Connecting Places

A Proposal For

Direct Frequent Electric Buses

Bridging key gaps in Melbourne's transport network

PUBLIC TRANSPORT
NOT TRAFFIC

Overview

Victoria's rapidly growing population is precipitating a transport crisis in Melbourne. In particular, a lack of high quality public transport, both in outer and inner suburbs, is forcing more people into cars which is having increasingly adverse environmental consequences, is reducing social connectedness and placing household budgets under stress as residents are compelled to maintain two or more motor vehicles. Congestion is also threatening our economy and liveability. There is an urgent need to modernize our transport network, get more value for money invested and attract additional patronage.

The Andrews Government recognises that investment in public transport infrastructure is necessary and has developed a number of major public transport projects such as the Melbourne Metro Rail Tunnel (MMRT) and the level crossing removal program which will facilitate higher frequency train services and better bus integration in parts of the network. However most of the benefits of these big-ticket projects will not materialise for many years—certainly not during this parliamentary term. The construction impacts in the meantime will be disruptive. It is critically important that the public remain engaged with the longer-term projects. This will require demonstrable incremental improvements in public transport to show that necessary progress is being made to improve access to public transport and to relieve road congestion at a time of rapid population growth.

We recommend a bus plan designed to 'connect places' as an ideal first step. The road infrastructure already exists and buses are the most effective mode of public transport for the provision of high frequency services, and especially in outer Melbourne.

These buses should be electric and they should be manufactured in Victoria.

Admittedly buses are regarded by Melburnians with disdain, often seen as the poor cousin to trams and trains. Buses have suffered from two liabilities. Despite the recent improvements listed below, too many bus routes fall well short of best practice. Not running direct at acceptable frequency across enough of the day (nor on every day of the week) and not adequately connected with other services, they are far less useful than they should be, and so far less used. The overall passenger rates make this abundantly clear. Secondly, diesel is dirty and, as is increasingly well-understood, carcinogenic. Diesel is "the new asbestos." Our current stock of noisy and polluting buses fit very poorly into pedestrian and cycling environments. This is a serious anomaly in a public transport vehicle.

Australia is emerging out of a period of stalled action on climate change with the Victorian government playing a leading role. We believe there would be widespread support and enthusiasm, should the current government initiate a first step toward electric buses in Victoria. Electric bus systems are gaining in popularity overseas and will soon be the norm. It is time to begin the move in Victoria now.

Clean silent buses powered by renewable energy, manufactured in Victoria and running on new critically needed routes implemented according to exemplary modern practice—we say that this proposal brings with it a significant confluence of virtues that will make it compelling to the Victorian public.

Supporting Evidence

Evidence clearly shows that well-planned bus services that connect places in a timely manner are rewarded with high levels of patronage on these services and the public transport network generally. The strong patronage growth on the orbital SmartBus routes 901, 902 and 903[1] are testimony to that fact as is the success of the DART services 905, 906, 907 and 908 from Manningham to Melbourne CBD.

Also, the 401 service, introduced in 2008, between North Melbourne railway station and the Melbourne University precinct in Carlton is a major success[2]. The 401 service provides a convenient and efficient cross-linkage from the western and north-western suburbs direct to Melbourne University and other nearby destinations on the northern perimeter of the city – a link previously only possible using the already heavily-used tram services from the city. These types of service will assume greater importance as employment levels and the population of the CBD and inner Melbourne grows.

Other success stories from bus improvements abound just in Melbourne:

- Recent reform to Brimbank's bus network, featuring more direct and frequent services, as well as better connections with trains and key local destinations, saw 10% patronage growth within the first six months.

[1] Bus patronage rose 29% in the three years from 2006 to 2009, a result attributable to the rollout of the orbital SmartBus routes in 2006 with 15-minute frequencies. Patronage grew twice as fast (4% versus 2% per year) on routes with full-time operation (7 days until at least 9pm) than on routes without evening or weekend services.

[2] Most recent publicly available data shows annual patronage on route 401 grew from just under 2 million in 2010/11 to over 3.5 million in 2011/12.

