

# The Political Busker

This poll was taken on the evening of **20 May 2010**. It was taken in a large part to support the submission of Benjamin Easton before the Wellington City Council on the matter of traffic resolutions on the proposal to put buses into Manners Mall.

1. **Q: If a judge has a legal discretion to dismiss evidence from the case should this extend to dismissing evidence that proves a case?** *(This is a question to go before the High Court in appeal of the Environment Court decision).*

Yes **8** No **35** Maybe **5**

2. **Q: If the intersection on Victoria Street and Manners Mall cannot physically or lawfully handle the buses should this be enough to stop the proposal?** *(Both the inner lane and center lane to accommodate right turning traffic are at 3 meters. The Court proceedings identified that buses can have a width of over 3 meters with the collapsible wing mirrors. This means the proposal is inconsistent with the road code. Undertaking traffic on the inside lane are not permitted to encroach into another lane. The lane encroached will be pedestrianised. The wing mirrors are in line with the public's heads. Wing mirrors collapse when they hit things/ r2.8 (3) LTA Rules 2004).*

Yes **46** No **1** Maybe **0**

3. **Q: Is it reasonable for Council to begin works on Manners Mall even though there are Court proceedings to question its legality?** *(The only debatable point before the Court on 23 June 2010 is whether or not I have standing. It is argued there is no doubt and therefore that a substantive appeal will be scheduled well after the June 23 2010 date – the viability of the project to be done before the World Cup 2010 is fully dependent on this weak point of my standing).*

Yes **0** No **44** Maybe **1**

4. **Q: Do you trust the integrity of the Wellington City Council accepting the Mayor has a conflict of interest when voting, yet does nothing to interfere with the conflict?** *(If the Mayor is still the Chair of the Transport portfolio there remains a conflict. Regardless the affects on voting practices in the past require review to be compliant with the law).*

Yes **0** No **43** Maybe **1**

5. **Q: If the law permits an ordinary citizen to interfere with public works on Manners Mall on the grounds of safety, would you stand to protect the mall from the public works?** *(Question 2 and Question 3 if necessary, where the safety of the public has been openly compromised, shall be supported with protests under section 330 of the Resource Management Act 1991).*

Yes **28** No **4** Maybe **14**

- (i) the roadway is marked in lanes and the driver can make the movement without the driver's vehicle encroaching on a lane available for opposing traffic; or
  - (ii) in any other case, the driver can make the movement with safety and with due consideration for users of the intersecting road; or
- (b) approaching or passing a flush median, unless the driver—
- (i) intends to turn right from the road marked with the flush median into another road or vehicle entrance; or
  - (ii) has turned right onto the road marked with the flush median; or
  - (iii) can make the entire movement without encroaching on the flush median.

Compare: SR 1976/227 r 8(2), (2A)

### 2.8 Passing on left

- (1) A driver must not pass or attempt to pass on the left of another vehicle moving in the same direction except in accordance with this clause.
- (2) In any case in which the movement referred to subclause (1) may be made,—
- (a) the 2 vehicles must be in different lanes; or
  - (b) the overtaken vehicle must be stationary or its driver must have given or be giving the prescribed signal of that driver's intention to turn right; or
  - (c) if the overtaken vehicle is a light rail vehicle moving in the same direction, the light rail vehicle must not be—
    - (i) signalling an intention to turn left or to stop; or
    - (ii) stationary for the purposes of allowing passengers to alight or board.
- (3) If the roadway is marked in lanes, the driver may make the movement referred in subclause (1) only if the driver's vehicle does not encroach on a lane that is unavailable to a driver.

Compare: SR 1976/227 r 8(1)

### 2.9 Passing where roadway marked with no-passing line

- (1) This clause applies if a driver is at or approaching a portion of a roadway where the road controlling authority has, in accordance with any enactment, marked a no-passing line applying to traffic moving in the direction in which the driver is moving.
- (2) The driver must not pass or attempt to pass a motor vehicle or an animal-drawn vehicle moving in the same direction within the length of roadway on which the no-passing line is marked until the driver reaches the further end of the no-passing line, unless throughout the passing movement the driver keeps the vehicle wholly to the left of the no-passing line.

