**Most travel behaviours revert to pre-incident levels over time**

In all cases, traffic patterns returned to pre-incident levels. This trend suggests that prior transport mode and route choices are/were rational, considering the levels of service offered by different modes.

Some behaviour change is generally maintained, though this varies across the case studies. In Japan, where people tend to regularly use all modes, they reverted to essentially the same travel patterns as pre-earthquake. In the UK and Tasmania where private motor vehicles dominate, public transport experienced increased patronage after reinstatement of the bridges. This highlights the need to increase the number of public transport vehicles and level of service in order to maintain higher patronage and increase its attractiveness to patrons.

**Long term disruption creates land use changes**

Long term disruptions to transport network links can create land use changes. After the Tasman Bridge collapse, discretionary activities were localised with shopping, recreation and other facilities established within walking and cycling distance of the local catchment. More local facilities further increased walking and cycling, leading to a virtuous cycle, opposite to the general experience of private motor vehicle dependent cities.

### 6.0 Travel behaviour analysis

#### 6.1 Introduction

This section provides a synopsis of two research projects conducted by SocialData Australia Pty Ltd and reported in the Impacts of Riverside Expressway Closure Report, November 2006 (See technical appendices C and D). They are:
- In-Depth Travel Behaviour Analysis Report Brisbane 2005 - the Potentials Analysis
- Behavioural Changes in Brisbane North (TravelSmart Area).

The purpose of this research was to improve understanding of:
- actual and potential travel behaviour changes resulting from the REX closure
- the implications of these for future transport network disruptions and travel behaviour change initiatives.

#### 6.2 Potentials analysis

##### 6.2.1 Objectives

The objective of the Potentials Analysis was to analyse households and their trips to determine the theoretical potential for reducing private motor vehicle traffic. This theoretical potential for change in trip numbers can then be compared with observed changes in travel behaviour so that constraints and opportunities for change can be identified in future scenarios.

##### 6.2.2 Methodology

The methodology incorporates a number of research techniques including:
- self-administered mail back travel surveys
- in-depth face-to-face interviews using a simulation model.

The model was used to expand the subset of in-depth data collected by previous TravelSmart research projects in the periods between October to December 2004, February to May 2005 and March to May 2006.

A situational analysis then compared actual trip behaviour with potential alternatives, considering factors which constrain or impact on both available choices and perceived utilities.

A total of 6,924 persons were surveyed from households in Aspley, Indooroopilly, Brisbane North, Redlands, Taringa, Toowong and Woolloongabba. While this was not a representative sample of Greater Brisbane, this sample spread and the number of respondents can be considered a reasonable sample of typical Brisbane suburbs to give us a picture of “Brisbane” for purposes of this analysis.
6.2.3 Findings

The results identify average “Brisbane” travel behaviour and the potential for change. Figure 16 – Average motor vehicle trips per year – “Brisbane” 2006

Constraints include mobility impairments, luggage requirements and so on. Alternatives are considered viable if:

- the trip distance is less than twice the average walk or cycle distance
- the door-to-door public transport trip is less than twice the motor vehicle trip time or 20 minutes longer (whichever is the least).

According to these definitions and the findings, Figure 16 shows that almost half of all motor vehicle trips have a viable alternative.

Figure 17 shows that over 35 per cent of all motor vehicle trips could be substituted by bicycle trips, 13 per cent by walking and around 18 per cent could be substituted by existing public transport services (some additional peak capacity would be required). People often have more than one mode choice replacement to the private car for a trip (walk or cycle; cycle or bus) and a typical “Brisbanite” will have 1.4 non-car options per replaceable trip.

Figure 17 – Replaceable motor vehicle trips per year - “Brisbane” 2006
Table 7 shows that 24 per cent of all motor vehicle trips are work commuting and one third (8 per cent) of these can be replaced with an alternative mode. Non-work related motor vehicle trips represent a higher proportion of total travel and are more replaceable with alternative transport. For example, almost a half of the shopping/personal business trips are replaceable.

Table 7 – Motor vehicle trips by purpose – “Brisbane” 2006

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Total %</th>
<th>Constraints and/or no alternative available %</th>
<th>Motor vehicle use solely for subjective reasons; alternative available %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work</td>
<td>24</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Shopping, Personal business</td>
<td>32</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Leisure</td>
<td>26</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Escort</td>
<td>13</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>53</td>
<td>47</td>
</tr>
</tbody>
</table>

Table 8 shows that about half of all motor vehicle trips made between 5.00 am and 7.00 pm are replaceable. Trips made at night are less able to be replaced. This is due to greater security concerns at night and reduced public transport frequencies.

Table 8 – Motor vehicle trips by time of day – “Brisbane” 2006

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>Total %</th>
<th>Constraints and/or no alternative available %</th>
<th>Motor vehicle use solely for subjective reasons; alternative available %</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 am-9 am</td>
<td>21</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>9 am-3 pm</td>
<td>40</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>3 pm-7 pm</td>
<td>30</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>after 7 pm</td>
<td>9</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>53</td>
<td>47</td>
</tr>
</tbody>
</table>
Table 9 shows that 34 per cent of all motor vehicle trips are less than three kilometres in distance and that over two thirds (24 per cent) of these are replaceable. For the 40 per cent of trips between three kilometres and ten kilometres long, almost 50 per cent can be replaced. In contrast, 26 per cent of all motor vehicle trips are over ten kilometres in length and less than a fifth (5 per cent) of these can be replaced.

Table 9 – Motor vehicle trips by distance – “Brisbane” 2006

<table>
<thead>
<tr>
<th></th>
<th>Total %</th>
<th>Constraints and/or no alternative available %</th>
<th>Motor vehicle use solely for subjective reasons; alternative available %</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 3.0 km</td>
<td>34</td>
<td>10</td>
<td>24</td>
</tr>
<tr>
<td>3.0 to 10.0 km</td>
<td>40</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>10.0 km and over</td>
<td>26</td>
<td>21</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>53</td>
<td>47</td>
</tr>
</tbody>
</table>

Table 10 shows that 74 per cent and that more than half (38 per cent) of the weekday motor vehicle trips are replaceable while only a third (4 to 5 per cent) of weekend motor vehicle trips have alternatives.

