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## **Report 02.342**

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Report to the Passenger Transport Committee  
From Nick Sargent, Senior Transport Planner, Transport Policy

### **Golden Mile: Bus Travel Time Survey**

#### **1. Purpose**

To inform the Committee about the findings of a bus travel time survey recently conducted over the 'Golden Mile'.

#### **2. Background**

Customer complaints received by Ridewell provides evidence that there has been marked deterioration in the reliability of buses servicing the Golden Mile. Although this phenomenon is not new (buses caught in road congestion was identified as an issue on page 60 of the current Regional Land Transport Strategy), the occurrence and severity appear to be on the increase. It should also be noted that the effects of congestion are cumulative such that delays incurred from one service run is transferred to the next.

To coincidence of a number of projects (the Joint CBD Transport Study, the Annual Monitoring Report for the RLTS and the creation of an updated Transport Strategy Model) has provided the opportunity to conduct a comprehensive survey of bus travel times along the 'Golden Mile.'

The survey was undertaken between 8 and 22 April 2002. The target sample was fifteen runs in each direction for each time period AM, IP, PM and Saturday.

Full copies of the survey report are available from the Council's library.  
[WRC-TP-T-02/23]

#### **3. Comment**

##### **3.1 Overview**

A summary of observed bus journey times, split into running time and the various classes of delay is shown as **attachment 1** (Figure 6).

The buses are fastest on Saturday: around 14 minutes in both directions. On weekdays outside the PM peak, average journey times are similar at around 15 minutes. However, during the PM peak, average times are significantly higher at 19 minutes southbound and 22 minutes northbound.

In terms of the averages, around 25% of journey time is spent delayed at signals; around 20% is spent picking-up and setting-down passengers; and around 50% is 'running' time.

Each bus survey was charted and checked for logic (sequence and duration of delays). The chart for the slowest southbound service (17:15, 16/04/02) is shown in Figure 1a (**attachment 2**) and for the fastest northbound service (17:40, 16/04/02) in Figure 1b (**attachment 3**). These are time/distance plots of bus progress. On the horizontal axis is the elapsed time in minutes (since the start of the survey) and on the vertical axis is the elapsed distance in metres (from the start of the survey). Horizontal dashed lines indicate the bus stops. The locations where the bus made no progress are indicated by blue, yellow and red colour coding.

### 3.2 Northbound delays and stopping times

	<i>Average journey time in minutes</i>	<i>67% ranges</i>	<i>Timetable time</i>	<i>Probability of bus running to timetable</i>
AM Peak	15.4	(12.9 – 18.0)	15	91%
Interpeak	15.4	(13.3 – 17.5)	13	9%
PM Peak	20.8	(17.6 – 23.9)	15	25%
Saturday	13.7	(11.5 – 15.9)	13	29%

Figure 7 (**attachment 4**) shows the average delay associated with each cause of delay on a map background. The graduated circles are sized in proportion to the delay. The colour of the circles indicates which time period the delay refers to. The labelled boxes show the delay in seconds (for AM/IP/PM periods).

### 3.3 Southbound delays and stopping times

	<i>Average journey time in minutes</i>	<i>67% ranges</i>	<i>Timetable time</i>	<i>Probability of bus running to timetable</i>
AM Peak	14.3	(11.9 – 16.7)	15	79%
Interpeak	15.1	(13.3 – 17.0)	13	16%
PM Peak	19.1	(17.0 – 21.2)	15	51%
Saturday	14.2	(12.2 – 16.2)	13	37%

Figure 8 (**attachment 5**) shows the average delay associated with each cause of delay on a map background.

### 3.4 Progress plots: Average journey times

Figures 9 and 10 (**attachments 6 and 7**) show the time-distance plots for northbound and southbound services respectively. On each figure, the progress of the average bus in each of the four time periods is plotted.

Northbound: The average bus times are very similar for AM and IP periods and for Saturday too as far as Lambton Quay. Along Lambton Quay, buses are faster on Saturday. In the PM peak, buses are significantly slower throughout (from Courtenay Place onwards).

Southbound: The average bus times are very similar for AM and IP periods although IP is slightly slower along Courtenay Place. On Saturday, the end-to-end time is similar to the AM weekday time, although buses run faster (than in the AM) along Lambton Quay and slower along Courtenay Place. During the PM peak the buses are slower by a significant margin after Brandon Street, although the difference is not as pronounced as in the northbound direction.

