Wellington's Regional Land Transport Plan
Working Paper 5 – Targets Development

Data & Analysis Team
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1. Introduction

1.1 Policy context for RLTP working papers

The Regional Land Transport Programme represents the Wellington region’s bid for funding from the National Land Transport Fund (NLTF) which is administered by the New Zealand Transport Agency (NZTA). The current Regional Land Transport Programme, covering the period 2012 to 2015, reflects both the national direction provided in the Government Policy Statement on Land Transport Funding 2012/13-2021/22 (GPS) – which includes a focus on economic growth and productivity, value for money and road safety – and the Wellington region’s priorities and outcomes in the Regional Land Transport Strategy (RLTS).

From 1 July 2015, the Land Transport Management Act (2013) requires that the RLTS and Regional Land Transport Programme be consolidated into a new planning document called the Regional Land Transport Plan (RLTP). The Wellington Regional Transport Committee is developing the new RLTP to be adopted in April 2015. The RLTP will set out the region’s land transport objectives, policies, measures and targets for at least 10 years, i.e. for the period 2015 to 2025 (with a view to the strategic approach for development of the land transport network over the longer term, of up to 30 years). The RLTP will identify the transport activities for funding in the short term (up to six years) and the regional priority to be given to these projects.

As shown in Figure 1, the RLTP will address the challenges facing the region in terms of its transport network, relating to four key areas – economic growth, safety, resilience and liveability. The figure shows the benefits associated with addressing the challenges, then these feed into a list of eight key objectives and associated outcomes. How these outcomes are measured, and the targets relating to the objectives, are the focus of this set of RLTP working papers.

The new RLTP needs to reflect changes to the purpose and decision-making criteria in the Land Transport Management Act (LTMA) with a new focus on aiming for an ‘effective, efficient, and safe’ transport network and to reset targets out to 2025 (the targets are out to 2020 for the existing RLTS). It is therefore timely to review the region’s outcomes and targets to ensure that they are relevant and measurable.

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1 Note that funding is not guaranteed for all projects included in the RLTP. Final decisions regarding funding are taken by the NZTA.
2 The Regional Transport Committee comprises Greater Wellington Regional Council (GWRC), the city and district councils in the Wellington region, and NZTA.
3 Definitions of these terms may be found at GWRC (2015): Regional Land Transport Plan 2015 (for consultation), p.141.
### 1.2 Overview of RLTP working papers

In order to inform the RLTP policy framework, a series of five working papers have been developed. There is a set of measures and targets associated with the RLTS for 2010-2040. The RLTP for 2015 will also contain a comparable set of measures and targets, but with changing circumstances and patterns of behaviour, and developments in the region since the last set were established, some revision is appropriate.

The five working papers start with a review of the current situation for the Wellington regional transport network, look at trends and influences in recent years; pressures and issues relating to the region’s transport network; and arrive at a revised set of targets and measures for the RLTP, informed by modelling and by actual trends.
The five working papers, of which this is the fifth, are as follows:

This paper begins the process of transition from RLTS to RLTP by reviewing the region’s land transport outcomes and associated targets which are determined by the strategic objectives for the region. The paper focuses on whether the targets are relevant, measurable and achievable, and the extent to which the work carried out by the Greater Wellington Regional Council can influence progress towards achieving these targets. The purpose of this paper is to provide information to guide the development of SMART targets – specific, measurable, achievable, realistic and time-bound – for the 2015 RLTP, which will cover the period 2015 to 2025.

**Working Paper 2: Background Trends and Issues**
This paper summarises demographic and transport-related trends over the last 10 to 20 years, suggests how these trends might develop in the short to medium term and the implications that this might have for future travel demand and the transport system. It arrives at a summary of trends and issues affecting the region’s transport network and identifies areas where future travel demand growth may occur. The purpose of this paper is to provide an evidence base for the development of an ‘expected future’ scenario that will be used to inform the development of RLTP targets.

**Working Paper 3: Transport Modelling Approach**
Drawing upon information presented in Working paper 2, this paper outlines the infrastructure, land use and economic assumptions that form the basis for the development and modelling of a number of future scenarios in the Wellington Transport Strategy Model (WTSM). This paper provides a description of the scenarios that are modelled in the WTSM. The modelling produces an ‘expected future’ for the Wellington region’s transport network, and a range of alternative scenarios as key assumptions are varied. The scenario results are analysed in Working paper 4.

**Working Paper 4: Development of Future Scenarios**
This paper presents the results from the WTSM scenarios modelling in Working paper 3 and outlines how the different future scenarios that are modelled result in different travel patterns. The modelled impacts of the scenarios are compared according to key performance indicators. The results of ‘revised future’ modelling are presented with revisions to two central expected future assumptions based on 2014 policy decisions. Drawing upon the modelling and information presented in the background paper, the ‘expected future’ scenario is developed further, and this is the expected future that forms the basis for the development of the RLTP targets.

**Working Paper 5: Targets Development**
This final working paper brings together the analysis from the first four working papers to produce a revised set of targets and measures for the RLTP. The purpose of this paper is to outline and provide rationale behind a set of targets that are considered challenging, yet achievable, and will help the region make progress towards a range of strategic objectives and outcomes.
A glossary of terms for the five working papers is provided as a separate document.

1.3 Outline of this working paper

This working paper is structured as follows.

Section 2 provides an overview of the measures contained within the RLTP, and the framework within which they sit, i.e. with regard to the strategic objectives and desired outcomes that they relate to. The measures are similar to those in the RLTS, with some revisions as shown. Targets in the RLTP will be set with reference to these measures.

Section 3 summarises the expected and alternative future scenarios and shows how they form the basis for challenging and stretch targets.

Section 4 summarises the structure with which each objective, outcome, measure and target is covered in sections 5 to 12 of this document.

Sections 5 to 12 present each of the eight objectives in turn, outlining the strategic objectives, outcomes, measures and recommended targets.

Section 13 concludes this working paper and this series of five working papers that together provide the background analysis and revised targets and measures for the RLTP.
2. Policy framework linking problems through to policy outcomes sought and the development of targets

This section builds on the framework presented in figure 1 which links the key problems identified for the region’s transport network through to the policy objectives, and the measures and targets for those measures that logically follow, and form the target elements of the RLTP.

Figure 1 shows the four problem areas that have been identified as the key problems that the region faces, relating to:

- economic growth
- safety
- resilience
- liveability

The framework for tackling these problems is as follows:

- The benefits that will be generated by addressing each of the problems are identified which provides the rationale for enacting policy.
- A number of strategic objectives have been developed in order to help deliver the improvements that are required in order to generate those benefits.
- For each objective, a series of outcomes are sought that each provide a means of focusing efforts towards the goal of achieving the objectives.
- For each outcome sought, a measure (or series of measures) will be used to gauge progress that is being made towards the desired outcomes and objectives.
- Each measure has a starting value and a target.

This working paper focuses on the measures and targets that will be used to assess progress that is made towards the stated outcomes and objectives. These measures and targets have been developed on the basis of the other four RLTP working papers, transport modelling and internal discussions within the Greater Wellington Regional Council (GWRC) and through the involvement of the Transport Advisory Group (TAG), the Regional Transport Committee (RTC) and targeted key stakeholder consultation.

Table 1 sets out the outcomes sought and measures to be used in the RLTP, for each of the strategic objectives outlined in Figure 1. The measures are generally similar to those used in the RLTS, with some revisions according to data availability and/or uses/interpretation of the data.
<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective: A high quality, reliable public transport network</td>
<td></td>
</tr>
<tr>
<td>Increased public transport use</td>
<td>Annual public transport boardings per capita</td>
</tr>
<tr>
<td></td>
<td>Public transport mode share of journey-to-work trips (census)</td>
</tr>
<tr>
<td></td>
<td>Public transport mode share of trips crossing Wellington City CBD cordon (AM peak)</td>
</tr>
<tr>
<td>Improved public transport accessibility for all</td>
<td>Proportion of population living within 500m of a core bus service or 1km of a railway station</td>
</tr>
<tr>
<td></td>
<td>Proportion of population living within 500m of any bus service or 1km of a railway station</td>
</tr>
<tr>
<td></td>
<td>Accessibility to public transport network for all users</td>
</tr>
<tr>
<td>Improved quality of public transport</td>
<td>Public transport vehicle fleet emissions</td>
</tr>
<tr>
<td></td>
<td>Overall satisfaction with the Wellington region’s public transport system (all modes)</td>
</tr>
<tr>
<td>Improved public transport reliability and journey times</td>
<td>Peak period public transport travel times on core routes</td>
</tr>
<tr>
<td></td>
<td>Peak period bus travel time variability on core routes</td>
</tr>
<tr>
<td></td>
<td>Rail service punctuality (trains arriving at final destination within 5 minutes of scheduled arrival time)</td>
</tr>
<tr>
<td>Objective: A reliable and effective strategic road network</td>
<td></td>
</tr>
<tr>
<td>Reduced severe road congestion</td>
<td>Average peak period travel speeds on selected strategic routes</td>
</tr>
<tr>
<td>Improved reliability of the strategic road network</td>
<td>Average peak period travel speed variability on selected strategic routes</td>
</tr>
<tr>
<td>Objective: An effective network for the movement of freight</td>
<td></td>
</tr>
<tr>
<td>Improved freight efficiency</td>
<td>Average all-day travel speeds on important regional freight routes</td>
</tr>
<tr>
<td></td>
<td>Average all-day travel speed variability on important regional freight routes</td>
</tr>
<tr>
<td>Increased proportion of freight moved by rail</td>
<td>Percentage of long distance freight volumes moved by rail (Ministry of Transport freight demand studies,4 5 yearly)</td>
</tr>
<tr>
<td>Objective: A safe system for all users of the regional transport network</td>
<td></td>
</tr>
<tr>
<td>Improved regional road safety</td>
<td>Killed and seriously injured totals, measured on an annual basis against a 5-year rolling average (CAS data)</td>
</tr>
<tr>
<td></td>
<td>Total casualties on an annual basis against a 5-year rolling average (CAS data)</td>
</tr>
<tr>
<td>Increased safety for pedestrians and cyclists</td>
<td>The number of vulnerable road users (cyclists and pedestrians) killed and seriously injured annually against a 5-year rolling average (CAS data)</td>
</tr>
<tr>
<td>Objective: An increasingly resilient transport network</td>
<td></td>
</tr>
<tr>
<td>Improved transport infrastructure resilience to disruption from unplanned</td>
<td>Proportion of the region covered by an adopted regional risk register</td>
</tr>
<tr>
<td>events</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
</tr>
<tr>
<td>A transport network that supports the restoration of access and regional recovery after a major event</td>
<td>Estimated time to reopen key road connections to and within the region and to key recovery facilities</td>
</tr>
<tr>
<td>Reduced regional economic risk</td>
<td>Proportion of the region covered by an adopted and comprehensive regional restoration and emergency plan</td>
</tr>
<tr>
<td>Objective: A well planned, connected and integrated transport network</td>
<td></td>
</tr>
<tr>
<td>Improved land use and transport integration</td>
<td>Proportion of population living within 500m of any bus service or 1km of a railway station</td>
</tr>
<tr>
<td>Improved integration between transport modes</td>
<td>Number of secure cycle parking spaces at railway stations</td>
</tr>
<tr>
<td>Objective: An attractive and safe walking and cycling network</td>
<td></td>
</tr>
<tr>
<td>Increased mode share for pedestrians and cyclists</td>
<td>Proportion of journey-to-work trips made by walking and cycling (census)</td>
</tr>
<tr>
<td>Increased level of service for pedestrians and cyclists</td>
<td>Proportion of trips crossing Wellington City CBD cordon (AM peak) made by walking/cycling</td>
</tr>
<tr>
<td>Objective: An efficient and optimised transport system that minimises the impact on the environment</td>
<td></td>
</tr>
<tr>
<td>Reduced harmful emissions from transport</td>
<td>Transport-generated emissions (per capita)</td>
</tr>
<tr>
<td>Increased private vehicle occupancy</td>
<td>Transport-generated emissions (absolute)</td>
</tr>
<tr>
<td></td>
<td>Concentrations of harmful transport-generated pollutants</td>
</tr>
</tbody>
</table>

| Objective: An efficient and optimised transport system that minimises the impact on the environment |                                                                 |
| Increased use of active modes for journeys to school                  | Use of active modes in journeys to school at schools participating in the Wellington Region School Travel Plan programme (annual GWRC survey) |
| Improved level of service for pedestrians and cyclists                 | Perceptions of level of service (annual GWRC perceptions survey) |

| Objective: An efficient and optimised transport system that minimises the impact on the environment |                                                                 |
| Reduced harmful emissions from transport                              |                                                                 |
| Increased private vehicle occupancy                                   | Peak period private vehicle occupancy                           |
3. Setting the targets for the measures

The targets for the measures given in Table 1 in section 2 were discussed in WP3 and WP4. Two sets of targets were considered – ‘challenging’ and ‘stretch’ targets. This section defines those sets of targets and relates them to the expected future and alternative future scenarios presented in WP3 and WP4.

3.1 Definitions of challenging and stretch targets

The challenging and stretch targets were derived in WP3 and WP4, the former from the expected future scenario and the latter from the alternative future scenario. The definitions are as follows:

**Challenging targets** – These are largely based upon the expected future scenario. The targets are considered challenging as it is assumed that future infrastructure projects will be delivered on schedule and have the anticipated impact. It is also assumed that expected changes in population, employment and the cost of travel materialise and contribute towards the expected future outcome.

**Stretch targets** – These are based upon an alternative future scenario. The targets are considered stretch targets as they are based on the assumptions of achieving a level of infrastructure development and management of the roading network over and above what is envisaged in the expected future scenario. Compared to the challenging targets the stretch targets would be more difficult to achieve.

3.2 Expected future

The set of outcomes resulting from the expected future scenario, from section 6 of WP4, form the basis for the set of challenging targets. These outcomes are summarised below:

- growth in travel demand between 2013 and 2025 is directly linked to growth in population, i.e. a 7% growth in the region’s population is assumed to result in a 7% increase in trips across all modes
- future growth in trips is forecast to be concentrated in and around Wellington City CBD and along high frequency transport corridors, favouring public transport and active modes
- the active mode share and public transport mode share of trips is forecast to increase, equating to a per capita increase in active mode and public transport trips
- vehicle mode share is forecast to decrease slightly, leading to only a small increase in overall vehicle trips and a slight decline in per capita vehicle trips
- the exact split of growth between public transport, walking and cycling is dependent to a large extent upon the nature and location of residential...
development together with the effective delivery of proposed infrastructure improvements

- improvements to vehicle fuel efficiency will outpace VKT growth, leading to a reduction in both per capita and absolute emissions
- infrastructure investment will deliver improved road travel and public transport travel times

### 3.3 Alternative future

The basis for the stretch targets are detailed below, and are based on the comparison between the alternative future and the expected future scenarios. Compared to the challenging targets listed above, the stretch targets assume the following:

- growth in numbers of car trips is likely to be further restrained due to TDM measures
- the number of active mode and public transport trips, together with their respective modal share, will increase at a faster rate
- improvements to road travel and, particularly, public transport travel times, will be greater
- growth in travel demand is likely to favour public transport and active modes to a greater extent
- vehicle fuel efficiency improvements and the corresponding decrease in transport-generated emissions will be more pronounced
4. Presentation of targets

This section outlines the structure of sections 5 to 12 that present the eight strategic objectives, along with the related outcomes sought, the measures for each outcome, and the targets relating to each of the strategic objectives.

