport in 2008 (c.f. 72% in 2006) and 7% felt 'unsafe' (c.f. 6% in 2006). When compared with Auckland, 3% more people felt 'safe' in Wellington in 2008).

Comments: GWRC and the regional community must continue to focus on providing a safe environment for public transport users.

Total Mobility Scheme patronage

Definition: The graph shows annual Total Mobility Scheme passenger numbers. This scheme assists people who have difficulty using public passenger transport services and is administered by GWRC. A voucher system provides a 50% discount on taxi fares to people who meet certain eligibility criteria (endorsed by the Ministry of Transport).

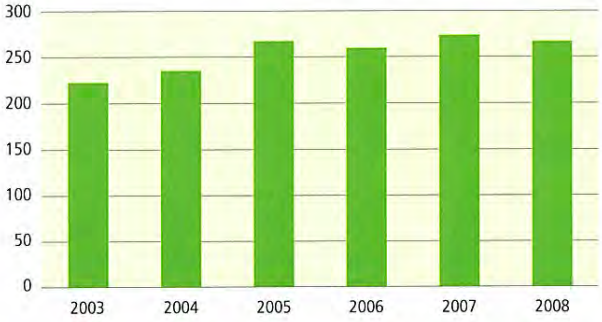

Figure 19: Total Mobility Scheme patronage (000). Source: GWRC

Interpretation: Total Mobility passengers decreased by 2.6% in 2008 following an increase of 5.4% the previous year.

Since 2003 the overall increase in passenger numbers was 20%.

Comments: Total mobility patronage is expected to continue to grow with increased demand as knowledge of the scheme increases and the population ages.

[1] National Research Bureau (2008). *Greater Wellington Regional Council Transport Perceptions Survey: June 2008.*

1.4 Reduced passenger transport journey times compared to travel by private car

Target: Peak period passenger transport journey times are equal to or better than a similar journey undertaken by a private car for key selected corridors

Journey time comparison

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

Route 1 SB: Paraparaumu – Wellington Airport

Route 1 NB: Wellington Airport - Paraparaumu

Route 2 SB: Upper Hutt – Wellington Airport

Route 2 NB: Wellington Airport - Upper Hutt

The values given are the difference in minutes between using public transport and travelling by private car; **the larger the value, the longer it takes to travel by public transport in comparison with the private car**, and vice versa. Both AM and PM peak period comparisons are shown along with the inter-peak period. The graphs show the average travel time across both routes and individual route times are given in the tables.

The RLTS target is shown on the AM and PM peak comparison graphs: *peak period passenger transport journey times are equal to or better than a similar journey undertaken by a private car for key selected corridors.*

Figure 20: Comparison of average AM peak travel times (minutes) by public transport and by car on key routes. Sources: Transit New Zealand; GWRC

	Route 1 SB	Route 1 NB	Route 2 SB	Route 2 NB	Average
2003	19	42	29	47	34
2004	16	48	15	44	31
2005	12	45	15	49	30
2006	23	48	26	47	36
2007	21	46	22	48	34
2008	21	46	18	47	33

Table 2: Comparison of AM peak travel times (minutes) by public transport and by car on individual key routes. Sources: Transit New Zealand; GWRC

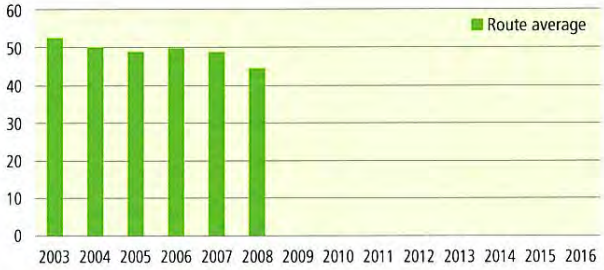

Figure 21: Comparison of average inter-peak travel times (minutes) by public transport and by car on key routes. Sources: Transit New Zealand; GWRC

	Route 1 SB	Route 1 NB	Route 2 SB	Route 2 NB	Average
2003	55	44	60	50	52
2004	48	50	57	45	50
2005	48	42	59	46	49
2006	50	44	58	46	50
2007	47	42	60	47	49
2008	49	41	41	46	44

Table 3: Comparison of inter-peak travel times (minutes) by public transport and by car on individual key routes. Sources: Transit New Zealand; GWRC

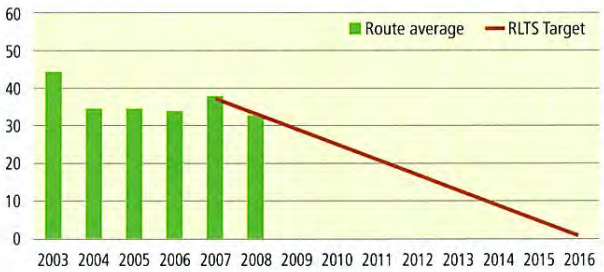

Figure 22: Comparison of average PM peak travel times (minutes) by public transport and by car on key routes. Sources: Transit New Zealand; GWRC

Passenger transport outcomes

	Route 1 SB	Route 1 NB	Route 2 SB	Route 2 NB	Average
2003	57	34	51	36	44
2004	45	25	41	27	34
2005	38	19	49	31	34
2006	35	22	47	31	34
2007	34	30	51	36	38
2008	41	20	41	27	33

Table 4: Comparison of PM peak travel times (minutes) by public transport and by car on individual key routes. Sources: Transit New Zealand; GWRC

Interpretation: The comparative travel time in 2008 has decreased across all periods of the day.

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 commuters (towards Wellington City). This indicates a more favourable relative travel time by public transport than by private car on a southbound journey.

During the PM peak the dominant direction of commuter travel is northbound. The comparative travel time in the southbound direction is greater than northbound; therefore relative journey time by public transport is more favourable than by car in the northbound direction.

No strong directional trend is evident from the comparative travel time by public transport and by car on individual routes during the inter-peak period.

Comments: An improvement in competitiveness of public transport was indicated by the decrease in comparative travel time in 2008. However, journey time by public transport remains relatively uncompetitive compared to the private car.

The overall decrease between 2007 and 2008 is due to increased travel times by private car and more efficient connectedness between trains and buses. Localised problems in the road network are averaged in the car travel time surveys and so whilst the car travel times are in most cases significantly faster than public transport, the reliability of travel times is not shown.

With an average of about 35 minutes difference between journey times by public transport and the private car in both the AM and PM peaks, major investment in public transport infrastructure and services is required to approach the RLTS target.

Journey time by public transport

Definition: The graphs show the time taken to travel by public transport (bus and train) on the same key routes which feature in the *Journey time comparison* indicator above, with the addition of the 'Golden Mile'. Travel times derive from timetables for routes 1 and 2. Traffic congestion on route 3, the Golden Mile (between Lambton Interchange and Courtenay Place) renders timetables to be unreliable. Information on this route is collected by a GWRC survey with times averaged over the two-hour periods. The routes covered and public transport modes for each are:

Route 1 SB: Paraparaumu – Wellington Airport (rail/bus)

Route 1 NB: Wellington Airport – Paraparaumu (bus/rail)

Route 2 SB: Upper Hutt – Wellington Airport (rail/bus)

Route 2 NB: Wellington Airport - Upper Hutt (bus/rail)

Route 3 SB: Lambton Interchange – Courtenay Place (bus)

Route 3 NB: Courtenay Place – Lambton Interchange (bus).

Travel times during the AM peak, inter-peak, PM peak and on Saturday are given.

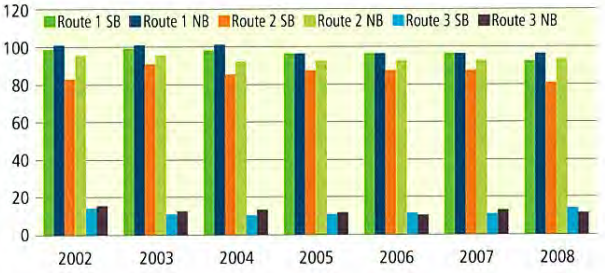

Figure 23: Public transport travel time (mins), AM peak. Sources: Metlink bus/rail timetables; GWRC survey

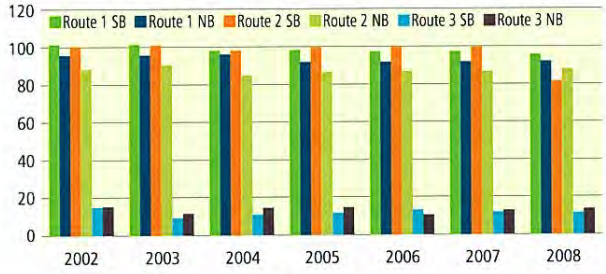

Figure 24: Public transport travel time (mins), inter-peak. Sources: Metlink bus/rail timetables; GWRC survey

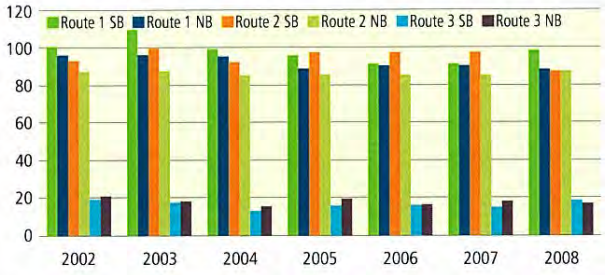

Figure 25: Public transport travel time (mins), PM peak. Sources: Metlink bus/rail timetables; GWRC survey

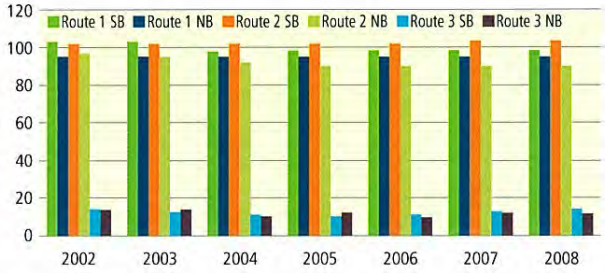

Figure 26: Public transport travel time (mins), Saturday. Sources: Metlink bus/rail timetables; GWRC survey

Interpretation: In 2008 changes in journey times on the following routes were noted:

Route 1 SB: during the AM peak, a decrease of 4.1 minutes; during the PM peak, an increase of 7mins

Route 2 SB: during the AM peak, a decrease of 6.4 minutes; during the inter-peak, a decrease of 18.3 minutes; during the PM peak, a decrease of 10 minutes.

Average journey times on the Golden Mile in both directions showed wide variation in 2008, from a minimum of 11.5 minutes to a maximum of 18.5 minutes.

Comments: The installation of bus lanes along the Golden Mile led to a decrease in travel times in the PM peak between 2003 and 2004. A speed restriction of 30km/h for all traffic was introduced along the northern section of the Golden Mile including Lambton Quay and Willis Street in mid 2006. In 2008, a scheduling adjustment of the Airport Flyer Service achieved improved coordination with train arrivals thereby reducing overall journey times.

1.5 Increased passenger transport reliability

Target: Nearly all bus and train services run on time

Reliability of public transport services

Definition: The graph shows the percentage of bus and passenger rail services in the region which run to time.

A bus service is defined as being 'on time' when it runs within 10 minutes of scheduled time at departure, and at its destination.

A train which departs from or arrives at Wellington Railway Station within five minutes of scheduled time is defined as 'on time'.

Both definitions are agreed in public transport operator contracts with Greater Wellington Regional Council. This data is currently self-reported by public transport operators which will continue until the introduction of a real time information system.

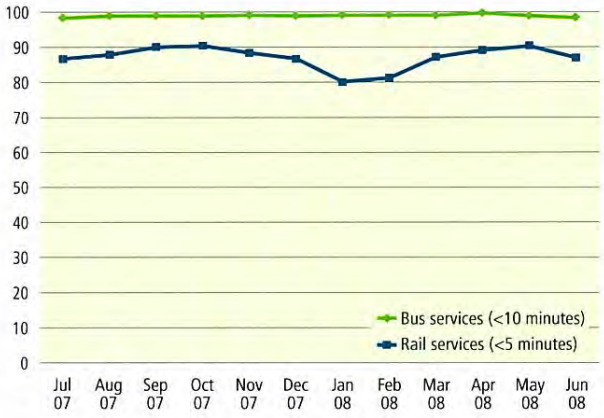

Figure 27: Bus and passenger rail services running to time (%). Sources: Public transport operators; GWRC

Interpretation: In 2008 nearly all bus services have operated within 10 minutes of scheduled time, and 80-90% of rail services arrived or departed Wellington Railway Station within five minutes of scheduled time.

Passenger transport outcomes

Comments: The region provides over two million bus trips per annum. The data shows that the vast majority of those services run to time. However, only 58% of surveyed Wellington region residents perceive the bus network as reliable (see the indicator *Perceptions of network reliability* in *Road network efficiency outcomes* section).

The region provides over one hundred and ten thousand rail trips per annum. The data indicates some variation in reliability with on average, one in five rail trips running late in early 2008 (some reliability issues are outside the control of the public transport operator). Again, of surveyed Wellington region residents, reliability of the rail network is perceived to be only around 60% (see the indicator *Perceptions of network reliability* in *Road network efficiency outcomes* section).

Relatively low (53%) satisfaction of public transport service reliability is also reported in the *Annual Public Transport Satisfaction Monitor 2008*.[2]

Conclusion

Initiatives encouraging the use of public transport especially for peak-period commuter trips remain important, but travel by car will continue to be the predominant form of regional transport. This is partly due to dispersed development in the Wellington region.

A superior level of service on the public transport network is required to encourage travellers to switch from private car travel, especially for the peak period commute to work. This requires measures to reduce bus and train travel time variations (such as dedicated bus lanes) and further integration between bus and rail services to minimise the 'cost' of transfer to passengers.

The introduction and regional implementation of 'txtBUS', 'txtTRAIN' and real time information along with integrated ticketing will significantly improve public transport level of service.

[1] Premium Research (2008). Greater Wellington Annual Public Transport Satisfaction Monitor. http://www.metlink.org.nz/story_images/5516_Annual_Public_T_s11047.pdf

Active mode outcomes

Introduction

This section discusses items relating to 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:

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

The following related outcomes and associated performance indicators for active modes are:

- **Improved level of service for pedestrians and cyclists**
  - Perceptions of the level of service for cyclists
  - Perceptions about the ease of cycling
  - Urban road frontages served by footpaths
  - Perceptions of the level of service for pedestrians
  - Perceptions about the ease of walking
  - Perceptions of the level of access for mobility restricted footpath users
- **Increased safety for pedestrians and cyclists**
  - Pedestrian casualties
  - Perceptions of pedestrian safety
  - Perceptions of child pedestrian safety
  - Cyclist casualties
  - Perceptions of cyclist safety
  - Perceptions of child cyclist safety

Key outcome

2.1 Increased mode share for pedestrians and cyclists

Target: Active modes account for at least 15% of region wide journey to work trips

Mode of journey to work: active modes

Definition: The graph uses New Zealand Census data to show active mode share for the region's 'main means of travel to work'. The RLTS target of 15% of all region wide trips by 2016 is also shown.

Active mode was defined as: 'walked or jogged, bicycle'. As the census is conducted five-yearly this indicator will next be updated in 2012.

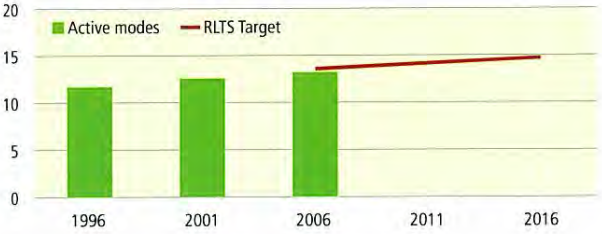

Figure 28: Active mode share of journey to work (%). Source: Statistics New Zealand

Interpretation: Active mode share of journey to work was over 13% in 2006. This represents an increase of almost 17% (3,500 more active mode trips) from the 2001 census.

Comments: The main means of travel to work by active modes indicator is 2% short of the 2016 RLTS target of 15% of all region wide journey to work trips.

Wellington CBD cordon cycle and pedestrian counts

Definition: The graph shows results from the cordon and screenline location surveys that Wellington City Council undertakes in March of each year. No information is available for the other local authority areas. Data is averaged over the weekday, two-hour periods described as follows:

- pedestrians in- and outbound to/from the central city during the morning peak period (AM cordon)
- cyclists in- and outbound to/from 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)
- pedestrians along the Golden Mile during lunchtime (Golden Mile midday)
- pedestrians between the CBD and waterfront during lunchtime (across waterfront midday).

Active mode outcomes

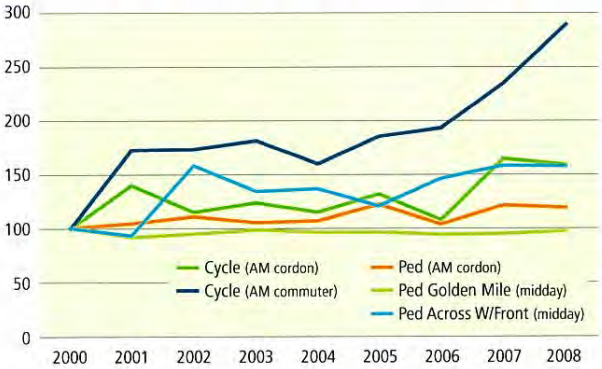

Figure 29: Wellington CBD corrdon pedestrian and cycle counts, average weekday two-hour period, March. Index: 2000 = 100. Source: Wellington City Council

Interpretation: Cycle and pedestrian counts vary widely according to weather conditions at the time of the survey. The 2008 surveys were conducted in mainly fine conditions with one day of light rain.

Cyclists crossing the CBD cordon in the 2008 morning peak decreased by 4% or 56 cyclists, following a marked increase of 519 cyclists the previous year. Pedestrian numbers at the same locations dropped by approximately 250 (or 2%) in 2008.

The number of commuter cyclists travelling across Wellington suburban screenlines in 2008 increased by 236 (23%), which follows a similar increase in 2007. Lunchtime pedestrian numbers between the CBD and waterfront remained relatively static in 2008. An increase of just less than 1,500 pedestrians on the Golden Mile is masked by the consistently high total number (78,000).

Comments: A further significant gain in the volume of commuter cyclists (both inbound and outbound) was evident again in 2008. Commuter routes tend to follow main arterial roads, while cyclists crossing the cordon into/out of the Wellington CBD, do so at many points and may not be counted in this survey. This may explain the decrease in cyclists at the cordon locations in 2008 compared to the increase in commuters.

Cycling is becoming a more popular means of travelling to work. Demands for active transport need to be accommodated and encouraged by the provision of safe and convenient networks for pedestrians and cyclists.

Active modes for short trips

These indicators measure progress against the GWRC LTCCP 2006-2016 target for active modes:

At least 80% of all trips up to 1 km and 60% of all trips between 1 and 2 km will be walked or cycled

Definition: The graphs show how the percentage of short trips by the active modes of cycling and walking compared with the GWRC LTCCP targets. The targets are based on 2001 active mode use levels for trips of less than 1 km and between 1 and 2 km in length. The 'Short Trip Active Modes' survey on which this indicator is based, was undertaken in 2004 and 2006. In future the survey will take place three-yearly so the next update will be in 2009.

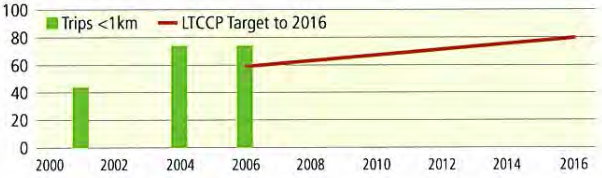

Figure 30: Trips of less than 1 km made by pedestrian or cycling modes (%), Wellington region. Source: GWRC Household Travel Survey 2001; GWRC Short Trip Active Mode surveys 2004, 2006

Interpretation: Seventy-four percent of trips less than 1 km made by respondents were cycled or walked in 2006, exactly the same result as in 2004.

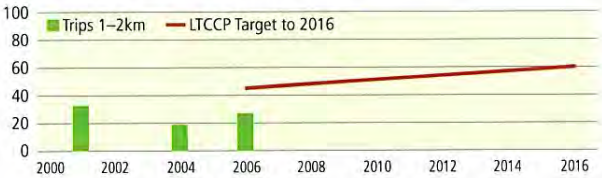

Figure 31: Trips between 1 and 2 km made by pedestrian or cycling modes (%), Wellington region. Source: GWRC Household Travel Survey 2001; GWRC Short Trip Active Mode surveys 2004, 2006

Interpretation: In 2006, 27% of respondents made trips of 1 – 2 km in length by the active modes of cycling or walking (c.f. 19% in 2004).

Comments: As the methodology of the 2004 and 2006 active mode surveys is not identical to that of the 2001 survey, data over further years is required before an accurate trend will emerge. While a pleasing three-quarters of all trips of less than 1 km in length were made by active modes in 2006 (on the way towards the LTCCP target of 80% by 2016) this result has not increased from 2004. A focused effort to increase the level of walking and cycling as the modes of choice especially for trips of 1 - 2 km in length, is warranted. Ongoing TDM, pedestrian and cycling plan implementation aims to achieve increased uptake of theses modes.

Related outcomes

2.2 Improved level of service for pedestrians and cyclists

Target: All of the strategic cycle network provides an acceptable level of service

Perceptions of the level of service for cyclists

Definition: The graph shows how respondents rate the level of service for cyclists in the Wellington region.

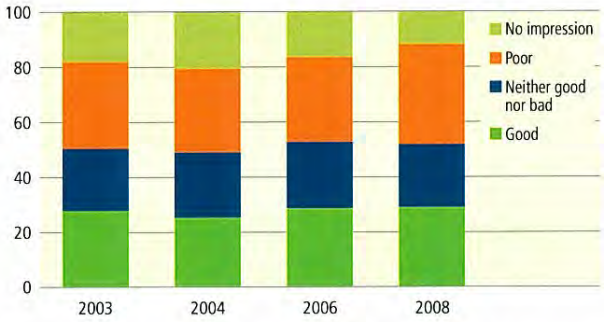

Figure 32: Perceptions of level of service for cyclists (%), Wellington region. Source: GWRC transport perception surveys

Interpretation: In 2008, 29% of respondents rated the level of service for cyclists as good, the same result reported in 2006. A perception of a poor level of service was indicated by 36% of the Wellington region residents surveyed in 2008 (31% in 2006) and 12% had no impression.

Comment: While the perception of a good level of service for cyclists remained the same from 2006 to 2008 at almost one-third, the perception of a poor level of service increased by 5% to over one-third of those surveyed. This result identifies the need for an increased effort in the level of service provision for cyclists in the Wellington region.

Perceptions about the ease of cycling

Definition: The graph shows how easy people found cycling around the Wellington region to be. Results for the Auckland region are also given.

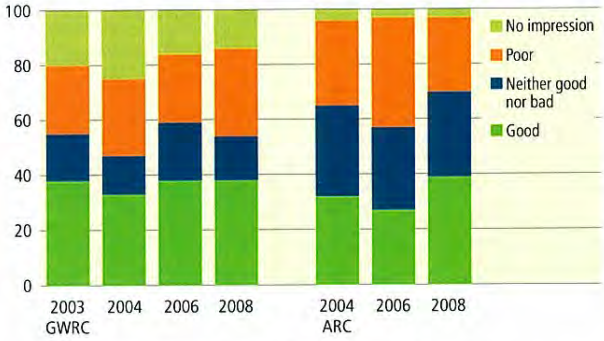

Figure 33: How 'hassle free' is it to get around the region by cycling? (%). Sources: GWRC and ARC transport perceptions surveys

Interpretation: Thirty-eight percent of Wellingtonians in both 2006 and 2008 believed that getting around the region by cycle was 'good', which was 1% less than 2008 Auckland respondents. In 2006, 11% separated these two results with Auckland residents at 27% in 2006.

In 2008, 32% of respondents (representing a 7% increase from 2006) believed that cycling in the Wellington region was poor. This result was 5% above that of Aucklanders with the perception that getting around their region by cycle was difficult, where a decrease of 13% from 2006 was evident.

Fourteen percent of respondents in the Wellington region had no impression while 17% were ambivalent (31% in Auckland).

Comment: More Auckland region residents than those in Wellington felt that getting around the region by cycle was good in 2008. The Wellington result was unchanged from 2006.

A perception that cycling is difficult can lead to less use of this mode. Almost one-third of Wellingtonians believed that getting around their region by cycling was relatively difficult. The need for improved cycling facilities throughout the region is indicated. Providing greater ease of cycle use will maintain current levels and increase uptake of cycling in the region.

