

## 5 Comparison of public transport scenarios

This section gives a comparison of the four passenger transport scenarios identified for further consideration.

■ **Table 7: Comparison of scenarios – Across all the northern suburbs**

|                      | <b>Enhanced Rail</b>   | <b>Bus with Walking and Cycling</b>   | <b>Busway</b>  | <b>Light Rail</b>   |
|----------------------|--|---|--|---|
| <b>Frequency</b>     | Frequency of trains 10 to 13 minutes during peak periods. Frequency of all other bus services 4 to 15 minutes during peak periods                  | Frequency of buses replacing trains 3 to 5 minutes during peak periods. Frequency of all other bus services 4 to 15 minutes during peak periods         |  | Frequency of light rail services 10 minutes during peak periods (3 minutes for CBD section). Frequency of all other bus services 4 to 15 minutes during peak periods            |
| <b>Journey times</b> | Journey times remain the same for existing rail users  | Journey times increase for existing rail users who will travel on bus   | Journey times similar for existing train users who travel on the busway with improvements for some express services  | Journey times are similar for existing rail users who travel on light rail  |
| <b>Reliability</b>   | Travel time reliability for the 43% of peak period commuters who travel on train services will not be affected by traffic incidents and congestion | Travel time reliability for all bus services affected by traffic incidents and congestion, which will worsen as traffic grows (all peak hour commuters) | Travel time reliability for busway services not affected by traffic incidents and congestion (expected to be majority of peak period commuters)            | Travel time reliability for light rail services from Johnsonville to Wellington Station not affected by traffic incidents and congestion  |
|                      | Travel time reliability for the 57% of peak period commuters who travel on bus services will worsen as traffic grows                               |   | Travel time reliability for bus services not on the busway affected by traffic incidents and congestion (expected to be minority of peak period commuters) | Travel time reliability for light rail services between Wellington Station and Courtenay Place affected by traffic incidents and congestion, which will worsen as traffic grows |
|                      |  |   |  | Travel time reliability for bus services affected by traffic incidents and congestion, which will worsen as traffic grows   |

|   |  |   |  |   |
|---|--|---|--|---|
| <b>CBD congestion and priority measures</b> | CBD congestion and traffic incidents will impact all services which run on roads including light rail                                      |   |  |   |
|   | CBD will require some bus priority measures to cater for general growth in public transport use  | CBD will require bus priority measures for additional buses. Road capacity and parking spaces in CBD may be reduced |  | CBD will require significant priority measures for light rail and consequential changes to bus priority measures. Road capacities and parking spaces in the CBD will be reduced |
| <b>Northern suburbs congestion</b>          | Where additional bus priority measures are provided, the resultant decrease in road space for other users will increase general congestion |   |  |   |
| <b>Seamless service</b>                     | Seamless service not possible through CBD to Courtenay Place   | Seamless service possible through CBD to Courtenay Place  |  |   |
| <b>Travel and waiting conditions</b>        | Vehicles more comfortable, reliable and attractive (new buses and new or refurbished rail vehicles where applicable)                       |   |  |   |
|   | Waiting environment more comfortable (new bus shelters and upgraded railway stations where applicable)                                     |   |  |   |
| <b>Ability to understand services</b>       | Potential for regular clock-face timetable (same time past the hour) for 10 minute frequency   | Operation similar to existing bus services  | Potentially confusing operation for non-regular users as different bus stops may operate at different times of the day | Potential for regular clock-face timetable (same time past the hour)  |
| <b>Adaptability</b>                         | Difficult and expensive to change route or extend coverage of rail service   | Easy to change routes and extend coverage   | Difficult and expensive to change route of busway but easy to change or extend bus routes at either end                | Difficult and expensive to change route or extend coverage of light rail service  |
| <b>Cost</b>                                 | Cost between 104-133% of budgeted funding  | Cost between 79-88% of budgeted funding   | Cost between 100-108% of budgeted funding  | Cost between 138-146% of budgeted funding   |
| <b>Other</b>                                | Closure of Box Hill Station and relocation of Raroa Station to Fraser Avenue (required for 10 minute frequency option only)                | Increased recreational opportunities with walking and cycling track along Johnsonville railway line                 | Closure of Johnsonville railway line during construction   | Disruption on Johnsonville railway line and through CBD during construction   |

■ **Table 8: Comparison of scenarios – Churton Park / Glenside**

| Enhanced Rail   | Bus with walking and cycling | Busway   | Light Rail  |
|---|------------------------------|--|---|
| New Route for 54 which removes the section of the existing Route 54 loop that uses Middleton Road. This will result in a more direct service.                 |                              |  |   |
| Middleton Road catchment will be catered for by the increased frequency on Route 59 with possible off-peak transfer from Route 59 to Route 54 at Johnsonville |                              |  |   |
| Route 54 frequency increased to 4 minutes in the peak of the peak, and 30 minutes interpeak and offpeak.  |                              |  |   |
| Route 59 frequency increased to 10 minutes in the peak of the peak, 30 minutes interpeak and offpeak  |                              |  |   |
| Improved rail services could be accessed by interchange or park 'n' ride at Johnsonville  |                              | New Route 54 and 59 services will use the newly constructed busway between Johnsonville and Hutt Road instead of the Ngauranga Gorge. Providing a more reliable journey time | New light rail services could be accessed by interchange or park 'n' ride at Johnsonville |

■ **Table 9: Comparison of scenarios – Johnsonville**

| Enhanced Rail  | Bus with walking and cycling  | Busway  | Light Rail   |
|--|---|---|--|
| Increased bus frequency of approximately 4 minutes in the peak of the peak |   | Increased bus frequencies of approximately 4 minutes in the peak for express services and 3 – 5 minutes for bus services replacing rail | Increased bus frequency of approximately 4 minutes in the peak of the peak |
| More frequent peak train service – between 10 and 13 minute frequency      | New Routes X, Y and Z via the Ngaio Gorge and Wadestown (3 – 10 minute frequencies in the peak of the peak) | Improved travel time for express services (17 minutes), other services similar to existing rail   | More frequent peak LRT service –10 minute frequency                        |
|  |   | Increased congestion at Johnsonville due to bus priority measures   |  |

