30 WINTER 2023

NEWS POST

RAIL FUTURES INSTITUTE INC - QUARTERLY NEWSLETTER

IN THIS EDITION

CBTC - SIGNALLING MILESTONE

History was made shortly after 11.00am on Tuesday 01 August, 2023 when HCMT train set # 26 ran the first trip carrying passengers using the new CBTC high capacity signalling system between Clayton and South Yarra en route on a special direct trip to Flinders Street.

Photo – Courtesy Chris Gordon

CONTRIBUTING TO RFI NEWSPOST

Members are invited to submit news articles and opinion pieces, plus reports of construction activities on transport projects. Submissions should be no more than 800 words. Members photos of current rail / tram activities are also welcome in jpeg or png format. Contributions may be edited to fit the available space. RFI reserves the right to edit / decline articles it considers not appropriate. Please forward all submissions to: secretary@railfutures.org.au

Opinions expressed in RFI Newspost are those of the individual authors and do not necessarily reflect the views of the Rail Futures Institute (Inc) . (RFI)

Editor - Val Sands *Publisher - David Hardy*

Picture of the Quarter:

Aerial view of the Through Suburban Lines at South Kensington diverging to enter the West end tunnel portal into the now connected Metro 1 tunnel running from South Kensington to the Eastern tunnel portal at Hawksburn.

Photo – Rail Projects Victoria

Since our last edition of RFI Newspost test trains have commenced trial running through the full length of the Metro tunnel at speeds up to design speed of 80 km/h.

PRESIDENT'S WORDS -

John Hearsch

" A REAL Tram Plan for MELBOURNE "

Whilst the Government's Tram Plan focuses on acquisition of new trams, improvements to tram stops and use of improved technology, it is totally devoid of any detailed proposals to revitalize and expand the network to help meet the challenges arising from Melbourne's rapid population growth.

The Government Plan claims to set out a vision for the city's tram network but then fails to actually do so ! This need is now more urgent than ever given the government's mooted reforms of the planning system to facilitate increased densification in established areas. The tram network is already struggling to cope with patronage growth, and some hard decisions will also have to be made about prioritizing trams over cars in the re-allocation of existing limited available road space.

Melbourne's 250 route-km tram network (the world's largest) is key to Melbourne's famed livability and the envy of cities around the world. It is the *"Jewel in the Crown"* of Melbourne's public transport system. The tram network carries almost as many passengers annually as the train network despite serving a much smaller geographic area. It is an irreplaceable asset with a replacement value today of over $55 billion.

Outside of Docklands, the network has seen only limited expansion since the 1950s, with many tram routes still terminating at "nowhere in particular". It now needs major development to match Melbourne's current size and projected growth by expanding coverage beyond established and inner suburbs, to serve new activity centres, employment hubs and better connecting with the train and bus networks.

Plan Melbourne 2017 – 2050 sets out the Government's metropolitan planning strategy that defines the future shape of the city over the next three decades. Policy 3.1.2 of the Plan specifically calls for *"extending tram lines improving tram travel times, reliability and capacity to support major movements of people by gradually transforming to a light-rail system with increased right-of-way, more accessible, low-floor, high-capacity vehicles, and level-access stops."*

A Tram Plan should encompass all these elements inclusive of project scope descriptions, projected timings and how the Plan complies with relevant provisions of the Transport Integration Act (2010).

Several short distance extensions of existing tram routes would aid greatly in enhancing public transport connectivity. Addition of short missing sections of track in Park Street, South Melbourne, Victoria and Arden Streets coupled with a restructure of tram routes within the Hoddle Grid would increase network capacity and offer a range of new tram travel opportunities. The CBD tram network also needs early extension into the Fishermans Bend precinct and west along Spencer Street to serve both North Melbourne and Arden stations, and Arden Development Precinct.

