First Orbital SmartBus attracts thousands of new daily passengers

Melbourne’s first Orbital SmartBus, route 903, has already generated around 30,000 new passenger trips per week after services commenced in April 2009.

Route 903 runs from Mordialloc to Altona via Chadstone, Box Hill, Northland, Coburg, Essendon, and Sunshine (refer map below), and is now carrying around 17,000 passengers each weekday, 10,000 on Saturdays and 8,000 on Sundays.

SmartBus services run every 15 minutes on weekdays between 6:30am and 9:00pm, and then every 30 minutes until midnight. Weekend services run every 30 minutes. SmartBus services also have special liveried buses, on-road priority to bypass congestion, and real time information signs at major stops (showing the expected minutes until the next departure).

On route 903, additional services result in a 7.5 minute frequency between Mentone and Heidelberg during peak periods, and there are three buses per hour on Saturdays between Box Hill and Mordialloc.

Previous experience with other SmartBus services shows that patronage will continue to grow for several years after an upgrade, so we expect to see more and more people choose to leave the car at home and use the SmartBus.

Bus Association Victoria (BusVic) is proud to present our second issue of BusSolutions, a publication full of news and views about buses and their role in Victoria’s transport network.

In this issue we summarise recent research on transport disadvantage and social exclusion, the impact of fuel prices on bus patronage, the congestion relief buses provide in Melbourne, and the real health benefits experienced by public transport users in Melbourne.

In particular we show that Melburnians who swapped the car for the SmartBus during the petrol price spike in 2008 loved it so much they haven’t gone back.

We also tackle the tough issue of bus-train connections, a frequent source of complaints in Melbourne. The story on page 6 explains the challenges in improving connections, and real solutions that would dramatically improve bus-train connections in Melbourne and further boost patronage.

With an election coming up later this year, we also talk about our priorities for further investment, including low cost and quick-to-deliver Bus Rapid Transit solutions for Melbourne’s growth areas.

We’d like to thank our readers for the great feedback on the first issue, and we’d welcome your feedback on this issue.

If you would like to send feedback, or subscribe to BusSolutions please email us at BusSolutions@busvic.asn.au

Chris Loader
BusSolutions Editor
High quality bus services an antidote to rising fuel prices

BusVic research shows that bus routes with higher service levels are a more attractive alternative to the car in the face of rising fuel prices.

Rapidly rising fuel prices in 2008 was a major driver of bus patronage growth. BusVic research shows this increase was most noticeable on high quality SmartBus services in the eastern suburbs of Melbourne.

By July 2008, unleaded fuel prices in Melbourne peaked at around $1.60 a litre, contributing to around 13% annual growth in public transport patronage by early 2009.

Fuel prices eased considerably after this mid-year price spike and averaged around $1.20 a litre between November 2008 and December 2009. During 2009, patronage growth slowed but remained positive, suggesting that most of the new users gained during the fuel price spike have continued to use public transport.

In the coming months, the Green Orbital SmartBus is due to commence on route 902 from Chelsea to Airport West via Springvale, Nunawading, Doncaster, Eltham, Greensborough and Broadmeadows. This will boost east-west travel options in Melbourne’s northern suburbs, and provide additional services through the City of Manningham.

The Yellow Orbital SmartBus (route 901) currently operates from Frankston to Ringwood via Dandenong and Knox City. This service will be extended to include Blackburn, Greensborough, Epping, Roxburgh Park, Broadmeadows and Melbourne Airport. Patronage on route 901 (and related bus routes) has more than doubled following the first 20 months of operation, with around 34,000 new weekly trips being taken.

The Doncaster Area Rapid Transit services (DART) is scheduled to commence by early 2011, upgrading four services between the Doncaster area and Melbourne CBD to SmartBus standards.

However, once these upgrades are complete in early 2011, there are no further commitments to extend the successful SmartBus network to more areas of Melbourne. This leaves the western suburbs of Melbourne with just one SmartBus route, and a number of major bus routes in Melbourne operating at lower frequencies and with no services after 9pm.

BusVic believes SmartBus is a great model for introducing high frequency bus services to the suburbs of Melbourne, and there are many opportunities to upgrade other existing routes that connect more activity centres. We list some routes that we think are strong candidates for future upgrade to SmartBus on page 7.

