

# Gippsland Line Upgrades

Text and images by David Campbell



## Background

The line of railway that we know of as the "Gippsland Railway" opened between Sale and Melbourne during 1878, with the extension to Bairnsdale opened in 1888. The line was really more of a secondary main line, and was a single track beyond Dandenong into the 1950s, serving the many rural communities carrying produce and passengers.

Gippsland comprises the eastern portion of Victoria, south of the Great Dividing Range. It is blessed with good rainfall, consequently much of the agricultural products (both plant and animal) produced in Victoria originates from this area. The district also has seen significant forestry and fishing industries.

Over the years branch lines were opened through the district, including Warragul – Noojee, Moe-Walhalla, Moe – Thorpdale, Hernes Oak – Yallourn, Morwell – Mirboo North, Traralgon – Heyfield – Maffra – Stratford, Maffra – Briagolong, Bairnsdale – Orbost, Dandenong – Port Albert, Koo Wee Rup – Stzrelecki, Nyora – Wonthaggi, Korumburra – Outtrim, and Alberton – Yarram – Woodside. Closure of these lines commenced from 1930 and continued over the next 65 years.

The development of the electricity industry in Victoria after World War 1 saw the extensive deposits of brown coal in the La Trobe Valley (the areas particularly around Moe, Yallourn, Morwell and Traralgon) used to fuel major new power stations built from the 1920's; with this development the population of the area grew considerably as people moved into the region looking for employment in the associated mining and electricity generation industries.

Following World War 2, extensive works occurred to provide more energy to the State; more power stations were constructed, mining for brown coal expanded, and briquette factories were established. These briquettes (brown coal which was compressed, dried and moulded to form a solid mass shaped into small, brick-like pieces, originally around 100mm long and 50mm wide and deep) were transported around Victoria powering homes and industries such as factories, hospitals, really anywhere a boiler might be found. Branch lines were constructed to briquette factories at Yallourn (on a new alignment from Moe, the original line from Hernes Oak having closed to allow for expansion of coal mining through the original rail alignment) and Morwell.

The old single line Gippsland railway had to be upgraded by then to carry the numerous trainloads of briquettes destined for houses and

**Above: VLocity unit VL 106 arrives into the new South line platform at Bunyip, with an Up service from Traralgon on Wednesday 31 July. Platform 1 and the train are on the site of the old goods yard, with the relatively level area made available here simplifying works necessary. The photo was taken from the original single line platform (now platform 2).**

industries all around the State, and during the late 1940's into the late 1950's the line's capacity was expanded, much of it duplicated as far as Moe, and electrification provided to Traralgon (the only regional line in Victoria ever electrified and Australia's first country rail electrification project). The final single line section was between Bunyip and Longwarry; earthworks for the duplication of this section of less than 5km had largely commenced, but a combination of technical issues, financial pressures and declining traffic saw construction of this partly built second track abandoned in the 1960's.

Other works during this period included easing of grades against Up trains on the Up side of Moe, which resulted in differing levels between the two tracks. Typically, the grades against Up trains were eased to 1:110, while Down trains still encountered 1:50 grades, favouring the traffic patterns of this time, when Up goods trains were typically the loaded/heavier services, while Down trains were mostly lightly loaded or even empty. The separated tracks at different levels are quite noticeable between Drouin and Warragul, while grade easing works in other areas are more subtle.

The railway settled into a regular pattern of several passenger trains during the day, and numerous goods trains mostly running by night. Goods traffic declined from the late 1960's into the 1970's as briquettes were replaced by natural gas, while the timber traffic from the Heyfield and Bairnsdale areas and from the Orbost line disappeared during the 1980's. General freight dropped away, however passenger traffic remained strong. The loss of most freight traffic combined with the age of the equipment and changes to passenger train fleet operation saw the electric traction wiring and equipment progressively removed from the Down side of Pakenham after 1987.

Chris Banger's excellent articles in *Australian Railway History* earlier this year over several issues provide much more detail of the post-war works leading up to the major changes which occurred around 20 years ago as part of the Regional Fast Rail Project.

