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SOCIETY CONTACT INFORMATION

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MINUTES OF MEETING HELD FRIDAY 19 FEBRUARY 2016, AT THE RACECOURSE JUNCTION SIGNAL BOX

Present: – Wilfrid Brook, Ross Cropley, Glenn Cumming, Michael Formaini, Ray Gomerski, Chris Gordon, Judy Gordon, Chris Guy, Bill Johnston, Keith Lambert, David Langley, Steve Malpass, Bruce McCurry, Colin Rutledge, Brian Sherry, Rod Smith, David Stosser, Andrew Wheatland and Ray Williams.

Apologies: – Laurie Savage and Peter Silva.

Visitors: – Margaret Brook, Ayden Gordon, Jim Gordon, Vera Guy, Colin Harvey and Maree Langley.

The President, Mr. David Langley, took the chair & opened the meeting @ 19:30 hours, and welcomed everybody to the Racecourse Junction Signal Box at the home of Chris and Vera Guy.

General Business: - The February 2016 meeting consisted entirely of a visit to the Racecourse Junction Signal Box at the home of Chris and Vera Guy in Montmorency VIC.

Members enjoyed an inspection of the signalling equipment at Racecourse Junction Signal Box.

The opportunity was taken to inspect a wide variety of historic signalling equipment on display. The items on display were in operating condition and were able to be demonstrated. The interlocked gates were swung many times.

No other business was transacted during the meeting.

At the conclusion of the visit, the President thanked the Chris and Vera Guy for their hospitality.

Meeting closed at approximately 22:00 hours.

The next meeting will be on Friday 18 March, 2016 at the Surrey Hills Neighbourhood Centre, Bedford Avenue, Surrey Hill, commencing at 20:00 hours (8.00pm).

SIGNALLING ALTERATIONS

The following alterations were published in WN 1/16 to WN 15/16, and ETRB A circulars. The alterations have been edited to conserve space. Dates in parenthesis are the dates of publication, which may not be the date of the alterations.

01.10.2015 Long Island (SW 100/16, WN 15/16)

On 1.10., the Metro leased portion of the lead to the Cresco siding was booked out of use due to track condition.

The points at the Up end of the Cresco siding lead have been secured to lie for the Coil Sidings. The points at the Down end of No 3 Coil Sidings have been secured away from the Cresco siding lead. Baulks have been provided at the Down end of the Metro lease.

(Front cover) Trains bound for the Adelaide seaside suburb of Grange travel for seven kilometres along the Outer Harbour line before diverging at Woodville and heading west to the Gulf of St. Vincent. Two kilometres beyond Woodville, just beyond the end of the double line at Holdens, is Albert Park. This photo of an Up single car redhen arriving at Albert Park bound for Woodville and Adelaide was taken on Thursday 19th June 1975. At this time Albert Park was a fully interlocked crossing station and the junction for the Hendon branch line (opened November 1940 and closed February 1980). In this view the Hendon line can be seen curving away from the 'main line' to cross over the road on the right. In 1975 Albert Park was the only crossing station on the Grange line but there used to be an unattended crossing station in the middle of the Royal Adelaide Golf Course located between Seaton Park and East Grange stations. Photo David Langley

18.01.2016 **Gardiner** **(SW 1/16, WN 49)**

On Monday, 18.1., the Up and Down lines were slewed to a new alignment between 10.085 km and 11.321km. A new station wase provided at 10.524 km with 161 metre long platforms. An over line bridge was provided at Bourke Rd (10.687 km).

New Automatics DG283, DG290, DG297, DG314, and DG317 were provided. A CBI interlocking was provided.