- Williams Landing station in the rapidly growing City of Wyndham opened in 2013 with reconstructed route bus services, to Point Cook and Sanctuary Lakes (Routes 494, 495, 497) with peak hour headway between 10 and 20 minutes, witnessed significant patronage growth with the connecting bus services providing much of this growth.
- Bus improvements to 15 minute frequencies or better have generally demonstrated a 'patronage elasticity' greater than 1 - meaning 10% growth in route-kilometres provided leads to more than 10% growth in patronage. In the case of the 508 route from Moonee Ponds to Alphington, a doubling of Sunday frequencies led to a tripling in patronage.
- Route 601 connecting Huntingdale railway station with Monash University Clayton, Monday to Friday, with 4 minute headway for much of the day, is one of the most heavily utilised services in the Melbourne metropolitan area.

Beneficial network effects

As is evident from these success stories patronage and revenue increases are not simply confined to buses when well designed route bus services are available. At Box Hill Central, 27.5% of train patrons connect by bus or tram; at Camberwell 28% of train patrons connect by train or tram; at Footscray 34.1% of train patrons connect by train, tram or bus; at Essendon 51.2% of train passengers connect by train, tram or bus.

In contrast, at locations where connecting bus services are not up to scratch, buses make up a much smaller proportion of public transport connections. For instance, only 17% of train journeys from South Morang are made via connecting bus services (See later for discussion on South Morang); and at Pakenham only 10% of train journeys are made by connecting train or bus services.

Solution

Connecting Places is focused on a simple reform to bus transport, which can be quickly implemented without major budgetary implications. The plan takes as its model the 'SmartBus' introduced under the Bracks Labor government. The plan would roll out 'SmartBus mk2' across suburban Melbourne. Each one would:

1. Connect residential areas with key destinations (e.g. employment hubs, shopping and activity centres, hospitals) with one or more rail stations.
2. Offer a speedy ride.
3. Follow a direct route.

4. Be equipped with clear uniform signage showing the route at each bus stop and on the bus.
5. Run to a frequent schedule that connects with train times, including nights and weekends
6. Offer an easy walk between bus terminal and rail platforms.
7. Be accompanied by real time information on bus schedules akin to TramTracker.

Connecting Places could be easily trialed in certain selected areas, and the trials quickly evaluated. Our belief is that such bus routes would replicate the success of SmartBus in attracting passengers.

There are many advantages:

1. The Plan puts the government one step ahead for when the MMRT opens.
2. The plan is entirely consistent as a supporting service for the MMRT. New stations will require bus integration if there is not to be increased traffic congestion.
3. Patronage and revenue increases will not be confined to buses. We would expect an increase in train patronage.
4. It is compatible with Plan Melbourne's Refresh 2016 vision to "increase the network's capacity, particularly to strategic employment, gateway and industrial locations".
5. The cost effectiveness of the bus system as a whole would over time be improved. At present buses carry on average just over one passenger per vehicle kilometre travelled. That is a wasteful use of public funds.
6. People choosing to travel by bus rather than take their car onto the road would have the opportunity to bypass traffic congestion. If bus service were improved sufficiently and attracted larger numbers of passengers, it is possible congestion may even reduce in places where people are currently forced to drive even for short trips.
7. There would be economic advantage to people in suburbs currently poorly served by public transport, many of whom are struggling with high mortgages and can scarcely afford to own more than one car.
8. The plan uses existing capacity of PTV to implement.

Public transport has enjoyed strong community support for a long time but real improvement in service quality over recent decades has been minimal. Our group believes there is strong community support for improved public transport, and improved coordination and integration of public transport services in particular.

