

# 5. east-west road travel

As discussed in Chapter 3, the growing demand for suburban passenger rail travel in Melbourne is placing the rail network under considerable strain, with the dramatic growth in demand on the Northern Rail Group lines likely to exceed the capacity of the system within a decade. The Study Team has recognised the urgency of responding to the increasing demand for rail travel in its recommendations, supporting the principle of encouraging even greater mode shift to public transport for commuters.

However, even with a significant shift to rail for peak period travel, roads will continue to be a vital and major component of a balanced metropolitan transport network. Importantly, in terms of Melbourne's public transport, trams and buses also rely upon an efficient road network.

The key east-west roads in the EWLNA Study Area are currently at capacity in the morning peak and significant ongoing traffic growth will put the road network under further pressure. While Chapters 2 and 4 examined demand on the transport system generally, this chapter focuses more specifically on east-west road travel in the Study Area.

Through modelling and analysis, the Study Team has found that:

- Transport options for travel across the city between the west and east are seriously congested.
- Notwithstanding the Monash-CityLink-West Gate freeway upgrade, within a relatively short time the extra capacity being provided on that route will be fully taken up during peak periods.
- With the exception of the Monash-CityLink-West Gate freeway, the east-west roads within the study area are disconnected and poorly suited to efficiently moving high volumes of traffic.
- Congestion on key east-west routes and the accompanying frustration, inefficiency and cost of travel – will be significantly worse in the future unless action is taken to make some provision for traffic growth.
- Current network limitations in relation to east-west travel have a negative impact on private travel, freight transport and road-based public transport.

Modelling undertaken for the EWLNA confirms what every person travelling across Melbourne knows: that the increasing demand for travel, the growing urban freight task and the growing number of cars on Melbourne's roads are generating increasing levels of congestion on major cross city routes. While the main points of congestion can be identified relatively easily, it is useful to examine the nature of these constraints and their implications for future transport planning.<sup>1</sup>

## 5.1 The demand for cross city travel

Before focussing on the demand for cross city travel, it is relevant to reflect on the nature of travel in an urban road corridor. Travel is rarely end-to-end: instead, the traffic volumes along roads are accumulated from many shorter trips along the way.

The EWLNA has a broad Study Area, extending from the Western Ring Road to the Eastern Freeway: a distance approaching 20 kilometres. Submissions to the EWLNA suggested that any east-west road improvements would be seeking to satisfy a demand for travel from one side of the Study Area to the other – in other words, travel that extends right across the city. These submissions expressed the view that – because the demand for such travel is demonstrably low – there is no justification for considering a new road link. However, it is important to note that the Study Team did not expect to discover pent-up demand for travel between Werribee and Ringwood: such journeys will always be a minor component of general travel along the east-west route.

In general, urban freeways and major arterial roads provide very efficient, high capacity travel along a corridor. Interchanges and intersections are located at regular spacings (rarely more than a few kilometres apart and commonly less than two kilometres apart along freeways) to facilitate the entry and exit of traffic. Traffic along an urban corridor comprises a constantly changing customer load as cars, trucks, buses, vans, heavy and light commercial vehicles join and leave the main carriageway. Longer trips are less common: for example, the majority of trips along a freeway are several kilometres in length, rather than tens of kilometres.

- On the M1 Current traffic volumes along the M1 vary from around 130,000 to nearly 200,000 vehicles per day along the length of the corridor. Of the traffic approaching the West Gate Freeway west of the Western Ring Road, around half crosses the West Gate Bridge, but only 12 per cent proceeds to the Burnley Tunnel. A similar analysis conducted closer to the CBD confirms that of all east-bound traffic crossing the West Gate Bridge, only 25 per cent continues to the Burnley Tunnel.
- On CityLink CityLink is a complex arrangement of tunnels, viaducts and surface freeways covering around 20 kilometres and linking directly to the Monash, West Gate and Tullamarine Freeways. Again, the majority of travel is along discrete sections of CityLink, rather than its entire length. For this urban tollway, the average trip is understood to be around two and a half 'sections'.

<sup>1.</sup> Further detail on this subject is provided in SKM Maunsell/Evans and Peck (2008a)

• On EastLink – This new road will extend nearly 40 kilometres from Donvale to Frankston and will join the Eastern Freeway at Springvale Road to the Frankston Freeway at Rutherford Road. Seventeen interchanges along the length will divide the road into travel 'sections' and allow traffic to join and leave the road. ConnectEast expects that most trips will be two or three sections long and that only around 5 per cent of vehicles will travel the full distance.

The same pattern is clear when considering cross town traffic from the west and across the north of the city, where the trip pattern is one of accumulated short trips – not long trips across the breadth of the city.

A simple illustration of one aspect of the demand for cross-city travel in Melbourne's inner and middle suburbs is shown below.

Figure 56 - Current (2006) east-west travel daily demand across Melbourne



This figure shows the number of trips across the Cities of Darebin, Yarra and Melbourne as a simple demonstration of this component of total east-west vehicle demand. Currently, around 95,000 vehicles make these cross city trips on a daily basis. The equivalent analysis for travel between the west and the south east of the city reveals that 145,000 trips are being made each day – in other words, there is a substantial volume of local trips being made across the north of the city, as well as to the south.

In addition to these 95,000 vehicles, there are also many vehicles making shorter trips from the eastern and western areas into the central areas (shown in cream - Figure 56) and within the blue and pink areas. These trips are also 'cross city' movements in the same way that much of the city-bound traffic on the Monash Freeway and the West Gate Freeway is part of the cross-city movement on that corridor. These trips include more 'popular' journeys - such as travel between the Tullamarine Freeway and the Eastern Freeway, and from the Western Highway to the CBD - and other, more irregular journeys, such as trips from the outer to the inner west, the inner west to inner north or inner east, and trips across the inner north. While these trips may be relatively short - for example, Footscray to Carlton, Moonee Ponds to Northcote, Richmond to Docklands - they either use the major cross city routes or divert to east-west suburban roads to avoid congestion on these routes. As modelling undertaken for the EWLNA shows, these diversionary journeys will contribute to increasing congestion on local roads, especially in the inner north. Overall, the number of daily journeys across the inner north is around 210,000 vehicles each day.