■ **Table 10: Comparison of scenarios – Raroa**

| <b>Enhanced Rail</b>   | <b>Bus with Walking and Cycling</b>      | <b>Busway</b>   | <b>Light Rail</b>  |
|--|--|---|--|
| More frequent peak train service – between 10 and 13 minute frequency                            | New bus Routes X and Z via Fraser Avenue | Increased peak frequency (3-5 minutes) for buses replacing rail | More frequent peak LRT service –10 minute frequency                  |
| Raroa Station removed and replaced by a new Station at Fraser Avenue (10 minute frequency only). |  |   | Raroa Station removed and replaced by a new Station at Fraser Avenue |

■ **Table 11: Comparison of scenarios – Johnsonville West**

| <b>Rail</b>   | <b>Bus with walking and cycling</b> | <b>Busway</b>   | <b>Light Rail</b>   |
|---|-------------------------------------|---|---|
| New Route B would follow the existing 46 route from the CBD to Broadmeadows. From here the route would utilise the yet-to-be-constructed John Sims Drive extension, then McLintock Street and its proposed extension to the top of Cortina Avenue, then via one of two possible routes to a terminus at Johnsonville. |                                     | New bus route W through Johnsonville West and Broadmeadows would feed into the busway at Khandallah | New Route B would follow the existing 46 route from the CBD to Broadmeadows. From here the route would utilise the yet-to-be-constructed John Sims Drive extension, then McLintock Street and its proposed extension to the top of Cortina Avenue, then via one of two possible routes to a terminus at Johnsonville. |
| Offpeak and weekend service for Johnsonville West   |                                     |   |   |
| Bus frequency of 10 minutes in the peak of the peak, 30 minutes interpeak and off-peak  |                                     |   |   |
| Improved rail services could be accessed by interchange or park 'n' ride at Johnsonville  |                                     |   | New light rail services could be accessed by interchange or park 'n' ride at Johnsonville   |

■ **Table 12: Comparison of scenarios – Broadmeadows**

| Enhanced Rail   | Bus with walking and cycling | Busway  | Light Rail  |
|---|------------------------------|---|---|
| New Route B would follow the existing 46 route from the CBD to Broadmeadows. From here the route would utilise the yet-to-be-constructed John Sims Drive extension, then McLintock Street and its proposed extension to the top of Cortina Avenue, then via one of two possible routes to a terminus at Johnsonville. |                              | New bus route W through Johnsonville West and Broadmeadows would feed into the busway at Khandallah | New Route B would follow the existing 46 route from the CBD to Broadmeadows. From here the route would utilise the yet-to-be-constructed John Sims Drive extension, then McLintock Street and its proposed extension to the top of Cortina Avenue, then via one of two possible routes to a terminus at Johnsonville. |
| Offpeak and weekend service for Broadmeadows  |                              |   |   |
| Frequency of 10 minutes in the peak of the peak, 30 minutes interpeak and offpeak   |                              |   | Frequency of 10 minutes in the peak of the peak, 30 minutes interpeak and offpeak   |
| Improved rail services could be accessed by interchange or park 'n' ride at Johnsonville or Khandallah  |                              |   | New light rail services could be accessed by interchange or park 'n' ride at Johnsonville or Khandallah   |

■ **Table 13: Comparison of scenarios – Khandallah / Ngaio West**

| Enhanced Rail   | Bus with walking and cycling  | Busway  | Light Rail  |
|---|---|---|---|
| More frequent peak train service – between 10 and 13 minute frequency   | New Routes X, Y and Z via Ngaio Gorge and Wadestown (3 – 10 minute frequencies in the peak of the peak) | Increased peak frequency (3-5 minutes) for buses replacing rail |   |
| New Route K – Khandallah via the Ngaio Gorge. This new “Khandallah Route” would replace the Ngaio Gorge section of the existing Route 43 and 44 loop and follow the Ngaio Gorge and Cockayne Road, terminating at Khandallah. |   | Current Route 43 and 44 loop maintained                         | New Route K – Khandallah via the Ngaio Gorge. This new “Khandallah Route” would replace the Ngaio Gorge section of the existing Route 43 and 44 loop and follow the Ngaio Gorge and Cockayne Road, terminating at Khandallah. |

| <b>Enhanced Rail</b>   | <b>Bus with walking and cycling</b> | <b>Busway</b> | <b>Light Rail</b>  |
|--|-------------------------------------|---------------|--|
| Route K frequency of 5 minutes in the peak of the peak, 30 minutes interpeak and 30 minutes and offpeak.     |                                     |               | Route K frequency of 5 minutes in the peak of the peak, 30 minutes interpeak and 30 minutes and offpeak. |
| Route 45 continuing on its current route during peak times via the Ngaio Gorge and terminating in Khandallah |                                     |               |  |
| More frequent bus services for Khandallah during the peak  |                                     |               | More frequent services for Khandallah during the peak  |
| Box Hill Station closure (10 minute frequency only)  |                                     |               | Box Hill Station closure   |