Compare: SR 1976/227 r 8(6)

### 2.10 Passing at school crossing point or pedestrian crossings

A driver must not pass or attempt to pass a vehicle that has stopped or slowed down at a school crossing point or pedestrian crossing in order to comply with clause 3.9 or subclause 10.1(1).

Compare: SR 1976/227 r 12(2)

### 2.11 Passing at level crossings

- (1) A driver must not pass or attempt to pass another vehicle that has stopped at a level crossing to—
- (a) give way to any rail vehicle using the railway line; or
  - (b) ascertain whether a rail vehicle is using the railway line.
- (2) A driver must not pass or attempt to pass another vehicle moving in the same direction at or within 60 m of a level crossing unless, if the roadway is marked in lanes, the driver's vehicle does not encroach on a lane available for opposing traffic.

Compare: SR 1976/227 r 8(5), (5A)

## *Motorways*

### 2.12 Motorways

- (1) A driver must not enter a motorway except at an opportunity and at a speed that will place the driver correctly in the stream of traffic without danger to any other user of the motorway.
- (2) A driver must not stop or park on a motorway except in an area set aside and indicated by a traffic sign as a parking area.
- (3) A driver must not drive in an emergency stopping lane unless—
- (a) the driver needs to drive in it to avoid a collision or to stop in an emergency; or
  - (b) the driver's vehicle is disabled; or
  - (c) a sign at the entrance to the lane indicates vehicles of a specified class or classes may use the lane during the time specified on the sign and the driver is operating a vehicle of that specified class or one of those specified classes.
- (4) A driver must not reverse or make a U-turn on a motorway.

Compare: SR 1976/227 r 3A(1)-(3)

## APPENDIX 4

right turning lane for all vehicles. Building the approach requires the use of existing footpath facilities along Lower Cuba Street to be wide enough for left turn bus swept paths.

By introducing a two-way operation along Manners Street (North), the Manners / Victoria Street intersection will require an additional signal phase to allow right turn movements from Manners Street into Victoria Street.

### Removal of Parking

A number of existing parking spaces will need to be removed to gain sufficient room to accommodate bus movements in both directions. It should be noted that these losses in parking are a worst case and traffic management mechanisms could be used to reduce the loss of parking. As can be seen in Table 8, the most significant removal of car parks on the route will occur along Manners Street (South).

Table 8 – Option B parking spaces required to be removed

Road Section	Vehicle Parking	Loading Bays	Motorcycle Parking	Taxi Parking
Mercer Street	-	1	75m <sup>2</sup>	-
Wakefield Street	-	-	-	-
Cuba Street	7	1	-	-
Manners Street (East of Cuba Street)	20	2	-	4
Total	27	4	75 m <sup>2</sup>	4

### Bus Stops

In this option both the north and southbound Willis Street bus stops will remain in their current locations between the BNZ centre and Mercer Street. Ideally the northbound stop could be relocated closer to Mercer Street for route legibility. However due to complications in the development of the new Telecom Building this is unlikely to be possible.

The relocation of the northbound bus route proposed as part of this option will see the existing Manners Street (West) stop removed. Instead a new northbound bus stop will be placed just south of the Manners Street (East) / Lower Cuba Street intersection. This will create a more legible service while also allowing passengers to interchange closer to a major attractor (Cuba Mall). Consideration was also given to a complementary stop on Lower Cuba Street for northbound buses; however this would be away for the key attractor and result in a significant loss of parking. The southbound service will use the existing bus stop on Lower Cuba Street as it does now.

