GETTING THE PRIORITIES RIGHT
A Programme for Budget-Conscious Transport Development in Victoria

Public Transport Users Association
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Introduction

Melbourne faces big decisions in the very near future about what kind of city it wants to be in the 21st century.

Despite a strong rhetorical focus at a political level on public transport improvements, and the growing public and expert consensus favouring investment in public transport as a priority, Melbourne's transport infrastructure development is still bound to a 'default strategy' modelled on car-dependent American cities like Los Angeles, Houston or Detroit. Institutional inertia threatens to make these cities' past into Melbourne and Victoria's future.

Less than two years ago, Victoria's 'number one transport priority' was said to be a $16 billion tollroad extending the Eastern Freeway to CityLink. The *Comprehensive Impact Statement* for the now-cancelled East West Link project showed that if built, it would within a decade have increased levels of car and truck traffic and pollution, and reproduced Melbourne's traffic problems all over again at a larger scale. Subsequent documents released with the project's Business Case show that it would also have absorbed substantial funds otherwise required to improve public transport, and to repair road congestion hotspots like level crossings. Availability payments extending for three decades, and the benefit-cost ratio of 0.45, presaged a repeat of the process by which motorway projects in the last half century have thwarted community demands for public transport improvements such as train lines to Rowville, Doncaster and Melbourne Airport.

The main public transport project to have competed for attention with new motorways has been the 9 kilometre 'Melbourne Metro' rail tunnel under the city. This is on all evidence a much superior project to the East West Link (including a higher benefit-cost ratio in all scenarios where the two have been directly compared, and most recently confirmed as 1.1 on conservative assumptions) and ought to proceed within the next decade. Nonetheless, the Metro tunnel also has the potential to distract from the importance of other, individually less costly but more beneficial, public transport improvements. The Metro tunnel is erroneously promoted in some quarters as the 'magic pill' that will solve every single problem with the rail network, a claim the project cannot possibly live up to in reality. Some commentators have gone so far as to claim the Metro tunnel as a prerequisite for rail improvements such as a future Doncaster line, which bear no logical connection to it.

The PTUA earnestly hopes that with the creation of Infrastructure Victoria we will see a return to rationality in Victoria's transport debate. The Metro tunnel is just one of a whole package of measures needed to bring our public transport system into the 21st century: many of which ought to proceed sooner than the tunnel and require a smaller

quantum of funds. Foremost among these is to update the technology underpinning our rail network to more closely match what is now used in similar rail systems in 'best practice' cities, and thereby boost the carrying capacity and reach of the entire network. This is something one or two new tunnels will never do by themselves. Grade separation of level crossings, rail extensions to poorly-served suburbs and an overhaul of the bus network are other urgently-needed measures. Vital as these improvements are, however, the real threat exists that another generation of Melburnians will miss out on their benefits if finite budgets are overextended on motorway projects with inferior benefit-cost ratios. This would be to the overall economic detriment of Victoria in addition to perpetuating traffic woe for Victoria's citizens.

Identifying Melbourne's Travel Needs

The PTUA maintains that an evidence-based approach to transport planning should not start out with a wish-list of infrastructure projects and then consider how to sell them to the public and Treasury. Instead, one begins by observing actual travel patterns, and then designs infrastructure and service solutions that match up with people's actual needs.

Urban geography and travel patterns

Melbourne is a large, medium-density, rapidly growing city, which has retained a strong inner-core focus for employment. Although our postwar development was influenced by cheap car travel, Melbourne largely avoided the hollowing-out tendency typical of North American 'doughnut cities'. Instead, suburban development continued in a contiguous manner, extending and filling in the radial corridors defined earlier by the train lines, and doing so at population densities similar to those prevailing in the older suburbs dating from the late 19th and early 20th century. Even before the motor car was invented Melbourne was a low-density city by world standards, and after an initial postwar decline our overall urban density has been on a steady increasing trend since the 1980s. It is lower than that of most European cities but similar to Canadian cities and well above sprawling US cities such as Houston or Atlanta, or even Boston or Portland.

Melb. Suburbs	Established	Density (persons/ha)
Yarraville	1890s–1920s	25.4
Balwyn	1910s–1940s	24.9
Gardenvale	1880s–1920s	21.7
Keysborough	1960s–1980s	36.7
Wheelers Hill	1970s–1990s	26.0
Bayswater	1960s–1970s	22.8

Cities	Density (persons/ha)
Melbourne	17.9
Portland	12.9
Houston	10.2
Boston	8.9
Atlanta	7.2

(Source: Australian Bureau of Statistics and US Census Bureau)

Our suburban development also largely avoided the US pattern of large-scale dispersal of employment to scattered suburban office parks. Well over half of all jobs in Melbourne are located within Myki Zone 1. The innermost municipalities of Melbourne, Yarra, Port Phillip and Stonnington alone account for 30% of all jobs, despite housing less than 10% of the population. So although it appeared for some decades as though the CBD itself was declining in relative importance as an employment centre, this was less a sign of wide-scale diffusion of jobs to the urban fringe as it was of the growth of a broader inner-urban core, comprising those suburbs within 10–15km of the GPO.