Operational issues also need attention, with 75% of the tram network being on-street, with low speeds averaging 6 to 16 km/h due to sharing road space with cars. Only 18 % of the network has a segregated right-of-way. Trams are hampered by road congestion (adding up to 40 % to trip times) and traffic management policies that prioritize cars over people. This diminishes benefits, increases operating costs and results in poor tram fleet utilization. A modern E class tram with capacity for 210 passengers occupies about 40 metres of road space and has the same practical capacity as 190 cars each carrying an average of 1.1 persons and occupying over one kilometre of road space.

The Rail Futures' *2020-2050 Melbourne Rail Plan* (the only comprehensive blueprint for Melbourne's public transport in the continued absence of an overall Government Transport Plan), contains detailed recommendations for Melbourne's Tram network. The RFI Tram Plan includes short and longer distance route extensions and an enhanced CBD tram network largely segregated from other traffic. It would transform the existing largely radial network into part of a future grid network of DDA compliant multi - modal public transport services operating to turn up and go frequencies, with extended hours of operation and new passenger friendly interchanges with the train and bus networks.

SAVIOUR OF BROAD GAUGE FREIGHT ?

- Max Michell

N – Class Diesel Electric locomotive

In mid August V/Line issued an Expression of Interest (EOI) for lease of surplus N and P class locos for use on Victorian broad gauge (BG) freight services. Not just any BG freight services but only NEW BG freight services (i.e the locos cannot be used to replace locos on existing services but must only be used on new bg rail freight services). To add to the intrigue three of the four initial N class locos available are currently on standard gauge (SG) and therefore will require gauge conversion before anything else happens. Although the objective of the EOI is well intentioned the execution would seem to be somewhat flawed.

In recent years (since around 2020) the BG rail freight task has shrunk quite considerably – loss of the Deniliquin rice traffic (too many track shutdowns), Dandenong cement (pathing and track shutdowns), part of the Maryvale paper task (mainly a manufacturing issue), much of the Ultima 'hay' traffic (both demand and rail service reliability issues), part of the Long Island coil steel traffic has reverted to ship (again persistent track shutdowns) and most notably a large part of rail's share of grain traffic coming off the BG network to Geelong and Melbourne for export has gone to road (seasonal traffic demand, protracted line shutdowns, and limited BG rail freight capacity). Even the Warrnambool and Tocumwal container trains have been repeatedly disrupted by track closures but have hung in there, but incurring additional costs with reduced throughput on rail.

Given that much of this traffic loss has been as a result of prolonged track shutdowns and pathing limitations, I wonder quite how a small coterie of second-hand locomotives can be expected to reverse the situation ? The restriction of loco use to 'new' traffics makes the position even more improbable – even if 'new' allows for traffic previously on rail it is hard to see how these locomotives will enable a recovery without a lot of attention to the underlying on-going track shutdowns and pathing restrictions.

Rail freight may not require the same 'to the minute' reliability as do passenger trains, but it does require consistent performance in line with the agreed schedules. Particularly export freight (the regional container trains) cannot be 'stored' until the railway is again functioning – it is being despatched to meet a ship which is running to a definite timetable. If rail freight can't provide that certainty, then the container will have no option but to go by road – once it goes by road it the whole traffic task may well switch to road so as to get the required reliability of delivery to port. Loss of the Deniliquin rice traffic to road is a classic case in point.

The key issues for the residual BG Victorian rail freight network is that it is short haul (by conventional measures), it is limited to existing resources (enhancement of loco or wagon numbers takes time and money) has to compete with frequent passenger train services on many track sections with limited or no installed spare capacity and/or has to deal with a degraded and in some cases barely fit for purpose freight network outside of the passenger network. To overcome these 'obstacles' BG rail freight has to become as lean as possible, with a cost structure that remains attractive to shippers despite the institutional blockages. There are some aspects of the recent EOI that really seem to miss this fundamental point.

