

land use-transport integration in melbourne as if 20/2020 mattered

Submission by

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to

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background

Melbourne's public transport network faces a fundamental challenge. After 25 years of stagnating demand,¹ there is now substantial growth in the number of passengers using the network.² This trend has a number of causes. These range from growing traffic congestion, rising petrol prices, increasing activities in Melbourne's inner suburbs and rail corridors, to greater awareness of the long-term social, economic and environmental wellbeing of the city.

In 2002, the Victorian Government set a policy goal to increase the proportion of public transport out of all motorised trips made within metropolitan Melbourne from 9 percent in 2001 to 20 percent in 2020 (the '20/2020 goal').³ Allowing for population growth, this is an increase in the absolute number of public transport trips by a factor of 2-3, or from 370 million trips in 2004/05 to more than 1 billion per year by 2020.

In the early years since the Melbourne 2030 strategy, work to achieve this goal concentrated on soft measures such as TravelSmart programs for residential communities and businesses, improved passenger information systems and modernisation of station facilities and rolling stock. But in the face of unprecedented growth in passenger numbers and resulting congestion effect on a network not structurally equipped for the task, it has now become obvious that hard measures are needed as well. These include investing in fixed infrastructure to increase capacity, and expanding network coverage and service.

¹ Australian Institute of Urban Studies (AIUS), City of Melbourne (2005) *Environmental Indicators for Metropolitan Melbourne*. Bulletin 8, October

² Betts J (2006), Presentation to the Metropolitan Transport Forum, 7 June

³ Government of Victoria (2001, 2005) *Growing Victoria Together. A Vision for Victoria to 2010 and Beyond*. Available online at www.dpc.vic.gov.au
Department of Infrastructure (DOI, 2002) *Melbourne 2030. Planning for Sustainable Growth*. Available online at www.dse.vic.gov.au
Government of Victoria (undated) *Linking Melbourne. Metropolitan Transport Plan*. Available online at www.doi.vic.gov.au

The State Government's latest transport strategy, *The Victorian Transport Plan*, was released in December 2008. It contains \$38bn of State and Federal Government investment in transport infrastructure until 2020. The plan is the first to include large-scale extensions to the rail network such as a new north-south underground link through central Melbourne; however, it also features approximately 120 km of additional freeways and tollways in the metropolitan area.⁴ Thus the plan falls short of communicating clear priorities as to how car dependence can be reduced through strategic infrastructure investment. Other points of criticism include an insufficient link with carbon reduction targets in the transport sector, an excessive focus on 'big-ticket' infrastructure items in lieu of substantial public transport improvements across underserved local areas, and a tendency to overinflate projected expenditure on infrastructure and rolling stock.⁵

The Metropolitan Transport Forum (MTF), in late 2005, published a transport policy review written by the author of this submission and titled *Most Liveable and Best Connected: The Economic Benefits of Investing in Public Transport in Melbourne*.⁶ The report compares the performance of Melbourne's public transport with international benchmarks, and creates goals and priorities for future public transport investment. More specifically the report identified, and proposed solutions for, some of the fundamental shortfalls in public transport in Melbourne, including:

Network coverage. Melbourne's train and tram networks, though extensive by international standards, are only within walking distance to about one third of the metropolitan population. The development of fixed-rail infrastructure has not kept up with population and spatial growth.

Network connectivity. Interchange hubs, where modes converge and provide convenient transfer to each other, are critical elements in the world's most successful public transport systems. But in Melbourne integration between trams, trains and buses is rare and transfer between modes is usually cumbersome: Facilities are poorly connected in physical terms, and timetables rarely synchronised.

Service standards. By international standards, service frequency on the rail network in Melbourne is unsatisfactory. Outside peak times, there are only 3-4 trains per hour. The new service standard for bus routes successively being introduced across Melbourne, with 7-day services at least every 60 minutes until 21.00, does offer tangible improvements over previous operations but still falls way short of what many other world cities would consider an acceptable service.