This helps to explain why there is still a very strong radial focus to overall travel patterns in Melbourne. The greatest proportion of journeys by number are local trips: the ones that start and end in the same suburb. But the next greatest, and the greatest by distance, are radial trips: not necessarily from the suburbs all the way to the CBD, but at least partway in the radial direction. By comparison, long trips across the suburbs in a non-radial direction are only a small proportion of the total.

Travel to work

This is even more true of travel to and from work, which is the most frequent reason for travelling outside one's home suburb and which accounts for the bulk of peak-hour traffic congestion.

Consider for example the growth areas of Casey and Cardinia in Melbourne's south east. Census data on the workforce in these areas, and where people go to work, confirms the general picture:
• 28 per cent—more than one in four—do not travel outside the Casey/Cardinia region.
• Only 8 per cent travel as far as Melbourne city, including a small number who continue further west.
• However, 49 per cent travel to work in suburbs on or adjacent to the radial Dandenong rail corridor such as Dandenong, Monash or Glen Eira. At present virtually all these journeys are made by car. Yet if the Dandenong line were boosted to carry a few additional trains, and supported with a frequent bus and tram network to cover the vital 'last mile' from stations to people's actual homes and workplaces, the majority of these journeys could potentially be made by public transport—and without adding to passenger loadings at CBD rail stations.
• Long distance travel to suburbs remote from the Dandenong rail corridor—such as Frankston, Knox, Ringwood, Melbourne's north or Gippsland—account for the remainder, about 15 per cent.

The evidence shows that, even in the outer suburbs, barely one in six journeys are beyond the scope of a public transport or road system that caters primarily for local travel and radial travel towards and away from the city. This is a key legacy of Melbourne's strong-centred urban form, and is the reason why suburban ring-motorways like Eastlink failed to meet traffic forecasts. Even the Western Ring Road functions in part as a radial freeway in disguise, feeding city-bound traffic from a broad swathe of the western suburbs onto the West Gate Bridge via Laverton North.

The flawed business case for the East West Link

Efforts at justifying the East West Link between 2012 and 2014 attempted—wrongly in the view of many planning experts presenting at the CIS hearings—to use the strong-centred nature of Melbourne as an argument in its favour. The 2008 *Investing in Transport* report by Sir Rod Eddington came up with a conventional BCR of around 0.5—as it happens, not far from the figure of 0.45 in the later 2014 Business Case. It was nonetheless claimed that these low benefit-cost ratios could be boosted to as high as 1.4 by allowing for 'Wider Economic Benefits'. Supporting documents suggested the largest of these supposed wider benefits was the assumed 'agglomeration effect' of further *strengthening* Melbourne's strong employment core, on the apparent assumption that the East West Link would make all the car and truck traffic vanish from Melbourne's inner north and allow people to get around more easily on public transport.

This argument cannot be sustained in the face of hard evidence. The vast majority of traffic in the inner north is not travelling between the Eastern Freeway and the west side of Royal Park. Like travel in Melbourne more generally, most of it is local trips, or headed towards or away from the CBD. We know this is the case because every previous study—whether the Northern Central City Corridor Study of 2002, or even the Census data on travel to work—leads to the same conclusion. The NCCCS remains to date the only comprehensive cordon study of travel in the corridor (relying on observations rather than model outputs), and shows that of traffic coming off the Eastern Freeway over the course of a day, less than 20% winds up west of Royal Park. The vast majority goes south to the CBD or South Yarra, or to other nearby destinations.

The long queues on the Eastern Freeway, like those on the West Gate Bridge and on CityLink, exist because of the need to travel to inner Melbourne from suburbs that lack a properly developed alternative to car travel. Foremost among these is the City of Manningham, which remains the only municipality in Melbourne without any rail infrastructure at all. But as a consequence of Eastlink, the Eastern Freeway now acts as a feeder road for much of the eastern metropolitan area. So, problems with transport alternatives in any of these suburbs translate into longer queues at Hoddle Street. Extending the Eastern Freeway is like buying bigger trousers as a cure for obesity: it tries to deal with the symptoms rather than the cause of congestion, and winds up dealing with neither.

Developing an effective public transport alternative

The development of Melbourne's public transport into a network that competes effectively with car travel is supported by an overwhelming majority of Victorians and is officially endorsed (though not yet actually pursued) at a State Government policy level, including through the *Transport Integration Act 2010.*

Given the evidence on the overall urban form and the nature of travel patterns in Melbourne, an effective public transport system should include the following:

• A high-capacity heavy rail backbone radiating from the CBD with fast and frequent services

covering the entire metropolitan area, providing a station within a few kilometres of all points within the urban boundary and at major employment hubs. Melbourne already has most of such a network in place, but with significant gaps in the City of Manningham and the southern part of Knox, in new urban fringe areas such as Mernda and Clyde, and at Melbourne Airport. Train frequencies on many lines also fall short of what is needed: the standard should be every 10 minutes throughout the day, to ensure that long waiting times cease to be a serious deterrent to travel.

• The enhancement of Melbourne's existing inner-city tram and bus network to provide dense coverage and consistent service throughout the inner employment core and to improve connections with the train network. This ensures that any location within the inner area, and not just the CBD itself, is easily accessible by public transport in a time competitive with car travel. Currently, many tram routes terminate just short of railway stations due to obsolete rivalries between train and tram authorities a hundred years ago, and short extensions would greatly improve the utility of the outer sections of these routes. Meanwhile, tram priority at intersections would not only improve travel times for passengers by up to 30 per cent, but would also significantly improve the service able to be provided with a given fleet size.