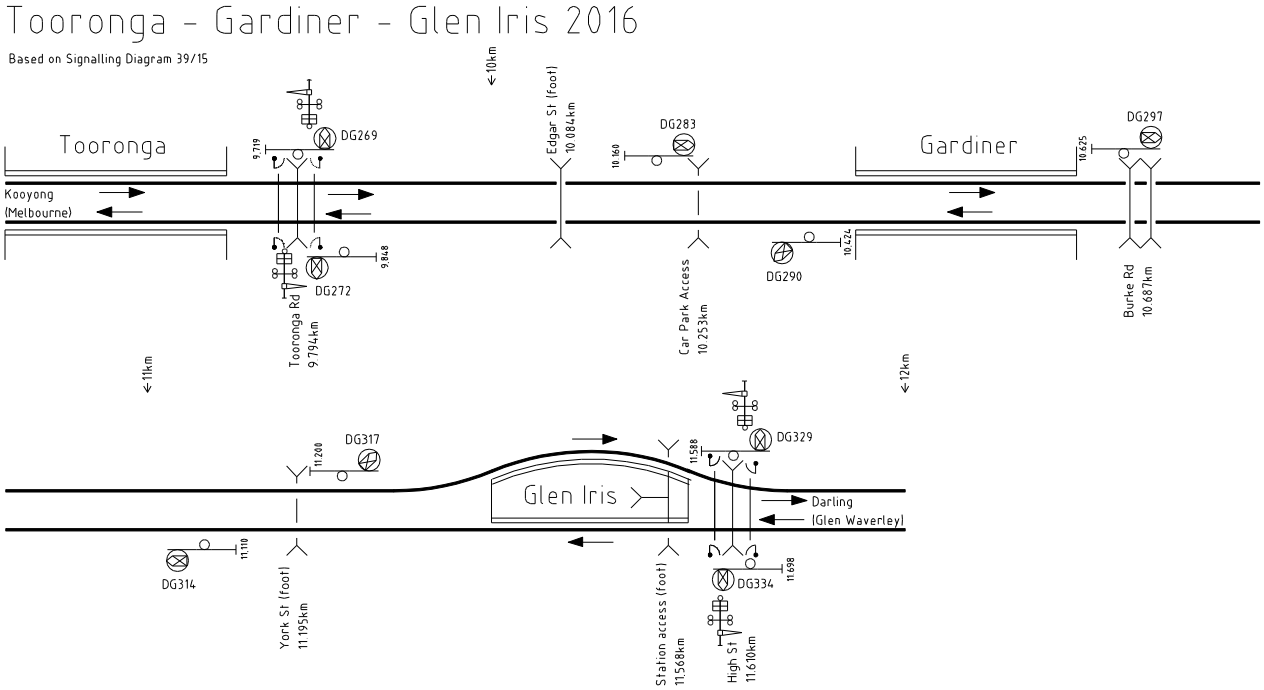


Diagram 39/15 (Heyington – Darling & Burnley Stabling Sidings) replaced 37/14.

(19.01.2016) **Automatic and Track Control System – Follow on train movements** **(SW 2/16, WN 3)**

When a Home Departure Signal has failed at Stop, a follow on movement is permitted once the block indications show the signal track section in advance of the defective signal is clear.

If the block indications have failed, a follow-on movement is not permitted until it has been determined that the first train has cleared the signal track section in advance of the defective signal. If it is not possible to confirm that the first train has cleared the track section in advance of the defective signal, a follow-on movement is not permitted until the first train has cleared the single line section.

A signal track section is defined as: the length of track between two fixed signals applicable to the same direction of travel and provided with track circuits, axle counters, or a combination of both. Section 36, Rule 3.3. is amended accordingly.

(19.01.2016) **Dandenong – Hallam** **(SW 13/16, WN 3)**

Commencing forthwith, Diagram 27/15 (Dandenong – Hallam) replaced 47/14. The main alteration was the conversion of DNG749 to a Home signal.

20.01.2016 **Meredith** **(SW 3/16, WN 4)**

On Wednesday, 20.1., No 2 Road was taken out of service and the main line points secured normal. The Down Distant (Post 1), Down Home (Post 2), Up Homes (Posts 3 & 5), and Up Distant (Post 6) were secured at proceed. Operation of the Staughton St level crossing (114.127 km) will be automatic for all trains.

24.01.2016 **Newport Workshops** **(SW 9/16, WN 2)**

On Sunday, 24.1., automated Train Stabling Gates 007 and 009 at the entrance to the Newport Workshops Yard were commissioned for automatic operation and interlocked with the signals.

24.01.2016 **Metro Lines**

On various dates and locations (as given in the table below) the level crossing approach circuits were altered to ensure safe operation for Vlocity trains. The alterations consisted of enforcing sequential operation of the track circuits (i.e. once the approach track circuits drop, they cannot pick up again until the track circuit beyond the level crossing has dropped).