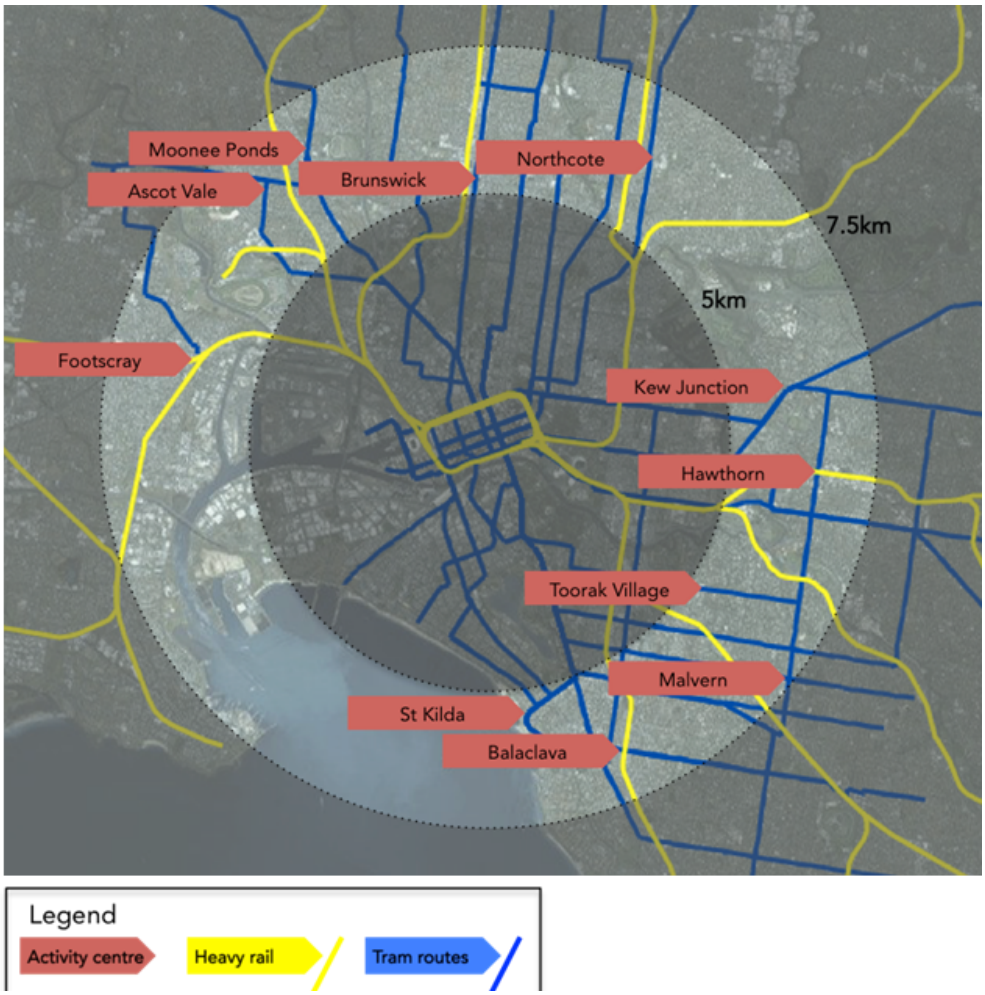
Current metropolitan bus services deliver 114.8 million bus-kilometres (State of Victoria 2014). Although costs vary among operators, a reasonable estimate for bus service costs, including drivers, fuel, maintenance and depreciation, is $4 per kilometre of operation.

This is verified by the current service frequencies and hours of coverage of the 'SmartBus' services which cover 370 route-kilometres and require 9.2 million bus-kilometres at a cost of around $37 million p.a. An increased expenditure on bus operations of $77 million p.a. could deliver 19.2 million additional bus-kilometres or approximately 770 additional route-kilometres of bus services at current SmartBus frequencies. This would effectively triple the current SmartBus network.

Key Opportunities

Due to the radial nature of our rail network, jobs rich activity centres are in most cases well connected to the CBD. Approximately 50% of all jobs in Melbourne are located within roughly a 15 kilometre radius of Melbourne GPO, corresponding loosely with the limits of Myki Zone 1. However, people wishing to travel to or from activity centres other than the CBD, or between these centres - even those relatively close to the centre - are often confronted with poor public transport options. As Figure 1 demonstrates, trams provide important linkages in the SE but there is little in the ring from Kew to Footscray. Smart Bus Mk2, with 'tram-like' frequencies would better connect these hubs.

Figure 1: Ring of activity centers located within 5-7.5km from CBD.



Example routes

1. Melbourne Airport to Broadmeadows station

Introduce a new service to boost the bus frequency between Broadmeadows railway station and Melbourne Airport. A 15-minute service alternating departures every 7-8 minutes with the existing 901 SmartBus at Broadmeadows and at Melbourne Airport would provide genuine 'turn up and go' service connecting the Airport with the Craigieburn train line. This initiative would be combined with bus priority initiatives along the route and an increased number of drop-off points at Melbourne Airport.