Service speed. Both Melbourne's rail and tram systems are among the slowest in the developed world, failing to offer competitive travel times to cars.

The core vision of this report is a public transport system that in 2020:

⁴ State of Victoria (2008) *The Victorian Transport Plan*. Available online at www.transport.vic.gov.au

⁵ Bowen D (2008) Little Difference to most Melburnians. *The Age*, 7 December
Davidson K (2008) The Real Plan is to Push us back into Cars. *The Age*, 15 December
Wakeham M (2008) *What Will the Brumby Transport Plan Mean for Melbourne?* Presentation at GAMUT Forum, University of Melbourne, 10 December

⁶ Scheurer J, Kenworthy J, Newman P (2005) *Most Liveable and Best Connected: The Economic Benefits of Investing in Public Transport in Melbourne*. Metropolitan Transport Forum (MTF), Melbourne, November

- provides convenient, walking distance access to an overwhelming majority of Melbourne's population and jobs;
- caters for most trips by providing links with a maximum of one or two transfers in interchange facilities located within or near activity centres, without excessive detours or long waits for connections;
- operates a standard frequency throughout the metropolitan area, is as legible as a road map and makes studying timetables unnecessary;
- caters for fast, longer-distance trips as well as slow, short-distance movement, and is rarely affected by congestion: express and all-stop trains operate alternately on most routes throughout the day, and trams and buses have priority over road traffic.

In short, the essence of this vision can be described as:

How can Melbourne transform its current 9% public transport system into a 20%-plus public transport system?

In 2006, the author was commissioned by the MTF in collaboration with seven of its member councils in the north-eastern parts of Melbourne (Banyule, Darebin, Manningham, Melbourne, Nillumbik, Whittlesea and Yarra) to develop a more detailed vision for an integrated public transport network of the future. This vision is designed to optimise accessibility based on existing and future land use patterns, and to be capable of delivering on the anticipated growth in public transport demand by a factor of 2 or 3, both in terms of attracting passengers through quality of service, and in terms of actually providing the capacity required.⁷ While restricted to the north-east of Melbourne for the purposes of the study, the philosophy of this vision can easily be transferred to the remainder of the metropolitan area and inform the quest for a less energy-intensive and carbon-emitting, and more socially and economically inclusive urban transport system.

settlement patterns in the study area

The study area is in the north-eastern quadrant of Melbourne and comprises the broader catchment of the Epping, Hurstbridge and potential future Doncaster railway lines.

Local Government areas included in this study are:

- Whittlesea, Nillumbik and Manningham (only the area within the Urban Growth Boundary is considered here);
- Darebin and Banyule;
- Yarra (only the section north of, and including, Victoria Street/Victoria Parade is considered here);

⁷ Scheurer J, Bergmaier R, McPherson J (2006) *Keeping People Moving in Melbourne's North East*. Metropolitan Transport Forum (MTF), Melbourne

- Melbourne (only the City Loop used by the Epping and Hurstbridge lines is considered here).

Settlement Structure

The region contains development patterns ranging from:

- inner suburbs with higher density and mixed use (Yarra and southern Darebin);
- middle suburbs characterised by lower densities and localised services (northern Darebin, Banyule, western Manningham);
- outer suburbs with housing estates and large regional shopping centres (southern Whittlesea, eastern Manningham);
- growth areas at the urban fringe (Whittlesea’s Aurora and South Morang-Mernda corridors);
- established low-density and semi-rural areas at the urban fringe (most of Nillumbik and Manningham’s Warrandyte region).

The Melbourne 2030 strategy identifies 19 higher-order (principal, major and specialised) activity centres in the study area.

Fifteen of these activity centres rely largely on the radial train and tram services for public transport access. Only one of the four others has a frequent bus service connecting directly to rail, leaving the three others with very poor services. Cross-suburban links between all activity centres in the region are generally under-developed.