Active mode outcomes

Target: Nearly all urban road frontages are served by a footpath

Urban road frontages served by footpaths

An enquiry with the Wellington region's Territorial Authorities in 2008 has revealed that no suitable data is collected to enable the development of an indicator to address the target: *Nearly all urban road frontages are served by a footpath*. A specific survey to acquire data would be required.

Perceptions of the level of service for pedestrians

Definition: The graph shows how respondents rate the level of service for pedestrians in the Wellington region.

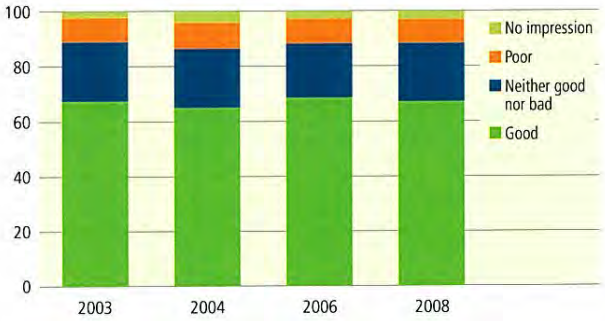

Figure 34: Perceptions of level of service for pedestrians (%), Wellington region. Source: GWRC transport perception surveys

Interpretation: Sixty-seven percent of respondents rated the level of service for pedestrians in the Wellington region as good in 2008, which is a slight decrease on the 2006 result of 69%. The perception that pedestrian's level of service was poor remained at 9% from 2006 to 2008.

Comment: Little change in the perception of the level of service for pedestrians has been indicated since 2003. Although reasonably high at over two-thirds of those surveyed, the perception of a good level of service in the region could be further improved by pedestrian oriented investment in the transport network.

Perceptions about the ease of walking

Definition: The graph shows how easily people found it to get around the Wellington region by walking. Results for the Auckland region are also given.

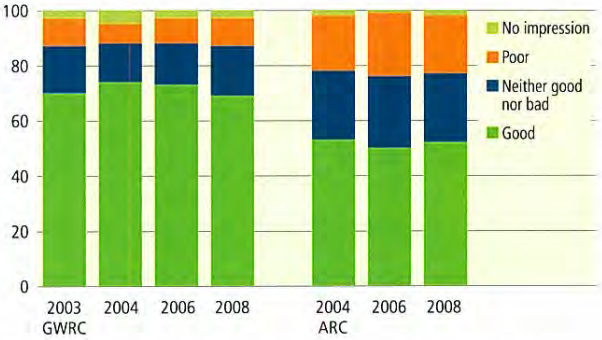

Figure 35: How 'hassle free' is getting around the region by walking? (%). Sources: GWRC and ARC transport perceptions surveys

Interpretation: In 2008, 69% of respondents rated getting around the Wellington region by walking as 'good' (73% in 2006) while just over half of surveyed Aucklanders had the same perception. Twenty-one percent of Aucklanders believed that getting around their region by walking in 2008 was difficult, 11% more than Wellington region respondents. Little change in this perception from 2006 was shown in either region.

Nineteen percent of the Wellington residents surveyed were ambivalent compared with 25% in Auckland.

Comment: Most Wellingtonians believed that walking around their region was relatively easy, with only half of Auckland respondents thinking the same. This result is to be expected as Wellington's regional cities and towns are relatively compact and geographically small in scale, whereas the Auckland region has sprawled as it has grown.

A perception that walking is a difficult mode of travel can lead to less use of public transport, which has an associated walking trip component. Through measures included in the pedestrian and TDM plans, GWRC encourages increased use of walking as a travel mode of choice.

Perceptions of the level of access for mobility restricted footpath users

Definition: The graph shows how respondents rate the level of access for mobility restricted footpath users in the Wellington region.

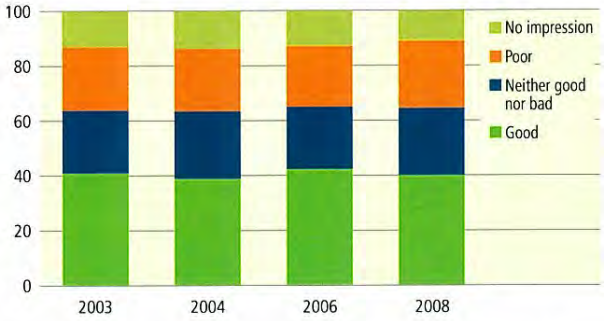

Figure 36: Perceptions of level of access for mobility restricted footpath users (%), Wellington region. Source: GWRC transport perceptions surveys

Interpretation: In 2008, 40% of the Wellington region residents who were surveyed felt that the level of access for mobility restricted footpath users was good, compared to 42% with the same perception in 2006. The perception of a poor level of service was relatively static over the five-year period the surveys were conducted at between 22% (recorded in 2006) and 24% in 2008. Eleven percent of 2008 respondents had no impression.

Comments: The perception of the level of access for mobility restricted footpath users has changed little since 2003. As only around 40% of respondents rated it as good, and almost a quarter had the perception that the level of access was poor, there is much room for improvement. Planning and investment for better access to footpaths for the region's mobility restricted population is indicated. Footpath accessibility for mobility restricted users should be considered in the development of local walking strategies.

2.3 Increased safety for pedestrians and cyclists

Target: Fewer than 100 pedestrians injured in the region per annum

Pedestrian casualties

Definition: The graph shows pedestrian casualties for the region. The RLTS target to 2016, of fewer than 100 pedestrians injured per annum, is also shown.

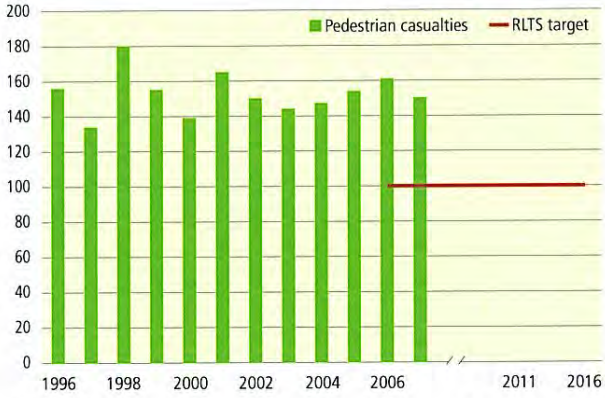

Figure 37: Pedestrian casualties, Wellington region. Calendar year. Source: Land Transport New Zealand

Interpretation: In 2008 the region's total pedestrian casualty figure decreased for the first time since 2003, by 11 (7%). However, at 150 the region is still well above the RLTS target of fewer than 100 pedestrians injured per annum.

Comments: The occurrences of pedestrian versus vehicle crashes on urban roads in the Wellington region remain high when compared with the rest of New Zealand during the period 2003-2007.[1] The implementation of Greater Wellington's regional pedestrian and road safety plans aim to address pedestrian safety issues.

Perceptions of pedestrian safety

Definition: The graph shows how safe respondents think people are when walking in the Wellington and Auckland regions.

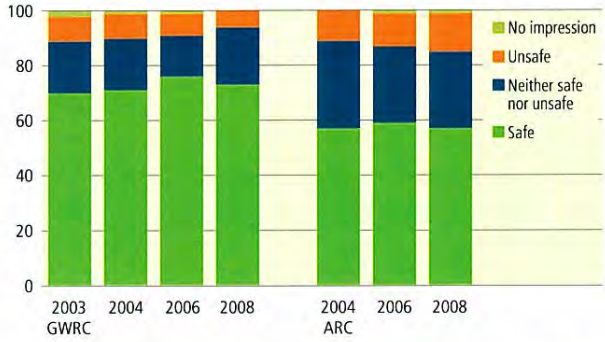

Figure 38: How safe do you think people are when walking? (%) Sources: GWRC and ARC perception surveys

[1] Land Transport New Zealand (2007). *Greater Wellington Region Road Safety Report 2003 to 2007*. p. 43.

Active mode outcomes

Interpretation: In the Wellington region, 73% of respondents said they felt people were 'safe' while walking (c.f. 76% in 2006) while only 6% said they thought it was 'unsafe' (8% in 2006). This compared favourably with ARC's survey, with 14% more people feeling 'safe' in Wellington than in Auckland.

Comments: With such a high number of people walking in the Wellington region, it is not surprising that almost three-quarters feel safe doing so. This result correlates well with the relatively low risk of a pedestrian being involved in a crash with a motor vehicle.

Perceptions of child pedestrian safety

Definition: The graph shows the percentage of people in the Wellington region who would or do allow a child (under 12 years) to walk unsupervised in the vicinity of their home and to or from school.

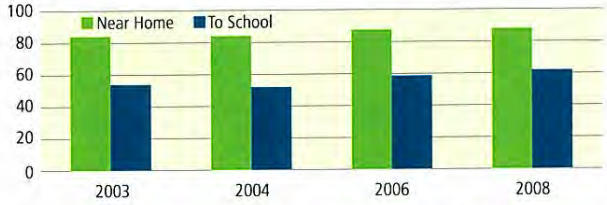

Figure 39: Allowing a child to walk unsupervised (%), Wellington region. Source: GWRC perception surveys

Interpretation: Eighty-eight percent of respondents would allow children to walk unsupervised near their homes (unchanged from 2006), while only 62% would allow them to walk to school (c.f. 59% in 2006). The main reason given for not allowing children to walk to school unsupervised has related to 'stranger danger' issues (around 40%). Other reasons given included the volume of traffic and main roads the children would need to contend with (12%), that the distance was too great (21%) and that children were not mature enough and required supervision (22%).

Comments: A similar number of respondents allowing children to walk unsupervised was shown in 2008. There is a small but pleasing increase in walk to school. While the actual recorded occurrence of 'stranger danger' incidents is very low, the media play a large role in over-reporting such incidents, leading to a climate of fear.

Many parents and caregivers drive their children to and from school as they feel their communities are unsafe. This leads to less physically active children and congestion both at the school gate and on the roads generally. A continued focus on providing and promoting a safe environment for transport users of all ages will benefit the community as a whole.

Target: Fewer than 75 cyclists injured in the region per annum

Cyclist casualties

Definition: The graph shows cycle casualties for the region. The RLTS target to 2016, of fewer than 75 cyclists injured per annum is also shown.

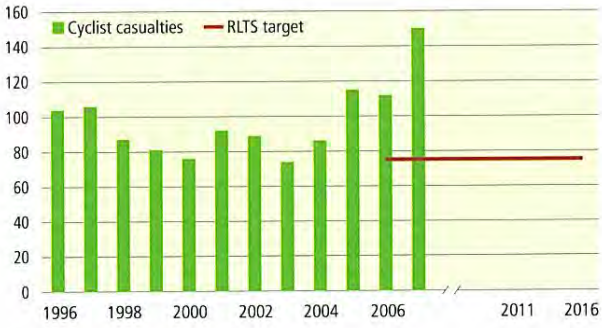

Figure 40: Cycle casualties, Wellington region. Calendar year. Source: Land Transport New Zealand

Interpretation: Cycle casualties in the Wellington region significantly increased by 38 in 2008 (34%) to a total of 150, a record high. The 2007 result is twice the RLTS target of fewer than 75 cyclists injured per annum.

Comments: Cyclist casualties are disproportionately high given the low number of trips made by cycle and have reached the level of double the RLTS target. Despite cyclists being vulnerable road users, cycling is a transport mode that needs to be encouraged. GWRC supports and promotes a culture of safe cycling in the region through the implementation of the regional cycling and road safety plans.

Perceptions of cyclist safety

Definition: The graph shows how safe respondents think people are when using bicycles in both the Wellington and Auckland regions.

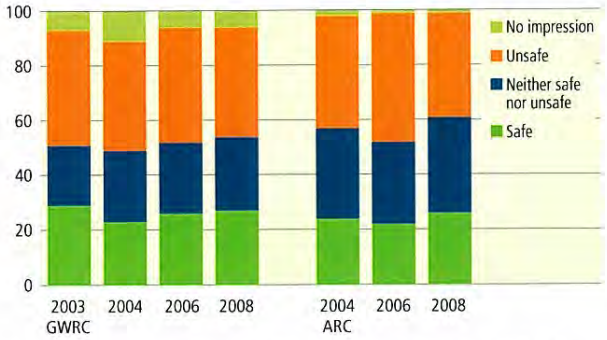

Figure 41: How safe do you think people are when cycling? (%). Sources: GWRC and ARC perception surveys

Interpretation: Twenty-seven percent of Wellington region respondents said they think people generally are 'safe' while 40% reported they think people feel 'unsafe' when cycling. Auckland region respondents choosing the 'unsafe' category were 38% (9% less than 2006) and 26% thought cycling to be 'safe'. Over one-quarter of respondents in the Wellington region did not feel cyclists were safe or unsafe and 5% had no impression.

Comments: Wellington region results in 2008 are very similar to those of 2006. Only one-quarter of Wellingtonians rated cycling in the region to be safe, a perception which has not changed much since 2003. GWRC and the regional community must focus on providing a safe environment for all transport users.

Perceptions of child cyclist safety

Definition: The graph shows the percentage of people in the Wellington region who would or do allow a child (under 12 years) to cycle unsupervised in the vicinity of their home and to or from school.

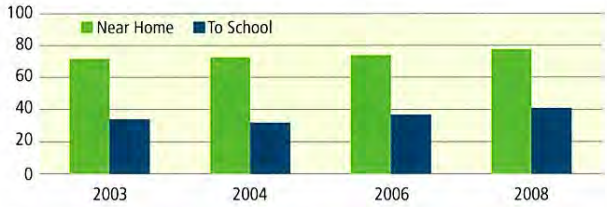

Figure 42: Allowing a child to ride their bicycle unsupervised (%), Wellington region. Source: GWRC perception surveys

Interpretation: While 78% of respondents would allow children to cycle unsupervised near their home in 2008 (c.f. 74% in 2006) only 41% would let them cycle to school (c.f. 37% in 2006). The main reason given for not allowing children to cycle to school was the volume of traffic (27%). Other reasons included the condition of the roads, steepness of hills and speeding traffic (all at 14%), and poor driver behaviour (12%).

Comments: It is clear that there must be more focus on providing a safe environment for transport users of all ages. Many parents and caregivers drive their children to school as they feel it is too dangerous on the roads for young cyclists. This leads to increased congestion and traffic danger at the school gate, and children who lack physical activity and road sense.

Conclusion

The provision of safe and convenient networks for pedestrians and cyclists are required to meet active transport demands. Continued progress on the three road safety interventions of engineering, education and enforcement could result in improvements in pedestrian and cyclist casualties which are ongoing issues for the region.

While already a relatively high number of people make short trips by active modes, GWRC aims to encourage significantly more trips by walking and cycling. The numbers of cyclists commuting through Wellington City suburbs in the morning have shown considerable increases in both 2007 and 2008 as cycling is becoming a more popular means of travelling. Active mode share will remain variable day to day, but this mode use is expected to increase with a growing awareness of the potential health benefits and improvements in cycle and pedestrian networks.

Environmental outcomes

Introduction

This section discusses items relating to 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
  - Fuel consumption by region
  - Fuel price index
- **Increased private vehicle occupancy**
  - Vehicle occupancy

Key outcome

3.1 Reduced greenhouse gas emissions

Target: Transport generated CO_2 emissions will remain below 1,065 kilotonnes per annum

Carbon dioxide emissions

Definition: Carbon dioxide is the most common and significant greenhouse gas formed from the combustion of fossil fuels.[1] The graph shows transport-generated CO_2 levels for the region. The RLTS target of less than 1,065 kilotonnes of CO_2 emissions per annum attributable to land transport also features on the graph.

Total fuel consumed (and consequently combusted) is directly correlated to the amount of CO_2 produced. Carbon dioxide emission levels for the region have been calculated from fuel consumption using production rates from the 2005 Ministry of Transport Vehicle Fleet Emissions Model (VFEM). The factors are: 2.3 kg of CO_2 per litre of petrol and 2.6 kg/litre for diesel.

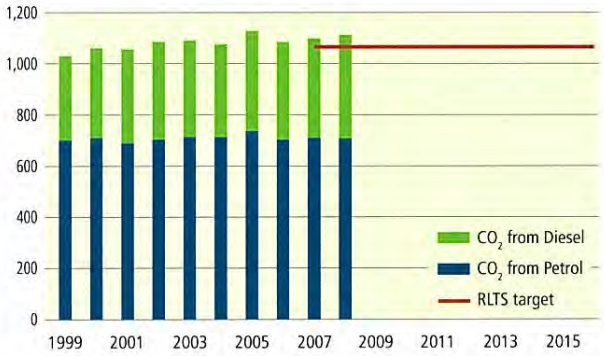

Figure 43: Transport-generated CO_2 (kilotonnes), Wellington region. Sources: local authorities; Ministry of Transport VFEM 2005.

Interpretation: As CO_2 emission levels have been calculated from fuel used, the same pattern seen in the *Fuel consumption* indicator in this section is evident here.

In 2008 land transport fuel combustion produced 1,113 kilotonnes of CO_2 in the Wellington region. This represents an increase of 14 kilotonnes (1.3%) from 2007 and builds on a similar increase in 2006.

More diesel was consumed in the region in 2008, accounting for the majority of the increase. As the factors above show, diesel also produces more CO_2 per litre than petrol, resulting in a 4.4% increase in CO_2 emissions attributable to diesel combustion from transport in 2008. Carbon dioxide emissions from petrol consumption decreased by 0.4% in 2008, due to a slight drop in the volume of petrol used in the region.

Comments: The target of no more than 1,065 kilotonnes of CO_2 per annum generated from transport has been exceeded by 48 kilotonnes in 2008 (up from 34 kilotonnes in 2007). Diesel usage in the region is forecast to dramatically increase.[2] If the proportion of diesel sales continues to rise, CO_2 emissions will increase even if total fuel sales remain constant.

[1] Ministry of Transport (2008). *The New Zealand Transport Strategy 2008.* Ministry of Transport, Wellington, p. 95.
[2] Greater Wellington Regional Council (2005). *Regional Travel Demand Management Strategy*, p. 30.

Related outcomes

3.2 Reduced private car mode share

Target: Private vehicles account for no more than 62% of region wide journey to work trips

Mode of journey to work: motor vehicle

Definition: The graph uses New Zealand Census data to show motor vehicle mode share for the region's 'main means of travel to work'. The RLTS target of less than 62% of all region wide trips by private vehicle by 2016 is also shown.

Motor vehicle was defined as: 'drove private car, truck or van; drove company car, truck or van; passenger in car, truck or van or company bus; motorcycle or powercycle'. As the census is conducted five-yearly this indicator will next be updated in 2012.

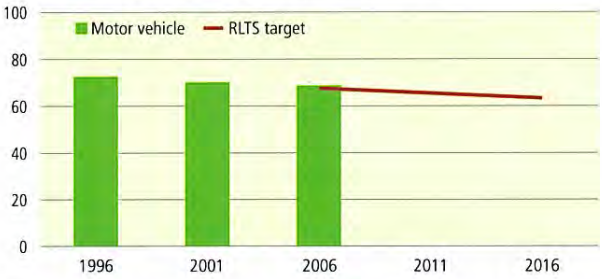

Figure 44: Motor vehicle mode share of journey to work (%). Source: Statistics New Zealand

Interpretation: Motor vehicle mode share of journey to work was 69% in 2006. Although the motor vehicle share of all trips has decreased slightly, 10,300 more motor vehicle trips were made than in 2001.

Comments: Across the three census periods shown, mode share of journey to work by motor vehicle has declined. To continue this trend and achieve the RLTS target by 2016, provision of alternative modes of transport and encouragement of their uptake must occur.

Wellington CBD cordon vehicle counts

efinition: Wellington City Council commissions classified vehicle counts in March of each year. The resulting numbers of vehicles entering the Wellington CBD cordon during the two-hour morning commuter peak are shown in the graph. Buses are not counted.

The 'cordon' comprises: Oriental Parade, Majoribanks Street, Elizabeth Street, Pirie Street, Cambridge Terrace, Buckle Street, Tasman Street, Taranaki Street, Cuba Street, Victoria Street, Willis Street, Aro Street, Abel Smith Street, Vivian Street, Ghuznee Street, Dixon Street, The Terrace, Boulcott Street, Aurora Terrace, Bolton Street, Bowen Street, Hill Street, Hawkestone Street, Murphy Street, Hobson Street, Thorndon Quay and Aotea Quay.

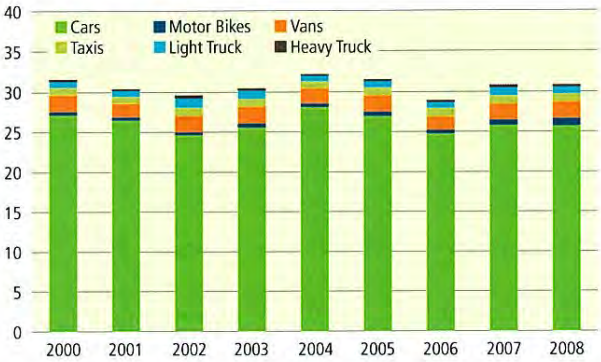

Figure 45: Wellington CBD cordon inbound traffic volumes (000), weekday AM two-hour peak, March. Source: Wellington City Council

Interpretation: After increasing by 6.5% in 2007, total inbound road traffic volumes remained the same in 2008. The number of cars decreased by 0.4% (100) while over 280 more motorbikes entered the CBD (an increase of 42%). This followed similar growth in motorbike numbers in 2007 of more than 200.

Heavy trucks and taxis decreased by around 6%, declining by 20 and 66 in number respectively. The van remains the most common vehicle travelling into the Wellington CBD after the car and rose by almost 5% (91) to reach over 2,000. The most marked decline shown by any vehicle in 2008 was for light trucks which decreased by 179 (18%) to 822. This followed a 43% increase (300) in 2007.

Comments: No change in the total number of vehicles crossing the cordon into the Wellington CBD was shown in 2008. The highest number of motorbikes since 2000 was recorded in 2008 while light truck numbers decreased substantially. Cars remained virtually unchanged in 2008.

Non-car classified vehicles make up approximately 17% of the total volume counted. The increase in numbers of motorcycles entering the CBD is consistent with the rising number of registrations with Land Transport New Zealand (see indicator *Motorcycle registrations in Appendix 1 – Regional Demographics*).

The lesser total number of inbound vehicles in 2006 may have been due to fuel price impacts and/or in response to Inner City Bypass construction works which encompassed some areas of the CBD cordon.

3.3 Reduced fuel consumption

Target: No more than 442 mega litres of petrol and diesel per annum will be used for transport purposes

Fuel consumption

Definition: The graph shows total petrol and diesel sales for the region as collected monthly for the local body fuel tax. The RLTS and GWRC LTCCP target of no more than 442 mega litres of fuel per annum used for transport, is also shown.

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 available. Sub-regional data would add little value as fuel is not necessarily used in the area in which it is purchased.

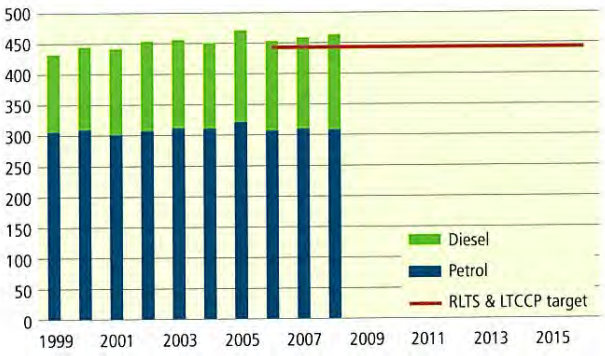

Figure 46: Fuel (diesel and petrol) consumption (M litres), Wellington region. Sources: local authorities

Interpretation: Total regional fuel sales grew by 1.1% to 463 million litres in total in 2008 (458 in 2007). Petrol consumption decreased by 1 million litres to 308, but diesel use increased by 7 million litres to 155 million litres in 2008.

Fuel sales in the western part of the region (where 86% of regional fuel is sold annually) experienced growth of 1.3%, mainly due to a 5.5% increase in diesel use. Wairarapa fuel sales increased by only 0.1% overall in 2008. Petrol consumption reduced by less than 1% in both parts of the region.

Comments: The RLTS target of less than 442 million litres of fuel consumed per annum is based on 2001 petrol and diesel sales and has been exceeded in all subsequent years. In 2008 total fuel consumed in the Wellington region was 21 million litres above this level. Growth in total fuel use from 2001 to 2008 was 5%.

