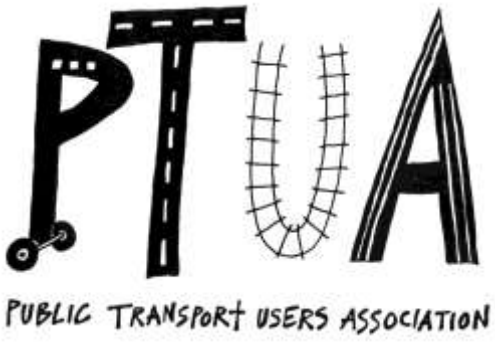
Submission to Infrastructure Australia

on Victoria's transport infrastructure priorities

October 2008



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1 Introduction

The impact of transport policy and infrastructure is felt from the local level in the liveability of our communities right up to the national level in supporting Australia's productivity and sustainability. A lack of investment in sustainable transport infrastructure – that is, infrastructure to support walking, cycling, public transport and rail freight – is now widely recognised as a serious liability for the future liveability of our cities and towns and for the competitiveness of our businesses[1].

Australians now face major deterioration in their quality of life unless transport infrastructure priorities are fundamentally reshaped to reduce vulnerability to peak oil and to reduce greenhouse gas emissions sufficiently to prevent runaway climate change.

2 Impacts of current transport patterns

Supported by decades of roads-dominated transport policy and expenditure, motorised transport has come to dominate travel patterns. While oil prices remained low and awareness of global warming was confined to the realm of scientists, sustainable transport was relegated to a declining niche market and successive federal governments starved it of resources in favour of large highway programs. This imbalance in transport policy is now endangering numerous economic, social and environmental goals, as outlined below.

2.1 Environment

2.1.1 Climate change

The social and economic costs of unmitigated climate change are likely to be more severe for Australia than for any other developed nation[2]. Added to this, emerging science shows that climate change is happening much faster than predicted by the IPCC, and that tipping points for irreversible feedback mechanisms are now perilously close[3].

Quantifying the costs of failure to prevent runaway climate change and non-linear impacts requires grappling with the impacts of sea levels rising by several metres within a century, the security implications of hundreds of millions of people in our region losing their homes and means of subsistence, and the consequences of entire marine and land-based ecosystems collapsing. It is beyond our capability to quantify these costs, and we do not believe that modelling for the Garnaut Climate Change Review has succeeded in coming to grips with the magnitude of the issue either.

Conventional Cost-Benefit Analysis is unlikely to effectively evaluate transport options where they may contribute to dangerous, non-linear and inadequately quantified outcomes. Business As Usual responses are therefore totally inappropriate, and options should only be considered where they contribute to greater transport *systems* efficiency[4] and aggregate emissions reductions. It cannot be stressed enough that hoping for emissions reductions from improved traffic flow is not a meaningful contribution to the task at hand, especially given the additional emissions resulting from induced traffic[5].

Transport is already a major source of carbon emissions, and life-cycle emissions from the sector may worsen due to depletion of conventional oil reserves and growing interest in more carbon-intensive alternatives such as shale oil, tar sands and coal liquefaction[6].

Motor vehicles are also a major source of emissions that create ozone in the lower atmosphere. Ozone in the lower atmosphere (i.e. troposphere) is a significant contributor to global warming and is expected to have even more serious impacts on human health and agricultural productivity under climate change[7].

While carbon pricing is inevitable, it may also contribute to financial stress in car-dependent, low income households, especially if the embedded carbon content of transport fuel is increased by the shift away from conventional oil. There is an urgent need to expand the availability of fast, frequent public transport so that more people are able to reduce their transport emissions and reduce their vulnerability to rising energy costs[8].

2.2 Health

2.2.1 Obesity and related diseases

Obesity is a growing social and economic problem that is estimated to cost Australia about $58 billion each year in health system costs, lost productivity, carer costs and other impacts[9]. A sedentary lifestyle, including reliance on private motor vehicles for transport, is a key risk factor for obesity and related illnesses such as diabetes, heart disease and various cancers[10]. Even at the relatively low current levels, cycling is estimated to save over $150 million in health system costs each year by encouraging physical activity[11].

Greater uptake of walking and cycling is constrained by the priority given to motor vehicles in transport planning which reduces the competitiveness of walking and cycling relative to driving and leads to higher traffic volumes that make walking and cycling less pleasant and less safe[12].

Prioritising walking and cycling as forms of transport in their own right and as means of accessing public transport would contribute to improved health outcomes and greater workforce productivity and participation[13].

2.2.2 Social capital

The discussion paper is correct to identify collaborative infrastructure as one of the forms of infrastructure underpinning the functioning of Australian society. Social capital is integral to community resilience and to efficient social and economic activity. With about one third of people in Melbourne unable to drive[14], sustainable transport options are vital to ensure social inclusion and workforce participation. Neighbourhoods that are geared towards walking, cycling and public transport use are more conducive to spontaneous social interaction and generate higher levels of social capital and community participation[15]. In contrast, high motor vehicle traffic volumes harm local amenity and result in severance that decreases community cohesion[16].

2.3 Economic performance

2.3.1 Congestion

Quantifying the cost of congestion to the national economy remains subject to debate, however the Bureau of Transport & Regional Economics estimated that the potentially avoidable cost of congestion was about $9.4 billion in 2005 and likely to rise to $20.4 billion in 2020[17]. The chief factor underlying congestion is lack of travel demand management (TDM) measures such as public transport enhancements and efficient pricing of road use[18]. We conservatively estimate that the costs imposed on society by Australian road users exceed the revenue obtained from them by around $16 billion per annum *excluding* congestion[19]. On the few roads that are priced, tolls are set at a level that does not incorporate broader social costs and are largely a financing mechanism to enable the construction of new roads that induce further traffic[20]. With such selective pricing, traffic diverted by tolls can also harm local amenity by 'rat-running' along untolled roads[21].

Responses based upon providing increased road supply in line with predicted traffic volumes are now widely recognised as economically inefficient and largely ineffective at reducing congestion due to the tendency of new road supply to generate additional traffic[22]. US research has shown that cities pouring large sums of money into road expansion fare no better in terms of congestion than other cities[23]. By contrast, cities with extensive passenger rail systems suffer from much lower congestion costs than otherwise comparable cities[24].