## Major station locations

**Flinders Street**, 1.2km (datum taken from Southern Cross station). The principal suburban station.

**Richmond**, 3.8km. Down trains departing here have already been committed to operate to Sandringham, Frankston, Dandenong or through Burnley to the Glen Waverley, Alamein and Ringwood lines.

**South Yarra**, 5.4km. The Sandringham line diverges here.

**Metro Tunnel Junction**, 6km. Name not confirmed, this will allow suburban trains to access the under-construction Melbourne Metro Tunnel toward Footscray.

**Caulfield**, 12km. Formerly the junction to the Frankston line, trains can no longer cross between lines, so effectively the four platforms serve either the Dandenong or the Frankston lines.

**Westall**, 22.6km. A third platform is provided, and a short section of third track, allowing limited overtaking movements. Several suburban train stabling sidings and a maintenance shed are situated beside the railway, also a siding where Hanson quarry trains (formerly known as the "Apex", and operated by QUBE) discharge product, usually daily.

**Dandenong**, 32km. Junction for the Cranbourne line. Three platforms are provided, also several suburban train stabling sidings.

**Pakenham**, 58km. Recent grade separation works and the opening of East Pakenham have seen a new station provided, with the sidings removed. Suburban trains no longer terminate here following grade separation works, with East Pakenham becoming the new suburban terminus. All V/line services stop here, but not at East Pakenham.

**East Pakenham**, 60km. Recently opened, passenger trains use an island platform, while express trains can use by-pass tracks to avoid the platform tracks. Tracks configured to allow trains in either direction to terminate and return to the rear.

**Pakenham East**, 61.5km. Substantial shedding and sidings (including a balloon loop) are provided beside the main lines to stable and service the new High Capacity Metro Train fleet.

**Bunyip**, 79km.

**Longwarry**, 83.5km.

**Warragul**, 100km. Some sidings remain, also crossovers between North and South lines.

**Moe**, 130km. Recent works see this station become the first station from Melbourne using only one platform.

**Hernes Oak**, 137km. Single line crossing loop, no platforms provided.

**Morwell**, 144km.

**Traralgon**, 158km. Several sidings provided, also the turntable and 5-bay part roundhouse remain (leased to a heritage group, and made available to turn locomotives on occasions).

**Rosedale**, 180km. A single passenger platform.

**Sale**, 206km. A few sidings remain, although seeing little use these days.

**Stratford**, 222km. A single passenger platform.

**Bairnsdale**, 275km. Terminus of line, a single platform provided. Sidings being re-arranged to accommodate overnight VLocity train stabling/servicing.

## Modern traffic requirements

This railway was selected to be upgraded under the Regional Fast Rail Project around 20 years ago, and the track was heavily re-built and upgraded to enable trains to operate at up to 160km/h. Unfortunately that project was constrained by financial issues, so the operationally annoying single line section between Bunyip and Longwarry was not duplicated. In common with the experience of other RFR upgrades, passenger numbers significantly increased, leading to capacity problems. Many passengers along this line tend to make relatively local trips, often more so than those travelling to/from Melbourne.

Current passenger services typically run hourly through the day, with a few more at peak times. Just one goods service runs beyond the suburban area, being the daily service to the OPAL (formerly APM) paper mill at Maryvale, near Morwell; the service is operated by QUBE, and usually hauled by two of their VL or G class locos). Speculation continues that an intermodal service will commence to serve a container facility at Bairnsdale, capturing the significant traffic (both primary produce as well as processed foods) which originates from this area. Unfortunately, the paper mill reduced its production of certain product last year, with potential adverse impact expected on rail freight traffic (at the time of writing this). New mineral sands traffic from a proposed mine near Lindenow has been suggested, although this is thought to impact on prime farmland, leading to an unusual alliance between farmers and environmentalists jointly opposing the proposal.