To examine cross city journeys more closely, the EWLNA undertook a screenline analysis at a number of key locations across the metropolitan area (as shown in Figure 57). This analysis counts the number of vehicles crossing all roads intersected by the screenline (on a daily or peak period basis). It provides an appreciation of the level of expected transport growth on the declared road network across each of the screenlines.

Of particular interest is the screenline that roughly follows the line of the Maribyrnong River, from the Bay to Raleigh Road. This screenline traverses the major constraints in this part of Melbourne's transport network and is a pivotal crossing for east-west traffic. Current daily volumes across this line on an average week day are approximately 320,000 vehicles (of which 11 per cent are commercial vehicles). Modelling indicates growth in vehicles travelling across this screenline of nearly 40 per cent by 2031, with a 50 per cent increase in commercial vehicle volumes over the same period. This equates to an additional 120,000 vehicles. Most of these additional vehicles (nearly 90 per cent) will be trying to travel on the main arterial roads crossing the screenline (West Gate Freeway, Footscrav Road, Dynon Road and Ballarat Road), Each weekday, around 5,000 of these extra vehicles will be trying to travel east in the morning peak period bringing the total peak traffic volume to 34,000. This is comparable to demand for an additional two freeway or three arterial road lanes heading east across the Maribyrnong River in the morning peak, and in the opposite direction for the evening peak.

Current daily public transport demand across this screenline (determined by counting the number of passengers on rail lines that are intersected by the screenline) is around 85,000 people, the majority of whom (around 95 per cent) travel on the heavy rail network. Modelling indicates growth in public transport demand over this screen-line of nearly 100 per cent by 2031 (or around 85,000 extra people travelling on public transport services in both directions throughout the day). Nearly 16,000 of these extra trips will be people travelling east in the morning peak hour (which equates to demand for at least an extra 16 trains during this period). This analysis demonstrates that the overall travel demand across this screenline will be very high. Current infrastructure for rail and road will be inadequate to the task of meeting this demand

Further to the west, the screenlines reveal an even more dramatic picture, with daily growth of around 90 per cent predicted for the roads (although from a lower base volume).

Table 12 shows the traffic allocated to the particular roads crossing the Yarra and Maribyrnong Rivers. The table shows that while the rivers are a distinct barrier to east-west travel, predicted growth is very high. The table includes the passenger numbers on the rail lines crossing the screenline to give the full sense of the overall growth in east-west travel.





Source: EWLNA (Veitch Lister)

Table 12 – 'Maribyrnong' screenline – 24 hour, 2006 and 2031

Road Name	Current Volume (2006)	Predicted Growth	Predicted Volume (2031)
Raleigh Road	34,000	21%	41,000
Farnsworth Avenue	9,000	32%	12,000
Smithfield Road	39,000	25%	47,000
Dynon Road	35,000	32%	47,000
Footscray Road	35,000	67%	58,000
West Gate Freeway	165,000	41%	235,000
Road Total	317,000	38%	440,000
Rail	84,000	98%	166,000
Rail Total	84,000	98%	166,000
People Total*	432,700	50%	650,000

 $^{\ast}$  Assumes vehicle occupancy of 1.1 persons per vehicle

An analysis of the growth across the Maribyrnong River screenline shows that the total daily projected growth is more than twice the growth level during the peak period. This reflects the finite number of lanes available during the peak, with the most likely result being further peak spreading. This analysis indicates that these roads would be operating at capacity for the greater part of the day.

In any event, the Maribyrnong screenline shows a very substantial increase in travel demand in the morning peak from west to east – a demand that existing transport infrastructure will not be able to meet. This is supported by other evidence indicating that growth in cross town movements is likely to be significantly greater from west to east than in the other direction – in other words, 'west-east' travel rather than 'east-west' travel. As noted throughout this report, the main driver of this increase is the strong residential growth in the west and north-west, which is not being accompanied by corresponding growth in jobs located in the west.

Further east the picture is less dramatic, but daily growth in east west traffic of around 25 per cent by 2031 is still predicted. Traffic movements in this area are less obviously east west, with the model confirming significant movements between the east and the north-west.

One influence in this travel pattern is Melbourne Airport. In 2006-07, Melbourne Airport recorded around 22 million passenger movements and 180,000 aircraft movements, making it Australia's second busiest airport after Sydney.<sup>2</sup> More than 3,200 international and domestic flights arrive at and depart from the airport each week.<sup>3</sup>

The airport also handles 350,000 tonnes of air freight each year, with 21 dedicated freight services arriving and departing from Melbourne each week<sup>4</sup>. In addition, more than 11,000 people work in the Melbourne Airport precinct.<sup>5</sup>

All these activities generate considerable traffic to and from the airport. Analysis by the EWLNA Study Team of the origin and destination of this traffic shows that between 15 to 20 per cent would gain a benefit from an east-west link running from the end of the Eastern Freeway to CityLink. In other words, around 20 per cent of Melbourne Airport-related travel is to and from areas in Melbourne's eastern suburbs: an improved east-west connection would give these people faster, more convenient access to the airport, whether they are passengers, workers or businesses using air freight.

The EWLNA undertook an analysis of traffic on a number of selected freeways and arterial roads ('select links'), several of which are set out in the figures below. These illustrate the complexity of the origins and destinations of vehicles travelling along the links.

- 4. A surprising example is the annual export of 30,000 live goats by airfreight.
- 5. Melbourne Airport website: www.melbourneairport.com.au

BITRE: Bureau of Infrastructure, Transport and Regional Economics (January 2008), Avline 11, Department of Infrastructure, Transport, Regional Development and Local Government, Commonwealth of Australia, Canberra

<sup>3.</sup> Melbourne Airport website: www.melbourneairport.com.au



Figure 58 - Select east-west link: Princes Freeway (Geelong Road) - eastbound, west of Western Ring Road

Source: EWLNA (Veitch Lister)



Figure 59 - Select east-west link: Tullmarine Freeway - eastbound, east of Bulla Road



#### Figure 60 – Select east-west link: Dynon Road – eastbound at Maribyrnong River

Source: EWLNA (Veitch Lister)

Figure 61 – Select east-west link: Eastern Freeway – westbound, east of Hoddle Street



Source: EWLNA (Veitch Lister)



#### Figure 62 - Select east-west link: Cemetery Road - westbound, east of Royal Parade

Source: EWLNA (Veitch Lister)

The select links highlight both the clear demand for eastwest travel and the myriad routes that drivers traverse when navigating east-west and west-east.