Even when carrying a minority of passenger journeys, public transport acts as a benchmark against which private motor vehicle travel is compared. Commuters without access to fast, attractive public transport will instead choose to travel by private motor vehicle and contribute to traffic congestion and deteriorating road network performance. On the other hand, public transport that offers competitive journey times will attract commuters from their motor vehicles and reduce pressure on the road network.

The slower the public transport network, the further road network performance will deteriorate before commuters are prepared to leave their cars at home[25].

> "Firms and individuals will only be able to express their demand for mode shift if there are suitable services and infrastructure. Surveys suggest that the main reasons that people do not currently use public transport relate to the lack of suitable quality infrastructure and services. Governments have a role in delivering these infrastructure and services."
> *Garnaut Climate Change Review, p.510*

2.3.2 Oil trade deficit

A widening gap between the quantity of oil consumed in Australia and declining local production contributed $10.85 billion[26] to Australia's 2007-08 trade deficit of $18 billion. Without a reduction in oil consumption, depletion of Australia's oil fields will lead to a growing oil import bill that puts further pressure on our balance of payments.

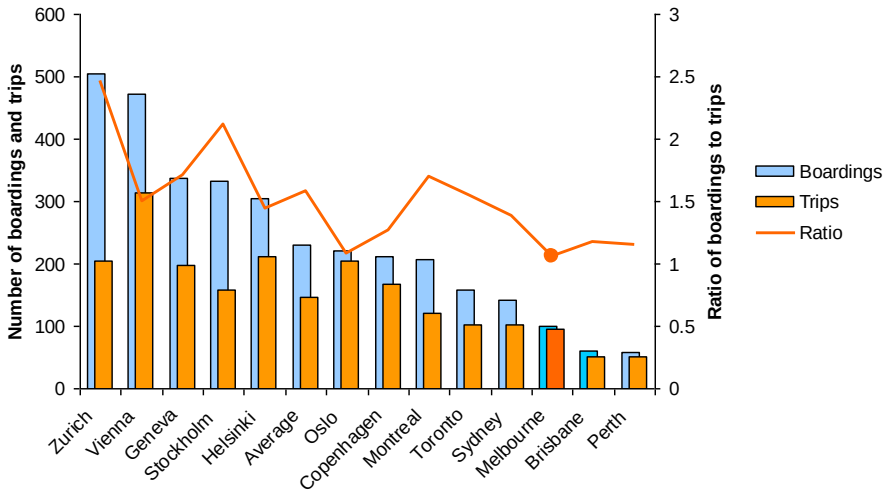
A larger role for active transport, public transport and rail freight can both increase energy efficiency and enable fuel switching to energy sources in which Australia is better endowed, including the burgeoning renewable energy sector. Electrified rail transport – for both passengers and freight - is particularly well-placed to bolster energy security as it is able to use electricity from any primary energy source utilising commercially proven technology, transmission infrastructure and rolling stock.

Expenditure on public transport also has a more positive impact on local employment and economic activity than automotive expenditure since the latter sector is capital intensive with a high degree of imported content[27].

3 An Agenda for Sustainable Transport Infrastructure

We welcome the broad approach to infrastructure outlined in the discussion paper. Transport system performance is not just about adding capacity to corridors, but requires strategic and tactical planning to ensure an effective public transport *network* is established that is able to offer an attractive alternative to private motor vehicle use for a wide range of journeys (see Box 1)[28]. Many of the key deficiencies in Melbourne's metropolitan public transport system, which are often mirrored in regional and rural services, relate to an absent or underdeveloped *network effect* that undermines the contribution of public transport to mobility, congestion management and emissions reductions.

Figure 1: Ratio of Public Transport Trips and Boardings[29]

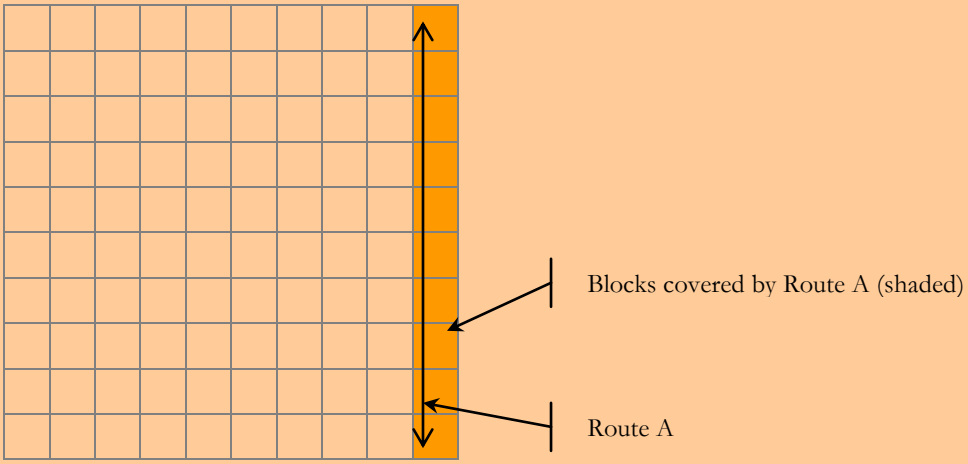


Note: A larger difference between the number of boardings and trips indicates a greater proportion of linked journeys, i.e. journeys requiring transfers to connecting services. Despite multi-modal ticketing, linked journeys are relatively uncommon in Melbourne compared to cities with higher public transport modeshare, indicating a low level of integration.

Box 1: The Network Effect

Imagine the city of Squaresville has 100 blocks and that destinations are evenly distributed across the grid of 100 blocks. Exactly 99 journeys to other blocks originate in each block – a total of 9,900 trips therefore being made within Squaresville.

Table 1: "Squaresville" - with one of 10 north-south routes shown



If public transport Route A runs from one end of Squaresville to the other, it would pass through 10 blocks which together generate 990 trips to other blocks (i.e. 10 blocks x 99 journeys to other blocks). However, Route A only travels to nine other blocks in Squaresville, so it could only serve 90 journeys (i.e. 10 blocks x 9 other blocks) – or 9 per cent of trips. If, for example, 30 per cent of these 90 journeys are made by public transport, then overall mode share will only be 2.7 per cent.

