

1 Introduction

This document identifies credible future public transport scenarios for the northern suburbs and provides background information to enable informed public comment on options being considered.

In November 2005, Wellington City Council and Greater Wellington Regional Council asked people in the northern suburbs about their public transport needs. The main overall need identified was for a sufficiently frequent, reliable public transport system with convenient routes. This included concern over the run down and poor condition of trains¹.

These submissions have been used to inform the investigation of various future public transport scenarios. The outcome has been the identification of four scenarios for further consideration and consultation:

- 1) *Scenario One – Enhanced Rail* – improvements to existing rail services
- 2) *Scenario Two – Bus with Walking and Cycling* – replacement of rail with buses running on street (the existing railway line would be converted to a walking and cycling track)
- 3) *Scenario Three – Busway* – replacement of rail with buses on a guided busway
- 4) *Scenario Four – Light Rail* – replacement of rail with a light rail service along the existing railway line

This report describes each of these scenarios and compares the advantages and disadvantages of each. Although it contains cost information, no attempt has been made to quantify the economic benefits of each scenario. This will be done during the next stage of the study when selecting the preferred scenario.

A number of other scenarios have also been considered and are discussed in this document but initial investigations have shown that these are either not appropriate for the northern suburbs or are unaffordable. The Scenarios Technical Appendices document contains further technical detail on all scenarios considered.

Information on the Study is available at www.gw.govt.nz

¹ North Wellington Public Transport Study, Stage 1 – Issues and Needs Analysis – Summary of Submissions (available at http://www.gw.govt.nz/story_images/2604_NorthernSuburbsP_s4943.pdf)

2 Context

This section identifies the objectives of the study and explains the strategic context within which it is being undertaken. This section also provides background information on current public transport patronage and explains the affordability criteria used to help identify viable scenarios.

2.1 Study objectives

The purpose of the North Wellington Public Transport Study is to develop a strategic framework for future investment in public transport. The study objectives are:

- 1) to identify the current and future passenger transport needs of the northern suburbs
- 2) to develop a passenger transport strategy to meet these needs
- 3) to develop a passenger transport strategy which supports and informs the strategic land use and transport planning objectives of the Regional Land Transport Strategy, the draft Wellington City Council Transport Strategy and the draft Wellington City Council Urban Development Strategy.

In achieving these objectives the study must consider investment efficiency and economic costs and benefits as well as environmental and urban planning matters.

2.2 Strategic context

A primary objective of this study is to support and inform the strategic land use and transport planning objectives of the following strategies:

- 1) Regional Land Transport Strategy
- 2) Draft Wellington City Council Transport Strategy
- 3) Draft Wellington City Council Urban Development Strategy

In addition this study is closely aligned to the Ngauranga to Airport Strategic Study which is looking at how to address transport issues between Ngauranga Gorge and the airport, including the Wellington CBD.

Each of these strategies and the Ngauranga to Airport Strategic Study are outlined below.

2.2.1 Regional Land Transport Strategy

The Regional Land Transport Strategy sets out the vision, objectives, policies and plans for land transport in the Wellington region. It offers the potential to significantly improve the economic and social wellbeing of the region. The Strategy fulfils the formal requirements of a Regional Land Transport Strategy and incorporates the Regional Passenger Transport Plan.

The strategy represents a balanced vision for land transport that is shared by local government and transport organisations represented on the Regional Land Transport Committee. The Regional Land Transport Strategy is a "living" document and is currently under review, with an updated version due for release later in 2006.

2.2.2 Draft Wellington City Transport Strategy 2006

The Draft Transport Strategy sets out Wellington City Council's long-term direction for transport. It identifies how the transport system is to be developed to support the city's vision for its future growth and function.

The draft strategy includes among its objectives developing public transport systems as the main means of moving people along the urban development "growth spine" and ensuring continued access to the CBD for commuters. The major issue for transport is the need to support the city's land use and urban form objectives which are contained in the Urban Development Strategy.

A key consideration for the current study is the desire for a seamless passenger transport system along the "growth spine", which has been identified by the Urban Development Strategy for intensification and includes Johnsonville and the CBD. The strategy also identifies the need for bus-priority measures on all main arterial routes to and through the city, to ensure a fast and efficient passenger transport system.