The ever-growing passenger traffic that followed from the RFR Project has seen an acknowledgement that additional services are necessary, and that the track in its current configuration would struggle to cope with those additional services, particularly if some form of "memory" timetable were used. The lengthy single line section between Moe (130km) and Traralgon (158km) is a significant constraint, despite crossing loops at Hernes Oak (138km) and on the Up side of Morwell station (at 144km). Another constraint is the lengthy suburban section to Pakenham, which sees an intense service provided by Metro Trains Melbourne and through which Gippsland trains have to find paths.

With these issues very much in mind, the Gippsland Railway Upgrade Project was created to provide additional track capacity, with works taking place at several sites.

One key target of the Project is to enable off-peak passenger trains to operate typically at 40 minute intervals in lieu of the present 60 minute interval through the day.







Looking in the Down direction from Bunyip station, the two lines negotiate a few curves before forming the single line towards Longwarry. The visible curve boards (yellow pointy ended signs with black numerals) require trains to slow, however in practise most trains stop at Bunyip, so few trains have to slow down for these curves.

Elsewhere in this article, I refer to the parallel lines beyond Pakenham as the North and South lines, rather than the more common terms of Up and Down lines. The two tracks are signalled for bi-directional running, hence this naming convention. The points at Bunyip, Longwarry and Moe have been arranged so that trains running on the South line do not diverge. During the day the train controllers actively seek to provide trains with the fastest possible routing options, particularly favouring the direction of peak hour running; as an example the morning Up and evening Down trains both generally use the faster South line. Of course, with the Metro tracks being uni-directional, trains may have to cross onto the "conventional" arrangements around Pakenham.

Substantial progress with Project works have been commissioned this year, particularly in the Pakenham and Bunyip – Longwarry areas, with substantial works commencing from 3rd May, 2024 and running into June.

### Pakenham Area

Pakenham represents the end of the suburban train network, which is operated by Metro Trains Melbourne. The V/line network commenced just on the Down side of Pakenham, however with the development of the Pakenham East rolling stock facility (serving the new High Capacity Metro Trains) the network boundary was moved east by around 4km to 64.6km.

Outside the railway reserve, substantial housing development has occurred in the last few years. Another concern with the railway was the presence of level crossings, with the State Government determinedly removing them throughout the suburban area. Recent works in the Pakenham area addressed these multiple concerns and have seen three road level crossings and two pedestrian crossings removed, while a new station has been constructed at East Pakenham. Commissioning works were completed on 1st June, 2024.

The existing level crossings at McGregor Road (57.055km), Main Street (58.025km), and Racecourse Road (58.735km), and the pedestrian level crossings at Savage Street (57.513km) and Pakenham station access (58.096km) were abolished. A viaduct section of the typical "skyrail" design was built to carry the railway across these roadways and incorporates a new Pakenham station located on the elevated portion.

Pakenham station now comprises two single face platforms, almost at its original location at 58.159km. The old yard, run down station buildings and associated infrastructure were removed. No points are provided around this station.

A new station, named "East Pakenham" was provided at 60.026km. The new station is based around an island platform, 164m length, with an unusual (for Victoria) configuration of tracks in its vicinity.

The Up and Down lines approaching the new station separate, with tracks then leading into the space provided to access the new platforms 1 and 2. The Down line by-passes the platform, forming the North line beyond, while the South line also by-passes the platforms to form the Up line. Down trains can by-pass the platforms, or pass into either platform, while approaching Up trains can access platform 2 from the North line, or access either platform 1 or the by-pass line from the South line. Over-run tracks are provided to allow trains to approach with limited overlap beyond the signals, safeguarding against an authority over-run. A maintenance siding is also provided, allowing track maintenance machinery a chance to clear the main lines.

Electric trains continue on another kilometre or so to access the Pakenham East Depot (note the transposal of "East" and "Pakenham", per formal documentation). V/line and freight services continuing into Gippsland may depart onto either track, with opportunity to cross between the North and South lines opposite the Pakenham East Depot.