If frequencies on Route A were doubled and as a result 60 per cent of the 90 journeys were made by public transport, overall mode share would also double to 5.5 per cent.

If, instead of doubling frequencies on existing routes, the extra resources were used to introduce 10 new east-west routes, it would become possible to travel to all other blocks by public transport. Instead of only nine other blocks being accessible, 99 other blocks could be reached by public transport – or 100 per cent of the 990 trips originating along Route A.

Even assuming only 30 per cent of these 990 journeys were made by public transport – the same as before doubling frequencies on Route A above – modeshare would leap from 2.7 per cent to 30 per cent – a proportional increase in patronage and fare revenue about 10 times greater than without the 'network effect'. The impact on congestion and emissions would also be proportionally much more significant.

Based on Mees (2000), pp.138-142

A good example of an underdeveloped network effect is the municipality of Moreland in the inner north of Melbourne. Compared to many outer suburbs this area is relatively well endowed with north-south services to and from the CBD. However, east-west routes (supplied by buses without effective traffic priority) often do not run on Sundays (or half hourly at best) and even during the weekday morning peak may only run every 20-30 minutes. The waiting time for connections when services run at these levels is generally regarded as unacceptable by people with the option of driving, and the result is large volumes of relatively short east-west trips in the inner north[30].

The effectiveness of a network in serving dispersed journeys can be gauged by the number of trips involving more than one boarding (i.e. proportion of trips that involve at least one transfer to a connecting service). The number of boardings in Melbourne is little different to the number of trips (Figure 1), indicating that little use is made of connecting services that would be required to access dispersed destinations[31]. This demonstrates the pressing need to focus on creating a stronger network effect in Melbourne's public transport system so that it can more effectively address the challenges outlined in Section 2 above.

3.1 Institutional reforms

3.1.1 Commonwealth funding

Australia has a very high level of Vertical Fiscal Imbalance which makes state governments highly reliant on Commonwealth grants[32]. This reliance tends to distort state funding priorities since expenditure patterns will develop around the availability of Commonwealth funding. This has been institutionalised in the case of transport funding to focus almost exclusively on road funding to the exclusion of sustainable transport[33]. As a result, state government submissions to the infrastructure audit have a tendency to focus heavily on road projects and ignore public transport improvements sought by the community[34].

In order to overcome this imbalance, the Commonwealth government will need to ensure that public transport can genuinely access *all* land transport funding programs (such as AusLink) in addition to the Building Australia Fund on an ongoing basis[35]. In meantime, there is also an urgent need to develop a mechanism to mitigate the dominance of road projects in State submissions and accommodate public transport proposals that are overlooked by States and that may consequently lack detailed analysis as sought by Infrastructure Australia.

3.1.2 Public transport governance

A wide body of international research has demonstrated the importance of effective governance arrangements in the delivery of public transport[36]. The most successful examples of effective governance comprise of a public transport authority that undertakes strategic and tactical planning of public transport to ensure services are well integrated with each other in order to develop effective and coherent *networks* as discussed above.

Such agencies incorporate input from all tiers of government including, where applicable, local and national governments which helps to ensure transport planning is also consistent with land use objectives[37]. As part of the Commonwealth's renewed commitment to major cities, institutional arrangements of this nature should be pursued, adopting the features of agencies operating in Geneva, London, Hamburg, Madrid and Vancouver.

3.2 Expanding coverage of fast, frequent public transport

About two thirds of Melbourne residents do not currently have access to the rail network which is a key determinant of congestion levels (Section 2.3.1). There is a need to boost coverage of the rail network to ensure more people have access to time-competitive public transport that can relieve pressure on known congestion hotspots[38] and reduce demand for liquid fossil fuel.

3.2.1 New and extended metropolitan railway lines

The priority investments for expanding coverage of heavy rail include:

3.2.1.1 Extending the Epping line to South Morang and Mernda;

This extension has been promised by the Victorian Government since 1999 and would serve the rapidly growing area of Whittlesea. A reservation is already in place ensuring that construction could commence promptly following approval of funding. This extension was recently supported by a Victorian Parliamentary inquiry[39].

3.2.1.2 Constructing a new railway line from Victoria Park to Doncaster East, following the alignment of the Eastern Freeway as far as Bulleen;

A heavy rail line into Manningham would finally offer a fast, high capacity public transport alternative to an area that currently has much lower public transport patronage than comparable parts of Melbourne due to the inadequacy of existing services[40]. A 1991 report to the Victorian Minister for Transport[41] found that heavy rail to Doncaster would provide "both the best service to residents and have the best chance of offsetting the problems of road congestion" compared to a range of other road and public transport enhancements. The report also recommended that this option be pursued if favourable costing advice

was obtained. Despite inflated costings, a 2001 study for the Victorian Government also found that the Benefit Cost Ratio (BCR) of heavy rail to Doncaster was nearly twice that of the westwards extension of the Eastern Freeway proposed as part of the recent East West Link Needs Assessment (EWLNA)[42].

The EWLNA has reconfirmed that the majority of Eastern Freeway traffic is heading to the CBD and surrounds (EWLNA, p.131). These travel patterns would be well-served by a heavy rail line to Doncaster, while the minority of journeys to destinations beyond the vicinity of the CBD would also be served by virtue of such a rail link connecting at inner city stations with services to other parts of Melbourne[43]. A railway line along our suggested alignment would also enable connections with buses at Hoddle Street, Burke Road, Chandler Highway, High Street and Bulleen, Thompsons, Williamsons and Blackburn roads (and possibly Springvale Road), including most or all of the orbital SmartBus routes.

Although not directly relevant to passenger services, we also note that proposals have been raised to run a railway line to Dandenong via the Eastern and Eastlink freeways for freight purposes. Such proposals would obviously add to the benefits of constructing a railway line to Doncaster, and could also provide an alternative route to Gippsland if the existing route via Caulfield is unavailable due to standardisation works, grade separation or other disruption.