The chart above shows rolling 12 month validations on different groupings of Melbourne bus routes (routes with service upgrades anytime in the measurement period have been excluded to isolate the underlying trends).

The chart shows a number of interesting trends for different route types:

- Melbourne’s first two SmartBus routes (703 and 888/9, upgraded in 2002) showed the strongest growth in response to rising fuel prices (around 15%). These routes operate along Blackburn and Springvale Roads in Melbourne’s eastern suburbs. It suggests that a high frequency SmartBus service is considered a viable alternative to car use for many people in the middle suburbs, compared to lower frequency routes. Despite a 25% decrease in fuel prices by the end of 2009, SmartBus patronage is largely stable, suggesting that people who have made the switch to SmartBus liked it enough to continue travelling on it.

- Bus routes that were upgraded to the new minimum service level (at least hourly buses until 9pm, seven days a week) in September/October 2006 also showed strong growth (around 13%). We normally see patronage slowly increase over time after an upgrade such as this, but it appears that higher fuel prices have accelerated this growth. It suggests that bus routes now operating until 9pm seven days a week were attractive to more commuters if faced with the increased cost of running a private car.

- Other routes that operate six or seven days a week showed more modest growth (around 6-7%), and have maintained their additional patronage following the drop in fuel prices.

- Routes that only operate five days a week started to show a decline in patronage soon after fuel prices eased. Many of these routes serve industrial areas, and this result may well reflect a decline in employment due to the economic downturn.

Buses - essential for congestion relief

Buses provide significant congestion relief to Melbourne, saving around $450 million in economic costs each year.

Recent research at Monash University has measured the congestion reduction benefits of Melbourne’s bus services. Using the Department of Transport’s Melbourne Integrated Transport Model (MITM), the researchers found that if Melbourne’s bus system was discontinued overnight, traffic congestion in Melbourne would be considerably worse, resulting in:

- 37% increase in vehicle hours of delay;
- 13% increase in kilometres of congested roads;
- 7% decrease in average travel speeds; and
- 7% increase in average actual travel times.

Whilst no one is proposing to discontinue Melbourne’s bus network, the figures show that despite relatively low service levels, buses still provide very important congestion relief in Melbourne.

In particular, BusVic estimate SmartBus services remove several thousand cars from Melbourne’s roads every day.

Using these figures, BusVic have worked with the University of Sydney to estimate the congestion cost savings of Melbourne’s bus network to be around $450 million per year, which is well in excess of the cost to government of providing these services.
Using public transport – a ticket to health

BusVic research has found that people who use public transport in Melbourne are also likely to be getting their recommended dose of physical activity during their travel.

Our analysis of household travel data from the Victorian Integrated Survey of Travel and Activity (VISTA) found that people who used public transport on a particular day, also spent an average 41 minutes walking and/or cycling as part of their travel. Those people who used public transport but not private transport (cars, taxis or motorcycles) averaged 47 minutes of physical activity.

The Australian Government’s physical activity guidelines recommend that adults spend at least 30 minutes doing moderate-intensity physical activity on most, preferably all, days. This activity could involve brisk walking, moderate pace cycling, or any other activity that causes a slight increase in breathing and heart rates.

Therefore it is likely that most regular public transport users get enough incidental exercise to maintain their health, without needing to find additional time to exercise.

On average, those people who travelled but did not use public transport spent just 8 minutes walking or cycling as part of their travel. Consequently, these people will need to find another 22 minutes (on average) for additional physical activity to maintain a healthy lifestyle. These 22 minutes could easily be the difference in travel time between driving and using public transport.

The VISTA research demonstrates that using public transport brings great public health benefits, which is particularly important given the increasing prevalence of obesity in Australia.

An Access Economics report prepared for Diabetes Australia estimates the total economic cost of obesity in Australia in 2008 was a staggering $58 billion. This includes “productivity, direct health, carer and other costs, as well as years of healthy life lost to disability or premature death". The report also found that 17.5% of Australians are obese.

The map above shows the overall average minutes of walking and cycling for transport per person in each local government area in Melbourne. It shows the outer suburbs - which generally have much lower levels of public transport service - also have the lowest rates of walking and cycling.

By upgrading public transport services in these areas, it is likely that more people will engage in more incidental exercise as part of their everyday travel. This represents yet another benefit of further investment in bus services, particularly in the middle and outer suburbs.