For instance, routes in the Study Area such as Cemetery Road and Brunswick Road display a clear west-east and east-west travel flow, while major roads such as CityLink (Western Link) and the Eastern Freeway have very complex travel patterns dispersing across a grid of roads around the CBD, as well as showing a strong CBD bias.

The select link analysis also underlines that the demand for travel is diverse and that the traffic at any one point on the network is an accumulation of trips that start and finish in widely dispersed areas.

Much discussion on east-west travel demand focuses on the Eastern Freeway. However, the select link analysis shows that many of the 210,000 vehicles battling their way across the north of the city each day use a variety of routes. In many instances, routes designed for local traffic are being clogged by 'through' vehicles that are 'improvising' a path across the city by zigzagging their way through the network. In submissions and consultations, a number of groups also argued that there was considerable 'latent' demand for direct east-west connections – especially in relation to freight movements – with people currently choosing a mixture of routes to zig-zag or 'rat run' their away across the city, avoiding congested locations. The Victorian Freight and Logistics Council (VFLC) observed that:

"Desire lines for travel are not necessarily directly east-west. Due to poor connections and over capacity routes connecting the western and central Melbourne regions with the south-eastern suburbs, an enhanced east-west connection would provide an alternative."<sup>6</sup>

This evidence – and the location of congestion points along the inner city road network – suggests strong and growing demand for trips that run across the city, although not necessarily the full distance from one side of town to the other or along direct east-west routes. The challenge for Melbourne's transport network is to accommodate these trips without an accompanying increase in congestion.

## Reclaiming suburban streets - traffic and the inner north

For some time, residents and community groups in Melbourne's inner northern suburbs have been expressing concerns about the impact of heavy traffic flows on neighbourhood amenity in the region.

In its submission, the North & West Melbourne Association observed that major transport routes passing through the inner suburbs "have impeded connectivity, movement and amenity within our community".<sup>7</sup> Similarly, the Carlton Residents Association pointed out that "excessive traffic levels have substantial negative impacts on community life and health".<sup>8</sup>

The City of Yarra also noted that local streets in the municipality "currently experience much higher levels of traffic than their function as local streets would suggest. The impacts of these high traffic levels are significant – as well as pollution, noise and community separation, high traffic levels have significant economic and social impacts."<sup>9</sup>

Amenity issues in the inner-north are largely the result of high traffic volumes (mostly cars) through these suburbs during peak periods, the congestion that results from large volumes of north-south traffic intersecting with large volumes of east-west traffic and 'rat running' through suburban streets to escape this congestion.

The current east-west road link between Flemington Road and Nicholson Street that runs across Melbourne's inner north is already at capacity during peak periods and there is little opportunity to increase capacity without major incursions into Royal Park and other properties abutting the route. The lack of alternative east-west routes across the northern CBD also compounds the concentration of traffic on the Elliot/ Macarthur/Cemetery/Princes/Alexandra Parade route.

Over time, the high traffic levels on this east-west route have led to an increase in the 'green' traffic signal time given to the route at the expense of north-south routes. In turn, this has led to increasing delays to tram and bus services operating along north-south routes such as Royal Parade and Lygon, Nicholson, Brunswick and Smith Streets. Pedestrians, cyclists and motorists using these routes are also penalised. As well as the impact on residents, commuters and visitors to the region also experience difficulties caused by the high traffic flows through the area. These difficulties include problems with parking, the shortage of safe pedestrian connections between the University and hospital campuses, and delays in moving through or around the area by car or bus as a result of traffic congestion.

While a number of submissions spoke of the need for amenity improvements in this area, many did not see a new road link as offering benefits in this regard. The Study Team believes that this is not the case: a road project that removes large amounts of traffic from passing through this area has the potential to deliver very substantial amenity benefits, particularly if accompanied by imaginative urban planning, improvements in public transport and more walking and cycling options. The Team notes that other cities around the world are exploring the option of directing more traffic into tunnels to improve the surface environment, provide better conditions for walking and cycling, and free up new urban space for residential development.

As congestion on cross city routes grows, a new road link will also reduce the volume of traffic 'rat running' through inner suburban streets to avoid congested routes and intersections.

As noted elsewhere in this report, the 2003 NCCC draft strategy found that an east-west road tunnel would deliver significant benefits to the inner-north, including removing traffic from Royal Park, reducing traffic levels and delivering positive environmental benefits. The Scenario Appraisal conducted for the NCCC recognised that the tunnel could deliver opportunities for traffic relief and improved amenity. The appraisal noted that measures such as "lane reductions, exclusive public transport lanes and/or resetting of traffic signals to favour north-south public transport and traffic" could ensure that spare road space created by the tunnel would not be used by additionally generated or re-routed road traffic.<sup>10</sup>

In exploring potential new east-west road links, the Team has been particularly conscious of the need to ensure that these options also include measures that will significantly improve amenity in the inner-north – over and above removing traffic from suburban streets.

<sup>7.</sup> North & West Melbourne Association Inc submission to the EWLNA (2007),  $\ensuremath{p.1}$ 

<sup>8.</sup> The Carlton Residents Association Inc submission to the EWLNA (2007), p.2

<sup>9.</sup> City of Yarra submission to the EWLNA (2007), p.26

### 5.2 The main east west routes

Melburnians use a number of routes for east-west travel across the city. These routes include the major freeways (which have been purpose-built for high volumes of traffic) along with other arterial roads, and city streets that are not suited to high traffic volumes. These routes are used for a variety of complex travel purposes: moving freight, commuting to work, many and varied local private and business trips, and road-based public transport.