Diesel consumption in the more urban, western region increased noticeably in 2008, indicating increased uptake of diesel-powered private vehicles.

The *Travel Demand Management Plan* (2005) outlines measures to reduce fuel use. The regional travel behaviour change programme includes the implementation of travel plans for schools, workplaces and communities. Through travel plans a range of travel choices and initiatives are actively supported and promoted to reduce dependency on vehicle use.

Fuel consumption by region

Definition: The graph shows total petrol and diesel sales in the Wellington, Canterbury and Auckland regions, as collected monthly for the local body fuel tax.

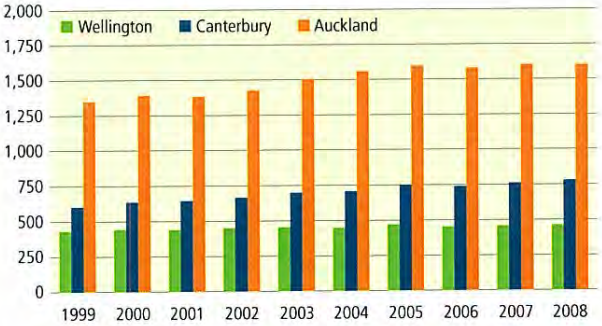

Figure 47: Total fuel consumption (M litres), by region. Sources: GWRC; ARC; ECan (Environment Canterbury)

Interpretation: Auckland fuel sales decreased by 0.1% in 2008. Overall fuel use in the Canterbury region increased by 2.6% with slightly more petrol than diesel consumed. Fuel consumption in Wellington increased by 1.1% in 2008, with 4.4% growth in diesel sales and a slight decrease in petrol use.

Diesel sales have made pronounced increases in all three regions since 1999. Canterbury shows the highest growth rate in diesel consumption at over 53% (136 million litres) between 1999 and 2008 with Auckland at 32% (127 million litres). Wellington region's diesel use grew by 23% (29 million litres) over the same period.

Approximately twice as much petrol as diesel is sold in both Auckland and Wellington regions while the volumes are roughly equivalent in Canterbury.

Comments: Fuel sales in Canterbury rose the most in 2008, followed by Wellington while overall fuel consumption fell in the Auckland region but only slightly.

Fuel price index

Definition: The graph shows the March quarter measure of the fuel component of the Farm Expenses Price Index (FEPI). The FEPI measures price changes of fixed inputs of goods and services to the farming industry. The data is collected quarterly as part of the Commodity Price Survey.

Figure 48: Fuel component of national Farm Expenses Price Index. March quarter. 1993 = 100. Source: Statistics New Zealand

Interpretation: An increase of 24% in the fuel price index occurred in 2008 following a steadying 2% rise in 2007. Growth since 2004 totals 89% and over the past 10 years the index has increased by one-and-a-half times.

Comment: The steep increase in the index over the past year was representative of the fuel price at the pump which was approximately $1.76 per litre (91 octane petrol retail price, March 2008).[3] Peak fuel prices of around $2.15 per litre (91 octane petrol retail price)[4] were experienced in July 2008.

3.4 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

Definition: The graph shows the average occupancy of vehicles entering the Wellington CBD. Data is generated from the same survey described in the indicator *Wellington CBD cordon vehicle counts* featured earlier in this section. Only traffic heading into the city is counted during the two-hour morning commuter peak. Buses are not included.

The RLTS target of 1.5 people on average per vehicle entering the Wellington CBD is also shown.

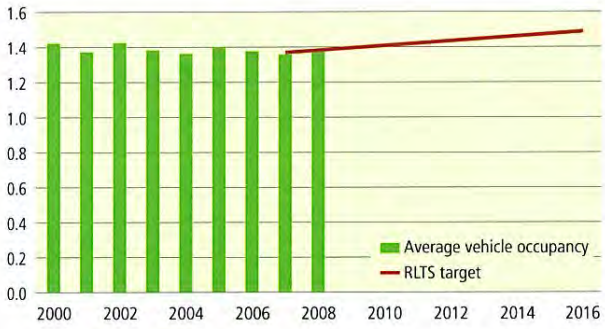

Figure 49: Wellington CBD cordon inbound vehicle occupancy, weekday AM two-hour peak, March. Source: Wellington City Council

Interpretation: Average occupancy of vehicles into the Wellington CBD increased to 1.39 persons in 2008, back to the level recorded in 2005. The highest occupancy level of 1.42 was recorded in both 2000 and 2002.

Comments: The slight increase in vehicle occupancy moves towards the RLTS target of 1.5 people by 2016. However, more emphasis is required to encourage carpooling or ridesharing if the target is to be reached.

[3] http://www.med.govt.nz/templates/contenttopicsummary____38614.aspx

Environmental outcomes

The high proportion of single-occupancy vehicles represents an inefficient means of transportation. An emphasis on moving *people* rather than *vehicles* would significantly improve efficiency. The implementation of a regional carpool programme is being planned to launch from March 2009. GWRC also continues to coordinate workplace, school and community travel plans for the region. These initiatives seek to increase car occupancy in the region.

Conclusion

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.[4] Without intervention, these emissions are predicted to grow by 35% over the next quarter century.[5] A reduction in transport sector emissions will therefore significantly impact overall greenhouse gas levels.[6]

Reducing the need to travel and improving the efficiency of the transport network will contribute to a reduction in the amount of fuel consumed by vehicles and the associated CO_2 produced. Increasing fuel prices may encourage the use of transport modes alternative to the private vehicle. Greater Wellington's travel demand management policies such as promoting the use of active modes and public transport aim to reduce the impact the transport sector has on the environment.

[4] Ministry of Transport (2008). *The New Zealand Transport Strategy 2008.* Ministry of Transport, Wellington, pp. 23, 95.
[5] Ministry for the Environment (2007). *Understanding Climate Change. Get a Grasp of the facts.* Ministry for the Environment, Wellington, p. 7.
[6] Ministry of Economic Development (2007). *New Zealand Energy Strategy to 2050.* Ministry of Economic Development, Wellington, p. 34.

Road network efficiency outcomes

Introduction

This section discusses items relating to 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 indicators associated with this key outcome are:

  - Road congestion: all day average
  - Road congestion: time of day comparison
  - Perceptions about the state of congestion

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
  - Variability of travel time by road
- **Improved reliability of the strategic roading network**
  - Key route road closure
  - Perceptions of network reliability

Key outcome

4.1 Reduced severe road congestion

Target: Average congestion on selected roads will remain below 20 seconds delay per km travelled despite traffic growth

Road congestion: all day average

Definition: The graph shows all day average congestion on a selection of the region's strategic road network. Information is from Transit New Zealand's March travel time surveys (see *Road congestion: time of day comparison* below). The RLTS and GWRC LTCCP target to 2016 is shown (congestion to remain below 20 seconds delay per km travelled).

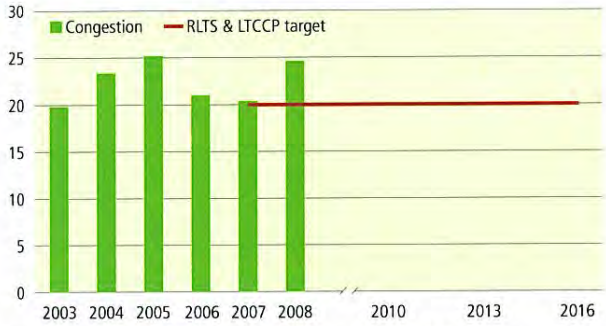

Figure 50: All day average congestion (seconds delay/km travelled), Wellington region, March. Source: Transit New Zealand

Interpretation: All day average congestion on the region's roads was 24.6 seconds delay per km travelled in 2008. This represents a 21% increase from 2007 and follows the significant drop in congestion (19%) experienced since 2005.

Comments: The all day average congestion level was showing a decreasing trend towards the target from 2005 to 2007 but has exceeded it by almost five seconds in 2008.

Road congestion: time of day comparison

Travel time performance is monitored by Transit New Zealand 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. This information yields a measure of congestion as minutes of delay per kilometre travelled for the morning peak period (AM), inter-peak period (IP) and afternoon peak period (PM).

Road network efficiency outcomes

Figure 51: Greater Wellington region travel time performance monitoring network. Source: Transit New Zealand

Data is susceptible to day-to-day aberrations in network performance such as crashes, breakdowns and road works. The March 2007 surveys were undertaken within the period when the effects of the opening of the Inner City Bypass had not completely settled down.

Definition: The graph shows results from the Wellington region travel time surveys conducted by Transit New Zealand in March of each year. Congestion is shown across three periods of the day along with the all day average (featured in *Road congestion: all day average* above).

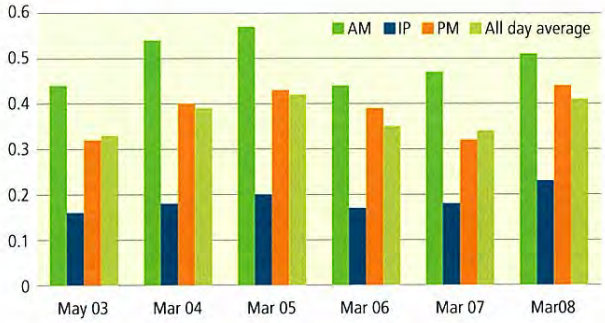

Figure 52: Congestion (mins delay/km travelled), Wellington region. Source: Transit New Zealand

Interpretation: Congestion increased across all periods of the day in 2008. Morning peak period congestion increased by three seconds delay per kilometre travelled to 31 seconds delay in 2008. Congestion during the inter-peak period is at the highest level since surveys began in 2003, at 14 seconds. A reduced delay during the PM peak was evident from 2005 - 2007 but has now also increased to the highest level since 2003, to 26 seconds delay (an increase of 7 seconds from 2007). The resulting all day average (as discussed in *Road congestion: all day average* above) shows a similar trend.

Comments: After generally improving since 2005, congestion levels have increased overall in 2008. While the survey results reflect the level of service the road network offers, the fact that it is averaged out over the whole measured network means localised problems are masked. The pattern of congestion in the Wellington region appears to be focused during the peak periods on a number of pinch points over the network such as the merge of State Highway 1 and State Highway 2 at Ngauranga. Transit New Zealand's travel time surveys continue to show that Wellington's congestion levels generally compare favourably with other New Zealand centres.

Perceptions about the state of congestion

Definition: The graph shows how Wellingtonians and Aucklanders believe traffic congestion has changed over the previous two years.

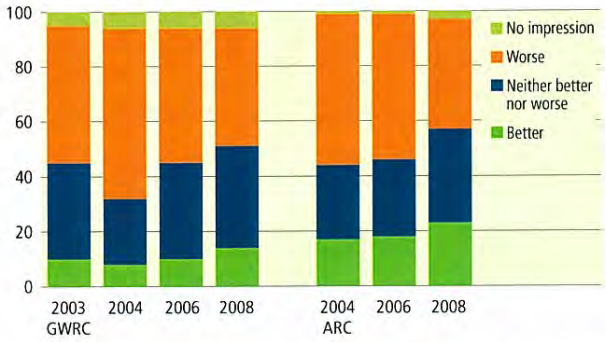

Figure 53: Do you think traffic congestion is better than it was two years ago? (%). Sources: GWRC and ARC transport perceptions surveys

Interpretation: In 2008, 43% of Wellingtonians considered congestion had worsened over the previous two years (c.f. 49% in 2006). Thirty-seven percent thought congestion was neither better nor worse (c.f. 35% in 2006) and 13% said it had improved (c.f. 10% in 2006).

Aucklanders' perceptions that congestion levels were better in 2008 than in 2006 increased from 18% to 23%. This result is almost 10% higher than the same perception in Wellington. The perception in Auckland that congestion was worse decreased by 13% in 2008 to 40%.

In 2008, 3% more people in Wellington than in Auckland perceived that congestion was worse than two years previous. This is a reversal of the 2006 result.

Comments: A continued reduction in the percentage of Wellingtonians reporting a perception of congestion being worse than two years ago is pleasing. However, this result is at odds with the measured results above.

Related outcomes

4.2 Maintained vehicle travel times between communities and regional destinations

Target: No decrease in average vehicle journey "speeds" shown in travel time surveys for selected key routes

Key route travel speed by road

Definition: This indicator shows results from the Wellington region travel time surveys conducted by Transit New Zealand in March of each year (see the indicator *Road congestion: time of day comparison* in this section for a description of the surveyed routes).

The graph shows 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. Speed of travel is given across three periods of the day along with the all day average.

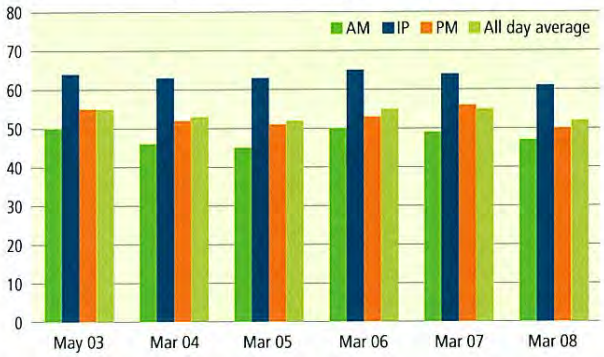

Figure 54: Road network average vehicle speeds (km/h), Wellington region. Source: Transit New Zealand

Interpretation: Average travel speeds on the road network decreased across all periods of the day in 2008 and are consistently slowest in the AM peak (47 km/h in 2008). Afternoon peak speeds decreased by 11% (6 km/h) from 2007 to an average of 50 km/h. The average inter-peak travel speed remained the highest at 61 km/h but also dropped by 5 % in 2008. The all day average travel speed decreased from 55 to 52 km/h.

Comments: The difference between speed of travel in the AM and PM peak periods reduced to 3 km/h in 2008. The all day average speed of travel for the region has fallen indicating increased congestion.

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. Localised problem areas on the surveyed routes where congestion occurs are masked by the average results.

Variability of travel time by road

Definition: This indicator shows results from the Wellington region travel time surveys conducted by Transit New Zealand in March of each year (see the indicator *Road congestion: time of day comparison* in this section for a description of the surveyed routes).

Road network efficiency outcomes

The graph shows a percentage of the average travel time as a measure of the reliability or certainty of travel times. Variability of travel time is given across three periods of the day along with the all day average.

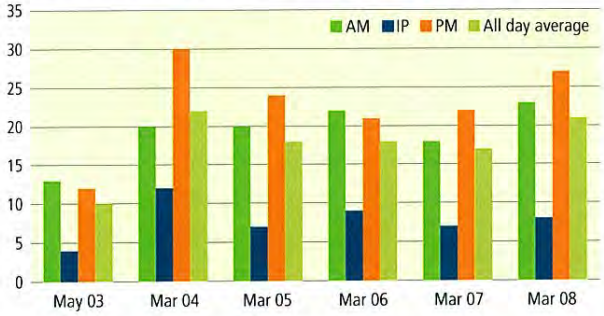

Figure 55: Travel time variability by road (%), Wellington region. Source: Transit New Zealand

Interpretation: Variability of travel time by road increased by 5% in both the AM peak (to 23%) and PM peak (to 27%). There was also a slight increase during the inter-peak period. The PM peak has consistently shown the most variability in travel time since 2003 with the exception of 2006, when the AM peak was more variable. The all day average percentage uncertainty in travel time increased to 21% after remaining fairly consistent at around 18% from 2005 to 2007.

Comment: A general improvement in travel time variability was shown over time until 2007. The variability of average travel time on the road network increased across all periods of the day in 2008.

4.3 Improved reliability of the strategic roading network

Target: Key routes are very rarely affected by closure

Key route road closure

Definition: The graph shows an estimate of the duration of incidents and number of vehicles delayed per annum on the region's strategic roading network.

Police data on traffic incidents on the strategic network has been combined with traffic flow information from the Wellington Transport Strategic Model (WTSM). The duration of the incident (shown on the left axis of the graph) combined with the average number of vehicles that would pass through that part of the network gives the number of vehicles delayed (right axis of the graph).

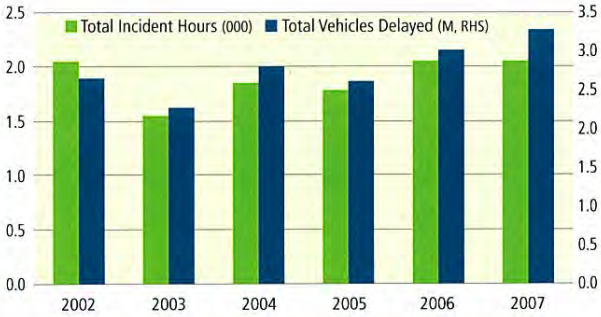

Figure 56: Total incident minutes (000) and total vehicles delayed (M) on the strategic roading network, Wellington region. Calendar year. Source: NZ Police; GWRC WTSM

Note: NZ Police data is susceptible to variable reporting rates.

Interpretation: In 2007 nearly 3.3 million vehicles (an increase of over 250,000 from 2006) were delayed by a total of 2,050 incident hours (no change from 2006).

In 2002 the same total of incident hours occurred as 2006 and 2007, but the number of vehicles affected was lower. This shows that as well as higher traffic volumes, the incidents in 2006 and 2007 on average, occurred during times when network flows were higher (e.g. AM peak periods) or on areas of the network where traffic flows were higher.

Comment: The overall trend is for an increasing number of vehicles to be affected by an increasing number of incidents.

Perceptions of network reliability

Definition: The graph shows the percentage of people surveyed who rate the main commuter transport networks in the Wellington region as 'reliable'.

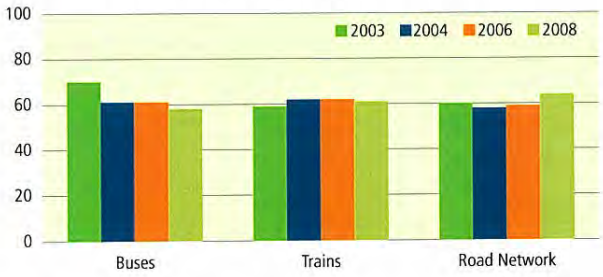

Figure 57: Reliability rating of regional transport networks (%). Source: GWRC transport perceptions surveys

Interpretation: In 2008, respondents felt the roading network was the most reliable of the transport network services surveyed at 64%, in contrast to 2004 and 2006, when roads were perceived to be the most unreliable transport network surveyed. Reliability rating of the bus and train networks both dropped slightly to 58% and 61% respectively in 2008.

Since 2003, the perception of reliability of the bus network has fallen by 17%. However, the train (3%) and road (7%) network reliability ratings improved slightly over the same period. An average of approximately 61% of people thought the transport networks in the Wellington region were reliable in 2008.

Comment: Overall, this perception indicates that a relatively low level of service is being provided on the region's transport networks. Despite 60% of the surveyed Wellington region residents perceiving the key public transport networks in the region to be reliable, the rating of the roading network reliability is higher. This will be a contributing factor to the dominant mode share of the private vehicle.

See the indicator: *Increased passenger transport reliability* in the *Passenger transport outcomes* section.

Conclusion

The regional Travel Demand Management Plan identifies measures to further improve the level of congestion on the roads by promoting alternatives to car travel. Many school, workplace and community travel plans are well established throughout the region and more schools and organisations are joining Greater Wellington's Travel Plan Programme on an ongoing basis.

RLTS proposals seek to maximise road network efficiency while encouraging travellers to use public transport and active modes for appropriate journeys. Current measures are relatively passive and rely on voluntary behavioural change. It is likely that direct incentives, such as road charges, congestion pricing and tolls, will be required in future to change travel behaviour.

Road safety outcomes

Introduction

This section discusses items relating to the RLTS road safety outcome.

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

- **Improved regional road safety**

The associated performance indicators included in this section are:

- Road crash fatalities attributable to road network deficiencies
- Total injury crashes
- Injury crashes by district
- Casualties by severity type
- Casualties by region
- Fatalities and hospitalisations
- Relative risk by transport mode: Casualties per million hours travelled; Casualties per million kilometres travelled
- Motorcyclist casualties
- Perceptions of road network safety

There are no related outcomes for road safety.

Key outcome

5.1 Improved regional road safety

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

Road crash fatalities attributable to road network deficiencies

A method for monitoring this indicator has not yet been developed. Transit New Zealand assesses all fatalities on the state highway network to determine whether roading deficiency factors were a significant factor. Road crash fatalities are monitored at a regional level in line with national *Road Safety to 2010* targets. Data availability will continue to be investigated.

Total injury crashes

Definition: The graph shows an extended time-series of total injury crashes for all vehicle types in the Wellington region. This data is also analysed in the indicator *Injury crashes by district* in this section.

Figure 58: Total injury crashes (000), including fatalities, Wellington region. Calendar year. Source: Land Transport New Zealand

Note: Under-reporting is possible prior to 1990. 1990 data is estimated.

Interpretation: A strong downward trend is evident from the very high number of injury crashes in the mid-1980s through to the end of the 1990's. Since 2000 however road injury crash numbers have increased significantly.

Comments: Vehicle safety improvements, driver education and proactive road safety engineering have previously all contributed to reductions in crash numbers. However, injury crash numbers continue to trend upwards from the year 2000 indicating that much more intervention is required if road safety in the region is to be improved.

Injury crashes by district

Definition: The graph shows total recorded injury crashes (including fatalities) for all vehicle types in the Wellington region, by district.

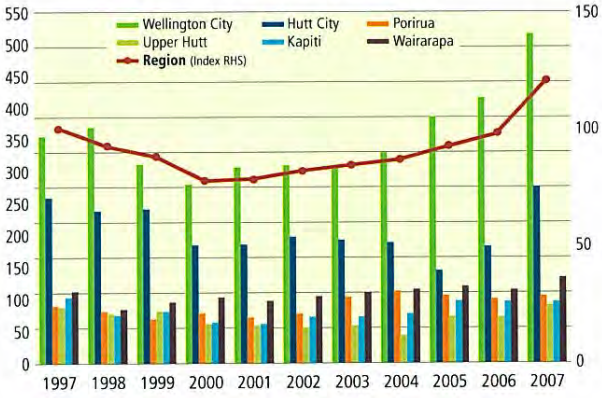

Figure 59: Total injury crashes (including fatalities) by district. Calendar year. Index: 1997 = 100. Source: Land Transport New Zealand

Interpretation: There were 1,212 injury crashes recorded in 2007, the highest overall number in ten years and an increase of 221 (22%) from 2006. A general downward trend is shown in most districts and across the region as a whole until 2000. Since 2001 total regional injury crashes have continued to increase particularly in Wellington City and more recently, in Hutt City and Upper Hutt.

Comments: (See comments: *Total injury crashes* in this section).

Casualties by severity type

Definition: The graph shows casualties classified by severity: fatal, serious and minor. The severity of a crash is determined as the most severely injured casualty in the crash.[1]

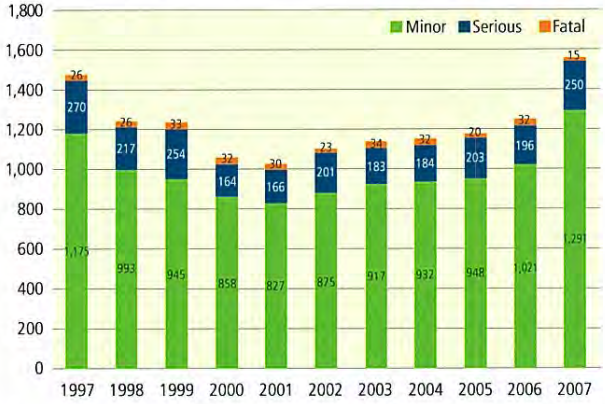

Figure 60: Total casualties, by type, Wellington region. Calendar year. Source: Land Transport New Zealand

Note: *Fatal* = injuries that result in death within 30 days of a crash. *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. *Minor* = injuries which are not serious but which require first aid, or cause discomfort or pain to the person injured, e.g. sprains and bruises.[2]

Interpretation: Fatalities halved in number to 15 in 2007, the lowest number recorded since 1997. However, minor casualties increased by 270 (26%) in 2007 and serious casualty numbers were up by 54 in total (28%) from 2006. The increase in overall casualties in 2007 is 25%.

Comments: (See comments: *Total injury crashes* in this section).

Casualties by region

Definition: The graph shows the rate of the number of casualties per 100,000 population in the Wellington, Auckland and Canterbury regions.