In all cases, the challenge target is the recommended target. However, where the targets are measurable and quantifiable, both challenging and stretch targets are presented, together with rationale. Where the targets refer to continuous improvement, only one target is provided.

The sections are structured as follows:

- **objectives**: each section focuses on each of the eight RLTP strategic objectives, as detailed in Figure 1 and Table 1
- **outcomes**: under each objective the desired outcomes are listed
- **measures**: for each outcome, the measures against which progress will be assessed are stated
- **background**: a short summary of the background information and context relating to each measure is provided
- **recent trends**: recent trends relating to the measure are outlined
- **factors influencing future trends**: the main factors that are likely to influence future trends are outlined
- **target**: for each measure, the baseline is summarised, a likely future trend is outlined together with the challenging target and, if applicable, the stretch target is also presented

Note that in most instances the baseline year for the measurement of progress towards targets is 2013, as this is the most recent year for which a complete set of data were available. In some instances, however, 2012 or 2014 is used as the baseline, according to data availability.

As the RLTP covers the region’s land transport objectives for the period 2015 to 2025, the targets are aligned to a reference year of 2025.

5. Objective: A high quality, reliable public transport network

5.1 Outcome 1 of 4: Increased public transport use

5.1.1 Measure 1 of 3: Annual public transport boardings per capita

Background

The number of public transport boardings per capita is an indicator of the attractiveness of travelling by public transport.
It is calculated by dividing the total number of regional public transport boardings per year by the population. An increase in per capita boardings suggests that public transport is becoming more attractive, with patronage growth rates exceeding underlying population growth rates.

It is a useful indicator as it allows for the attractiveness and popularity of travelling by public transport to be compared across cities and regions of different shapes, sizes and characteristics.

**Recent trends**

Public transport boardings per capita rose between 2001 and 2006, indicating that the attractiveness of public transport increased during this period. Between 2006 and 2011, boardings per capita decreased slightly, potentially due to a number of factors such as the global financial crisis and a tendency for people to travel less.

Compared to other conurbations within Australasia, Wellington has a high number of public transport boardings per capita\(^5\), highlighting the attractiveness of public transport as a means of transport across the region.

**Factors influencing future trends**

Public transport boardings per capita are forecast to increase out to 2025 under the 'expected future' scenario, a result of ongoing investment in the rail network, integrated ticketing, the proposed Bus Rapid Transit (BRT) network, other additional bus priority measures and the likelihood that the location of future residential development will favour active modes and public transport.

This forecast increase in public transport boardings per capita is dependent upon a number of assumptions relating to both the phasing of infrastructure projects, location and characteristics of proposed residential developments and the relative cost of travelling by public transport and driving a private vehicle.

The target is based upon a set of assumptions, therefore it is sensitive to changes made to these assumptions and outcomes.

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Target: Increase annual public transport boardings per capita

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased public transport use</td>
<td>Annual public transport boardings per capita</td>
<td>72</td>
<td>Challenge – increase to at least 76</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overall increase from 67 (2001), though slight decline since 2006</td>
<td>Stretch – increase to at least 80</td>
</tr>
</tbody>
</table>

Figure 2 Annual public transport boardings per capita, 2001 to 2025

Challenge – The target is based upon the expected future. The forecast is for a 6% increase in boardings per capita from 72 to 76, which is equivalent to a 15% increase in public transport trips from 35m to 40m between 2013 and 2025.

Stretch – The target is based upon an alternative future that includes enhanced public transport and travel demand management (TDM) measures. The forecast is for a 10% increase in boardings per capita from 72 to 80, which is equivalent to a 25% increase in public transport trips between 2013 and 2025.
Measure 2 of 3: Public transport mode share of journey-to-work trips (census)

**Background**

The New Zealand Census, usually undertaken every five years, provides a comprehensive summary of journey-to-work travel patterns, enabling journey-to-work trips by mode to be calculated across the whole region and compared with data from previous censuses.

Progress towards census-based targets can only be assessed every five years (2018 and 2023 for the purpose of this reporting cycle).

**Recent trends**

In summary, the period between 2001 and 2013 was characterised by very high growth rates in travel by active modes, high growth rates in public transport patronage, and low growth rates in car use (numbers of trips).

The public transport mode share of journey-to-work trips in the Wellington region increased from 15.6% in 2001 to 16.6% in 2013. Given that the regional population increased by 11% over this same period, this increase in public transport mode share is equivalent to a 21% increase in public transport trips between 2001 and 2013.

**Factors influencing future trends**

As outlined under the public transport boardings per capita measure above, public transport patronage is forecast to increase out to 2025 under an expected future scenario, largely as a result of infrastructure investment and the spatial distribution of population growth.

Whilst the Roads of National Significance (RoNS) will deliver capacity and travel time improvements that may benefit people heading into Wellington City CBD at peak times, the existing parking constraints are expected to remain (or worsen) in the future, which will have the effect of limiting the number of car trips to Wellington City CBD, especially at peak times (assuming most people will need to park at some point in their trip).

Given that Wellington City CBD is the major employment hub for the region, and that around 60% of forecast employment growth out to 2025 is likely to occur in Wellington City CBD, an anticipated increase in public transport mode share to Wellington City CBD is likely to drive up the regional public transport mode share of journey-to-work trips.

The expected future, however, is based upon several assumptions including the delivery of major infrastructure projects.

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7 [http://profile.idnz.co.nz/greater-wellington](http://profile.idnz.co.nz/greater-wellington)
**Target:** Increase the public transport mode share of journey-to-work trips (census)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased public transport use</td>
<td>Public transport mode share of journey-to-work trips (census)</td>
<td>16.6% Steady increase from 15.6% (2001)</td>
<td>Challenge – increase to at least 17.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – increase to at least 18.8%</td>
</tr>
</tbody>
</table>

**Figure 3 Public transport mode share of journey-to-work trips, 2001 to 2025**

**Challenge** – The target is based upon the expected future and results in an increase in public transport journey-to-work mode share from 16.6% to 17.8%. This is equivalent to a 15% increase in the number of public transport journey-to-work trips between 2013 and 2025.

**Stretch** – The target is based upon an alternative future including enhanced public transport infrastructure and TDM measures. This results in an increase in public transport mode share from 16.6% to 18.8%, and this is equivalent to a 30% increase in public transport journey-to-work trips.
5.1.2 Measure 3 of 3: Public transport mode share of trips crossing Wellington City CBD cordon (AM peak)

**Background**

The Wellington City CBD cordon survey is undertaken annually in March and captures all trips – walking, cycling, public transport, motor vehicles – crossing a cordon around Wellington City CBD.

This dataset is a good source of information that can be used to identify changes in travel patterns, mode share and patronage through time.

**Recent trends**

Between 2001 and 2013, the public transport mode share of trips crossing the Wellington City CBD cordon (inbound) in the AM peak increased from 28.6% to 33.1%. Given that the regional population grew by 11%\(^9\) over this same period, in absolute terms this equates to a 26% increase in public transport trips crossing the cordon.

This increase can partly be explained by the increases in residential development in Wellington’s inner suburbs and continued parking constraints in the Wellington City CBD. In addition there were also rail infrastructure improvements that resulted in public transport becoming more reliable and attractive, resulting in increased rail patronage and a small increase in the corresponding public transport modal share.

**Factors influencing future trends**

For buses, the key infrastructure projects are the proposed BRT network and the implementation of the new network structure developed through the Wellington City bus review.

For rail, the second tranche of Matangi\(^10\) units is expected to improve the reliability of the rail network and the overall passenger experience.

Combined with continued parking constraints and proposed residential development being focused on suburbs such as Newtown and Kilbirnie and along the ‘growth spine’, it is thought that the expected future will result in a further increase in public transport mode share for travel into Wellington City CBD.

**Target: Increase the public transport mode share of trips crossing the Wellington City CBD cordon (AM peak)**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased</td>
<td>Public transport mode</td>
<td>33.1%</td>
<td>Challenge – increase to at least 34.7%</td>
</tr>
<tr>
<td>public transport use</td>
<td>share of trips crossing Wellington City CBD cordon (AM peak)</td>
<td>Increase from 28.6% (2001)</td>
<td>Stretch – increase to at least 36.7%</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------</td>
<td>-----------------------------</td>
<td>-------------------------------------</td>
</tr>
</tbody>
</table>

Figure 4 Public transport mode share of trips crossing Wellington City CBD cordon, AM peak, 2001 to 2025

**Challenge** – This target is based upon the expected future and results in an increase in public transport mode share from 33.1% to 34.7%, which is equivalent to a 15% increase in public transport journey-to-work trips.

**Stretch** – This target is based upon an alternative future including enhanced public transport and TDM measures. The forecast is for an increase in public transport mode share from 33.1% to 36.7%, which is equivalent to a 30% increase in public transport journey-to-work trips.

*Note: the possibility of obtaining additional data, similar to the Wellington City CBD cordon data, covering other local authority areas to allow for local progress to be monitored outside of census years will actively be explored by GWRC. Ideally, additional data will provide further qualitative and quantitative evidence of travel patterns and modal share across the region.*
5.2 Outcome 2 of 4: Improved public transport accessibility for all

5.2.1 Measure 1 of 3: Percentage of the region’s population living within 500m of a core bus service or 1km of a railway station

Background

This measure looks at the percentage of the region’s population living within 500m walk of a ‘core’ bus service or 1km of a railway station. It is a measure of both public transport coverage and frequency, highlighting accessibility to the all-day public transport network, designed around the principle of core bus services, as envisaged in the Regional Public Transport Plan (RPTP).

Recent trends

Under the existing land transport network in the Wellington region, 41.6% of people lived within 500m of a core bus service or 1km of a railway station in 2013. This proportion increased marginally over the 10-year period from 2003, largely as a result of population growth becoming focused in areas that have greater access to core routes (Wellington City CBD, CBD fringe), rather than being due to whole-scale service reviews and alterations.

Factors influencing future trends

In the future, accessibility to the ‘core’ network should improve due to the following:

- Residential development being largely focused on areas that already have relatively comprehensive coverage and relatively high frequency of public transport services
- Implementation of the new network structure developed through the Wellington City bus review
- Future services reviews that are likely to focus on expanding the operation of an all-day network to cover more parts of the region

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11 Core bus services are defined as high-capacity, frequent, all-day services within urban areas that meet all-day travel demand and reduce congestion on the major transport corridors. They operate at least every 15 minutes during the day, and often more frequently during busy periods. Core bus services are route numbers 1,2,3,11,110,120,130 (Upper Hutt to Petone) and 220.

12 GWRC catchment analysis, 2013
**Target: Increase the percentage of the region’s population living within 500m of a core bus service or 1km of a railway station**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved public transport accessibility for all</td>
<td>Population living within 500m of a core bus service or 1km of a railway station</td>
<td>41.6%</td>
<td>Challenge – improvement towards at least 50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – improvement towards at least 60%</td>
</tr>
</tbody>
</table>

**Challenge** – This target is based on the expected future including the implementation of the new Wellington City bus network and a BRT network, combined with future residential development being focused on suburbs that already have relatively good access to the core public transport network, in terms of coverage and frequency of services.

**Stretch** – This target is based on an alternative future with enhanced public transport levels of service that will further increase the percentage of the region’s population living within 500m of a core bus service.
5.2.2 Measure 2 of 3: Percentage of the region’s population living within 500m of any bus service or 1km of a railway station

Background

This measure looks at the percentage of the region’s population living within 500m walk of any bus service or 1km of a railway station. It is a measure that provides an indication of public transport coverage across the region, regardless of service frequency or level of service.

Recent trends

Under the land transport network existing network, in 2013, 84.9% of people lived within 500m of a core bus service or 1km of a railway station.

This figure increased slightly between 2006 and 2013 from 83.1% to 84.9%, for the same reasons as stated in section 5.2.1, namely recent population growth largely being focused in areas with relatively comprehensive existing public transport network coverage.

Factors influencing future trends

Looking towards the future, the coverage of the public transport network is likely to improve further, largely due to the fact that residential development is likely to be focused on areas that are already relatively well served by public transport, such as Wellington City’s inner suburbs.

Whilst it is possible that bus services could be altered to better serve new subdivisions, this will be dependent upon potential levels of demand creating a business case for network alterations. Should any changes occur it is thought that they would likely be minor and incremental in nature.

Target: Increase the percentage of the region’s population living within 500m of any bus service or 1km of a railway station

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved public transport accessibility for all</td>
<td>Population living within 500m of any bus service or 1km of a railway station</td>
<td>84.9%</td>
<td>Challenge - increase the % of the region’s population living within 500m of any bus service and 1km of any railway station to 88%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch - increase the % of the region’s population living within 500m of any bus service and 1km of any railway station to 92%</td>
</tr>
</tbody>
</table>

Challenge – This target is to increase the percentage of the region’s population living within 500m of any bus service and 1km of a railway station to 88%. This is based on the expected future scenario that includes the implementation
of the new network structure developed through the Wellington City bus review and future residential development focused on suburbs that have relatively comprehensive existing public transport coverage.

**Stretch** – This target is to increase the percentage of the region’s population living within 500m of any bus service and 1km of a railway station to 92%. This is based on an alternative future with enhanced public transport levels of service that will increase the percentage of the region’s population living within 500m of any bus service, with proximity to rail stations remaining the same as under the stretch target.
5.2.3 Measure 2 of 2: Accessibility to the public transport network for all users

Background

A public transport network should be accessible to all users. The key element of accessibility is the proximity of the users to the network – this is covered in the measures above (sections 5.2.1 and 5.2.2). The other key elements of accessibility relate to the provision of information, facilities, infrastructure and services.

The Wellington RPTP lists five policy areas against which actions to improve accessibility to the public transport network are listed. These policy areas relate to student transport, community transport, Total Mobility services, safety and standards of vehicles, infrastructure and facilities.

The focus areas of the target outlined here are:

- current standards of vehicle
- infrastructure
- parking and facilities

Improving the quality of public transport infrastructure (i.e. vehicle quality and fleet accessibility) and facilities (i.e. stations, stops, interchanges) will make public transport more attractive and more accessible for all users, including the transport disadvantaged.