Overwhelming support for more public transport investment

Melburnians express almost unanimous support for public transport investment, well ahead of support for more roads.

A Metlink-commissioned survey of 1000 Melburnians in August 2009 found that 90% of people in Melbourne agree that the government needs to spend more on public transport infrastructure, while only 56% agree that more money needs to be spent on road infrastructure.

This strong public appetite for public transport investment follows a recent significant shift from the use of cars to public transport, where the share of motorised weekday trips in Melbourne on public transport rose from 10.6% in 2004 to 14.3% in 2009.

Even amongst those people who rarely use public transport (once every six months or less), 82% supported increased investment in public transport, suggesting they still appreciate the broader benefits of public transport.

The survey also found that:

- 66% of people agreed that “in the future people will rely more on public transport than on their cars”, and
- Of these, 38% report “using PT more is one of the ways I am looking to save money”.

Of the 241 respondents who had reduced their car use:

- 63% saw this as a permanent change,
- 49% agreed that “using the car less means I can spend money on other things”,
- Only 10% of those who also increased their use of public transport felt like they’ve taken a step down in the world by catching public transport more often, and
- 30% cited cost factors, 26% cited convenience factors, and 22% cited lifestyle factors for their reduced car use.

Of the 182 respondents who had recently decided to use their car more, overcrowding and reliability issues with public transport were the most frequently cited reasons.

Of 354 respondents who have recently increased their use of public transport, cost and convenience were the two biggest reasons (other than changes in personal circumstances).

Overall, 16% of all respondents said they planned to increase their use of public transport in the next 12 months, while only 7% planned to decrease their use of public transport.

The survey findings highlight the importance of continued government investment in public transport to meet the community’s expectations and making further progress towards the target of 20% of motorised trips being on public transport by 2020.
Did you know?

There are over 17,500 bus services each weekday in Melbourne, and around 5,000 in regional Victoria.

In 2009, Melbourne's buses carried over 390,000 passengers on the average school day.

77% of Melburnians live within 400m of a bus stop.

21% of Melburnians live within 800m of a train station.

13% of Melburnians live within 400m of a tram stop.

23% of Melburnians (over 15 years old) use buses at least once a month.

60% of Melburnians (over 15 years old) use public transport at least once a month.

There are over 17,000 bus stops in Melbourne, and over 4,000 in regional Victoria.

Transport disadvantage, social exclusion and well-being

Stories in this section highlight many of the findings from recent research into this topic, partly funded by Bus Association Victoria and the Australian Research Council.

Public transport social needs and current service provision in Melbourne areas circled have high social needs and low public transport supply.

Public transport missing people most in need

Around 400,000 people in Melbourne live in areas with very high social needs, but below average public transport supply.

Monash University researchers calculated an index of public transport social needs by combining data from the ABS Index of Relative Socio-Economic Disadvantage and other indicators such as unemployment levels, educational qualifications, car ownership, persons over 60, students and pensioners.

The map above shows this index of social need overlaid with the number of public transport services per week for each bus, tram and train stop in Melbourne.

The map shows many areas (circled) with low public transport supply (pink and orange dots) but high needs (darker grey shading). These are mostly Melbourne's outer suburbs where funding constraints at the time of settlement resulted in very basic service levels (often only hourly services).

There are other areas of high social needs that do have moderate to good levels of public transport supply – typically older suburbs such as Sunshine, Thornbury, Preston and Heidelberg. These suburbs had a higher level of public transport service introduced when they were settled, and service levels have remained relatively high.

This analysis can be used as a valuable tool in prioritising upgrades to bus services where needs are highest, and shows the...
strong need for service upgrades in many parts of Melbourne. Unfortunately, current funding for upgrades to local services is unlikely to make significant in-roads into this problem.

The map also shows that many parts of inner Melbourne have significantly higher public transport services than outer Melbourne. While the social needs are generally lower, we suggest that public transport still provides important benefits including alleviating congestion and reducing emissions in these areas.

People on low incomes with high car ownership doing it tough

There are around 20,000 low income households mostly in outer Melbourne who spend more than half their income on transport.8

The study showed that not only is transport a very significant drain on the household budget, but these people are extremely vulnerable financial stress due to increases in fuel prices and interest rates.