### 3.5 Progress plots: Variability of journey times

Northbound figures 11 to 14 (**attachments 8 to 11**) and Southbound figures 15 to 18 (**attachments 12 to 15**) show the progress along the surveyed section for the average bus, the fastest bus surveyed (end-to-end), the slowest bus surveyed (end-to-end), and the 67% range (the average plus and minus one standard deviation). These give an indication of the spread of the survey data (i.e. the variability of journey times). If the journey time variation is small, the standard deviation is small and therefore the 'plus and minus' lines do not splay out too far from the average. If the journey time is more variable, the standard deviation is greater and the lines splay out more.

Northbound, bus journey times are most variable during the peaks and on Saturdays. The variability in the AM peak is, in the main, due to significantly slower progress in the middle hour of the peak period (0730 to 0830) than in the first and last half hours. In the PM peak, the variability of journey times is such that the fastest bus surveyed arrived at Lambton Interchange some 11 minutes (or 80%) quicker than the slowest.

Southbound bus journey times are most variable during the peaks. Most of the variability - particularly in the PM peak - is encountered only after the Lambton Quay (ANZ) stop.

There is more variability of journey times going north than going south.

## 4. Conclusion

The PM peak is the period that requires most attention from those seeking to reduce the bus journey times through the CBD. According to these results, it is normal for buses to take over 20 minutes, with the slowest buses taking over 24 or 25 minutes.

In both directions, the 'running' time of buses is around 8 minutes. The time spent picking up and setting down passengers is around 3 minutes. Delays at signals add another 3 to 6 minutes. The delays have been attributed to individual items in this

survey. During the most congested periods, this proved difficult. At the busiest times, some road sections are filled with traffic and blocked back over several hundreds of metres.

It is clear that in places road layout and signal controls are not optimised for buses. It will be possible to achieve improvements in journey time and reduction in journey time variability through priority measures at signals and on signal approaches. This would of course need careful study.

The areas that appear to deserve attention are:

#### Northbound

- the left turn from Cambridge Terrace into Courtenay Place;
- Courtenay Place / Taranaki St signals;
- Dixon/Victoria/Manners/Willis (signals); and
- Lambton Quay / Bowen St signals.

#### Southbound

- the movement from Thorndon Quay into the Lambton Interchange (across Mulgrave Street);
- Lambton Quay / Bowen St signals;
- Lambton Quay / Hunter St signals;
- Willis Street stop (bus congestion) and the subsequent pair of traffic signals at Willis/Mercer and Mercer/Victoria;
- Manners St / Taranaki St signals;
- Courtenay Place / Kent Terrace signals; and
- Kent Terrace / Elizabeth St signals (co-ordination with previous signals).

## **5. Communications**

The survey confirms what bus users and operators already know and regularly complain about. Wellington City Council is the only organisation able to take steps to rectify the problem. Direct communication with the City Council is clearly a necessity.

## **6. Recommendations**

1. *That this report be noted.*
2. *That the Chair of the Committee write to Wellington City to communicate formally the findings of this survey to them.*

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**Attachments:**

- 1- **Figure 6: Summary of bus journey times**
- 2- **Figure 1a: Time/distance plot through the CBD (southbound)**
- 3- **Figure 1b: time/distance plot through the CBD (northbound)**
- 4- **Figure 7: Delays at signals and pedestrian crossings, northbound, weekday**
- 5- **Figure 8: Delays at signals and pedestrian crossings, southbound, weekday**
- 6- **Figure 9: Route 43/44 journey times: northbound, averages**
- 7- **Figure 10: Route 43/44 journey times: southbound, averages**
- 8- **Figure 11: Route 43/44 journey times: northbound, AM peak**
- 9- **Figure 12: Route 43/44 journey times: northbound, interpeak**
- 10- **Figure 13: Route 43/44 journey times: northbound, PM peak**
- 11- **Figure 14: Route 43/44 journey times: northbound, Saturday**
- 12- **Figure 15: Route 43/44 journey times: southbound, AM peak**
- 13- **Figure 16: Route 43/44 journey times: southbound, interpeak**
- 14- **Figure 17: Route 43/44 journey times: southbound, PM peak**
- 15- **Figure 18: Route 43/44 journey times: southbound, Saturday**