3.2.1.3 A new railway line to Rowville via Monash University

A heavy rail line to Rowville would improve access to the Stud Park Major Activity Centre and the Monash Science Technology Research and Innovation Precinct incorporating Monash University, the CSIRO and Australia Synchrotron. Journey times from Rowville on the current SmartBus service are about 40 minutes to Monash University and an hour and a half to the CBD, both of which compare poorly to driving. A heavy rail line could cut journey times from Rowville to Monash University and the CBD to around 10 minutes and 30 minutes respectively. By offering an attractive, time competitive public transport option to this area of outer eastern Melbourne, a heavy rail line would provide significant relief to the Monash freeway corridor, comfortably absorbing the equivalent of a lane full of traffic.

A 2004 study found that a railway line to Rowville would offer many benefits such as reduced travel times, reduced congestion and vehicle emissions, employment generation, more affordable mobility and reduced pressure on car parking[44]. A heavy rail line would also offer greater capacity, thereby addressing overcrowding issues experienced on existing bus services and providing greater scope for patronage growth, and improve reliability by separating services from congested road conditions.

3.2.1.4 Electrification of the existing line to Sunbury;

Electrification of the existing line to Sunbury would allow more frequent services to a relatively neglected zone within the Urban Growth Boundary and enable higher capacity metropolitan rolling stock to access train paths along the corridor that are currently taken up by lower capacity regional services. With an operational double track line already in place, electrification could commence promptly after approval of funding, enabling a relatively quick addition to passenger capacity on a corridor suffering from high levels of overcrowding.

This would improve mobility in a rapidly growing area that is currently transport-poor and generates a growing number of journeys on the Calder and Tullamarine corridors. Electrification will also improve access to the Principal Activity Centre at Sydenham and Major Activity Centre at Sunbury.

3.2.1.5 Electrification of the existing line to Bacchus Marsh, adding a new station serving Caroline Springs;

Electrification of the line to Bacchus Marsh would also enable higher capacity metropolitan rolling stock to access train paths along the corridor that are currently taken up by lower capacity regional services and thereby ease overcrowding in the west of the city right through to central Melbourne. Construction of a station at Caroline Springs would greatly improve access to the public transport network in an important growth area and ease pressure on Sydenham line services (and Sydenham line station parking) which are currently among the most crowded in Melbourne. This line could also connect with the Green Orbital SmartBus route planned by the Victorian Government, providing a link between the outer west of Melbourne and other parts of the city.

In order to enhance capacity and reliability on this corridor, single track sections of line should also be duplicated in conjunction with electrification works.

A more attractive and time-competitive public transport option for outer western Melbourne enabled by electrification would relieve pressure on both the Western Ring Road and Westgate corridors, delivering significant productivity benefits for business.

3.2.1.6 Extending the Frankston line to Baxter and beyond;

This extension provides improved mobility within the Urban Growth Boundary to the southeast of Frankston, and enables improved access to Monash University campus at Leawarra.

3.2.1.7 Extending the Cranbourne line to Cranbourne East;

This short extension would better connect one of the fastest growing areas in Melbourne to the public transport backbone and improve access to a number of existing and proposed educational institutions and recreational facilities in the area. A station at Cranbourne East was proposed under Melbourne 2030 and could be easily achieved given the existing reservation for the South Gippsland railway line. This extension was recently supported by a Victorian Parliamentary inquiry[45].

3.2.1.8 Constructing a line to Melbourne Airport from the Craigieburn line.

Melbourne Airport is one of the largest trip generators in greater Melbourne, and a major employment centre for people in the north west of Melbourne. A spur line to the airport from the nearby Craigieburn line would incorporate the airport into the Principal Public Transport Network and enable connections to services right across northern Melbourne and beyond.

3.2.2 Restoration of regional rail services

> "Now is a good time for the Commonwealth Government and the governments of New South Wales, Victoria, Queensland, South Australia and the Australian Capital Territory to examine why intercity passenger train services in Australia are inferior to those in European and high-income Asian countries, with a view to removing barriers to the emergence of high-quality inter-regional rail services in Australia."
> *Garnaut Climate Change Review, pp.523-524*

3.2.2.1 South Gippsland

Significant population growth is expected in South Gippsland, and restoration of rail services to the area would fulfil a state ALP election commitment dating back to 1999.

3.2.2.2 Mildura

This extension would fulfil a state ALP election commitment dating back to 1999 and extract greater value from the infrastructure which is also being upgraded for freight services. Given the significant distances along this corridor, infrastructure should be upgraded to allow for consistent operation of fast services.

3.2.2.3 Cobram

This is a short extension of existing services to Shepparton along an existing alignment, and could therefore be achieved relatively quickly, cheaply and easily. This restoration would improve both intra-regional and inter-regional services in northern Victoria.

3.2.2.4 Portland

When greater rail gauge standardisation is achieved in western Victoria, restoration of passenger services to Portland would extract greater value from rail infrastructure and improve both intra-regional and inter-regional services in the west of the state.

3.2.3 Upgrading interstate rail services

> "High-speed rail is a major component of long-distance travel in Europe, Japan, Korea and China, linking cities that are several hundred to a thousand kilometres apart. While the prospects for competitive high-speed rail for intercity journeys in Australia have seemed limited in the past, high oil prices, an emissions price, rising incomes and a growing population on the east coast improve the prospects of cost-competitive high-speed rail links between major cities."
> *Garnaut Climate Change Review, p.523*

Australia's population is heavily concentrated in a small number of coastal cities and intervening regional areas. As part of a broader national high speed rail network, services from Melbourne to Adelaide and to Sydney could provide a lower carbon alternative to the significant volume of air travel on these routes and help to ease pressure on Sydney Airport, Mascot.

3.3 Integration

> "Where two or more services combine to provide a passenger trip (such as a bus then a train), benefits accrue to the passenger if the infrastructure, ticketing, provision of information, and timing of these services are well integrated. This coordination does not always occur, resulting in a suboptimal outcome for passengers."
> *Garnaut Climate Change Review, p.456*

An effective network capable of serving dispersed destinations relies upon integration between services and ease of transfer between intersecting routes. Integration in Melbourne is hampered by a range of problems, including tram routes terminating short of suitable interchanges and inadequate integration between bicycle and public transport networks.