Melbourne 2030 requires local governments to undertake structure planning in the major activity centres to demonstrate how future growth will be accommodated. To maintain liveability and to ensure that these centres are attractive for developers, residents and businesses alike, a greater share of trips is anticipated to occur by the lower-impact modes of walking, cycling and public transport. Hence, public transport connections of a much higher standard than at present are fundamental to the success of Melbourne 2030 and its goal to absorb a greater share of the city’s growth into existing and new activity centres. Likewise, local governments need the certainty of superior public transport provision to install the planning schemes incorporating transit-oriented development opportunities in activity centres.

Local Government Area	Activity Centre	Existing Public Transport Connection
Banyule	Ivanhoe	Rail
	Heidelberg	Rail
	Heidelberg Medical Precinct	Rail
	Greensborough	Rail
Darebin	Northcote	Rail, Tram 86 (not connected)
	Preston	Rail

Local Government Area	Activity Centre	Existing Public Transport Connection
	Reservoir	Rail
	Northland Shopping Centre	Bus (limited service)
	Latrobe University	Tram 86
Manningham	Doncaster	Bus (variable service)
	The Pines Shopping Centre	Bus (limited service)
Nillumbik	Eltham	Rail
	Diamond Creek	Rail (low frequency)
Whittlesea	Epping	Rail (away from centre), Bus 571 (TrainLink)
	South Morang	Bus 571 (TrainLink)
	Bundoora (RMIT University)	Tram 86
Yarra	Brunswick St, Fitzroy	Tram 112, Bus 200-207
	Smith St, Collingwood	Tram 86, Bus 200-207
	Victoria St, North Richmond	Rail, Tram 78, 109

public transport in the study area

Figure 1 shows the settlement patterns within the study area, and the existing public transport network. For the purpose of this study, a minimum service standard for public transport has been defined, which is an interval of no more than 30 minutes during the day, including Sundays, and continuing services into the evening. Local and international experience suggests that public transport services not meeting this standard fail to function as an effective choice for people's everyday mobility.

Train services

The Epping and Hurstbridge lines (or Clifton Hill group) share one of the four separate city loops in Melbourne's CBD and constitute an operationally self-contained component of the suburban rail system. Both lines are constrained by several single-track sections, outdated signalling and train control systems, sub-optimal patterns of express workings, at-grade junctions between lines at Clifton Hill and Jolimont, and level crossings with major arterial roads. These constraints

affect operating frequencies and commercial speeds, which inhibit competitive advantage over cars, and reduce the potential for increasing passenger numbers.⁸

Both lines currently operate three trains per hour (20-minute intervals) on weekdays between peak hours, except between Eltham and Hurstbridge where there is a 40-minute interval. During peak hours, services on the Hurstbridge line increase to seven and eight trains per hour, and there are some express services in the peak direction. The Epping line has no express services and only a maximum of four trains per hour during the peak. Peak hour timetables and express running patterns are generally irregular and hard to memorise for passengers.

Tram Services

Two tram lines service the study area: Route 86 between the CBD and Bundoora RMIT, and Route 112 between the CBD and West Preston. The service frequency of these lines is 8 trams per hour (every 7-8 minutes) on weekdays between peak hours, which is reasonable by international standards. However, trams are slowed down considerably in mixed traffic, particularly on the inner suburban sections.

Both routes run parallel to the suburban section of the Epping line within 500 metres in High Street (86) and St Georges Road (112), roughly between Clifton Hill and Thornbury. However, neither tram line provides a convenient, co-located and adequately signposted transfer point with rail. Hence, trains and trams do not integrate well to work as a multi-modal system in this corridor. Tram passengers cannot easily transfer to a faster train and are forced to endure longer travel times on their way to and from the city, and train passengers have to make a detour through central Melbourne to access the tram-based activity centres in Fitzroy and Collingwood.