Station or section	Road	Date	Reference
Pascoe Vale	Gaffney St	21.1.16-24.1.16	SW 26/16, WN 6
Oak Park	Devon Rd	21.1.16-24.1.16	SW 26/16, WN 6
Glenroy	Glenroy Rd	21.1.16-24.1.16	SW 26/16, WN 6
St Albans	Main Rd	25.1.16-26.1.16	SW 27/16, WN 6

Station or section	Road	Date	Reference
Ginifer	Furlong Rd	25.1.16-26.1.16	SW 27/16, WN 6
Dandenong – Hallam	Progress St	29.1.16	SW 28/16, WN 6
Hughesdale	Poath Rd	5.2.16	SW 30/16, WN 6
Narre Warrne	Webb St	8.2.16	SW 31/15, WN 6
Sandown Park – Noble Park	Corrigan Rd	9.2.16	SW 32/16, WN 6
Cardinia Road	Cardinia Rd	10.2.16	SW 33/16, WN 6
Dandenong	South Gippsland Hwy	11.2.16	SW 34/16, WN 6
Hughesdale	Poath Rd (Down)	12.2.16	SW 35/16, WN 6
Beaconsfield – Officer	Brunt Rd	15.2.16	SW 39/16, WN 7
Officer	Station St	15.2.16	SW 39/16, WN 7
Hallam	Hallam Rd	16.2.16	SW 41/16, WN 7
Beaconsfield	Station St	17.2.16	SW 42/16, WN 7
Carnegie	Koornang Rd	18.2.16	SW 45/16, WN 8
Clayton	Clayton Rd	19.2.16	SW 47/16, WN 8
Sandown Park – Noble Park	Heatherton Rd	22.2.16	SW 49/16, WN 8
Noble Park – Yarraman	Chandler Rd	23.2.16	SW 51/16, WN 8
Yarraville	Anderson St	24.2.16	SW 61/16, WN 8
Spotswood	Hudsons Rd	24.2.16	SW 62/16, WN 8
Murrumbeena	Murrumbeena Rd (Down)	26.2.16	SW 57/16, WN 9
Murrumbeena	Murrumbeena Rd (Up)	2.3.16	SW 63/16, WN 9
Hallam – Narre Warren	Webb St	25.2.16	SW 56/16, WN 9
Berwick	Clyde Rd (Down)	3.3.16	SW 67/16, WN 10
Berwick	Clyde Rd (Up)	4.3.16	SW 68/16, WN 10
Dandenong	Webster St (*)	10.3.16	SW 70/16, WN 10
Kensington	Macaulay Rd (*)	11.3.16	SW 71/16, WN 10
Moonee Ponds	Puckle St (*)	11.3.16	SW 71/16, WN 10
Moonee Ponds	Ardmillian Rd (PX) (*)	11.3.16	SW 71/16, WN 10
Moonee Ponds – Essendon	Park St (*)	11.3.16	SW 71/16, WN 10
Essendon	Buckley St (*)	11.3.16	SW 71/16, WN 10
Glenroy	Glenroy Rd (Up)	11.3.16	SW 77/16, WN 11

(*) Crossing marked thus are computer based interlockings. In this case the data has been updated to force sequential operation of the track circuits.

25.01.2016 **Meredith** **(SW 3/16 & 4/16, WN 4)**

On Monday, 25.1., Meredith was abolished as a Train Order location. The Train Order sections Lethbridge BP – Meredith – Lal Lal BP were replaced by Lethbridge BP – Lal Lal BP.

Operating Procedure 131 (Train Order Territory) was reissued and SW 58/15 was cancelled.

30.01.2016 **South Geelong** **(SW 5/16, WN 4)**

On Saturday, 30.1., the rodded connections to Crossover 10 were abolished and both ends were equipped with dual control point machines. Plunger 9 was abolished. The rotary detector and wire lead for Down Home 3 (Post 5) was abolished. Lever 9 became a pilot lever and the push button release was retained.

Amend Diagram 22/11 (South Geelong).

02.02.2016 **Warncoort Loop** **(SW 7/16, WN 5)**

On Tuesday, 2.2., updates were made to the axle counter equipment at Warncoort Loop.

05.02.2016 **Oakleigh** **(SWP 2/16, WN 7)**

On Friday, 5.2., Caulfield Group Operating Procedure 12A (Oakleigh – Operation of No 9 Points) was added.