In addition to governance reforms discussed in Section 3.1.2, the network effect – and the ability of the system to serve a larger share of non-CBD journeys - could be greatly strengthened by the following measures.

3.3.1 Tram gap filling program

A range of modest extensions to tram routes to integrate them more effectively with train and bus routes and major trip generators:

3.3.1.1 Extend Route 3 to East Malvern station, and then onto Chadstone

A modest extension that provides a more logical terminus for the no. 3 tram, linking it with the Glen Waverley train line and Warrigal Road SmartBus. This provides an improved link to Chadstone Shopping Centre which is a Principal Activity Centre and major trip generator that is notorious for creating traffic congestion in the area. This link also provides improved connectivity between the inner south and Waverley regions.

3.3.1.2 Extend Route 48 from North Balwyn to Doncaster Hill

This extension provides a more logical terminus for the no. 48 tram, linking the Principal Activity Centre at Doncaster Hill with the light rail network and inner east residential areas. This route would also connect with and feed into Eastern Freeway bus or rail services (see Section 3.2.1.2).

3.3.1.3 Extend Route 8 to Hartwell station;

This completes tram coverage along Toorak Road, providing a more logical terminus and connection with the Alamein train line and thereby offering a connection between the inner east and inner south. The extension would serve significant trip generators such as Tooronga Village and the Coles HQ.

3.3.1.4 Extend Route 57 to East Keilor;

Provides access to the Principal Activity Centre at Highpoint from residential areas across the Maribyrnong River.

3.3.1.5 Complete Route 75 extension from Vermont South to Knox City

Provides a direct east-west link from the major trip generator and Principal Activity Centre at Knox City and the north-south Stud Road Smartbus route to residential areas and trip generators to the west, including Deakin University Specialised Activity Centre, PLC, Tally Ho Major Activity Centre and through to the CBD on the tram itself or by connecting to the intersecting Alamein train line. This extension would fulfil a state ALP election commitment dating back to 1999.

3.3.1.6 Extend Route 16 to Kew Junction

A simple extension along Cotham Road to the Kew Junction Major Activity Centre that would allow connections with High Street buses and route 48 trams and hence greatly facilitate non-radial journeys.

This would complement the extension of route 48 to Doncaster and offer connections between the inner east and Manningham.

3.3.1.7 Extend Route 6 to Ashburton Station

A modest extension that provides better coverage of High Street and offers links to both Alamein and Glen Waverley train lines.

3.3.1.8 Extend Route 109 to Box Hill station

This minor extension would provide improved integration between heavy and light rail services and the bus interchange.

3.3.1.9 Extend Route 72 north to Doncaster Road (tram 48) and then to Ivanhoe station

The initial extension would provide more a significant north-south service and allow direct connections with the no. 48 tram. A further extension to Ivanhoe railway station would enable connections with Eastern Freeway public transport services to the CBD or Doncaster as well as provide a link between the inner east and northeast of Melbourne.

3.3.1.10 Extend (Route 72) south along Burke Rd to Caulfield station;

Provides north-south link between the Frankston, Cranbourne/Pakenham, Glen Waverley and Belgrave/Lilydale train lines improving access to the Caulfield activity centre, racecourse and Monash University campus from the north.

3.3.1.11 Extend Park St South Melbourne track to St Kilda Rd

A very simple and cheap augmentation to permit creation of a new east-west tram route linking Albert Park, South Melbourne and South Yarra in an area dominated by north-south services.

3.3.1.12 Extend Route 67 to Carnegie station

A modest extension that provides a more logical terminus for the No. 67 tram, linking it with Cranbourne/Pakenham line trains, and giving improved access to the inner south from the south east.

3.3.1.13 Extend Route 82 via Footscray Road to Docklands and the City

This connection would significantly improve access to the rapidly developing Docklands area from the CBD as well as from Footscray and Maribyrnong. The extension would also provide access to the Footscray transit city from the CBD and Docklands.

3.3.1.14 Extend Route 5 to Darling station

This short extension would provide an improved link between the inner south and the Glen Waverley line which serves the eastern suburbs and connects with SmartBus routes along Warrigal, Blackburn and Springvale roads.

3.3.1.15 Extend Route 86 to South Morang

This extension would provide improved access from outer northern Melbourne to educational institutions in Bundoora and other destinations in inner and middle northern Melbourne. Connections could also be made with the future Mernda heavy rail extension (Section 3.2.1.1) and Yellow Orbital SmartBus route running through northern Melbourne.

3.3.1.16 Extend Route 112 to Reservoir station

This extension would enhance public transport services in Reservoir and better integrate existing train and tram services by providing a more logical terminus for tram 112.

3.3.2 New railway stations

In a number of established areas, existing railway lines are not well integrated with surrounding activity. This often forces people to drive to stations some distance away, placing added pressure on station parking, or to bypass public transport altogether adding to pressure on road networks.

3.3.2.1 Newport West (Werribee line)

Enables access to existing rail services in an area that has poor access to train services despite Werribee line running through the area. Would also serve a Victoria University campus.

3.3.2.2 Lynbrook (Cranbourne line)

Enables access to existing rail services in a growth area that has poor access to train services despite the Cranbourne line running through the area.

3.3.2.3 Eltham North (Hurstbridge line)

3.3.2.4 Cave Hill (Lilydale line),

3.3.2.5 Fountain Gate (Pakenham line),

3.3.2.6 Southland (Frankston line)

Obvious means of integrating a Principal Activity Centre and major trip generator with the Principal Public Transport Network (PPTN) and enables sensible modal interchange with many bus routes.

3.3.2.7 Caroline Springs (Melton/Bacchus Marsh line)

Construction of a station at Caroline Springs was recently supported by a Victorian Parliamentary inquiry into outer suburban development[46], and would improve access to rail services along an existing corridor,

3.3.2.8 Werribee line stations (Werribee line)

Two new stations to improve access to existing Werribee line train services in identified Melbourne 2030 growth areas. Suggested locations include Derrimut Rd and Forsyth Rd, subject to community consultation.