**Before the Environment Court  
At Wellington ENV-2009-WLG-00231**

Under Local Government Act 1974

**In the matter** of an appeal under section 336 of the RMA

**Between** **The City is Ours (Inc)**

**Appellant**

**And** **Wellington City Council**

**Respondent**

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**Supplementary Evidence of Dr Wayne Gavin Stewart**  
**Date: 19 March 2010**

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50-64 Customhouse Quay, Wellington 6011  
PO Box 2791, Wellington 6140  
DX SP20002, Wellington  
Tel +64 4 472 6289  
Fax +64 4 472 7429

Solicitor on the record    Craig Stevens    craig.stevens@phillipsfox.com    Tel +64 4 472 3202  
Contact solicitor        Kerry Anderson    kerry.anderson@phillipsfox.com    Tel +64 4 472 3255

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## **Introduction**

1 In addition to my evidence-in-chief, I have prepared the following supplementary evidence in relation to matters raised by City is Ours. Specifically I cover the following matters: -

- (a) Establish the width of Manners Mall between shop fronts.
- (b) Confirm that a 6.5m wide carriageway is adequate for buses.
- (c) Confirm the width of buses.
- (d) Confirm the available width for footpaths along Manners Mall and whether this will be sufficient for the number of pedestrians using it.
- (e) Confirm that buses will be able to safely manoeuvre through the Willis Street and Manners St (west) intersection.
- (f) Confirm that buses will be able to pass a stationary bus within a 6.5m wide carriageway.
- (g) Show that our economic assessment is robust because it did consider whether buses could pass each other and that the matter of whether a bus can or cannot pass has such an insignificant effect on the overall economic benefits for the project that it can be neglected.
- (h) Confirm why the Fire Service does not have any concerns about the carriageway width for Manners Mall.

## **Width of Manners Mall**

2 I asked one of our engineers to prepare A1 drawings from aerial photography flown by Wellington City Council. These drawings are at a scale of 1:200. On these drawings, the engineer has shown where he has taken actual measurements of widths along Manners Street (west) and Manners Mall. These widths included

the actual distance from shop front to shop front, footpath width and distance between kerbs. It turns out that the distance between shop fronts vary along these streets.

- 3 In Manners Mall, one measurement was taken at the eastern end of Manners Mall outside Burger King, another at the western end outside MacDonald's and a third in the middle. The width between shop fronts varied from 15.0m to 15.3m.
- 4 We also took three measurements in Manners Street (west), one at each end and one in the middle. Along this street, the width between shop fronts varied from 14.2m to 17.2m. Unlike Manners Mall, Manners Street (west) has an existing carriageway for buses and general vehicles which all travel in a westbound direction. The width of this carriageway between kerbs is 6.6m. This leaves the available total width for pedestrians of between 7.6m and 10.6m. This width is not split evenly between footpaths on both sides of the carriageway. The width of the footpath varies between 3.4m and 5.8m.
- 5 In summary, I have established that there will be 15.0m width for carriageway and footpaths along Manners Mall and that this width is similar to Manners Street (west) that presently operates successfully with a carriageway for buses and general vehicles as well as a footpath on both sides.

#### **Width of Bus Lanes**

- 6 I understand from Wellington City Council that they propose to provide a carriageway width for buses along Manners Mall of 6.5m. This is sufficient width for two buses to pass each other. There are a number of existing situations in NZ where the successful movement of traffic occurs on a carriageway width of 6.5m or less.
- 7 As already mentioned, Manners Street (west) has a carriageway width of 6.6m, and this allows for two buses or one bus and another heavy vehicle to travel abreast – albeit in the same direction.

- 8 The Mt Victoria Tunnel is part of SH1. The distance between kerbs within this tunnel is 6.0m, giving 3.0m wide lanes. The tunnel carries 30,000 vehicles per day including heavy vehicles, four buses and out of service commuter buses. In terms of commuter buses, they use a separate one-way bus tunnel to the north.
- 9 The Dublin Street bridge in Wanganui has a carriageway width of 6.2m between kerbs, giving 3.1m wide lanes. The Auckland Harbour Bridge has a distance between a kerb and central concrete barrier of 6.3m, giving 3.15m wide lanes. The Fitzherbert Bridge over the Manawatu River in Palmerston North has a distance of 12.8m between kerbs to accommodate four 3.2m wide lanes. All of these bridges carry heavy vehicles including buses.
- 10 I conclude that a carriageway width of 6.5m is adequate for bus lanes through Manners Mall.