■ **Table 14: Comparison of scenarios – Ngaio East**

| <b>Rail</b>   | <b>Bus with walking and cycling</b>   | <b>Busway</b>   | <b>Light Rail</b>   |
|---|---|---|---|
| More frequent peak train service – between 10 and 13 minute frequency   | New bus Routes X and Z via Fraser Avenue  | Increased peak frequency (3-5 minutes) for buses replacing rail | More frequent peak LRT service – between 10 and 13 minute frequency   |
| New Route K – Khandallah via the Ngaio Gorge, would replace the Ngaio Gorge section of the existing Route 43 and 44 loop and follow the Ngaio Gorge and Cockayne Road, terminating at Khandallah. |   | Current Route 43 and 44 loop maintained                         | New Route K – Khandallah via the Ngaio Gorge, would replace the Ngaio Gorge section of the existing Route 43 and 44 loop and follow the Ngaio Gorge and Cockayne Road, terminating at Khandallah. |
| Route K frequency of 5 minutes in the peak of the peak, 30 minutes interpeak and 30 minutes and offpeak.  |   |   | Route K frequency of 5 minutes in the peak of the peak, 30 minutes interpeak and 30 minutes and offpeak.  |
| Route 45 continuing on its current route during peak times via the Ngaio Gorge and terminating in Khandallah  |   |   |   |
| More frequent peak train service – between 10 and 13 minute frequency   | New Routes X, Y and Z via Ngaio Gorge and Wadestown (3 – 10 minute frequencies in the peak of the peak) |   | Increased peak LRT frequency (10 minutes)   |

■ **Table 15: Comparison of scenarios – Crofton Downs**

| <b>Enhanced Rail</b>  | <b>Bus with walking and cycling</b>   | <b>Busway</b>   | <b>Light Rail</b>                         |
|---|---|---|---|
| More frequent peak train service – between 10 and 13 minute frequency | New bus Route X via Waikowhai Street and Wadestown  | Increased peak frequency (3-5 minutes) for buses replacing rail | Increased peak LRT frequency (10 minutes) |
| Improved disabled access and reduced stepping distances at station    | Route X frequency of 10 minutes in the peak of the peak, 15 minutes interpeak and 15 minutes and offpeak. |   |   |

■ **Table 16: Comparison of scenarios – Newlands, Grenada, Paparangi, Woodridge**

| <b>Enhanced Rail</b>  | <b>Bus with walking and cycling</b> | <b>Busway</b>   | <b>Light Rail</b>   |
|---|-------------------------------------|---|---|
| Route 55 and 56 frequencies of 10 minutes in the peak of the peak, 30 minutes interpeak and off-peak. |                                     |   |   |
| Route 57 frequency of 15 minutes in the peak of the peak.   |                                     |   |   |
| An approximately 3-4 minute frequency for Newlands Road during the peak of the peak                   |                                     |   |   |
| Improved rail services could be accessed by interchange or park 'n' ride at Johnsonville              |                                     | New busway could be accessed at Johnsonville by express services. Increased journey times for much of the day but improved journey time reliability | New light rail services could be accessed by interchange or park 'n' ride at Johnsonville |
|   |                                     | Alternative to continue to operate bus services down the Ngauranga Gorge  |   |

## 6 Next steps

This report has identified four scenarios that could be implemented to meet the current and future passenger transport needs of people living and working in the northern suburbs. These scenarios are:

- *Scenario One – Enhanced Rail Scenario*
- *Scenario Two – Bus with walking and Cycling Scenario*
- *Scenario Three – Busway Scenario*
- *Scenario Four – Light Rail Scenario*

Following the receipt of comments from this stage of consultation, the next phase of the study will investigate and evaluate the scenarios in greater detail to identify a preferred scenario. The initial findings will be publicly released later this year. A further opportunity for comment will be provided at that time.

The outcome will be a strategic framework for future investment into public transport within Wellington City's northern suburbs. At the end of the process, the findings will feed into the respective Council transportation and urban development strategies for the area, and be incorporated into the review of the Wellington Regional Land Transport Strategy (WRLTS), which is due to be updated this year.

## **Appendix A Key issues for northern suburbs public transport**

### **A.1 Issues and needs consultation**

“Issues and Needs” consultation was undertaken in Stage 1 of this study to help identify the key issues and needs as seen by the community. The main overall issue that submitters reported was to achieve a sufficiently frequent, reliable public transport system with convenient routes. General issues and needs raised in the Stage 1 consultation included:

- frequency
- reliability
- proximity
- cost
- journey time
- capacity
- condition of vehicles
- condition of waiting areas
- accessibility for less able
- parking provision
- passenger transport integration (connectivity, integrated ticketing etc)

It should be noted that the responses from the Stage 1 consultation were primarily received from current public transport users and were dominated by access issues.

### **A.2 Development potential – greenfields and infill development**

The population of the northern suburbs is expected to grow in the future and with it the demand for public transport will increase. The potential for growth is due to infill (subdividing existing properties or redeveloping them with higher density uses) and greenfield development (opening up new sections on land which is currently undeveloped).

Future infill development is near impossible to predict given the number of other factors that affect the intensification potential. However, some trends can be derived from past activities, and provide a basis for prediction in the near future.

Using the data on new dwellings over the past five years<sup>20</sup>, projections have been made regarding infield development potential over the next five years in

■ **Table 17 Infill Housing predictions in the Study Area**

| Area          | New dwellings over the past five years | Potential for growth over next five years (dwellings) | Number of people based of 2.6 people per household |
|---------------|--|---|--|
| Grenada       | 10                                     | 10  | 26   |
| Paparangi     | 20                                     | 20  | 52   |
| Crofton Downs | 25                                     | 25  | 65   |
| Woodridge     | 30                                     | N/A   | N/A  |
| Broadmeadows  | 50                                     | 50  | 130  |
| Raroa         | 60                                     | 60  | 156  |
| Ngaio         | 100                                    | 50  | 130  |
| Khandallah*   | 160                                    | 100   | 260  |
| Johnsonville* | 220                                    | 100   | 260  |
| Newlands*     | 230                                    | 100   | 260  |
| Churton Park* | 280                                    | N/A   | N/A  |

\*Development within Churton Park and Woodridge appears to be predominantly from Greenfield subdivision, and therefore the potential for infill is close to nil as these are typically developed to maximum site coverage under the District Plan.