The initial offering is four N class and three P class locomotives. Putting aside the low powered P class for now, the EOI identifies that three of the four N locos will need to be converted from SG to BG at the proponents expense (estimated as $170k each), while all four require a major overhaul worth approximately $1.2m each – so the starting price to even get a reliable mid - range second hand loco is around $1.2m - $1.4m before it does anything. That sort of impost, spread over the limited efficiencies able to be achieved on the BG network, will go a long way to shutting down commercial interest in leasing these locos. If that is not enough the more astute proponents will sense that by waiting they might get a BG N - loco from the second tranche that does not need the $170k gauge conversion – a handy saving if the pricing issue is marginal. The fact that a significant investment is required to get a loco that in the end ownership will revert back to the State will not have escaped attention. All these issues alone will make the job of 'selling' the EOI to potential commercial broad gauge rail freight operators rather fraught.

It is suspected that the existing BG freight operators (PN, QUBE, SSR) will all have their own strategies for dealing with the BG network – ranging from getting out of it altogether (it is notable Aurizon, which has returned to the Inter-modal fold recently, has no intention of doing anything on BG) to continuing on with BG as long as the existing resources survive or to having a perpetuation policy involving low cost investments appropriate to the small Victorian bg freight network and traffic base.

Whatever happens I would be surprised if there is any serious uptake of the initial offer in its present format. Commercial rail freight operators have a quite different outlook on life than does the State owned and operated passenger network. Assets modest in their earning capacity, requiring a hefty initial investment, are not likely to engender much serious interest in the face of a number of alternative strategies in handling the low volume BG freight task.

P – Class Diesel Electric locomotive

INLAND RAIL WORKS NEARER

Inland Rail has announced a contractor shortlist of three – CPB Contractors, John Holland and McConnell Dowell who will now develop their final designs and detailed tender submissions for Inland Rail works for a second tranche of Victorian works to be undertaken at Wandong, Broadford, Tallarook, Seymour, Euroa, and Benalla.

In Victoria, works will be undertaken at twelve locations to allow for double-stacked container freight trains to operate in the North Eastern corridor.

McConnell Dowell is already delivering awarded Stage -1 contract works at Seymour, Glenrowan, Barnawartha North, and Wangaratta.

The preferred contractor for the latest tendered Stage – 2 works will be announced in 2024, with construction works to follow in 2025.

Further ARTC will shortly call tenders for works at a further eight Victorian sites to determine who will do the capital works at those locations. Works already contracted at the four Stage 1 sites are already well under way.

- *Photo Fergus Moffatt*

ADELAIDE - GAWLER LINE GOES ALL ELECTRIC

Adelaide's suburban Gawler line went all electric from mid – August with the delivery of a tenth 3 car EMU set from Alstom allowing for the previous mix of EMU and DMU services to now go all electric. Two further 3 car EMU sets will join the total Adelaide Metro fleet over the coming months bringing it up to a total 34 x 3 car trains providing electrified services on the Gawler, Flinders and Seaford lines. (The Adelaide Metro Network is operated by Keolis Downer for the South Australian government .)

The extension of electrified operations to three lines brings benefits in:

- cleaner and greener high-performance trains
- an improved travel experience with quieter, faster and improved ride qualities for all passengers.
- improved operational reliability and safety
- reduced noise and elimination of diesel emissions for residents along the three rail corridors and their stations.
- Lower electric energy consumption through the ability to use regenerative braking installed on the new electric trains. (Regenerative braking is where the EMU trains traction motors are used to brake the train generating electric current which is returned to the overhead line).
- Electric services tend to attract higher patronage encouraging more car commuters to use public transport. Still to be converted to EMU operation are the Belair line, and also the Outer Harbour line and it's branches to Grange and Port Dock.

Between the Federal and South Australian governments electrification of the Adelaide metro network has sadly become a rather drawn out "Blue Hills" saga that Gwen Meredith would be proud of. By comparison electrification of both the Perth and Brisbane metro rail networks has been completed in a much shorter overall time frame.