#### **Width of Buses**

- 11 I asked two of our engineers to measure the width of buses that frequently use the Golden Mile. On Tuesday 16 March, they measured the width of a new trolley bus and a diesel bus. The width of the buses ranged between 2.43m to 2.45m. They also measured the width that the rear vision mirrors extended out from these dimension, and this was found to vary between 150mm and 330mm.
- 12 The Land Transport Rules specify the legal permitted width of heavy commercial vehicles including buses is up to 2.5m<sup>1</sup>. Any vehicle exceeding this width is deemed over dimensioned. Special Rules apply to over dimensioned vehicles, including flags, signage and pilot vehicles.

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1 Table 14.1 of The Land Transport Rule: Vehicle Dimensions and Mass, May 2002.

- 13 The Rules allow a vehicle to have collapsible mirrors that extend not more than 240 mm beyond the side of the vehicle<sup>2</sup>. This means that the legal overall width of a bus, including mirrors, must be less than 2.98m.
- 14 The buses measured fully comply with the Rules for width and generally complied with the rules for the extension of mirrors.
- 15 I conclude that buses using Wellington's Golden Mile will not exceed 2.5m in width, and that the overall legal width, including mirrors, must be less than 2.98m.

### **Width of Footpaths**

- 16 Referring to NZTA guideline<sup>3</sup> for the design of footpaths, we find that the total width of a footpath will typically have four zones, (illustrated in attachment one): -
- (i) Kerb width at 0.15m.
  - (j) Street furniture – up to 1.2m. This allows for plantings, poles and seating. This width provides a useful neutral zone between the general flow of pedestrians and buses, irrespective of whether any furniture is installed within this zone or not.
  - (k) Through route – typically from 1.5 to 2.4m, but could be more depending on number of pedestrians.
  - (l) Frontage – from 0 to 0.75m. This allows people to enter and exit shops freely, others to window shop and others to merge with people using the through route. A greater width may be required if Council allow shops to use some of this space for café tables and the like.

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2 Rule 14.1(4)(b) of The Land Transport Rule: Vehicle Dimensions and Mass, May 2002.

3 NZTA, Pedestrian Planning and Design Guide, Oct 2009.



- 17 When estimating the width of footpath to be provided, I should calculate the width of the through route needed to accommodate the number of pedestrians and then add on additional width for street furniture, frontage and kerb.
- 18 In her evidence, Teena Pennington<sup>4</sup> provided the results of a pedestrian count survey undertaken in 2009. This showed that 5781 pedestrians per hour use Manners Mall in the lunch time period<sup>5</sup>. This is significantly more than in the morning peak and a little more than the evening peak. Most of the pedestrians in the morning and evening peak will be commuters, some which will also use buses. This trend that most pedestrians use the Mall during lunch time was also found in a survey undertaken by Gehl Architects<sup>6</sup> in 2004.
- 19 If I assume that pedestrians use the footpath equally on both sides of the carriageway, then the total number of pedestrians using the 'through route' on one side of Manners Mall is 2890 people/hour (48 pedestrians/minute). This number of people can be accommodated within a 'through route' width of just 1.5m<sup>7</sup>. If we now add to this 0.75m for frontage, 1.2m for street furniture and 0.15m for kerb, we find that we need a footpath width of 3.6m on each side, or 7.2m in total.
- 20 I have already established that the available width along Manners Mall is 15m. Allowing for a 6.5m carriageway, this leaves 8.5m for footpath width. An 8.5m footpath will provide one 'through route' on each side of 2.15m. A width of 2.15m is, according to the NZTA guide<sup>8</sup>, sufficient to provide for 70 pedestrians/minute.

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4 Teena Pennington evidence-in-chief, Appendix Three, Pedestrian Effects of Restoring the Golden Mile.