To prevent the irregular operation of Poath Rd level crossing equipment, the Signaller must ensure that Controlled Auto 4 is at Stop before signalling a shunt movement towards the Up line, or before reversing Points 9. If an Up train is to pass over Points 9 reverse, Controlled Automatic 4 may be cleared before the train departs. Points 9 must be restored to the normal position immediately they are free to operate.

18.02.2016 **Ginifer** **(SW 37/16, WN 7)**

Between the passage of the last train on Thursday, 18.2., and Monday, 22.2., the Furlong Rd level crossing at Ginifer will be closed for road traffic. Barriers will be erected to block road access, the booms will be disconnected and latched up. The pedestrian crossing will be closed (until Monday 7.3.) and pedestrians will be required to use the pedestrian crossing at the station.

24.02.2016 **South Geelong** **(SW 12/16 WN 9)**

On Wednesday, 24.2., signs were provided in the Queenscliff Siding to mark the point where 3 and 6 car Vlocity sets must reach to clear the Up approach track circuit for Swanston St. The signs take the form of

white markers between the rails reading 'VL3', situated 80 metres from Swanston St, and 'VL6', situated 160 metres from Swanston St.

Boards lettered 'Shunting trains must not enter the crossing until booms are horizontal' and 'Second train may delay starting of the crossing' are provided on each side of Swanston St. Approach section boards are provided in the rear of these boards – 27 metres for Down trains and 20 metres for Up trains.

If the Swanston St booms are not operating when a train passes the approach section board, the train must not enter the level crossing until the booms are horizontal. If the train passes the approach section board immediately after the passage of another train on the main line, the boom barriers will not commence to operate until after a time delay.

(01.03.2016) Bungaree East (SW 14/16, WN 9)

Commencing forthwith, when a Down train has been signalled from the Bank Box section toward Bungaree West via the North Line and Points 3 reverse, the Signaller must not set a route that requires Points 3 normal, or call Points 3 normal, until the previous train has passed BGL718 and track circuit AA946BT is occupied. SW 13/16 is cancelled.

(08.03.2016) Warrenheip Loop (SW 16/16, WN 10)

Commencing forthwith Warrenheip Loop is not available for crossing trains. Warrenheip Loop has been changed to an Intermediate Train Order station and is available for follow-on movements. When a Train Order is issued for a movement to Warrenheip Loop, it will only apply to the 'F' board at the end of the loop for that direction of travel.

All trains will operate via the Up track. The Up and Down end trailable points have been secured to lie for the Up track and the point banner has been removed from the point machine at the Up end.

08.03.2016 Caulfield (SW 78/16, WN 10)

On Tuesday, 8.3., the Down approach track circuit (712T) was upgraded to a CSEE type to ensure the safe operation of Grange Rd for Vlocity trains.

11.03.2016 Oakleigh (SW 80/16, WN 11)

On Friday, 11.3., Points 27, 29, and 31 were booked out of use.

13.03.2016 Centrol (TON 52/16, WN 11)

On Sunday, 13.3., train control communication equipment at Centrol will be relocated to the Dudley St signalling equipment room.

13.03.2016 South Geelong (SW 18/16, WN 10)

On Sunday, 13.3., dual control point machines will be provided on Points 6 and Catch 6 in Siding A. The existing rodded connections will be abolished. Plunger 5 was removed and lever 5 became a pilot lever. The pushbuttons for releasing lever 5 will remain.

Amend Diagram 22/11 (South Geelong).

(15.03.2016) Newport – Werribee (SW 79/16, WN 11)

Commencing forthwith Vlocity, Sprinter, self powered diesel trains, and locomotive hauled trains less than 250 tonnes cannot operate between Newport and Werribee. Locomotive hauled trains greater than 250 tonnes may operate on this section.

(15.03.2016) Birregurra – Sherwood Park (SW 19/16, WN 11)

Diagrams 118/14 (Birregurra – Colac), 30/14 (Camperdown – Terang) and 48/14 (Panmure – Sherwood Park) replaced 52/13 (Birregurra), 64/14 (Colac), 44/13 (Camperdown – Terang) and 98/13 (Panmure – Sherwood Park) as in service.

Note that the alterations to roll-out protection on No 3 Rd Camperdown (SW 14/15) are not shown on Diagram 30/14.