These households have the lowest levels of public transport supply and limited opportunities to access local activities by walking. Low income households in the middle and outer suburbs are more likely to own 2 or more cars.

Of these households:
- Most were located away from high quality public transport and activity centres.
- 65% agreed that they “have no choice but to pay these costs otherwise they couldn’t get around”.
- 55% agreed that they “wish we could walk and cycle more and use the car less”.
- 35% identified dwelling affordability as one of their top three considerations in choosing where to live (the equal-top rating reason overall).

If there is another significant rise in fuel prices (which many people expect), these people will be hit hardest if they do not have viable public transport alternatives to their car. The vast majority of these households are serviced only by buses, often at low service levels.

Increased investment in bus services to the middle and outer suburbs of Melbourne is one of the most effective ways to reduce the impact of rising fuel prices on these households.

People on low incomes who do not own cars

Around 16,000 people who are on low incomes do not own cars.9

The research finds that these people:
- Spend less than 20% of their household income on transport.
- Live closer to activity centres, walk and use public transport more often.
- Reported more frequent travel difficulties and made fewer daily trips on average.
- Tend to travel more locally, and say they are able to participate in more activities because they save money by not owning cars.
- Are typically single person households, older people, pensioners, and renting.

While these people scored lower on social inclusion measures, their well-being scores were the same as those with high car ownership. They also have much more environmentally sustainable transport habits.

By extending the operating hours of more bus services, these people can become more socially included through increased access to activities that are beyond the walking distance of their home.

Socially excluded people make less trips

The research also found that people who were classified as at risk of social exclusion in one or more ways have lower rates of travel, as shown in the chart below.

It follows that if people at risk of social exclusion had greater access to public transport, this would enable them to gain greater social inclusion, with health, well-being, and social benefits resulting.
Train-Bus connections – why don’t they always work?

This is a question that public transport users frequently ask. After all, we know from surveys that around 25% of Melbourne bus users transfer to or from train. In this article, we outline the challenges and solutions for improving bus-train connections in Melbourne.

Challenges

There are several reasons why coordinating buses with trains is a challenge:

- If the bus frequency does not “harmonise” with the train frequency, you cannot coordinate all bus trips. For example, if a train runs every 20 minutes, and a bus runs every 30 minutes, then at best only every second bus can coordinate well with the train. But coordination is easier if the train runs every 15 minutes, and the bus runs every 15 or 30 minutes. Unfortunately around 45% of Melbourne’s bus routes run a weekday frequency that doesn’t harmonise with trains.
- Many bus routes pass multiple train stations (over half serve two stations and a third serve three or more). Usually it is not possible to coordinate with trains at all stations and schedulers must choose which connections are more important.
- Every minute that buses spend waiting for trains is a minute they don’t spend providing service along the route. Often there is a trade-off between running at a higher frequency and having buses wait for train connections. Holding a bus at a train station mid-way along a route to allow transfers to and from a train would cause significant delays to other passengers remaining on the bus.
- Where bus and train lines intersect, there are up to 8 different directions in which people might want to transfer. Writing timetables to make all transfers efficient is almost impossible, so schedulers have to prioritise some connections over others.
- During peak periods trains often do not have a regular timetable pattern and buses are slowed by increased passenger loads and traffic congestion, meaning it is difficult to maintain regular connection patterns.
- Trains do not always run on time, and for buses to stay on time throughout the day there are limits as to how long they can wait for late trains.
- Melbourne has many rail level crossings which can significantly delay buses trying to coordinate with trains.

Solutions

Despite these challenges, there are many ways to improve bus-train connection times:

- Higher frequencies result in transfer times that are lower on average, even if the timetables have not been harmonised. For example, for a bus route running every 15 minutes intersecting trains running every 10 minutes, the average waiting time is 7.5 minutes for the bus, and 5 minutes for the train. However at present only 3% of Melbourne’s buses run every 15 minutes or better during the day on weekdays.
- Harmonising the frequency of buses to match trains (e.g. buses every 30 minutes, trains every 15 minutes) means that certain transfer directions can have short waiting times for every trip, while all other transfer times will at least be consistent each time.
- Careful network design can sometimes result in bus routes with travelling times that allow good connections at more than one train station. However this often doesn’t work in peak periods and after train timetables change, and can conflict with other network design objectives.
- Metlink’s online journey planner automatically recommends the best available connections that minimise overall travel time. In future the journey planner might also help you change your plans when there are delays or disruptions. As more mobile phone platforms are supported by the journey planner, more people who are comfortable with, and have access to mobile phone technology will benefit.
- Real-time information about bus and train arrivals can help people make informed decisions about where and when to transfer while they travel.
- Advanced scheduling software can to some extent manipulate timetables to optimise the number of connections with short transfer times. This requires prioritisation of connections and becomes more complex when more routes or modes are involved. Most bus routes in Melbourne are already scheduled using such software. More complex multiple-operator scheduling was undertaken on a limited scale during metropolitan Bus Service Reviews, although funding constraints means these timetables have not yet been implemented.
- Road/rail grade separations at key bus-train interchanges provide a quicker and much more predictable trip for bus passengers as they will not be held up by lengthy delays caused by boom gates.

A Melbourne-wide solution

A very significant improvement can be made to bus-train connections across Melbourne at relatively low cost by doing the following:

- Upgrade most suburban bus routes to operate at least every 30 minutes during the day on weekdays. At present, 60% of Melbourne’s bus routes have buses running more than 30 minutes apart during the day on weekdays.
- In conjunction with this, standardise train service frequencies to at least every 15 minutes on weekdays on most train lines. Currently only 7 lines meet this frequency standard (refer box below). We understand that existing rolling stock and track infrastructure on most rail lines is capable of running trains at this frequency. This would harmonise almost all bus and train routes, allowing shorter and more consistent bus-train connection times. The improved connections would amplify the patronage gains resulting from increased frequency of service, significantly increasing the return on such an investment.

Facts about bus-train connections in Melbourne

93% of Melbourne’s regular bus routes serve one or more train stations. 55% serve at least two stations and 32% serve three or more stations. 45% of Melbourne’s bus routes run at a frequency that does not harmonise with the intersecting train lines. Around 40% of peak period bus users and 20% of weekday daytime bus users connect to or from train services.

Weekday daytime train frequencies on Melbourne’s train lines:

- Hurstbridge: 40 minutes
- Belgrave, Lilydale, Pakenham and Cranbourne: 30 minutes
- Sydenham, Craigieburn, Upfield, Epping, and Eltham: 20 minutes
- Ringwood, Alamein, Glen Waverley, Dandenong, Frankston and Sandringham: 15 minutes
- Werribee: 10 minutes (every 20 minutes via Atwood)

Train stations with the highest number of transferring bus passengers in Melbourne:

- Footscray
- Box Hill
- Dandenong
- Sunshine
- Essendon
- Oakleigh
Bus services – next investment priorities

With 2010 an election year, we list BusVic’s priorities for further investment in bus services in Melbourne and regional Victoria.

The Victorian Transport Plan, released in December 2008, provided around $1.4b of new funding over 12 years for buses. This included the SmartBus routes mentioned on page 2, as well as funding for improving local services in Melbourne and regional centres.

We welcome this funding, but there is still much more to do to bring high quality public transport to more parts of Melbourne and provincial Victoria.

What follows are BusVic’s priorities for future funding for bus services, which have been submitted to the state government in a budget submission for 2010-11:

SmartBus priorities

As mentioned on page 2, funding for expanding the SmartBus network in Melbourne runs out in 2011.

As well as completing the Orbital SmartBus network and the BRT projects in the north (refer story on page 8), BusVic proposes several new SmartBus routes (as shown in the map above):

- An upgraded service connecting Sandringham, Southland, Cheltenham, Dandenong, Fountain Gate and Berwick via Bay Road, Centre Dandenong Road, Cheltenham Road, Frawley Road and Princes Highway. This would connect four train lines and several major shopping centres, and provide an important east-west route across Melbourne (upgrading most of the existing route 828 service).
- An upgraded service between Frankston and Fountain Gate via Cranbourne and Narre Warren. This route would connect three train lines and several activity centres (amalgamating services provided by current routes 790, 791 and 841).
- A new SmartBus service along the Western Highway and Ballarat Road connecting Caroline Springs, Sunshine, Footscray and the Melbourne CBD. This would involve a consolidation of some existing routes in the corridor to provide a simple high frequency route along the highway.
- Upgrading route 630 from Monash University’s Clayton campus to Elsternwick via North Road, and extending it to St Kilda and Port Melbourne, providing better access to Monash University, and a significantly upgraded service parallel to the bay in Port Phillip.
- Upgrading route 693 from Ferntree Gully to Oakleigh via Ferntree Gully Road, with an extension to Chadstone Shopping Centre. This would also serve Mountain Gate, Wheelers Hill, and Brandon Park shopping centres and potentially also the northern side of Monash University Clayton Campus.
- Upgrading route 250 between Port Melbourne, the CBD, Clifton Hill and Latrobe University Bundobora to SmartBus status, but with services every 10 minutes on weekdays. This would involve consolidating some other routes to provide a simple high frequency route at relatively little cost.