2.2.3 Draft Wellington City Urban Development Strategy

The Draft Urban Development Strategy sets out Wellington City Council's long-term direction for the physical development of the city. It aims to direct growth to where the benefits are greatest and adverse effects are minimised, and to ensure high quality development.

A key component of the strategy is the "growth spine" concept which identifies the benefits arising from transit-oriented intensification of employment and housing along the major north/south axis of the city, and which includes Johnsonville and the CBD.

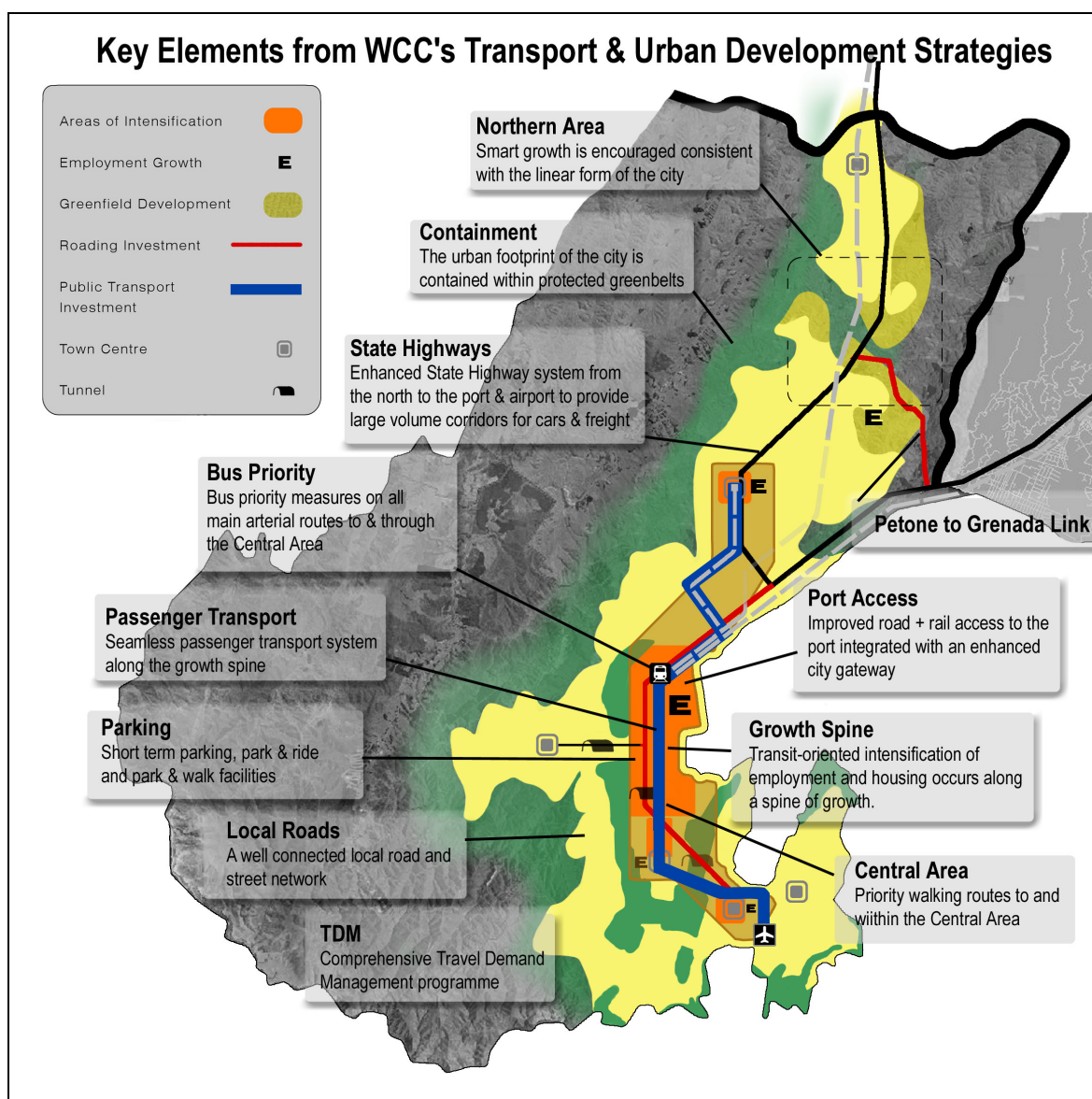
The strategy also identifies the importance of residential growth in the northern suburbs. The Northern Growth Management Framework developed by the Council in consultation with the community identifies how both employment and population growth is to be managed in the northern suburbs. The framework identifies new areas for both residential and economic development and may result in significant changes to land use patterns in the northern suburbs.