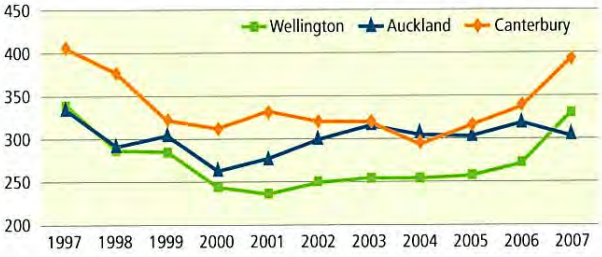

Figure 61: Casualties per 100,000 population, by region. Calendar year. Sources: Land Transport New Zealand; Statistics New Zealand

Interpretation: Casualties per 100,000 population in the Wellington region have remained the lowest of the three regions for 10 years except in 2007 when they rose above the casualty rate in Auckland, with a 24% increase (64 casualties per 100,000 population). Canterbury region also experienced an increase of 60 (18%) while the Auckland region's rate dropped by 18 casualties per 100,000 population (nearly 6%).

Comments: Wellington's casualty rate rose sharply in 2007, but remains below the rate in Canterbury. The casualty rate in Auckland was the lowest of the three regions in 2007. The casualty rate in both the Wellington and Canterbury regions has risen considerably since 2004, while remaining relatively static in the Auckland region.

Fatalities and hospitalisations

This indicator specifically measures progress against the regional targets for road casualties as set out in the Wellington Regional Road Safety Plan (2004) and in line with the national *Road Safety to 2010* strategy.

Definition: The graph shows the number of deaths plus the number of people hospitalised; deaths plus those hospitalised more than one day; and deaths plus those hospitalised for more than three days.

[1] Land Transport New Zealand (2006). *Wellington Region Road Safety Report 2001 to 2005*, p. 3.
[2] Land Transport New Zealand (2006). *Wellington Region Road Safety Report 2001 to 2005*, p. 3.

Road safety outcomes

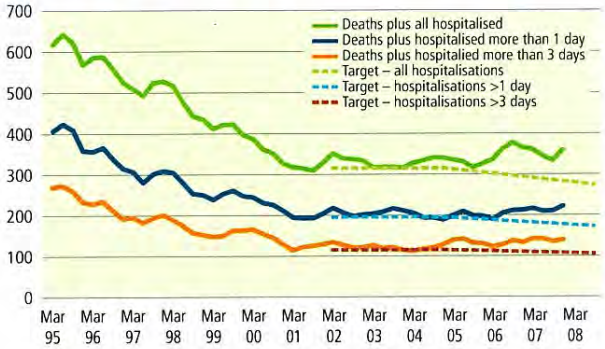

Figure 62: Number of deaths plus hospitalisations (12-month totals) resulting from road crashes, Wellington region. Source: Land Transport New Zealand

Note: Hospitalisations are the number of hospital admissions reported by the New Zealand Health Information Service. Along with deaths, the numbers of people hospitalised for more than one day and more than three days have been included as measures of more serious injuries.[3]

Interpretation: After a strong decline from 1995 to 2001, the trend in each category has generally plateaued. Wellington region's targets have been adjusted down proportionally from 2004 towards 2010 in line with national targets.

Comment: The number of deaths plus hospitalisations in the Wellington region fluctuated around the targets between approximately 2002 and 2004, but has generally exceeded the targets since then. If this trend continues it is unlikely that the 2010 targets will be achieved unless proven road safety interventions are reprioritised by all agencies involved in regional road safety.

Relative risk by transport mode

In the following graphs travel data is sourced from the New Zealand Household Travel Survey (collected between July 2003 and June 2007). Casualties are reported by New Zealand Police to Land Transport New Zealand via the Crash Analysis System (CAS). Due to sample size, motorcyclist risk estimates could be calculated at the national level only. Risks shown for cyclists and bus passengers are based on relatively small numbers of people and may be subject to large fluctuations from year to year. Distances were not collected for walking trips but have been imputed from the durations, using the conversion factor of 4.4km/h.[4]

Definition: The graph shows the number of people killed and injured in **New Zealand** per million hours spent travelling, by mode, from 2003 to 2007.

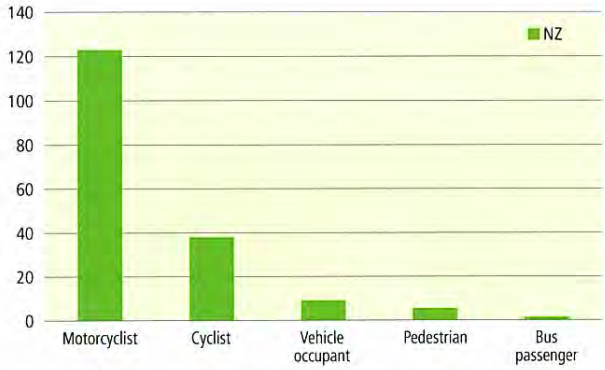

Figure 63: Casualties per million hours travelled, by transport mode, 2003-2007, national. Source: Ministry of Transport

Note: *Vehicle occupants* refer to trips made in light, four-wheeled vehicles i.e. cars, vans, utilities and sports utility vehicles (SUV). *Trip* refers to a segment of travel by a single mode, for a single purpose, to one stop. For example, walking to the bus, riding the bus to town and walking to work would be three trips.

Interpretation: The relative risk of travelling by each mode is determined using an 'exposure-to-risk' indicator of casualties per million hours travelled. The data shows that per million hours travelled, a cyclist is 4.2 times as likely as a vehicle occupant to become a casualty and 7 times more likely than a pedestrian. Bus travel represents the mode of travel with the least casualty risk and motorcyclists face the greatest risk of casualty.

Comment: Reducing cyclist risk is a priority for road safety initiatives. Cycling is 'less safe' than other modes of transport but cycling in itself is not 'unsafe'. There is only one chance per 26,000 hours cycled of experiencing a casualty.[5]

Pedestrian travel remains safe with only one chance of casualty per 185,000 hours spent travelling[5] and initiatives on pedestrian safety are likely to be about maintaining that level. National and regional road safety initiatives will assist with addressing vehicular risk.

[3] Land Transport Safety Authority (2003). *Road Safety to 2010*, p. 12.
[4] O'Fallon, C. & Sullivan, C. (2005). *Trip chaining: understanding how New Zealanders link their travel.* Wellington: Transfund New Zealand.
[5] Ministry of Transport, NZ Household Travel Survey and reported crashes, 2003-2007.

Road safety outcomes

Definition: The graph shows the number of people killed and injured in New Zealand and for the first time, in the Wellington region, per million kilometres travelled, by mode, from 2003 to 2007.

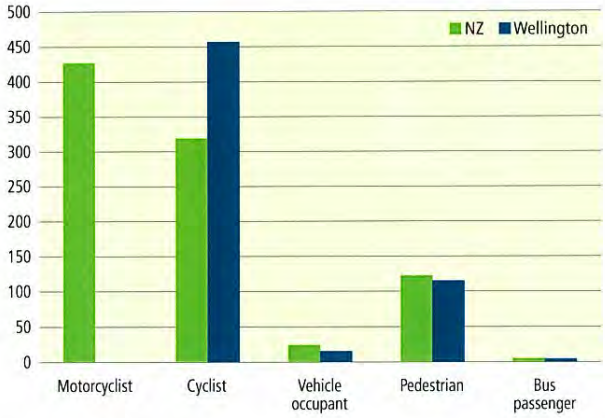

Figure 64: Casualties per million kilometres travelled, by transport mode, 2003-2007, New Zealand and Wellington region. Source: Ministry of Transport

Interpretation: The national data shows that per million kilometres travelled, a cyclist is 13 times as likely as a vehicle occupant to become a casualty and 2.6 times more likely than a pedestrian. Bus travel represents the mode of travel with least casualty risk and motorcyclists face the greatest risk of casualty nationally.

In the Wellington region, a cyclist is 30 times as likely as a vehicle occupant to become a casualty and 4 times more likely than a pedestrian. The risk for a Wellington cyclist exceeds the national risk, however all other modes present slightly less risk in Wellington.

Comment: In the Wellington region the risk to cyclists by distance travelled is greater than the risk for motorcyclists nationally, indicating a significant need to improve the level of service for cyclists.

Motorcyclist casualties

Definition: The graph shows the total number of motorcyclist casualties for the region. Motorcycle registration numbers are given as a comparison.

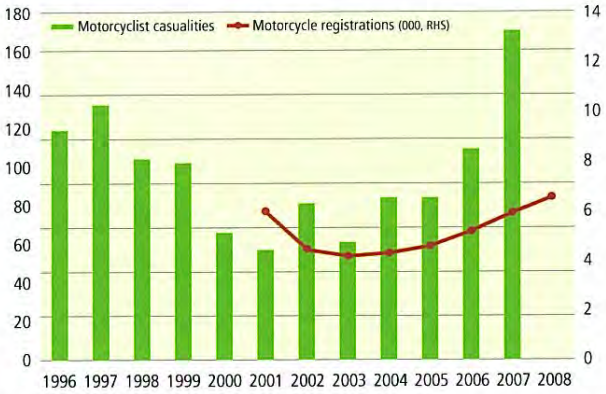

Figure 65: Motorcyclist casualties (calendar year) and registrations (financial year), Wellington region. Source: Land Transport New Zealand

Interpretation: Motorcyclist casualties in 2007 totalled 170 for the region, representing an increase of 56%. This was due to increases in motorcyclist casualties in Wellington City (of 50%), and in Hutt City and Wairarapa which both experienced increases of over 100% in 2007. Until 2001, a clear downward trend in casualties was shown, followed by some fluctuation. Since 2005, casualty numbers have more than doubled.

The number of motorcycles registered in the region increased by over 2,500 during the period 2003 to 2008. Registrations have risen 12% in 2008 after increases of around 15% in both 2006 and 2007.

Comments: The strong downward trend in motorcyclist casualty figures has reversed and the number has soared in 2007. The overall number of casualties is increasing at a much faster rate than that of motorcycle registrations (180% c.f. 33% between 2003 and 2007).

Perceptions of road network safety

Definition: The graph shows how safe respondents in the Wellington and Auckland regions feel when using a car.

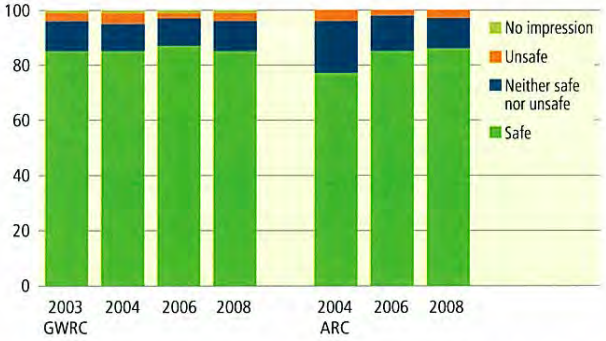

Figure 66: How safe do you feel when using a car? (%) Sources: GWRC and ARC perception surveys

Road safety outcomes

Interpretation: In 2008, 85% of Wellington respondents said they felt 'safe' when using a car (c.f. 87% in 2006), while 3% thought it was 'unsafe' (c.f. 2% in 2006). Results in the Auckland region in 2008 are very similar to these.

Comments: With such high mode use, many people perceive they are safest when travelling by car.

Conclusion

An increased focus on road safety issues throughout the region is required to improve overall regional safety.

A strong downward trend in total injury crashes is evident from the very high number of injury crashes in the mid-1980's through to the end of the 1990's. Since 2000, however, road injury crash numbers have increased significantly.

To address this issue continued cross-agency efforts are required through engineering, enforcement and education programmes. The 2004 *Regional Road Safety Plan* aims to address road safety issues via a range of performance measures. Continued improvement in vehicle safety standards will also help achieve this aim.

Opportunity exists for more effective coordination in planning and implementing road safety initiatives for the greater Wellington region. Combined resources in a focused effort between agencies with road safety responsibilities will result in more effective programme delivery and enhanced road safety.

Land use and transport integration outcomes

Introduction

This section discusses items relating to 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)**

The performance indicators associated with this key outcome are:

- Urban development integrated with active modes and public transport
- Density of new subdivisions
- New lots by district

The following related outcomes and associated performance indicators for land use and transport integration are:

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

Key outcome

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

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

Urban development integrated with active modes and public transport

A review of local authority procedures has identified that while there is some consideration of active modes and public transport in all district plan policies, there are varying degrees of implementation, and hence, scope for improvement in this area. Local authorities do not consider any form of indicator measuring relative performance as reliable or helpful. For this reason, an approach using a checklist for consideration when assessing consent applications has been proposed for the short term; and advice will be provided with regard to longer term changes required to district plan documentation. Progress in the implementation of these measures will be reviewed periodically.[1]

Density of new subdivisions

Definition: The following maps show the density and location of new subdivisions less than eight hectares in size in the western and eastern (Wairarapa) parts of the region, from July 1999 – June 2008.

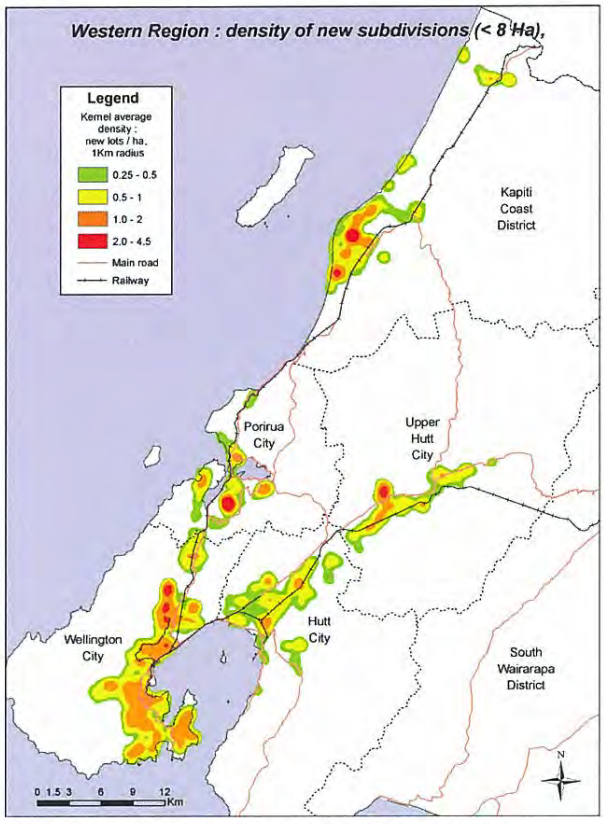

Figure 67: Density of new subdivisions < 8 Ha in area, western Wellington region, 2000 – 2008. Source: GWRC

[1] Greater Wellington Regional Council. (2008). *Land Use & Transport Integration: Assessment Report*, p16.

Land use and transport integration outcomes

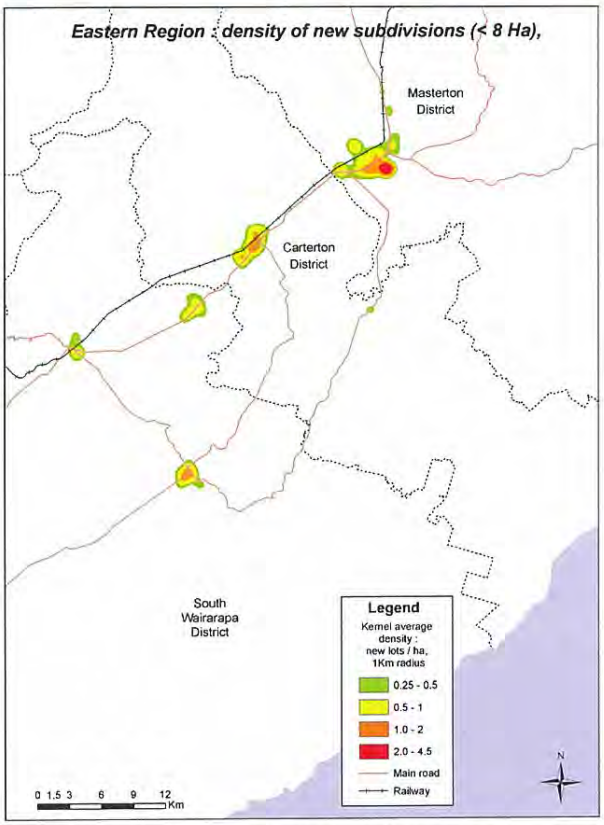

Figure 68: Density of new subdivisions < 8 Ha in area, Wairarapa, 2000 – 2008. Source: GWRC

Interpretation: From the map of the western part of the region there was some evidence of a higher density of new subdivisions in Otaki Township and Te Horo in the Kapiti Coast District. Cambourne and Titahi Bay in Porirua City also showed some increase in density.

In the northern suburbs of Wellington City, the density of new subdivisions on the southern edge of Churton Park, in Paparangi and Newlands all decreased in area. Khandallah showed some growth in density, and to the south of Wellington City some increase in new subdivision density is evident in the Melrose/ Southgate area.

In the Hutt Valley, Petone and Hutt Central showed a decrease in density while an increased area of slightly higher density is evident in Stokes Valley. The area from Heretaunga north to Upper Hutt Central experienced an increased density of new subdivisions, with increases also evident in Kingsley Heights and Te Marua north of the city.

In Wairarapa, the area of higher density to the east of Masterton town centre remained relatively unchanged. Carterton township continued to show an increase in density.

Comments: Most areas of land use densification and infilling are occurring around the region's rail corridor. However, the area of development in eastern Masterton is somewhat removed from rail.

Urban sprawl leads to an increased dependence on private vehicle use, as subdivisions are often located away from public transport networks. Long cul-de-sacs, a common feature of new subdivisions can also require walking and cycling some distance to local or main amenities. Land use planning integrated with existing and future transport nodes will provide more sustainable transport choices.

New lots by district

Definition: The graph shows the location and number of new lots created in the Wellington region between 2000 and 2008.

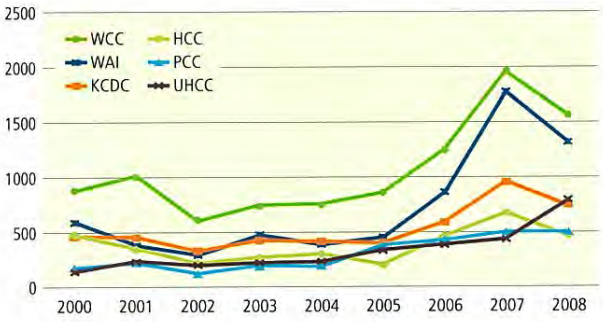

Figure 69: New lots created < 8 Ha in area, by district, 2000 – 2008. Source: GWRC

Interpretation: The development of new lots decreased in all districts across the region in 2008 by a total of 15%, with the exception of Upper Hutt District (where 370 new lots were created, an increase of 85%) and in Porirua City which retained the same number of new lots as in 2007.

The number of new lots created in Wairarapa districts and Wellington City soared from 2005 to 2007. Kapiti Coast District and Hutt City experienced strong growth over the same period while Porirua and Upper Hutt cities exhibited moderate increases in new lots created.

Comments: A decrease in new lots was experienced in Wellington City, all Wairarapa districts, Kapiti Coast District and Hutt City. The number of lots in Porirua City was static. Upper Hutt City was the only district in the region to experience growth in new lots during 2008, possibly indicating a delayed response to economic growth.

The establishment of higher density housing in areas which are already built up, e.g. new residential development in existing buildings is desirable from an environmental sustainability viewpoint. Residential intensification through redevelopment and refurbishment of central city buildings in Wellington City has slowed, as has the development which was evident in Wairarapa between 2005 and 2007.

Related outcome

6.2 Improved integration between transport modes

Target: The majority of passenger transport services covered by integrated ticketing

Public transport services with integrated ticketing

Definition: As many journeys are multi-modal, a good level of integration between the different transport modes is sought by the RLTS. Integrating the fare structures and ticketing systems used on public transport throughout the region is a vital step in this process.

Interpretation: Currently, no overall system of fares or ticketing integration is operational in the Wellington region. Only some ad hoc, manually based integrated ticketing arrangements exist within the region including the 'Hutt Plus' bus/rail transfer, the similar, experimental 'KapitiPlus' and the 'Metlink Explorer' off-peak ticket.

Comment: A system of integrated, electronic ticketing for the region remains a policy aspiration. Electronic ticketing on rail and a suitable system of fares integration is being initially investigated.

This investigation will proceed over the next financial year in the context of the recent deployment of the proprietary 'Snapper' payment card on a significant part of the Wellington bus network, the planned introduction of the SuperGold free travel concession for seniors, and the expected regional and national influences of the Auckland integrated fares and ticketing tender.

Cycle storage and park and ride facilities

Definition: The number of regional railway station 'park and ride' car parks and cycle locker facilities available in 2007 and 2008 is shown in the graph.

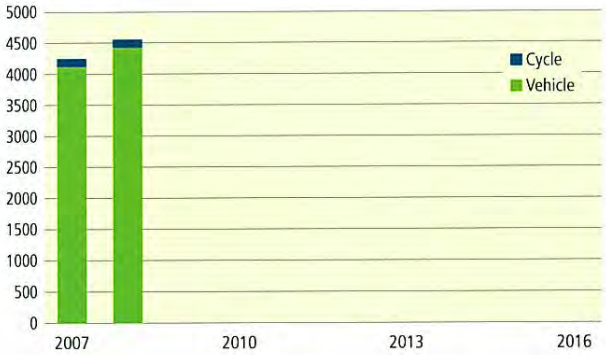

Figure 70: Number of vehicle car parks and cycle lockers at railway stations, Wellington region. Source: GWRC

Interpretation: In 2008 there were a total of 4,428 car parks and 132 cycle storage spaces available to commuters at railway stations across the region. Park and ride car parks increased in number by 306 (7%) and cycle storage by only two spaces.

Comments: A trial programme for a maximum of two bicycles per baggage compartment carried free of charge on the region's commuter trains will begin 1 July 2008. These facilities for the region are limited and are available on a first in, first served basis. Park and ride facilities were extended in Plimmerton, Paraparaumu and Wairarapa during the 2007/08 year.

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

Target: Reduced vehicle kilometres travelled per GDP

State highway vehicle kilometres travelled per GDP

Definition: The graph shows the ratio of VKT (vehicle kilometres travelled) on the state highway network to GDP for the region.

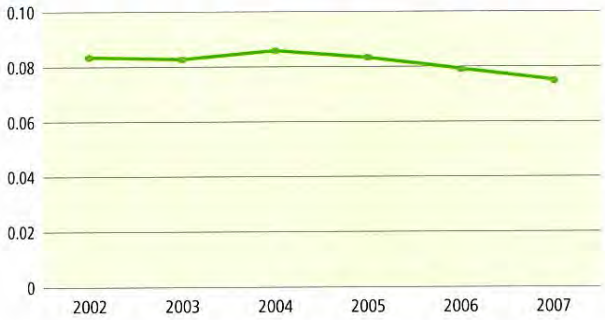

Figure 71: State highway VKT per GDP. Sources: Transit New Zealand; Business and Economic Research Limited (BERL)

Note: GDP = real value added GDP (2007$) for the Wellington region

Interpretation: Between 2002 and 2007 an overall decline in VKT per GDP of 12% was shown.

Comments: The slight downward trend shown indicates more efficiency. There is less traffic on the region's state highway network for each unit of GDP. Other than the increase between 2003 and 2004 some progress towards the target of reduced VKT per GDP is evident.

6.4 Improved transport efficiency

Target: Reduced passenger transport expenditure per passenger

Public transport expenditure per passenger

Definition: The graph shows the ratio of expenditure on public transport services to the number of passengers using train, bus and ferry services.

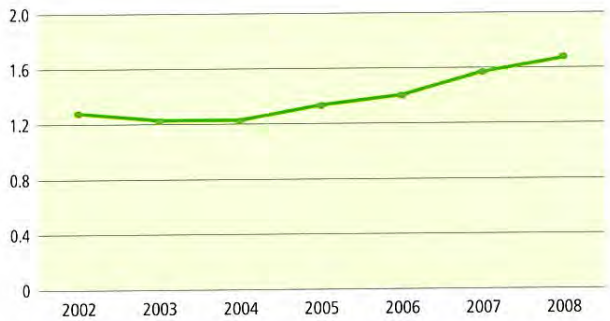

Figure 72: Public transport expenditure ($) per passenger. Source: GWRC

Interpretation: An overall increase in public transport expenditure per passenger of 34% was shown between 2002 and 2008. After an initial decrease in 2003, followed by no growth for a year, a steady increase since 2004 has occurred. In 2008, public transport expenditure per passenger increased by 7%.