• A frequent bus network covering all suburban neighbourhoods within the urban growth boundary, operating at frequencies and speeds competitive with car travel. A typical Melbourne suburban bus that runs once an hour and takes 30 minutes to travel five kilometres simply will not be attractive to anyone with a car in the driveway, so it is not surprising that most such routes operate almost empty for much of the day. Well-designed bus routes attract substantial numbers of full-fare paying passengers, including those with the option of using their own car. Buses should generally aim to carry passengers along the most direct available route to the nearest railway station or district centre. Most should run on the arterial road grid, but with some using local street networks to ensure overall network coverage within reasonable walking distance of all homes.

Strengthening the Rail Network: Better Management, With Better Infrastructure

A high-capacity heavy rail 'backbone' is an essential underpinning for a first-rate public transport network in a strong-centred city the size of Melbourne. However, our metropolitan train network currently struggles with the legacy of a half-century of neglect, suffering routine failures and non-delivery of service despite record high patronage.

Part of the legacy of privatisation is that the rail system operates with a 'performance management' mentality rather than a 'service' mentality. What passengers value is a service that gets them from A to B quickly and without hassle (including quick and easy transfers), is clean and comfortable, and gives them a seat enough of the time on longer journeys. But few of these passenger outcomes are actually defined and measured in private operators' contracts. Instead, performance management focusses on things that can be measured more easily, like the proportion of trains that depart and arrive on time at the ends of the route. The things that aren't measured get much less attention. An example now very familiar to passengers is trains skipping their timetabled stops to make up time: lateness at the destination is measured; adherence to the stopping pattern is not.

Reducing waste in the rail network

The other important but non-measured outcomes have to do with operating the network to maximise its inherent capacity. This has become imperative since the recent boom in peak-hour train travel, with patronage doubling between 2006 and 2011. Prior to this, it may have seemed tolerable to run every train service through the City Loop and leave two out of six tracks idle between Flinders Street and Southern Cross; to lay over trains for 10 minutes or more in the very centre of the network; to shift the duty of assisting passengers in wheelchairs from platform staff to train drivers thus extending 'dwell times' unnecessarily; and so on. This level of waste can no longer be sustained.

Much has been done to reduce the wastage of rail network capacity since 2005, when private operator Connex and Transport Minister Peter Batchelor both claimed there was no room to run more than about 100 trains into the city in the busiest hour of the peak. Thanks to operational improvements up to 2012, achieved without the laying of new tracks, we now run over 130 trains into the city in the same hour: an increase equal to or greater than that expected to be provided by the Metro tunnel. But much remains to be done. Operating practices such as long layovers at Flinders Street and a lack of platform staff persist, despite the government and operators acknowledging that they waste capacity.

A significant institutional barrier to some useful waste-reduction measures has been that they entail an increase in annual operating expenditure, and therefore place an ongoing burden on the budget. The PTUA believes this has been a factor in the past tendency to favour more expensive capital measures such as additional tracks, because these can be assigned to the capital budget. It should not take a political emergency such as the train overcrowding crisis of 2008–10 to induce planners to embrace change.

Particularly with the increasing tendency of governments to carry out capital works as public-private partnerships involving substantial annual availability payments, it is imperative that operational measures be considered on a level playing field with capital works, and that the potential for increased revenue from improved service be appropriately assessed.

The Metro tunnel in context

The proposed Metro rail tunnel is, like the City Loop before it, a 'city shaping' project that supports the growth of major commercial hubs beyond the Hoddle Grid, while providing a further capacity boost to the rail network (particularly to the north and west). What recent history does show, however, is that mega-projects like the Metro tunnel—just like large and expensive road projects—have to be viewed in the context of alternative measures with equal or greater benefit. These alternatives include further reform of operating practice to access available capacity in the network, as well as targeted infrastructure improvements (of which more below).

A proper evaluation requires us, in particular, to face certain facts about what the Metro rail tunnel does and does not do, as implied in PTV's 2012 *Network Operating Plan*:

• It does not provide any additional capacity on the half of the rail network comprising the Burnley and Clifton Hill line groups, because it does not physically connect to either group. So it does not itself provide any capacity to run trains to Doncaster or to boost services to Belgrave, Lilydale, Glen Waverley, Hurstbridge or South Morang / Mernda.

• Because its southern connection to the existing network is at South Yarra, from which there already exist three independent train paths through the city, the tunnel actually results in 'stranded capacity': one pair of tracks through Richmond station will no longer carry any suburban trains. The capacity boost it provides south of the Yarra is due to the future ability to run 9-car trains in place of 6-car trains on the Dandenong line.

• It provides substantial additional capacity from the West, equivalent to another double track. Yet the West has just received a large capacity boost already, courtesy of the Regional Rail Link project. The timetable changes required to make this capacity available for suburban train services (in particular on the Werribee and Altona lines) have been on hold after being originally scheduled for mid-2015.

If a complementary measure could boost capacity on existing rail corridors by at least 50 per cent, then on the basis of the above, it would provide capacity benefits even greater than what the Metro rail tunnel will provide. The PTUA believes high-capacity signalling is one such measure that is proven elsewhere and can be implemented in a cost-effective manner.