Recent trends

In the period between 2010 and 2014 the following have improved both the public transport user experience and accessibility to public transport services:

- the rolling programme of railway station upgrades
- the roll-out of real time passenger information (RTPI) systems across the whole public transport network
- new stop totems along the Golden Mile and targeted upgrades for other bus stops
- the increasing ability to access timetable information via the internet and mobile devices

13 http://www.gw.govt.nz/assets/Transport/Regional-transport/RPTP/WGNDOCS-1386111-v1-FinalRPTPdocWEBversion.PDF, p. 70
Factors influencing future trends
Over the six year period between 2014 and 2020, $28.2 million\textsuperscript{14} is projected to be spent on rail infrastructure improvements (stations, car parks) and a further $7.7 million on bus and ferry shelter improvement projects.

This anticipated progress will be measured annually looking at the following areas:

- improved physical accessibility to the bus network – access to stops, standing pads, seated waiting areas
- improvements to station facilities and physical accessibility to the rail network, including drop-off areas and parking facilities
- improvements to vehicle standards across both the bus and rail fleets

Target: Improved accessibility to the public transport network for all users

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved public transport accessibility for all</td>
<td>Accessibility to the public transport network for all users</td>
<td>2013 standards of vehicle, parking and facilities, as captured by the RPTP and Rail Asset Management Plan</td>
<td>Challenge – continual improvement in physical accessibility and standards of vehicles, infrastructure, parking and facilities</td>
</tr>
</tbody>
</table>

Challenge – This target is for continual improvement in accessibility and standards of public transport vehicles, delivering improved vehicle standards across both the bus and rail fleets, plus improved facilities at rail stations, bus stops and bus interchanges, assuming expenditure as outlined in the RPTP occurs.

\textsuperscript{14} http://www.qw.govt.nz/assets/Transport/Regional-transport/RPTP/WGNDOCS-1386111-v1-FinalRPTPdocWEBversion.PDF, p. 81
5.3 Outcome 3 of 4: Improved quality of public transport

5.3.1 Measure 1 of 2: Public transport vehicle fleet emissions

**Background**

GWRC, working with its regional partners, aims to generate health and well-being benefits by striving to continually reduce transport-generated emissions.

Whilst private vehicles and heavy commercial vehicles account for over 97% of trips on the road\(^\text{15}\) and produce the majority of vehicle emissions, GWRC’s ability to influence behaviour and impact upon emissions for these road users is limited and largely reliant upon government policy and market forces.

GWRC can, however, influence the future shape of the bus fleet for the region and contribute towards reducing vehicle fleet emissions. This is the focus of this measure.

**Recent trends**

Wellington’s bus fleet, at the time of writing, comprised a range of vehicle types of differing ages/emissions standards, ranging from trolley buses to older diesels (Euro I category), newer diesels (Euro III) and the newest diesels (Euro IV).

**Figure 5**, taken from a report prepared for GWRC by PwC\(^\text{16}\), shows emissions per kilometre by bus type (Euro standard).

![Figure 5 Total emissions per km by Euro standard](image)

When combined with the fleet mix in 2014\(^\text{17}\), average total emissions equated to 24g/km.\(^\text{18}\)

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\(^{15}\) Wellington Transport Strategy Model (WTSM), 2013


\(^{17}\) Wellington Transport Strategy Model (WTSM), 2013

Factors influencing future trends

Looking towards the future, the following influences are of key importance:

- buses leaving the fleet are expected to be replaced by vehicles with emissions standards equal or better than current Euro V/VI standards
- some buses in the fleet may be converted to produce lower emissions, thus extending their design life\(^9\)
- new technologies – hybrid vehicles, electric vehicles – are expected to become more affordable and thus such vehicles may be become integrated into the bus fleet
- higher capacity buses (as proposed in the BRT programme) might reduce the number of vehicles in the fleet, resulting in an further decrease in vehicle emissions

Looking at the potential future fleet composition, at least a 50\% reduction in fleet emissions between 2014 and 2025 is considered realistic yet challenging.

Such a reduction would broadly equate to a vehicle fleet in 2025 comprising the most efficient diesel vehicles available in 2014 (Euro V/VI) and a number of hybrid/electric vehicles.

**Target: Reduction in vehicle fleet emissions**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2014)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved quality of public transport</td>
<td>Public transport vehicle fleet emissions</td>
<td>Total emissions 24g/km</td>
<td>Challenge – at least a 50% reduction by 2025</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – at least a 75% reduction by 2025</td>
</tr>
</tbody>
</table>

**Challenge** – This target is based on the expected future scenario where at least a 50\% reduction in vehicle fleet emissions is achieved by 2025, driven by the likely replacement of older diesel vehicles with new, more fuel efficient vehicles including a small number of hybrid/electric vehicles.

**Stretch** – This target is based on an alternative future scenario where accelerated investment in public transport vehicles would deliver a 75\% reduction in vehicle fleet emissions by 2025, driven by a wholesale shift from diesel to hybrid and electric vehicles even before the fleet of Euro V vehicles have reached the end of their serviceable life.

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18 Assumes even fleet utilisation (measured in kilometres travelled per annum). Whilst approximate this assumption is considered appropriate as a means of estimating vehicle fleet emissions and providing a benchmark against which future fleet emissions can be estimated. Assumes zero emissions for trolley buses.
19 Euro I standard vehicle engines can be converted to run on a mix of fuel and water, reducing emissions to a level comparable to Euro IV standards. In some instances such a process could extend the lifespan of a Euro I vehicle and thus delay its retirement from the fleet.
5.3.2 Measure 2 of 2: Overall satisfaction with the Wellington region’s public transport system (all modes)

**Background**

Overall satisfaction with the public transport system is measured annually by the GWRC Public Transport Customer Satisfaction Survey. The most recent (2014) survey has been updated and revised to align with NZTA’s customer satisfaction survey guidelines and provide comparability with surveys undertaken elsewhere in New Zealand.

**Recent trends**

Overall satisfaction\(^{20}\) with the public transport network was 83% in 2014, as taken from the GWRC ‘Annual Public Transport Satisfaction Monitor 2014 Report’\(^{21}\). As this was the first year of a slightly altered survey, no directly comparable data are available for earlier years.

Broad trends from the previous surveys, albeit with a slightly different set of questions and emphasis, suggest that customer satisfaction levels increased slightly between 2010 and 2014, largely as a result of the rail rolling stock improvements (introduction of new Matangi trains) and rail infrastructure investment (improvements along Kapiti and Johnsonville lines).

**Factors influencing future trends**

Future trends are likely to be influenced by fleet renewal, travel time improvements (a result of infrastructure projects such as double tracking, signalling improvements and improvements to line speed and alignment) and improved station/stop facilities (i.e. refurbishment of station waiting facilities, lighting improvements).

Given the level of public transport investment planned for the region out to 2025\(^{22}\), a target of increasing overall satisfaction to 90% (from 83% in 2014) is considered challenging yet achievable.

**Target: Improvement in the overall satisfaction with the region’s public transport system (all modes)**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved quality of public transport</td>
<td>Overall satisfaction with Wellington region’s public transport system (all modes)</td>
<td>83% (2014)</td>
<td>Challenge – increase to at least 90%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – increase to at least 95%</td>
</tr>
</tbody>
</table>

\(^{20}\) Includes all aspects of a public transport journey – stop, vehicles, journey time, information – across all modes – bus, rail and ferry.


\(^{22}\) http://www.gw.govt.nz/assets/Transport/Public-transport/Train-docs/WellingtonRegionalRailPlan2010-2035.pdf
Challenge – This target is contingent upon delivery of infrastructure and fleet renewal projects associated with the expected future.

Stretch – This target is based on an alternative future and contingent on considerable additional investment in public transport.
5.4 Outcome 4 of 4: Improved public transport reliability and journey times

5.4.1 Measure 1 of 3: Peak period public transport travel times on core routes

**Background**

Improvements to public transport travel times, particularly relative to road travel times, are likely to encourage more people to switch to public transport and improve perceptions of the transport network for existing public transport users.

This measure focuses on average peak period bus travel times across a selection of core routes.

Rail travel times are not included as they are largely fixed (except in the event of an incident) as they are a function of the timetable and line speeds. Over the course of the RLTP (2015 to 2025), rail travel time improvements are likely to be relatively small and generated through timetabling efficiencies rather than major infrastructure improvements.23

**Table 2** shows the core bus routes that are the focus of this measure. Note that IB refers to inbound travel, and OB refers’ to outbound travel.

### Table 2 Core bus routes to be assessed

<table>
<thead>
<tr>
<th>Route start and end points (for inbound journeys in AM peak)</th>
<th>Route number</th>
<th>AM peak</th>
<th>PM peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Island Bay – Wellington Station</td>
<td>1</td>
<td>IB only</td>
<td>OB only</td>
</tr>
<tr>
<td>Karori – Courtenay Place</td>
<td>3</td>
<td>IB only</td>
<td>OB only</td>
</tr>
<tr>
<td>Seatoun – Wellington Station</td>
<td>11</td>
<td>IB only</td>
<td>OB only</td>
</tr>
<tr>
<td>Upper Hutt – Lower Hutt (Queensgate)</td>
<td>110</td>
<td>Towards Lower Hutt</td>
<td>Towards Upper Hutt</td>
</tr>
<tr>
<td>Stokes Valley – Petone Station</td>
<td>120</td>
<td>Towards Petone</td>
<td>Towards Stoke Valley</td>
</tr>
<tr>
<td>Naenae– Petone Station</td>
<td>130</td>
<td>Towards Petone</td>
<td>Towards Naenae</td>
</tr>
<tr>
<td>Ascot Park – Titahi Bay</td>
<td>22024</td>
<td>Towards Titahi Bay</td>
<td>Towards Ascot Park</td>
</tr>
</tbody>
</table>

**Recent trends**

The 2013 average AM peak and PM peak travel are presented in **Table 3** for the selected routes.

The travel times are average end-to-end travel times between the stated origin and destination stops obtained between 3 and 7 March 2014 from the RTPI 23 Rail scenario 1 (RS1) which constitutes the expected future. 24 At the time of writing, no travel time data were available for this route from the RTPI system. These data may become available in future and then be used to monitor ongoing progress towards the recommended target.
database. The data cover services scheduled to arrive at the location shown in red between 7am and 9am (AM peak) or depart from the location shown in red between 4pm to 7pm (PM peak).

An average travel time across all routes is also provided as a means of benchmarking network-wide performance.

Table 3 Core bus route travel times – AM peak (IB) and PM peak (OB), minutes

<table>
<thead>
<tr>
<th>Route start and end points (for inbound journeys in AM peak)</th>
<th>Route numbers</th>
<th>AM peak average travel time (minutes)</th>
<th>PM peak average travel time (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Island Bay – Wellington Station</td>
<td>1</td>
<td>35.0</td>
<td>39.4</td>
</tr>
<tr>
<td>Karori – Courtenay Place</td>
<td>3</td>
<td>32.3</td>
<td>35.2</td>
</tr>
<tr>
<td>Seatoun – Wellington Station</td>
<td>11</td>
<td>47.8</td>
<td>47.9</td>
</tr>
<tr>
<td>Upper Hutt – Lower Hutt (Queensgate)</td>
<td>110</td>
<td>69.8</td>
<td>66.5</td>
</tr>
<tr>
<td>Stokes Valley – Petone Station</td>
<td>120</td>
<td>31.3</td>
<td>33.4</td>
</tr>
<tr>
<td>Naenae – Petone Station</td>
<td>130</td>
<td>38.4</td>
<td>37.6</td>
</tr>
<tr>
<td><strong>Average across all routes</strong></td>
<td></td>
<td><strong>42.4</strong></td>
<td><strong>43.3</strong></td>
</tr>
</tbody>
</table>

The data show that for the Wellington City CBD routes (1, 3 and 11), PM peak outbound travel times from Wellington City CBD are slightly inferior to corresponding AM peak travel inbound (to CBD) travel times.

All three of those routes are less than 10km in length and have relatively slow peak period average travel speeds, in the range 13kph to 18kph.

**Factors influencing future trends**

Future bus travel times will be influenced by the following:

- Infrastructure improvements relating to – bus lanes, signal pre-emption, BRT network, implementation of the network structure resulting from the Wellington City bus review.

- Changes to service frequencies along key sections of the routes, such as the Golden Mile, delivering scheduling and associated travel time improvements.

- The potential rationalisation of bus stops, leaving slightly fewer bus stops but enabling improved travel times (due to buses stopping less frequently). The net result is likely to be a reduction in both stop-to-stop and door-to-door travel times for the majority of users.

- Changes in traffic volumes, resulting from changes in the number of vehicles, infrastructure projects and TDM measures.
Accounting for anticipated future investment, bus (or BRT) travel times along core routes are expected to improve slightly out to 2025.

These forecasts are dependent upon the delivery of bus priority measures in Wellington City CBD, the BRT programme, the implementation of the network structure resulting from the Wellington City bus review and travel time improvements along the Golden Mile.

The improvement trajectory may not necessarily be linear for all routes during all years, as progress will be dependent on projects that may have a phased implementation such that they may benefit certain routes in certain years.

**Target: Improve peak period public transport travel times on core routes**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved public transport reliability and journey times</td>
<td>Peak period public transport travel times on core bus routes</td>
<td>Table 3 – average peak period travel time for core routes: 42.4 min (AM peak) 43.3 min (PM peak)</td>
<td>Challenge – continuous improvement</td>
</tr>
</tbody>
</table>

**Challenge** – This target is for a continuous improvement in peak period public transport travel times, resulting from a scenario equivalent to the expected future. The assessment of ‘improvement’ will be a qualitative assessment, informed by analysis of future RTPI data for the routes outlined in Table 3.

Where data permits, supporting analysis will be provided looking at the change in the relative differences between car and public transport travel times through time as this relativity, along with actual travel times, will affect people’s modal choice.
5.4.2 Measure 2 of 3: Peak period bus travel time variability on core routes

Background

Travel time variability is another factor that affects people’s perceptions of public transport and its attractiveness as a mode of transport. The 2014 GWRC Annual Public Transport Satisfaction Monitor suggests that the region’s public transport users consider having a reliable journey a top priority.

Travel time variability is a measure of how reliable a public transport journey is. For example, a slow but reliable service might take 20 minutes (as scheduled) to travel 5km in the AM peak, day in, day out. A faster yet unreliable service might have a travel time that varies between 15 minutes (scheduled) and 30 minutes from one day to the next. Such variability can affect people’s behaviour and travel choices.

A reduction in travel time variability, and a consequent improvement in travel time reliability, is likely to improve both the actual and perceived attractiveness of travelling by public transport, potentially attracting new public transport users and generating modal shift from car to public transport.

Recent trends

Travel time variability and reliability is assessed using the same set of routes and data as outlined for the previous measure (see section 5.4.1) focusing on travel times.

Table 4 and Table 5 provide an indication of average lateness at timing points along a route and the standard deviation of lateness at timing points along a route.