Comments: The target of reduced passenger transport per passenger is not being met. Between 2002 and 2003 the relationship between expenditure on regional passenger transport services versus patronage improved, i.e. the region was spending a relatively lesser amount for increasing patronage. Since 2003 this has reversed, meaning the region is paying increasingly more for each person moved by the public transport system. This largely reflects an increase of 86% in bus contract costs since 2004. Significant investment in rail improvements is yet to be incurred.

Public transport expenditure per GDP

Definition: The graph shows the relationship between expenditure on public transport services and GDP for the region.

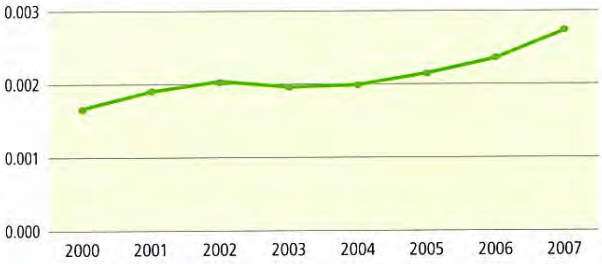

Figure 73: Public transport expenditure ($) per GDP. Sources: GWRC; BERL

Note: GDP = real value added GDP (2007$) for the Wellington region

Interpretation: Between 2000 and 2007 public transport expenditure per GDP increased by 70%. A decline of 4% was shown between 2002 and 2003 and a 40% increase occurred from 2004 to 2007. In 2007, the increase amounted to 17%.

Comments: Since 2000 (apart from a dip between 2002 and 2003) the region has continued to pay increasingly more for passenger transport improvements as a proportion of total regional GDP. Like the previous indicator (*Public transport expenditure per passenger*) the increase shown from 2004 to 2007 largely reflects the increase of almost 70% in bus contract costs.

Expenditure will need to increase over the short term in order to address the most pressing public transport needs, particularly on rail.

Target: Reduced roading expenditure per GDP

Roading expenditure per GDP

Definition: The graph shows the relationship between expenditure on roading and GDP for the region.

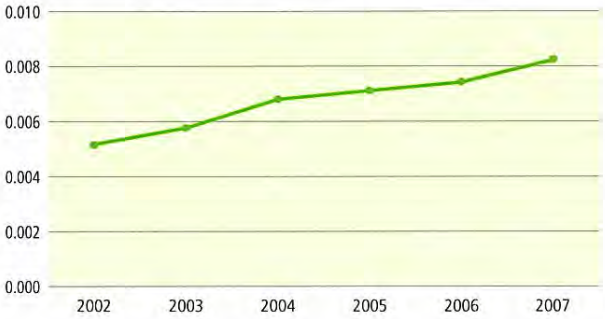

Figure 74: Roading expenditure ($) per GDP. Sources: Road Controlling Authorities (RCA); BERL

Note: GDP = real value added GDP (2007$) for the Wellington region

Interpretation: A 64% increase in roading expenditure per GDP overall was shown between 2002 and 2007. During 2004 an increase of almost 20% occurred, driven by a 29% increase in capital expenditure on the region's roads. A steady rise in expenditure has continued.

Comments: Since 2002 the region has continued to pay increasingly more for roading improvements as a proportion of total regional GDP. The target of reduced expenditure on the region's roads per GDP is therefore not being met.

Conclusion

The RLTS has targets of: *Reduced passenger transport expenditure per passenger*, and: *Reduced roading expenditure per GDP*. Unfortunately the current trend shown in both cases is in the opposite direction.

In the long run, these RLTS outcomes are meant to decouple transport costs from economic development.

While it is desirable to seek an improvement in financial efficiency for the operation of the region's transport system, there is a backlog of works that has built up as a result of significant under investment for much of the last 20 years.

Supporting and advocating for integrated land use and transport planning through district plans, the Regional Policy Statement and the Wellington Regional Strategy will influence higher density development around public transport infrastructure.

Specific integrated land use strategies that can encourage public transport use and other more sustainable modes of transport include downtown redevelopment and intensification, clustered suburban development, more compact residential development in and along public transport corridors, mixing land use activities (work, recreation, residential), pedestrian and cycle-friendly urban design, and the physical integration of new development with public transport services. These strategies, often called Transit-Oriented Development (TOD) should be encouraged as they offer an alternative to auto-oriented development through integrating transportation and land use planning. This provides the necessary context for implementing other TDM strategies and ultimately reducing automobile dependence.

Freight outcomes

Introduction

This section discusses items relating to 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 indicators associated with this key outcome are:

  - Journey times for road freight between key destinations
  - Heavy vehicles on key routes

Related outcomes and associated performance indicators for freight are:

- **Improved inter-regional freight efficiency**
  - Removal of rail freight infrastructure constraints
  - Inter-regional freight movements

Key outcome

7.1 Improved regional freight efficiency

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

Journey times for road freight between key destinations

Representative routes for heavy goods movement were selected as follows:

- Seaview - Porirua via SH58
- Seaview - Porirua via SH1 and SH2
- Seaview - CentrePort

Transit New Zealand travel time survey data was used to create route travel times by combining sections of the regional routes used in *Road Network Efficiency Outcomes*.

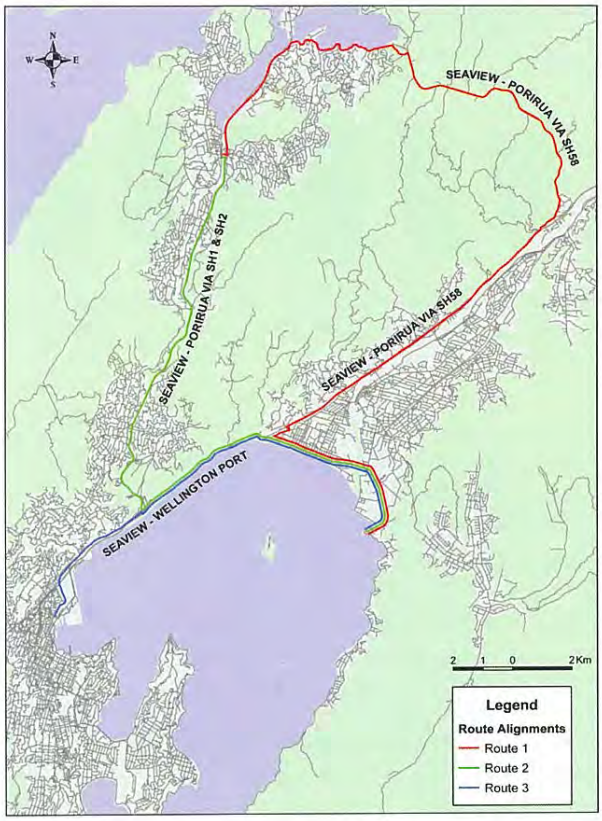

Figure 75: Representative regional road freight routes. Sources: Transit New Zealand; GWRC

Definition: The graphs show all day average travel time in minutes for the routes listed and shown on the map. These routes are representative of typical road freight movements across the region.

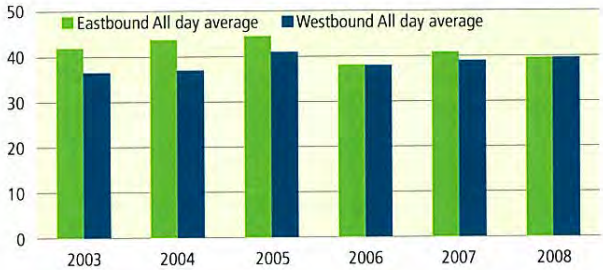

Figure 76: All day average travel time (mins) on road freight route: between Seaview and Porirua via SH58, March. Sources: Transit New Zealand; GWRC

Interpretation: The all day average time taken to travel between Porirua and Seaview (eastbound) via State Highway 58 has decreased slightly since 2003 while the westbound route travel time has generally increased over the same period. This has had the effect of lessening the directional difference in all day average travel time on this route. In 2008 the all day average travel time was just under 40 minutes in either direction.

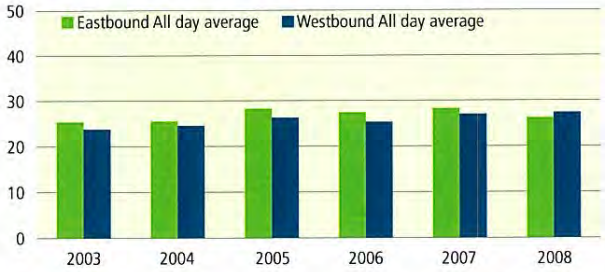

Figure 77: All day average travel time (mins) on road freight route: between Seaview and Porirua via SH1 and SH2, March. Sources: Transit New Zealand; GWRC

Interpretation: Travel between the same locations (Seaview and Porirua) via State Highways 1 and 2 presents a lower all day average travel time by approximately 13 minutes. A slight increase in all day average travel time was shown over the five year period with the pattern reversing for the first time in 2008. All day average travel time in the eastbound direction was slightly less than on the westbound route (26 and 27 minutes respectively).

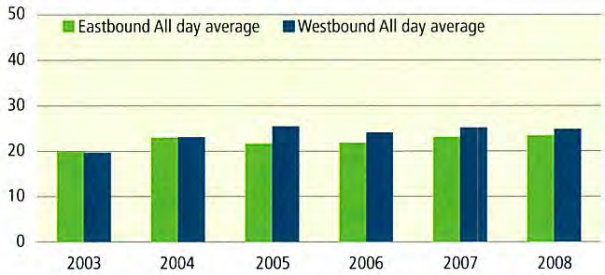

Figure 78: All day average travel time (mins) on road freight route: between Seaview and CentrePort, March. Sources: Transit New Zealand; GWRC

Interpretation: At 23 minutes (eastbound) and 25 minutes (westbound) in 2008, all day average travel time between Seaview and CentrePort remains unchanged from 2007. Since 2003, the travel time on this route has increased by approximately four minutes.

Comment: Very little change in all day average travel time on the surveyed routes was shown between 2007 and 2008. Localised problem areas on these routes where congestion occurs are masked by the averaged results. Worsening congestion on key routes will impact negatively upon the efficiency of freight movements on the road network and consequently on the regional economy.

Heavy vehicles on key routes

Definition: Data for the graphs displaying heavy vehicle percentages is obtained from permanent telemetry sites. These sites record the length of each vehicle, with anything more than 5.5 metres defined as 'heavy'. The percentage of heavy vehicles on selected key routes is shown on both weekdays and weekends. Telemetry data from the State Highway 1 site at Pukerua Bay is no longer available.

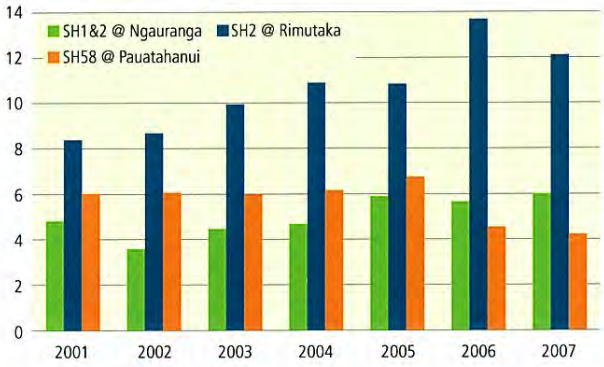

Figure 79: Heavy vehicles on major routes (%), weekdays. Calendar year. Sources: GWRC; Transit New Zealand

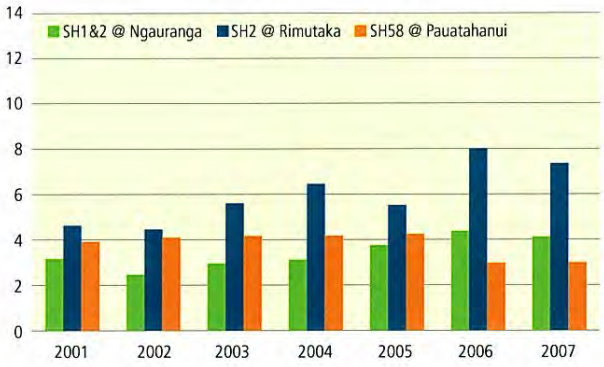

Figure 80: Heavy vehicles on major routes (%), weekends. Calendar year. Sources: GWRC; Transit New Zealand

Interpretation: Heavy vehicles at all monitored sites during both weekdays and on weekends decreased in 2007, with the exception of State Highway 1 and 2 at Ngauranga. The volume of heavy vehicles on this route has generally increased since 2002 and has surpassed the numbers of heavy vehicles on State Highway 58 which have continued to decline since 2005.

State Highway 2 at Rimutaka continues to carry more heavy vehicles than the other routes monitored, at 12% of all traffic at this site on weekdays and 7% on weekends. The volume of heavy vehicles passing this site is small when compared with that on the overall network.

Comments: Heavy vehicles make up a greater proportion of total traffic at sites further removed from the urban areas, e.g. Rimutaka and on State Highway 58 (until 2005). Closer to the major urban areas and during weekends, there are more light vehicles on the network, resulting in lower absolute and percentage figures for heavy vehicles.

Commercial vehicle traffic is related to economic activity. For the region's continued economic wellbeing it is important to allow for this growth while not compromising the needs of other road users.

Related outcome

7.2 Improved inter-regional freight efficiency

Target: All infrastructure constraints to rail freight movements are removed

Removal of rail freight infrastructure constraints

Definition: Infrastructure constraints which are limiting the movement of rail freight through the region are listed. This information was provided by KiwiRail and ONTRACK.

Interpretation: Three key restrictions to rail freight movement were identified on the network as follows:

Kaiwharawhara throat

This area of constraint on the rail network is located just north of Wellington Station where the Wairarapa and the North Island Main Trunk Lines (NIMT) meet. Addressing the merging and capacity issues and alleviating this bottleneck will lead to less conflict between freight and commuter services especially during peak times.

North-South junction

The section of railway line between Pukerua Bay and Paekakariki is known as North-South junction and is currently single tracked.

Freight trains experience much difficulty restarting if they are forced to stop on uphill sections of the track to wait for other trains to pass. This occurs particularly during the peak commuter periods due to conflict between commuter and freight services. Double tracking through this section would address this constraint.

Paekakariki to Waikanae

Freight trains are sometimes forced to queue from Paraparaumu to Waikanae due to single track restrictions between Paekakariki and Paraparaumu. A delay of over 30 minutes for a freight service can occur while a commuter unit travels from Paekakariki north to Paraparaumu, offloads passengers then reloads and travels south again. Double tracking the section of railway line between MacKay's Crossing and Waikanae would significantly alleviate this issue.

Comment: The Kaiwharawhara throat issue is expected to be addressed by ONTRACK over the next two years. The North-South junction and double tracking issues will be addressed by the Regional Rail Plan (currently under development and expected in late 2008).

Inter-regional freight movements

Definition: The graph shows a freight movement index. Freight is measured in a range of non-comparable units. For this reason, and because some data is commercially confidential, absolute numbers are not given. The aggregate measure (total) is based on several assumptions and is for indicative purposes only. 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.

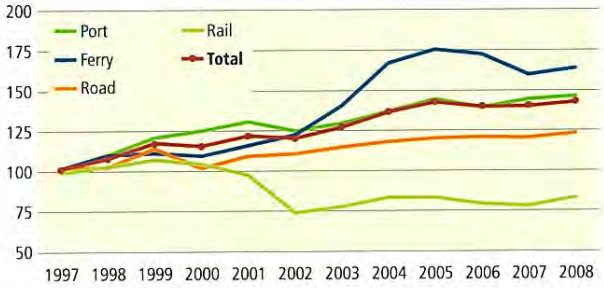

Figure 81: Inter-regional freight movements. 1997 = 100. Sources: CentrePort; Strait Shipping; Transit New Zealand; KiwiRail

Note: Road freight refers to the previous calendar year.

Interpretation: Inter-regional freight movement by ferry showed a steady increase from 2000 followed by a period of significant growth at a rate totalling 46% between 2002 and 2005. Some of this growth may be attributable to the addition of the Strait Shipping Bluebridge service in 2002. Since 2005 ferry freight has declined again (by 7% overall) but in 2008 increased 3% from 2007. Freight carried by ferry has shown the greatest overall growth rate of all freight modes since 1997, at 65%.

Conversely, rail freight has shown an overall decline of 18% since 1997 despite experiencing modest growth between 2002 and 2008 of 14%. Freight movement through the port and by road has shown steady growth overall, and since 2002 has grown at a rate of 18% and 13% respectively.

Overall there is a positive trend with the aggregate measure indicating growth of 4% per annum over the measured period.

Comments: Modest growth in the rate of inter-regional freight movement was experienced by all modes in 2008.

Road is the key freight transport mode in the region with strong freight movement growth occurring over time. This reinforces the need to maintain and improve the quality and reliability of the state highway network.

Conclusion

Easing congestion has a positive effect on regional economy as freight by road is able to move more freely. Road traffic correlates strongly with regional economic activity, and there is a direct relationship between economic growth and freight growth.

Wellington region's current economic growth trend is therefore expected to result in increased freight volumes and consequently, freight traffic across its boundaries.

Freight access to CentrePort and the ferry terminals by road and rail is affected by problems experienced on those networks. Improved access will lessen this impact on the volume of onward freight by sea.

Inter-regional rail freight movements are expected to continue to decline in the face of competition from a deregulated road freight environment.

Rail freight issues relate primarily to a lack of infrastructure and rolling stock constraining use of the rail network. Efficiency improvements and addressing existing constraints on the rail network will increase the viability of medium and long haul freight by rail.

International air freight out of Wellington is limited both in terms of capacity and destination. As technology allows, air freight capacity is likely to improve. Passenger and freight access issues and any increase in future freight movements to/from the airport are being considered as part of the Ngauranga to Airport Study.

Environmental quality

This section sets out and discusses items relating to environmental quality which in addition to other sustainability indicators elsewhere in the report, 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 passenger transport, cycling and walking; reduced use of private and company cars; increased energy efficiency of the vehicle fleet; reduced greenhouse gas emissions; and a high standard of environmental design of transport infrastructure.

The following performance indicators are considered:

- Air quality
  - Particulate matter (PM_{10})
  - Carbon monoxide (CO)
  - Nitrogen dioxide (NO_2)
- Noise adjacent to arterial routes
- Surface water quality

Associated indicators with an environmental focus can be found in each of the RLTS outcomes sections of this report (see especially the *Environmental outcomes* section).

Performance 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 Greater Wellington's objectives and targets concerning air quality in the Regional Land Transport Strategy 2007-2016 and the GWRC LTCCP 2006-2016.

Three transport air quality monitoring stations are operational at the sites specified below. Meteorological monitoring instruments are co-located at each monitoring site to assist with the interpretation of air quality data.

Transit New Zealand's 2006 traffic count data estimates that on average approximately 43,000 vehicles (southbound and northbound) pass by the Ngauranga station daily, 35,000 travel past the Melling station and 40,000 by the Wellington Central station.

Site	Location	Sensitivity of surrounding land use[1]	Status
Wellington central	Corner of Vivian & Victoria Streets, Te Aro	Medium to high	Permanent
Melling	SH2, Melling intersection	High	Mobile
Ngauranga	Centennial Highway, Ngauranga Gorge	Low	Mobile

Table 5: Wellington region transport air quality monitoring programme sites

The contaminants monitored are particulate matter (PM_{10}), carbon monoxide (CO) and nitrogen oxides (NOx). These contaminants are by-products of combustion and all have known adverse human health effects when concentrations in air are elevated.

Definition: Ambient air quality associated with land transport is continuously monitored in the Wellington region at the three sites described above. Air quality measured at these sites is compared against national standards and guidelines. The GWRC LTCCP has set a long-term target to 2016 of:

No recorded instances when air pollution reaches the 'alert' level of the national ambient air quality guidelines or 66% or greater of the national ambient air quality standards.

2007/08 results for the three pollutants described are shown in the following tables and graphs.

Particulate matter (PM_{10})

Interpretation: The ambient air quality monitoring results for PM_{10} have been assessed against the national standard of 50 $\mu g/m^3$ (24-hour average). The national standard was exceeded at Ngauranga (53 $\mu g/m^3$) on 24 October 2007 and at Wellington central (60 $\mu g/m^3$) on 28 June 2008.

[1] MfE 2008: Good practice guide for assessing discharges to air from land transport. May 2008, p41.

Comment: The exceedences of the national standard for PM_{10} in October 2007 and in June 2008 were due to high concentrations measured during the middle of the day that did not coincide with normal morning or evening peak traffic flows. It is likely that the PM_{10} sources on these exceedence days were not traffic-related. It is probable that the Ngauranga site was influenced by wind-blown particulate arising from nearby aggregate stockpiles and the Wellington central site by a local event.

Site	Year	Mean (annual)	Median	Max
Wellington central	2004/05	17	16	49
	2005/06	15	15	30
	2006/07	14	14	37
	2007/08	14	14	60
Melling	2006/07	15	14	32
	2007/08	14	13	34
Ngauranga	2006/07	18	17	44
	2007/08	19	17	53

Table 6: Descriptive statistics PM_{10} $\mu g/m^3$ (24-hour average) 2007/08. Source: GWRC

Interpretation: The ambient air quality monitoring results for PM_{10} have also been assessed against the **national guideline** of 20 $\mu g/m^3$ (annual average).

Comment: Annual means range from 14 to 19 $\mu g/m^3$ and are therefore within the national guideline.

Definition: The graph below shows ambient PM_{10} daily average concentrations by percentage of days per year, in each air quality category (Excellent, Good, Acceptable, Alert and Action).

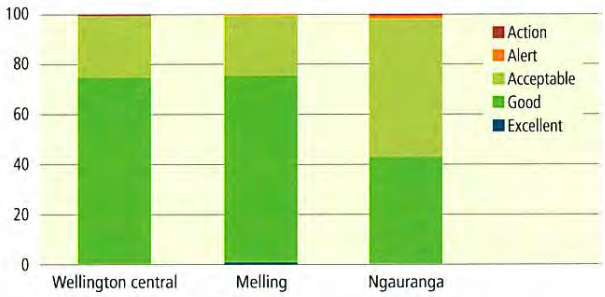

Figure 82: PM_{10} (24-hour average) by air quality category, % of days per year, 2007/08. Source: GWRC

Comment: There was one day at Melling and eight days at Ngauranga when the 'alert' level was reached. There was one 'action' or exceedence day at Ngauranga and at Wellington central.

Carbon monoxide (CO)

Interpretation: Carbon monoxide monitoring results have been assessed against the **national standard** of 10 mg/m^3 (8-hour moving average calculated on the hour). None of the transport monitoring sites exceeded the national standard for carbon monoxide during 2007/08.

The ambient air quality monitoring results for carbon monoxide were also assessed against the **national guideline** of 30 mg/m^3 (1-hour average). None of the transport monitoring sites exceeded the national guideline for carbon monoxide during the 2007/08 reporting period.

Site	Year	Mean (annual)	Median	Max
Wellington central	2005/06	0.6	0.5	3.3
	2006/07	0.6	0.4	3.7
	2007/08	0.6	0.4	3.7
Melling	2006/07	0.5	0.3	3.5
	2007/08	0.4	0.2	3.6
Ngauranga	2006/07	0.5	0.3	4.5
	2007/08	0.7	0.5	4.5

Table 7: Descriptive statistics CO mg/m^3 (8-hour moving mean) 2007/08. Source: GWRC

Comment: No exceedences of either the national standard or the national guideline for carbon monoxide occurred at any of the monitored sites in 2007/08.

Definition: The graph below shows concentrations of carbon monoxide in air by percentage of hours per year, by air quality category (Excellent, Good, Acceptable, Alert and Action).

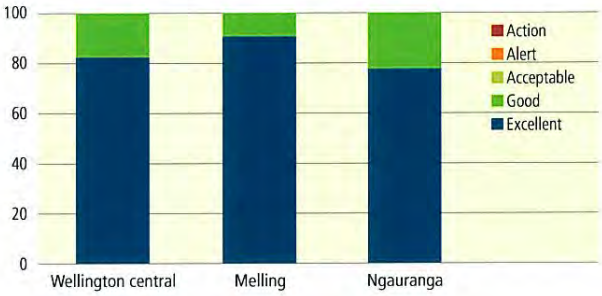

Figure 83: CO (8-hour moving average) by air quality category, % of hours per year, 2007/08. Source: GWRC

Comment: Across all transport monitoring sites levels of carbon monoxide were at least 'acceptable' or better.