As the major arterials become congested, motorists seek alternative routes, increasingly resorting to using many of the minor roads crossing the area to make their journeys. The select link analyses for Brunswick Road provide a good illustration of this (see Figures 63 and 64).

Figure 63 – Select east-west link: Brunswick Road (two-way)



Figure 64 – Select east-west link: Brunswick Road (two-way), detailed



Source: EWLNA (Veitch Lister)

In the past, traffic congestion led to widespread filtering through residential areas as drivers attempted to bypass peak-period traffic queues, causing annoyance to residents and declining local amenity. Now, 'through' traffic is generally confined to a fixed number of options, as local governments have resorted to Local Area Traffic Management (LATM) devices and other strategies to discourage 'rat-running'. These LATMs take various forms: speed humps are common, although more drastic measures such as closing roads to through traffic are also used extensively. In the inner west, truck curfews have also been used to try and reduce the impact of heavy vehicles seeking a way through the suburbs.

The intent behind these measures is to channel through traffic along the major road network. However, the discontinuous nature of most major east-west routes means that many vehicles still 'work their way' across the city using local roads, with negative impacts on local amenity. Regardless of the number of 'rat-runs' that are still available, a key feature of Melbourne's east-west routes is that they have to cross the Yarra or Maribyrnong Rivers and there are very few options available for making these river crossings. The two rivers represent a physical east-west divide, with the river crossings becoming 'choke-points' for traffic attempting to travel across the city from west to east and vice versa.<sup>11</sup>

To the east, the daily queues on the Eastern Freeway are a constant reminder that this is the last of the major freeways terminating on the fringe of the inner city, with the freeway coming to an abrupt halt at Hoddle Street. The RACV noted in its submission to the EWLNA:

"The Eastern Freeway needs to be better connected, not just at its terminus at Hoddle Street, but across the Western Highway."<sup>12</sup>

<sup>11.</sup> The social and demographic aspects of Melbourne's east-west divide are set out in Chapter 1.

<sup>12.</sup> RACV, submission to the EWLNA (2007), p23

A consideration of the key cross-city routes in Melbourne's west (as set out in Figure 65) provides an appreciation of the city's east-west travel problem. These routes are:

- West Gate Freeway (over the Yarra River)
- Footscray Road (over the Maribyrnong River)
- Dynon Road (over the Maribyrnong River)
- Ballarat Road Smithfield Road (over the Maribyrnong River)<sup>13</sup>
- Eastern Freeway.

#### Figure 65 – Key east-west routes across Melbourne



Source: EWLNA

Strictly speaking, there are other crossings of the Maribymong River further north – Farnsworth Road and Raleigh Road – but these are less significant east-west routes.

#### Monash-CityLink-West Gate Freeway (the M1)

The M1 is Melbourne's most important road and the key east-west arterial in the EWLNA Study Area. The current demand on this road is immense, with traffic volumes varying from 130,000 vehicles per day to nearly 200,000 vehicles per day along the length of the route.

The corridor is congested during commuter peak periods, with congestion also building up during non-peak weekday periods (when freight movements continue relentlessly) and weekends and holidays (with high levels of recreational travel). Morning traffic queues stretching from the West Gate Bridge back to the Western Ring Road (and even as far as Laverton) are common and – for west-bound traffic in the evenings – delays are felt as far east as Malvern on the Monash Freeway as traffic slows to a crawl over the West Gate Bridge.

Travellers on the M1 are experiencing reduced reliability (with significant variance in travel time from day to day) and lower speeds (often deteriorating to stop-start conditions). Inbound morning peak travel speeds along some sections of the West Gate Freeway have almost halved over the last 10 years and travel time reliability is becoming increasingly variable. For example, between the Western Ring Road and Todd Road, the maximum travel time along the West Gate Freeway is now nearly three times the average travel time (or an additional 34 minutes). This variability on one of the city's major freight routes is a significant concern to the freight industry, as well as a cause of frustration to motorists.

As part of the Government's *Meeting Our Transport Challenges* program, major improvement works are underway along the M1. These improvements will see additional lane capacity provided, supported by a Freeway Management System that will manage vehicle access to the freeway to ensure that hourly lane volumes are maximised. The combination of these measures will provide congestion relief.

The critical link along this road is the West Gate Bridge. The M1 upgrade includes modifications to the bridge that, in combination with a program of bridge strengthening measures, will allow five lanes to operate in the peak direction.<sup>14</sup>

Modelling undertaken by VicRoads recognised that the M1 upgrade was essential, but that it would only result in a moderate period of respite from further intervention to the network – with traffic demand exceeding capacity within 10 to 15 years. The Study Team agrees with this assessment and the Team's own analysis has confirmed that traffic across the West Gate Bridge will continue to increase to around 235,000 vehicles per day by 2031 (a 41 per cent increase from the current volume of 165,000 vehicles). This represents substantial traffic growth outside the morning and evening peak periods. In other words, the extra lanes across the bridge will be fully utilised within a relatively short period of time as people and goods continue to travel across the city in growing numbers.

VicRoads modelling also indicated that the demand for travel along the full length of the M1 warranted the investment in the corridor being made through *Meeting Our Transport Challenges*, rather than the creation of an alternative route. However, VicRoads concluded that an alternative route to the north would be a complementary and necessary project in the future. Once the current M1 work is completed, options for further capacity increases on this route are limited: the bridge and tunnel constraints are obvious, but median space further east along the Monash Freeway will also be fully utilised.

Modelling by the Study Team shows that the M1 corridor will remain the key route across Melbourne and highlights the very strong 'desire line' along this route. This is not surprising, given the development of Melbourne around the geography of Port Phillip Bay. Land use in Melbourne is skewed from the south-east to the west, with the Bay funneling traffic to the edge of the city for this element of east-west travel. In fact, if traffic relief for the West Gate Bridge were the only consideration, a good theoretical response would be a road crossing of the Bay, linking North Altona to St Kilda (and on to Malvern). While constructing a tunnel under the Bay, or a viaduct and bridge above it, would be technically feasible, this would not achieve many of the objectives of the EWLNA and would also introduce an array of new, complex issues.