Average lateness within a specified time period provides an indication of service reliability. The standard deviation of lateness provides an indication of the extent to which lateness varies between different stops and services within that time period:

- a low standard deviation suggests that the difference between scheduled and actual stop times is relatively constant (and predictable) between stops along a route and between services along a route during the time period in question
- a high standard deviation suggests that average lateness varies considerably between stops along a route and between services along a route during the time period in question

The data are taken from the RTPI system between 3 March and 7 March 2014 and cover:

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25 The difference between scheduled and actual arrival times.
26 Where buses arrive at a stop before the scheduled arrival time the difference between scheduled and actual arrival time has been reset to zero.
• AM peak – all stops between the origin and destination (in red) for services scheduled to arrive at the destination between 7am and 9am.

• PM peak – all stops between the origin (in red) and destination for services scheduled to depart from the origin between 4pm and 7pm.

An average across all routes is provided in the tables as a means of benchmarking network-wide performance. The corresponding inter-peak figures for average lateness are provided in brackets as a means of comparison against a less congested time period.

Table 4 Core bus travel time variability and reliability – AM peak

<table>
<thead>
<tr>
<th>Route start and end points</th>
<th>Route numbers</th>
<th>Average lateness at bus stops along route (minutes)</th>
<th>Standard deviation of lateness at bus stops along route (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Island Bay – Wellington Station</td>
<td>1</td>
<td>3.8 (2)</td>
<td>3.7</td>
</tr>
<tr>
<td>Karori – Courtenay Place</td>
<td>3</td>
<td>3.4 (1.6)</td>
<td>3.8</td>
</tr>
<tr>
<td>Seatoun – Wellington Station</td>
<td>11</td>
<td>3.6 (3.1)</td>
<td>5.0</td>
</tr>
<tr>
<td>Upper Hutt – Queensgate</td>
<td>110</td>
<td>5.1 (3.1)</td>
<td>4.2</td>
</tr>
<tr>
<td>Stokes Valley – Petone Station</td>
<td>120</td>
<td>3.1 (1.3)</td>
<td>2.4</td>
</tr>
<tr>
<td>Naenae – Petone Station</td>
<td>130</td>
<td>2.2 (1.6)</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Average across all routes</strong></td>
<td></td>
<td><strong>3.5</strong></td>
<td><strong>3.7</strong></td>
</tr>
</tbody>
</table>

Table 5 Core bus travel time variability and reliability – PM peak

<table>
<thead>
<tr>
<th>Route start and end points</th>
<th>Route numbers</th>
<th>Average lateness at bus stops along route (minutes)</th>
<th>Standard deviation of lateness at bus stops along route (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wellington Station – Island Bay</td>
<td>1</td>
<td>5.2 (2.6)</td>
<td>4.8</td>
</tr>
<tr>
<td>Courtenay Place – Karori</td>
<td>3</td>
<td>3.2 (1.3)</td>
<td>4.9</td>
</tr>
<tr>
<td>Wellington Station – Seatoun</td>
<td>11</td>
<td>7.9 (4.0)</td>
<td>5.5</td>
</tr>
<tr>
<td>Queensgate – Upper Hutt</td>
<td>110</td>
<td>2.8 (3.2)</td>
<td>3.1</td>
</tr>
<tr>
<td>Petone Station – Stokes Valley</td>
<td>120</td>
<td>1.3 (2.6)</td>
<td>2.1</td>
</tr>
<tr>
<td>Petone Station – Naenae</td>
<td>130</td>
<td>2.6 (2.9)</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Average across all routes</strong></td>
<td></td>
<td><strong>3.8</strong></td>
<td><strong>3.8</strong></td>
</tr>
</tbody>
</table>

Looking at the Wellington City CBD routes (1, 3 and 11), average lateness in the PM peak (3.2 to 7.9 minutes) was slightly higher than in the AM peak (3.4 to 3.8 minutes). Similarly, standard deviation of lateness (a measure of travel time variability) was also higher in the PM peak compared with the AM peak.
This analysis is consistent with the findings relating to average travel times in section 5.4.1, which showed that for routes 1, 3 and 11, PM peak travel times were longer than AM peak travel times.

Looking at the other three routes shown in the tables, which service the Hutt Valley, average lateness and the standard deviation of lateness was lower than for the Wellington City CBD services, the exception being route 110 (Upper Hutt to Queensgate) in the AM peak which had an average lateness figure of 5.1 and a standard deviation of lateness of 4.2.

**Factors influencing future trends**

The factors influencing future trends are identical to those highlighted for the measure in section 5.4.1 and relate to future infrastructure improvements, changes in service frequencies, stop rationalisation and changes in traffic volumes.

The bus travel time reliability along core routes are expected to improve given the factors listed. Similar to the measure in section 5.4.1, any improvement will be contingent upon infrastructure improvements and is therefore unlikely to be linear in nature.

**Target: Continuous improvement in peak period bus travel time variability on core routes**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved public transport reliability and journey times</td>
<td>Peak period bus travel time variability on core routes</td>
<td>Table 4 – Average lateness across all core bus routes: 3.5 min (AM peak) 3.8 min (PM peak)</td>
<td>Challenge – Continuous reduction in peak period bus travel time variability along core routes</td>
</tr>
</tbody>
</table>

**Challenge** – This target is for a continuous improvement in peak period public transport travel time variability, consistent with the expected future scenario. The assessment of ‘improvement’ will largely be a qualitative assessment, looking at RTPI data as presented in Table 3 together with the reasons behind recent trends.
5.4.3 Measure 3 of 3: Rail service punctuality (trains arriving at final destination within five minutes of their scheduled arrival time)

**Background**

Rail punctuality is measured and reported in the Wellington Metropolitan Rail Annual Report as the proportion of trains throughout the year that arrive at their final destination within five minutes of the scheduled arrival time.

**Recent trends**

The recent trend (2008/09 to 2012/13) has been one of improving punctuality, which may be at least partially attributed to the introduction of new Matangi rolling stock (from 2010 onwards) and infrastructure improvement projects (Kapiti and Johnsonville line improvements).

The level of punctuality of rail services of 93.9% in 2012/13 was the highest reported to date on the network and a substantial improvement from the 2008/09 figure of 88.8%.

This 2012/13 figure includes the impact of severe storms across the Wellington region during June 2013 which adversely affected punctuality as the main line between Ngauranga and Petone was closed for a number of days, resulting in the cancellation of most Hutt Valley, Melling and Wairarapa lines. If the impact of the storm were removed from the series, it is likely that the punctuality would have been above 94%.

**Figure 6 Rail service punctuality, 2008/09 to 2012/13**

<table>
<thead>
<tr>
<th>Year</th>
<th>% On-time to 5 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008/09</td>
<td>75.0%</td>
</tr>
<tr>
<td>2009/10</td>
<td>78.0%</td>
</tr>
<tr>
<td>2010/11</td>
<td>80.0%</td>
</tr>
<tr>
<td>2011/12</td>
<td>82.0%</td>
</tr>
<tr>
<td>2012/13</td>
<td>84.0%</td>
</tr>
</tbody>
</table>

**Factors influencing future trends**

---

27 This report is published for each financial year and is the result of collaboration between the GWRC, Metlink and Greater Wellington Rail Ltd.
In the future, the following factors are expected to impact upon rail punctuality:

- reliability of the rolling stock fleet, which is a function of age and maintenance expenditure
- reliability of the rail infrastructure – signalling, tunnels, track, embankments – a function of infrastructure investment
- one-off natural events, such as storms, or extreme high/low temperatures, that affect the network performance

Future rolling stock improvements (i.e. Matangi replacing Ganz Mavag units) together with infrastructure projects (e.g. double tracking, overhead line improvements, signalling improvements) envisaged as part of the regional rail plan RS1 scenario\(^28\) are likely to result in a further small improvement in punctuality from current levels.

Looking at punctuality achieved on rail franchises\(^29\) in the UK that have similar characteristics to the Wellington network,\(^30,31\) a 96% punctuality figure would place Wellington in the top three franchises whilst 97.5% would have Wellington ranked first.

**Target: Increase rail service punctuality (trains arriving at final destination within five minutes of their scheduled arrival time)**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved public transport reliability</td>
<td>Rail service punctuality (trains arriving at final destination within 5 minutes of scheduled arrival time)</td>
<td>94%</td>
<td>Challenge – continuous improvement towards 96% and maintenance at that level thereafter</td>
</tr>
<tr>
<td>and journey times</td>
<td></td>
<td></td>
<td>Stretch – continuous improvement towards 97.5% and maintenance at that level thereafter</td>
</tr>
</tbody>
</table>

**Challenge** – This is a realistic, challenging yet achievable target where punctuality continually improves to 96% of rail services reaching their final destination within five minutes of their timetabled arrival time.

**Stretch** – This target is for 97.5% of rail services reach their final destination within five minutes of their timetabled arrival time.
6. **Objective: A reliable and effective strategic road network**

6.1 **Outcome 1 of 2: Reduced severe road congestion**

6.1.1 **Measure 1 of 1: Average peak period travel speeds on selected strategic routes**

**Background**

Average peak period travel speeds on selected strategic routes are a proxy measure for congestion and the ability of the network to effectively and efficiently transport people and freight to their desired destination.

As the roading network is largely uncongested outside of peak times, this measure focuses on peak travel speeds across six strategic routes\(^{32}\) for which travel time data are collected annually (in March) by NZTA:

- 1 – Waikanae to Wellington Airport (SH1)
- 2 – Upper Hutt to Wellington City CBD (SH2)
- 3 – SH58 – Paremata to Haywards Road
- 4 – Karori to Bowen Street
- 5 – Wellington Railway Station to Island Bay
- 6 – Wainuiomata to Petone

Every year, five or six drive-through journey time surveys are undertaken for each of six routes, in both directions and for two time periods. From these journey time surveys, average travel times are calculated by route, direction and time period.

Day-to-day variation within a relatively small sample means that an element of the variation between one year and the next might be due to statistical error or other factors (e.g. road works, weather) rather than any discernible trend.

The data used for the analysis of travel speeds only cover three years – 2012, 2013 and 2014. Whilst variations and trends between one year and the next are documented and explained, the three-year average between 2012 and 2014 is used as the benchmark and basis for the development of appropriate targets.

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\(^{32}\) New technology may present the opportunity to expand this set of routes to capture areas of the region such as the Wairarapa.
Recent trends

Table 6 shows peak period travel speeds by route and year. The figures shown are the averages of the AM (inbound), AM (outbound), PM (inbound) and PM (outbound) observed travel speeds for each route.

A weighted average across all routes is also provided and used as the benchmark from which challenging and stretch targets are developed.

<table>
<thead>
<tr>
<th>Route start and end points</th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
<th>3 year average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waikanae to Wellington Airport (SH1)</td>
<td>52.5</td>
<td>56.0</td>
<td>55.8</td>
<td>54.7</td>
</tr>
<tr>
<td>Upper Hutt to Wellington City CBD (SH2)</td>
<td>49.7</td>
<td>54.9</td>
<td>52.2</td>
<td>52.3</td>
</tr>
<tr>
<td>SH58 – Paremata to Haywards Road</td>
<td>59.5</td>
<td>63.9</td>
<td>64.9</td>
<td>62.8</td>
</tr>
<tr>
<td>Karori to Bowen Street</td>
<td>23.3</td>
<td>24.7</td>
<td>24.4</td>
<td>24.1</td>
</tr>
<tr>
<td>Wellington Railway Station to Island Bay</td>
<td>20.8</td>
<td>24.0</td>
<td>25.2</td>
<td>23.3</td>
</tr>
<tr>
<td>Wainuiomata to Petone</td>
<td>29.5</td>
<td>35.5</td>
<td>39.4</td>
<td>34.8</td>
</tr>
<tr>
<td><strong>All routes combined, weighted by distance</strong></td>
<td><strong>43.3</strong></td>
<td><strong>47.5</strong></td>
<td><strong>47.7</strong></td>
<td><strong>46.2</strong></td>
</tr>
</tbody>
</table>

As a means of comparison, the three-year average inter-peak (largely uncongested) travel speed across all routes is around 57kph.

The data in Table 6 show the following:

- average travel speeds across all routes remained relatively unchanged between 2012 and 2013 before decreasing between 2013 and 2014
- at a route level, the shorter local routes, i.e. Karori to Bowen Street, and Wellington City CBD to Island Bay, that are within congested urban areas had slower average travel speeds compared to the other routes in the table
- the longer state highway routes had faster average travel speeds, although these averages include short sections where peak travel speeds were considerably lower than the average

It is thought that a combination of factors including road works on sections of state highways contributed to the decrease in average travel speed between 2013 and 2014. It is for this reason that a three-year average is a more useful indicator for the period 2012 to 2014, and a rolling three-year average is used as the indicator of future trends rather than variation from one year to the next.
**Factors influencing future trends**

In the future, significant roading investment is planned in the shape of the RoNS schemes, delivering a step change in capacity along the state highway corridor. The net result should be an improvement in average peak period travel speeds, particularly on the state highway routes (Waikanae to Wellington City CBD and Upper Hutt to Wellington City CBD).

Improvements in travel speeds on other routes will depend upon a number of factors, including the potential for modal shift from car to public transport resulting in decongestion benefits and improved travel speeds for remaining car users. The modelling undertaken for the RLTP suggests that some modal shift from car to public transport will occur.

Overall, the balance of evidence suggests that average peak period travel speeds on selected strategic routes will increase between 2015 and 2025.

**Target: Increase in average peak period travel speeds on selected strategic routes**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2014)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced severe road congestion</td>
<td>Average peak period travel speeds on selected strategic routes</td>
<td>46.2kph (2012 to 2014 3-year average)</td>
<td>Challenge – at least a 10% increase in 3-year rolling average travel speeds to 50.8kph</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – at least a 15% increase in 3-year rolling average travel speeds to 53.3kph</td>
</tr>
</tbody>
</table>

**Challenge** – This target is for a 10% increase in the three-year rolling average peak period travel speed to 50.8kph. It is based on the expected future scenario where state highway and, to a lesser extent, local road travel speeds increase as a result of infrastructure investment and modal shift.

**Stretch** – This target is for a 15% increase in the three-year rolling average peak period travel speed to 53.3kph, resulting from infrastructure investment, significant modal shift and TDM measures as envisaged under an alternative future.
6.2 Outcome 2 of 2: Improved reliability of the strategic road network

6.2.1 Measure 2 of 2: Average peak period travel speed variability on selected strategic routes

**Background**

Average peak period travel speed variability on selected strategic routes is assessed using the same six routes as are used for the measure in section 6.1.1 – ‘average peak period travel speeds on selected strategic routes’.

From the various car travel time surveys, average, maximum and minimum travel speeds are calculated, from which the variability can be expressed in percentage terms. For example, a +/- 20% range means that the slowest travel speed is 20% longer than the average and the fastest travel speed is 20% faster than the average.

**Recent trends**

Table 7 shows peak period travel speed variability by route and year. The figures shown are the averages of the AM (inbound), AM (outbound), PM (inbound) and PM (outbound) observed travel speed variability for each route and year combination.