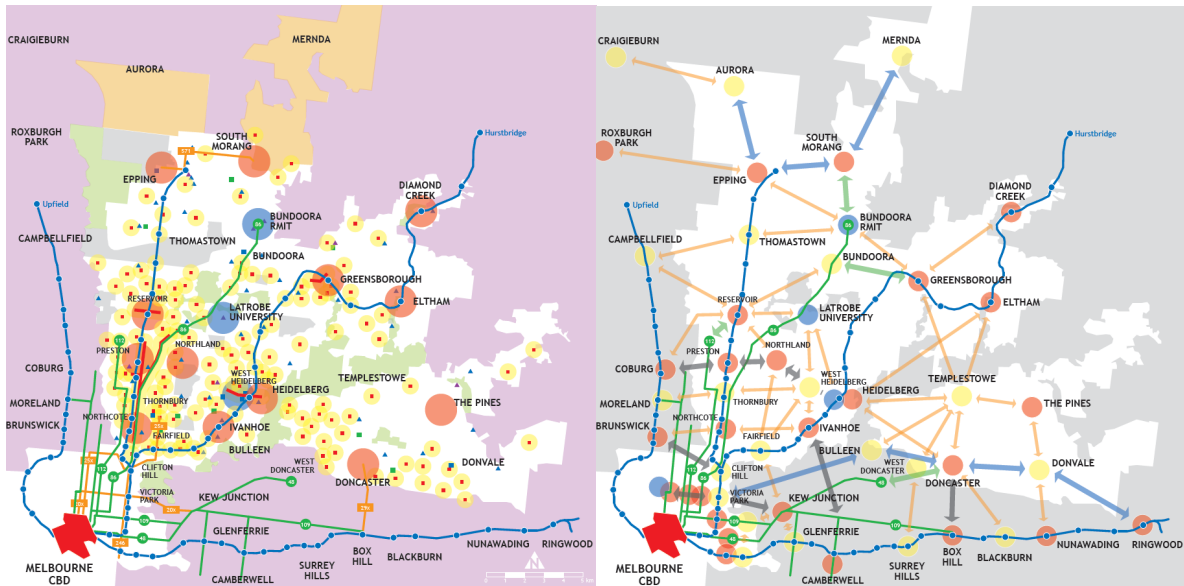
The trunk rail section between Clifton Hill and Jolimont intersects with tram route 109 at North Richmond and with tram routes 48 and 75 at Jolimont; however, most Hurstbridge trains do not stop at North Richmond. Again, an opportunity for integration between trains and trams is partly lost.

Bus services

There are only four bus routes in the catchment area of the Epping and Hurstbridge lines operated at frequencies and service hours similar to or better than the rail lines. They are:

- the trunk of routes 200-207 between the city and Kew Junction via Carlton (Lygon St) and Victoria Park,
- route 246 between Clifton Hill and St Kilda via Hoddle Street and Punt Road,
- the trunk of routes 250-251 between the city and East Northcote via North Carlton (Rathdowne St) and Clifton Hill - Westgarth, and
- route 571 (TrainLink) which operates a precursor service to a future rail extension between Epping and South Morang.

⁸ Department of Infrastructure (2004) *Clifton Hill Rail Group Review. Phase 1: Identification of Network Capacity Issues*. December, available online at www.doi.vic.gov.au



- Boundary of Study Area
- Growth Area
- Regional Open Space
- Industrial Area
- Principal/Major Activity Centre
- Specialised Activity Centre
- Neighbourhood Centre
- Secondary Education
- Tertiary Education
- Hospital
- Community Centre
- Rail Line
- Tram Line
- Full-Service Bus Line

Figure 1: Existing public transport network (to the minimum service standard specified) and land use pattern in Melbourne's north-east.