Refer Figure 1 below for a summary of the key elements of both the Urban Development Strategy and Transport Strategy.

2.2.4 Ngauranga to Airport Strategic Study

The Ngauranga to Airport Study is being undertaken in parallel with this study and is looking at how to address transport needs between Ngauranga Gorge and the airport, including the CBD and the performance of the bus lanes. There is significant overlap with the current study because the CBD public transport corridor may be at or near capacity and the implications of sending more buses through the CBD from the northern suburbs must be considered.

- **Figure 1 Wellington City combined draft Urban Development Strategy and Transport Strategy diagram**



2.3 Current public transport patronage

Public transport figures have been collected from a number of sources and used to calibrate the regional transport model (WTSM). Journey to work data from the 2001 Census has also been obtained for those areas shown in Figure 2. Due to patronage figures generally being commercially sensitive the following figures are not actual figures but are either outputs of the regional transport model or data collected from the Census 2001.

Annual patronage – Approximately 3.1 million trips were made in 2005 on public transport services from the northern suburbs. Of these trips, 1.3 million trips (42%) were on the Johnsonville railway line and 1.8 million trips (58%) on either Stagecoach or Newlands bus services².

Morning peak patronage – Approximately 3,000 trips were made to the CBD in 2001 during the two hour morning peak period on public transport services using the northern suburbs. Approximately 1,300 (43%) of these trips were on the Johnsonville railway line³ and 1,700 (57%) on either Stagecoach or Newlands bus services⁴.

Proportion of journey to work – Census 2001 data showed public transport carried 3,102 trips and accounted for 14.9% of all journeys to work each day from the northern suburbs. Of these trips 1,137 (37%) were by train and 1,965 (63%) by bus⁵.

The population of the northern suburbs in 2001 was approximately 38,000 and by 2016 is projected to increase by 15% to approximately 44,000. This projection is consistent with additional growth that may occur through the implementation of the Urban Development Strategy growth spine concept. Most of this growth will be in greenfields areas to the north of Churton Park and Newlands.

The 15% increase in population is anticipated to result in a 35% increase in the use of public transport during the two hour morning peak period over the same period. The use of public transport is expected to increase at a faster rate than population for a number of reasons, including increasing impacts of traffic congestion.

² The 1.8 million trips on bus are made up of: 0.4 million on Stagecoach and 1.4 million on Newlands bus services