Table 10 – Motor vehicle trips by day – “Brisbane” 2006

<table>
<thead>
<tr>
<th></th>
<th>Total %</th>
<th>Constraints and/or no alternative available %</th>
<th>Motor vehicle use solely for subjective reasons; alternative available %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week Day</td>
<td>74</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>Saturday</td>
<td>14</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Sunday</td>
<td>12</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>53</td>
<td>47</td>
</tr>
</tbody>
</table>

The Potentials Analysis has demonstrated that almost 50 per cent of all motor vehicle trips have the potential to be replaced by public transport, walking or cycling. This could occur without significant change to the existing transport system, as most patronage increases would occur outside the morning peak or act to extend the peak both earlier and later. Given the small proportion of motor vehicle trips over ten kilometres, the impact of road closures would be localised to the immediate vicinity and alternative routes.

Actual travel behaviour is clearly different from theoretical potential, motor vehicle drivers may choose to drive even when alternative modes of transport are available and convenient. This analysis shows that road closures can bring about significant change to travel behaviours if alternative modes are available, without leading to widespread disruption of lifestyle or the economy.
6.3 TravelSmart survey

6.3.1 Objectives
The objective of the TravelSmart Survey was to measure the impacts of the REX closure on households participating in the TravelSmart Brisbane North Project study area. It also assessed the impact of the TravelSmart Project on a participant’s ability to adopt new travel behaviours during the road closures.

6.3.2 Methodology
The survey was conducted by telephone during October and November 2006. There were a total of 4,153 people interviewed from selected suburbs (Nundah, Wavell Heights, Bracken Ridge, Bald Hills, Brighton) in Brisbane North. This target region was a joint QT, BCC and Australian Greenhouse Office initiative, known as the TravelSmart Brisbane North Project (TravelSmart project).

The TravelSmart project was conducted during 2006 and targeted more than 70,000 households from Windsor to Aspley with individualised marketing material relating to alternative transport options. Questions pertaining to the REX closure were added to the project’s final ‘quality control’ survey. The TravelSmart project segmented participating households into three groups. These became known as Groups I, R and N and were used to categorise and interpret data relating to the REX closure.

Group I included households without regular users of public transport, walking or cycling but whose inhabitants were interested in using these modes.

Group R included households with at least one regular user of public transport, walking or cycling.

Group N included households with inhabitants who were not interested or were unable to use alternatives to the motor vehicle.

6.3.3 Findings
The survey findings are categorised according to the I, R and N groups established by the TravelSmart project. Members of groups I and R actively requested and received information about alternative transport modes during the project, while Group N was not interested in receiving any information.

To identify the differences between those who had received alternative transport information before the REX closure and those who had elected not to receive information at all, Groups I and R were tallied together and are compared with Group N.

Table 11 shows the number and percentage of people surveyed from the three groups. Some of the following tables will compare the responses from the 63 per cent serviced in the TravelSmart project with the 37 per cent not serviced.

<table>
<thead>
<tr>
<th></th>
<th>abs.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I Interested Households</td>
<td>1,736</td>
<td>42</td>
</tr>
<tr>
<td>Group R Regularly using environmentally-friendly modes</td>
<td>880</td>
<td>21</td>
</tr>
<tr>
<td>Total serviced in TravelSmart</td>
<td>2,616</td>
<td>63</td>
</tr>
<tr>
<td>Group N Not interested households (not serviced in TravelSmart)</td>
<td>1,537</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>4,153</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 11 – Base population of Brisbane North households surveyed on the Expressway closure
Table 12 shows that about 14 per cent of people in Brisbane North were affected by the REX closure.

**Table 12 – Brisbane North population affected by the Riverside Expressway closure**

<table>
<thead>
<tr>
<th>Affected by the closure</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>14</td>
</tr>
<tr>
<td>No</td>
<td>86</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 13 shows that for those affected by the closure, the vast majority were motor vehicle drivers.

**Table 13 – Mode used by the affected Brisbane North population**

<table>
<thead>
<tr>
<th>Mode Used</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor vehicle as driver</td>
<td>87</td>
</tr>
<tr>
<td>Motor vehicle as passenger</td>
<td>5</td>
</tr>
<tr>
<td>Public Transport</td>
<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 14 shows 75 per cent of affected trips were for work purposes, however other trip purposes were also affected. This high representation of work trips is attributed to the REX closure being outside of the TravelSmart project area and the road closure’s proximity to the central business and employment district.

**Table 14 – Trip purpose of affected trips - Brisbane North population**

<table>
<thead>
<tr>
<th>Trip purpose of affected trips</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work</td>
<td>73</td>
</tr>
<tr>
<td>Education</td>
<td>5</td>
</tr>
<tr>
<td>Shopping/Services</td>
<td>8</td>
</tr>
<tr>
<td>Leisure</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 15 shows that 66 per cent of those affected made no changes to their trip. 21 per cent changed mode and 9 per cent changed route, with very few staying at home rather than making the trip at all. Those who had been serviced with information by the TravelSmart project were much more likely to change their travel behaviour in response to the closure.

Table 15 – Behaviour change of the affected Brisbane North population

<table>
<thead>
<tr>
<th>Total %</th>
<th>Changes</th>
<th>With TravelSmart %</th>
<th>Group N %</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Changed mode</td>
<td>27</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>Public Transport</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>Walking and Cycling</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Motor vehicle as passenger</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Motor vehicle as driver</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Changed route</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>Stayed home, cancelled trip</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>66</td>
<td>No Change</td>
<td>58</td>
<td>81</td>
</tr>
<tr>
<td>100</td>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 16 shows that of those who changed mode from motor vehicle to public transport, 66 per cent had a positive experience. Those who had received TravelSmart project information were two and a half times more likely to report a positive experience, suggesting that they were better informed and possessed a greater understanding of the public transport system.