### Bunyip-Longwarry

Sadly, duplication of this section will not occur at this time. I recall while working in the District Engineer's Office in Traralgon in the late 1980s handling files documenting the troubles the builders encountered into the early 1960's, when their attempts to build piers for a second bridge (for the expected future Down line) across the Bunyip River foundered as they struggled to reach a sufficient depth in the silt to provide a firm base. One of the old bridge gangers surmised to me that the current (single line) bridge built many years earlier must have been fortunate to encounter a firm base, possibly due to a boulder. With the struggles to locate a suitable foundation continuing, the funds were eventually diverted to the



then-critical construction of the standard gauge line from Melbourne to Albury.

Several of the smaller bridges for this duplication were in fact constructed, as was some trackage, particularly around Longwarry, where a long refuge siding was built on the site of the still-born Down line opposite the single passenger platform, while most of the second track formation remains through this section. Another “temporary” arrangement was that both Bunyip and Longwarry stations remained as single platforms, forcing opposing trains to wait some distance away for entry onto the single track section should an opposing movement be underway (or imminent).

Hopes for duplication of this section during construction of the “Regional Fast Rail” upgrades of around 20 years back disappeared as the Project encountered its own financial difficulties. Trains traversing this section had to slow to 65km/h for turnouts onto the single line and then slow again when returning to the North line, with the duplication commencing several hundred metres away from the platforms with both of these stations then operated using only a single platform. Consequently, a train approaching this section often had to wait for another opposing movement to clear the platform and enter clear into the double track. Aggravating delays to trains was the need to apply “time delay – approach clearing” to the signals approaching the diverges, a particularly annoying arrangement for Up trains, which often had to run at 40km/h for several km on a 1:50 falling grade.

The Gippsland Line Upgrade Project does not deliver full duplication; however it has (finally) delivered second platforms at both Bunyip and Longwarry, which will allow trains approaching the single line to now actually enter a platform for customer convenience while it waits for an opposing movement to clear the single line, rather than waiting well over a kilometre away for the platform track to clear. What might initially appear to be a cheap/partial solution will actually create a significant benefit to rail operations.

Track duplication has been extended to serve these new platforms, with the single line commencing beyond each station (from the Down side of Bunyip to the Up side of Longwarry), effectively reducing the remaining single line by around 2km while producing a significant improvement in service reliability. Both stations now have two single platforms, with the single line commencing at 79.624km (Bunyip, points BYP 27), and