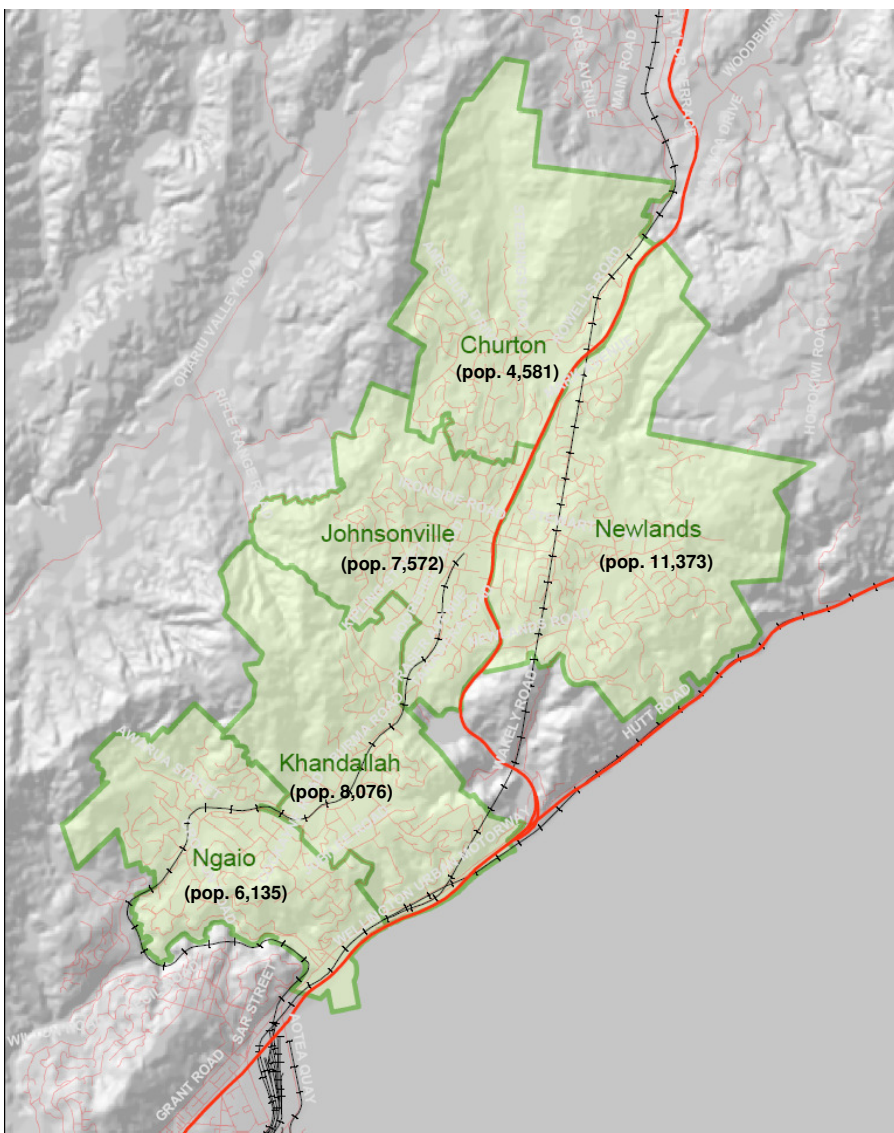
³ Rail guard counts in 2001

⁴ Factored WTSM model 2001

⁵ Census 2001 population and journey to work information for Wellington North

By 2016 general traffic growth is expected to result in increased congestion and longer journey times for both private vehicles and buses. For example the average amount of time taken to travel from the Newlands onramp to the Aotea off-ramp via the SH1 Ngauranga Gorge in the two hour AM peak is expected to increase by 20%⁶.

Figure 2: Census 2001 Areas used for Population and Journey to Work Information



⁶ WTSM model base forecasts

2.4 Affordability considerations

In developing public transport scenarios for the northern suburbs the issue of affordability is expected to limit the number of viable options as discussed below.

2.4.1 LTCCP as benchmark

A benchmark for what is affordable to the region is the amount of funding currently identified in Greater Wellington's Long Term Council Community Plan (LTCCP) for public transport improvements in the northern suburbs.

The amount of funding identified in the LTCCP includes anticipated rates increases over the plan's 10-year period and it is therefore unlikely more money will be available.

The public transport improvements that have been included in the "funding envelope" are those identified for improvements on the Johnsonville railway line as set out in Table 1. The LTCCP funding assumed running refurbished Ganz-Mavag units on the Johnsonville railway line, however, the affordability calculations used to determine the funding envelope assumes new units.

■ Table 1: Northern suburbs passenger transport improvements allowed for in the Greater Wellington LTCCP

Improvement	Timing	Cost
Minor Johnsonville Station refurbishment	06/07	\$0.2m
Infrastructure improvements to allow the new larger trains to operate on the Johnsonville railway line (Tunnel Lowering)	07/08	\$3.0m
Increased length of passing loops at Wadestown and Khandallah to accommodate longer car lengths	07/08	\$9.0m
Replacement of the existing English Electric trains which run on the Johnsonville railway line with new EMUs (12 units) or refurbished Ganz-Mavag units	08/09	\$42m
Minor station refurbishments	12/13 – 13/14	\$1.3m
New EMUs to meet demand (4 units)	11/12	\$12m
Total		\$67.5m

Note: These values are in nominal dollars and include capital costs only. They are therefore not comparable with NPV values used elsewhere.