Table 16 – Experience with public transport of the affected Brisbane North population

<table>
<thead>
<tr>
<th>Total %</th>
<th>Experience with Public Transport %</th>
<th>With TravelSmart %</th>
<th>Group N %</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Changed to Public Transport</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>Positive</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Negative</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>22</td>
<td>Other Changes</td>
<td>29</td>
<td>13</td>
</tr>
<tr>
<td>66</td>
<td>No Change</td>
<td>57</td>
<td>81</td>
</tr>
<tr>
<td>100</td>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 17 shows that of those who changed modes from motor vehicle driver, more than 20 per cent continue to use the new mode and another 40 per cent expect to use it more often. Those serviced by the TravelSmart project were much more likely to change mode and to continue to use the new mode once trialling it.

**Table 17 – Intention to continue travelling of the affected Brisbane North population**

<table>
<thead>
<tr>
<th>Total %</th>
<th>Do you think you will continue that way of travelling?</th>
<th>With TravelSmart %</th>
<th>Group N %</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Changed to mode other than motor vehicle driver</td>
<td>23</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>Yes, continue</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Eventually continue</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>No, not continue</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>16</td>
<td>Other changes</td>
<td>20</td>
<td>11</td>
</tr>
<tr>
<td>66</td>
<td>No change</td>
<td>57</td>
<td>81</td>
</tr>
<tr>
<td>100</td>
<td>(Base %)</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

In addition to the quantitative data outlined above, the following qualitative data was collected from incoming phone calls during the TravelSmart project:

- “Hey, I was talking to friends about the Expressway chaos and they said we should have been in the TravelSmart project. We live in Chapel Hill, can we join in too?”
- “Thanks for the great gear, nice bag. The timetables were great ...I used the ones you guys sent me when the road was closed, it’s a shame that I didn’t do that earlier. Was great. Brilliant”
- “Thanks for that pack I got... I didn’t get around to using the train before ...they really came through with the extra services – it was super full but I still made it to work on time”
- “I’m telling everyone about the info I got - the train was great when the Expressway was shut down. It was much quicker than driving”
- “Just to let you know I tried out the train to avoid the congestion, amazingly easy and quick to get to work”
- “I used the bus to get to work – it was a bit late but still easier than driving”
### 6.3.4 Comparing Brisbane North to Greater Brisbane

At the same time as the AC Nielsen Riverside Expressway Closure General Population Survey of the Brisbane Statistical Division (Greater Brisbane) was being carried out a survey of residents in the TravelSmart Brisbane North project area was also conducted. This allowed an assessment of the impact of the TravelSmart Project on a participant’s ability to adopt new travel behaviours during the road closures.

Overall Brisbane North residents were less affected by the closure than those of Greater Brisbane. Only 14 per cent of people in Brisbane North were affected by the closure as compared to 29 per cent for the Brisbane Statistical Division. This phenomena correlates with the road traffic data which showed that northside commuters generally were least affected by the closure.

However in Brisbane North 87 per cent of those who were affected and changed were regular car drivers while in Greater Brisbane only 72 per cent of those who were affected and changed were regular car drivers. One might have assumed that northside car drivers would have had less than average incentive to change mode during the closure given they were less affected by the closure.

21 per cent of Brisbane North residents who were affected by the closure changed mode compared to the Greater Brisbane average of 14 per cent. In both cases it was predominantly to public transport.

Those in Brisbane North who had chosen to participate in, and had therefore been serviced with information by, the TravelSmart project in the year prior to the closure made an even stronger mode choice decision (27 per cent which is almost twice the Greater Brisbane average of 14 per cent). Those residents of Brisbane North who specifically did not want to participate in TravelSmart but were affected by the closure were three times less likely to change mode (8 per cent compared to 27 per cent). They were however much closer to making similar levels of mode switch as the general Greater Brisbane population (8 per cent compared to 14 per cent). See Figure 18.

![Figure 18 – Mode change during the closures - BSD (Greater Brisbane) v Brisbane North](image)

The influence of TravelSmart is considerable given that both the traffic data and the surveys showed that northside commuters generally were least affected by the closure and would have had less than average incentive to change mode during the closure. Instead Brisbane North residents made significantly higher mode shifts from their cars to public transport and active transport. This suggests that Brisbane North residents were much more aware of their available options and could better tailor their choice to optimise their outcomes.
6.3.5 Conclusions

The TravelSmart survey population lived between three and 15 kilometres north of the road closure. The survey findings can be extrapolated to confirm that only a minority of the population were affected by the road closure and the impacts were mostly localised. For the minority who were affected, many were still able to undertake their trip as usual but experienced some inconvenience. Even though the potential for mode change is close to 50 per cent, only about 20 per cent of affected trips changed mode, with an additional 13 per cent changing route or staying at home. Most of those who changed mode reported a positive experience, with a significant portion continuing to catch public transport, walk or cycle instead of travelling by motor vehicle.

A comparison of those who were provided TravelSmart project information with those who were not demonstrated a clear benefit to those who had participated in the project. The participants were better informed about their travel options and as a result had more positive experiences that encouraged sustained alternative transport use, minimising congestion and other negative impacts associated with the road closure.

When comparing the population of Brisbane North to the general Greater Brisbane population TravelSmart influence is quite pronounced. Residents who were affected in Brisbane North had significantly high rates of shifting out of their cars to public transport and active transport compared to the general Greater Brisbane population.

This research indicates that implementation of TravelSmart based projects in the local area prior to scheduled road closures, construction and or maintenance projects will help the community and as a result, improve the transport system’s ability to cope with the reduction in capacity.

Identifying the household’s transport needs and tailoring information to suit each individual’s circumstances provides a clear benefit to the community and transport system. However, the TravelSmart process requires time and resources for planning and implementation, and is therefore not feasible for unplanned closures.
7.0 Stakeholder perspectives

7.1 Introduction
This section summarises a series of informal conversations with important stakeholders about the impacts and management of the REX closures.

7.2 Purpose and objectives
The purpose of the stakeholder conversations research was to:
- inform stakeholders of the RETINA
- gain stakeholder views on how well the incident was managed
- open discussions with stakeholders on broader policy issues.