Nitrogen dioxide (NO_2)

Interpretation: The ambient air quality monitoring results for nitrogen dioxide have been assessed against the **national standard** of 200 $\mu g/m^3$ (1-hour average); the **national guideline** of 100 $\mu g/m^3$ (24-hour average) and the **WHO guideline** of 40 $\mu g/ m^3$ (annual average).

Site	Year	Mean (annual)	Median	Max
Wellington central	2005/06	34	30	136
	2006/07	33	30	142
	2007/08	33	31	96
Melling	2007/08	22	18	112
Ngauranga	2006/07	22	21	69
	2007/08	23	22	101

Table 8: Descriptive statistics NO_2 $\mu g/m^3$ (1-hour average), 2007/08

Comments: None of the transport monitoring sites exceeded the national standard or either of the guidelines for nitrogen dioxide during the 2007/08 reporting period.

Definition: The graph below shows ambient air quality monitoring results for nitrogen dioxide by percentage of the number of hours per year, in each air quality category (Excellent, Good, Acceptable, Alert and Action).

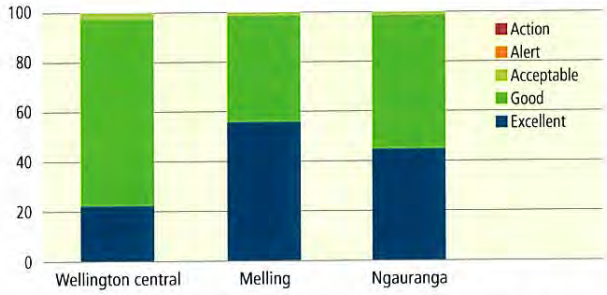

Figure 84: NO_2 (1-hour average) by air quality category, % of hours per year, 2007/08. Source: GWRC

Comment: Across all monitoring sites levels of nitrogen dioxide were at least 'acceptable' or better.

Summary: Both the Wellington central and Ngauranga monitoring sites recorded one exceedence of the national environmental standard for PM_{10} during the reporting period. Both these exceedences are likely to be due to local sources or events and not related to peak traffic flows.

Concentrations of nitrogen dioxide and carbon monoxide were well within the national guidelines and standards and remained at 'acceptable' levels or better throughout the monitoring period. The 'alert' level for PM_{10} was reached on one day at Melling and on eight days at the Ngauranga site. There was also one 'action' or exceedence day at Ngauranga and at Wellington central during 2007/08. Overall, the concentrations of PM_{10}, carbon monoxide and nitrogen dioxide measured during the reporting period were not at concentrations that could be considered of concern to human health.

As with the previous reporting period, annual mean and median concentrations of nitrogen dioxide were generally higher at the Wellington central site than measured elsewhere in the region. The maximum concentration of carbon monoxide was recorded at Ngauranga. The maximum concentration of PM_{10} was measured at Wellington central.

Noise adjacent to arterial routes

Definition: The graph shows motor vehicle generated noise levels as 24 hour L_{eq} [2] averaged over five days, at selected sites next to state highways as follows:

- SH1, Inner City Bypass at Vivian Street, Wellington City
- SH1 & 2, urban motorway at Kaiwharawhara, Wellington City
- SH2 at Western Hutt Road, Hutt City
- SH1 at Mana Esplanade, Porirua City.

These sites represent some of the busiest roads in the region. This indicator will be measured every five years.

[2] A-frequency weighted time average

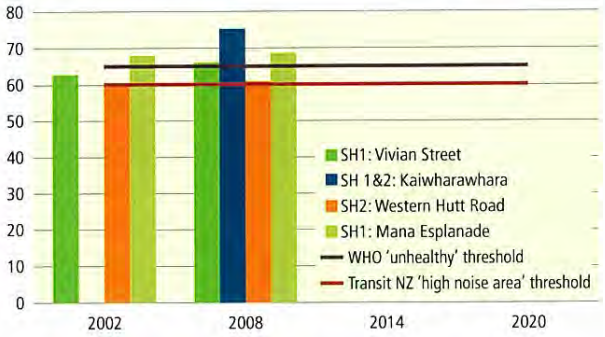

Figure 85: Noise adjacent to arterial routes (noise level 24 hour L_{eq}, dB(A), one-week average). Source: GWRC survey, 2002

Note 1: World Health Organisation (WHO 1995, 1999) criteria are widely quoted as suitable to protect health and well-being. In Australia, 55 dB(A) L_{eq} (24 hour) is considered the threshold above which adverse effects on people and communities may commence; and above 65 dB(A) L_{eq} (24 hour) represents possible unhealthy levels of noise exposure (Lansdell & Cameron, 1998).[3]

Note 2: Appendix 6 of Transit New Zealand's Planning Policy Manual (1999) contains guidelines for dealing with road traffic noise for new roads or improvements that require a new designation. The guidelines apply to some noise-sensitive facilities adjacent to new state highway stretches aimed at achieving cost-effective noise avoidance and mitigation. The Noise Guidelines are a 'design' guideline, to assist Transit to design new roads and major road improvements in a manner that ensures traffic noise does not exceed a reasonable level. The noise levels that a new road is to be designed to are highly dependent on the ambient noise levels in the locality in that noisier roads are permitted in noisier areas, under the following categorisation of ambient noise levels:

- low-noise areas: <50dB(A) L_{eq} (24 hour),
- medium-noise areas: 50-59dB(A) L_{eq} (24 hour),
- high-noise areas: >59dB(A) L_{eq} (24 hour).

Residential areas and teaching environments are considered the most sensitive receptors of noise in the Guidelines. The Transit Noise Guidelines are essentially the only New Zealand guidelines on land transport noise emissions. Although less then perfect, the guidelines are widely referred to by Transit, other roading authorities and local authorities. The guidelines are adhered to closely and only in exceptional cases are they deviated from, up or down. Lack of other guidelines means they are at times used for purposes outside the narrow application they were written for: new roads or substantial improvements requiring a new designation by Transit. There are several significant limitations of the guidelines, which limit either their use by Transit, or their wider application for land use planning. These include:

- Limited application to the design of new roads or substantial improvements requiring a new designation by Transit. On this basis, the guidelines do not apply to new roads or substantial improvements which may have been designated decades ago.
- A lack of application and consideration of how to deal with existing transportation noise impacts and the cumulative effects of noise. Including only provisions for new roads and improvements fails to address the impacts of changes to traffic volumes, flows, and cumulative noise arising from new roads and improvements.
- The measurement location for noise, being one metre in front of the most exposed façade of permanently occupied buildings, does not account for undeveloped land for which urban development is likely. This includes areas with a residential zoning or areas on the urban fringe. Given the often long-term nature of planning for new roads, by the time the road is built it can then be surrounded by sensitive receivers. The measurement location has also attracted some Environment Court criticism, particularly with respect to schools.
- The L_{eq} (24 hour) measure has limitations, including the applicability of the measure to buildings or facilities that are occupied for less than 24 hours, such as schools. In addition, it recognised that L_{eq} (24 hour) is not ideal for 'describing' the noise level actually perceived by receivers. The guidelines do not cater for undeveloped, residentially zoned areas, or future planning.[4]

Interpretation: Between 2002 and 2008 noise levels adjacent to the selected arterial routes increased by 1 dB(A) at the SH2 Western Hutt Road site (to 61 dB(A)) and SH1 Mana site (to 68 dB(A)). The noise level at the SH1 Vivian St site increased from 63 dB(A) to 66 dB(A). No comparison can be made at the SH1 & 2 Kaiwharawhara site due to a fault with the monitoring equipment which resulted in no 2002 data.

Comments: Monitored noise levels at three sites exceeded the WHO level of 'above 65 dB(A) L_{eq} 24 hour' which represents potential exposure to a possible unhealthy level of noise. Two of these sites are residential (Vivian Street and Mana Esplanade). The urban motorway at Kaiwharawhara, Wellington City (SH1 & 2) with the highest result, is not an environment sensitive to noise as there is no residential area nearby.

Although the Transit New Zealand threshold (>59 dB(A) L_{eq} 24 hour) has been exceeded at all monitored sites in 2008, the guidelines were not written to assess noise levels adjacent to existing roads (see *Note 2* above).

[3] Malcolm Hunt Associates, Beca Carter Hollings & Ferner, Transport Research Laboratory. (2004). *Noise impacts of Land Transport – Stage 3: Development of Policies For The Management of Noise From Land Transport.* Section 2 Defining the Problem, pp 16-17.
[4] McCallum-Clark, M., Hardy, R., Hunt, M. (2006). Transportation and noise: land use planning options for a quieter New Zealand. *Land Transport New Zealand Research Report 299.* pp 60-61.

Environmental quality

Surface water quality

Contaminants in discharges from the national road network include fuels, additives, oil, grease and brake and tyre residues containing a variety of toxic and ecotoxic components. These can include 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 also adversely impact on certain types of streams, wetlands and lakes. New highway construction and traffic growth is expected to exacerbate this situation.[5]

A pilot study has been undertaken in Porirua Harbour including Pauatahanui Inlet and an associated wetland, and the section of Porirua Stream adjacent to the estuary. This area comprises a sensitive receiving environment and a mixture of local roads and state highways (SH1 and SH58).[6]

Transit New Zealand is piloting catchpit filter systems near the western end of Pauatahanui Inlet, Porirua Harbour adjacent to SH58. This system treats road runoff before in enters the inlet.

Greater Wellington has undertaken sediment quality sampling in both Porirua Harbour and Wellington Harbour in recent years and is working towards implementing a long-term sediment quality programme for both of these coastal receiving environments. Results of sub-tidal 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 run-off. A report has recently been completed on the Wellington Harbour sediment quality sampling.

Greater Wellington has also undertaken various stormwater-related investigations to date and routinely monitors water quality and ecological health at 56 river and stream sites across the region. In early 2008, testing of heavy metals and suspended solids – common contaminants found in road runoff – was introduced at the 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.

Greater Wellington's environmental monitoring and investigative programmes, together with other national developments in road runoff research and analysis, help to inform us of the impact road runoff has on surface waters in the Wellington region.

Conclusion

Levels of transport-generated air contaminants are relatively low in the Wellington region. Further investigation and development would be required to monitor surface water quality attributable to the region's road network.

Land transport activity, especially the use of private vehicles, has significant detrimental effects on the environment. Measures to reduce overall car use and improve car travel efficiency will reduce fuel consumption, air and water pollution, and noise levels adjacent to arterial routes.

[5] 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.
[6] 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.

Affordability

This section sets out and discusses items relating 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 performance indicators are considered:

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

Associated economic indicators can be found in other sections of this report as follows:

- Public transport user costs and perceptions of those costs (in Public Transport Outcomes, 1.3: *Improved passenger transport accessibility for all, including disabled people or from low income groups*)
- Fuel price index (in Environmental Outcomes, 3.3: *Reduced fuel consumption*)
- Vehicle kilometres travelled per GDP (in Land Use and Transport Integration Outcomes, 6.3: *Sustainable economic development supported (in line with the WRS)*)
- Public transport expenditure per passenger and per GDP; Roading expenditure per GDP (in Land Use and Transport Integration Outcomes, 6.4: *Improved transport efficiency*)

Performance indicators

Maintenance expenditure: roading

Definition: The graph shows total annual expenditure on maintenance works associated with the road network, by road-controlling authority (RCA).

Maintenance expenditure: operational and maintenance expenditure for the roading network excluding replacements/renewals and any expenditure on emergency works. This includes road safety operation (i.e. power for street lights). Depreciation and activities where expenditure has been recovered are excluded. As of 2008 seal widening, unsealed road metalling, and some road marking work categories have been recategorised to capital expenditure by Transit New Zealand.

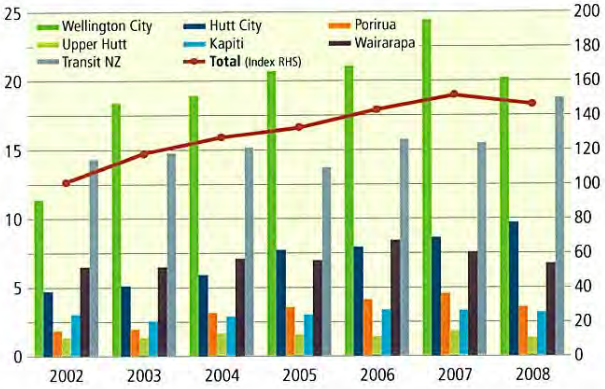

Figure 86: Maintenance expenditure ($M) by RCA, by year. Index: 2002 = 100. Sources: local authorities; Transit New Zealand

Interpretation: Total expenditure decreased for the first time in six years, by 3.6% in 2008.

Comments: Maintenance expenditure on roading throughout the region has risen steadily since 2002 but apparently reduced over the past year, although much of this reduction may have resulted from a change in accounting practices.

Capital expenditure: roading

Definition: The graph shows total gross annual expenditure on capital works associated with the road network, by road-controlling authority (RCA). Note that Transit New Zealand's expenditure includes property purchases for new roading developments.

Capital expenditure: new works and replacement/renewal of existing assets for the roading network including expenditure on public transport improvements such as bus lanes/bus shelters which are a part of the roading network and funded or part-funded by GWRC. This includes new traffic signals, roundabouts, road links, footpaths, bus lanes, street furniture, street lighting and seal replacement on roads and footpaths. Note that this now includes seal widening, unsealed road metalling and more road marking activities that have been reclassified as "renewal".

Affordability

Figure 87: Capital expenditure ($M) by RCA, by year. Index: 2002 = 100. Sources: local authorities; Transit New Zealand

Interpretation: Overall expenditure increased by 7% in 2008 following a 21% increase in 2007. After a 40% increase in capital expenditure in 2007 by Transit New Zealand, 2008 expenditure increased by 3.5%.

Comments: Overall capital expenditure for the region increased at a more moderate rate in 2008 compared to 2007.

Public transport subsidy expenditure

Definition: The graph shows combined GWRC and Land Transport New Zealand financial contributions to the public transport contracted services operating costs.

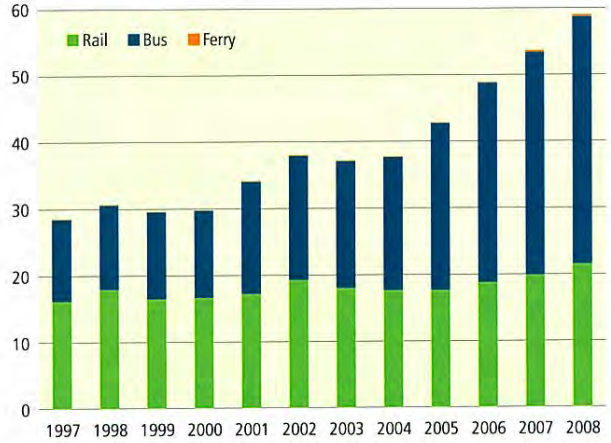

Figure 88: Public transport operating expenditure on contracted services ($M). Source: GWRC

Interpretation: The total public transport subsidy increased by 10% in 2008 to $59 million ($54 million in 2007). The subsidy for bus services grew by 11%; rail by over 8%; and harbour ferry services by 24%.

Comment: The overall increase in contracted services subsidy in 2008 is primarily due to bus contract inflation costs. The cost contributions of GWRC and Land Transport New Zealand to public transport have increased over time mainly related to increases in services.

Total Mobility Scheme expenditure

Definition: The graph shows total GWRC and Land Transport New Zealand expenditure on the Total Mobility Scheme since 2000. This scheme assists people who have difficulty using public passenger transport services and is administered by GWRC. A voucher system provides a 50% discount on taxi fares to people who meet certain eligibility criteria. These criteria are endorsed by the Ministry of Transport.

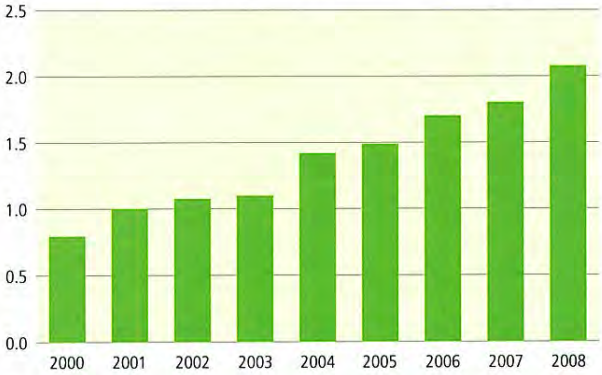

Figure 89: Total Mobility scheme expenditure ($M). Source: GWRC

Interpretation: Expenditure on the Total Mobility Scheme in 2008 rose by 15% (6% in 2007).

Comment: Despite patronage of the Total Mobility Scheme decreasing by just under 3% in 2008 (see *Total Mobility Scheme patronage* in section: *Public transport outcomes*) expenditure on the scheme has increased. Taxi fare increases due to the rising cost of fuel is the main reason for increased expenditure in 2008.

Public transport improvements

Definition: This indicator comprises expenditure on enhancements to public transport infrastructure and rail rolling stock.

Interpretation: In 2007/08 GWRC invested $25.1 million in improvements to public transport.

Comment: Expenditure was primarily on new Wairarapa carriages and increasing the capacity of rail rolling stock.

Household travel expenditure

Definition: The graph shows **national** average weekly household expenditure and highlights the proportion spent on transportation. This data is not available by individual region. The Household Economic Survey collects this information three-yearly so the next update will be in the 2010/11 report.

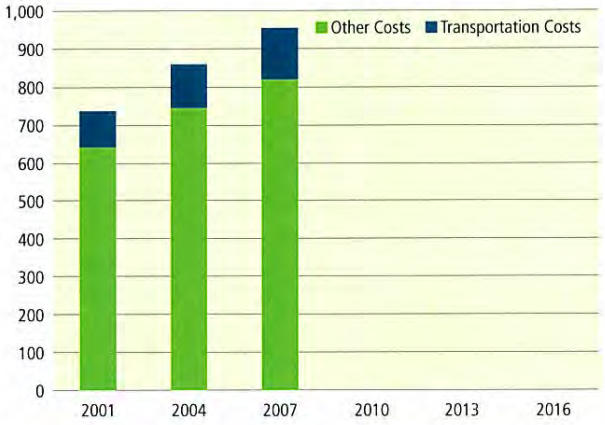

Figure 90: National average weekly expenditure per household ($). Source: Statistics New Zealand

Note: Transportation costs relate to domestic travel only.

Interpretation: The total average weekly household expenditure in 2007 was $956 of which domestic travel accounted for $136 (or 14%). The proportional expenditure on travel in 2001 and 2004 was comparable at 13%. Total household expenditure increased by 11% in 2007 and travel expenditure by almost 19% between 2004 and 2007.

Comments: The proportion of average weekly travel expenditure relative to average total expenditure per household remains unchanged between the three surveys. Like any economic good or service, consumption is influenced by price. If the cost of travel increases relative to other costs, total travel demand is likely to reduce, and vice versa.

Car operating costs

Definition: The graph shows vehicle operating costs per kilometre for a petrol-engine car driven 14,000km a year. To reflect current popular vehicle size, the cc rating was lowered in 2008 to include 1500cc – 2000cc engine size ('compact car'). Costs are broken down into fixed (unrelated to vehicle use) and running (proportional to use). Parking charges are not included.

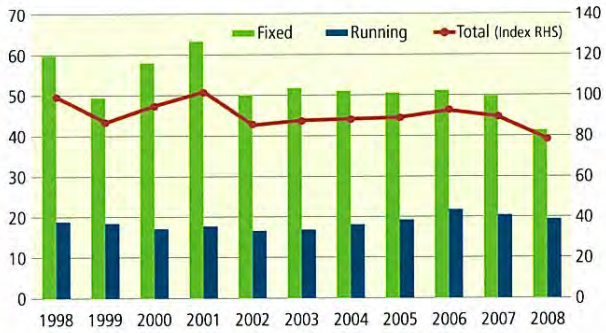

Figure 91: Petrol driven car operating cost per kilometre (cents). Index: 1998 = 100. Source: Automobile Association of New Zealand

Note: For 1601cc-2000cc car; 1998-2001 = 12,000 km/yr; 2002-2007 = 14,000 km/yr. From 2008: for 1500cc-2000cc car; 14,000 km/yr. Cars were used more in 2002 than in previous years. The average running distance per year increased to 14,000 km from 12,000 km which had the effect of lowering the cost per kilometre by 7%.

Interpretation: The total cost of operating the specified sized car fell by 14% in 2008 after decreasing by 4% the year previous (which was the first overall decrease in operating cost since 2002).

In 2008, fixed costs decreased by 17% (a 2.5% drop in 2007) while the combined direct running costs of petrol, oil, tyres, repairs and maintenance declined by 5% (a 6% in drop 2007). By comparison, a significant increase in running costs of 13% was experienced between 2005 and 2006.

The price of petrol dropped again in 2007 from a high price of $1.73 in 2006. The 2008 analysis uses a petrol price of $1.85.

Year	Month	Petrol per litre ($)
1998	May	0.91
1999	May	0.82
2000	March	1.02
2001	January	1.01
2002	March	1.05
2003	January	1.09
2004	March	1.17
2005	April	1.32
2006	May	1.73
2007	May	1.52
2008	April	1.85

Table 9: Price of petrol used in the running cost calculation in Figure 91. Source: Automobile Association of New Zealand

Affordability

Comments: The overall cost of operating a car decreased substantially in 2008 mainly due to a large drop in fixed costs. Lower interest rates and a $6,000 drop in value of the specified sized car were the main reasons for this decrease.

Despite the highest fuel cost recorded in this analysis, the running cost of a petrol-engine car decreased in 2008. This may be partly attributable to the inclusion of smaller engine sizes (1500cc-1600cc) in this category.

Although the price of petrol is a prominent consideration in travel mode choice, it has little effect on overall cost.[1] Fluctuating fuel prices have a minimal effect on overall vehicle ownership.[2] The costs of owning, operating and maintaining a car are usually considered when choosing a mode of transport. However, comparisons of public transport costs are often made with only the variable, or marginal, costs of running a car.

Petrol cost and hourly earnings

Definition: The graph shows an index of the cost of petrol (CPI Petrol Index) and income over time.

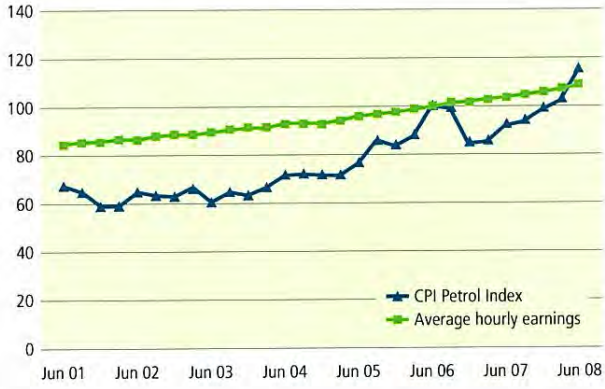

Figure 92: Petrol cost index and average hourly earnings, national. Index: June 2006 = 100. Source: Reserve Bank.

Interpretation: The petrol CPI tracked below income until June 2006. Due to a petrol price spike in early 2008, the relative cost of fuel rose above average hourly earnings.

Comment: The CPI petrol index reduced in comparison to income from June – December 2006, but has grown at a faster rate since. Despite the increasingly high price of fuel in 2007, it was only in the first half of 2008 that the petrol index surpassed average hourly earnings.

Perceptions of private transport user costs

Definition: The graph shows the percentage of people who considered cost to be a barrier to their use of private transport. Comparison between the Auckland and Wellington regions is made.

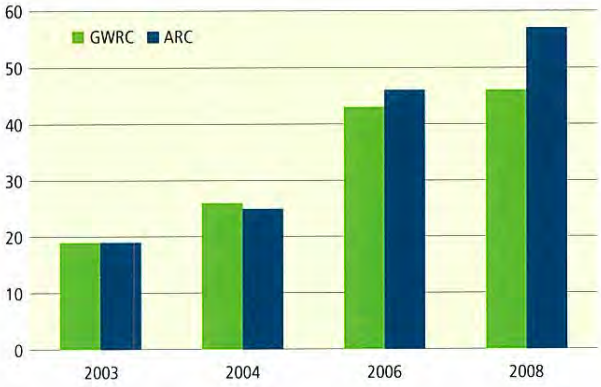

Figure 93: Private transport costs as a barrier to use (%), Wellington and Auckland regions. Source: GWRC and ARC transport perceptions surveys

Note: First ARC results are sourced from a 2002 survey.