High-capacity signalling: Priority One for metropolitan rail

The potential of 'current practice technology' to boost capacity emerges soon enough from a basic study of the state of the art in European urban rail systems. A good benchmark for Melbourne's network is the Paris 'RER' suburban network, which shares many technical features with ours: it operates on double track, with lines that combine in the city but branch into three or four parts in the suburbs. (One difference is that the RER operates double-deck trains, which makes it vulnerable to dwell-time issues at key stations at least as severe as what our system experiences in the City Loop.)

Yet the Paris RER is able to schedule trains reliably every 120 seconds in peak hour—a feat said to be impossible in our own train network. Indeed, until a few years ago this wasn't possible in the RER either. But then the Parisians rolled out a key capacity-boosting measure: an improved rail signalling system.

Trains on rails do not operate like trams or cars on roads. Because trains are so much heavier, they require longer distances to stop, so it is not safe for drivers to rely on sight to keep a safe distance from the next train ahead, the way a car or tram driver can. Instead, drivers rely on a signalling system that tells trains when it is safe to proceed and when it is necessary to slow down in anticipation of a possible stop. The technical attributes of this signalling system are the key factor that determines how many trains per hour can run on a single track.

Melbourne currently operates traditional 'fixed block' signalling, which was standard for rail systems through most of the 20th century. Imagine a road is set up with traffic lights every

500 metres. A car can proceed into one of these 500 metre 'blocks' when the light turns green, but as soon as it does the light turns red, and does not turn green for a second car until the first one has cleared the block. Clearly, with such a system the capacity of the road to carry a given volume of traffic depends critically on design factors such as the spacing of the blocks.

The highest standard in Melbourne's network currently is 2-minute fixed block signalling. This has a 'theoretical' capacity of 30 trains per hour; however because running times are subject to random variation, the 'practical' capacity is taken as no more than 80% of this, or 24 trains per hour. On the suburban sections of many lines (such as to Dandenong) the signalling is designed for longer headways, and practical capacities are typically 16 to 20 trains per hour.

'Moving-block' signalling represents a substantial improvement, because it operates the line more like the way cars follow each other on a motorway. The signalling system monitors the distance between trains and issues signals to the train driver whether it is safe to proceed at full speed, or if it is necessary to slow down or stop. Effectively, the signalling 'block' moves with the train. Another key difference is the signals are issued in the driver's cabin itself rather than with trackside lamps: this is known as 'in-cab' signalling.

Full 'moving-block in-cab signalling' is also known as Communications Based Train Control (CBTC) and is in place on the Vancouver SkyTrain and several lines in London, including the Docklands Light Railway, the Jubilee Line and the Northern Line.

Various in-cab signalling systems, ranging from full moving-block solutions to enhanced fixed-block systems with greater capacity, are now available off-the-shelf from suppliers such as Siemens, Thales, Invensys, Alstom and Bombardier. With any such system it becomes possible to reliably timetable trains 2 minutes apart or better on the same track. As mentioned above, the Paris RER manages this well—though its in-cab 'SACEM' system is technically intermediate between fixed-block and moving-block. This system is also of particular interest in the Victorian context as (compared with CBTC systems) it is more closely compatible with the European Train Control Standard (ETCS) that the PTUA understands is currently favoured by Victorian planners for future infrastructure upgrades.

Upgrading from 16–20 trains per hour to 30–33 trains per hour is an improvement of at least 50 per cent. This is technically capable of being achieved on every line in the Melbourne rail system at an estimated cost (based on indicative suppliers' quotes) of between $1.5 and $3 billion. (This will need to include the cost of fitting in-cab signals to all Metro, V/Line and freight trains.) New signalling would, for example, provide the additional capacity to accommodate Doncaster trains on the existing line to Victoria Park, allowing a major future objective of the *Rail Network Development Plan* to be achieved at substantially lower cost.

The State Government is currently funding a trial of high-capacity signalling technology on the Sandringham line. This is understood to be a version of the ETCS technology alluded to above. The PTUA places the highest priority on progressing this trial and using its outcomes to progressively upgrade the Melbourne train network to contemporary best practice. Given the development status of the ETCS standards, it will also be important to ensure all new-build signalling infrastructure has the capacity to be upgraded in accordance

with future evolving standards.

Rail renewal: A comprehensive improvement package

Naturally, to obtain the full benefit from high-capacity signalling some additional infrastructure upgrades on the rail network will eventually be necessary. Thus, the PTUA does not support the notion of one 'magic pill' to solve systematic rail network problems. The best use of near-term funds for major transport infrastructure in Melbourne, in the PTUA's view, is on a comprehensive package: giving Melbourne a modern, 21st-century rail backbone for its public transport system that could be the envy of the rest of the world. Such a package would realise the potential for Melbourne's public transport as a so-called 'metro' system well beyond what is obtained from a single rail tunnel (beneficial as the latter is nonetheless).

The ingredients of our rail renewal package include:

• A rollout of high-capacity signalling across the entire metropolitan network, commencing with the Clifton Hill and Dandenong corridors. The actual technology used should be assessed on the best advice available including consultation with British and French engineers who have experience with the successful implementation of such schemes.