Figure 2: Activity centre structure and missing links in the public transport network, with categorisation into primary radial links (blue), secondary radial links (green), primary orbital links (grey) and secondary orbital links (orange)

easy wins – city loop and timetable reconfiguration

This initial package of measures can be made in the short term without adaptations to infrastructure. They would greatly improve legibility and memorability of operational patterns and timetables for passengers, and substantially increase services outside peak hours.

1. **Run the Epping and Hurstbridge lines through the City Loop in a clockwise direction at all times.** This eliminates the at-grade crossing of trains west of Jolimont and should boost the Epping/Hurstbridge City Loop capacity to that of the other three loops (currently 22 trains per hour, with a target of 26 after signalling system upgrades). This measure was implemented by State Government and Connex as part of system-wide timetable improvements in November 2008.
2. **Discontinue non-stop running on the Clifton Hill-Jolimont section** to allow more train paths and transfer opportunities from trains to Johnston Street bus routes (200-207) at Victoria Park, and to Victoria Street trams (109) at North Richmond. This will improve network connectivity in the inner north.
3. **Increase rail frequencies between peak hours on both lines from three to four trains per hour** (15-minute headways, or 30 minutes between Eltham and Hurstbridge). This would lift the service level on the Epping and Hurstbridge lines to that offered on the Ringwood, Glen Waverley, Dandenong and Frankston lines. It is a crucial step towards system-wide service integration, and makes transfers easier by enabling bus routes connecting several rail lines to operate at matching frequencies. The duplication of the bottleneck between Clifton Hill and Westgarth on the Hurstbridge line, opened in January 2009, removed a critical obstacle to this measure.
4. **Continue this regular 15-minute service with the same departure times through peak hours, on weekends and into the evening** to make the service more legible to passengers and more integrated with connecting bus services. During peak hours services can be doubled to 8 trains per hour where feasible, while during times of low demand (late evenings and early Sunday mornings) they can be halved to 2 trains an hour without changing the basic schedule.

regional bus network development

There is currently only one bus route in the study area that can aptly be described as a functional and full-service rail feeder (route 571 TrainLink between South Morang and Epping). However, *Meeting our Transport Challenges* and the *Victorian Transport Plan* have addressed this gap and propose a network of orbital SmartBus routes to be introduced between now and 2012.⁹ Ultimately, three SmartBus routes will pass through the region.

The MTF report lent support to this concept, but made the following reservations:

- The SmartBus network will not be sufficient to attract 20% of motorised trips to public transport in the region if it remains the only substantial network improvement between now and 2020, and must be complemented by further investment in rail, tram and local bus routes;
- This study recommends that the roll-out of the SmartBus route network and service level improvements should occur more quickly than described in *Meeting our Transport Challenges*, even if this leads to a gradual phase-in of the bus priority measures, accessible stops and passenger information systems at a later stage.
- The geographic structure of the proposed SmartBus network limits opportunities for transfers between the different routes, and creates extremely long lines that are difficult to operate. Arranging the SmartBus routes in a more interlaced (rather than concentric) pattern, as shown in the diagrams, will create a more interconnected network, integrate the activity centres better and enable shorter lines that are easier to operate and more in tune with the travel needs of users.