2.4.2 Affordability envelope

The twenty-five year affordability envelope for public transport in the northern suburbs is anticipated to be in the order of \$120m, with \$70m available over the next ten years. In accordance with existing Land Transport NZ funding criteria the total regional contribution would be \$55m,

with \$35m contributed over the next ten years as part of the current LTCCP⁷. The balance would be funded by Land Transport NZ. Greater Wellington is also able to borrow to fund capital items and smooth its cash flow.

2.4.3 Note on financial calculations

In this document, except where otherwise noted, it has been assumed that all capital investments in infrastructure and new rolling stock would be debt funded and paid annually. The calculations also include operational costs for both rail and bus, which are assumed to be paid annually in the year incurred. The cost estimates are expressed in today’s equivalent dollars (net present value or NPV) and include both capital costs and operational subsidies after fare revenue is deducted. Depreciation is not included in these figures as it is a non-cash item. In other words the cost of each scenario is based on the NPV of the total financing cash flow, including Greater Wellington and Land Transport NZ contributions. In addition the calculations include an amount allocated on a region wide basis for bus service improvements which will be part of the Wellington Bus Service Review to be undertaken in 2008.

2.4.4 Performance of scenarios against affordability envelope

Table 2 below compares the total cost of each scenario to the funding currently available in the LTCCP for public transport in the northern suburbs. These figures are not directly comparable with the figures in Table 1 as those figures are in nominal dollars and include capital costs only.

■ **Table 2: Option Costs relative to base LTCCP**

Scenario	Cost (25 yr NPV)	% of LTCCP funding envelope
LTCCP base case	\$120 million	100%
Enhanced Rail	\$125 to \$160 million ⁸	104% to 133%
Bus with Walking and Cycling	\$95 to \$105 million	79% to 88%
Busway	\$120 to \$130 million	100% to 108%
Light Rail	\$165 to \$175 million	138% to 146%

⁷ These figures are expressed in today’s equivalent dollars (NPV) and are based on the infrastructure improvements detailed above, information provided on current bus and rail subsidy costs and a percentage of the bus improvement funds available for the region. Affordability calculations have been done over a 25 year analysis period with any capital or operational expenditure outside of the 25 year analysis period not incorporated in the calculations.

⁸ Since these costs were prepared additional work has been undertaken by Ontrack indicating costs could be significantly lower than quoted here. It is not clear, however, whether these results are directly comparable to the figures quoted here. This issue will be considered in more detail during the next stage of this study.

It is important to note that scenarios costing significantly more than \$120m are unlikely to proceed without significant additional funding.

2.4.5 Land Transport NZ funding policies

Land Transport NZ is the government agency responsible for transport funding, including public transport. Land Transport NZ subsidise public transport services throughout New Zealand in accordance with their funding policies. These funding policies were used in determining the amount of funding available for each scenario.

Current Land Transport NZ funding policies state that they will contribute 60% towards rail costs and 50% towards bus costs after accounting for fare box revenues. The region is required to cover the remaining funding.

3 Proposed improvements under all scenarios

A number of public transport improvements are expected under all the scenarios put forward in this document. Appendix A describes the current public transport services in the northern suburbs.

3.1 General improvements to bus services

The scenarios mostly impact on the current rail corridor serving Johnsonville, Khandallah and Ngaio, and not on other areas of the northern suburbs. Additional bus improvements are therefore proposed under all scenarios, except the Busway⁹, to benefit Newlands (Route 56), Woodridge (Route 57), Grenada Village (Route 55), Churton Park (Route 54), Johnsonville West (Route 53), Broadmeadows (Route 46) and Khandallah East and Ngaio (Routes 43, 44 & 45).

These additional bus improvements will cater for new patronage. Before any improvements can be implemented Greater Wellington will need to carry out a full bus route service review to ensure that changes meet the needs of residents and are economically viable.