• Continuation of the current government's programme of level crossing grade separations, so that improved train frequencies don't lead to boom gates being closed for long periods of time. Priority for future grade separations should go to crossings with intersecting tram and SmartBus services, those with substantial benefits for operation of the road network, and those identified as high priority under the ALCAM safety assessment programme. Noting current controversies around elevated rail solutions, the various available methods of grade separation should be canvassed well in advance. Local communities should be given adequate time and opportunity to provide feedback, and a degree of control over decisions (similar to that traditionally exercised through democratic local government).

• Commencement of work on the extensions needed to complete the metropolitan rail network within the urban growth boundary: to East Doncaster, Rowville, Melbourne Airport, Mernda and Clyde. Full or partial duplication of the Melton line will also allow the present infrequent service to be radically improved. Capacity to run the additional peak services required for these extended corridors would follow chiefly from the deployment of high-capacity signalling, as the first priority for development.

• Small, targeted infrastructure improvements to address bottlenecks within the rail network that stand in the way of 'every 10 minutes' service on existing train lines. Foremost among these is the duplication of remnant single-track sections on the Altona, Upfield, Hurstbridge, Lilydale, Belgrave and Cranbourne lines.

• Minor extensions to the tram network to support greater use of trams as feeder services to rail stations, to fill obvious gaps, and to ensure each tram route has a logical terminus in a district centre to maximise utilisation at each end of the route. Specific examples include a 500 metre extension to route 6 along High Street to Glen Iris railway station; extension of route 57 from West Maribyrnong via Avondale Heights to meet the route 903 SmartBus

at Milleara Mall; and extension of route 75 from Vermont South to Knox City shopping centre.

• Re-staffing of the rail and tram network, with a minimum of one staff member per station from first to last train, one per platform at interchange stations, and one staff member per tram. At quieter locations, staff may substitute for the current Protective Service Officers, who would be redeployed either as platform staff or on board trains to provide security for travellers. Station staff are the key to keeping 'dwell times' under control, ensuring that passengers are supported to board and alight from trains without causing undue delays.

• Underground tunnels would take their place within an overall priority list as part of the renewal package. The benefits available from high-capacity signalling, in line with the evidence from Europe, mean that the Metro tunnel and future projects (such as a tunnel from Northcote to Fishermans Bend) are important capacity-boosting measures for the urban core of Melbourne, but are not a prerequisite to building suburban rail extensions. The Melbourne Metro tunnel's clear purpose, in our view, is as a medium-term project to provide the next increment of Western suburbs capacity after the Regional Rail Link, and to further develop the inner north and west of Melbourne.

A Network, Not Silos

Historically, Melbourne's public transport did not develop as a single integrated system. For the best part of a century it was managed by separate public authorities for trains and trams and a plethora of private bus operators. Institutional rivalries led to many of the odd features of today's system, such as the fact that so many tram routes terminate half a mile short of railway stations, and that it still appears impossible to organise a bus timetable that takes account of train arrivals and departures at stations. Only in 1981 did it become possible to buy a single ticket to cover bus, train and tram travel.

The silo mentality that consigns trains, trams and buses to parallel universes still exerts its hold over today's public transport management. Despite years of 'aspirational' statements from all sides of politics about the need to coordinate trains and buses, it is still routine for buses to arrive at stations minutes after trains depart, or leave stations just before a train arrives. Even where bus routes are revised, little thought is given to maintaining intermodal connections. At least two railway stations—Oak Park and Aircraft—are no longer served by local bus routes that used to call there prior to 2010.

Public transport management culture and governance

All this is made worse by the defeatist mentality inherited from the postwar history of patronage collapse and budget starvation. Neither our public transport system nor those who manage it have ever fully recovered from the period between 1950 and 1980 when patronage fell by two-thirds even as Melbourne's population doubled. The patronage collapse was deeper and more rapid than almost anywhere else in the world, and planners —working in isolation in their train, tram and bus silos—were at a complete loss as to how to compete with the rising popularity of car travel.

The creation of Public Transport Victoria (PTV) was supposed to have been a 50-years-overdue reform to create a single highly competent and motivated planning authority to knit together and run a multimodal network. Unfortunately, while multimodal coordination of services and integrated planning are now recognised on paper, the government has failed to completely reform the defeatist and defensive culture that has long existed at senior management level, and still threatens the nascent attempts at expansionary network planning within PTV.

When planning authorities prioritise the public interest, most senior managers and planners have both impeccable qualifications in public transport network planning and extensive personal experience with public transport (often being regular users of the system themselves) and act as fierce advocates for public transport when dealing with other government departments such as Treasury. This, at least, is the established and expected practice in most cities with good public transport, from London to Perth. In Victoria up to now, the imperative has been more to defend poor performance in the face of public pressure to improve, and avoid stress on budgets by keeping public expectations low.

It is therefore imperative that the work done to establish PTV actually be carried through to completion, fulfilling the promises that were originally made for it. Foremost among these is a renewed effort to recruit outside expertise—including from cities in Europe and North America having a record of success—with a clear mandate to reform the managerial culture, give network planning the pre-eminence it requires, and embrace change for the benefit of the travelling public. While the appointment of a certain number of 'insiders' is important for the sake of continuity and local knowledge, this needs to be balanced by an infusion of new talent to drive cultural change for the better.