- *Photo State Library S.A.*

GLEN HUNTLY ROAD RE-OPENS Boom Gate FREE

Glen Huntly Road has re-opened mid July boom gate-free – with cars, trams, pedestrians and cyclists able to cross the rail line again with the removal of two level crossings including a former tramway square.

The former level crossings were two of the busiest in Melbourne with boom gates down for around 60 per cent of the morning peak as up to 40 trains on the busy Frankston line ran through both crossings.

As well as the level crossing, the tramway square at Glen Huntly Road – where trams, trains, and road vehicles all previously intersected at grade, has been removed, allowing Route - 67 Carnegie trams to achieve faster transit times through the Glen Huntly station area.

Since early June LXRA staff have worked around the clock to excavate more than 160,000 cubic metres of soil, the equivalent of 64 Olympic swimming pools, to form the three track rail trench over 1.2 kms long. Neerim Road re-opened early in July and works then proceeded to lay ballast and tracks, install signalling and build other rail infrastructure as well as laying more than 30,000 bricks for the brand-new Glen Huntly Station.

Buses replaced trains on sections of the Frankston Line until early August when trains ran through the new rail trench for the first time, stopping at the new 3 platform Glen Huntly station.

More than 20,000 road vehicles travelled through the two former level crossings each Weekday. The current expectation is that all 27 level crossings on the Frankston Line will be grade separated by 2029.

A Down Frankston train emerges from the new Glen Huntly station

Photo Rod Watson

SMART TECH's ROLE IN MELBOURNE TRAM NETWORK

In this day and age, smart city initiatives are everywhere; but despite this technology becoming more and more commonplace, a recent questionnaire from the University of South Australia found that over half of South Australian residents don't understand what a 'smart city' is, with similar results found in the UK. However, real-world results are beginning to emerge from smart city initiatives – such as Melbourne's iconic tram network trialing innovative new technology – bringing the technology to the public eye.

Managing Melbourne's trams with smart tech

In Australia, one example of smart city technology benefiting citizens is Melbourne's Yarra Trams, operated by Keolis Downer. Yarra Trams has recently partnered with Madison Technologies to leverage IIoT solutions to create efficiencies in the way they manage the tram network, including tram safety and speeds.

Across the Yarra Trams network, junction pits fill with both water and debris, requiring an on-going labour intensive to keep the pits refuse free. Yarra Trams sought a solution that can detect water and solids that have built-up in these junction pits, creating more efficient maintenance programs.

Secondly, during extreme weather events that bring high temperatures, the 40 kilometres of ballasted tracks managed by Yarra Trams are susceptible to buckling and need careful monitoring. Before a visual inspection can be completed, tram speed restrictions must be implemented to keep commuters safe, which can lead to operational delays.

Smart Tech Solutions in Action

For the initial pilot program, Madison Technologies provided two solutions for Yarra Trams, leveraging IIoT technologies from Australian manufacturer, Kallipr. The first, the junction pit monitoring solution, provides up-to-date data on the levels of water in the junction pits. If a pit is full of water and not draining, alerts are automatically sent, and maintenance teams can then react quickly to clear the water.

The second solution carefully monitors track temperatures across sections of the track that are susceptible to buckling. Sensors monitoring the ambient air and rail temperature provide frequent data points back to the Yarra Trams Operations Centre, allowing for informed decision making when applying network speed limits, and also reducing the reliance on visual inspections of track.

Both solutions use low-cost, low-power devices to enable remote monitoring and measurement, leveraging Telstra's M2M NBIoT / CatM1 network to send small packets of low-cost data, making the overall solutions incredibly cost effective. The pilot program has given the opportunity to learn more about the technology and its possible further uses, whilst lowering the risks connected with introducing a new technology. Yarra Trams can apply these learnings and easily scale the technology across the network for other monitoring applications.

Based on material from Madison Technologies.

ADDITIONAL V/LINE WEEKEND RAIL PASSENGER SERVICES

As at : Mid – September, 2023.