In addition, we propose extensions to existing SmartBus routes:

- Extend route 900 (Caulfield – Chadstone – Oakleigh – Monash University – Stud Park) to Ferntree Gully via Rowville, to provide better access to the SmartBus service from more parts of Rowville, and connect with trains at Ferntree Gully.
- Upgrade the section of route 703 along Centre Road between Clayton and Brighton to SmartBus Standards (current Sunday services do not reach Brighton, and Saturday evening services finish before midnight).

Melbourne local bus priorities

- Extend the bus network to urban growth and employment areas.
- Complete the upgrade of local routes to the minimum service standards, with buses running at least hourly until 9pm, seven days a week. Following this, the next priority would be to extend major routes to run later at night and start earlier in the morning on weekends.
- Upgrade all suburban bus routes to run at least once every 30 minutes during the day on weekdays.
- Make other improvements to the bus network in line with the recommendations of the recent Metropolitan Bus Service Reviews.
- Extend funding for on-road bus priority measures beyond 2011 to improve bus service reliability, and help buses get around traffic congestion.
- Expand the roll-out of real-time bus arrival displays to major stops on non-SmartBus routes.

Regional bus priorities

- Implement recommendations from recent Bus Service Reviews in several regional centres.
- Introduce a minimum hourly service standard, seven days a week on suburban routes in larger regional centres.
- Upgrade major routes in larger centres to run every 30 minutes on weekdays.
- Allow spare seats on school buses to be used by members of the public, subject to practical guidelines.
Bus Rapid Transit — a solution for Melbourne’s growth areas

Heavy and light rail extensions come at significant cost and take many years to deliver. Bus Rapid Transit (BRT) is a relatively low cost alternative that is quick to implement, and can provide high quality public transport services for many areas of Melbourne.

BRT refers to services where buses operate at high frequency for a long span of hours on simple, fast and direct routes, often using segregated road space or bus lanes. Other common features include real time bus arrival information at stops and off-bus fare collection.

Many corridors of Melbourne are not served by rail and BRT is a real option in these areas. SmartBus already provides an on-road ‘light’ form of BRT, but there are opportunities for segregated busways in a number of growth areas of Melbourne.

One opportunity is in the Epping North corridor, which has been reserved for a heavy rail connection from Lalor to VicUrban’s Aurora development. A busway-style BRT could be implemented in this reservation in a short space of time, and we expect this would cost under $100 million. At least initially, a busway would not need grade separations at intersections, provided that buses can be given signal priority when crossing intersecting roads.

We envisage a bus running to meet every train at Epping station, and also providing a connection to the Northern Hospital and Epping Plaza Shopping Centre.

Another opportunity is Aitken Boulevard in the City of Hume. Originally reserved for a freeway standard road, a wide reservation is available with dedicated space available for a busway. This would provide high quality public transport to connect the Broadmeadows Central Activity District, train stations at Broadmeadows and Craigieburn, the Craigieburn Town Centre, and various major schools along the route.

These BRT opportunities are shown in the map above.

Send us your feedback

We want to hear from you about what you think of BusSolutions. Please send your feedback to: BusSolutions@busvic.asn.au or call us on 03 9645 3300.

About BusVic

Bus Association Victoria (BusVic) is the representative body for Victoria’s bus and coach operators. Our primary role is to encourage increased use of buses and public transport as part of the development of more sustainable transport systems by engaging with transport community stakeholders.

We advocate that buses and coaches provide cost-effective and demand responsive solutions to complex issues such as social inclusion, climate change, peak oil and congestion. We encourage commuter mode shift (behavioural change) initiatives to realise these solutions.

BusSolutions is edited by Chris Loader, Manager Transport Planning and Policy at BusVic.

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