Figure 66 – West Gate Freeway – inbound travel time, WRR to Todd Road, weekdays 15/10/07 to 1/11/07

Time of day

Source: EWLNA - based on VicRoads data

#### **Footscray Road**

It is deceptive to look along Footscray Road – it gives the impression of a very wide arterial road, with extensive capacity. It is the spine of the Port of Melbourne's road system and provides essential access to the docks and railheads for the high volume of container trucks and other freight vehicles needing to access this area each day. But despite its eight lanes, Footscray Road has little to offer east-west travel in the broader sense, other than as a link between Footscray and the city.

At its western end, Footscray Road narrows to four lanes (two each way) across the Maribyrnong River (Shepherd Bridge) and has no high-capacity connection further west. Buckley Street provides the direct link to Geelong Road and Sunshine Road, but is a narrow and constrained road that runs through the residential and commercial areas of Footscray and Seddon, and is increasingly unsuited to through traffic. Buckley Street is currently two lanes, but as Footscray becomes a more dense urban area, through traffic on existing streets such as Buckley Street will be even less welcome. Traffic from Footscray Road currently disperses across a number of connecting roads, including Somerville Road and Francis Street, where the impact of this traffic is of major concern to many residents. The eastern end of Footscray Road is similarly compromised. The connection to CityLink is clearly important and provides links to high standard roads to the north and south-east. Closer to the city, opportunities are provided to either access the city from Footscray Road or connect to major arterials for travel further east and south-east. However, these connections are circuitous and do not provide high capacity east-west routes.

Footscray Road carries 35,000 vehicles per day, and is vitally important to the Port of Melbourne. Grade separation of the rail line crossing Footscray Road is in progress to ensure that both rail and road are able to operate efficiently; however, this is a local measure designed to resolve the conflict between more frequent and longer trains coming to the port and the current traffic on Footscray Road. It is not a measure directed towards improving broader east-west connectivity.

#### Dynon Road

Dynon Road is another disconnected route. Again, four lanes (two each way) are provided across the Maribyrnong River (Hopetoun Bridge), but making a direct connection to the high capacity Geelong Road requires travel along Barkley and Hopkins Streets through the heart of Footscray. These streets are highly unsuitable for through traffic and will become even more so in the future. This means that Dynon Road traffic needs to connect to the south via Whitehall Street (and then run through residential streets) or travel north along Moore Street to Ballarat Road – another circuitous and largely residential route.

At its eastern end, Dynon Road has northerly connections to City Link, but otherwise provides access to the city, or further east, via Spencer Street.

Dynon Road also carries 35,000 vehicles per day.

<sup>6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00</sup> 

#### Figure 67 – Footscray and Dynon Roads at the western end



Source: Melway (2008)

#### Ballarat Road - Smithfield Road

The Lynch's Bridge crossing of the Maribyrnong River, linking Ballarat and Smithfield Roads, looks more promising, but is also constrained. The four-lane bridge links to divided roads on each side of the river. To the west, the road connects to Geelong Road and Ballarat Road. Geelong Road is a wide, multi-lane arterial road, generally accepted as capable of handling extra traffic. Ballarat Road west of Geelong Road is less generous, comprising an undivided four lanes, although VicRoads has maintained a planning overlay to widen this section to a better standard.

The main problem lies to the east, where Smithfield Road connects to Racecourse Road through the middle of the Kensington shopping and community precinct, which also includes an area of high density housing. This stretch of the east–west route winds under height restricted rail overpasses, along a 40 kph road, is shared with trams and passes several signalised road and pedestrian crossings. It is not – and has no prospect of ever being – a key traffic arterial. Traffic along this section of the route is highly congested, with volumes along Racecourse Road being virtually the same as Footscray and Dynon Roads – around 37,000 vehicles per day.

Figure 68 – Racecourse Road through Kensington



Source: EWLNA

In summary, the east-west river crossings are limited, with no 'rat-runs' as alternatives to current traffic congestion. In addition, with the exception of the M1, these crossings do not provide sufficient through road capacity or connectivity with the rest of the network to serve east-west traffic. As Melbourne grows and develops, the current connectivity through Footscray and Kensington will be further constrained.

#### **Eastern Freeway**

The Eastern Freeway is the last of the 'unconnected' freeways leading towards the city. The construction of CityLink, which joined the Monash Freeway (then the South Eastern Arterial), the West Gate Freeway and the Tullamarine Freeway, provides an effective southern and western bypass of the inner city and directs tens of thousands of vehicles each day onto a high standard road and away from less suitable city streets. The Eastern Freeway remains unconnected, with no equivalent northern bypass of the city. The freeway carries around 140,000 vehicles each day, which are deposited to or drawn from Hoddle Street and Alexandra Parade, and numerous city and inner urban streets beyond.

There are two prevailing myths about Eastern Freeway traffic.

• Myth 1 – Eastern Freeway traffic congestion would be 'fixed' by a heavy rail service to Doncaster. Chapter 7 and Appendix C canvasses this issue more fully and the Study Team has confirmed that a significantly enhanced public transport service to the Doncaster/Manningham area is warranted and will result in an increase in public transport patronage. In turn, this will mean some associated reduction in the number of cars on the freeway. But the queue on the Eastern Freeway is not caused primarily by traffic from Doncaster. Modelling undertaken for the EWLNA shows that most of the vehicles arriving at the end of the Eastern Freeway during the morning peak period have not travelled from the Doncaster/Manningham region. The single biggest origin of traffic entering the freeway (33 per cent) is at Springvale Road, well to the east of the region.