It is anticipated there will be a small demand for apartments in sub-regional centres, particularly Johnsonville Shopping Centre<sup>21</sup>. However such density is hard to predict, is unlikely to represent a large proportion of the housing sector, under current policies.

The Northern Growth Management Framework (NGMF) provides a ‘strategy for achievement’ for the future development of the northern part of Wellington City. The framework arose from the 2000/2001 Strategic Review, which saw the immediate pressure for new urban development in the Wellington region being in the northern areas, from Johnsonville to Kapiti.

In terms of the area covered by the NGMF, it is larger than the Study area in that it also extends to south of Porirua, where there is the demand and space for more ‘greenfield development’.

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<sup>20</sup> Housing needs and demands, open space and community facilities, working paper no. 12, prepared by Property Economics Ltd, April 2005.

<sup>21</sup> Data supplied from Wellington City Council, based on approved building consents.

In terms of population projections, the framework predicts growth of 9,000 over the next 20 years. This contrasts to the 4,000 more people allowed for in the current Wellington City Council District Plan zoning regime, and Greater Wellington projections of 5,000 people in the next twenty years.

Existing greenfield development is very much centred in the northern part of the study area being Churton Park and Woodridge to the northeast. Churton Park is a large subdivision in the northwest of Johnsonville, and has experienced steady growth in the order of 50 new dwellings per annum. This trend is predicted to continue into the future. Churton Park currently provides for around 3-4% of the WRS Study Area’s housing needs. The potential for Greenfield development within the study area is outlined in the table below.

| Zoning   | Number of households | Number of people based of 2.6 people per household <sup>22</sup> | Time frame                              |
|--|----------------------|--|---|
| Existing Outer Residential   | 256                  | 665  | Immediate future – within next 10 years |
| Rural land appropriate for development under Plan Change 32 and 33                     | 90                   | 234  | Immediate future – within next 10 years |
| Potential Future growth land identified under the Northern Growth Management Framework | 3610                 | 9386   | Longer term – 5 – 10 years +            |

Note: These projections have been reviewed by Wellington City Council as part of this report.

The potential areas of greenfield development are shown diagrammatically in

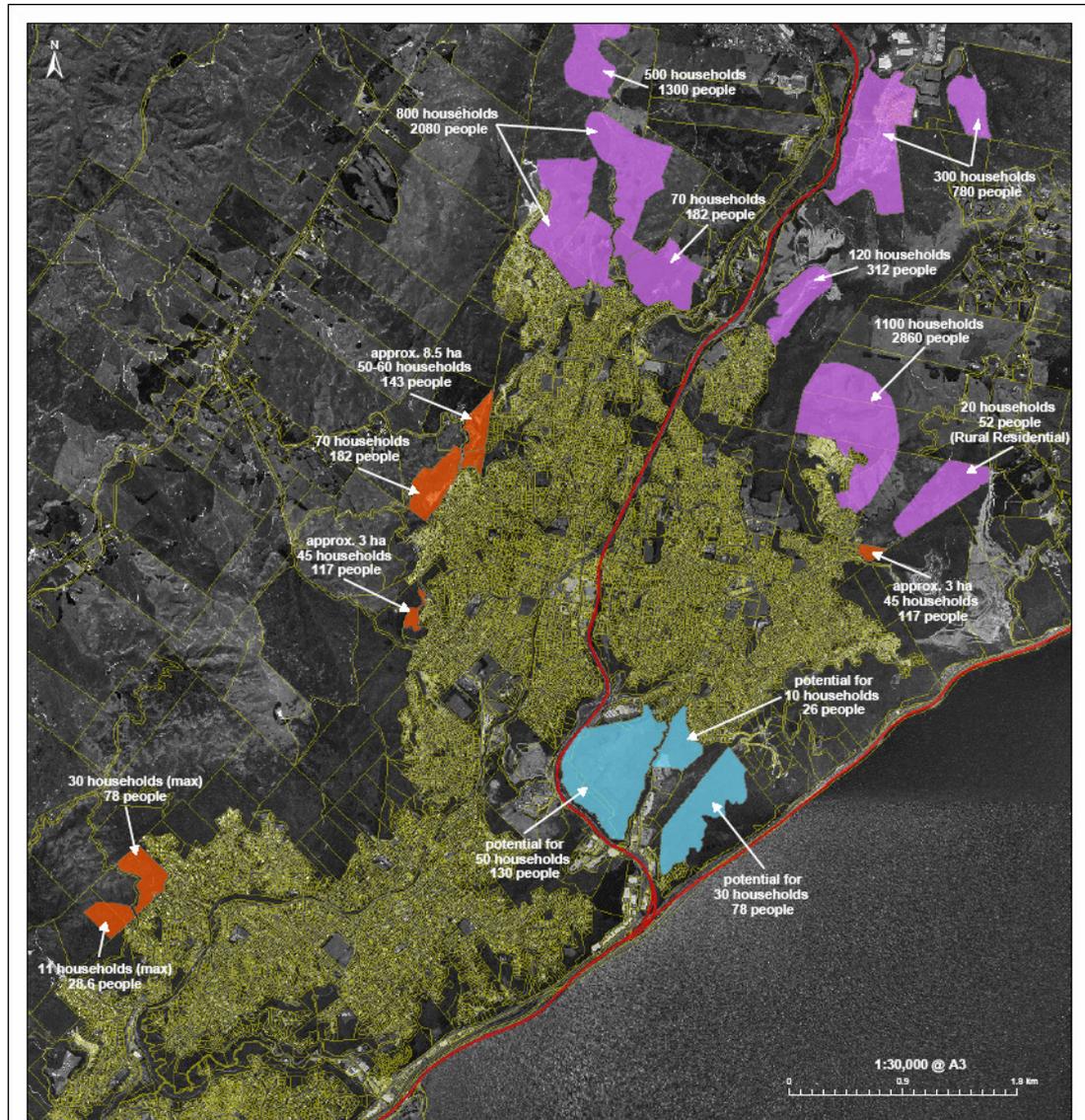
Figure 9.

