AITPM Victorian Branch Technical Forum

Keeping Public Transport Moving

Wednesday 9th July 2008, 5:00pm – 6:30pm
Department of Transport Theatrette, Level 5, 121 Exhibition Street, Melbourne

Our speakers tonight are...

Jill Earnshaw  Acting Director, Urban and Regional Planning, Department of Transport
Duncan Smith  Manager, Operations Performance, Yarra Trams
Alistair Cumming  Manager, Integrated Transport Engineering, VicRoads
Keeping Melbourne Moving
Easing Melbourne’s Congestion
Local Government, Industry and State Government Working Together

Making a Difference through Smart, Short-Term and Targeted Actions

Melbourne is Growing

Population Change
(Thousands of Persons)

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Sydney</td>
<td>250</td>
<td>270</td>
</tr>
<tr>
<td>Melbourne</td>
<td>200</td>
<td>220</td>
</tr>
<tr>
<td>Brisbane</td>
<td>150</td>
<td>170</td>
</tr>
<tr>
<td>Adelaide</td>
<td>100</td>
<td>120</td>
</tr>
<tr>
<td>Perth</td>
<td>50</td>
<td>70</td>
</tr>
<tr>
<td>Canberra</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Greater Hobart</td>
<td>-100</td>
<td>-80</td>
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</tbody>
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(272,700 people 2001 - 2006 compared with 188,400 in previous 5 year period)

Population growth, LGAs in Melbourne 2001 to 2006

Source: DPCD, 2007
Patronage Growth Metropolitan - Train, Tram and Bus

Train Patronage Growth - 2003/04 to 2006/07
(plus annual growth to end of Sep 07)

<table>
<thead>
<tr>
<th>Year to Sep 07</th>
<th>2003/04</th>
<th>2004/05</th>
<th>2005/06</th>
<th>2006/07</th>
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</thead>
<tbody>
<tr>
<td>Growth (%)</td>
<td>0.8%</td>
<td>4.0%</td>
<td>9.7%</td>
<td>12.2%</td>
</tr>
<tr>
<td>Forecast (%)</td>
<td>15.8%</td>
<td>12.2%</td>
<td>9.7%</td>
<td>4.0%</td>
</tr>
</tbody>
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Tram Patronage Growth - 2003/04 to 2006/07
(plus annual growth to end of Sep 07)

<table>
<thead>
<tr>
<th>Year to Sep 07</th>
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<th>2004/05</th>
<th>2005/06</th>
<th>2006/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth (%)</td>
<td>0.9%</td>
<td>2.0%</td>
<td>2.9%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Forecast (%)</td>
<td>5.3%</td>
<td>3.6%</td>
<td>2.9%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

Bus Patronage Growth - 2003/04 to 2006/07
(plus annual growth to end of Sep 07)

<table>
<thead>
<tr>
<th>Year to Sep 07</th>
<th>2003/04</th>
<th>2004/05</th>
<th>2005/06</th>
<th>2006/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth (%)</td>
<td>0.6%</td>
<td>2.5%</td>
<td>4.9%</td>
<td>7.9%</td>
</tr>
<tr>
<td>Forecast (%)</td>
<td>5.8%</td>
<td>7.9%</td>
<td>4.9%</td>
<td>2.5%</td>
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Road Congestion

Duration of congestion at signalised intersections
Wednesday, 28 November, 2007
A.M. Peak 7am – 9am
Congestion Management Requires Road Space Management

Or, only 1 bus …

While a modern Melbourne tram can carry 150 people

75 people are carried either by 60 cars …

Congestion affects all of us

- Travel delays and highly variable travel times for workers, business travel, students and freight
- Higher operating costs for motor vehicles and some public transport services
- Reduced productivity due to increased transport costs, and loss of economies in production and transport
- Increased driver stress and fatigue
- Losses in urban amenity
- Increased vehicle emissions (noise, greenhouse gases and other forms of air pollution)
- Passenger discomfort due to overcrowding on some train and tram services
Afternoon Peak Traffic

Tram performance in pm peak period
Managing Congestion – Four Key Strategies

The Government’s four key strategies to manage congestion inner and established suburbs are:

• Improving the reliability and flow of road-based public transport
• Making existing roads operate better
• Improving service co-ordination, integration and customer interface
• Promotion sustainable travel through better demand management

$112.7m Keeping Melbourne Moving plan to ease congestion

• Standardised clearway times within 10kms of CBD and expanded use of tow-away zones
• Greater priority for tram and bus services
• Improved tram travel times and reliability on two key tram routes, particularly in peak periods
• Improved facilities for cyclists and pedestrians
• Improved management of road works and events on roads
• A new incident response service on the arterial road network
• Improved communications with commuters
Smart, Targeted and Immediate Actions

• Standardised clearway times and expanded use of tow-away zones

• Improved tram travel times and reliability on two key tram routes, particularly in peak periods

• Improved priority for tram and bus services

Smart, Targeted and Immediate Actions

• Improved facilities for cyclists and pedestrians

• A rapid response patrol on the arterial road network

• Improved management of road works and other events

• Improved communications with commuters so that they are able to make better travel choices in real time
Next Steps

• Delivering the initiatives and the benefits
• Ongoing discussions with councils, and others
• Community input on clearway changes
• Clearways Implementation Reference Group
• Ongoing investigation of additional measures to assist the delivery of clearway changes and support local communities
• Implementation timeline

Metlink Journey planning information

Source: Metlink
Tram Priority - Scheduling

July 2008

Duncan Smith
Operations Performance Manager

Operations Performance

- **Scheduling**
  - 29 routes
  - 486 vehicles
  - 31,309 weekly trips

- **Rostering**
  - 1100+ Drivers
  - 8 Depots

- **Database Management**
  - Tram polling data
  - Scheduling, rostering and administrative databases

- **Analysis and Reporting**
  - Operations Performance Regime
  - Identifying and analysing improvements
Tram Priority in scheduling can be thought of as the process of maintaining or improving tram speed and reliability on the network.