Interpretation: Forty-six percent of those people surveyed in 2008 in the Wellington region felt that the cost of using a private vehicle hindered their use of it (compared with 43% in 2006).

Comments: A slight increase in the perception that cost was a barrier to private transport use occurred in Wellington in 2008 but a marked shift in this perception occurred in Auckland with over half of respondents indicating that cost is a barrier to private vehicle use. It is likely that fuel price increases led to this result.

[1] Automobile Association of New Zealand (2006). Car costs: *What does it cost to drive for a year?* In *AA Directions (Winter 2006)*, p. 61.

[2] Automobile Association of New Zealand (2007). *Car costs: What does it cost to drive for a year?* http://www.aa.co.nz/motoring/owning/runningcosts, accessed 27 July 2007

Conclusion

Costs for most indicators have increased at well above the underlying inflation rate.

The transport network requires ongoing investment to maintain and improve accessibility and efficiency levels.

In particular, continuing investment in public transport infrastructure and services needs to be made to meet the changing requirements of the community. Demographic changes and increasing transport needs of those with mobility challenges may then be addressed, catering for all socio-economic groups.

RLTS implementation

Overall progress achieved in 2007/08

Highlights of the 2007/08 year include:

- new Wairarapa rail rolling stock (all 18 carriages delivered and now in service)
- completed Wairarapa rail station upgrades
- awarded Matangi train purchase contract to Rotem-Mitsui
- completed construction of the Centennial Highway median barrier (June 2008)
- completed new Metlink bus stop signage roll out across the region (November 2007)
- commenced "Share the Road" cyclist and driver awareness campaign
- completion of the Ngauranga to Airport Strategic Transport Study
- commenced investigation of bus priority measures in Wellington CBD
- completion of a business case for Wellington regional passenger transport Real Time Information (November 2007)
- seven workplaces and eight schools fully adopted travel plans
- completed upgrade of the Wellington Transport Strategy Model with 2006 census data (Jan/Feb 2008)

Major 2008/09 actions programmed

Major programmes and projects anticipated to **be completed** in 2008/09 include:

- delivery of short term additional capacity rolling stock (equivalent to 10 carriages)
- Johnsonville Line upgrades
- introduction of new Metlink bus and train fare structure and new fares in September 2008
- completion of detailed designs for Western Corridor rail projects
- commence trial of free cycle carriage on trains at all times from July 2008
- adoption of the Ngauranga to Airport Corridor Plan
- completion of the Regional Rail Plan
- adoption of the updated Regional Cycling Plan
- adoption of the updated Regional Walking Plan

Major programmes anticipated to **commence or continue** in 2008/09 include:

- continue the design and commence construction of Matangi rolling stock EMUs and associated works
- commencement of construction of Western Corridor double tracking
- continued replacement of Wellington's trolley bus fleet
- Ganz Mavag prototype units refurbishment
- continue the development of the Western Link Road project
- continue Transmission Gully Motorway preparation activities
- continue construction of the Dowse to Petone upgrade
- continuing the Wellington Region Travel Behaviour Change Travel Plan Programme
  - 13 schools and 6 Territorial Authorities are participating in the school travel plan programme
  - 12 workplaces are participating in the workplace travel plan programme
- coordination with Territorial Authorities on annual Bike the Bays (Wellington), Bike the Trail (Hutt River Trail) and Porirua Family Wheels Day cycle events
- commencement of a business case for electronic ticketing for passenger rail (Wellington Region)
- continue the planning of a Real Time Information system

Project, activity and action programme progress

Detailed reporting of progress for each project, activity and action in the various implementation documents is no longer reported through the report. Instead, progress is continually reported through the quarterly Agency Progress Reports to the RTC which are available on Greater Wellington's website. These include:

- Passenger transport projects
- Passenger transport activities
- Roading projects
- Travel Demand Management actions
- Walking, Cycling, and Road Safety actions.

Obstacles to implementing the RLTS

Funding Impediments

While the Government has committed a total of $965M additional funding to support the region's transport needs over the next 10 years, very little of this funding has yet flowed into purchasing additional services or projects. This is primarily due to project start-up lead times and difficult funding allocation processes.

Funding of the local share component of project costs presents affordability issues for a number of projects and activities. Such issues continue to be discussed with various Crown agencies.

Resource impediments

In addition to funding, the provision of adequate resources to deliver on all of the projects identified through the RLTS implementation plans continues to be an issue for the region. One example of such a challenge will be provision of staff resources to develop and implement local walking and cycling strategies.

Legislative/institutional impediments

The weak requirement for agencies to 'take into account' the relevant RLTS when preparing land transport programmes will be strengthened with the new provisions for Regional Land Transport Programmes in the Land Transport Management Amendment Act 2008.

Appendix 1 - Regional demographics

Introduction

This section discusses trends in regional demographic variables driving transport demand. The following indicators are described:

- Population
  - Population growth rates
- Population age distribution
- Occupied dwellings
  - Number of persons per occupied dwelling
- Unemployment
- Economic activity by region
- Building activity
- Vehicle ownership per household
- Car registrations
- Motorcycle registrations

Performance indicators

Population

Definition: The graph shows 'usually resident' population by district from the New Zealand Census and the population forecast in 2016 and 2026. As the census is conducted five-yearly this indicator will next be updated in 2012.

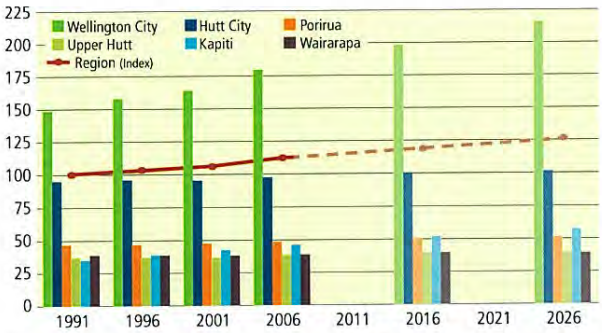

Figure 94: Usually resident population, actual and projected (000), by district. Index: 1991 = 100. Source: Statistics New Zealand; GWRC WTSM

Note: Historic and forecast population data is based on usually resident census night population. Forecast population has been derived for use in the WTSM, and is based on the December 2007 medium projection series from Statistics New Zealand.

Interpretation: The total 2006 regional population was 448,941 with 40% living in Wellington City. Thirty percent were resident in the Hutt Valley, 11% in Porirua, 10% in Kapiti and 9% in Wairarapa.

The projected population change for the region to 2016 shows 7% growth from the 2006 population to a total of 480,600. Wellington City and Kapiti populations are forecast to increase by 10% (approximately 18,500) and 13% (6,000) respectively by 2016. The forecasted increase of 3% in Hutt City would result in population growth of almost 3,000.

Table 10 shows retrospective growth rates by district over the five year periods between census years. All areas of the region experienced population growth from 2001 to 2006. Kapiti District and Wellington City growth rates were strongest at around 9%. The overall population growth rate for the region was 6% or 25,000, a higher rate than previous census periods. This growth is mainly due to Wellington City's population increase of over 15,000.

District	1991 to 1996		1996 to 2001		2001 to 2006	
	Actual growth	% growth	Actual growth	% growth	Actual growth	% growth
Wellington City	9,279	6.3%	6,105	3.9%	15,642	9.5%
Kapiti District	3,645	10.4%	3,861	10.0%	3,759	8.9%
Upper Hutt City	-168	-0.5%	-345	-0.9%	2,046	5.6%
Porirua City	81	0.2%	744	1.6%	1,167	2.5%
Hutt City	990	1.0%	-393	-0.4%	2,232	2.3%
Wairarapa	-84	-0.2%	-300	-0.8%	402	1.1%
Wellington Region	**13,743**	**3.4%**	**9,672**	**2.3%**	**25,248**	**6.0%**

Table 10: Population growth rates, by district. Source: Statistics New Zealand

Comments: Relatively modest regional population growth is both evident from census and forecasted data. Steady population growth in Kapiti has been sustained since 1991. Upper Hutt City, formerly in population decline, experienced a moderate increase in population in the 2006 census period due chiefly to significant development and to a lesser extent infill and rural lifestyle subdivision.

Appendix 1 - Regional demographics

Wellington City's population growth from 2001 to 2006 is largely due to markedly increased housing density in the central city supported by steady increases generally across the city. Inner city intensification leads to increased use of sustainable transport modes (public transport, walking and cycling) where supporting infrastructure exists, and less use of the private car.

Population age distribution

Definition: The graph shows the distribution of the population in broad age groups for the Wellington region. Information to 2006 is actual census data and beyond this date population projections based on estimates are shown. Census data is collected five-yearly, so this indicator will next be updated in 2012.

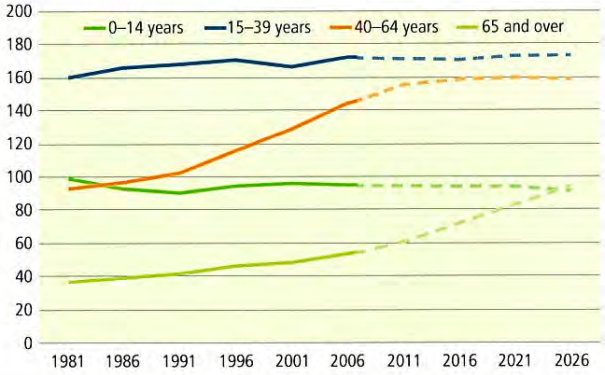

Figure 95: Age distribution by broad age groups, actual and projected (000), Wellington region. Source: Statistics New Zealand

Note: Projections are based on estimated population at 30 June rather than usually resident census night population. Forecast population data is based on the December 2007 medium projection series from Statistics New Zealand.

Interpretation: Statistics New Zealand forecasts indicate that by 2016, the population of the 0-39 year age groups will decrease by around 0.8% from that of the same groups in 2006. Conversely, the 40+ age groups will increase significantly in number by 2016, up by around 17% from 2006.

Comments: By 2016, the older working age group (40-64 years) and the population aged 65 years and over are together, forecast to make up 47% of the total population. This proportion is forecast to become almost 50% of the 2026 population. Currently (2006) these groups represent 43% overall.

Occupied dwellings

Definition: The graph shows occupied dwellings by district. Census data is collected five-yearly and this indicator will next be updated in 2012.

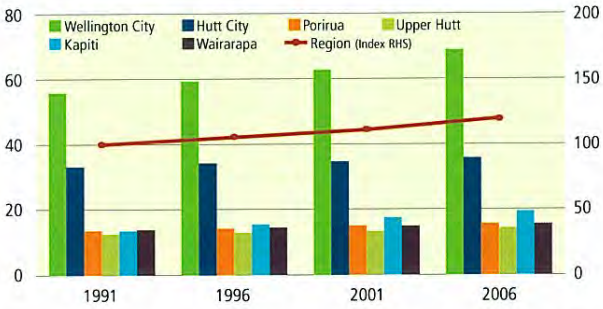

Figure 96: Occupied dwellings (000), by district. Index: 1991 = 100. Source: Statistics New Zealand

Interpretation: The number of occupied dwellings in the region has increased by over 7% in 2006. This follows increases of more than 5% over the previous two census periods (1996 and 2001). Wellington City experienced almost 10% growth in occupied dwellings (over 6,000) between 2001 and 2006. Table 11 shows changes in the average number of people per occupied dwelling over the past four census periods.

District	Number of persons per occupied dwelling			
	1991	1996	2001	2006
Wellington City	2.7	2.7	2.6	2.6
Kapiti District	2.6	2.5	2.4	2.4
Upper Hutt City	3.0	2.9	2.7	2.7
Porirua City	3.4	3.3	3.2	3.1
Hutt City	2.9	2.8	2.8	2.7
Wairarapa	2.8	2.7	2.6	2.5
Wellington Region	**2.8**	**2.8**	**2.7**	**2.7**

Table 11: Average number of persons per occupied dwelling, by district. Source: Statistics New Zealand

Comment: Patterns of absolute and relative growth are closely linked to population. Intensification in central Wellington accounts for the significant growth in the number of dwellings in the city. Household size has generally decreased across the region with the largest households in Porirua and the smallest in Kapiti. The latter reflects the large retirement-aged population living in Kapiti Coast.

Appendix 1 - Regional demographics

Unemployment

Definition: The graph shows district labour force status, with unemployment as a percentage of population. Census data is collected five-yearly and this indicator will next be updated in 2012.

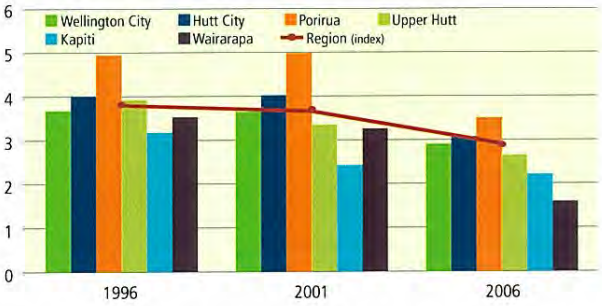

Figure 97: Unemployment (%), by district. Source: Statistics New Zealand

Interpretation: Unemployment rates in 2006 have fallen markedly in all districts across the region, most noticeably in Wairarapa and Porirua. Kapiti unemployment rates remained fairly static in 2006. Porirua unemployment rates remain the highest in the region followed by Hutt and Wellington cities, with Wairarapa now experiencing the lowest rate.

Comments: Transportation demand is likely to be inversely correlated with unemployment rates. Higher levels of unemployment result in lower levels of transportation demand.

Economic activity by region

Definition: The graph 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.

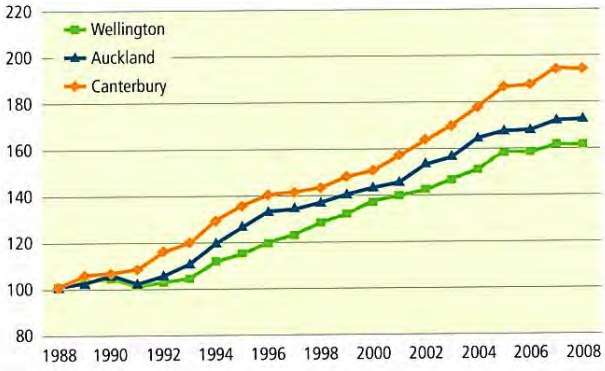

Figure 98: Economic activity by region. March quarter. Index: 1988 = 100. Source: National Bank

Interpretation: The Wellington region experienced a decline in economic activity of 0.1% for the year ending on 31 March 2008, following an increase of 2.1% in 2007. Economic activity in Canterbury also decreased in 2008 by 0.4% (c.f. 4% growth in 2007). Of the three regions, Auckland showed the only increase in economic activity in 2008, with 0.3% (c.f. 2.5% in 2007). The New Zealand average growth was 0.2% (c.f. 3.1% in 2007).

Comments: Economic activity remained strong but there has been little growth in the Wellington region since 2005. While growth since 1998 has been steady across all the regions, the Wellington region has experienced the least overall increase in economic activity. Canterbury continues to show the highest economic activity compared with other regions since the last big economic downturn of the late 1980s.

Economic growth increases the demand for movement of people and freight which in turn, has a greater impact on the transport network.

Building activity

Definition: The graph shows the number of new residential and non-residential buildings in the region. The construction value is given as an index. Data is available monthly and relates to the year ended March.

Figure 99: Building activity (000) and construction value, Wellington region. Year ended March. Index: 1997 = 100. Source: Statistics New Zealand

Interpretation: The number of building consents issued in the year ended March 2008 increased by almost 14% following a 5% decrease the year previous. Growth of 15% in the number of residential consents occurred in 2008 while consents for non-residential properties increased by 7%.

A 34% rise in the 'value of construction' index resulted from increases in both the value of non-residential consents issued (73%) and residential consents (16%) in 2008.

Comments: Significant growth in consent numbers was shown in 2008 following a decline over the two previous years. The value of construction demonstrated in 2008 is the highest since 1997.

The construction industry generates demand for transport as well as being a 'barometer' of regional economic activity. Demand for travel (both freight and passenger) is positively correlated with regional economic activity.

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, which do not necessarily have any implications for levels of transportation activity.

Vehicle ownership per household

Definition: The graph shows the average number of cars per household, by district. Census figures are available five-yearly and this indicator will next be updated in 2012.

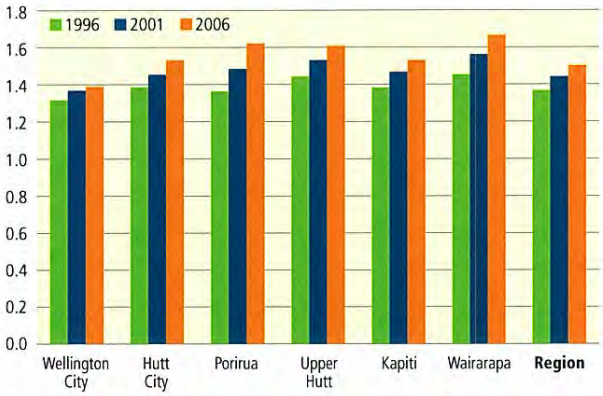

Figure 100: Average car ownership per household, Wellington region. Source: Statistics New Zealand

Interpretation: Over the five years from 2001 to 2006 the average number of cars per household rose from 1.4 to 1.5 or by 4%. Average car ownership per household grew in every district in 2006 with the highest growth of over 9% in Porirua and the lowest in Wellington City (1.5%). The lowest average number of cars per household is in Wellington City and the highest in Wairarapa.

Comments: Levels of car ownership correlate inversely with urban density. The lower rate of vehicle ownership by household in Wellington city reflects a trend for inner-city living and proximity to employment.

Car registrations

Definition: The graph shows licensed car numbers in Wairarapa and the western part of the region ('Wellington') recorded on the register by Land Transport New Zealand.

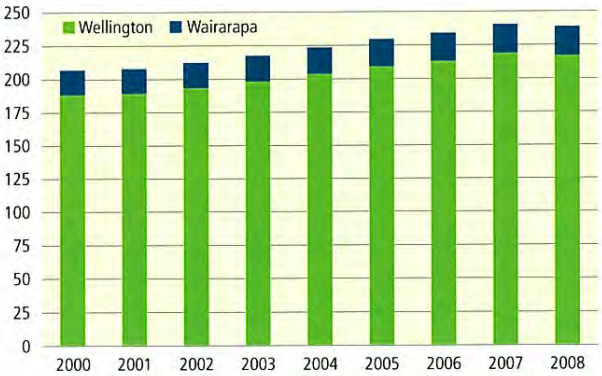

Figure 101: Licensed cars (000), Wellington region. Source: Land Transport New Zealand

Interpretation: The total number of licensed cars on the register declined by 0.7% in 2008. This decrease was mainly influenced by a drop of 0.8% in licensed cars in Wellington; whereas an increase of almost 0.3% occurred in Wairarapa. Since 2000, the total number of cars registered has risen by 15%.

Comments: The number of cars registered in the region decreased for the first time since 2000. The availability of private cars influences car use, demands on the road network and pressure on the environment.

Motorcycle registrations

Definition: The graph shows the number of licensed motorcycles registered with Land Transport New Zealand in Wairarapa and the western part of the region ('Wellington').

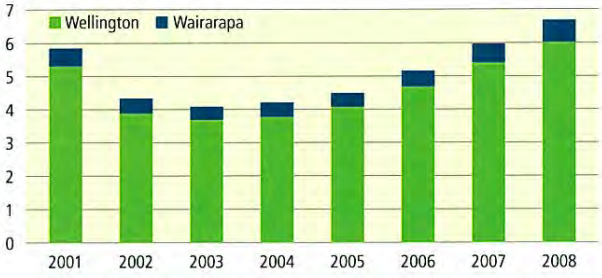

Figure 102: Licensed motorcycles (000), Wellington region. Source: Land Transport New Zealand

Appendix 1 - Regional demographics

Interpretation: After declining in number early in the decade, motorcycle registrations have steadily increased throughout the region since 2003. Registrations increased by 11% and 12 % respectively in Wellington and Wairarapa in 2008. This follows increases in 2006 and 2007 of approximately 15% in both areas of the region.

Comments: The increasing cost of fuel may be influencing the number of licensed motorcycles in the region, as a more economic alternative to travelling by private car.

Conclusion

Transportation demand is expected to rise markedly driven by increasing car ownership, modest population growth and economic activity. Current initiatives to discourage peak-period car use (e.g. Travel Planning) rely mainly on a voluntary change in travel behaviour only and are anticipated to affect the demand for travel at the margins.

Ultimately tolls, congestion pricing and parking fees will be needed to give travellers direct financial incentives to change their behaviour and ensure the network can efficiently accommodate transportation demand. To a large extent transport demand is driven by factors over which the RLTS has no control, such as fuel prices and economic activity.

Appendix 2 - Regional travel demand

Introduction

This section discusses trends in regional travel demand variables affecting the transport network. The following indicators are described:

- Mode of journey to work (all modes)
- Mode use in previous six months
- Inter-regional passenger movements
  - Number of inter-regional passengers by mode
- State highway traffic volumes
- State highway hourly traffic profiles: Ngauranga
- State highway vehicle kilometres travelled
  - State highway network characteristics
- Strategic road network level of service
- Work from home
- CBD parking supply: regional centres
- Perceptions of parking supply: Wellington CBD
- Perceptions of parking prices: Wellington CBD

Performance indicators

Mode of journey to work (all modes)

Definition: The graph 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; bicyle'
- Other: 'e.g. taxi, ferry, plane'

As the census is conducted five-yearly this indicator will next be updated in 2012.

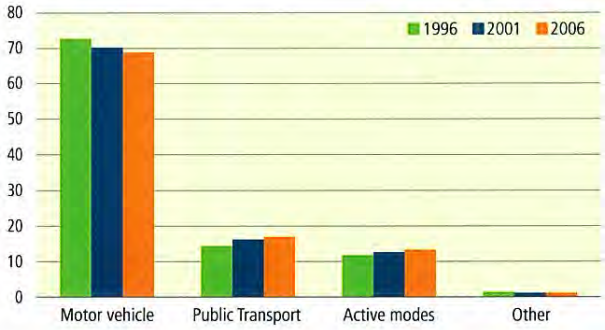

Figure 103: Journey to work mode share (%). Source: Statistics New Zealand

Interpretation: Public transport, walking and cycling mode share increased in 2001 and 2006. Motor vehicle mode share has decreased over the 10 year period but approximately 10,000 more trips were made by vehicles in 2006 compared with 2001.

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

Mode of journey to work:

- Motor vehicle – in *Environmental Outcomes, 3.2 Reduced private car mode share*
- Public transport – in *Passenger Transport Outcomes, 1.1 Increased peak period passenger transport mode share*
- Active modes – in *Active Mode Outcomes, 2.1 Increased mode share for pedestrains and cyclists*

Comments: While the share of sustainable transport modes has risen and that of motor vehicles has declined, the number of trips made by motor vehicles has increased over the last census period.

Definition: The following graph gives a detailed breakdown of each mode within the 'main means of travel to work' definitions used above. Results are for the 2006 census only.

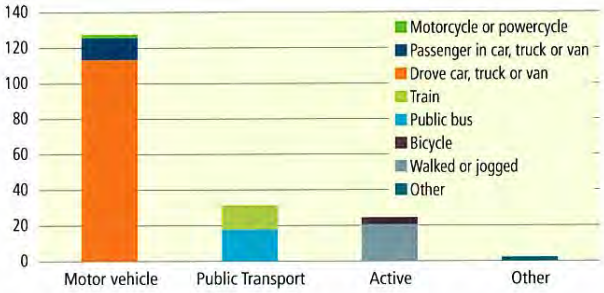

Figure 104: Disaggregated journey to work trips by mode (000s), 2006. Source: Statistics New Zealand

Interpretation: Driving a car, truck or van on census day accounted for approximatetly 90% of all motor vehicles while passengers made up only 9% of the total. The split between bus and train showed bus passengers dominating at 57% over those travelling by train. The active mode split was weighted towards walking and jogging over cycling in 2006 at 84% of the total.

Comments: Travelling to work by driving a car, truck or van is the outstandingly prevalent travel mode of choice in the Wellington region. More people travelled to work by public bus than train on census day in 2006 and walking or jogging are more popular means of getting to work than is cycling.

Appendix 2 - Regional travel demand

Mode use in previous six months

Definition: The graph shows how many people used the four main modes of transport (private and public transport, walking and cycling) for any of their trips in the previous six months to June 2003, 2004, 2006 and 2008.