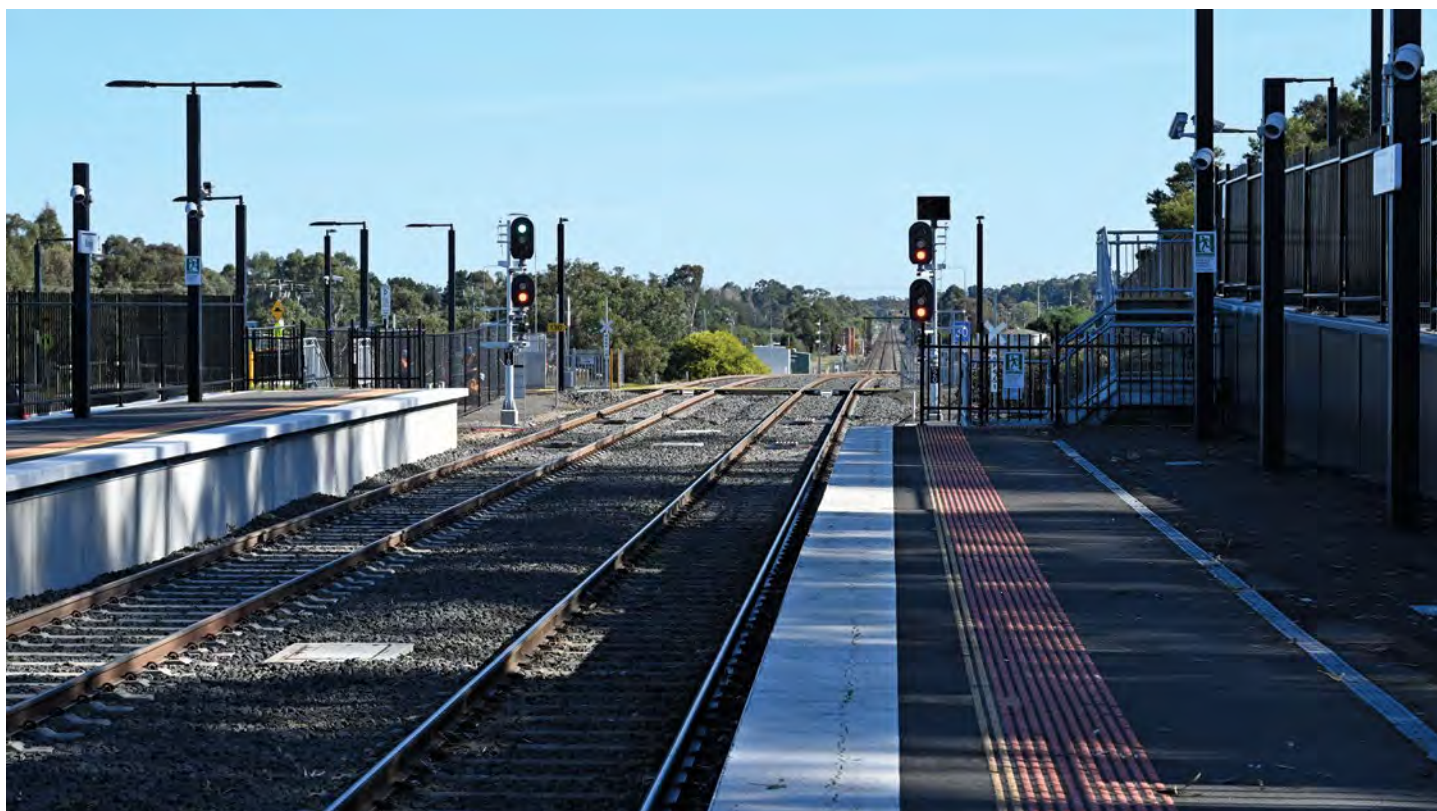
reverting to double line (two parallel lines configuration) at 82.984km (Up side of Longwarry, points LWY 07).

The pedestrian crossing at the Down end of Bunyip station was closed, being replaced by a new pedestrian crossing at 78.948km, at the Up end of the station, which improves public access and convenience (bringing the crossing closer to the main town and avoiding the steep hill formerly encountered by pedestrians), while also minimising the duration that rail operations cause closures of the crossing. A new platform has been built on the south side of the line, using the area once occupied by the goods yard, and provides a length of 180m; this new platform is designated as platform 1. The existing platform 1 (re-named as platform 2) now serves only the North line and retains its existing length of 161m. Car parking for passengers has been improved, with 30 additional sealed parking spaces being provided as a new car park within the former goods yard area.

One interesting feature here is the installation of a new crossover between the North and South lines at around 76.7km, a little over 2km on the Up side of Bunyip station. This crossover (designated as BYP 07) will allow Up trains on the North line to cross onto the South line and Down trains on the South line to cross to the North line to serve platform 2. In practical terms, the new crossover will allow most trains stopping at Bunyip to use the original platform (North line, platform 2), which is more convenient to the town shops, etc.

New car parking is also being provided at Longwarry, as well as additional car parking adjacent to the new platform. The new platform was constructed on the North side of the line, opposite the existing platform, with a length of 165m. The North line (new) platform is named Platform 2, with the existing (South line) platform remaining as platform 1. The existing level crossing at the Down end of the station will remain, with provision within the signal design to minimise operation of the crossing, notably when Up trains are approaching.

Environmental concerns in the area have seen the relocation of various crayfish, frogs and turtles from the Bunyip site to a safer area nearby. Under-track crossings have been constructed at Longwarry to enable the threatened Southern Brown Bandicoot population to safely cross the railway. Removal of trees has been limited as far as practical to non-indigenous species, and qualified wildlife rescuers were engaged to be on hand to check for and if necessary re-locate threatened fauna species prior to tree removal.