A weighted average across all routes is also provided and used as the benchmark from which challenging and stretch targets are developed.

<table>
<thead>
<tr>
<th>Route start and end points</th>
<th>Average travel speed variability ( % +/- average)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014</td>
</tr>
<tr>
<td>Waikanae to Wellington Airport (SH1)</td>
<td>12%</td>
</tr>
<tr>
<td>Upper Hutt to Wellington City CBD (SH2)</td>
<td>20%</td>
</tr>
<tr>
<td>SH58 – Paremata to Haywards Road</td>
<td>5%</td>
</tr>
<tr>
<td>Karori to Bowen Street</td>
<td>18%</td>
</tr>
<tr>
<td>Wellington Railway Station to Island Bay</td>
<td>24%</td>
</tr>
<tr>
<td>Wainuiomata to Petone</td>
<td>18%</td>
</tr>
<tr>
<td><strong>All routes combined, weighted by distance</strong></td>
<td><strong>14.4%</strong></td>
</tr>
</tbody>
</table>

As a means of comparison, inter-peak (largely uncongested) travel speed variability on the same routes was around 5%.

The recent data show the following:
• Average peak period travel speed variability increased slightly between 2012 (13.2%), 2013 (13.6%) and 2014 (14.4%).

• For some routes, travel speeds vary considerably between one year and the next – SH1 and the Karori to Bowen Street speeds increased between 2013 and 2014 whilst the SH2 and Island Bay speeds decreased. This highlights the year-to-year variability in peak period travel speeds that exists across the region’s highway network.

• In general, shorter local routes through urban areas had a higher degree of travel speed variability than longer state highway routes.

• Looking at the longer state highway routes, certain congested sections, such as Petone to Ngauranga on SH2 and Porirua to Wellington City CBD on SH1, exhibited greater travel speed variability than the average for the route.

It is thought that a combination of factors including road works on sections of state highways contributed to the decrease in average travel speed between 2013 and 2014. It is for this reason that the three-year average for 2012 to 2014 is taken as the benchmark to compare against future trends.

Factors influencing future trends

In the future, significant roading investment is planned in the shape of the RoNS schemes, delivering a step change in capacity along the state highway corridor. The net result is expected to be an improvement in average peak period travel speed variability, particularly on the state highway routes, i.e. Waikanae to Wellington City CBD and Upper Hutt to Wellington City CBD.

Improvements in travel speed variability on other routes will depend upon a number of factors, including the potential for modal shift from car to public transport resulting in decongestion benefits and increased travel speeds for remaining car users.

The balance of evidence suggests that average peak period travel speed variability on selected strategic routes is likely to improve between 2015 and 2025.

**Target: Reduction in average peak period travel speed variability on selected strategic routes**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2014)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved reliability of the strategic road network</td>
<td>Average peak period travel speed variability on selected strategic routes</td>
<td>The average peak period travel speed variability for the period 2012 to 2014 was +/-13.7%</td>
<td>Challenge – a 25% reduction in the 3-year rolling average peak period travel speed variability to +/- 10.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – a 50% reduction in the 3-year rolling average peak period travel speed variability to +/- 6.8%</td>
</tr>
</tbody>
</table>
Challenge – This target is for a 25% reduction in average peak period travel speed variability under the expected future scenario. The reduction is due to infrastructure investment and modal shift, leading to a reduction in travel speed variability.

Stretch – This target is for a 50% reduction in average peak period travel speed variability under an alternative future that delivers significant infrastructure investment, TDM measures and significant modal shift from car to public transport, leading to reduced congestion and a significant reduction in travel speed variability.
7. Objective: An effective network for the movement of freight

7.1 Outcome 1 of 2: Improved regional freight efficiency

7.1.1 Measure 1 of 2: Average all-day travel speeds on important regional freight routes

Background

Road freight has a key role to play in the movement of goods between various regional origins and destinations.

Average all-day travel speeds are obtained from the same NZTA surveys that are used to obtain the measures associated with the ‘reliable and effective strategic road network’ objective.

All-day data (including peak and inter-peak periods) were obtained for the following key routes that are used by freight travelling within the region:

- Paremata to Seaview, via SH58
- Paremata to Seaview, via SH1 and SH2
- Seaview to CentrePort

These three routes cover major known congestion ‘hot spots’ and will capture the impact that congestion might have upon longer distances trips such as those between the lower North Island or the Wairarapa and destinations such as Seaview industrial estate and Centreport.

Recent trends

Table 8 shows all-day travel speeds by route and year. The figures shown are averages of the AM (inbound), AM (outbound), inter-peak (inbound), inter-peak (outbound), PM (inbound) and PM (outbound) observed travel speeds for each route and year combination. A weighted average across all routes is also provided and used as the benchmark from which challenging and stretch targets are developed.

Table 8 Freight routes – average all-day travel speeds

<table>
<thead>
<tr>
<th>Route start and end points</th>
<th>2014</th>
<th>2013</th>
<th>2012</th>
<th>3 year average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seaview to Porirua (SH58)</td>
<td>48.9</td>
<td>54.6</td>
<td>56.4</td>
<td>53.3</td>
</tr>
<tr>
<td>Seaview to Porirua (SH1 and SH2)</td>
<td>56.1</td>
<td>60.7</td>
<td>63.7</td>
<td>60.2</td>
</tr>
<tr>
<td>Seaview to CentrePort (SH1 and SH2)</td>
<td>44.6</td>
<td>51.2</td>
<td>52.1</td>
<td>49.3</td>
</tr>
<tr>
<td>All routes combined, weighted by distance</td>
<td>50.3</td>
<td>56.1</td>
<td>58.2</td>
<td>54.9</td>
</tr>
</tbody>
</table>
As a means of comparison, the three-year average inter-peak (uncongested) travel speed across the selected freight routes was 67kph.

The recent data show the following:

- average travel speeds across the three freight routes declined from 58.2kph (2012) to 56.1kph (2013) and 50.3kph (2014)
- analysis of the underlying data suggests that the downward trend was driven by a decline of average peak period travel speeds, for reasons outlined in section 6 relating to the ‘reliable and effective strategic road network’ objective.

Factors influencing future trends

The RoNS projects and the Petone to Grenada link road are expected to increase freight travel speeds across the state highway network, including all of the three key freight routes.

Given that one of the primary objectives of the RoNS is to improve travel times along SH1, the major corridor for inter-regional road freight, it is likely that freight travel speeds will improve considerably out to 2025.

Any improvement in all-day freight travel speeds on the state highway network might not be as marked as any corresponding improvement in peak period freight travel speeds. This is because all-day travel speeds include observations in the inter-peak, a relatively uncongested time of day during which additional infrastructure investment will likely generate smaller benefits in terms of travel time savings and improved travel speed, compared with the congested peak periods.

Target: Improve average all-day travel speeds on important regional freight routes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2014)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved regional freight</td>
<td>Average all-day travel speeds on important regional freight routes</td>
<td>Average travel speed of 54.9kph (2012 to 2014)</td>
<td>Challenge – a 10% increase in 3-year rolling average travel speeds to 60.4kph</td>
</tr>
<tr>
<td>efficiency</td>
<td></td>
<td></td>
<td>Stretch – a 15% increase in 3-year rolling average travel speeds to 63.1kph</td>
</tr>
</tbody>
</table>

**Challenge** – This target is for a 10% increase in the three-year rolling average peak period travel speed to 60.4kph. It is based on an expected future scenario where average all-day travel speeds on selected freight routes increase as a result of infrastructure investment (the RoNS).

**Stretch** – This target is for a 15% increase in three-year rolling average all-day travel speeds on selected freight routes to 63.1kph, a result of infrastructure investment (RoNS) and modal shift from car to public transport generating significant decongestion benefits.
7.1.2 Measure 2 of 2: Average all-day travel speed variability on important regional freight routes

**Background**

Average all-day travel speed variability on important regional freight routes is assessed using the same three routes that are used for the measure in section 7.1.1 above for average all-day travel speed on important regional freight routes.

From the three moving car travel time surveys, average, maximum and minimum travel speeds were calculated, from which the variability can be expressed in percentage terms. For example, a +/- 20% range means that the slowest travel speed is 20% slower than the average and the fastest travel speed is 20% faster than the average.

**Recent trends**

Table 9 shows all-day travel speed variability by route and year. The figures shown are averages of the AM (inbound), AM (outbound), inter-peak (inbound), inter-peak (outbound), PM (inbound) and PM (outbound) observed travel speed variability for each route and year combination.

A weighted average across all routes is also provided and used as the basis/benchmark from which challenging and stretch targets are developed.

<table>
<thead>
<tr>
<th>Route start and end points</th>
<th>Average travel speed variability (% +/- average)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014</td>
</tr>
<tr>
<td>Seaview to Porirua (SH58)</td>
<td>10%</td>
</tr>
<tr>
<td>Seaview to Porirua (SH1 and SH2)</td>
<td>15%</td>
</tr>
<tr>
<td>Seaview to CentrePort (SH1 and SH2)</td>
<td>15%</td>
</tr>
<tr>
<td>All routes combined, weighted by distance</td>
<td>12.7%</td>
</tr>
</tbody>
</table>

As a means of comparison, the three-year average inter-peak (largely uncongested) travel speed variability across the selected freight routes was 4.5%.

The recent data show the following:

- travel speed variability for the three freight routes increased considerably between 2013 (9.5%) and 2014 (12.7%)
- data collected in subsequent years will illustrate whether the increase in travel speed variability between 2013 and 2014 was the start of a trend or merely statistical variability between one year and the next
**Factors influencing future trends**

The capacity and travel time improvements envisaged by the RoNS and the Petone to Grenada link road are expected to reduce freight travel speed variability across the state highway network, including all of the three key freight routes.

One of the primary objectives of the RoNS is to improve (i.e. reduce) travel times and levels of service along SH1. As SH1 is one of major corridor for inter-regional road freight, it follows that freight travel times should improve if the RoNS objectives are achieved. In addition to reduced travel times, the expectation is also for freight travel speed variability to reduce considerably out to 2025.

**Target: Reduction in average all-day travel speed variability on important regional freight routes**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2014)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved regional freight efficiency</td>
<td>Average all-day travel speed variability on important regional freight routes</td>
<td>The average all-day travel speed variability over was +/- 10.6%,34 (2012 to 2014)</td>
<td>Challenge – a 25% reduction in 3-year rolling average travel speed variability to +/- 7.9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – a 50% reduction in 3-year rolling average travel speed variability to +/- 5.3%</td>
</tr>
</tbody>
</table>

**Challenge** – This target is for a 25% reduction in freight travel speed variability under an expected future scenario, a result of the RoNS and the Petone to Grenada link road delivering a more effective network for the movement of freight.

**Stretch** – This target is for a 50% reduction in travel speed variability under an alternative future scenario, a result of the RoNS, Petone to Grenada link road and selected travel demand management measures delivering a more effective network for the movement of freight.

33 WP3, section 3.1
34 The comparable inter-peak variability figure, generally taken as being a benchmark for relatively uncongested conditions, was 9% between 2012 and 2014.
7.2 Outcome 2 of 2: Increased proportion of freight moved by rail

7.2.1 Measure 1 of 1: Long distance freight volumes moved by rail

**Background**

Providing an efficient and effective freight network will support and enhance the region’s economic stability and growth into the future.

As New Zealand’s capital city and a major urban hub, much of Wellington region’s freight movement consists of short trips within the region. This type of freight movement has different characteristics and needs to longer distance, higher volume freight.

This measure concentrates on long distance freight volumes, particularly freight moved by rail.

**Recent and future trends**

Table 10 shows freight volumes travelling to and from the region by rail, obtained from the Ministry of Transport’s Freight Information Gathering Service (FIGS) database. Growth between 2006 and 2012 is presented, together with 2041 forecasts and 2025 forecasts (pro rated from the 2041 range) for freight volumes.

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2012</th>
<th>% increase (2006 to 2012)</th>
<th>2041 forecast range</th>
<th>2025 pro rata forecast</th>
<th>forecast % increase (2012 to 2025)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Originating freight</td>
<td>6.4</td>
<td>8.4</td>
<td>31%</td>
<td>14.6 – 13.3</td>
<td>13.9</td>
<td>66%</td>
</tr>
<tr>
<td>Terminating freight</td>
<td>8.1</td>
<td>9.9</td>
<td>22%</td>
<td>16.8 – 15.3</td>
<td>16.1</td>
<td>62%</td>
</tr>
<tr>
<td>Total</td>
<td>14.5</td>
<td>18.3</td>
<td>26%</td>
<td>31.4 – 28.6</td>
<td>30.0</td>
<td>64%</td>
</tr>
</tbody>
</table>

Between 2006 and 2012, regional rail freight tonnage increased by 26%. Growth was slightly greater for originating freight than for terminating freight.

Forecast growth between 2012 and 2025 (over 60%) is double the rate of growth seen between 2006 and 2012 and appears optimistic when compared against recent trends.

Rail has a vital role to play in helping to improve road freight efficiency by removing volumes of freight from the road, thus improving travel times and reducing congestion for remaining road users.

The following factors are likely to affect rail freight volumes in the future:
• economic growth, particularly relating to export-orientated growth in primary industries such as dairy and forestry
• growth in rail freight handling capacity and improved rail freight handling efficiency at CentrePort
• government policies designed to encourage the movement of freight by rail
• investment by KiwiRail in rail infrastructure
• roading investment, affecting the relative costs and merits of transporting freight by rail as opposed to road.

In order to monitor progress relating to this measure there is a reliance on the continued collection by the Ministry of Transport of the annual FIGS data and the repetition of the five-yearly national freight demand study.35

**Target: Increase the volume freight travelling to/from the region by rail**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2012)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased proportion of freight moved by rail</td>
<td>Long distance freight volumes moved by rail</td>
<td>18.3 million tonnes freight transported by rail (2012) A 26% increase in rail freight volumes between 2006 and 2012</td>
<td>An increasing proportion of long distance freight moved by rail</td>
</tr>
</tbody>
</table>

**Target** – Due to uncertainties around forecasting future freight volumes (both road and rail) it was decided that this target should be based upon the idea of ‘continuous improvement’, with the target being to increasing the proportion of freight moved by rail, resulting in fewer trucks on the region’s roads and associated decongestion benefits.

8. Objective: A safe system for all users of the regional transport network

8.1 Outcome 1 of 2: Improved regional road safety

8.1.1 Measure 1 of 2: Killed and seriously injured totals, measured on an annual basis against a five-year rolling average (CAS data)

Background

In recent years (since 2010) a concerted focus has been placed on national road safety by local authorities, regional councils and the NZTA.

Central to these efforts is ‘Safer Journeys’, the government’s strategy to guide improvements in road safety over the period 2010 to 2020. The strategy’s vision is for ‘a safe road system increasingly free of death and serious injury’.

This measure looks at numbers of people killed and seriously injured on the region’s roads (excluding cyclist and pedestrian casualties).