5 Lunch time period was 11.30am to 1.00pm

6 Gehl Architects, City to waterfront – Wellington, Public Spaces and Public Life study, October 2004.

7 Using Table 14.3 of NZTA's Pedestrian Planning and Design Guide

8 Using Table 14.3 of NZTA's Pedestrian Planning and Design Guide

- 21 I would like to comment that in the final design of Manners Mall, the designer may decide that street furniture is not required at some locations. This means that a width of less than 1.2m may be needed for the 'street furniture' zone, meaning more width is available for the 'through route' zone or a narrow overall width can be provided without adversely affecting pedestrian capacity.
- 22 I would also like to comment that the proposed development of Lower Cuba Street has the potential to attract more pedestrians, reducing the number that presently use Manners Mall as a through route between Lambton Quay and Courtenay Place.
- 23 As previously noted, the pedestrian numbers during the evening peaks when many pedestrians may also be using buses are less than those at noon. On one side of Manners Mall we can expect 2446 pedestrians/hour (40 pedestrians/minute). If the number of commuters who walk to work was to increase by 40%<sup>9</sup>, then this would result in 56 pedestrians/minute – requiring a through route width of 1.8m, which is still well less of the 2.15m being provided.
- 24 I now consider the impact of bus stops on pedestrian numbers. If I assume that about 10 passengers<sup>10</sup> get on or off each bus at stops around the Manners Mall area, I can calculate what impact, if any, this has on pedestrian numbers. Assuming 90 buses per hour<sup>11</sup> in a peak hour direction, this will give us about 900 pedestrians/hour.
- 25 I will assume that any decision to move a bus stop as part of the scheme would cause 50% of these 900 people to become

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9 In WCC 2006 LTCCP, they set a goal of increasing the number of commuters who walk to work from 13% to 18%, giving a 40% increase.

10 Bus occupancy along the Golden Mile was surveyed in 2009 by GWRC. The results published in a report by Opus, Central Area Bus Operational Review, Nov 2009. Figure 3.7 and 3.8 of this report indicate that on average the number of people on a bus does not change by more than five people after a stop.

11 The number of buses per hour in one direction is 90, refer to paragraph 23 in my evidence-in-chief.

'additional' pedestrians using Manners Mall<sup>12</sup>. In other words, I am assuming that these passengers do not presently walk along Manners Mall, but would do so in the future as a result of the scheme. If we added these additional pedestrians to the 40% growth in total pedestrians calculated in paragraph 23, then we would need to accommodate 60 pedestrians/minute. Again we find that this could be easily accommodated within the footpath width available.

- 26 This analysis leaves me in no doubt that the 8.5m available for footpaths along Manners Mall is more than adequate both now and in future years.

**Buses being able to manoeuvre around Willis Street and Manners Street (west) corner.**

- 27 We regularly use the specifically designed software '*AutoTurn 6.1*' to predict the tracking of heavy commercial vehicles making turning movements<sup>13</sup>. We use this software in the design of intersections to ensure that what is built can be used by heavy commercial vehicles.
- 28 I asked one of our traffic engineers with experience in using this software to prepare a detailed drawing of the minimum radius needed for buses and other heavy commercial vehicles to safely manoeuvring between Willis Street and Manners Street (west).
- 29 I have provided in Attachment Two the tracking curves required for buses travelling in both directions between Willis Street and Manners Street (west). It confirms that the intersection can accommodate southbound buses turning left into Manners Street at the same time as northbound buses turning right into Willis

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12 50% of 900 is 450 additional people sharing both sides. This gives 225 pedestrians/hour or 4 pedestrians/minute on one side.

13 '*Autoturn*' is software supplied as part of Autodesk from Transport Solutions Ltd. We assumed a Large Rigid Bus (Austroads 2006). This has a length of 14.5m, width of 2.5m and steering angle of 46.3°.

Street. This can all be achieved at the same time as a heavy commercial vehicle turning from Willis St into Boulcott Street, in the event that the signals provide for all these movements at the same time.

- 30 I have established that the Willis St/Manners Street intersection will accommodate the movement of buses in both directions.