Looking in an Up direction from the original platform at Bunyip we can see the two main lines swing to align with their respective platforms. The original single track commenced on the Up side of the level crossing just visible in the distance, so the extra duplication allowing two platforms to be available for trains makes quite a neat improvement.





**Looking in an Up direction from the new platform at Longwarry, the track extension through the platform before the single line commences is evident. A few hundred metres beyond the signals, the double line reverts to a single line about where the shadow across the track is seen.**

Whilst not appearing to be a huge job, these works will substantially improve train operations, particularly if late running arises. V/line trains are frequently delayed in the lengthy suburban system, and a late-running Down train will in turn block an Up service in this area. There are now only two tracks through between Pakenham and Richmond, more than 60km, and with an intense suburban service V/line trains are forced to follow slow-moving suburban trains which typically stop at all 25 suburban stations over virtually that entire distance. Off-peak V/line services run at roughly hourly intervals, with most trains having to wait for opposing moves both in the Bunyip-Longwarry section as well as around Moe (the start of the single line toward Bairnsdale).

One interesting outcome of these works is that the new crossover between Garfield and Bunyip will provide an opportunity to "stage" a slow moving train (whether a freight train, or even a heritage special) on the South line between Garfield and Bunyip while other trains run past on the North line.

### Morwell

Morwell station has only one platform, so all passenger trains currently have to contend with this constraint. A crossing loop is located on the Up side of the station and allows some flexibility, however as this does not serve the platform trains having to cross are required to access this loop and wait for the opposing train movement to clear. A second track existed through the station precinct (part of what was the goods yard and branch line to the Briquette factory), however this track does not serve a platform.

A new platform is being built at Morwell, almost opposite the existing platform, and the existing tracks are being re-configured to form an extended crossing loop. The two platforms will be slightly offset relative to each other, reflecting the limited space now available (most of the former railway land having been considered "not required for railway purposes" and disposed of years ago). The new platform is located on the Down side of the present, fronting onto the extended crossing loop, which itself is on part of the site of the closed Morwell Briquette Siding.

The platforms will be connected through an existing pedestrian subway, which is undergoing significant enlargement, providing better access across the railway precinct for the general public (the railway

bisecting the town here), as well as meeting modern access guidelines for railway customers climbing from the subway to the platforms.

The track through this area will form an extended crossing loop, commencing with the existing crossing loop at the Up end of the station, and then using the formation of the former branch line toward the now closed Morwell Briquette Factory until it returns to the main line at 145.350km, close to 1000m on the Down side of Morwell station; the overall length of the new loop will be close to 3km.

### Traralgon

The original passenger station was on the south side of the line. This station was replaced in 1995 by a new station on the north side of the line on the site of the former goods yard, which itself is closer to the main commercial parts of Traralgon; the old platform and heritage listed station buildings remained in place although not used for passenger purposes. Public access across the yard here was via an ancient footbridge.

Unfortunately the arrangements from the 1990's (prior to Regional Fast Rail) kept restricting passenger trains to just the one platform, and can lead to congestion in this area, with trains stabled overnight in the yards and through services to Bairnsdale competing for space. Crossing of trains is theoretically possible, however in practise this is a cumbersome procedure involving manual operation of points at each end of the yard; in any case all passenger trains have to perform platform work here at this busy station.

The old footbridge was also seen as unsatisfactory, with limited load capability and less than ideal access.

The Project has seen the demolition of the original station platform on the south side of the line, and the construction of a new platform on that site. The original station buildings are being retained for community use, with passengers able to use the 1995 station buildings on the north side of the line. Access between the two platforms (and for general public access across the railway yard, the railway effectively dividing the city) has been enhanced by the construction of a compliant footbridge, featuring lifts and ramp access, as well as stairs. The footbridge includes weather protection, a nice touch in this region of higher rainfall, and a striking artistic design by local artist Marilyn Fenton featuring various Gunaikurnai patterns.