7.3 Methodology
The targeted stakeholders formed four categories:
- Road User Groups
- Professional Associations
- State-Owned Corporations
- Business Reference Groups.

These groups represent a cross section of the major organisations which have an interest in shaping Brisbane City and was not intended to be an exhaustive list. Stakeholder conversations were conducted with the following organisations as either face-to-face meetings or telephone discussions.

Road user groups
- Queensland Trucking Association
- Taxi Council of Queensland
- Royal Automobile Club of Queensland (RACQ)
- Bicycle Queensland.

Professional associations
- Brisbane Development Association
- Urban Development Industry Association.

State-owned corporations
- South Bank Corporation
- Port of Brisbane Corporation.

Business reference group
- Commerce Queensland
- Tourism Queensland

The range of topics discussed with stakeholders included:
- provision of trip information
- stakeholder initiated strategies to mitigate their own circumstances, if any
- stakeholder views on how the city would have coped if the closures had have been in place for longer.

The conversations were informal in nature without a set structure to encourage stakeholders to be more open and direct.
7.4  Findings
Stakeholder viewpoints have been reported as a collective and do not necessarily represent the views of any particular stakeholder.

The following is a summary of the positive feedback and concerns received during the conversations.

7.4.1  Positive feedback
Most stakeholders:
- appreciated the need for the closure, acknowledging that safety was an imperative over short term congestion
- were satisfied with the incident management and the transport information provided
- used a number of communication methods to keep their employees informed of the closures and associated impacts.

7.4.2  Concerns
Many stakeholders:
- suggested there was a need to provide more alternate routes (although some spare capacity was acknowledged in sections of the road network east of the city)
- acknowledged that had the closures gone on for longer the severity of the impacts could have increased
- felt the incident highlighted the need for improvements in the city’s multi modal transport system to cater for the growing population.
- Some stakeholders:
  - questioned the timing of the Minister’s public announcement, needing it well before the evening road peak period
  - suggested a partial ramp closure may have sufficed, given the ramps were reopened to light traffic after about a week of their complete closure
  - queried why buses were able to use the ramps when heavy vehicles were not
  - expressed concern for the strain placed on the CBD road network by major road projects.

7.5  Conclusions
- A majority of stakeholders were happy with the management of the closure.
- Longer term closure would have created more business disruptions.
- Stakeholders appreciated being contacted to discuss their views and indicated they would welcome future opportunities to discuss strategic transport planning for the city with the Queensland Government.
8.0 Travel demand strategy: flexible work policies

8.1 Introduction
A review of the Queensland Government’s arrangements regarding flexible work hours was conducted following the REX closure to ascertain what impact these arrangements had or could have on spreading travel demand during peak periods and during critical incidents.

8.2 Purpose and objectives
Of the estimated 86,500 people who work in Brisbane’s CBD, the number of buildings occupied by government agencies suggest that up to 25 per cent of people working in the inner city are public sector employees.

Peak spreading is an appropriate demand management strategy to apply when part of the major road network capacity is reduced.

The application of flexible work hours was reviewed to determine whether or not the opportunity to spread the peak commuter demand on the congested road network was taken.

8.3 Methodology
A survey of inner city Queensland Government agencies was undertaken to determine if agencies affected by the closures took advantage of the flexible work arrangements.

The following workplace arrangements were considered in the survey:
- working from home
- staggered start and finish times
- normal operating hours
- accrued time
- overtime
- time off in lieu.

The following specific questions were included in the survey. The surveys were emailed to the relevant Human Resource Manager or their delegate:
- what impact did the closure have on your agency?
- how many staff (approximately) were affected and how many took advantage of the flexibilities offered?
- were there any unforeseen consequences of the closure of the REX or your agency’s handling of the difficulties faced?
8.4 Findings
Of the 29 agencies contacted approximately 35 per cent provided a response. The following is an overview of the survey responses:

- Almost all agencies implemented flexible work arrangements to allow employees to adjust their working hours around traffic delays. Many staff members took advantage of the options presented to them and expressed their appreciation.
- Instead of commuting to the city during the peak periods, employees were allowed to either adjust their start and finish times, work from home, use recreation time, use time off in lieu or work from a regional office.
- Flexible work arrangements were communicated via email from the Director-General’s office or by the line manager.
- Although agencies were advised of the closure, some said it was too late to inform staff appropriately of their flexible work options.
- A few agencies commented that the closures had minimal affect on the working patterns of staff which may reflect that a high proportion of staff already used public transport to and from work.
- Travel time to meetings outside the CBD increased considerably.
- A possible increase in absenteeism was suspected, although exact absenteeism figures have not been determined.

8.5 Conclusions
Using the REX closure as an example, the research has shown that the application of flexible work place arrangements provides the ability for managers to implement effective travel demand strategies to reduce pressure on the road network during peak periods.

It is recommended that:

- the application of such arrangements be increased to reduce congestion during the peak demand periods (not just when there is a failure in the road network)
- surveys of public sector employees could be undertaken to gain a better understanding of the impact such arrangements will have on the operational performance of the transport system, particularly during the weekday peak periods.

9.0 Community perspectives

9.1 Introduction
This section presents the results of a survey conducted by AC Nielsen and reported in REX Closure General Population Survey Report, January 2007.

The report presents data and analysis from telephone survey responses on the community impacts and attitudes toward the REX closure. The survey was conducted between three and five weeks after the initial event.
9.2 Purpose and objectives

The purpose of the research was to gain a better understanding of the impacts of the REX closure and associated agency actions on community attitudes and travel behaviour. The objectives of the survey were to investigate:

- the public’s opinion and level of support for how well the incident was managed
- what travel behaviour change resulted from the on-ramp and bikeway closures along the REX
- what behaviour change resulting from the closures was sustained
- the public’s awareness and travel behaviour following the decision to waive the Gateway Bridge toll
- the public’s awareness and travel behaviour following the decision to open bus and transit lanes to single occupancy vehicles (SOVs).

This data and analysis will inform future decisions about effective procedures to manage similar transport events.