3.3.2.9 Campbellfield (Upfield line)

Enables access to rail services in an area that has poor access to train services despite the Upfield line running through the area. Also enhances network effect by enabling connection to the future Green Orbital SmartBus route.

3.3.2.10 Lakeside (Pakenham line)

Construction of this station was recently supported by a Victorian Parliamentary Inquiry[47];

3.3.3 Train network configuration

3.3.3.1 Alamein line

Stations on the Alamein line could be realigned to better integrate with intersecting routes (e.g. tram 75), and a short extension to the Glen Waverley line investigated to allow connections at East Malvern station, including with the proposed tram 3 extension.

3.3.3.2 Upfield line

Extending the Upfield line to Roxburgh Park station would provide a convenient transfer point between the Craigieburn and Upfield lines. This extension is along an existing alignment and so can be undertaken relatively quickly and easily.

3.3.4 Cycle network

Cycling is an important means of accessing some the world's most successful public transport systems. Cycling could also play an important role in improving access to public transport in Australia if comprehensive and safe local and principal cycle routes are supplied and are well integrated with public transport interchanges. We endorse proposals from the cycling sector for greater investment in cycling infrastructure and call for public transport interchanges to be incorporated into cycle network planning.

3.3.5 Not a priority: park and ride

Reliance on park and ride weakens the network effect by undermining the viability of interconnecting feeder buses and by focusing ridership on peak radial services rather than a more balanced range of journeys. Station car parking also requires large amounts of valuable land around stations and caters poorly for intra-peak travel since car parks are often full following the morning peak. Instead of significant spending on station car parking, attention should focus on improving amenity and security for people using feeder services or active transport to access the station.

3.4 Speed

Overall journey speed will be a major determinant of mode choice and the ability of public transport to contribute to congestion management (see Section 2.3.1). Journey speed will be a function of service frequency (which drives waiting and connection times) and average vehicle speed. There are measures required to address both of these factors.

3.4.1 Frequencies

Service frequencies are constrained by both infrastructure and rolling stock deficiencies. The following measures would allow for higher frequencies and thereby significant increase passenger capacity.

3.4.1.1 Track duplication

A lack of investment in Melbourne's rail network has left numerous single track sections of railway that limit train capacity and frequencies. Duplication will enhance capacity and reliability on the lines themselves and flow through to improved reliability and flexibility on other lines in the same group.

Werribee line (Northern group and Geelong line): The Werribee line serves some of the fastest growing areas in Melbourne, however offers poor service levels relative to other railway lines. Duplication of the Altona loop (Altona Junction to Laverton Junction) would boost capacity and reliability on the line, and indirectly benefit Geelong services by allowing greater operational flexibility.

Upfield line (Northern group): Gowrie to Somerton Road. The planned extension of the Upfield line to Roxburgh Park increases the proportion of single track along the route and thereby constrains frequencies, flexibility and reliability. The enhanced network effect resulting from the extension should also encourage patronage growth which will require higher service levels.

Epping line (Clifton Hill group): Keon Park to Epping/Mernda. The Epping line serves the rapidly growing Whittlesea area and can expect substantial patronage growth with the combination of population growth and improve access following the promised extension. Duplication will ensure higher service levels can be provided more reliably.

Hurstbridge line (Clifton Hill group): Clifton Hill to Westgarth, Heidelberg to St James Road and Greensborough to Hurstbridge.

Belgrave line (Burnley group): Ferntree Gully to Belgrave. Belgrave services are often delayed by having to wait for services heading in the opposite direction along the single track section beyond Ferntree Gully. Duplication would boost capacity on the Belgrave line and have capacity and reliability benefits across the broader Burnley group.

Lilydale line (Burnley group): Mooroolbark to Lilydale. Anecdotal evidence indicates that Lilydale services are sometimes terminated at Mooroolbark due to city-bound trains using the single track section beyond Mooroolbark. Duplication would boost capacity on the Lilydale line and have capacity and reliability benefits across the broader Burnley group.

Alamein line (Burnley group): Ashburton to Alamein/East Malvern. Significant network enhancements proposed elsewhere have the potential to substantially boost patronage on this line and necessitate higher service levels which may be constrained by the single track section of line.

Cranbourne line (Caulfield group): Pakenham line junction to Cranbourne East. This line serves one of the fastest growing areas in Australia, however the single track constrains frequencies on Cranbourne line services and limits operational flexibility right across the Caulfield group of lines.

Stony Point line (Caulfield group): Frankston to Baxter. Service levels to Stony Point are constrained by the long stretches of single track line along this route. Adequately serving this area within the Urban Growth Boundary will require higher frequencies and improved reliability that can be provided with duplication to at least Baxter. Electrification work should be carried out simultaneously with duplication.

Melton line (Northern group and Ballarat line): Deer Park to Melton/Bacchus Marsh. Rapid population growth in this corridor and substantial potential to grow modeshare underline the need to cater for higher service levels without excessively compromising regional services to Ballarat and beyond. Duplication would significantly boost capacity and reliability for both metropolitan and regional services.

3.4.1.2 Additional platforms

Extra platforms at Flinders Street and Southern Cross stations would reduce bottlenecks and open up more opportunities for through-routing of services. This would reduce crowding on existing platforms and enabling faster through-put of services, and hence boost frequencies and capcity.

- Reinstate platform 11 at Flinders Street; and
- Build platforms 15+16 at Southern Cross.

3.4.1.3 Procuring additional rolling stock

Chronic overcrowding is affecting many lines around Melbourne, and some regional services. Additional trains, trams and buses could help to relieve this overcrowding and increase the proportion of DDA-compliant services. Procurement processes should also ensure carriage configuration is optimised to allow fast loading and unloading in order to reduce dwell times (and hence boost capacity), and seek opportunities to boost energy efficiency through regenerative braking and lighter construction.

3.4.1.4 Signalling and controls

More frequent train services on existing lines would be enabled by bringing antiquated signalling and control systems up to 21st century standards, including consideration of technologies such as Positive Train Control.