## Stratford

The bridge across the Avon River was replaced in late 2020, allowing trains to operate through this area at 90km/h instead of the previous 10km/h, leading to a handy reduction in running times.

## Bairnsdale

The existing sidings are currently being re-configured to allow *VLocity* trains to be stabled and serviced overnight, with a fenced stabling compound being constructed. Once complete (anticipated from Sunday 15 September), it is expected that all services along the Gippsland line will be operated by *VLocity* trains (currently only the evening Down and morning Up Bairnsdale trains are loco-hauled). The use of *VLocity* sets will allow all Bairnsdale services to now stop at all stations east of Pakenham, giving residents in these growing intermediate communities more travel options.

## Constraints and benefits

Currently most trains take around 140 minutes to cover the 158km between Southern Cross and Traralgon; despite the headlines of "Regional Fast Rail" a few years back, this is hardly fast, particularly when trains normally reach up to 160km/h in several places. Trains on the Down side of Pakenham usually make up to 12 stops in that 100km, contributing to travel times of around 80 minutes over this section. Whatever improvements this project achieves will occur on the Down side of Pakenham by overcoming delays caused by waiting for opposing trains at the start of the single line sections, however the slowest running still occurs on the Up side of Pakenham, where V/line trains have to share tracks with suburban services. Importantly, service reliability should substantially improve, with the additional platforms and extended crossing places allowing operational flexibility and minimising occasions when punctual trains may be delayed by opposing late running services.

The suburban trains average better than 60km/h between Dandenong and Pakenham, however that average speed drops to as low as 40km/h on the Up side of Dandenong. Suburban trains generally operate at 10 minute intervals through the day as far as Dandenong (alternate suburban trains heading from there either to Cranbourne or Pakenham), and these trains are usually stopping at all stations apart from three on the Up side of Caulfield, so V/line trains will always be following a suburban train for much

of the journey and limited to that suburban train's overall average speed. Only two tracks exist between Pakenham and Richmond (the crossovers at Caulfield having been recently removed, losing some limited track capacity and flexibility in the section between Caulfield and Richmond), so there is no opportunity for overtaking a suburban train (except at Westall and Dandenong, where additional platforms exist, although this feature in practise is used more for local terminating/originating services).

As an aside, freight trains have little difficulty gaining paths through the suburban network. Those relatively slow overall speeds can be achieved by freight trains, and they can generally get a good run even between suburban trains running at ten minute intervals. This being the case, it seems possible that additional freight trains can run within the current infrastructure and operations, with the track arrangement at Bunyip providing a new opportunity to hold a freight train while faster passenger trains overtake.

V/line services are scheduled to take between 56 minutes (early morning) and 79 minutes (evening peak) to traverse the suburban network. The only options for improving V/line speeds through this long section seem to be to reduce the number of suburban services (not really an option), or to enhance track capacity, in reality by building additional tracks.

It's important to recognise that Metro Trains do give V/line services a reasonable path as far as practicable. A V/line service leaving Melbourne usually runs just before a Pakenham suburban train by Richmond Junction, before catching up to a Cranbourne train by Oakleigh, then follows that until close to Dandenong. After the Cranbourne train clears, speed can increase until our train catches up to the preceding Pakenham service, and usually trains see slower running between Officer and Pakenham. Up trains usually precede a suburban train out of Pakenham, then just sneak in front of an Up Cranbourne train at Dandenong before catching up to the previous Up Pakenham service around Westall. While tedious, within the infrastructure constraints, the service delivery on the Up side of Pakenham seems as good as it can be.

Current indications are that increased services will eventuate on the Gippsland line in conjunction with the commissioning of the South Geelong – Waurin Ponds duplication, and major timetable changes throughout Victoria are anticipated late this year or early next.

*With thanks to John Hoyle for his assistance.*



Taken from the existing (single) platform at Morwell, looking in a Down direction, the under-construction second platform is visible, notable for being offset against the existing due to space considerations. The distinctive palm trees here are also seen. The new track will continue east before reverting to single line through to Traralgon. At the time of writing a completion date for this part of the Project has not been announced.