Rationale: Melbourne Airport is car-dominated. Enhanced bus services would benefit air travellers and airport workers and provide more congestion-free travel opportunities in the northern suburbs. The current route 901 runs on a 15 minute headway for most of the day whilst the connecting Craigieburn train runs with a 20 minute headway on weekdays, resulting in erratic transfer time patterns at the train station. The proposed

frequency of 8 buses per hour is not dissimilar to that provided by route 601 between Huntingdale station and Monash University - another key suburban trip generator - and is high enough that explicit coordination of bus and train services is not required.

Scheduled running time between Melbourne Airport and Broadmeadows, at about 20 minutes, is far too slow. It should be improved to a minimum of 12 minutes with on-road priority works (including at traffic lights), which will also allow the same level of service to be provided with fewer buses. There is currently only one pick-up and drop-off point, adjacent to Terminal 4, which increases walking time at the airport significantly for some users. There should be additional pick-up/ drop-off points at Terminals 1 and 3.

2. Blue Orbital

Increase service frequency of Route 246 (Elsternwick railway station to Clifton Hill bus interchange) to a uniform 10 minutes all day, 7 days a week, and extend in an arc via Brunswick, Ascot Vale and Footscray to complete the 'Blue Orbital' SmartBus route as part of a 'SmartBus mk2' initiative.

Rationale: The highly patronised 246 bus service was proposed to form part of an orbital SmartBus service in the inner suburbs in 2006, but this was not delivered (although the three other orbital routes mostly were). The proposed route connects numerous tram and bus routes with rail services on all corridors, providing most of the missing connections in Figure 1 above. The current Route 246 is the only public transport that runs the length of the Hoddle Street corridor. Current non-peak frequencies are 10 minutes during weekdays and 30 minutes in late evenings. Service frequencies and service span are lower still on weekends.

3. North Melbourne station to North Richmond station

Extend Route 401 (North Melbourne railway station to Melbourne University) to North Richmond railway station. In parallel with this, increase the frequency of Route 402 (Footscray to St Vincents Hospital) to run every 10 minutes throughout the day and extend the route through East Melbourne along Clarendon St to Jolimont railway station. Implement bus priority measures along both routes, including at traffic lights.

Rationale: This would provide direct high-frequency connections between the South Morang and Hurstbridge railway lines, the northern periphery of the Melbourne CBD, the Upfield and Craigieburn lines at Kensington, and Footscray. It would also facilitate connections to eastern suburban tram services (12 and 109) on Victoria Parade and DART and other route bus services to eastern and northern suburbs. Access is now more readily obtained with the introduction of dedicated bus lanes on Victoria Parade.

The route 402 extension through East Melbourne would complete access to the inner Melbourne hospital destinations and provide connections with the MCG and sports

precinct and with eastern suburban tram routes 48 and 75. Service frequencies on route 402 have recently been increased with a reported uptick in patronage.

4. Mornington Peninsula to Frankston

Increase frequency on route 788 (Frankston to Portsea) to provide at least a 30 minute 'clockface' timetable coordinated with train arrivals at Frankston. Also harmonise timetables for routes 781, 784 and 785 and boost frequency to at least every 30 minutes on each route, to provide a combined 10 minute headway service between Frankston and Mornington matching the frequency of Frankston train services 7 days a week.

Rationale: Route 788 serves one of the largest catchment populations of any single bus route in Melbourne and is consequently one of the most highly patronised, yet has only a 45 minute frequency on weekdays and 75 minute frequency on weekends. Its main catchment is on Point Nepean Road between Safety Beach and Portsea. It serves low-socio-economic and car-dependent areas, and a locale subject to high levels of seasonal holiday traffic. Currently it is of no use as a commuter service due to its poor frequency. Increases in frequency would precipitate very large increases in patronage and provide a substantial population with additional mobility opportunities and the ability to bypass traffic congestion.