WYNDHAM VALE LINE:

Down: 1530 & 1730 Saturday and Sunday
Up: 1021 & 1221 Saturday and Sunday

MELTON LINE:
Up: 1043 Saturday & Sunday

BENDIGO LINE:
Up: 0944 Saturday & Sunday

ALBURY LINE:
Down: 1422 Sunday
Up: 0845 Saturday

KILMANY RAIL BRIDGE UPDATE

Existing Kilmany two lane road over rail overpass at Kilmany - *Photo Rail Projects Victoria*

Late August 2023 and the new single track rail over road bridge has been placed into final position. - *Photo Rail Projects Victoria*

Artists impression after excavation under the new rail bridge is complete showing the future duplicated Princes Highway.

- *Photo Rail Projects Victoria*

ANSWERS TO RAIL QUIZ - Autumn Edition - 2023

1. Where is the tram stop in Melbourne that is only accessible by a single set of stairs (no ground level access) ?

Stop 31 on routes 5 and 64, called variously Queens Way or Upton St, where the trams run in the centre of Queens Way which becomes Dandenong Rd at Chapel St. The only access is a long set of steps from the Upton St overbridge.

2. How many of the 24 scheduled Melbourne tram routes (counting 3 and 3a as one route) terminate at places that include a cardinal compass point in their name ?

Exactly half the tram routes terminate at a place with a cardinal point in its name – East Coburg (Route 1), East Malvern (3, 3a), West Preston (11), North Coburg (19), North Balwyn (48), West Maribyrnong (57), West Coburg (58), Airport West (59), East Brighton (64), Vermont South (75), North Richmond (78), and East Brunswick (96). Coburg is the most visited suburb with trams terminating at East, West and North Coburg.

3. Where, if anywhere, can you get a taxi for some distance at V/Line fares (now no more than $ 10 . Road replacements of scheduled trains do not count in this case ?

If you travel with V/Line from Mt Beauty to anywhere past Bright, you will be given a taxi ride to Bright to connect with the V/Line coach..

4. How many scheduled loco hauled passenger trains now operate on Standard Gauge in Australia ?

The simple answer is three (3) trains - Indian Pacific, Ghan and Overland, which between them normally run eight single trips per week. No more than five locos are involved, all NR class from the Pacific National fleet. There are some residual loco hauled trains on Narrow Gauge (Queensland) and on Broad Gauge (Victoria) and the seasonal Great Southern but otherwise everything else is some form of multiple unit EMU or DMU train.

5. What percentage of the national loco fleet is made up of modern AC traction diesel electric power ?

The total national loco fleet in 2022 was estimated as 2080 locos inclusive of the four major mining railways in the Pilbara. A total of 824 AC traction d.e. locos were recorded in that year – just under 40% of the fleet. Interestingly the North American fleet was 47% AC traction out of a total fleet of 25,400 locos around the same date. Given the concentration of AC locos in iron ore and coal haulage in Australia it is probable that around 80% of our national rail freight tonnage is hauled by these modern locos. These locos are found in large numbers on both narrow and standard gauge but there are none on broad gauge

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SRL PACKAGE OUT TO TENDER

Tenders for the next major works package for the Suburban Rail Loop (SRL) East between Cheltenham and Box Hill were recently called – with Expressions of Interest sought for high-tech trains, signaling and rail systems, and a 15-year term to operate and maintain the new network.

The state-of-the-art trains will provide a reliable and frequent turn-up-and-go service using the latest in world best practice technologies.

The four-carriage trains will work seamlessly with the platforms and signaling systems, delivering a world-class Metro experience from the moment passengers enter the SRL stations. The trains will include the latest safety features and passenger information systems, as well as improved wheelchair access with level boarding and platform screen doors at each station.

This tender for the trains, signaling and network operation and maintenance has already generated strong international interest from around the world. Construction of SRL East is proceeding with works underway at Box Hill, Burwood and Heatherton, and starting soon at Monash.