Consistent service standards

The other major ingredient of a public transport system that attracts patrons by successfully competing with car travel is the existence of consistent service standards. Many people who would prefer to use public transport are deterred by the likelihood of missing a bus at their stop and having to wait half an hour or more for the next one. Others lack even that choice, because there is no full-time public transport service within walking distance of home. Yet in other suburbs, whose demographics are essentially the same but where the houses are a few decades older, any resident can find a tram stop within walking distance with a maximum wait during the day of 10 minutes, and service through to midnight.

Running an inferior service in an attempt to contain costs is a lose-lose proposition. It guarantees that all those in the catchment population who can do so will feel compelled to buy cars and drive everywhere, which worsens congestion and makes the streets unsafe for pedestrians and cyclists, particularly children. Meanwhile, the bus service bleeds money because so few people use it, and those who do use it are primarily the socially disadvantaged on concession fares. So the service runs at a serious loss, even if (like most suburban buses in Melbourne and regional Victoria) it operates at the lowest possible frequency that can be justified on social-equity grounds.

Moreover, infrequent bus services run at a *greater* loss than the frequent tram service in

historically privileged suburbs. It is frequently remarked that Melbourne's public transport recovers about 30 to 40 per cent of its operating costs from fares. Less commonly acknowledged is that this is actually an average, combining poorly-patronised suburban buses recovering 20 per cent or less, with frequent, well-patronised trams recovering over 80 per cent, and trains (crowded in peak hour but half-empty at other times) recovering something in between. Sometimes you have to spend money to make money, and the relative success of our tram system shows that public transport is no exception.

The tram network has in fact been the most successful part of the system for decades, measured both by convenience for passengers and by the proportion of costs recovered from fares. It succeeds despite the fact that the network takes in many relatively low-density Melbourne suburbs like Camberwell and Caulfield. (On a density map of Melbourne, these suburbs have less concentrated populations than many outer suburbs with 40-minute bus services.) GIven this, it is perfectly reasonable to suggest that the service levels of trams—basically every 10 minutes, even if this is not consistently applied—should set the benchmark standard for 'good' service throughout Melbourne and Victoria's regional cities. Of course, a different standard is required for rural areas and inter-city services.

The elements of a 'benchmark' service standard for Victoria include:

• All those living within the urban boundary of Melbourne or a major regional city should have a public transport service accessible within roughly a 10 minute walk. This will be the case when buses or trams run along the arterial road grid with about 800 metres (originally half a mile) between major roads.

• Services should operate every 10 minutes or better until midnight, seven days a week. Again, this is the standard successfully established by Melbourne's own trams in both high-density and low-density suburbs.

• Convenient interchange between services should be provided, with convenient and safe road crossings where necessary, and minimal walking distance required to change service. With at most one or two changes of service per trip, a well-designed network can connect any origin with any destination in the entire urban area. The alternative strategy of attempting to serve multiple scattered destinations with one route leads to inefficient duplication of services and meandering, difficult-to-understand routes that take much longer than necessary to travel a given distance. Such routes are uncompetitive with car travel.

• Buses and trams should receive priority in the traffic stream, based on the principle that a mass transit vehicle with 50 passengers should not be subject to the same routine delay as a single-occupant motor car, being equivalent to a queue of cars stretching the length of one city block. Vicroads' Network Operating Plan ('Smartroads') is a promising start, but has been implemented in only a piecemeal manner and in some cases flatly ignored (as with recent changes at Haymarket Junction in Parkville that have favoured car traffic at the expense of trams and pedestrians, despite this being classified as a 'tram priority route' in the Network Operating Plan). Tram and bus priority requires appropriate coordination at senior levels between PTV, Vicroads, local councils and Victoria Police.

• Where services continue to operate less frequently than every 10 minutes, arrivals and departures at major interchange points should be explicitly coordinated on a 'pulse timetable' so that one service departs a few minutes after the other service arrives and vice versa. It is inexcusable that there are so many instances where buses operate every 20 or 30 minutes from railway stations but are timetabled to depart one minute before the 'connecting' train arrives!

• For regional services (that is, excluding long-distance services such as Melbourne–Sydney or a restored Mildura line) that operate outside urban boundaries to link regional towns and villages, the minimum frequency standard should be one service per hour. There is little point providing a regional public transport service at all if it does not operate at least hourly. When a higher frequency is justified in peak times, this should be extended to off-peak periods whenever the incremental revenue is likely to meet or exceed the incremental operating cost.

• All the above standards should apply regardless of mode. The reason many Melbourne bus services remain unpopular is not that they don't *look* like trams, but that they don't *act* like trams, and operate to a far inferior standard of service. This needs to change.

Of course, bringing all of Melbourne up to this benchmark standard, let alone regional Victoria, will require substantial investment. It would be sensible to begin with pilot projects, covering a few suburbs, which would allow the revenue and passenger service benefits to be demonstrated ahead of a more substantial and staged rollout. Options for funding improvements in service are canvassed under 'Paying For Improvements' below.