15.03.2016 Vlocity operation (SW 81/16, WN 11)

Commencing on Tuesday, 15.3., Vlocity railcars are not permitted to operate on the following lines:

- North Melbourne Junction – Upfield
- Southern Cross to South Morang & Hurstbridge
- Southern Cross to Belgrave, Lilydale, Alamein, and Glen Waverley
- Caulfield – Frankston – Stony Point
- Richmond Junction – Sandringham
- Newport – Williamstown & Werribee (both direct and via Altona)

Detection of Vlocity rail cars will be monitored at MTM test sites. To allow MTM Engineering to decide if a Vlocity set may continue to run, V/Line must inform MTM Engineering when a Vlocity set has not been in service for 14 days or longer, and (or?) has had wheel attention.

16.03.2016 Antwerp (TON 55/16, WN 13)

On Wednesday, 16.3., the siding at Antwerp was booked out of service due to poor sleeper condition. The points at 379.046 km and 379.483 km were spiked normal.

24.03.2016 **McKinnon – Bentleigh** **(SW 75/16, WN 11)**

From 2000 hours on Thursday, 24.3., McKinnon Rd (McKinnon) and Centre Road (Bentleigh) will be closed to road traffic. Rail services will continue to operate until 0130 hours on Friday, 25.3. Barriers will be in place to block road traffic. The boom barriers will be removed.

25.03.2016 **Caulfield – Moorabbin** **(SW 76/16 & 91/16, WN 11 & 14)**

On Friday, 25.3., the Up line will be closed to traffic. The Centre line will not be available for Down movements and circuit alterations will be made to prevent this route from being selected. The Up line signals and the Down signals on the Centre line will be removed between the Down side of Glenhuntly and Patterson. Automatics F420, F434, F460, & F486 (Up line) and FM417, FM441 (and co-acting FM441P), FM467, & FM493 were abolished.

Ormond and McKinnon will be closed. Circuit alterations will be made so that the signalling at both stations will not be subject to the Express/Stopping selection.

Amend Diagram 65/12 (Glenhuntly – Highett).

27.03.2016 **Ginnifer** **(SW 74/16 & 89/16, WN 11 & 13)**

After the passage of the last train on Sunday, 27.3., Furlong Rd will be temporarily closed to road and pedestrian traffic. Barriers will be in place to block road traffic. The Up side boom barrier will be isolated and latched up. The Down side boom barrier will be removed. Pedestrians must use the pedestrian crossing at the Up end of Ginnifer station. The level crossing is expected to reopen on 16.4.16.

28.03.2016 **Colac** **(SW 24/16, WN 12)**

On Monday, 28.3., the flashing lights at Flaxmill Rd (150.311 km) on the Up side of Colac will be converted to boom barriers. A level crossing predictor will be provided to operate the boom barriers, and RFR predictor boards will be provided. Trains travelling at more than 50 km/h at the predictor boards may accelerate before the level crossing. Remote monitoring equipment was provided. Amend Diagram 118/14.

Amend Diagram 118/14 (Birregurra – Colac).

(29.03.2016) **Permit Limit Markers** **(SW 26/16, WN 13)**

Commencing forthwith 'Permit Limit Markers' can be used to mark the limit of a 'Permit to Foul' within an Absolute Occupation instead of a hand signaller.

A Permit Limit Marker consists of a yellow plastic case with two yellow LED flashing lights on one side and two red LED flashing lights on the other. The case can be clamped to a rail and secured by a padlock.

The permit limit marker is to be fixed to the rail with the red lights facing rail traffic approaching the 'Permit to Foul' area, and the yellow lights facing rail traffic exiting the 'Permit to Foul' area.

(29.03.2016) **Warrenheip Loop** **(SW 27/16, WN 13)**

Commencing forthwith, Warrenheip Loop was restored to normal operation. SW 16/16 is cancelled.

29.03.2016 **Jeparit** **(TON 60/16, WN 14)**

On Tuesday, 29.3., Points 4YHP (Down end of No 3 Road at 398.888 km) were secured for the dead end extension. Points 5YHP at the Down of No 2 Road were secured for No 2 Road. No 3 Road is now only accessible from the Up end.

29.03.2016 **North Bendigo** **(TON 63/16, WN 14)**

On Tuesday, 29.3., Points 35 (164.885 km) were booked out of service and secured normal due to the condition of the timber foundations under the point lever and the condition of the cranks. Access to the North Bendigo Workshops is only accessible from the Up end.