3.4.2 Average vehicle speed

The speed of public transport in Melbourne compares unfavourably to other Australian cities[48], particularly in the case of road-based public transport, which constrains its ability to attract journeys away from private motor vehicles and minimise congestion. Eliminating unnecessary delays would not only benefit transport system users, but also make more efficient use of driver time and rolling stock that could instead be used to provide higher service levels and extra effective network capacity.

We propose a national *Cutting Through Congestion* program to implement to following measures:

3.4.2.1 Expanding the coverage of train services

Fixed guideway systems operating in their own right-of-way offer the highest levels of speed, reliability and capacity to absorb passengers from private motor vehicles[49]. International research demonstrates that road network speeds tend to converge with that of the best alternative, i.e. rail services[50]. Priorities for improving access to the rail backbone are outlined in Section 3.2.

3.4.2.2 Traffic signal priority

Trams can spend as much as one third of their time waiting unnecessarily at traffic lights[51], making services uncompetitive with private motor vehicles and thereby limiting their contribution to minimising congestion. Travel time savings of around 20 per cent have been achieved in Munich, Germany by enabling trams to activate green lights as part of a 'Stop only at stops' program that has also boosted the productivity of rolling stock and delivered savings in operating costs. Similar improvements to travel times and capacity could be gained by implementing dynamic signal priority to reduce traffic light delays for road-based public transport in Melbourne.

3.4.2.3 Bus lanes and headstart lanes

On-road priority measures for buses could reduce travel times by around 20 per cent, thus making much more effective use of bus fleets and enticing more people out of low occupancy private motor vehicles.

3.4.2.4 Level crossing elimination on tram and SmartBus routes

While the main beneficiaries of level crossing eliminations are road users, the following grade separations should be prioritised to allow higher speeds for trains and reduce delays for road-based public transport.

Springvale Rd, Nunawading: Remove impediments to increased frequencies on the Belgrave and Lilydale train lines, Melbourne's busiest route, and ease traffic flow on Springvale Road, which would benefit the proposed Smartbus service. To maximise the benefit of grade separation and given local topography, nearby crossings at Mitcham Rd and Rooks Rd could also be eliminated as part of this project.

Glenferrie Rd, Kooyong: Facilitate increased speed and frequencies on Glen Waverley line, which would ease pressure on Monash freeway corridor, and reduce delays for the no. 16 tram.

Toorak Rd, Malvern: Facilitate increased frequencies on Glen Waverley line, which would ease pressure on Monash freeway corridor, and reduce delays for the no. 8 tram once extended.

Glenhuntly Rd, Glenhuntly: Facilitate increased frequencies and higher speeds for both passenger and freight trains on the Frankston line (currently limited to 15 km/h crossing Glenhuntly Rd). This would ease pressure on Nepean Highway corridor, and would also reduce delays for no. 67 tram and the 623 and 624 bus routes. Simultaneously re-locating the station to mid-way between Glenhuntly and Neerim roads would improve passenger interchange between trams, trains and buses, and improving pedestrian amenity in the suburb, which is a designated Major Activity Centre under the Melbourne 2030 plan.

Clayton Rd, Clayton: Facilitate increased frequencies on Cranbourne/Pakenham lines, serving growth areas in southeast Melbourne, and ease traffic flow on Clayton Road.

Burke Rd, Gardiner: Facilitate increased speed and frequencies on Glen Waverley line, which would ease pressure on Monash Freeway corridor, and reduce delays for the no. 72 tram.

Springvale Rd, Springvale: Facilitate increased frequencies on Cranbourne/Pakenham train lines, serving growth areas in southeast Melbourne, and ease traffic flow on Springvale Road.

Riversdale Rd, Camberwell: Facilitate increased frequencies on Alamein line and reduce delays for the no. 70 tram.

3.4.2.5 Not a priority: clearways.

Clearways do not have a clear benefit. A study undertaken in 2007 indicates the likely reduction time from clearways is between 5 and 10 per cent, compared to 15 to 35 per cent for traffic light priority[52]. Furthermore, implementing clearways without simultaneously installing tram or bus lanes would mean that the total road space for motor vehicles is expanded, and this is likely to encourage additional traffic, which results in little long-term difference to tram and bus speeds. Clearways also provide no solution to trams getting stuck behind right-turning cars at intersections. On the other hand, clearways can have seriously detrimental impacts on local amenity and retail vitality[53].

3.5 Freight

3.5.1 Freight trends

Building an effective and efficient rail freight system will greatly increase the sustainability of Australia's transport task. It will help reduce emissions, enhance road safety, lessen road damage and relieve capacity constraints in road freight[54]. The underfunding of rail networks over many decades requires that freight infrastructure investment be concentrated on the rehabilitation and upgrading the nation's rail network.

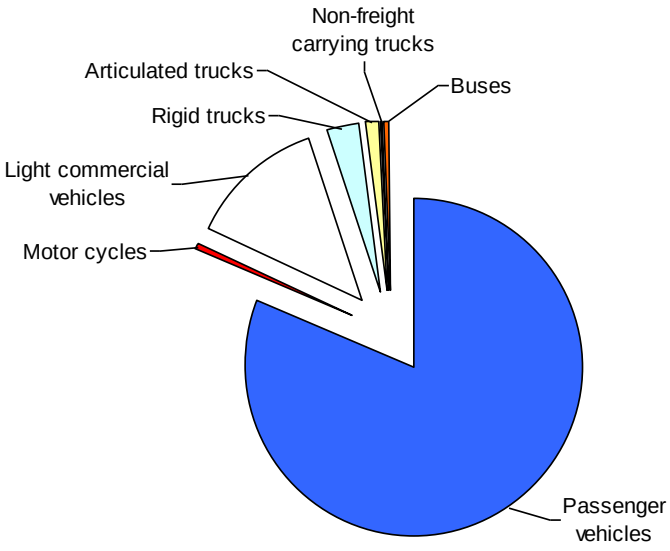
In recent years, federal government funding of transport infrastructure has largely been driven by the intention to facilitate the movement of road freight. State governments have also frequently framed road spending in terms of freight needs. Recent calls for large road infrastructure expenditure are similarly based on projections of strong growth in the freight task. However these assumptions do not stand up to close scrutiny[55] and projections based upon them should not be considered as robust.