The new SRL East will be carbon-neutral and also set new benchmarks for sustainability, with the trains powered by 100 per cent renewable energy, and each of the six stations to have at least a 5-Star Green Energy rating.

V/LINE RAIL PATRONAGE SOARS

After the first three months of the daily capped maximum fares on V/Line of $10 Single or return ($ 5 Concession) the uplift in patronage has been dramatic.

V/LINE	2022	2023	% Change
April	1.1 m	1.5 m	40 %
May	1.1 m	1.7 m	60 %
June	1.1 m	1.6 m	45 %
Total 3 months	**3.3 m**	**4.8 m**	**45 %**

On the Albury Line additional 3 car Vlocity trains have operated on Weekends as an 0845 Up on Saturdays arriving Southern Cross at 1230; and a 1433 Dn on Sundays arriving Albury at 1816. The new trips have been well supported with back up coaches still being required to many weekend trains. Additionally ALL Albury weekend trains are to be seat booked from mid-September on a trial basis for some months.

UPDATED EAST / WEST METRO RAIL CONCEPT

Over recent weeks the RFI has fine tuned our East – West Metro Rail proposal in that the key features now include :

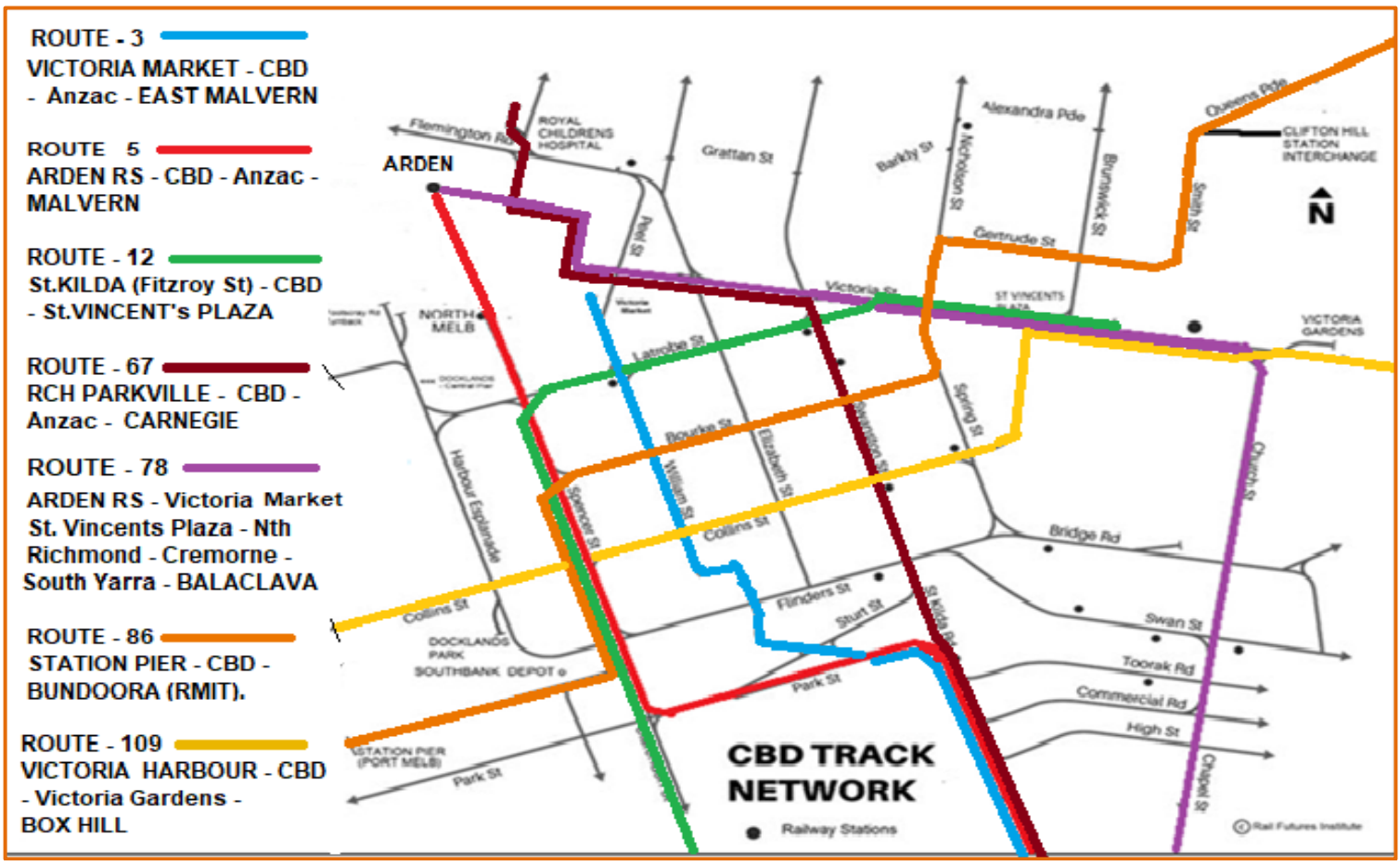
- NEW Metro line from the South West via the CBD to the North East
- NEW Metro Trains passenger service between Spotswood and Sunshine
- Interchange between Metro 1 BLUE & Metro 2 RED at BOTH Sunshine and Parkville
- Connects Fishermans Bend Precinct to the CBD, South West, Parkville & North East
- Interfaces at Southern Cross with V/Line regional trains and coaches
- Interfaces at Southern Cross and Flagstaff with other suburban lines
- Interfaces with CBD Tram and Bus networks at key stations
- Connects at Parkville and Sunshine with Metro 1 BLUE to / from Melbourne Airport
- Extends MTM trains to Epping Central, Epping North, Aurora and WOLLERT
- Extends MTM trains to WYNDHAM VALE and MELTON
- Provides MTM train services between Werribee, Black Forest Road and Wyndham Vale