At this stage a service review has not been undertaken, so the following list of potential improvements are simply indicative of those that may take place under all scenarios (except the busway⁹) subject to a full service review. The potential enhancements to bus services in the northern suburbs include:

- New Route B – Broadmeadows via Homebush Road and Khandallah and terminating in Johnsonville. This route replaces the Homebush Road section of the existing Route 43 and 44 loop, Route 46, Route 50 and the existing Route 53 service for Johnsonville West.
- New Route K – Khandallah via the Ngaio Gorge. This route replaces the Ngaio Gorge section of the existing Route 43 and 44 loop.
- New Route 54 which removes the section of the existing Route 54 loop that uses Middleton Road. Capacity for this section of Middleton Road would be provided for by additional Route 59 services running to / from Courtenay Place and / or connecting with the Route 54 at Johnsonville.
- Peak frequencies of between 4 and 15 minute and off-peak frequencies of no less than 30 minutes to all suburbs served by bus.

These general improvements to bus services are shown on Figure 3. This figure is the *Enhanced Rail Scenario* but includes the proposed general improvements to bus services.

⁹The *Busway Scenario* includes a comprehensive redesign of bus operations throughout the northern suburbs as detailed under that scenario.

It is assumed that these improvements would take place incrementally over the next ten years as justified by patronage with all improvements proposed to be in place by 2016.

3.2 Johnsonville town centre and transport hub

Improvements to the public transport facilities in Johnsonville town centre are planned and will be required under all the scenarios identified. The exact nature of the improvements will depend on the preferred scenario and the strategic vision for Johnsonville town centre, which is currently being developed in a separate exercise.

Johnsonville town centre is a key component of Wellington City Council's two key urban form strategies – the Urban Development Strategy and the Northern Growth Management Framework. These strategies recognise that Johnsonville is the largest and most significant town centre in Wellington outside of the CBD. The importance of this centre will grow with the implementation of the Northern Growth Management Framework and subsequent population expansion in the north. Johnsonville is also identified by the Urban Development Strategy as a centre for intensification.

In implementing its strategic vision for Johnsonville town centre, Wellington City Council will consider how Johnsonville can be promoted as a public transport hub that is integrated with the town centre. This will take into account location, amenity, connectivity and supporting facilities.

3.3 Wellington CBD

The Wellington Central Business District (CBD) is the primary employment area and destination for public transport users from the northern suburbs. Journey to Work data from the 2001 Census indicates that 26.8% of all journey to work trips from the northern suburbs are made by train or bus and finish in the CBD¹⁰.

All rail journeys currently finish at the Wellington Railway Station which is located at the northern end of the CBD, adjacent to the Lambton Bus Interchange. Bus routes enter the CBD from various directions and are directed through a single CBD bus corridor between the Lambton Bus Interchange and Courtenay Place.

The benefits of extending public transport services from the railway station through the CBD are highlighted by the large patronage increases achieved when Newlands bus services were reorganised in 2000 and extended from Lambton Bus Interchange through to Courtney Place (that is, a seamless service was implemented through the CBD). This resulted in a 40% increase in

¹⁰ 9.7% of journey to work trips from the Northern Suburbs are made by train and terminate in the CBD, while 17.1% are made by bus

patronage as frequency increased and a seamless service provided where passengers were able to travel through the CBD without having to interchange.

The patronage increases achieved in 2000 highlight the benefits of a seamless public transport service through the CBD. They also indicate a possible unsatisfied demand for a seamless service where services do not extend through the CBD.

Although major patronage increases may arise from extending bus services through the CBD, the existing bus corridor is currently at or near capacity. The capacity issue is made worse by the region's topography and layout which means that all traffic is funnelled through the CBD. The Ngauranga to Airport Strategic Study, which is being undertaken in parallel with this study, will consider these issues in further detail.

What is clear is that additional bus priority measures, which aim to overcome the problem of buses and other vehicles competing for limited road space, will be required under all scenarios where additional bus services are required through the CBD. An indicative cost of such measures has been included in all scenarios where appropriate.