9.3 Methodology

A telephone survey of randomly selected residents in the BSD was conducted in two stages and ensured a representative and reliable sample. Following a pilot survey, the main phone survey was conducted between 16 and 26 November 2006. Interviewing was conducted on weekdays between 4 pm and 9 pm and on the weekends during the day to ensure all resident types were captured. Four callback attempts were made per household.

The survey involved telephoning a random sample of residents to calculate the incidence rate of those affected by the closure. Residents were considered to be affected by the closures if they claimed to have been positively or negatively affected in how, when or where they travelled, and if they were affected on at least one of the three days following the closure (18 to 20 October 2006).

9.3.1 Stage one of the survey

The telephone numbers were generated by random digit dialing. Respondents aged 18 years or older were randomly selected from within the household. A total of 1,340 interviews were conducted, 330 of which were with affected residents.

9.3.2 Stage two of the survey

The telephone numbers were generated by random digit dialing just as in stage one. The person who answered the phone was surveyed providing they lived in the residence and were affected by the road closure.

If they did not meet the basic criteria the survey was offered to another member of the household who did. Stage two was designed to increase the sample size of the affected group to improve data reliability.

9.3.3 Total survey sample

Stage one and two combined samples totalled 1,000 interviews with affected residents. The overall total number of interviews conducted was 2,085 and was weighted by age and gender according to Australian Bureau of Statistics population estimates (June 2006), and by incidence of impact within age and gender categories, based on incidence figures calculated from the stage one sample.
9.4 Findings

The research indicated that of the 1.3 million residents aged 18 years and over in the BSD population, approximately 395,000, or 29 per cent, were affected by the REX closures between 18 and 20 October 2006.

The survey measured the following features of affected residents:
- awareness of and support for the closures
- when and how they were most affected
- what they did about it
- support for management strategies
- preferred information source
- travel behaviour following the reopening.

9.4.1 Awareness of and support for the closures

Figure 19 shows the degree of support amongst affected and aware residents. Of the affected residents, 93 per cent were aware of the closures and of those aware, 94 per cent supported the closures as a safety precaution.

Radio and television news broadcasts were the preferred media for information about scheduled or emergency road closures and alternative routes and travel options.

9.4.2 When and how residents were most affected

Residents were more likely to be affected on Wednesday and Thursday than on the Friday. The fact that fewer journeys were made on a Friday may help explain this. As expected, residents commuting to work were significantly more affected by the closures than those travelling for other purposes.

Approximately 40 per cent of those whose trip was affected did not cross the river as part of their journey during the Wednesday to Friday period. The impacts thus extended beyond those who would normally use the REX.

Overall, the majority of those affected experienced a negative change in their trip experience over the Wednesday to Friday period, with a longer journey time the most common experience. Conversely, there were some who enjoyed a positive change to their trip experience, of which a shorter trip was the most common experience. Residents who experienced a shorter trip were more likely to have switched transport modes.
9.4.3 What residents did about it

Figure 20 provides a statistical overview on the travel behaviour change of the 29 per cent of Brisbane Statistical Division residents that were affected by the closures.

**Figure 20 – Affects of REX, bikeway and ramp closures**

<table>
<thead>
<tr>
<th>Day Affected</th>
<th>WED (71%)</th>
<th>THUR (67%)</th>
<th>FRI (62%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive change in trip experience:</td>
<td>12%</td>
<td>18%</td>
<td>20%</td>
</tr>
<tr>
<td>Shorter time for trip</td>
<td>61%</td>
<td>66%</td>
<td>68%</td>
</tr>
<tr>
<td>Negative change in trip experience:</td>
<td>85%</td>
<td>79%</td>
<td>81%</td>
</tr>
<tr>
<td>Longer time for trip</td>
<td>91%</td>
<td>88%</td>
<td>90%</td>
</tr>
<tr>
<td>Route changed, destination same</td>
<td>51%</td>
<td>51%</td>
<td>52%</td>
</tr>
<tr>
<td>Time of day travelled changed:</td>
<td>34%</td>
<td>38%</td>
<td>41%</td>
</tr>
<tr>
<td>Travelled up to 1 hour earlier</td>
<td>63%</td>
<td>61%</td>
<td>62%</td>
</tr>
<tr>
<td>Travel mode changed:</td>
<td>11%</td>
<td>16%</td>
<td>14%</td>
</tr>
<tr>
<td>Switched to train</td>
<td>45%</td>
<td>45%</td>
<td>39%</td>
</tr>
<tr>
<td>Switched to motor vehicle</td>
<td>12%</td>
<td>15%</td>
<td>16%</td>
</tr>
<tr>
<td>Switched to bus</td>
<td>9%</td>
<td>16%</td>
<td>17%</td>
</tr>
<tr>
<td>Switched to walking</td>
<td>17%</td>
<td>10%</td>
<td>12%</td>
</tr>
<tr>
<td>Switched to ferry/City Cat</td>
<td>12%</td>
<td>10%</td>
<td>8%</td>
</tr>
<tr>
<td>Switched to other</td>
<td>5%</td>
<td>4%</td>
<td>7%</td>
</tr>
<tr>
<td>Final trip destination changed</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Postponed trip</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Cancelled trip</td>
<td>5%</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Worked at home instead</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>

**Change route**

The most common change in actual behaviour was changing the route of the journey but arriving at the same destination.

**Bring forward trip**

Many of those affected also changed their usual time of travel, most commonly up to one hour earlier than usual. This was more common for morning peak commuters than those commuting during the evening peak.

**Postpone trip**

Only a few residents (around 8 per cent of the affected 29 per cent) postponed or cancelled their trip and/or worked from home during the closures.

**Switch mode**

Some residents switched modes with almost half of those switching to the train, and a smaller proportion switching from public transport to motor vehicle. The bus grew in popularity day-by-day for those who switched.
9.4.4 Overall support for government strategies
A total 73 per cent of all residents believe the incident was well managed (rating ‘excellent’ or ‘good’). Females were more favourable, as were those who were affected by the closures. Figure 21 shows the degree of support for government strategies.