Because of their locations, these growth areas are likely to be serviced by bus-based public transport under any scenario considered.

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<sup>22</sup> 2.6 people per household is the Wellington average.

■ **Figure 9 Potential Areas for Greenfield Development**



**NORTH WELLINGTON TRANSPORT STUDY**  
- Potential Greenfield & Infill Development -

**Areas Defined**

- **Outer Residential zoned land not yet subdivided**
  - Based on 10% of site excluded from calculations for infrastructure purposes.
  - Based on 600 m
  - Number of people based on 2-6 people per household

Total number of households = 256  
Total number of people = 665
- **Rural zoned land identified for development in Plan Changes 32 & 33**

Total number of households = 90  
Total number of people = 234
- **Northern Growth Management Framework (Future Growth Areas)**

Potential number of households = 3610  
Potential number of people = 9386  
*This includes 700 households (1820 people) to the area North of Takapu Industrial.*

### A.3 Congestion

The road network that serves the northern suburbs is restricted by topography which means there are only a few routes into Wellington CBD and so they become heavily congested. The strategic road that provides a link between the area north of (and including) Johnsonville and Newlands is the State Highway 1 Motorway through Ngauranga Gorge. Links from the lower Study area include the Ngaio Gorge Road which becomes Kaiwharawhara Road and Cashmere Avenue which becomes Onslow Road. Both Kaiwharawhara Road and Onslow Road feed onto Hutt Road which continues into the CBD.

A review of the 2003 base year Wellington City SATURN model was undertaken and identified the road network links that have a Volume/Capacity ratio which exceeds 1.0, indicating that those links are over capacity<sup>23</sup>. The following links in the northern suburbs, or that feed into central Wellington were identified as currently being over capacity.

- SH1 Ngauranga Gorge
- SH1 motorway on approach to CBD
- Onslow Road on approach to Hutt Road intersection
- Kaiwharawhara Road on approach to Hutt Road intersection
- Grant Road (end of Wadestown Road)

This indicates that most routes into the city from the northern suburbs experience significant congestion.

The Ngauranga Gorge provides particular congestion problems for buses during the peak periods. This also affects buses in the contra-peak direction in the afternoon, which in order to follow the Hutt Road into the CBD must exit the Motorway via the same link as vehicles travelling to the Hutt (becomes congested with northbound traffic on SH2).

Congestion is likely to get worse in the future extending journey times for private vehicles and for buses and reducing journey time reliability. The average length of a trip from Newlands onramp to the Aotea off-ramp via the SH1 Ngauranga Gorge in the two hour morning peak is anticipated to increase by some 20% between 2001 and 2016<sup>24</sup>.

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<sup>23</sup> The Volume/Capacity ratio is the ratio of the actual capacity of a road to its theoretical capacity. Anything over 0.85 is considered unsatisfactory and likely to cause major delays.

<sup>24</sup> WTSM model base forecasts

#### **A.4 Seamless service through to the CBD**

The Wellington Railway Station is situated on the northern fringe of the Wellington CBD and does not provide rail penetration into the central city. This means that passengers wanting to access many locations in the southern CBD must walk substantial distances or transfer to bus to continue their journey.

The benefits of extending services into the CBD are highlighted by the large patronage increase achieved on Newlands bus routes in 2000, largely as a result of extending routes from the northern suburbs to terminate at Courtenay Place. Combined with frequency improvements, this resulted in some 40% increase in patronage as passengers were able to travel further into the CBD without having to interchange.

The terms of reference for this study require the consideration of a “seamless transport service” between the northern suburbs, through the CBD. This is reinforced by Wellington City Council’s Urban Development Strategy “growth spine” concept, which proposes a growth corridor between Johnsonville in the north, the CBD, Newtown, Kilbirnie and Wellington Airport in the south.

#### **A.5 Integrated automatic electronic ticketing**

Greater Wellington have advised that integrated ticketing for both rail and bus services is being investigated at present and is expected to be put in place in the future. It is expected that when it is introduced, fares would be related to distance travelled, not by mode or service provider.

For all scenarios, integrated automated electronic ticketing machines are assumed to be installed at all stations as part of the current Greater Wellington Draft Passenger Transport Strategy. This could facilitate driver-only operation of the units with enforcement undertaken by roving inspectors.

## Appendix B Current northern suburbs public transport services

### B.1 Johnsonville railway line background

The Johnsonville railway line is a 10.5 km suburban passenger railway line. It runs between Johnsonville in the north and the Wellington Railway Station in the south. The stations served by the line are:

- Johnsonville
- Raroa
- Khandallah
- Box Hill
- Simla Crescent
- Awarua Street
- Ngaio
- Crofton Downs
- Wellington

The Johnsonville railway line is a single track line with three sets of passing loops which are located at Wadestown, Ngaio Station and Khandallah Station. The track gauge is 1,067mm which is the common gauge for rail in New Zealand but less common internationally where standard gauge track is more common, particularly with new rail applications. There are seven tunnels which have restricted cross-sections that only cater for the existing English Electric Multiple Units (EEMU), and are too small for the other rolling stock used on the remainder of the Wellington Electrified Network (the Network). The 1600v (1500v nominal) DC power supply is provided via overhead wires. Operation of points and signals is under Central Traffic Control (CTC), but is usually automatic.

The line rises approximately 150m from Wellington Station to Johnsonville and the line's ruling gradient is 1 in 20.4. The current permissible line speed is 50km/h, with permanent restrictions existing through tunnels and crossing loops (40km/h and 25km/h respectively).