**Buses being able to manoeuvre around stationary buses**

- 31 Allowing buses to pass stationary buses will result in reduced dwell time, improved journey times and improved reliability, particular with GWRC's existing operational bus model that requires all bus routes to pass through the Golden Mile. If GWRC adopted other operational models like a high quality shuttle service through the Golden Mile<sup>14</sup>, it would remove the need for buses to pass.
- 32 Buses need space to pull out and overtake a stationary bus. They need adequate clear space ahead to enable them to make this manoeuvre within the 6.5m wide carriageway and to avoid having to drive onto the footpath on the other side.
- 33 To assist the Court, I asked one of our traffic engineers to use the tracking software I referred to in paragraph 27 to confirm that this manoeuvre can be undertaken within the carriageway width and to determine how much of the bus would encroach onto the footpath. The drawing showing the tracking space needed for this manoeuvre is shown in Attachment Three. I was able to confirm that buses can pass each other safely. A bus would need a clearance of about 3m (at front of the bus) to make this manoeuvre.

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<sup>14</sup> A shuttle service would force passengers to transfer at a terminus at each end of the Golden Mile from local buses to a high quality transit system like light rail or high quality buses.

- 34 During this manoeuvre, the back of the bus would encroach onto the footpath by less than 200mm. This encroachment will occur whenever the clear space in front of the bus is 3m and is pulling out to pass a stationary bus. The encroachment would be less if a bus had a clear space of more than 3.0m ahead or if it was pulling out of a bus stop without needing to pass another bus.
- 35 In summary, I conclude that a bus will be able to pass one or more stationary buses along Manners Mall.

### **Impact of buses being able to pass on economic assessment**

- 36 In the existing situation of bus routes, some buses are able to pass other buses that are delayed at bus stops. I use the word some because Wellington operates trolley buses. While these buses can pass diesel buses, they cannot pass other trolley buses.
- 37 In our economic assessment undertaken for Wellington City Council and reported in our evidence-in-chief, we assumed that buses would be able to pass one or more stationary buses in any of the four options in the same way that they can at present.
- 38 Buses using the proposed Manners Mall route will be able to pass stopped buses. They would do this by pulling out into the opposing traffic lane. With 90 buses per hour<sup>15</sup> in one direction, the time between buses will be on average 40 seconds providing time for a bus to pull out into an opposing lane. Furthermore traffic signals will have a tendency to create platoons of buses travelling in each direction. These platoons will create even more time for one bus to pass one or more a stationary buses.
- 39 Buses would have the same opportunity to pass in Option D (along Manners Mall) as they would using Option B (Wakefield Street) and Option C (Dixon Street). This means that any change in journey time as a result of buses having more or less

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<sup>15</sup> Refer to paragraph 23 of my evidence-in-chief.

opportunity to pass than they do at present will apply equally to all these three options.

40 The key difference between the Manners Mall route and the existing situation<sup>16</sup> is that buses will need to pull out into an opposing lane of buses. At present they pull out into, and merge with, a flow of general traffic that is travelling in the same direction or out into their own lane. While buses in the Manners Mall option will have to pull out into an opposing lane, this lane will only be for buses at headways that will allow this manoeuvre to be undertaken safely. In the existing situation, while buses can pull out and merge with flows of traffic in the same direction, these flow are much greater than buses will experience in the Manners Mall option.

41 In my opinion, buses are likely to have at least the same, if not more, opportunity to pass in the new arrangement than at present. I accept that there may remain in some people's minds some uncertainty as to whether buses will find it more difficult, or easier, to pass in the proposed Manners Mall route as they do in the existing situation. However, any differences in ability to pass is immaterial to the option selection process and to the overall quantum of our economic assessment.

42 To test whether any reduction in the ability to pass has any material impact on our economic assessment, I conducted the following sensitivity test.

43 Bus stop dwell times both now and in future years was based on observations of existing stops. This means that the dwell time data that was used in our analysis included the fact that a proportion of buses are able to pass one or more stationary

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<sup>16</sup> In talking about the existing situation, I refer to bus stops within the study area, being those on Lower Cuba St, Manners St (west) and Dixon St. These stops are all located on one-way streets. There are other situations within the Golden Mile bus route where bus stops are located on two-way traffic.

buses. The dwell time at stops will be less when passing is possible compared to a situation where passing is not possible.