1. **Speed** – Tram speed according to time of day, direction and route

2. **Reliability** – Is of critical importance – this determines if the tram arrives, if it is on time, and how accurately a passenger can plan a trip.
Think Tram

- Vic Roads
- DoT
- 600+ treatments
- T Light priority, progression lanterns, removal of right turning traffic in front of trams, advanced tram detection, ripple strips - all successful treatments
- A lot still to be done

Example: St Kilda Road

- 1700 trips per day
- Approximately 150,000 passengers per day
- 9 routes
- 7 routes terminating at University
- Federation Square – major interchange – creating the challenge of a Southern loading peak combining with a Northern loading peak
- AM Peak
  - Northbound: trams are 7% total vehicles but 75% people
  - Southbound: trams are 5.5% total vehicles but 76% people
Journey Time & Reliability

Speed = journey times
Reliability = variance

St Kilda Road
The basis for all these trips is the journey time.

The journey time selected is dependent on both the median journey time and the variability.

The 40th percentile is often used to overcome variability and drift issues.

The 20th percentile is often used in other networks typically with lower variability.
Example: Route 19 Sydney Road

Moreland Road to Bell Street (North Direction)

Pronounced improvement in travel times due to the clearway starting at 4pm

+30 minutes (4:30 PM) = 23% improvement
+1 hour (5:00 PM) = 29% improvement
End Clear Way (6:00 PM) = 31% improvement
30 mins before/after (3:30 PM/6:30 PM) = 43% improvement

Example: Route 6 High Street

Route 6 Clearway

- St Kilda Road to Glen Iris analysis

- Clearway extends from:
  - 7:00 – 9:00 (AM Peak)
  - 16:30 – 18:30 (PM Peak)
Route 6 Clearway

High Street
Average Travel Times Along Clearways PM Peak
1st January 2008 - 28th May 2008

- High Street: West
  - Glenferrie Rd to Orrong Rd
    - NO CLEARWAY: 6.3 mins
    - Time saved: 1 min 6 secs

- High Street: East
  - Orrong Rd to Glenferrie Rd
    - CLEARWAY - 16:30-18:30: 5.1 mins
    - NO CLEARWAY: 5.9 mins
    - Loading for entire clearway time: 740
    - Time saved annually: 4952 hours
Conclusion

So what?

Increased journey time has a cost
- Commuter productivity
- CapEx and OpEx cost of trams

Decreased reliability has a cost
- Commuter dissatisfaction
- Inefficiency

Tram Priority produces real and tangible savings

Thank You.
The Role of Policies

Policies are a statement on a position that an organisation is taking on a particular issue

Policies should aim to provide improved clarity, rationale, and transparency on a particular issue
Examples of Policies

**Bus Bay Policy**
A policy on the limitation and use of bus bays

**Red Pavement on Bus Lanes**
A policy on bus lanes having red pavement

**Bicycles using Bus Lanes – Under development**
When should bicycles be permitted to use bus lanes?

**Other Vehicles using Bus Lanes – Under development**
What other vehicles should be permitted to use bus lanes?

Standards and Guidelines

**Standards** are an established norm or requirement. A formal document that establishes uniform engineering or technical criteria.

**Guidelines** provide guidance on the practical application of the Standards.
Example 1 - Set Back Bus Lanes

- Bus lane up to the green time queue length at signalised intersections
- Maintains intersection capacity
- Ensures buses can travel through intersection in the first green phase
- Setback distance needs to be carefully calculated

Example 1 - Set Back Bus Lane
Example 2 – Buses Using Left Turn Lanes

- Bus queue jump lane by using a left turn lane
- Need to design slip lane islands so they can be cut back
- Improved priority by detecting queue length and approaching bus and use signals to clear left turn lane
Example 3 – Trams and Median Openings

Unsignalised Median Openings

Storage for one car (preferable)

Left turn only from side road
Example 3 – Trams and Median Openings

Control with Dynamic Signs

Example 3 – Trams and Median Openings

Part Time Signal Control
Example 3 – Trams and Median Openings

Full Signal Control

Example 4 – Part Time Tram Lanes

- A tram lane that operates only in peak hours
- Historic lack of compliance
- New engineering standards have been developed
- More than any other treatment, Part Time Tram Lanes need the “best of” engineering, education, enforcement, and road rules
Example 4 – Part Time Tram Lanes
Example 4 – Part Time Tram Lanes

- Despite a high level of engineering, lack of compliance remains
- Reason for lack of compliance being investigated
- Education and enforcement being considered