Figure 21 – Perceptions of incident management

The majority of residents supported the removal of the Gateway Bridge peak hour toll and the opening of bus and transit lanes to SOVs. However, the effectiveness of each strategy in instigating positive behaviour change is less obvious.

**Gateway Bridge toll**
About 69 per cent of residents were aware the toll was removed during peak times. Of those aware, 14 per cent would normally use the bridge at these times, but only 12 per cent used it during the closures, and only two per cent of those aware of the removal state this influenced their decision to use the Gateway Bridge. Overall, about 93 per cent of all residents supported the decision to remove the toll during the closures.

**Bus and transit lanes opened to SOVs**
Only 25 per cent of residents were aware of the bus and transit lane openings to SOV use. Of those aware, only 16 per cent of residents claim to have used the lanes in either a bus or a motor vehicle during the REX closure. Also, only four per cent of those aware state this influenced their decision to use the lanes.
Overall, about 80 per cent of all residents supported the decision to open transit lanes to SOVs during the closure.

9.4.5 Preferred information source
Overall, the most preferred information sources for affected residents were radio and television. Affected residents sourced key information in the following ways:
- scheduled road closures: radio (65 per cent), TV (63 per cent)
- emergency closures: radio (75 per cent), TV (58 per cent)
- alternative routes/ travel options: radio (59 per cent), TV (46 per cent).
9.4.6 Travel behaviour following the reopening

A total of 33 per cent of affected residents claim to have continued their new travel behaviour one week after the reopening of the Expressway and bikeway. Of these residents, 84 per cent claimed to still be travelling in this way, three to five weeks later, and stated they were likely (rating ‘very’ or ‘quite’) to continue in the future.

Those who continued the new behaviour for some trips (both in the week following reopening and longer) are more likely to have switched modes; whilst those who continued their new behaviour on all trips (both in the short and long terms) are more likely to now be travelling at a different time of day.

9.5 Conclusions

The community survey demonstrated that the community strongly supports interventions in the transport network where safety is at risk, and believes that in general, the responses and communication were well managed by government.

Despite the closure for several days of the most highly used road in Queensland, only 29 per cent of Greater Brisbane’s population was affected at all. This indicates that the existing road network is relatively robust and traffic is efficiently dispersed across the region and not overly dependent on a specific link.

The closure of such an important link did create significant impacts throughout the local area and alternative corridors, not just for cross river trips. Few people had to resort to changing their activities and of those who did, most were able to accommodate the disruption by changing route, time of travel or mode.

Up to 33 per cent of those who changed their travel behaviour have decided to continue with the new mode, route or time of travel, indicating that a positive experience and learning occurred which modified previous habits.

Despite support for strategies announced by Queensland Government, these do not appear to have had a significant impact on travel decisions. There was at least a high level of awareness in the community of the Gateway Bridge toll removal.
10.0 RETINA summary and conclusions

Although the closure of the REX was a significant media and public event that caused disruption to a significant number of people’s travel plans, only 29 per cent of people in greater Brisbane reported any affect on them – either positive or negative.

This section summarises and concludes the main findings of the RETINA project and consolidates the outcome of the investigations into five main topic areas:

- travel behaviour change
- road transport and traffic management
- role of intelligent transport systems in incident detection, management and response
- transport network capacity
- public communications and media response.

The conclusions will be utilised by QT, MR and other stakeholders when reviewing and updating policies strategies, plans and procedures to improve the transport system’s preparedness and response capability for any future network disruptions.

10.1 Travel behaviour change

10.1.1 Ability to change behaviour quickly

Subject to some peak hour public transport capacity constraints, 47 per cent of motor vehicle trips in Brisbane can potentially be replaced with other transport modes. In addition, many motor vehicle trips can also change route or time if necessary.

Community survey findings indicate that actual mode change during the closure was about 15 per cent and that affected commuters modified their travel behaviour in the following ways:

- about 50 per cent changed route
- about 40 per cent changed their time of travel (most earlier)
- about 10 per cent changed destination or chose not to make a planned trip
- about 15 per cent changed the mode of transport.

Studies of travel behaviour during transport incidents show that people make rational choices based on their perception of available transport options and are able to maintain the new travel behaviour until the incident is over.

Behaviour changes varied widely across case studies because of differences in the extent and nature of disruption and available opportunities to utilise alternatives. The most common changes were route changes, retiming of trips (usually earlier) and mode substitutions.

Many people from northern suburbs of Brisbane participated in a recent TravelSmart Brisbane North project and as a result were better informed and were more likely to try other transport modes, helping to reduce anticipated congestion levels. TravelSmart participants also reported more positive experiences on the new modes and were less likely to revert to using motor vehicles when the expressway reopened.
10.1.2 Travel pattern reversion

Case studies from around the world showed a general trend for the majority of pre-incident travel patterns to be resumed post incident, although some behaviour change was maintained in the long term in several cases. In Japan, where people tend to regularly use all modes, travel patterns reverted to essentially the same levels as pre-earthquake. In the UK and Tasmania where private motor vehicles dominate, public transport maintained some increased patronage after the reinstatement of each bridge.

For the REX closure, about 30 per cent of those who changed their travel behaviour claimed to have continued the new behaviour after the expressway and bikeway were reopened. Over 80 per cent of these intended to continue with the new mode in the future.

Contrary to this intention, most of the increased public transport patronage had not been maintained three weeks after the closure.

10.1.3 Walking and cycling

The inability to reach some destinations during a network disruption, travel delays and uncertainty encourage more people to choose local destinations within walking and cycling distance. It can be expected then that patronage to walking and cycling increase during disruptions as more activities are contained to the local area.

Considering that approximately one third of all motor vehicle trips are less than three kilometres in distance, many of these could be replaced by walking or cycling. Insufficient pedestrian and cycle data was collected during the REX closure to confirm the assumption, but there is some anecdotal evidence from news reports suggesting that there was an increase in walking and cycling.

To continue this trend, more and improved walking and cycling paths, improved access to public transport and end of trip facilities are needed.

10.1.4 Flexible work arrangements

Organisations can play a significant role in reducing traffic demand by supporting alternative travel plans and by providing flexible work arrangements. Those organisations with existing travel plans were able to inform staff of ways they could avoid traffic congestion during the closure.