#### B.1.1 History of the Johnsonville railway line

The Thorndon-Tawa (via Johnsonville) line was opened in 1885 by the Wellington & Manawatu Railway Company after blasting through significant amounts of rock and negotiating steep gorges. The Company later sold the line to the Government in 1908 after the 1937 completion of the North

Island Main Trunk (NIMT) Railway Tawa deviation, which allowed the steeply graded Johnsonville saddle to be bypassed.

Wellington City Council was subsequently offered the use of the line for the City's tramway network, however the offer was declined. This resulted in the Government deciding to close the Tawa to Johnsonville section of the line. In 1938 the Government upgraded the remaining Johnsonville to Wellington section, resulting in New Zealand's first electrified suburban passenger railway, using purpose-built electric multiple unit trains and making Wellington the third city in Australasia to electrify its first suburban railway line. The English Electric Multiple Unit (EEMU) trains were introduced between 1938 and 1953 – the last 36 of which are still in service.

Between 1984 and 1995, a series of studies were undertaken on the Johnsonville railway line, with some including potential transport scenarios through the Wellington CBD and beyond to the airport. These studies were primarily driven by the need to look for options for northern suburbs access to the Wellington CBD once the economic life of the existing EEMUs was exhausted. This was anticipated to be during the mid 1990's, however the units are still in operation in 2006.

### **B.1.2 Existing services**

The timetabled running time between Johnsonville and Wellington Railway Station is 21 minute in each direction. During peak times (approx. 6:00am to 9:30am and 3:30pm to 6:00pm Monday to Friday) services are scheduled to operate a 13 minute - 13 minute - 26 minute timetable, allowing three trains (four car sets) to run in 52 minutes.

On weekdays in the interpeak and evenings, the trains operate generally on a 30 minute timetable in each direction, that is, two trains per hour. On Saturdays and Sundays, the trains operate generally on a 30 minute timetable over the whole day with some very widely spaced early morning services.

The busiest services arrive at Wellington Station at 8:07am and 8:20am on weekday mornings. The Peace Train monthly ticket, which does not include travel on these trains, is an attempt to spread the very peaked demand for the Johnsonville railway line at these times.

### **B.1.3 Existing rolling stock**

The existing rolling stock operated on the line are English Electric Multiple Units (EEMU) which were originally purchased new in 1953. The EEMUs operate as a coupled pair consisting of one motive car (Class DM unit) and one trailer car (Class D unit) with combined seating capacity of 128 seats. The units are in a very poor condition, providing an unattractive service to the public.

There are 36 units available. About half are used for Johnsonville railway line services and the rest on the Hutt line. There are 18 units operating as two-car sets (9 x 2 car) which are suitable for use

on the Johnsonville railway line and are all in similar condition. The existing timetable requires 12 of these units, operating as four-car sets (3 x 4 car) with the remaining units being spares.

The remaining 18 units are operated as three-car sets and are therefore not suitable for use on the Johnsonville railway line unless they are broken up to operate in two-car sets (1 power and 1 trailer car). One six car set could run on this line but, station platforms would need to be extended to cater for them. In addition, two six-car trains would not be able to pass one another on the existing passing loops.

The EEMU units have undergone major refurbishments over their life, the last of which was undertaken in the mid 1980s. The units are currently undergoing a cosmetic and rust refurbishment programme, which would extend their lives for some three to five years at a cost of \$5.4m.

#### **B.1.4 Infrastructure ownership and maintenance**

ONTRACK took responsibility on behalf of Central Government for the Operation, Maintenance and Development of the railway infrastructure including tracks, overhead wires and platforms following Central Government's repurchase of the Network from Toll NZ in September 2004. As part of the agreement, Central Government provided Toll with access to the rail infrastructure from ONTRACK as part of a 68 year lease. The maintenance of this infrastructure is funded by Toll through the TrackCo Access Agreement (Access Agreement), the value of which is currently negotiated on a yearly basis.

Greater Wellington have no direct relationship with the Access Agreement, but do have an agreement with Toll. Greater Wellington pays Toll an amount to cover the Passenger Transport share of the maintenance costs, while Toll pays ONTRACK for all track maintenance costs. Currently, Greater Wellington pay Toll approximately 10% of Toll's total Access Agreement charge for the entire regional rail network. The amounts paid as maintenance contributions are not broken-down by line, but cover the whole of the network so it is difficult to determine the exact maintenance costs associated with the Johnsonville railway line.

ONTRACK have advised the study team that only routine maintenance of the Johnsonville is anticipated at present. No significant power supply or rail renewal schemes are envisaged at present, except normal maintenance allowed for as part of the Access Agreement.

Toll is not involved in funding track or station improvements. As such, if Greater Wellington wanted to raise platform heights or modify track configurations for example, they would negotiate directly with ONTRACK who would undertake the work. Greater Wellington would then negotiate with Toll over disruption to their services as a result of infrastructure improvement works.

### **B.1.5 Rolling stock operation and maintenance**

The rolling stock on the Wellington Network is owned, operated and maintained by Toll NZ though their commuter rail division Tranz Metro. In the near future Greater Wellington will be taking ownership of rebuilt Wairarapa cars and new EMUs, so this picture will change.

At present Greater Wellington have a fixed fee (approx. \$16.5m) contract with Tranz Metro for operating the existing timetable and providing and maintaining the rolling stock for the network as a whole. This amount is not broken down by line so again it is difficult to determine the exact Johnsonville railway line component. A cost fluctuation to cover inflation is also calculated and paid annually (approx \$1.15m 04/05). These amounts are in addition to the fare box revenues generated from passengers. A new agreement is being negotiated on an open-book basis whereby Greater Wellington would have access to the operator's financial accounts.

### **B.1.6 Rail business case**

No investment has been made in the Wellington suburban rail infrastructure for some time. As a result of this, substantial investment is now required to retain a viable commuter rail system in Wellington.