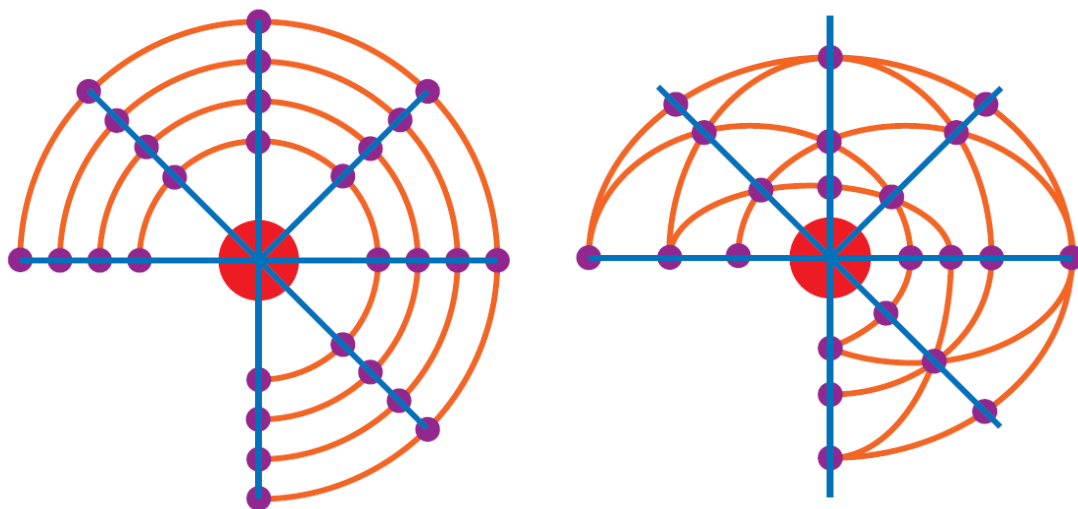


Figure 3: Concentric (left) and interlaced (right) pattern of orbital routes

⁹ State of Victoria (2006) *Meeting our Transport Challenges: Connecting Victorian Communities*. Melbourne, May
State of Victoria (2008) *The Victorian Transport Plan*. Available online at www.transport.vic.gov.au

rail duplications and extensions

The rail network is the backbone of the public transport system with its characteristics of high capacity and dedicated right-of-way, offering a real opportunity to provide travel times that are competitive with the private car. Rail has the ability to drive land use change and underpin higher-density and mixed uses, such as transit-oriented development.

The recommendations for developing the rail network in the study area between 2006 and 2020 are as follows:

Double Tracking

- Clifton Hill-Westgarth (Hurstbridge Line), completed in January 2009
- Heidelberg-Rosanna (Hurstbridge Line)
- Keon Park-Epping (Epping Line), now committed in the *Victorian Transport Plan*

Eliminating these bottlenecks is critical to enable greater service reliability, higher-frequency services and all-day express trains on both lines.

In all three cases, land reserves for duplication exist, but the Heidelberg-Rosanna section requires the replacement or reconstruction of a short tunnel.

Whittlesea Rail Extensions

- Epping-South Morang (short-term), now committed in the *Victorian Transport Plan*
- Lalor-Aurora (medium-term)
- South Morang-Mernda (medium-term)

These rail extensions service the rapidly growing new housing areas in Whittlesea and support their new town centres in South Morang, Aurora and Mernda. They can help make public transport a backbone to mobility in these areas, not just for travel to and from central Melbourne, but also between activity centres within the growth corridors. New and existing stations along these extensions will be located in the heart of these activity centres and feature well-designed transfer facilities to buses.