The completion of EastLink, which will soon connect to the eastern end of the Eastern Freeway at Springvale Road, will provide further connectivity to the road network in the east and facilitate an alternative traffic path to that of the M1, particularly for heavy vehicles. The impact of this connection will be known before long, but modelling indicates that daily traffic on the Eastern Freeway could increase by up to 10 per cent as a result of EastLink. There is no evidence to indicate that a rail line to Doncaster (or the proposed substantial increase in bus services to the region) will ameliorate traffic congestion at the end of the Eastern Freeway to any significant extent: in fact, traffic demand on the freeway will continue to grow and the part of the traffic stream that is crossing the city, rather than accessing it, will continue to filter through inner-northern suburbs and along city streets.  Myth 2 – Nearly all of the Eastern Freeway traffic is destined for the inner city. This misconception may have arisen from an interpretation of the origin and destination analysis for the 2003 Northern Central City Corridor draft strategy.<sup>15</sup> The NCCC produced diagrams (see Figure 69) showing that traffic from the Eastern Freeway distributed along Hoddle Street and the roads crossing Alexandra Parade, with only 5 per cent of cars and 8 per cent of trucks continuing to the west. However, this presents a distorted view of traffic distribution (and further NCCC modelling for a future link would have identified and addressed this issue).

First, given the roads in question, the traffic distribution is not surprising: at the end of the freeway, there are ten freewaystandard traffic lanes (five each way). By the time traffic reaches Macarthur Avenue in Royal Park, the corresponding 'connection' is a two-lane road (one lane each way). The traffic distribution is as much a function of the roads available, which progressively reduce in capacity towards the west, as it is a reflection of the demand for a particular direction of travel.

Secondly, when the Study Team analysed how traffic from the Eastern Freeway is distributed (with the analysis closely matching the NCCC distribution), it revealed that around 40 per cent of the daily traffic from the freeway travels beyond the central city area – to the south and the west (See Figure 71). That is the case with the current network: in the future, EastLink will add a new dimension.

#### Figure 69 – NCCC traffic distribution from the Eastern Freeway



Source: NCCC (2003)

Figure 70 – EWLNA modelling of NCCC traffic distribution





Figure 71 – EWLNA modelling showing traffic distribution across a broader area

Source: EWLNA (Veitch Lister)





Source: EWLNA (Veitch Lister)

Daily congestion is experienced now at the city end of the Eastern Freeway, principally in the morning peak, with queues forming from Hoddle Street as far back as the Chandler Highway. This congestion results in low travel speeds, although bus, taxi and high occupancy lanes give better service to these classes of vehicles. The roads accepting Eastern Freeway traffic include:

- Hoddle Street which suffers from heavy congestion between the Eastern Freeway and Victoria Parade, carrying over 5,500 vehicles in the morning peak.
- Alexandra Parade which carries over 5,000 vehicles in the morning peak at its eastern end, with around 2,000 turning off before Swanston Street. Alexandra Parade is one of inner Melbourne's busiest routes and experiences prolonged congestion during both peak periods. Weekend traffic is also congested, with traffic jammed along the length of the street at times. Key locations of congestion along Alexandra Parade are at the intersections of Brunswick Street and Nicholson Street, both of which are heavily used for CBD access (especially by trams).

Some less direct travel paths are adopted by through traffic to bypass the worst areas of congestion. The long queues on the Eastern Freeway each day have the effect of pushing cross town traffic further north (to roads such as Brunswick Road and Bell Street). This can have a 'knock-on' effect, with Eastern Freeway congestion influencing traffic as far north as the Metropolitan Ring Road (although the effect is relatively minor at this distance).

What is less obvious from this picture is the growing west to east travel demand. Many submissions to the EWLNA mentioned traffic in the context of an east to west movement; however, traffic from the western approaches is expected to grow significantly in the coming years, given the imbalance between population growth and employment opportunities in the city's western suburbs, with some of this traffic wending its way across the top of the city. Figure 72 shows the westbound traffic accessing the Eastern Freeway in the morning peak, compared to eastbound traffic. This is now a very substantial traffic movement.

Many other roads play a role in east-west travel, but the key routes described above are the main avenues. These routes illustrate the constraints within the EWLNA Study Area: constraints that will continue to worsen as traffic growth increases in line with Melbourne's strong population growth.

## 5.3 Transport connections to and from the west

The evidence for action in relation to improved links to and from Melbourne's growing west is particularly compelling. With strong economic and population growth forecast for the coming decades, the region's transport infrastructure is coming under significant pressure – pressure that will only continue to escalate.

The Study Team strongly agrees with the assessment of the Member for Kororoit and the Member for Keilor in their submission that:

#### "The need for improved transport solutions from the western region of Melbourne is beyond dispute."<sup>16</sup>

It is clear that growth in the west is proceeding at a rapid pace. It is also clear that transport options and services in the city's east are much better than in the west – and that the supply of transport in the west needs to improve significantly to keep pace with growth.

There is a clear and demonstrated need for better transport connections within the western suburbs – and the Study Team notes that the Victorian Government is upgrading bus services in the region (including extended operating hours and extra services) as part of *Meeting Our Transport Challenges*. However, the most critical links for the west are with central Melbourne, with the inner and middle east and with the Port of Melbourne. These are the connections that will support the region's most important economic journeys and underpin long term growth.

In the Study Team's view, five regional transport issues are critical to improving these connections:

- Addressing the lack of rail capacity through North Melbourne and the City Loop (boosting rail services to and from the west)
- · Increasing road capacity across the Maribyrnong River
- Reducing Melbourne's reliance on the West Gate Bridge
- Increasing access to businesses, services and jobs in the inner and middle eastern suburbs
- Improving access to the Port of Melbourne (while reducing the number of trucks on local roads in the inner west).

These issues are canvassed elsewhere in this report. However, it is worth reiterating some of the significant benefits for Melbourne's west in successfully tackling these issues:

- Significantly improving relative accessibility and density, boosting the west's capacity to attract and retain businesses, jobs and households
- Reducing social disadvantage by improving access to the central city – for work, education and other purposes
- Opening up new business opportunities and employment growth (especially in the services sector)
- Improving the area's competitive advantage as a Transport, Distribution and Logistics hub
- Incorporating Footscray into the inner city economy
- Providing the efficient transport connections needed to sustain residential and industrial/ commercial growth in the west and in Geelong.

Over the longer term, further investments will need to be made to ensure the west's transport infrastructure keeps pace with growth. These investments may include extensions of the rail network, further improvements to bus services and new intermodal freight facilities. The Study Team has been careful to ensure that opportunities exist to leverage further investment, development and extensions to the transport network from the EWLNA recommended options.