Recent trends

Since 2009, the number of killed and seriously injured people on the region’s road network has maintained a largely downward trajectory (Figure 7).

The most recent full year for which data were available (2013) showed a significant decrease, although data for the first half of 2014 showed a slight upwards trend compared with 2013.

This highlights the fact that considerable statistical variability can exist between one year and the next, particularly in instances like this where the number of observations is relatively small (129 persons killed or seriously injured in 2013).

For this reason, a five-year rolling average has been calculated as it provides a more meaningful and statistically significant picture of trends over the short to medium term against which future progress can be measured.

The general downward trend in recent years is attributed to continued coordinated road safety efforts including targeting accident high risk sites, safety infrastructure improvements, road safety educational programmes and campaigns, and improved vehicle safety standards.

Factors influencing future trends

Road safety is affected by a wide variety of factors, from user behaviour and travel patterns to legislative changes. In the future it is likely that:

- vehicles will become safer

local and national government will continue to invest in order to reduce road casualties, focusing on continual and targeted infrastructure investment at known accident blackspots

- a concerted focus on road safety education and on road user behaviour will help reinforce the recent downward trend, complemented by integrated transport and land use planning providing the region’s population with safer travel choices

The number of people killed on New Zealand’s roads per 100,000 head of population (9.0 in 2010) is still around double the figure in Western Europe (UK, 3.7 in 2010; Sweden, 3.0 in 2010). This suggests that further progress can be made towards a ‘Vision Zero’ goal.

Given the factors listed above, is likely that the number of people killed and seriously injured will maintain the recent downward trend.

**Target: A reduction in the number of people killed and seriously injured, measured on an annual basis against a five-year rolling average (CAS data)**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved regional road safety</td>
<td>Number of people killed and seriously injured, measured on an annual basis against a 5-year rolling average (CAS data)</td>
<td>5-year average of 184 (2009 to 2013) Recent downward trend</td>
<td>Challenge – at least a 50% reduction in the 5-year rolling average</td>
</tr>
</tbody>
</table>

Figure 7 Number of people killed or seriously injured on the roads, 2009 to 2025

---

37 http://apps.who.int/gho/data/node.main.A997
**Challenge** – This target is for a continuous annual reduction in the number of people killed and seriously injured, leading to a 50% reduction in the five-year rolling average between 2013 and 2025. No stretch target is provided as the challenging nature of the target outlined above aligns with the similar challenging nature of nationwide targets set by NZTA.
8.1.2 Measure 2 of 2: Total casualties on an annual basis against a five-year rolling average (CAS data)

**Background**

As stated in section 8.1.1 a concerted national focus has been placed on road safety by local authorities, regional councils and the NZTA since around 2010.

Central to these efforts is ‘Safer Journeys’, the government’s strategy to guide improvements in road safety over the period 2010 to 2020. The strategy’s vision is for ‘a safe road system increasingly free of death and serious injury’.

This measure looks at all casualties on the region’s roads (excluding cyclist and pedestrian casualties).

**Recent trends**

Between 2009 and 2013, the total number of casualties on the region’s road network maintained a largely downward trajectory, similar to that seen for the previous measure (people killed and serious injured only).

The most recent year of data (2013) showed a large decrease in the number of people killed or seriously injured on the region’s roads, while the decrease in total casualties for 2013 was not as pronounced.

In order to maintain consistency of analysis between measures, a five-year rolling average has again been calculated as it provides a more meaningful and statistically significant picture of recent trends over the short to medium term against which future progress can be measured.

The general downward trend in recent years is attributed to continued coordinated road safety efforts including targeting accident blackspots, safety infrastructure improvements, road safety educational programmes and campaigns and improved vehicle safety standards.

**Factors influencing future trends**

The factors influencing future trends are the same as with the measure in section 8.1.1, for the measure ‘Killed and seriously injured totals, measured on an annual basis against a five-year rolling average (CAS data)’.
**Target: A reduction in total injury casualties measured as an annual five-year rolling average**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved regional road safety</td>
<td>Total casualties on an annual basis against a 5-year rolling average</td>
<td>5-year average of 1,080 (2009 to 2013)</td>
<td>Challenge – at least a 50% reduction in the 5-year rolling average</td>
</tr>
<tr>
<td></td>
<td>(CAS data)</td>
<td>Recent downward trend</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 8 Total number of road casualties per year, 2009 to 2025**

![Graph showing trend of road casualties](image)

**Challenge** – This target is for a continuous reduction in total road casualties, leading to at least a 50% decrease in the five-year rolling average between 2013 and 2025. No stretch target is provided as the challenging nature of the target outlined above aligns with the similar challenging nature of nationwide targets set by NZTA.
8.2 Outcome 2 of 2: Increased safety for pedestrians and cyclists (vulnerable road users)

8.2.1 Measure 1 of 1: The number of vulnerable road users (cyclists and pedestrians) killed and seriously injured annually against a five-year rolling average (CAS data)

**Background**

Creating ‘Safer Journeys’ for pedestrians and cyclists is vital, not only in order to make these journeys safer in their own right but also to encourage a wider modal shift to sustainable modes of transport.

Such changes in behaviour would improve the efficiency of the transport network as a whole and create a ‘safety in numbers’ scenario, whereby the increasing popularity of travelling by active modes creates a scenario where more cyclists and pedestrians increase the general awareness of vulnerable road users amongst other road users and improve overall road safety for all modes.

This measure looks at all cyclist and pedestrian casualties on the region’s roads.

**Recent trends**

The number of pedestrians and cyclists killed or seriously injured on the region’s roads doubled between 2000 and 2008 and subsequently fluctuated between 2008 and 2013.

When placed in the context of a doubling of cycling trips between 2001 and 2013, combined with an approximate 20% increase in pedestrian trips during the same period, the risk to any individual cyclist/pedestrian remained roughly the same between 2000 and 2008 and then declined slightly since 2008, indicating that the network was becoming safer for vulnerable road users.

Whilst the most recent observation (2013) shows a 50% improvement (decline in casualties) compared with 2012, this should be placed in the context of a relatively small number of observations.

Therefore in order to maintain consistency of analysis between all measures under the ‘safe system for all users of our regional road network’ objective, a five-year rolling average has again been calculated as it provides a more meaningful and statistically significant picture of recent trends over the short to medium term against which future progress can be measured.

**Factors influencing future trends**

Pedestrian and cyclist safety, along with general road safety, is influenced by a wide variety of factors:

- investment in infrastructure

38 New Zealand Census and Wellington City CBD cordon data
• the increasing popularity of travelling by active modes
• the extent to which residential development might favour active modes
• traffic management measures in urban centres
• education programmes

It is thought that future pedestrian and cyclist safety will be influenced by:

• continued investment in cycling education programmes, including an expansion of school cycle programmes
• development in and around Wellington City CBD and the inner Wellington suburbs favouring active modes, potentially generating a more pedestrian and cyclist friendly way of living
• local authorities, led by Wellington City Council, investing heavily in cycling infrastructure
• a desire to create a more friendly environment for pedestrians and cyclists in urban areas such as Wellington City and particularly Wellington City CBD
• investment focused on targeting cyclist and pedestrian casualty blackspots, in combination with aggressive marketing campaigns

Under such a future, the popularity and safety of travelling by active modes is likely to increase considerably.

**Target: A reduction in the number of vulnerable road users (cyclists and pedestrians) who are killed or seriously injured against a five-year rolling average**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased safety for pedestrians and cyclists</td>
<td>The number of vulnerable road users (cyclists and pedestrians) killed and seriously injured annually against a 5-year rolling average</td>
<td>5-year average of 57 (2009 to 2013) General downward trends since 2008</td>
<td>Challenge – at least a 50% reduction in the 5-year average of killed and seriously injured vulnerable road users</td>
</tr>
</tbody>
</table>
Figure 9 Number of vulnerable road users (cyclists and pedestrians) killed or seriously injured, 2008 to 2025

Challenge – This target is for a continuous reduction in the number of vulnerable road users (cyclists and pedestrians) killed or seriously injured on the region’s roads, leading to at least a 50% decrease between 2013 and 2025.
9. Objective: An increasingly resilient transport network

9.1 Outcome 1 of 3: Improved transport infrastructure resilience to disruption from unplanned events

9.1.1 Measure 1 of 1: Proportion of the region covered by an adopted regional risk register

**Background**

The purpose of a risk register is to act as a central repository for all risks identified by an organisation with regard to a particular event (or set of events).

Typically a risk register includes:

- a description of the risk
- the impact should this event actually occur
- the probability of its occurrence
- a summary of the planned response should the event occur
- a summary of the mitigation required to reduce either the probability and/or impact of an event

Risk registers can include both qualitative and quantitative components. The purposes of a Wellington regional risk register would be to document, quantify and qualify all risks to the disruption of the transport network that might result from an unplanned event which is assumed to be either a major seismic event (>7 Richter) or major natural disaster.

The register itself would be a tool to stimulate cross-organisational debate and develop mitigation to reduce either the probability and/or impact of an event, providing a means of ranking the risks so that resources can be targeted at the high impact, high probability risks.

At the time of writing, separate council risk registers exist but there is no regional risk register.

**Factors influencing future trends**

The Wellington Lifelines Group (WELG) is developing deliverables and setting levels of service in relation to major event recovery.

This work is guided by the fact that in order to create a more robust and resilient transport network, the region needs to better understand and assess risk and then prioritise critical locations. An agreed, prioritised regional resilience risk register is a way to influence project prioritisation.
The current timetable envisages an agreed regional risk register by 2017, with an agreed prioritisation methodology by 2019 and an application of the prioritised list thereafter.

**Target: Increase the proportion of the region covered by a regional risk register**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved transport infrastructure resilience to disruption from unplanned events</td>
<td>Proportion of the region covered by an adopted regional risk register</td>
<td>0% – separate council risk registers exist but not a regional risk register</td>
<td>100% – an agreed, prioritised regional resilience register that ultimately influences project prioritisation and development</td>
</tr>
</tbody>
</table>

**Challenge** – This target is for the creation and adoption of a full and complete regional risk register.
9.2 Outcome 2 of 3: A transport network that supports the restoration of access and regional recovery after a major event

9.2.1 Measure 1 of 1: Estimated time to reopen key road connections to and within the region and to key recovery facilities

**Background and recent trends**

At the time of writing, existing district and regional emergency plans outline the estimated time thought to be required in order to reopen key roads and connections after a major event.

**Factors influencing future trends**

The development of a regional risk register is likely to focus attention on the resilience of key routes, in order to identify mitigating measures that might reduce the number of days required to open parts of the network following a major event.

Ongoing targeted preventative maintenance and seismic strengthening on the transport network, such as recent tunnel strengthening that has been undertaken within Wellington (Karori tunnel (2012), Seatoun tunnel (2013), Hataitai bus tunnel (on-going)) are examples of targeted projects focused upon improving the resilience of the network and reducing the estimated time to reopen key routes and connections.

Combined with the anticipated delivery of new infrastructure projects such as Transmission Gully and the Petone to Grenada link road (both of which are intended to improve the overall resilience of the transport network), the future is likely to be one where there is a gradual but continuous improvement in the number of estimated days to reopen the transport network following a major event.

**Target: Continuous improvement in the number of estimated days to reopen the transport network following a major event**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>A transport network that supports the restoration of access and regional recovery after a major event</td>
<td>Estimated time to reopen key road connections to and within the region and to key recovery facilities.</td>
<td>Existing emergency plan</td>
<td>Continuous improvement in the number of estimated days to reopen the transport network following a major event.</td>
</tr>
</tbody>
</table>

**Challenge** – This target is for continuous improvement in the number of estimated days to reopen the transport network following a major event, to be delivered via regional emergency and restoration plans.
9.3 Outcome 3 of 3: Reduced regional economic risk

9.3.1 Measure 1 of 1: Proportion of the region covered by an adopted and comprehensive regional restoration and emergency plan

Background and recent trends

In the short term the region is heavily dependent upon existing restoration and emergency plans that largely exist at a local level.

Factors influencing future trends

The work being undertaken by WELG, drawing together information from existing district and regional plans, should result in a comprehensive regional restoration and emergency plan alongside a regional risk register.

Target: The whole region is covered by an updated and revised restoration and emergency plan

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced regional economic risk</td>
<td>Proportion of the region covered by an adopted and comprehensive regional restoration and emergency plan</td>
<td>Existing emergency plan</td>
<td>The whole region is covered by an updated and revised restoration and emergency plan</td>
</tr>
</tbody>
</table>

Challenge – The target is for the whole region to be covered by an updated and revised restoration and emergency plan.
10. Objective: A well planned, connected and integrated transport network

10.1 Outcome 1 of 2: Improved land use and transport integration

10.1.1 Measure 1 of 1: Percentage of the region’s population living within 500m of any bus service or 1km of a railway station

This measure is exactly the same measure as in section 5.2.2, which is ‘Measure 2 of 3’ as it applies under the objective ‘A high quality, reliable public transport network’, relating to the outcome ‘Improved public transport accessibility for all’.

This measure looks at the percentage of the region’s population living within 500m walk of any bus service or 1km of a railway station. This measure provides an indication of public transport coverage across the region, regardless of service frequency or level of service.

In 2013, 84.9% of people lived within 500m of a bus service or 1km of a railway station.

**Target: Increase the percentage of the region’s population living within 500m of any bus service or 1km of a railway station**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved land use and transport integration</td>
<td>Population living within 500m of any bus service or 1km of a railway station</td>
<td>84.9%</td>
<td>Challenge – increase the % of the region’s population living within 500m of any bus service and 1km of any railway station to 88%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – increase the % of the region’s population living within 500m of any bus service and 1km of any railway station to 92%</td>
</tr>
</tbody>
</table>

**Challenge** – This target is to increase the percentage of the region’s population living within 500m of any bus service and 1km of a railway station to 88%. This is based on the expected future scenario that includes the implementation of the network structure arising from the Wellington City bus review and future residential development focused on suburbs that have relatively comprehensive existing public transport coverage.

**Stretch** – This target is to increase the percentage of the region’s population living within 500m of any bus service and 1km of a railway station to 92%. This is based on an alternative future with enhanced public transport levels of service that will increase the percentage of the region’s population living within 500m of any bus service and no change in accessibility to the rail network.
10.2 Outcome 2 of 2: Improved integration between transport modes

10.2.1 Measure 1 of 1: Number of secure cycle parking spaces at railway stations

**Background and recent trends**

Over the period 2008 to 2013, the number of dedicated cycle parking stands on railway station platforms and station forecourts across the region has increased by around 100%. This is both a response to the increasing popularity of cycling and a means of trying to encourage more people to cycle to and from the station as part of the wider objective of increasing public transport patronage.

This improvement in both the provision of cycle facilities at railway stations (placed in the context of poor facilities and low numbers of people cycling to station prior to these recent improvements) is the result of a new approach to cycle parking, which has seen a mix of secure cycle racks, cages, and lockers provided, replacing the previous situation where lockers were relatively expensive to provide and took up a significant area of space at the stations, thus limiting their number and availability.