44 I asked two traffic engineers to undertake a survey of the number of buses passing at the bus stop in Dixon St and Lower Cuba St in the week starting 15 March 2010. From this survey I can make the following observations: -

- (a) Only when buses are experiencing long delay did they attempt to pass.
- (b) Buses rarely passed a single bus, but two or more buses.
- (c) Hutt Valley and Newland buses are more likely to pass another bus, but were also more likely to be passed.
- (d) Trolley buses cannot pass each other.

45 We found that the percentage of buses that decided to pass was 17% at Lower Cuba St and 9% at Dixon St.

46 We also have bus stop dwell time data from other surveys<sup>17</sup>. For example, we know that the median dwell time in the AM peak for the of the Dixon Street bus stop is 14 seconds and is 60 seconds at the 99%ile.

47 I made a number of assumptions that enabled me to estimate the quantum of the economic benefits associated with buses passing:

- (a) That those buses that decide to pass, passed two stationary buses.
- (b) That the two stationary buses being passed are in the upper 18%ile for Dixon St and 36%ile for the Cuba Street bus stops. This assumption is based on the fact

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<sup>17</sup> The dwell time data and the bus occupancy data came from the surveys completed by GWRC for us as part of the Central Area Bus Operational Review. The surveys were completed between 4 August 2009 and 18 August 2009.

that the percentage of buses that are passing is 9% and 18% respectively for the Dixon and Cuba St stops and that each of these buses pass two stationary buses. It is these two stationary buses that are assumed to be at the tail end of the distribution of dwell times.

- (c) That buses only pass in the AM and PM peak and not in the inter peak.
- (d) Those buses that decide to pass only spend the median dwell time at the bus stop.
- (e) That had these buses not been able to pass, they would have waited in the upper percentile range of dwell time distribution (for Dixon Street this would be between 82%ile and 99%ile).
- (f) The travel time saving for those buses that pass is the difference between assumption d) and e) above. I calculated travel time saving for two values: an upper bound value and a lower bound value. For Dixon St this gave an upper bound saving of 46 seconds (between the median and 99%ile) and a lower bound saving of 13 seconds (between median and 82%ile).
- (g) Given that the distribution of time savings is non-linear, I assumed that average time savings for all buses was the sum of the upper bound and lower bound values calculated in step f) divided by three.

48 Having estimated these time saving for both bus stops in both AM and PM peaks, I determined the economic benefits associated with buses being able to pass using the same methods that I outlined in my evidence-in-chief (paragraphs 80 to 83). The



economic benefits associated with allowing buses to pass was found to have a net present value (NPV) of \$160k<sup>18</sup>.

49. I have already established in paragraph 38 that buses will be able to pass each other in any of the new schemes. Therefore, this figure of \$160k is an upper bound estimate of the possible impact on the total quantum of our economic assessment. This overall assessment found the economic benefits of Option D to be NPV \$19.8 million, meaning that the convenience of bus passing has a negligible effect (much less than 0.8%) of the total economic benefits for the scheme<sup>19</sup> and hence the benefit cost ratio.

50. I can conclude that whether buses can or cannot pass a stationary bus at a stop or how convenient a bus will be able to pass does not affect the robustness of our economic assessment, or in our option evaluation process. Furthermore, the benefit cost ratio for Option D remains at 2.1. Therefore the question of how convenient one bus might pass another bus does not affect the overall conclusions of our report<sup>20</sup>.

#### **Access for the fire service.**

51. The NZ Fire Service does not have, nor do they need, any specific requirements for the width of public roads. This is because the Fire Service operate vehicles that comply with the Land Transport Rules, meaning that their vehicles can be no larger than other heavy vehicles including buses.

52. In my opinion, the Fire Service will not have any difficulty gaining access to a 'bus only' Manners Mall. Manners Mall will provide similar access opportunities as any other street in Wellington. In the event that Manners Mall is blocked in one direction, they would use the other directions. In the unlikely event that Manners

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<sup>18</sup> Net Present Value (NPV) is the \$ value in today's terms of the flow of benefits in future years.