*The Wellington Commuter Rail Network Business Case, Warwick Walbran Consulting Ltd, 2004* (RBC) was produced for Greater Wellington. It sets out a programme for the minimum investment which is required from Regional and Central governments to maintain a commuter rail system in Wellington allowing for small annual patronage growth (1.7% pa).

As noted above, minor refurbishment of the EEMU units to extend their life by three to five years is currently being undertaken and is programmed to finish in the next 18 months. These minor modifications centre mainly on rust repairs and painting of the units. The RBC envisaged that this refurbishment would allow time for new units to be purchased so that existing Ganz-Mavag rolling stock (operated on other parts of the network) could be freed up and refurbished for continued use on the Johnsonville railway line.

In relation to the Johnsonville railway line, the investment proposed includes:

- Minor refurbishment of the EEMUs to buy time for purchase of new units – \$1.8m (currently underway)
- Refurbishment of the Ganz-Mavag units 05/06 –06/07 - \$7.2m
- New EMU units 14/15 – 15/16 - \$36m
- Tunnel improvements on the Johnsonville railway line to allow refurbished Ganz-Mavag units to replace the existing EEMUs starting 06/07 - \$3m

- Track improvements on the Johnsonville railway line (inc. Raroa and Stadium Passing Loops) to allow for more frequent peak period services 10/11 – 11/12 - \$5.5m.
- Station Refurbishment: Johnsonville 06/07 – \$0.2m, Simla Crescent, Raroa, Khandallah, Awarua, Crofton Downs, Ngaio and Box Hill 12/13 – 13/14 - \$1.1m and Johnsonville 26/27 - \$0.75m

As government agencies are reluctant to fund the capital of private organisations, it is anticipated that Greater Wellington would need to own the assets funded through a government capital contribution, and these would be leased back to Tranz Metro to operate. Greater Wellington's LTCCP does not include provision for depreciation on the new and refurbished units.

## **B.2 Northern suburbs bus service background**

There are nine bus routes (and two Night Bus routes) that operate in the study area and cater for a much larger area of the northern suburbs than rail. Services extend out to Churton Park, Newlands, Grenada Village, Woodridge, Johnsonville West, Paparangi, Broadmeadows, Cashmere and Te Kainga. Generally, buses provide services that run into Wellington CBD and do not act as feeder services for the Johnsonville railway line. The information set out below includes changes that were implemented in the Newlands, Paparangi, Grenada Village and Woodridge areas on 30 January 2006.

### **B.2.1 History of bus services**

Newlands Coach Services have been operating bus routes from Newlands to Wellington City for over 40 years. The routes were expanded over the years to include limited services to Churton Park and Grenada. Mana Coach Services bought Newlands in November 1998 and now service the study area north of Broadmeadows.

In December 2000, the routes were extended to Courtenay Place, the feeder service from Grenada was extended into the CBD and the timetable was improved to give peak hour frequencies of approximately 5 minutes for Johnsonville and Newlands Road. These changes played a significant role in increasing total patronage in the northern suburbs by approximately 40% over this time.

Stagecoach purchased Wellington City Transport Ltd from Wellington City Council. Wellington City Transport had purchased the Khandallah operation of Cityline (formerly New Zealand Railways Road Services). Improvements to Stagecoach's services in the recent past have been limited. A number of extra peak buses and higher capacity buses have been introduced. Most changes have involved improvements to night and weekend services.

At present, Stagecoach is in the process of acquiring Mana / Newlands. This move requires Commerce Commission approval. If this purchase is approved this will provide a single operator for bus services in the northern suburbs.

### B.2.2 Bus journey times

Table 18 shows the scheduled journey times between the northern suburbs and Lambton Interchange in the AM-peak period.

- **Table 18: Scheduled Bus Journey Times from the Northern Suburbs to Lambton Interchange**

| Origin          | Time ( minute) |
|-----------------|----------------|
| Churton Park    | 32             |
| Grenada Village | 29             |
| Newlands        | 19             |
| Johnsonville    | 16             |
| Ngaio           | 17             |
| Khandallah      | 22             |

In vehicle travel times from Johnsonville are greater on the railway line (21 minute +) than the scheduled time on bus services which run via the Ngauranga Gorge. Observed bus travel times from Johnsonville to the CBD can be substantially longer than this in the morning peak due to general traffic delays down the Ngauranga Gorge and along Hutt Road. Greater access to the CBD is provided by bus services that run into Wellington from the northern suburbs, as passengers can travel further into the CBD (via Lambton Quay) and Courtenay Place without the need for interchange.

### B.2.3 Description of bus services by area and suburb

#### (1) CBD bus route and Lambton bus Interchange

There is a defined bus route through the Wellington CBD from Courtenay Place to the Lambton Interchange, which most bus routes follow. A significant amount of work has been undertaken to provide bus priority through the central city. Bus lanes, one-way roads with contra-flow bus lanes, and signal pre-emption have been installed in some locations.

The way the central bus route and the associated bus stop facilities are configured and operated at present, the route is near capacity during peak times and the journey through the CBD can take up to 20 minutes. For example there are 196 services that stop at the Lambton Quay – Farmers stop each weekday in the two hour evening peak, with sometimes up to six buses scheduled to arrive in the same minute. The bus stops are very closely spaced and all buses stop at all stops. This means that the buses must decelerate, stop and accelerate many times along the route.

This problem is exacerbated by inefficient ticketing systems, which result in long dwell times at each stop for boarding and alighting, with buses backing up behind each other to access stops. This is particularly noticeable southbound, where there are bus lanes without adjacent general traffic

lanes to allow buses to pass one another. There is scope to address the capacity of the central bus route and typical measures are discussed below.