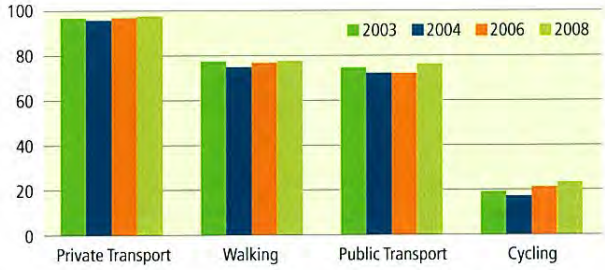

Figure 105: Transport modes used for any trips over the six months to June (%), Wellington region. Source: GWRC transport perceptions surveys

Interpretation: Ninety-eight percent of respondents in 2008 said they had made trips in the previous six months by private transport, 78% by walking and 76% by public transport. Cycling trips represented 23% of trips in 2008.

Comment: An increase was shown for all modes in 2006 and 2008. Private transport remains the main travel mode of choice for the Wellington region. There is a high level of use of public transport and of trips made by walking. Cycling as the travel mode of choice is increasing in popularity.

Inter-regional passenger movements

Definition: The graph shows a passenger movement index. Figures relate to numbers of people crossing regional boundaries by air, sea (inter-island ferries only), rail or road. Buses are excluded as information is unavailable. Because some data is commercially confidential, absolute numbers are not given.

Some double counting of passenger movements will be included (e.g. passengers may arrive in the region by car and leave by ferry). An average vehicle occupancy factor of 1.7 has been applied to road traffic counts.

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.

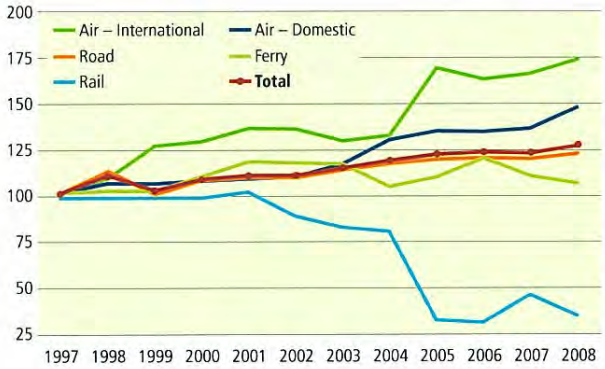

Figure 106: Inter-regional passenger movements. 1997 = 100. Sources: Wellington International Airport; KiwiRail; Strait Shipping; Transit New Zealand

Note: Air passenger figures refer to year ended March. Rail passengers include The Overlander and Northerner services until November 2004 when The Northerner rail service ceased operation. Passengers by road refer to the previous calendar year. The Interislander Lynx service terminated in May 2005.

Table 12 shows absolute numbers of travellers. Figures for the inter-island ferries (operated by Strait Shipping and KiwiRail) and inter-regional passenger trains (operated by KiwiRail) have been omitted to protect commercial confidentiality.

Mode	Number of persons (million)
Air – domestic	4.4
Air – international	0.6
Rail	Not available
Ferry	Not available
Road (except buses)	11.3

Table 12: Number of inter-regional passengers by mode. Sources: Wellington International Airport; Transit New Zealand

Note: Air = April 2007 – March 2008; Road = 2007 calendar year.

Interpretation: Domestic and international air passenger movements have increased by 9% and 5% respectively in 2008. Since 1997, domestic passenger numbers have almost doubled and 75% growth in international passengers is shown.

Inter-regional rail passenger numbers decreased by 26% in 2008. A marked decrease in patronage of 63% was shown between 2004 and 2006, coinciding with the Northerner ceasing operation in 2005.

Appendix 2 - Regional travel demand

Ferry patronage declined for a second year, and dropped by over 4% in 2008. Passenger numbers by road increased almost 3% in 2008 but have remained relatively static since 2005.

Comments: Road-based travel is vital to the region and continues to be the dominant land transport mode for inter-regional passenger movements. Travel both to other New Zealand destinations and overseas via Wellington International Airport is proving to be a growth area and domestic air travel is the region's second largest passenger mover.

Overall, there is steady growth in passenger movements averaging 2.6 % per annum since 1997.

State highway traffic volumes

Definition: The graphs show annual average daily traffic (AADT) volumes derived from automatic counters operating on each road section over a calendar year. The overall traffic volume at all monitored sites in the region is shown, followed by traffic volumes in the western and eastern parts of the region.

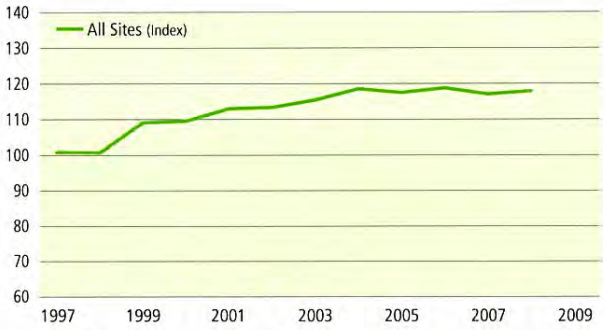

Figure 107: Annual average daily traffic volumes, all sites. Index: 1997 = 100. Calendar year. Source: Transit New Zealand

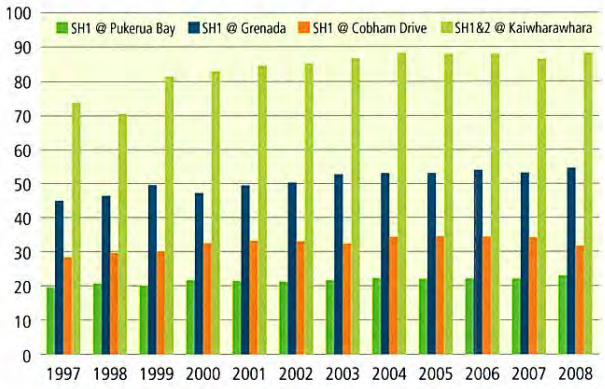

Figure 108: State highway annual average daily traffic volumes (000), western region. Calendar year. Source: Transit New Zealand

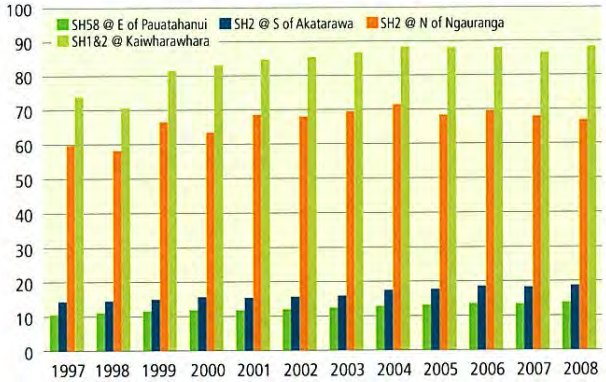

Figure 109: State highway annual average daily traffic volumes (000), eastern region. Calendar year. Source: Transit New Zealand

Interpretation: Fairly strong growth in traffic volumes was shown from 1997 to 2004 at 19%. Since that time the annual average has stabilised.

Comment: Results should be interpreted with care as many vehicles are counted several times depending on their route through the network. Counts record only vehicles on the network; vehicle trips that are avoided because of perceived congestion cannot be quantified.

State highway hourly traffic profiles: Ngauranga

Definition: The graph shows hourly traffic flow distribution on State Highway 1 and State Highway 2 at Ngauranga over the course of an average weekday, Saturday and Sunday, in March and October 2007.

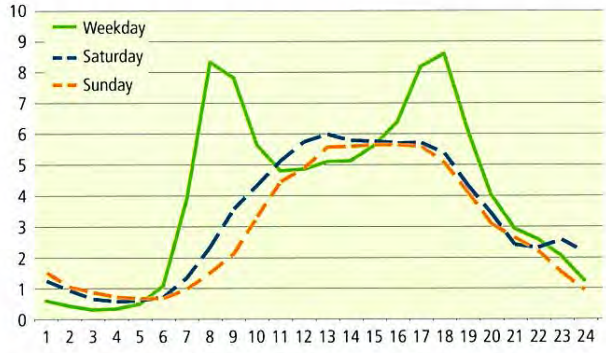

Figure 110: Average hourly traffic volumes at Ngauranga (000), combined directions. Weekday, Saturday and Sunday, 2007. Source: Transit New Zealand

Appendix 2 - Regional travel demand

Interpretation: The weekend profiles show a single broad peak occurring across the middle of the day with Sunday's profile slightly narrower than that of Saturday. This analysis uses combined two-way traffic volumes. Directional volumes would show more pronounced peaks especially in the direction of commuter traffic volumes. Peak weekday hourly volumes are approximately 40% higher than peak weekend hourly volumes.

Comment: Comparison with peak weekday hourly volumes shows that capacity is not an issue at Ngauranga on the weekend.

Definition: The graph 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, 2003 and 2007.

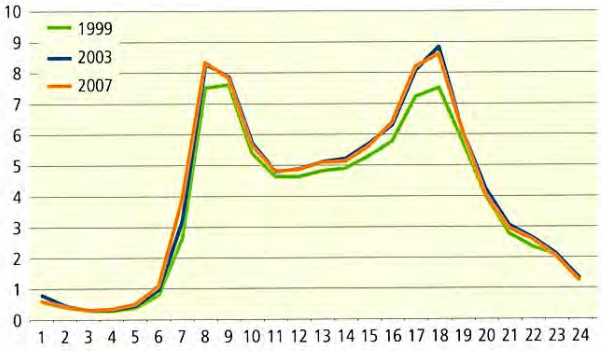

Fig 111: Average weekday hourly traffic volumes at Ngauranga (000), combined directions. 1999, 2003 and 2006. Source: Transit New Zealand

Interpretation: The three profiles have the same overall shape. The 2007 profile is almost identical to that shown for 2003 and has markedly higher peaks than in 1999.

Morning peak traffic at Ngauranga builds up rapidly as is shown by the sharply increasing profile between 6.00am and 8.00am. The lowest volume of traffic during the day at Ngauranga is experienced at 11.00am and the increase shown between 2.00pm and 4.00pm is possibly attributable to the end of the school day and flexible or part time working hours.

The afternoon peak occurs from 4.00pm until 6.00pm 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.

Comment: The PM peak spread which occurred between 1999 and 2003 has not continued in 2007. Higher fuel prices may be contributing to the stability in morning and evening commuter peaks and hence, hourly traffic volumes in 2007 compared with 2003.

State highway vehicle kilometres travelled

Definition: The graph shows information that Transit New Zealand gathers from traffic counters to determine total annual vehicle kilometres travelled (VKT) on each section of regional state highway. Information for 2002 and 2003 is indicative only and should not be compared with data for subsequent years.

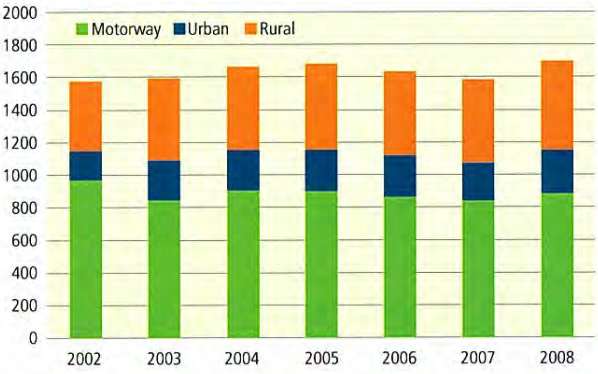

Figure 112: State highway VKT (M). Source: Transit New Zealand

Interpretation: VKT on the state highway network increased by over 7% in total and across each classification in 2008.

Total VKT has risen to the highest level since 2002. The composition per highway class differs with 9% less kilometres travelled on motorways in 2008 than in 2002; and almost 50% and 28% more on urban and rural highways retrospectively.

Table 13 shows that over half of state highway VKT is occurring on the motorway system.

Class	State highway network 2008	
	Percentage of network length	Percentage of VKT
Motorway	24	52
Urban	17	16
Rural	59	32
Region	**100**	**100**

Table 13: State highway network characteristics, Wellington region, 2008. Source: Transit New Zealand

Appendix 2 - Regional travel demand

Comments: State highway network loadings vary widely by location. Rural requirements are very different from those of a city. Continued monitoring is needed to ensure state highway network components give the best service possible within topographical and financial constraints.

Strategic road network level of service

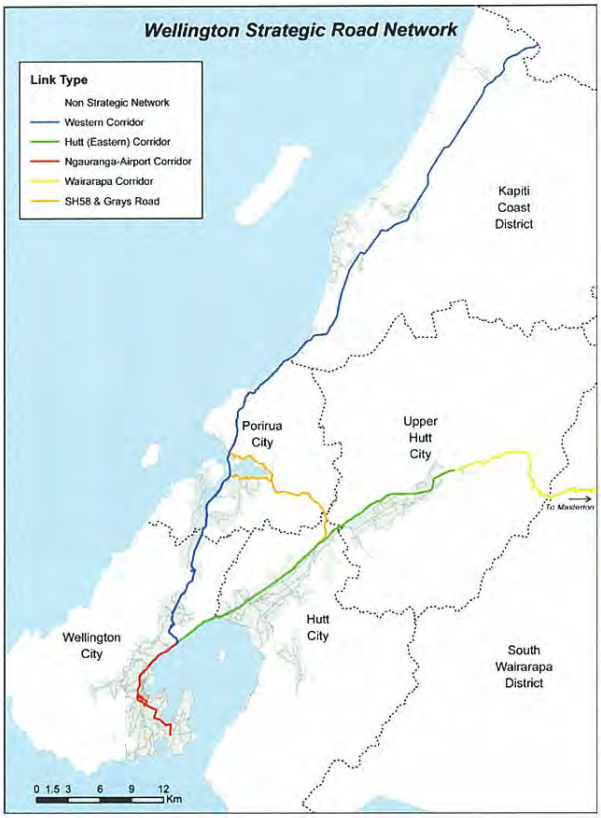

Figure 113: Wellington region strategic road network, 2006. Source: GWRC

Definition: The graph shows vehicle hours segmented by condition of travel (congested, interrupted, freeflow) and vehicle kilometres travelled, operating during the AM peak period. This indicates the level of service for the 2006 strategic roading network of the Wellington region, as illustrated in the map. The strategic roading network is defined by the following corridors: Western; Hutt; Ngauranga – Aiport; Wairarapa; and State Highway 58 and Grays Road.

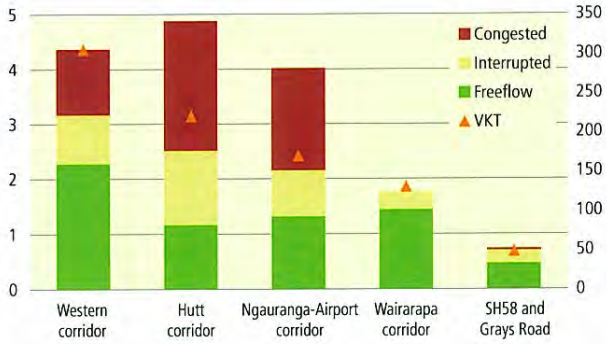

Figure 114: Roading strategic network level of service, 2006. Y-axis: LHS = vehicle hours (000s); RHS = VKT (000s). Source: GWRC Wellington Transport Strategic Model

Interpretation: The Western corridor strategic network has the highest vehicle usage of all the corridors, as shown by the highest VKT value (a combination of high volumes and long average distances). The Hutt corridor however has higher total travel times due to higher levels of congestion than the Western corridor. The Ngauranga – Airport corridor has lower total usage than both the Western and Hutt corridors due primarily to the shorter definition of the corridor, but has total travel times comparable with the Western corridor, indicating the higher overall levels of congestion. Congestion is less of an issue for the Wairarapa and State Highway 58 corridors.

Comments: The Hutt and Ngauranga – Airport corridors are the most congested in the region. Total distance travelled within the Western strategic network is higher than other corridors.

Work from home

Definition: The graph shows the percentage of people in employment who worked from home on census day. A breakdown by district throughout the region is given. Census information is collected five-yearly and this indicator will next be updated in 2012.

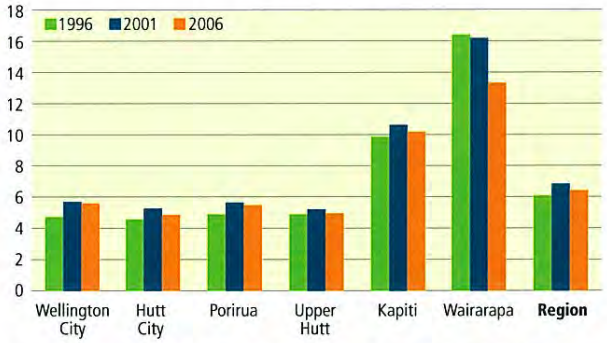

Figure 115: People working, who work at home (%), by district. Source: Statistics New Zealand

Appendix 2 - Regional travel demand

Interpretation: The percentage of those working from home showed a decrease in all districts in 2006. This contrasts with the increase from 1996 levels across the region (except Wairarapa) shown by the 2001 census.

Comments: The 2006 result of less people working at home does not correlate with technological advances that should make it easier for people to do so. An increased uptake of technology allowing work from home or teleworking for at least one day each week will reduce peak period traffic demands on the region's transport network.

CBD parking supply: regional centres

Definition: The graph shows parking supply in regional city centres from a March 2003 report commissioned by GWRC and as supplied by the region's Territorial Authorities in 2008. Both public and private carpark numbers are given. The data is only indicative of parking supply in the region.

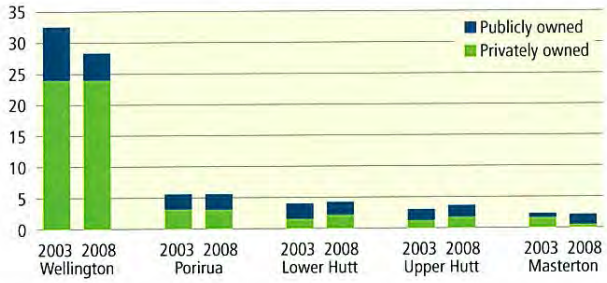

Figure 116: Parking supply by city centre (000), Wellington region. Sources: Wellington Regional Parking Study, Booz Allen Hamilton (2003); Territorial Authorities (2008)

Interpretation: Wellington City has the largest number of carparks in the region with a total of over 28,000 of which approximately 24,000 are privately owned. Parking supply in Porirua is the next most abundant and other city centres have less than 5,000 parking spaces.

Comments: The availability and cost of city centre parking are factors considered by residents when deciding on the mode of travel to work, for shopping or leisure.

Perceptions of parking supply: Wellington CBD

Definition: The graph indicates what people thought about the availability of car parking in the Wellington CBD in 2003, 2004, 2006 and 2008.

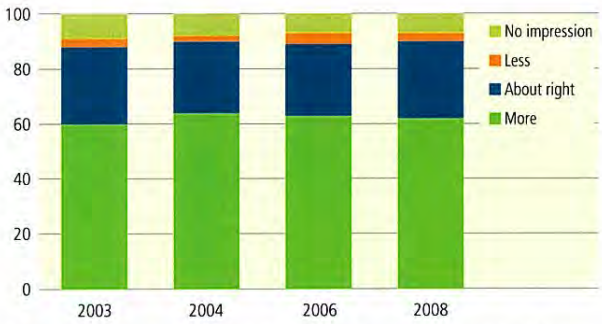

Figure 117: Perceptions of Wellington CBD parking supply (%). Source: GWRC transport perceptions surveys

Interpretation: Some 62% of respondents in 2008 thought there should be more car parks in Wellington (c.f. 63% in 2006). Twenty-eight percent thought the number was about right, (c.f. 26% in 2006). Only 3% thought there should be fewer car parks in Wellington CBD (c.f. 4% in 2006).

Comments: These results remain relatively unchanged since 2004. Almost two-thirds of respondents thought that the parking supply in the Wellington CBD was inadequate.

Perceptions of parking prices: Wellington CBD

Definition: The graph shows what people thought about the cost of car parking in the Wellington CBD in 2003, 2004, 2006 and 2008.

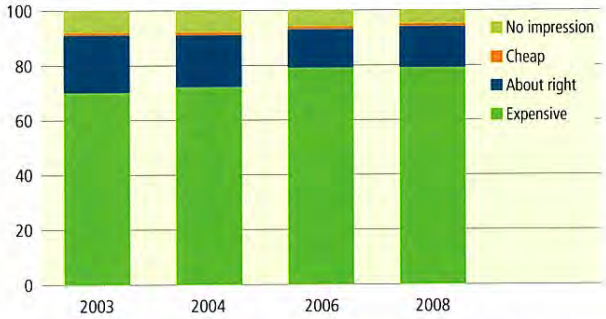

Figure 118: Perceptions of Wellington CBD parking pricing (%). Source: GWRC transport perceptions surveys

Interpretation: The graph shows that 79% of people in 2008 thought the cost to park in Wellington CBD was expensive (the same result as in 2006). Fifteen percent thought the cost was about right (c.f. 14% in 2006) and only 1% thought it was cheap as they have since the survey began.

Comments: Parking pricing is one method of deterring people from driving into city centres. Over three-quarters of people thought parking was expensive which demonstrates a level of parking constraint operating in the Wellington CBD.

Conclusion

The main routes to and from the region, State Highway 1 and State Highway 2, account for around two-thirds of passenger movements across the regional boundary. State Highway 1 accounts for over 80% of total movements, highlighting its national importance.

Demand for passenger movement to and from the region is expected to grow steadily in future years. The predominance of road-based travel requires reliable connections, particularly the State Highway 1 corridor to the north of Wellington. The reduced inter-regional passenger rail service is likely to be causing increased demand on the State Highway network.

Passenger rail travel plays a small part in inter-regional passenger movements, with the single remaining long-distance service being the daytime Overlander train to and from Auckland. The Northerner night-time train ceased service in November 2004. The Bay Express service to Napier was also discontinued in 2001. Rail passenger movements have declined steadily in accordance with discontinued services. The current Capital Connection to and from Palmerston North is essentially a commuter service and is not included.

Take-up rates of home and teleworking should be increasing (although this was not shown in 2006) as changes in technology and lifestyle allow. Depending on level of uptake, this is likely to have only a marginal effect on regional travel demands.

Glossary

000	Thousand
AADT	Annual average daily traffic
AMR	Annual Monitoring Report
ARC	Auckland Regional Council
CBD	Central business district
cc	Cubic centimetre
CDC	Carterton District Council
c.f.	Compared with
CO	Carbon monoxide
CO_2	Carbon dioxide
dB(A)	Decibel (A-weighted)
ECan	Environment Canterbury
EMU	Electric multiple units
FEPI	Farm Expenses Price Index
Golden Mile	Lambton Interchange to Courtenay Place
GIS	Geographical information system
GWRC	Greater Wellington Regional Council
HCC	Hutt City Council
KCDC	Kapiti Coast District Council
Km/h	Kilometres per hour
L_{eq}	Time-averaged sound level
LOS	Level of service
LTCCP	Long-term Community Council Plan
LTCCP Target	GWRC LTCCP target to 2016
LTMA 2003	Land Transport Management Act 2003
LTMAA 2008	Land Transport Management Amendment Act 2008
LTNZ	Land Transport New Zealand
M	Million
Metlink	Greater Wellington's public transport network
MDC	Masterton District Council
mins	Minutes
MOT	Ministry of Transport
NES	National Environmental Standard
NIMT	North Island Main Trunk line
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides
NZTA	New Zealand Transport Agency
PCC	Porirua City Council
PM_{10}	Particulate matter
Police	New Zealand Police
RCA	Road Controlling Authority
RHS	Right hand side
RLTS	Regional Land Transport Strategy
RTC	Regional Transport Committee
SDI	Social deprivation index
SH	State highway
SWDC	South Wairarapa District Council
TDM	Travel demand management
TOD	Transit-Oriented Development/ Design
UHCC	Upper Hutt City Council
VFEM	Vehicle Fleet Emissions Model
VKT	Vehicle kilometres travelled
WAI	Wairarapa
WCC	Wellington City Council
WRS	Wellington Regional Strategy
WTSM	Wellington Transport Strategy Model

Water, air, earth and energy – elements in Greater Wellington's logo combine to create and sustain life. Greater Wellington promotes **Quality for Life** by ensuring our environment is protected while meeting the economic, cultural and social needs of the community

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Published October 2008
GW/TSD-G-08/155

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