3.5.2 Road network performance

Despite the emphasis given to freight in discussions of road infrastructure needs, the reality is that passenger cars make up the vast majority of road vehicles (see Figure 2), especially during the most congested periods. They therefore present the most significant impediment to the efficient movement of road freight. Road expansion aimed at enhancing freight movement is invariably frustrated by the increased volume of private motor vehicle traffic induced by the expanded road facilities. The 'road deficit' of around $16 billion p.a.[56] mentioned in Section 2.3.1 also demonstrates that utilisation of our national transport infrastructure is far from efficient.

Given the composition of traffic utilising major roads, and the professed importance of freight movements, it is baffling that additional charges have been suggested for freight vehicles using major roads, while the major contributor to congestion – private passenger vehicles - will retain free access[57]. This would lead to even less-efficient utilisation of major transport infrastructure and result in over-capitalisation in road infrastructure, at a time when there are major infrastructure deficits in rail networks and non-transport sectors. To ensure investment is well-directed, federal road funding should clearly be withheld from States that fail to ensure efficient utilisation of nationally-significant transport infrastructure.

Figure 2: Share of vehicle kilometres of travel in Melbourne[58]



3.5.3 Rail network performance

While considerable sums of federal, state and local government spending have been directed to roads, rail networks have deteriorated due to decades of neglect. The inadequacy of rail networks is exemplified by permanent speed restrictions on numerous rail lines throughout Victoria, culminating in the decision to suspend most passenger rail services between Wangaratta and Albury due to the poor condition of the broad gauge track.

A truly national, integrated rail network is also currently impossible due to the break of gauge problem, which especially affects Victoria. The failure to fulfil past commitments to standardise most of Victoria's broad gauge rail network[59] has helped to create uncertainty over continuity of services in the state. With the incumbent major operator, Pacific National, shedding services, potential alternate operators from interstate cannot provide an alternative due to the incompatibility of their rolling stock with Victoria's broad gauge. Standardisation of the nation's rail infrastructure would enable a more efficient and integrated rail logistics market that could drive productivity improvements within the mode as recommended by the Productivity Commission[60], and provide greater certainty over continuity of service by enhancing the movement of rolling stock around the nation.

Since both rail infrastructure condition and breaks of gauge cause problems with the performance of Australia's rail network, we recommend a national *Bringing our rail network up to standard* program. This program would progressively standardise non-standard gauge lines, and ensure they are in the condition required for fast and efficient services. For Victorian lines, we suggest the following general sequencing of the gauge standardisation program:

3.5.3.1 Seymour to Albury, including Oaklands

The Victorian and Commonwealth governments have already committed to standardise the broad gauge line between Seymour and Albury. However we believe that passenger rail access should be maintained to the existing Wodonga station, which is centrally situated in that city and can be more readily integrated with the bulk of town bus services. Access to the Bandiana spur should also be maintained as part of this

project. The branch line from Benalla to Oaklands must also be standardised to avoid its unnecessary closure purely due to being isolated from the rest of the rail network.

3.5.3.2 Melbourne to Cobram, Tocumwal and Dookie via Shepparton

Standardisation of these lines in the north east of Victoria would allow the entire Melbourne to Albury corridor to be converted to standard gauge, providing greater capacity and reliability for passengers and freight on this major interstate route and ensure a more cohesive rail system in the region.

3.5.3.3 Geelong to Mildura, Yelta, Pinnaroo, Kulwin and Robinvale, via Ballarat and Maryborough

A recent study found that the lack of an effective rail freight service to Mildura costs over $100 million per annum[61]. While the Geelong to Mildura line is currently being re-conditioned, the lack of gauge conversion will mean that the full potential of the upgrade will not be realised.

If the Mildura line was standardised, the capacity of the interstate rail network could be considerably enhanced by building a new standard gauge line from Mildura to Broken Hill, thereby connecting with the main east-west standard gauge line between Sydney and the western seaboard. With some minor infrastructure adjustments, this route would allow the running of double-stacked container trains to Melbourne from other states, something that is currently impossible, due to insurmountable infrastructure restraints on the existing interstate lines from Sydney and Adelaide.

The standardisation of western and north western Victorian lines would improve standard gauge access to the Port of Geelong via Ballarat, and make more effective use of the recently-completed dual-gauge Corio Independent Goods Line, which will enhance standard gauge access to the Port of Geelong. Standardisation of these lines would also enhance their potential to carry significant tonnages of mineral sands from the north west of Victoria to Geelong or Portland.

Standardisation of the Pinnaroo branch also provides additional capacity and redundancy for east-west interstate services, by re-establishing the former connection with the rail network in South Australia at that point.

3.5.3.4 Melbourne to Piangil, Moulamein and Deniliquin via Bendigo, including Bendigo to Inglewood and Maryborough

Standardisation of the remaining central Victorian and Riverina lines would naturally follow the conversion of the routes mentioned already and provide a seamless rail network from Melbourne to all northern regions of the state.

3.5.3.5 Heywood to Mount Gambier

This would reopen access to the Port of Portland from the SA border region and allow rail to regain a larger share of the freight task which was lost when the Ararat to Portland line was standardised. This may also offer another east-west route between Melbourne and Adelaide, providing greater interstate capacity and redundancy for freight movements, if the Wolseley to Mount Gambier line was to be included.

3.5.3.6 Melbourne to Ararat via Ballarat

This would complete the standardisation of western Victoria and provide greater capacity and redundancy for east-west interstate rail freight movements, by connecting the line though Ballarat with the existing interstate standard gauge line at Ararat, providing an alternative route to the present one via Geelong.

3.5.3.7 Geelong to Dennington

With all other western lines standardised, and given the existing standard gauge line from Melbourne to Geelong, this would bring the south west of Victoria into the growing standard gauge network.

3.5.3.8 Melbourne to Bairnsdale, Maryvale and Leongatha.

This would complete standardisation of Victoria's regional rail infrastructure and ensure the state is properly integrated into a seamless national rail freight network.

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