Following on from this, the definition of safe cycle parking in the future is as follows:

- covered cycle stands (cages or racks) or
- cycle stands located in well-lit areas, either on platforms or directly outside station exits, covered by CCTV

This target focuses on the provision of safe cycle parking as a means of promoting modal shift from car to bike for trips accessing the rail network, thus providing health benefits and resulting in a more efficient highway network.

**Factors influencing future trends**

The popularity of cycling increased significantly across the region between 2001 and 2013, with the number of journey to work trips across the region made by bike increasing by 40% \(^{39}\).

The popularity of cycling is expected to further increase into the future, driven by the location of residential development favouring active modes, Wellington City Council’s increased cycling budget ($4.3 million in 2014/15) \(^{40}\) and other initiatives led by GWRC\(^{41}\) (Pedal Ready, Active A2B, Spring to the Streets) aimed at increasing the attractiveness and popularity of cycling.

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38 WP4, section 5.2.2
40 http://wellington.govt.nz/services/parking-and-roads/cycling/we-support-cycling
41 http://www.gw.govt.nz/cycling2/
Building upon this growing popularity, there is scope to increase the number of cycle parking spaces at railway stations either where demand for cycle spaces exceeds supply or where the councils consider there to be untapped demand.

An increase in cycle parking spaces and a corresponding increase in the popularity of cycling to the station could:

- lead to an increase in rail patronage
- lead to an increase in the cycle mode share of trips accessing the rail network
- result in a decrease in the car mode share of trips accessing the rail network, potentially reducing congestion on the local road network
- reduce pressure on the available car parking spaces at certain stations where demand exceeds supply at peak times (e.g. Waterloo, Paraparaumu, Waikanae).

**Target: Continually and proactively increase the number of cycle parking spaces at railway stations across the region**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve integration between transport modes</td>
<td>Number of secure cycle parking spaces at railway stations</td>
<td>100% increase over the period 2003 to 2013</td>
<td>Challenge – increase by 50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – increase by 100%</td>
</tr>
</tbody>
</table>

**Challenge** – This target is for an increase in the number of secure cycle parking spaces at railway stations by 50%.

**Stretch** – This target is for an increase in the number of secure cycle parking spaces at railway stations by 100%.
11. **Objective: An attractive and safe walking and cycling network**

11.1 **Outcome 1 of 3: Increased mode share for pedestrians and cyclists**

11.1.1 **Measure 1 of 2: Proportion of journey-to-work trips made by walking and cycling (census)**

### Background

The New Zealand Census, usually undertaken every five years,\(^{42}\) provides a comprehensive summary of journey-to-work travel patterns, enabling journey-to-work trips by mode to be calculated across the whole region and compared with data from previous censuses.

### Recent trends

The active mode share of journey-to-work trips increased from 12.1% in 2001 to 14.6% in 2013. This increase was driven by a 42% increase in the number of journey-to-work trips made by cycle and a 34% increase in the number of journey-to-work trips by foot (walking). Wellington City was the major generator of these new trips and also accounted for over 75% of all journey-to-work trips made by active modes.

In addition to the significant growth rates in the share of active mode trips between 2001 and 2013, the New Zealand census data also revealed that the share of trips by public transport increased relatively strongly while the share of trips made by private car grew at a relatively slow rate.\(^{43}\) The trends regarding public transport and car use are relevant here as they will also have contributed to the increase in the share of active mode trips.

### Factors influencing future trends

The population across the region is forecast to increase by between 7% and 8%\(^{44}\) over the period to 2025, which is slightly lower than the 11% growth rate experienced over the period 2001 to 2013.

The location of future residential development, continued parking constraints in urban areas, and policies to promote active mode usage are all likely to result in a further increase in the proportion of active modes trips between 2013 and 2025.

Under the expected future scenario, the absolute increase in the number of trips over the period 2013 to 2025 is assumed to be the same as was observed between 2001 and 2013.

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\(^{43}\) WP4, section 5.2.2

\(^{44}\) Based on Statistics NZ forecasts developed for the WTSW model re-build (2011) and ID Community Profile forecasts for Wellington City Council. [http://forecast.idnz.co.nz/wellington/population-households-dwellings](http://forecast.idnz.co.nz/wellington/population-households-dwellings)
**Target: Increase the proportion of journey-to-work trips made by foot**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased mode share for pedestrians and cyclists</td>
<td>Proportion of journey-to-work trips made by foot</td>
<td>Steady increase from 9.8% (2001) to 11.6% (2013)</td>
<td>Challenge – 13.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – 14.6%</td>
</tr>
</tbody>
</table>

**Figure 10 Journey-to-work trips made by foot, 2001 to 2025**

**Challenge** – This target, based on the expected future, is for an increase in the walking mode share of journey-to-work trips from 11.6% to 13.6%, equivalent to a 27% increase in absolute terms between 2013 and 2025. The absolute increase in the number of trips is assumed to be the same over the period 2013 to 2025 as was observed between 2001 and 2013.

**Stretch** – This target is for an increase in the walking mode share of journey-to-work trips from 11.6% to 14.6%. This is equivalent to a 40% increase in the number of walking journey-to-work trips, consistent with an alternative future scenario where growth favours active modes and TDM measures are used to constrain traffic growth and promote active mode usage.

**Target: Increase the proportion of journey-to-work trips made by cycle**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased mode share for pedestrians and cyclists</td>
<td>Proportion of journey-to-work trips made by cycling</td>
<td>Steady increase from 2.3% (2001) to 2.9% (2013)</td>
<td>Challenge – 3.7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – 4.6%</td>
</tr>
</tbody>
</table>
Figure 11 Journey-to-work trips by cycle, 2001 to 2025

**Challenge** – This target is for an increase in the cycling mode share of journey-to-work trips from 2.9% to 3.7% between 2013 and 2025, equivalent to a 37% increase in absolute terms, and the addition of the same number of trips in the period 2013 to 2025 as was observed between 2001 and 2013.

**Stretch** – This target is for an increase in the cycling mode share of journey-to-work trips from 2.9% to 4.6%. This is equivalent to a 60% increase in the absolute number of journey-to-work trips made by cycle and indicative of an alternative future scenario where growth favours active modes and TDM measures are used to constrain traffic growth and promote active mode usage.
11.1.2 Measure 2 of 2: Proportion of trips crossing Wellington City CBD cordon (AM peak) by walking or cycling

**Background**

Wellington City CBD is the largest employment area in the Wellington region and the destination for many trips in the AM peak.

The Wellington City CBD cordon survey is undertaken annually in March and captures all trips by pedestrians, cyclists, public transport, and motor vehicles that cross a notional cordon around Wellington City CBD. This dataset is a source of information that can be used to determine changes in travel patterns, mode share and patronage through time.

Opportunities to gather similar cordon data for urban areas in the region other than Wellington City will be pursued by GWRC to gain a better understanding of changes in journey-to-work travel patterns in these areas between census years.

**Recent trends**

Between 2001 and 2013, the active mode share of trips crossing the Wellington City CBD cordon in the AM peak increased from 17.6% to 21.0%. In absolute terms, cycling trips crossing the cordon increased by 64% while walking trips crossing the cordon increased by 20%.

By comparison, car trips crossing the cordon decreased by 2% whilst the overall number of trips crossing the cordon increased by 4%. This 4% increase in overall cordon crossings may be considered to be relatively small, particularly compared to population growth (11%) and employment growth (13%) over the period 2001 to 2013. The small (4%) increase in overall cordon crossings can partly be explained by residential growth occurring within the CBD cordon, thus generating a considerable increase in the number of trips solely within the cordon (and not captured by the surveys).

**Factors influencing future trends**

The factors influencing future trends will be the same as for the measure in section 11.1.1 above, relating to population growth, the location of future residential development, continued parking constraints, and policies to promote active mode usage.

Whilst future residential development within the Wellington City CBD cordon will potentially generate many new trips that will not be captured by the cordon surveys, it is thought that a similar increase in the absolute number of active mode trips seen crossing the cordon between 2001 and 2013 could also be achieved between 2013 and 2025, given that Wellington City Council is planning for further residential development along the growth spine towards Newtown and Kilbirnie.
Target: Increase the proportion of trips crossing the Wellington City CBD cordon in the AM peak made by foot

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased mode share for pedestrians and cyclists</td>
<td>Proportion of trips crossing the Wellington City CBD cordon in the AM peak made by foot</td>
<td>Increase from 16.0% (2001) to 18.4% (2013)</td>
<td>Challenge – 20.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – 21.1%</td>
</tr>
</tbody>
</table>

Figure 12 Walking mode share of trips crossing Wellington City CBD cordon, AM peak, 2001 to 2025

**Challenge** – This target is for an increase in the walking mode share of trips crossing the Wellington City CBD cordon in the AM peak from 18.4% to 20.1%. This is equivalent to a 19% increase in absolute terms and is equivalent to the same number of trips added between 2001 and 2013 also being added in the period 2013 to 2025.

**Stretch** – This target is for an increase in the walking mode share of trips crossing the Wellington City CBD cordon in the AM peak from 18.4% to 21.1%, equivalent to a 30% increase in absolute terms and reflective of a scenario where significant residential growth is focused around the Wellington City CBD fringe (e.g Newtown, Kilbirnie).
**Target:** Increase the proportion of trips crossing the Wellington City CBD cordon in the AM peak made by cycle

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased mode share for pedestrians and cyclists</td>
<td>Proportion of trips crossing the Wellington City CBD cordon in the AM peak made by cycle</td>
<td>2.6% (2013), increased from 1.7% (2001)</td>
<td>Challenge – 3.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – 4.6%</td>
</tr>
</tbody>
</table>

**Figure 13 Cycling mode share of trips crossing Wellington City CBD cordon, AM peak, 2001 to 2025**

**Challenge** – This target is for an increase in the cycle mode share of trips crossing the Wellington City CBD cordon in the AM peak from 2.6% to 3.6%, representing a 36% increase in absolute terms. This equates to broadly the same increase in cycle trips observed crossing the cordon between 2001 and 2013 being generated again in the period 2013 to 2025.

**Stretch** – This target is for an increase in cycle mode share of trips crossing the Wellington City CBD cordon from 2.6% to 4.6%, equivalent to an 80% increase in cycle trips crossing the CBD cordon and reflective of a scenario where TDM measures influence the popularity of travelling by active modes.
11.2 Outcome 2 of 3: Improved level of service for pedestrians and cyclists

11.2.1 Measure 1 of 1: Perceptions of the level of service for the cyclist and pedestrian network

**Background**

Providing walking and cycling facilities that are perceived to provide ‘good’ levels of service – a safe environment, good quality path/road surfaces, sufficient and clear signage, direct link routes to key centres and destinations – is important in terms of keeping existing users satisfied and trying to attract new users.

The levels of service for the walking and cycling networks are drawn from the GWRC Transport Perceptions Survey through the following response: ‘the proportion of pedestrians or cyclists rating the network as equivalent to or better than, neither good nor bad’.

**Recent trends**

The 2012 GWRC Transport Perceptions Survey shows that 90% of respondents ranked the walking facilities as providing a ‘good level of service’ whilst only 50% thought that the cycling facilities provided a ‘good level of service’.

The perceived walking level of service improved slightly between 2003 and 2012 (from 88% to 90% satisfied). Whilst the cycling level of service deteriorated slightly over the same period (from 52% to 50% satisfied), the cycling level of service in 2012 was perceived as being relatively poor as minimal dedicated cycle infrastructure was provided within Wellington City and the majority of cycle kilometres travelled on the region’s roads occur on stretches of road where there are no dedicated cycling facilities.

**Factors influencing future trends**

There is a desire by the authorities to invest in and expand the cycle network within the region. Wellington City Council is undertaking a process to identify potential corridors that could benefit from enhanced cycle facilities (Island Bay to Berhampore is the first corridor to have been identified as part of this process) whilst NZTA are also focusing on progressing the Ngauranga to Petone cycleway to provide a commuter and leisure route between the Hutt Valley and Wellington City.

With future residential development likely to be focused upon Wellington City CBD and in urban areas, combined with urban redevelopment strategies designed to create more open and pedestrian friendly urban areas, the walking level of service is likely to improve into the future.
Target: Perceptions of level of service – increase the percentage of respondents rating the pedestrian and cycling networks as either ‘good’ or ‘neither good nor bad’

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved level of service for pedestrians and cyclists</td>
<td>Perceptions of the level of service for the cyclist and pedestrian network</td>
<td>Pedestrians = ~90%, cycling = ~50% Walking – flat trend since 2001 Cycling – slightly declining trend</td>
<td>Challenge – pedestrians 95%, cycling 60%</td>
</tr>
</tbody>
</table>

Figure 14 Regional walking levels of service, 2003 to 2025

Figure 15 Regional cycling levels of service, 2003 to 2025
**Challenge** – This target is to attain the 95% and 60% level of service ratings for both active modes (pedestrian and cycling, respectively). This target is reliant upon continued investment in both walking and cycling facilities.
11.3 Outcome 3 of 3: Increased use of active modes for journeys to school

11.3.1 Measure 1 of 1: Use of active modes in journeys to school at schools participating in the Wellington Region School Travel Plan programme

**Background**

The Wellington Region School Travel Plan (STP) programme began in 2006. It is a joint partnership between GWRC, local councils and the schools, with the aim of designing school travel plans to increase the number of journeys to school made by active modes. As stated on the GWRC website, the desired benefits are to ‘support parents to develop their children’s confidence and independence; reduce traffic congestion; reduce air pollution and improve children’s road and personal safety skills, health and well-being’.

In 2014, 74 schools (with 22,000 children) were included in the STP programme. Across the region, participation rates for school children varied from Kapiti (80% of children participated in the programme) to Upper Hutt (32%) and Porirua (9%). Across the region, around 25% of school children participated in the programme (2014).

Whilst the councils aim to expand the reach of the programme to other schools, such efforts are not the subject of any specified RLTP target. Instead, this measure focuses on continually increasing the use of active modes for journeys to school at schools already participating in the programme.

During the lifetime of the RLTP, however, it is hoped that school participation rates in the programme will increase. If this is the case then any new schools will also be covered by this measure.

**Recent trends**

**Figure 16** shows the mode share of journeys to school for schools participating in the STP programme, as assessed using a rolling four-year average between 2006 and 2013.

Figure 16 Mode share of journeys to school (schools in STP), rolling four–year average, 2006 to 2013

There was an 8 percentage point increase in the active mode share of journeys to school (from 32% to 40%) over the period in question, mainly driven by a 5% increase in the number of children cycling, skating or going by scooter to school.

Factors influencing future trends

Future trends are likely to be influenced by:

- continued and additional resources, support and assistance that can be provided to schools in the region undertaking STPs
- expanding the programme to additional schools
- continued investment in both cycle safety programmes (e.g. Pedal Ready) and cycling infrastructure

As safety for all roads users continues to be a focus area for national and local authorities, combined with the progress made under the STP programme since 2006, the percentage of children travelling to school by active modes is expected to increase in the future.