Doncaster Corridor Rail

- Victoria Park-Doncaster Hill-Ringwood

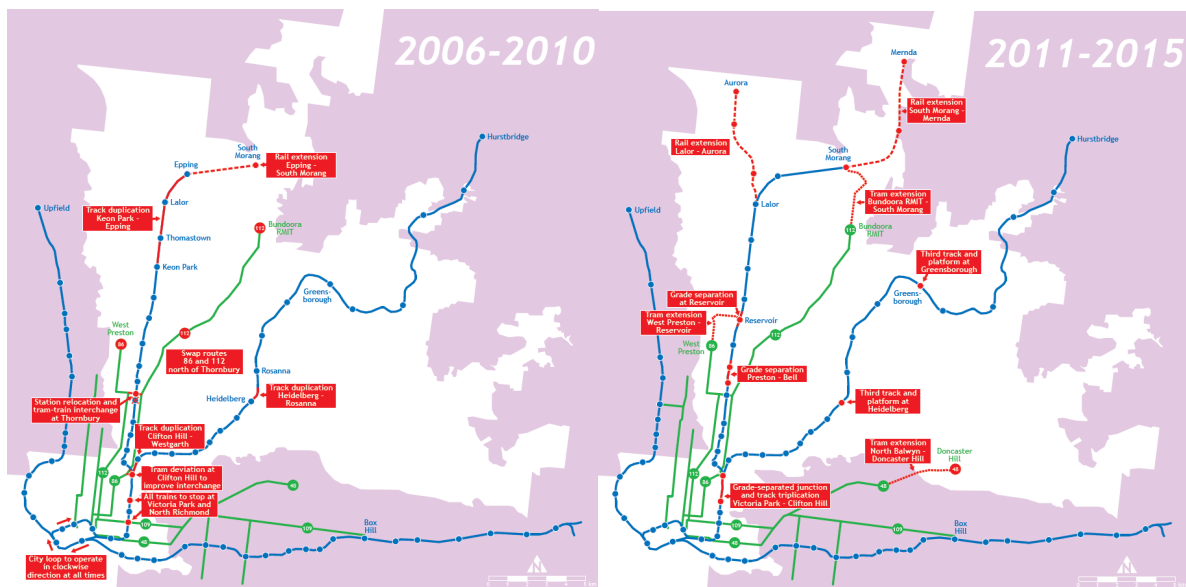
A Doncaster branch railway line was planned in the late 1960s, and space for a double-track railway was reserved in the median of the Eastern Freeway when it was constructed during the 1970s. Of the 25 principal activity centres identified in the *Melbourne 2030* strategy, Doncaster (along with Chadstone, Northland, Fountaingate and Knox) is one of only five without rail or tram access, and possibly the one closest to accommodating a full range of town centre uses. Manningham, the local government area for Doncaster, is the only council in metropolitan Melbourne with no rail or tram services.

A continuation of the Doncaster rail line to Ringwood would result in a better balance of passenger flows on the new corridor, provide relief for the heavily used Belgrave and Lilydale lines, and offer all-day travel time savings between Ringwood and the city of 9 minutes. The introduction of a third branch route into the Clifton Hill route at Victoria Park remains within the capacity of the City Loop, provided each line contributes eight trains per hour during peak hours.

Further Projects

The MTF report further raised for discussion:

- upgrades to train-tram interchanges at Clifton Hill and Thornbury to create seamless connections;
- extensions of existing tram lines to access nearby activity centres in Reservoir, South Morang and Doncaster;
- construction of a fully grade-separated junction for all three rail branch lines north of Victoria Park, construction of third tracks and platforms between Victoria Park and Clifton Hill, and at Heidelberg and Greensborough stations (These measures require the reversal of the Hurstbridge Line north of Victoria Park to right-hand operation.);
- rail and road grade separation projects in busy activity centres where bus and tram routes can benefit, and where surplus land or air rights can be sold for redevelopment (Preston, Reservoir and Fairfield);
- conversion of busy orbital bus routes to trams where redevelopment opportunities exist along linear corridors (Carlton-Victoria Park-Kew Junction, Moonee Ponds-Brunswick-Clifton Hill, Coburg-Preston-Northland-Heidelberg).