Analysis of increasing travel demand fuelled by population and commercial growth in the west shows that a failure to address these critical issues will effectively 'shut out' the west and entrench Melbourne's east-west divide. Doing nothing about these issues is not an option.

### **Study Team Findings**

Strong and growing demand exists for trips across the city, although not necessarily the full distance from one side of town to the other, or along direct east-west routes.

Melbourne's major cross city routes are coming under increasing pressure and are already experiencing significant congestion – constraints that will continue to worsen as traffic growth increases. There are very few cross city routes with spare capacity during peak periods.

In particular, serious capacity constraints are being felt now along the M1 (Monash-City Link-West Gate Freeway corridor) and the western end of the Eastern Freeway. Levels of traffic congestion are also increasing substantially along key east west arterial routes, such as Footscray Road, Dynon Road, Geelong Road, Racecourse Road and Bell Street.

There is widespread 'rat-running' along inappropriate roads in the inner north as east west routes become more congested.

Demand for cross town movements is likely to be significantly greater from west to east than in the other direction – in other words, 'west-east' travel rather than 'east-west' travel – and current infrastructure will not be adequate to meet this demand. The growth in demand for travel across the Maribyrnong screenline by both rail and road will overwhelm existing infrastructure, leading to significant peak-spreading and an inability to make trips when they are needed.

There is a need for better transport connections from, to and within the western suburbs, with the most critical links for the west being with central Melbourne, the inner and middle east, and the Port of Melbourne. These connections will support the region's most important economic journeys.

Substantial new investment in the city's road network is needed to meet the growth in cross-city travel demand. A failure to make this investment will lead to significantly increased congestion, greater transport disadvantage, and unnecessary constraints upon economic growth, especially in the central city and the west.

## 5.4 West Gate Bridge – the city's transport keystone

The West Gate Bridge is something of a Melbourne icon – and a unique and critical element in the city's transport network. It is also a transport 'keystone', with delays and congestion on the bridge rippling out to affect the entire road system.

At present, the bridge serves as the major connection from the city's west and Geelong to inner Melbourne and to the south and south-east. The bridge is also Melbourne's most important land freight route (with 15 per cent of traffic over the bridge comprising commercial vehicles) and its continued effectiveness is essential to efficient freight movements to and from the Port of Melbourne, across Melbourne, to and from western Victoria and interstate.

The Western Transport Alliance has noted the particular value of the bridge to Melbourne's west:

"This link provides the principal road access and link between the west, the central Melbourne district and the Port of Melbourne. The constraints have social, environmental and economic impacts on the west, on Melbourne and western Victoria, and affect:

- people's ability to travel on the road network and by public transport;
- the achievement of the State Government's clearly stated policy objectives on community travel and movement of freight in/out of the Port;
- the movement of freight generally and freight movement in/out of the Port specifically; and
- four of Melbourne's five designated growth areas in terms of railway access, and three growth areas in terms of direct road access."<sup>17</sup>

#### 5.4.1 Melbourne's reliance on the bridge

The reliance on the West Gate Bridge as the principal road connection from the west into Melbourne means that the city faces short-term and long-term strategic risks should the bridge become unavailable for use.

In the short-term, even a minor traffic incident such as an accident or a car breakdown can have a severe, costly and disruptive effect – bringing traffic across the inner west to a halt and spreading across Melbourne's entire transport network. In the longer term, an incident that restricted access to the bridge or rendered it unavailable for an extended period of time would have potentially catastrophic economic repercussions that would extend well beyond Melbourne.

As Figure 73 shows, the unavailability of the Bridge would have a major impact on traffic flows across the entire road network, with severe congestion occurring in and round the central city.

Geelong Road, Footscray Road, Whitehall Street, CBD Streets and many other roads would be inundated with major traffic increases. From these roads in the vicinity of the bridge, the effect ripples outwards, with roads across the city feeling the impact.

## The West Gate Bridge

The bridge is 2583 metres long, 37 metres wide and 58 m high.

Thirty five workers lost their lives when a section of the bridge collapsed during construction.

The bridge was completed and opened to traffic in 1978.

Construction of the bridge took around 13,000 tonnes of steel, 500,000 bolts and 90,000 cubic metres of concrete.

It was built to handle 40,000 vehicles a day and now handles nearly 160,000 vehicles every day

The bridge is constantly being maintained and upgraded, and was strengthened in the early 2000s.

The bridge is currently undergoing a major strengthening and upgrading project (jointly funded by Victoria and the Commonwealth)





Source: EWLNA (Veitch Lister)

The risks associated with the bridge becoming unavailable or constrained include:

- Additional costs to road users due to traffic queues, using alternative routes, lost time, missed or late deliveries, more fuel used, absenteeism, and general loss of productivity
- Additional direct costs to the transport industry
- Disruption to the operations of the Port of Melbourne
- Impacts on community amenity from commercial vehicles using alternative routes
- Negative impact on Geelong's economic development
- Highly negative impact on growth and development in Melbourne's west.

#### 5.4.2 Congestion on the bridge

As noted by several submissions and consultations, congestion on the bridge during peak periods is already having an impact on traffic to and from the west, with negative economic and business impacts.

Currently, around 165,000 vehicles use the bridge each day. This will grow over the coming years, reaching around 220,000 vehicles per day by 2020 and 235,000 by 2031.

Table 13 - Future traffic volumes, West Gate Bridge, 2031

	Current volume	Percentage change	Predicted volume
West Gate Bridge	165,000	41%	235,000

Source: EWLNA (Veitch Lister)

As commuters from the west experience on a daily basis, the practical carrying capacity of the West Gate Freeway during peak periods is already fully taken up. Alternative routes along Footscray Road, Dynon Road and Racecourse Road are also near capacity. While traffic management measures may improve traffic flows and reduce congestion, there is very limited potential to accommodate significant volume increases across the bridge or along current alternative routes. With strong population growth occurring in Melbourne's west, these routes will become further constrained.