<sup>19</sup> Table 2 of my evidence –in-chief, I reported NPV\$19.8M for Option D.

<sup>20</sup> Opus, restoring the Golden Mile, May 2009

Mall is blocked in both direction, they would use the footpath or push buses out of the way.

53 In her evidence, Teena Pennington (Appendix 7) provides a letter from the Fire Service by their agent Beca confirming that Fire Service is satisfied with the proposal for Manners Mall.

54 In her evidence, Maria van der Meel (page 6), refers to the *Access for Appliances and Fire Fighting for Fire and Rescue Services*<sup>21</sup> and noted that this document requires, "A clearly defined path of at least 3.7 metres wide, and... ..a fire path will need to be 5.5 metres wide for use by hydraulic platforms". This document is to be applied in the UK and is designed to meet the specific requirements of the fire appliances in that location. They do not apply to NZ. Even if they did, the carriageway width of 6.5m for Manners Mall will more than meet all of these requirements.

55 I conclude that Manners Mall will provide adequate access for the Fire Service.

### Summary

56 My calculations show that: -

- (a) The width of Manners Mall (shop front to shop front) is at the narrowest, 15m.
- (b) A carriageway of Manners Mall, if reopened, will be 6.5m.
- (c) Buses using the Golden Mile will not exceed 2.5m, this being the legal limit of vehicles on NZ roads. Allowing for mirrors, the overall bus cannot legally exceed 2.98m.

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<sup>21</sup> This UK document can be down loaded from (accessed 15 March 2010) <http://www.hertsdirect.org/infobase/docs/pdfstore/fireaccess.pdf>. This UK document is a Hertfordshire County Council standard. The figures in it are based on those in the UK Department for Transport's Manual for emergency vehicles. The Manual for Streets is a guideline only (not statutory) for the design of any new streets.

- (d) The space available for footpaths will be 8.5m.
- 57 The carriageway width of 6.5m is adequate for buses and will allow one bus to pass one or more stationary buses.
- 58 Manners Mall is wide enough to accommodate a footpath of sufficient width to carry existing and future pedestrians, while also having sufficient width for street furniture.
- 59 Buses will be able to pass though the Willis St/Manners St intersection.
- 60 The overall economic benefits are not influenced by whether buses will find it more or less convenient to pass one or more stationary buses. The BCR for Option Di remains at 2.1.

### **Conclusions**

- 61 Notwithstanding the questions raised in the City of Ours evidence, I remain very confident in the conclusion in our report "Restoring the Golden Mile – Taranaki Street to Willis Street". This conclusion was that Option D Manners Mall route is the preferred option.

# Attachments

## Attachment One: Footpath widths – definition of terms

Source: - NZTA, Pedestrian Planning and Design Guide, Oct 2009, page 14-2

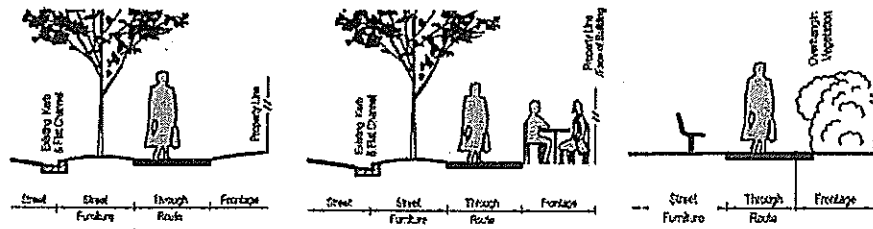


Figure 14.1 – Examples of footpath zones

## Attachment Two: Bus Tracking curves at the Willis Street and Manners Street (west) intersection

The drawing below shows two way bus between Willis Street and Manners Street (west). It confirms that the intersection can accommodate southbound buses turning left into Manners Street at the same time as northbound buses turning into Willis Street. This can all be achieved at the same time as a heavy vehicle turning from Willis St into Boulcott Street, in the event that the signals provided for all these movements at the same time. The turning circles as based on four coaches (RTS 18 NZ).