POTENTIAL NEW CBD & INNER AREA TRAM TRAVEL OPPORTUNITIES

With the opening of Metro – 1 in 2025 RFI proposes both an extended and upgraded CBD and Inner Suburban Tram network to increase the carrying capacity of the tram network and offering a much wider range of trip choices outside of existing limited choices.

The re-structured tram network would :

- Offer increased carrying capacity, and better fleet utilization
- Separate cars and trams to a much greater degree, reducing travel times
- Add missing track sections in Park St (South Melbourne), Victoria and Arden Streets
- Link the CBD to both North Melbourne and Arden stations
- Extend the CBD tram network into the FISHERMANS BEND and ARDEN precincts
- Offer hundreds of new trip options in developing a CBD and Inner Suburban GRID network of Train, Tram and Bus services operating to Turn Up & GO frequencies with extended hours of operation
- NEW CBD tram trip options outside of the existing North/South and East/West trips
- Full DDA compliance for both tram fleet and stops



NEWS PIX FROM AROUND THE TRAPS

Single to Double track junction at Longwarry.

- *Photo Jonathan Scutt*

Yet to be commissioned new future second platform at Longwarry.

- *Photo Jonathan Scutt*

New rail over road grade separation and HCMT train at Narre Warren.

- *Photo Jonathan Scutt*

NEWS PIX FROM AROUND THE TRAPS

New overhead station taking shape at Pakenham, with an Up Traralgon Vlocity at the existing ground level Up platform.

- *Photo Jonathan Scutt*

Departing the new Glen Huntly Station looking towards Caulfield in the Up direction

The vacant space between the tracks is for emergency passenger exit from the station via the staircase seen in the distance to street level above the trench

- *Photo Rod Watson.*

B-2 Class tram outbound on Route 67 to Carnegie passes over the new Glen Huntly station below in a three track trench.

- *Photo Jonathan Scutt*