While the Government's current upgrade of the Monash – City Link – West Gate corridor will deliver significant improvements in travel time reliability and traffic flow, the capacity of the corridor remains constrained over the longer term by the capacity of the West Gate Bridge. As the Committee for Werribee noted:

"While pleased with [the] proposals for contra-traffic flows and signalisation of ramps to improve peak hour traffic flows on the West Gate Freeway, the CFW is concerned that this will be a very short term solution [and] a longer term structure or vision is required for 2020 or beyond."<sup>18</sup> Similarly, Metlink expressed the view in its submission that the upgrade "will possibly reach full capacity by around 2025".<sup>19</sup>

In its 2006 report on congestion in Melbourne, the Victorian Competition and Efficiency Commission drew attention to concerns about congestion on the bridge, noting that inquiry participants had called for a range of measures to address the problem, including duplication of the bridge, a tunnel under the Yarra, alternative road connections, the reallocation of road space on the bridge and improvements to public transport.<sup>20</sup> VCEC noted that while the improvements to the M1 corridor will be helpful, "in the longer term, pressures to address the issue of a second Yarra crossing will become even more pronounced".<sup>21</sup>

In its 2005 report, *Freight Forward*, the Victorian Freight and Logistics Council also called for action to address congestion on the bridge to expand urban freight capacity, noting that "there is a common view among industry respondents that the duplication of this facility and its integration into the port traffic streams is urgent".<sup>22</sup>

The Study Team shares the widespread concerns about Melbourne's dependency on the West Gate Bridge and agrees that it make little sense to place so much reliance upon one structure. While acknowledging the options available to duplicate the bridge, the EWLNA has recommended a broader solution to traffic issues in the east-west corridor that also delivers an alternative to the bridge. This has the advantage of not only addressing a major vulnerability in Melbourne's transport network, but also delivering a long-term alternative to the West Gate Bridge that is part of a more flexible, fully connected cross city network.

### **Study Team Finding**

The Study Team shares the widespread concerns about the short- and long-term vulnerability of Melbourne's transport network as a result of over-reliance on the West Gate Bridge. The team believes that Melbourne needs the 'insurance' of a long-term alternative to the West Gate Bridge and that action should commence as soon as possible to develop and deliver such an alternative.

- 19. Metlink submission to the EWLNA (2007)
- 20. VCEC (2006), p.161
- 21. VCEC (2006), p.280

<sup>18.</sup> Committee for Werribee submission to the EWLNA (2007)

<sup>22.</sup> Victorian Freight and Logistics Council (2005), *Freight Forward: An Industry* Perspective on Transport Infrastructure in Victoria, Melbourne, p.50

## The NCCC draft strategy

A substantial number of submissions to the Study Team pointed to the 2003 Northern Central City Corridor draft strategy, which – for a range of reasons – did not recommend a tunnel link between the Eastern Freeway and the Tullamarine Freeway. These submissions used the NCCC strategy to justify their conclusions that no additional east west road connection was required. Many of these submissions called instead for a heavy rail line to Doncaster.

The Study Team believes that this line of reasoning is flawed and notes that the narrow scope of the NCCC strategy renders it of limited value to the broader requirements of the East West Link Needs Assessment.

To meet its brief, the Study Team needed to look well beyond the analysis undertaken by the NCCC strategy, which was restricted to the area between the Eastern Freeway and CityLink. In particular, the NCCC analysis focused on Parkville, Princes Hill, Carlton and Fitzroy and on the destination of westbound Eastern Freeway traffic. It did not examine eastbound traffic from the central and western suburbs or traffic on other key east-west routes. It did not examine the broader transport needs of the city's west.

The scope of the EWLNA required the Study Team to analyse cross town connections within the overall structure of Melbourne's arterial road network and within the context of the economic and social implications of such connections for the western part of the city – a much broader analysis than that required by the relatively narrow study area and terms of reference of the NCCC strategy.

It is also important to note that the NCCC strategy did not recommend a road tunnel largely on the basis of its high development cost (and associated low benefit/cost ratio), not on the basis that insufficient numbers of vehicles would use the tunnel.

Although the NCCC analysis drew upon traffic modelling results for its study area, the strategy also used an origindestination diagram of existing traffic exiting the Eastern Freeway. This diagram is often used to 'demonstrate' that there is limited demand for traffic to travel further west. While the diagram is useful in helping to understand traffic distribution off Alexandra Parade at the time, its limitations should be acknowledged: aside from the focus on Eastern Freeway westbound traffic (and not on adjoining streets), it does not identify the ultimate destination of the traffic once it left the NCCC study area. It should also be noted that, notwithstanding the NCCC strategy's stated aim of reducing car travel, the strategy found that a tunnel would deliver significant benefits, particularly a significant reduction in traffic and improved amenity on surface streets.

For example, the NCCC strategy found that "an eastwest tunnel is the only real way to remove traffic from Royal Park, but it is difficult to justify the expense ... based on relief to this area alone".<sup>23</sup> The strategy also stated that "a tunnel reduces traffic levels on the surface east-west route significantly (especially if it is constructed with intermediate ramp access). It would also attract traffic from other regional routes, such as Victoria Parade, Brunswick Road, Bell Street and City Link, although the volumes from each route are not significant enough to make a noticeable difference to their traffic performance or the amenity of surrounding areas".<sup>24</sup>

The strategy further recognised that if a tunnel was not built, "there is little expectation that freight traffic levels will be reduced in the inner north; they will continue to grow in line with growth in economic activity ...".<sup>25</sup>

In addition, the NCCC Scenario Appraisal Report observed that an east-west road tunnel could deliver "social and broad-scale economic benefits and generally positive environmental benefits".<sup>26</sup>

The Study Team also notes that, despite a number of submissions citing the NCCC strategy as justification for both opposition to a road tunnel and support for a heavy rail link to Doncaster, the strategy did not recommend such a rail link.

24. DOI (August 2003), NCCC Strategy, p.35

26. DOI (August 2003), NCCC Scenario Appraisal Report, p.33

DOI: Department of Infrastructure (August 2003), Northern Central City Corridor (NCCC) Strategy, Draft strategy, State of Victoria, Melbourne, p.35

<sup>25.</sup> DOI (August 2003), NCCC Strategy, p.35