Results from consultation with Queensland Government have shown that the application of flexible work arrangements reduces pressure on the road network during peak periods.

The application of such policies could be increased through mechanisms to reduce congestion.

10.1.5 The role of High Occupancy Vehicles (HOVs)

The case studies highlighted that during the major network restriction event, government agencies instigated some form of discouragement or restriction to single occupant vehicles in order to reduce the extent of congestion across the remainder of the network. This often included the introduction or extension of HOV/transit and/or bus lanes and bus priority measures. Public transport services were generally increased or extended and additional park and ride sites were made available. The success of these measures in the case studies were mixed, dependent on the extent of time savings afforded to the buses and HOVs; the extent of concentrated verses dispersed trip destinations; and the availability of additional public transport vehicles and staff.

During the REX closure, bus and transit lanes were opened to general traffic, in contrast to management practice elsewhere. The delays to buses reduced the number of public transport services despite the additional buses deployed on the road network.
10.2 Road transport and traffic management

10.2.1 Inter-agency communication and cooperation

The established relationships and protocol agreements in place to manage the cross agency coordination of traffic incidents in Brisbane contributed significantly to management efficiencies. Some relationships were not identified or maintained during the closure and this affected intra and inter-agency communications.

Difficulties with classifying the incident level and invoking appropriate management systems also affected the overall outcome.

A whole-of-Government framework for managing critical traffic and transport incidents could address these difficulties. The framework would increase the efficiency and effectiveness of incident management and communications and would reduce recovery times by:

- identifying specific roles of agency personnel in incidents
- classifying different incidents and agency roles within these classifications
- identifying external impacts in major incident planning policies and practices
- creating information inflows from specialists during critical incidents.

10.2.2 Brisbane Metropolitan Transport Management Centre (BMTMC)

The BMTMC played a fundamental role in monitoring and assisting road operations, communicating to motorists and the public, and in providing updates on changed conditions to agencies involved in road operations. A particular advantage was the integration of MR and BCC traffic operations and Bus Operations in the one centre under the Alliance Agreement between Queensland and local government.

However, at the time the BMTMC was a relatively new entity with processes and working arrangements still evolving and bedding in. Further development of protocols and information systems is required to address a number of issues regarding the role and status of the various agencies and BMTMC in managing network operations, data provision, and stakeholder and public communications.

10.2.3 Traffic Management Plans (TMPs)

Existing traffic management plans provided a base from which to develop TMPs for the unplanned closure. The TMPs for the planned maintenance work to resurface the REX (scheduled for September to October 2006) and for major events such as RiverFire were the most relevant.

The TMPs developed for the unplanned closure however, were limited due to difficulties in incorporating specific conditions not identified in previous plans and limited availability of skilled resources. To improve reference materials for unplanned closures, further TMPs for key links and vulnerable assets should be developed in advance.
10.2.4 Public transport

Public transport operators acted quickly to deploy additional services and optimise network/infrastructure usage during the closures. Additional trains (including carriages, services and modified routes) were added to the normal scheduled services. The morning and afternoon peaks were extended. Despite these measures, severe crowding on trains occurred.

Bus services were increased with additional buses added to many routes. Some routes experienced increased patronage and better performance. Other routes were hindered by fewer services because of longer travel times. The closure of the Captain Cook Bridge and the resulting bus diversion to the SEB significantly increased flows along the Busway and the Victoria Bridge. Buses were hindered by traffic congestion particularly in and around the CBD.

Ferry services were increased and experienced increased patronage of approximately 35 per cent. This increase though is from a relatively low base and therefore is minor compared with the increase in rail patronage.

The natural day-to-day variability of patronage data made it difficult to provide accurate patronage figures. However, overall public transport patronage is estimated to have increased by about eight per cent during the closures. Citytrain was most effective in transporting extra people in and out of the city. The SEB was also effective, but overall buses did not increase patronage because of delays on the congested road network.

The introduction of TransLink’s Go card system will improve the availability and accuracy of patronage figures and allow more robust analysis of modal shifts.

10.3 Role of ITS in incident detection, response and management

Clearing of incidents quickly is an increasing priority for the Queensland Government with many of our worst episodes of most congestion resulting from a traffic incident on a major road or intersection. The negative impacts of incidents can be reduced by focusing on:

- more rapid responses
- getting traffic moving without compromising safety
- diverting traffic where required
- and informing drivers during disruptions.

These strategies are made possible through the use of ITS such as STREAMS and a coordination body, the BMTMC. ITS enhance capacity of existing infrastructure and improve real time responses and communications during incidents. They have been used to reduce congestion during disruptions and maximise traveller information and flow in the following ways:

- Improve incident response and management by rapidly locating and responding appropriately to incidents that would otherwise cause further delays
- Provide travel time information to alert motorists before and during trips of which routes to use and traffic conditions to expect
- Coordinate traffic signals to adjust timing, optimise the re-routed traffic flow and minimise delays.

MR, TransLink, QR and BCC already have substantial investments in some of these initiatives but as the network grows more implementation is required.
10.3.1 Detection, verification and monitoring of incidents

Currently MR, BCC and QT have a number of CCTV cameras around the Brisbane area. The closure revealed many “blind spots” in the network, particularly in Brisbane’s north and west (Gympie Road, Western Arterial from Milton Road and Sandgate Road). At these locations the BMTMC was forced to rely on reports from QPS and bus drivers to assess network conditions.

STREAMS is Main Roads' integrated Intelligent Transport System (ITS) platform. STREAMS manages both freeway and surface street traffic. It provides the following services: Freeway Traffic Management (including on-ramp metering and control of off-ramp traffic); Traffic Signal Management (including public transport priority and emergency vehicle priority); Incident Management (incident detection, verification, logging and incident response); Passenger Information (real time passenger information) and Driver Information (incident reports, traffic conditions and travel times and parking guidance).