On the northwest Peninsula between Frankston and Mornington / Mount Martha the principal public transport corridor is provided by the three overlapping routes 781, 784 and 785. For one brief period nearly a decade ago, timetables on these three routes were coordinated to provide a combined service between Frankston and Mornington departing at regular intervals of 15 minutes on weekdays and 20 on weekends, matching the Frankston train service provided at the time. Subsequent ad-hoc changes mean the current timetables are neither uniform nor coordinated with trains - services are frequently now timetabled to depart been zero and 4 minutes before trains arrive. Restoring the earlier timetable coordination at a boosted frequency would harmonise the service between Frankston and Mornington and make the most of the 10-minute 7-day service provided on the Frankston trains line.

5. La Trobe University to CBD

Increase frequency of route 350, La Trobe University, Bundoora, to Melbourne CBD. Introduce Sunday services.

Rationale: This service has the potential to provide a good commuter service in an area suffering from increased road congestion because of a lack of good route bus services. There is increased higher density residential development in its catchment area, including the redevelopment of the Amcor site in Grange Road, Alphington. Current peak hour services should be increased to a 10 minute headway (currently 20 minutes).

6. La Trobe University to Glenferrie Station

Introduce a seven day a week high frequency route bus service between La Trobe University, Bundoora, and Glenferrie railway station, via Grange Road, Chandler Highway, Kew Junction and Glenferrie Road.

Rationale: There are no route bus services that cross the Yarra River on Chandler Highway apart from route 609 which only provides 3 or 4 services per day between Hawthorn and Fairfield Monday to Friday. The proposed service would provide vital connections between two major universities (La Trobe and Swinburne), Northland, the schools precinct in Kew and Hawthorn and activity centres, along with two train lines (Hurstbridge and Belgrave/ Lilydale), the 48 and 109 trams and several CBD-terminating radial route bus services.

7. South Morang Station

Provide higher frequency route bus services connecting South Morang railway station.

Rationale: The South Morang railway station was opened in 2012. The first CBD-bound train service runs at 4.24 a.m. on weekdays and a peak time service frequency is 10 minutes from 6.04 a.m. The local bus services (Now routes 562, 564, 569, 572, 573 and 577, along with SmartBus 901) were reviewed to cater for South Morang in April 2012 when the railway station was opened but still do not provide sufficiently frequent services. As a consequence there is significant pressure to increase car parking in the station precinct. There are no connecting route bus services for the early train services and for the most part the buses run on a 20 minute headway with several on a 40 minute headway.

Local Procurement & Jobs

The closure of Victoria's largest automobile manufacturing centres poses a real threat to our economic future. The Andrews Government is already doing a great deal to mitigate this by ensuring future rolling stock contracts have a minimum 50 per cent local content. The rollout of SmartBus mk2 is a perfect opportunity for the government to extend their local procurement agenda by matching these targets. Not only would this provide a much-needed boost to local manufacturing and jobs but it would also help bring our ageing bus fleet in line with environmental and DDR compliance standards.

Powering these new buses from renewable sources will make them part of the move into the clean energy future that Victorians want. The cutting edge technology that would need to be deployed for manufacture here means not only jobs for Victorians, but jobs

that will last—and the creation of local expertise that will be needed in many other areas of the economy in the decades to come.

Electric buses are being deployed internationally.

- A partnership between Seimens & Volvo has been introducing electric bus systems in Hamburg, Stockholm and Gothenburg.[3]
- In Luxembourg six Volvo buses and four ABB automatic e-bus chargers will be integrated into the country's urban public transport system by 2016.[4]
- Recent technological advancements show that battery longevity is no longer an issue: Proterra's new electric bus drove 258 miles on a single charge in a recent test[5]
- In 2015 Brighsun's all-electric bus travelled 1,018km from Melbourne to Sydney, setting a new world record for the greatest distance covered by an electric bus on one charge.[6]

[3] http://www.siemens.com/press/en/pressrelease/?press=/en/pressrelease/2015/mobility/pr2015010104moen.htm&content[]=MO
[4] http://reneweconomy.com.au/2015/abb-microsoft-launch-robotic-fast-charger-for-electric-buses-55767
[5] http://www.fastcoexist.com/3051475/meet-the-electric-bus-that-could-push-every-other-polluting-bus-off-the-road
[6] http://reneweconomy.com.au/2015/australian-all-electric-bus-drives-into-record-books-1018km-on-one-charge-39659