The Lambton Interchange is located adjacent to the Wellington Railway Station and was opened in 2003 to provide Wellington's major passenger transport interchange. The facility provides for interchange between the rail and bus and also between different bus services. The majority of buses that serve the CBD are routed through the Lambton Interchange. However, some services start and terminate at Brandon Street.

### **(2) Johnsonville town centre and transport hub**

The Johnsonville Hub is the interchange facility at the Johnsonville Mall, adjacent to Johnsonville Station. The interchange currently takes place on the Mall car park owned by Dominion Funds. Bus stands are provided in the car park against the Caltex service station and Ford car dealership's retaining wall. Two bus stops are located outside the train station and two shelters are provided however, in general the interchange facilities are very poor. There is little shelter, no effective kerb space, and no co-ordinated signage.

A very frequent service is provided from the Johnsonville Hub to the CBD. In weekday peaks, Route 54 buses provide the main service, and are supplemented by some Route 53 and 59 services which continue on to the CBD (or come from the CBD). This results in an approximately five minute frequency for most of the peak hour.

Bus movements into and out of the Johnsonville Hub take place in general traffic lanes and no bus priority is provided. As a result, buses accessing the Hub can experience significant delays in Johnsonville during the peak periods.

### **(3) Ngaio, Khandallah, Te Kainga, Cashmere (and Broadmeadows)**

Ngaio, Khandallah, Te Kainga, Cashmere and Broadmeadows are served by Routes **43, 44, 45** and **46**, which are operated by Stagecoach Wellington.

The Route 43 runs up the Ngaio Gorge and services Ngaio, Te Kainga, the Khandallah shops and Cashmere before returning to the CBD via the Hutt Road. The Route 44 covers the same route as the 43, however it does the loop in the opposite direction from Hutt Road through Cashmere, Khandallah and Ngaio. Most of the 43 and 44 services extend south of the CBD and on to Strathmore. There are issues with the legibility of the current loop system.

During peak periods, Routes 45 and 46 also operate. Route 45 services Ngaio and Khandallah via the Ngaio Gorge and the Route 46 serves Broadmeadows via Homebush Road. As well as servicing wider catchments in Ngaio and Broadmeadows respectively, the No. 45 and 46 routes

have the effect of supplementing the No. 43 and 44 routes by increasing the frequency of peak services over substantial lengths of the routes between the CBD and the northern suburbs.

#### **(4) Johnsonville West and South**

Johnsonville West and South are catered for by Routes **50** and **53** which are operated by Newlands Coach Services.

Like Route 46 detailed above, Route 50 also services Broadmeadows, but these routes do not operate at the same times. Route 50 only operates between the peaks (9am to 4pm) and is described as a “Shopper” service, taking passengers to the Johnsonville Mall and also servicing the Malvina Major Retirement Village. During the Inter-peak periods, this route can act as a feeder service to Johnsonville allowing the passengers to interchange and continue into the CBD by rail or bus.

Route 53, from the CBD, uses the Ngauranga Gorge (SH1) and serves Johnsonville West and North. The 53 services generally only run between Johnsonville West and Johnsonville; effectively providing a feeder service. This requires passengers to transfer to or from the train or alternative buses services at the Johnsonville Hub for the section of the trip between Johnsonville and the CBD. In the peak period, some services extend to the CBD.

#### **(5) Churton Park**

Churton Park is catered for by Route **54**, which is operated by Newlands Coach Services.

The Route 54 makes a loop through Churton Park before continuing to the CBD. The Route 54 service provides most of the five minute service from Johnsonville to the CBD during the weekday peak periods.

There are two morning express services which do not stop at the Johnsonville Hub when returning from Churton Park, travelling straight to the Lambton Interchange via the Ngauranga Gorge.

#### **(6) Grenada Village**

Grenada Village is catered for by Route **55**, which is operated by Newlands Coach Services. The current routes servicing Grenada Village and Newlands have recently been modified with the latest amendments taking effect on 30 January 2006.

Outside the peak periods, Route 55 buses connect with Route 56 buses at a stop on Newlands Road. Passengers transfer here and the Route 56 bus makes the trip to or from the CBD.

### **(7) Newlands Woodridge**

Newlands and Woodridge are catered for by Route **56** and **57**, which are operated by Newlands Coach Services. Route 57 services Woodridge and only operates during the peak. Combined, Route 55, 56 and 57 services provide a 4-5 minute frequency along Newlands Road.

As noted above, outside the peak periods, Route 56 buses connect with Route 55 buses at a stop on Newlands Road. Passengers transfer here and the Route 56 bus makes the trip to or from the CBD.

Link services are also provided in Newlands and are operated by smaller vehicles. They are available to all passengers connecting to or from Route 55, 56 or 57 services along Newlands Road. No formal bus stops are provided on the Link routes and they are operated on a stop on request basis.

### **(8) Porirua / Tawa**

Although Porirua and Tawa are not within the study boundaries, we must consider the impact of their bus services on the Study area. Porirua and Tawa are catered for by Route **59**, which is operated by Mana Coach Services. Some Route 59 services pass through Johnsonville to the CBD helping to maintain the five minute frequency from Johnsonville.

#### **B.2.4 Night buses to all areas**

Two night bus routes operate in the study area. The N4 runs from Courtenay Place and caters for Thorndon, Wadestown and Wilton to Ngaio, Khandallah and Broadmeadows. The N5 runs from Courtenay Place and caters for Newlands, Grenada and Churton Park to Johnsonville. Both services operate 3 services on Saturday and Sunday mornings at 1am, 2am and 3am.

#### **B.2.5 Bus depot facilities**

Bus depots are required to provide bus storage, fuelling, maintenance, office and staff facilities. Depots are currently provided by the bus companies at the following locations:

- Onepu Road, Kilbirnie (Stagecoach)
- Newlands Road (Mana/Newlands)
- Commerce Crescent, Waitangirua, Porirua (Mana/Newlands)