**Target: Increase the use of active modes in journeys to school at schools participating in the regional STP programme**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased use of active modes for journeys to school</td>
<td>Use of active modes in journeys to school at schools participating in the regional STP programme</td>
<td>40% of journeys to school undertaken by active modes at schools with an STP – 27% by foot, 13% by cycle/scooter/skateboard</td>
<td>Continual increasing use of active modes in journeys to school</td>
</tr>
</tbody>
</table>
**Challenge** – This target is for a continual increase in the use of active modes as a method of travelling to school, as a result of continued investment in STPs and the increasing attractiveness of travelling by active modes.
12. **Objective:** An efficient and optimised transport system that minimises the impact on the environment

12.1 **Outcome 1 of 2: Reduced harmful emissions from transport**

12.1.1 Measure 1 of 2: Transport-generated emissions (per capita)

12.1.2 Measure 2 of 2: Transport-generated emissions (absolute)

**Background**

Across New Zealand, 16% of total annual greenhouse gas emissions were attributed to the transport sector in 2014. Carbon dioxide (CO$_2$) accounted for the bulk of transport-generated emissions and is therefore a suitable proxy for total transport-generated greenhouse gas emissions in this measure. Furthermore, the time-series data relating to transport-generated CO$_2$ emissions are easily accessible.

As stated above, whilst transport only accounts for a 16% percentage of nationwide greenhouse gas emissions, reducing transport-related CO$_2$ emissions is expected to deliver health benefits and contribute towards New Zealand’s goal of reducing greenhouse gas emissions and helping global efforts to influence climate change.

Two similar measures have been chosen for this outcome:

- **Per capita** transport-generated emissions – provides an indication of whether the transport system is becoming more efficient, in relation to emissions, by producing less emissions on a per head of population basis.

- **Absolute** transport-generated emissions – provides an indication of how overall transport-generated emissions changes due to factors such as population growth, changing travel patterns and improvements in vehicle efficiency.

**Recent trends**

As shown in Figure 17, between 2001 and 2013, transport-generated CO$_2$ emissions within the region declined in per capita terms by around 12%. It is thought that this is due to the combined effect of a reduction in fuel consumption due to vehicle fleet fuel efficiency improvements, and a reduction in vehicle kilometres travelled (VKT) per capita over the same period.

In absolute terms, transport-generated CO$_2$ emissions increased by around 10% between 1999 and 2005, before falling by 8% between 2005 and 2013, to a level in 2013 that was 2% higher than in 1999.

---

Between 2005 and 2013, transport-related greenhouse gas emissions decreased when expressed in both absolute and per capita terms.

According to WTSM\textsuperscript{47}, public transport accounted for approximately 3% of total annual regional transport-related greenhouse gas emissions in 2011, whilst freight trips accounted for around 10%. The majority of emissions (87%) were generated by the private motor vehicle.

Figure 17 Annual regional transport-generated CO\textsubscript{2} emissions, 1999 to 2013

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure17}
\caption{Annual regional transport-generated CO\textsubscript{2} emissions, 1999 to 2013}
\end{figure}

Sources: local authorities (fuel sales); Ministry of Business Innovation & Employment

\textbf{Factors influencing future trends}

In the future it is likely that the downward impact on fuel consumption from vehicle fleet efficiency improvements, including improvements to the bus fleet, will outweigh the impact on fuel consumption of population growth (generating additional vehicle trips) and any per capita increase in private car and freight VKT that might occur, resulting in a steady reduction in per capita CO\textsubscript{2} emissions and a similar reduction in absolute annual transport-generated CO\textsubscript{2} emissions.

The rate of reduction, however, will depend on several factors including growth in car VKT, modal shift from car to public transport, government policies and external factors such as the price of fuel.

\textbf{Target: Reduction in per capita transport-generated CO\textsubscript{2} emissions}

\begin{table}
\centering
\begin{tabular}{|l|l|l|l|}
\hline
\textbf{Outcome} & \textbf{Measure} & \textbf{Baseline (2013)} & \textbf{2025 target} \\
\hline
Reduced harmful emissions from transport & Transport-generated emissions (per capita) & 2.31 tonnes CO\textsubscript{2} per capita & Challenge – 15% reduction \\
13\% reduction since 2005 & & & Stretch – 25% reduction \\
\hline
\end{tabular}
\end{table}

\textsuperscript{47} Estimate, based on 2011 base year WTSM model
**Challenge** – This target is for a 15% reduction in per capita CO\textsubscript{2} transport-generated emissions. This scenario assumes a continuation of recent trends (since 2005), namely a small reduction in CO\textsubscript{2} emissions per capita. Whilst VKT might increase by up to 5% out to 2025 as a result of 7% increase in population\textsuperscript{48} and a slight decrease in VKT per capita, fleet fuel efficiency improvements of up to 15%\textsuperscript{49} would result in a net decrease in emissions of around 15%.

**Stretch** – This target is for a 25% reduction in CO\textsubscript{2} emissions per capita under a scenario where modal shift from car to public transport, combined with TDM measures, results in no significant increase in car VKT across the region. Combined with vehicle fleet fuel efficiency improvements at the upper range of probability (20%) and a 7% increase in population, such a scenario would result in a decrease in per capita CO\textsubscript{2} emissions of around 25%.

**Target: Reduction in total annual transport-generated CO\textsubscript{2} emissions**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced harmful emissions from transport</td>
<td>Transport-generated emissions (absolute)</td>
<td>1,060 kilotonnes per annum, Decrease of 8% since 2005</td>
<td>Challenge – 10% reduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – 20% reduction</td>
</tr>
</tbody>
</table>

**Challenge** – This target is for a 10% reduction in annual transport-generated CO\textsubscript{2} emissions. Such a scenario assumes a continuation of recent trends (since 2005), namely a small reduction in CO\textsubscript{2} emissions per annum. Whilst car VKT might increase by around 5%, fleet fuel efficiency improvements of around 15% would result in a net decrease in emissions of around 10%.

**Stretch** – This target is for a 20% reduction in absolute CO\textsubscript{2} emissions assumes a scenario where significant modal shift from car to public transport, in parallel with TDM measures, results in only a small or negligible increase in car VKT. Combined with vehicle fleet fuel efficiency improvements at the upper range of probability (20%), the resulting decrease in annual transport-generated CO\textsubscript{2} emissions would be around 20%.

\textsuperscript{48} Based on a 7% increase in population (WP2, section 2.2, page 12) and a small decrease in VKT per capita between 2013 and 2025

12.1.3 Measure 3 of 3: Concentrations of harmful transport-generated pollutants

**Background**

Air contaminants such as particulate matter (PM\(_{10}\) or PM\(_{2.5}\)), carbon monoxide (CO) and nitrogen dioxide (NO\(_2\)) are by-products of fuel combustion and are known to have adverse human health effects, particularly when their concentrations in air exceed certain guidelines.

At the time of writing, nitrogen dioxide is the only pollutant for which enough data are collected around the region to enable trends to be identified, targets set and progress monitored. The data are obtained from the NZTA’s network of air quality monitoring sites\(^50\) which covers state highways and local roads and includes GWRC’s site on the corner of Vivian Street and Victoria Street.

This target was developed on the basis that nitrogen dioxide is the pollutant being monitored and provides a proxy for the impact of other pollutants.

However, the aim during the course of the RLTP is to improve the reporting and monitoring framework such that levels of other pollutants might also be measured.

**Recent trends**

*Figure 18* shows the average annual nitrogen dioxide levels across a number of monitoring sites throughout the region between 2010 and 2013, together with the four-year average that will be the basis against which progress towards the recommended target will be measured.

![Figure 18 Average annual nitrogen dioxide emissions at regional monitoring sites (µg/m\(^3\))](image)

Looking across all sites, nitrogen dioxide emissions fluctuated between 2010 and 2013. The 2013 average (22.1µg/m\(^3\)) was marginally lower than the 2010 average (22.8µg/m\(^3\)), pointing to a slight reduction in emissions of harmful transport-generated pollutants between 2010 and 2013.

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\(^{50}\) Passive diffusion tubes
Factors influencing future trends

In the future, continual vehicle fleet fuel efficiency\(^{51}\) improvements are expected to result in lower levels of emissions and less harmful emissions being produced by road transport.

Government policies regulating road vehicle emissions and providing incentives for people to drive cleaner (i.e. with lower pollutant emission levels), and more fuel efficient vehicles may also help accelerate this trend.

Vehicle emissions are influenced by the age of the vehicle, maintenance standards, fuel type, etc. As the vehicle fleet is continually renewed, the level of pollutants produced per vehicle is expected to drop. Whilst the number of vehicles on the region’s roads is forecast to increase into the future, it is thought that the rate of improvement in vehicle fuel efficiency and cleanliness will outstrip any growth in VKT, leading to a net decrease in harmful emissions.

**Target: Reduction in concentrations of harmful transport-generated pollutants (nitrogen dioxide emissions as a proxy)**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced harmful emissions from transport</td>
<td>Concentrations of harmful transport-generated pollutants</td>
<td>Four-year average (2010 to 2013) nitrogen dioxide emissions across all NZTA monitoring sites of 22.4µg/m(^3)</td>
<td>Challenge – 10% reduction in harmful transport-generated pollutants</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stretch – 20% reduction in harmful transport-generated pollutants</td>
</tr>
</tbody>
</table>

**Challenge** – This target is for a 10% reduction in harmful transport-generated pollutants, measured using nitrogen dioxide as a proxy measure for a range of harmful transport-generated emissions. This is based on an expected future scenario where improvements in vehicle fuel efficiency outweigh any increase in VKT leading to a small but significant reduction in harmful transport-generated pollutants to a level 10% below the average 2010–2013 level.

**Stretch** – This target is for a 20% reduction in harmful transport-generated pollutants, measured using nitrogen dioxide as proxy for a range of harmful transport-generated emissions. Equivalent to an alternative future scenario where improvements in vehicle efficiency and subdued traffic growth, potentially as a result of TDM measures, result in a 20% reduction in harmful transport-generated pollutants compared with the average 2010–2013 level.

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12.2 Outcome 2 of 2: Increased private vehicle occupancy

12.2.1 Measure 1 of 1: Peak period private vehicle occupancy

Background

Multiple occupancy vehicle trips (including buses) contribute to the efficient usage of the region’s roads, as they raise the average number of people per vehicle, which in turn reduces the number of vehicles on the road required to transport those people.

From a driver’s point of view, having two or more people in a vehicle means that the costs – particularly fuel and parking – are shared across a number of people, making the journey more affordable per person.

Given that capacity on the roading network is limited, increasing average vehicle occupancy levels is a means of transporting more people, more efficiently across the network.

Wellington City Council surveys vehicle occupancies crossing a cordon around Wellington City CBD between 7am and 9am. These data are used as a basis for developing future vehicle occupancy targets.

Recent trends

Over the period 2002 to 2013, the average vehicle occupancy in the AM peak rose slightly from 1.38 to 1.41. This increase has not been continual and linear, however, with the figure fluctuating between 1.36 (2005) and 1.44 (2010).

Factors influencing future trends

Factors that might affect vehicle occupancies in the future include:

- Parking policy – increasing the cost of parking at an average annual rate over and above the rate of inflation may result in people finding ways to cut costs, such as car sharing.

- The increasing attractiveness of travelling by public transport – shifting from car to public transport is more likely to be considered by current single occupant drivers as opposed to persons who currently share the cost of travel with others. Therefore an increase in the public transport mode share might remove single occupant cars from the roads, resulting in a consequent increase in average vehicle occupancies.

- Measures to promote car-pooling, ranging from advertising through to priority T2/T3 lanes and perhaps priority parking for multiple occupant vehicles.

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52 Annual survey, split across three days, undertaken in March
53 Dedicated lanes that can only be used by vehicles that have more than two (T2) or three (T3) occupants
With the attractiveness of public transport forecast to increase in the future, due to infrastructure projects such as BRT, combined with continued parking constraints and the assumption that parking costs will continue to increase at above inflation rates into the future, a likely future scenario is one where vehicle occupancy gradually increases.

**Target: Gradual increase in peak period private vehicle occupancy**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measure</th>
<th>Baseline (2013)</th>
<th>2025 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased private vehicle occupancy</td>
<td>Peak period private vehicle occupancy</td>
<td>AM peak vehicle occupancy of 1.39</td>
<td>Challenge – Gradual increase in peak period private vehicle occupancy to 1.45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Little change between 2002 and 2013</td>
<td>Stretch – More rapid increase in peak period private vehicle occupancy to 1.50</td>
</tr>
</tbody>
</table>

**Figure 19 Average vehicle occupancy, 2002 to 2025**

**Challenge** – This target is for a gradual increase in peak period private vehicle occupancy to 1.45, a result of public transport investment and continued parking constraints.

**Stretch** – This target is for a more rapid increase in peak period private vehicle occupancy to 1.50, driven by significant public transport investment, continued parking constraints, TDM measures and car-pooling initiatives such as T2/T3 lanes.
13. Summary

This working paper is the fifth in a series of five working papers that together provide the background analysis and revised targets and measures for the RLTP that will be effective from 1 July 2015. As explained in section 1, the RLTP replaces the RLTS and the Regional Land Transport Programme for 2012–15, and the associated set of measures and targets must therefore be revised and incorporated into the RLTP.

This series of working papers presents the targets associated with the RLTS and Regional Land Transport Programme (WP1) and shows the progress made towards each of the targets during the time that the programme has been operational. From that list, recommendations of revised targets (and where appropriate revised measures) for the RLTP are provided.

WP2 summarises observed trends and patterns affecting the region’s land transport network, and suggests how they may develop into the future. This feeds into an analysis of pressures and issues affecting the region’s transport network. This evidence and analysis provides a basis for the development of the expected future scenario that is used in the subsequent working papers to inform the development of the RLTP targets.

The Wellington Transport Strategy Model (WTSM) has been used to model a range of scenarios, investigating the extent to which different future scenarios might result in different travel patterns (WP3). The expected future scenario is defined, as are alternative scenarios. This analysis then informs the choosing and setting of the targets for the RLTP (WP4).

This working paper brings together the analysis from the first four working papers to produce a revised set of targets and measures for the RLTP. The measures are broadly similar to those in the RLTS, and the targets in the RLTP are set with reference to these measures, to apply to the period 2015 to 2025. This is presented within the context of the policy framework within which they sit, specifically the stated strategic objectives and desired outcomes for the RLTP. For each of the measures, challenging targets are set on the basis of the expected future and for some measures, stretch targets are presented, which relate to alternative future scenarios.

This set of working papers has determined that the expected future is the most likely scenario and the associated set of targets – the challenging targets – are the set that are used in the RLTP.

The targets outlined in this paper are summarised under Part E of Policy Framework, pages 34-41 of the draft RLTP 2015 document.