Solutions for Freight and Business

A transport strategy to be complete must consider the movement of both people and goods. Freight transport accounts for about 10 per cent of traffic on the road network, but —like public transport—has an economic importance outweighing its raw vehicle numbers. Unlike with people, however, it is not feasible to put a twenty-foot shipping container on board the 10:12 to Flinders Street. A similar difficulty applies to the mobile trades: the time-honoured 'white vans and utes' that are frequently (and mistakenly) invoked against the idea that public transport, walking and cycling can substantially increase their share of the urban transport task.

Nonetheless, responding to the needs of freight and business with big new roads is just as futile an exercise as expanding road space for private cars. The traffic congestion that actually impedes freight movement in Melbourne is not caused by freight vehicles: it is caused by the personal car trips that make up the vast majority of travel (during both peak and non-peak periods). Road freight already generally avoids the early-morning and late-afternoon peak periods when traffic congestion is worst, as there is no compelling reason to move most goods at these times. Whether or not new roads are built on the express pretext of catering for freight transport, the effect is always to encourage huge growth in private car traffic, which is the chief impediment to freight movement.

It is neither economically nor politically viable to build new roads through urban areas and then ban or restrict traffic from using it other than trucks and commercial vehicles. But any

attempt short of this to provide 'freight roads' is a sham, as Infrastructure Australia has itself emphasised:

> Several submissions to Infrastructure Australia in the past year have continued to focus on the development of large urban motorways, presented as freight roads, when, in fact, 80–90% of the projected traffic is expected to be private vehicles. In several cases, the use of tolls to fund these roads was rejected. At the same time, the jurisdictions have asked for the Australian Government to meet all or the great majority of the cost of these projects....
>
> Unless urban road proposals are scoped in line with the principles outlined above; and/or.... send [price] signals that will influence demand, Infrastructure Australia is highly unlikely to support the proposals for funding by the Australian Government.
>
> —Infrastructure Australia. *Communicating the Imperative for Action*, report to COAG, July 2011

Freight operators themselves acknowledge that the freight transport task and the passenger transport task cannot be neatly packed away in separate boxes. As the Australian Trucking Association's communications manager Bill McKinley told *ABC News* in October 2009, "*The fact is that cars make up most of the congestion on the road system in our major cities, that won't change. So congestion is a problem related to light vehicles not heavy vehicles.*"

The measures that will truly boost productivity in the transport sector, therefore, must focus primarily on discouraging further growth in the private car traffic that holds it up, and where possible, shifting private car travel to other modes that do not impede freight transport. Vancouver's *Liveable Region Strategy* tackled the problem explicitly, by giving priority to freight transport over private car travel in transport planning and operations. Meanwhile Victoria does the opposite, through such measures as banning trucks from the right lane of freeways, and prioritising road projects that were planned expressly as commuter freeways in the 1960s and cannot be otherwise justified even today.

Importantly, Vancouver's approach has worked for the benefit of both transport companies and the general public. Not by eliminating congestion—no city in the world has achieved this—but by arranging transport and land-use to progressively unlink economic activity from congestion. For example, Vancouver is the only city in Canada (and probably in the Western world) where average travel time to work actually *declined* between the 1992 and 2005 censuses. When more people can travel to work, and for other purposes, without adding to traffic congestion, relatively more space on the roads becomes available for more efficient freight transport.

Freight in Victoria is also not entirely bound to road transport. Outside Melbourne, rail plays a much greater role in the bulk freight transport task, especially for Western District grain traffic. More such freight could be handled by rail if we did not artificially distort the freight market by charging rail freight operators the full cost of rail network maintenance, while charging trucking companies only a fraction of the true cost of road maintenance via vehicle registration fees. Even within Melbourne, a large part of the heavy freight task is focussed on a small number of major nodes, which should function in the future as rail-

connected intermodal hubs. We are unlikely to see a return to the days when parcel vans were attached to the back of suburban trains for light goods transport, but rail nonetheless retains a role in freight transport which requires actively defending and expanding.

A sustainable freight strategy for a Victorian government will therefore include the following measures:

• Adopt a 'freight priority' principle similar to Vancouver's to guide the planning and operation of the motorway and primary arterial road network. This would involve targeted measures to prioritise freight within the traffic stream, not dissimilar in principle to traffic priority for trams and buses. This may involve, for example, dedicating motorway lanes to freight vehicles and buses at particular times of the day.

• As a complementary measure to the above, adopt strategies to direct freight movement away from residential areas, with the ultimate objective of banning all heavy freight vehicles from residential streets. In some cases targeted road infrastructure may need to be provided to cater for this. (Although the Western Distributor is currently cited as an example, this purpose is incompatible with the presence of major off-ramps direct to the western end of the CBD: with these included, it will function in practice as another radial commuter road for private cars on which freight traffic will struggle just as it does today.)

• Accelerate development of intermodal hubs in the Big Four freight centres: the Port of Melbourne, the Western logistics precinct, the Hume corridor (including the new Melbourne Markets site in Epping North), and Dandenong. Plan for gauge-convertible rail connections between each, such as would be provided by the fully-funded Port Rail Shuttle project. Provide incentives for moving goods between these hubs by rail rather than by road where capacity exists to do so.

• Work through COAG processes to remove the market distortion in favour of road freight transport, either by building the true cost of road maintenance for trucks into heavy vehicle registration fees, by reducing or removing diesel fuel tax concessions for road transport, or by directly funding rail authorities to maintain rail freight networks in the same way road authorities are funded to maintain road networks.