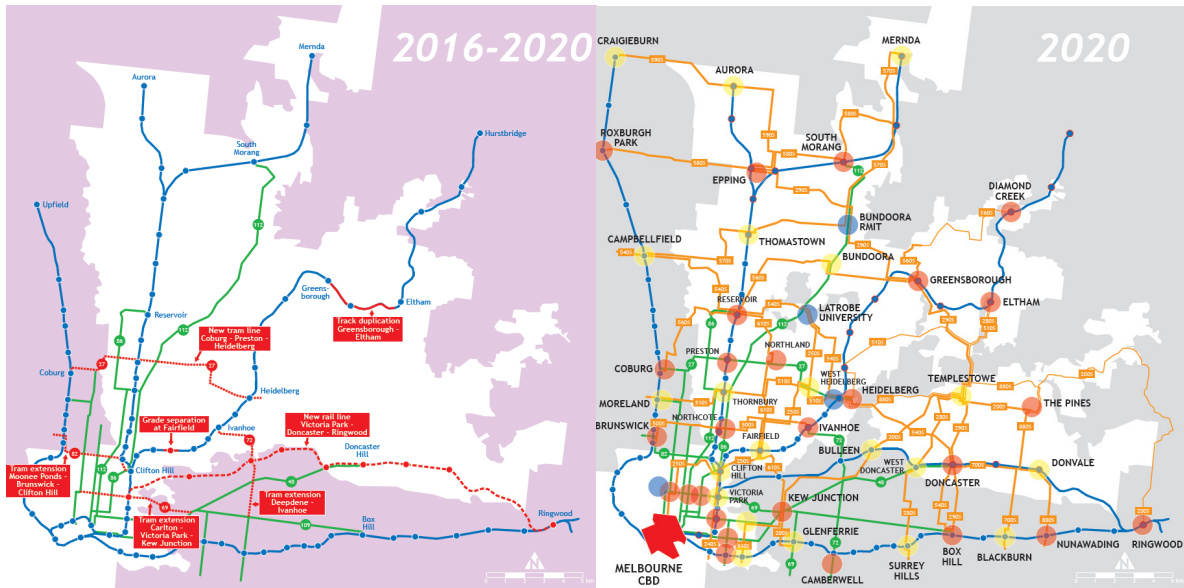
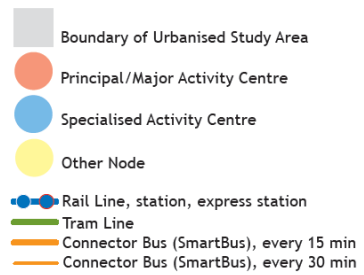


Figure 4, 5 and 6: Proposed physical infrastructure improvements in three steps according to Keeping People Moving in Melbourne's North East

Figure 7: 2020 target network with activity centre structure



Conclusion

Keeping People Moving in Melbourne's North-East put forward a strong case for stimulating and supporting Melbourne 2030 and the goal of serving 20% of motorised trips by public transport by 2020.

The report argued that there is a good base of public transport infrastructure in the region, but many of its components stem from the past and have not kept pace with urban development and the changing needs of the travelling public. In particular, the report highlights the following main problems with the existing public transport system:

- **insufficient coverage of the urban area** by frequent, full-time services puts a sizeable proportion of residents and jobs out of reach of public transport;
- **insufficient connectivity** between higher-order activity centres and between the routes of different public transport modes makes orbital and transfer trips onerous or impossible;
- **poor service frequencies** (trains and buses) **and operating hours** (most bus routes) limit spontaneous use of the system and make it unattractive for discretionary trips;
- **uncompetitive operating speeds** mean that only a small proportion of trips on public transport are faster and more reliable than by private car.

To overcome these shortfalls, it is proposed that a 20%-plus public transport system in Melbourne should:

- put a large majority of residents and jobs within a 10-minute walk from a train station, or within a 5-minute walk from a tram or bus route with at least four services per hour per direction during business hours;
- be configured to allow passengers to travel along geographical desire lines with a minimum number of convenient, coordinated transfers at legible interchanges;
- operate at predictable intervals at specified times of the day and week, in multiples or exact portions of 15 minutes, and is identified by this quality;
- offer opportunities for faster movement, achieved by introducing all-day, bi-directional express services to train lines, affording trams and buses priority over road traffic, and developing transfer routes that help passengers combine the speed advantage of trains with the ability of trams and buses to provide close access to homes and destinations.

A strategic and determined approach to achieving the goals of Melbourne 2030 and the Victorian Transport Plan is needed. This means pursuing public transport institutional reform and infrastructure development to address local and regional economic, social and environmental needs, as well as integrating and connecting transport modes to enable people and businesses to organise their lives and travel needs around an efficient and user-friendly public transport service.