The BMTMC operates under and is governed by an alliance agreement between BCC and Queensland Government (acting through the Department of Main Roads and Queensland Transport). Their key role is to service the road commuters and public transport patrons. There are also Main Roads TMCs across the Queensland – Cairns, Townsville, Gold Coast, and Sunshine Coast.

Many agencies acknowledged the CCTV and data collection gaps across the network and reported they would have been invaluable to inform real time decisions and post event analysis. Further investigation and installation of cost effective vehicle detection devices could address many of these gaps.

10.3.2 Travel time information

Knowing how long it will take to arrive at a destination depending on which route is taken and when is valuable information for any traveller. Agencies can provide this information via website, radio broadcasts, on VMS (including drive time boards) and/or by phone SMS. These communication mediums could be used to provide public transport variances, road work or road closure information.

Website hits and call centre logs during the REX closure confirmed that these channels were well utilised by the public, but required pre-awareness and/or knowledge of the services (website and information phone number 13 19 40) before information could be accessed. This exposes a gap in the target audience where those that have no previous knowledge or experience with public transport and the traffic/transport information phone lines or websites are excluded from the information.

During the REX closures, various agencies used a diverse range of media to ensure maximum saturation, including radio and press advertising, web announcements, flyers to affected residents and more than 80 VMS.

Radio provided the highest volume, most neutral and factual coverage and was identified in the community survey as the most preferred communication channel to receive information in future situations.

Radio should be the primary media used for communicating information and key messages quickly and effectively to the public.

Future funding and implementation of information bulletins for emergency services and operational staff should be investigated to improve decision making by providing accurate and authoritative information flows.
10.3.3 Traffic signal coordination

Traffic signal coordination across the network was not optimal as MR and BCC run separate systems (BCC; BLISS and MR; STREAMS) that do not communicate directly. MR and BCC retimed signals manually to optimise traffic flows where necessary, relying on reports from QPS and bus drivers for information.

One integrated traffic signal system would increase effectiveness in dynamically optimising traffic flows and vehicle prioritisation across the network. MR and BCC are presently negotiating resolution of this issue.

BLISS is the traffic signal coordination system that BCC uses at key intersections to monitor traffic volume and change the timing of traffic signals to ensure the most efficient traffic flow.

10.4 Transport network capacity

Table 18 shows approximate peak people carrying capacities of various transport modes compared with general use car lanes, indicating the ability of other corridors to absorb additional flows when a specific corridor is interrupted.

Actual capacity of existing links is usually constrained by intersections or the approach and exit routes. Capacities for public transport modes can also be limited by the availability of rolling stock, buses and ferries or drivers. Full utilisation of public transport vehicles also does not allow for maintenance, so this cannot continue indefinitely.

Increased patronage resulted in high rates of public transport utilisation during peak hours. Lengthy timeframes involved in purchasing more train carriages or buses limited the ability to provide additional services. Existing peak period flows on many public transport corridors are at or near capacity thus limiting their ability to absorb additional movements without peak spreading.

Additional resourcing is required to allow public transport to maintain higher levels of patronage. Bottlenecks and links with no or inadequate alternatives in the public transport network should also be examined to identify how these can be alleviated. During the closures, Victoria Bridge operated at capacity due to diversions elsewhere, carrying more than 350 inbound buses (double usual levels) and close to 20,000 people per hour.

The current road network in and around the CBD operates close to capacity ordinarily, so severe congestion results if there is disruption to a critical link. This is also the case for rail as there are only two rail river crossings in Brisbane and limited corridors for trains from the north. During the closure, most additional public transport patrons travelled on the rail network. Should a major rail link be disrupted in the future, severe road network congestion would result from a shift to road based modes.

The closure of the REX had a major effect on the city’s road network, with traffic increases of between 10 to 20 per cent on the major arterials within one kilometre of the CBD. The Gateway Motorway and some eastern arterial roads were also affected while most roads outside the CBD’s one kilometre radius experienced only minor impacts. A critical blockage point for buses was the eastern end of Milton road at the intersection of Upper Roma Street. Bus services to and from the West experienced the most severe disruption.

The data highlights a need for transport system planning to include consideration of traffic and public transport impacts associated with disruption to the high volume links.

Table 18 – Lane capacity people by mode

<table>
<thead>
<tr>
<th>Lane Type</th>
<th>Equivalent number of car lanes in capacity</th>
<th>Capacity in peak direction (people/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car lanes*</td>
<td>1</td>
<td>2,000–3,000</td>
</tr>
<tr>
<td>Transit/Bus lanes</td>
<td>3</td>
<td>5,000–8,000</td>
</tr>
<tr>
<td>Busway</td>
<td>5</td>
<td>10,000–16,500</td>
</tr>
<tr>
<td>Heavy Rail</td>
<td>10</td>
<td>20,000–30,000</td>
</tr>
</tbody>
</table>

Adapted from The South East Transit Project Parliamentary Public Works Committee Report #39 Jul 1997.
10.5 Public communications and media coverage

Public communication during the closures was delivered via existing communication media established as part of the planned maintenance work to the REX between September and October 2006.

MR Metropolitan District efficiently communicated operational information to relevant outlets. Information saturation through ministerial office support and senior MR/QT staff involvement was a priority communication exercise. TransLink disseminated information to the public about public transport services and changed traffic conditions.

The media and many organisations supported transport agencies in informing travellers of options, encouraging alternative mode use and adjusting their own activities to reduce, relocate or spread the demand.

A majority of the media coverage was not directly related to the media releases or ‘direct to public communication’ being generated by agencies. The media gave significantly more coverage to infrastructure and roads, focusing on traffic delays rather than the provision of public transport. Television focused on these issues even after reopening and ongoing maintenance information was released by the Minister for Transport and Main Roads and MR. Communication of reopening(s) was with short notice and received little coverage from the media.

Public transport service communication became operational in nature relying on websites, call centres and bus stop signage.

The absence of a designated contact point for public communications was identified as causing confusion and may have affected the quality, timeliness and effectiveness of information transmitted.

Despite some of the media focus on congestion, overall there was strong community and stakeholder support for:

- the closure
- the management of the incident
- the priority measures to ensure public safety
- the transport information provided.