• Commit to the long-term planning and funding required to standardise the rail gauge throughout Victoria, to remove the multiple breaks of gauge introduced since the 1990s that act as unnecessary obstacles to the efficient movement of regional freight by rail. To this end, mandate the procurement of dual-gauge sleepers for all rail construction projects in the broad-gauge network, effective immediately.

Paying For Improvements

Even a well-targeted transport plan requires adequate funding, which will realistically run to several tens of billions of dollars over many electoral cycles.

Commonwealth funding

As has long been the case for road infrastructure, renewing Victoria's public transport will rely on certain measures which are beyond the likely financial capacity of any State Government acting alone (given the severe constitutional limits on the capability of individual States to raise revenue, compared to their responsibilities for service provision). It will be incumbent on the Federal Government to assist in the funding of key measures such as suburban rail extensions and the Melbourne Metro rail tunnel, on the same financial terms on which it has funded equivalent road projects for decades. There is no constitutional, historical or statutory basis for the Commonwealth to refuse to fund urban public transport on the supposed basis that it is an exclusive State responsibility. The same was once true of urban roads which are now extensively Federally funded.

Land value capture

'Land value capture' is a funding option which has often been raised in urban planning circles, and which has been applied successfully in Britain, Singapore and some US cities. It is based on the principle of recognising the (frequently very large) positive effect on land values from nearby public transport improvements that benefit the area, and 'capturing' part of this value as public revenue in a 'gain sharing' arrangement with landowners.

In practical terms, It often takes the form of a levy on property rates, such as was used in Melbourne in the 1970s to finance construction of the underground City Loop. With appropriate financial arrangements, the bulk of the financial impact on existing landowners can be deferred until the gain in land value is actually realised.

Incremental revenue capture

Another somewhat related option is 'incremental revenue capture'. This explicitly takes into account that public transport improvements are intended to generate large gains in patronage, on existing as well as new services. (The rail line between Perth and Mandurah generated a substantial increase in patronage across the entire system within six months of opening in 2007.) The expected patronage growth can be quantified (using conservative assumptions to manage the associated risks) and ascribed as the future value of the project, similar to the way 'shadow tolls' are sometimes used to finance roads. It helps under this approach if the project is developed in a staged manner, which ensures that patronage gains are realised after each individual stage to provide valuable cash flow.

Other proposed revenue measures: can they be sustained?

The above measures for financing new infrastructure all have the advantage that they can be sustained over time, and can be applied repeatedly as needed to finance a 'pipeline' of projects such as is realistically required to overhaul Victoria's public transport.

The same is not true of attempting to finance infrastructure through fare rises. This merely reduces the competitiveness of public transport relative to car travel, and suppresses

demand for the new infrastructure, as experience with Sydney and Brisbane's airport rail links has shown. While revenue generated from passengers needs to increase to cover an increasing cost base for well-patronised public transport, we should expect the bulk of this increase to be driven by strong growth in the number of passengers attracted to the system, and specifically from strong growth in the numbers paying full fares, and paying in advance for periodical travel passes.

The government must also avoid placing too heavy reliance on the leasing of the Port of Melbourne as a revenue source for infrastructure improvements. Melbourne's future infrastructure needs extend well beyond what can be covered by any single asset sale, and past Victorian Governments have never shied from funding major road construction without drawing any explicit link to a 'balancing' source of revenue.

Conclusion

The true complexity of Melbourne's transport needs must not be reduced to simplistic formulas or magic-bullet ribbon-cutting opportunities. Nothing short of a wholesale government commitment to a rolling programme of infrastructure and service improvements will suffice to answer the urgent challenges facing our city and state.

Our proposed programme of improvements includes:

• A comprehensive package of infrastructure renewal on the rail network, including high-capacity rail signalling, level crossing grade separations, suburban rail extensions, short tram extensions, re-introduction of full staffing, and the Metro rail tunnel.

• Improvements to suburban and regional town bus services in accordance with uniform 'Every 10 Minutes to Everywhere' service standards derived from the successful model of Melbourne's trams, and the introduction of comprehensive tram and bus priority to speed up travel and generate efficiency benefits to offset the cost of additional services.

• A freight strategy focussing on targeted measures to remove impediments to freight travel on the existing motorway and arterial road network, to prioritise freight movement over generation of private car traffic in transport planning and operations, to remove heavy freight vehicles from residential streets, and to remove artificial barriers to the expansion of rail freight.

As the development of the public transport system is essential to the expansion and sustainable development of the Victorian economy, state-sourced borrowings and revenues should continue as the core funding sources for investment in the system. The benefits are substantial and on-going and will be reflected in the growth in Gross State Product, and other measures including social wellbeing and environmental sustainability. However, given the nature of federal-state fiscal relations in Australia the Commonwealth also has a basic obligation to contribute, as it has for many years in a range of other areas of State responsibility such as health and education. Given such projects also confer significant local economic benefits, there is scope to derive revenue from the resulting cash flows.

With a sustainable reorientation of our transport priorities and plans, Melbourne will once again deserve its reputation as the world's most liveable city, with an urban and regional transport system to genuinely rival the best in the world.