End£

ESSENDON

(Continued from January 2016)

The new station

At the beginning of the 20th century, Essendon must have been an awkward station for all concerned. Up suburban trains originated from the island platform, but there were no proper facilities on that platform for passengers, least of all a ticket office or waiting room. Buying a ticket required a trip to the Up platform – from which few trains actually departed. And there was not even a convenient mid platform subway. The only way to or from the island platform was by subways at each end of the island platform. From an operating point of view, all terminating Down suburban trains had to arrive into No 2 Road where they would have blocked any through Down train until they could be shunted clear or despatched. It is not surprising that around 1908 the Department proposed a significant enlargement of the station. Negotiations with the residents in Rose St delayed matters as the Department wished to resume part of the street to allow construction of the wider island platform. The proposed cost of the new station was reported to be £20,000, however this apparently included rebuilding of the Mount Alexander Road underpass.

As was usual at that time, few details of the stageworks involved in rebuilding the station survive. A works siding was provided in mid December 1908 leading from No 3 Road. The points were secured by an Annett lock and rodded to catch points in the siding. It is likely that No 4 Road had been removed by this time, although the WN is silent on the matter. It is also likely that this works siding eventually became the new No 4 (back platform) road.

The major portion of the new station was brought into service on 20 June 1909. A new, much wider, island platform was provided with a central pedestrian subway. A proper set of station buildings was located on the island platform with the usual offices, waiting rooms, and toilets. Two carriage sidings were provided at the Up end of the station, and a significant rearrangement of tracks meant that suburban trains could now arrive into and depart from either side of the island platform. It was even possible for a Down train to arrive into No 4 Road (Back Platform) while an Up train departed from No 3 Road. However, most suburban services probably used the back platform road as this provided direct access to the coal stage and the run around road.

The new station was controlled by a new signal box immediately on the Up side of Buckley St. It contained a 74 lever No 6 pattern frame which worked two sets of interlocked gates. A tall box was provided to give a clear view over the top of the new station building.

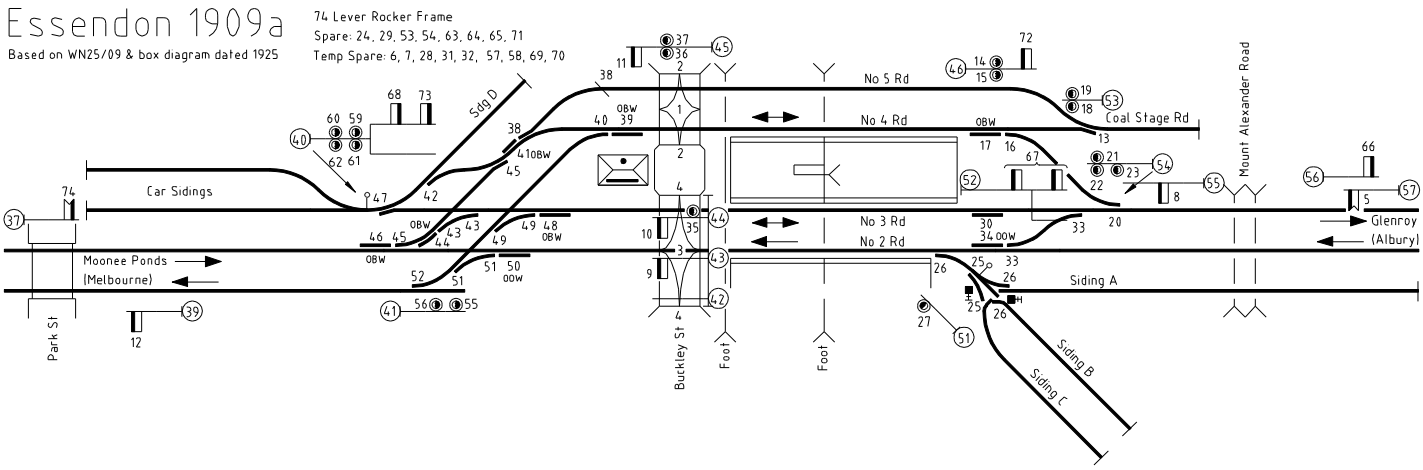
The initial phase of the new station only brought into service the new island platform. The original Up platform remained in use on what was now No 2 Road. It would appear that a new Up platform was constructed behind the original platform which, after removal, allowed the construction of No 1 Road. No 1 Road was brought into use in the middle of July 1909, possibly 14 July.

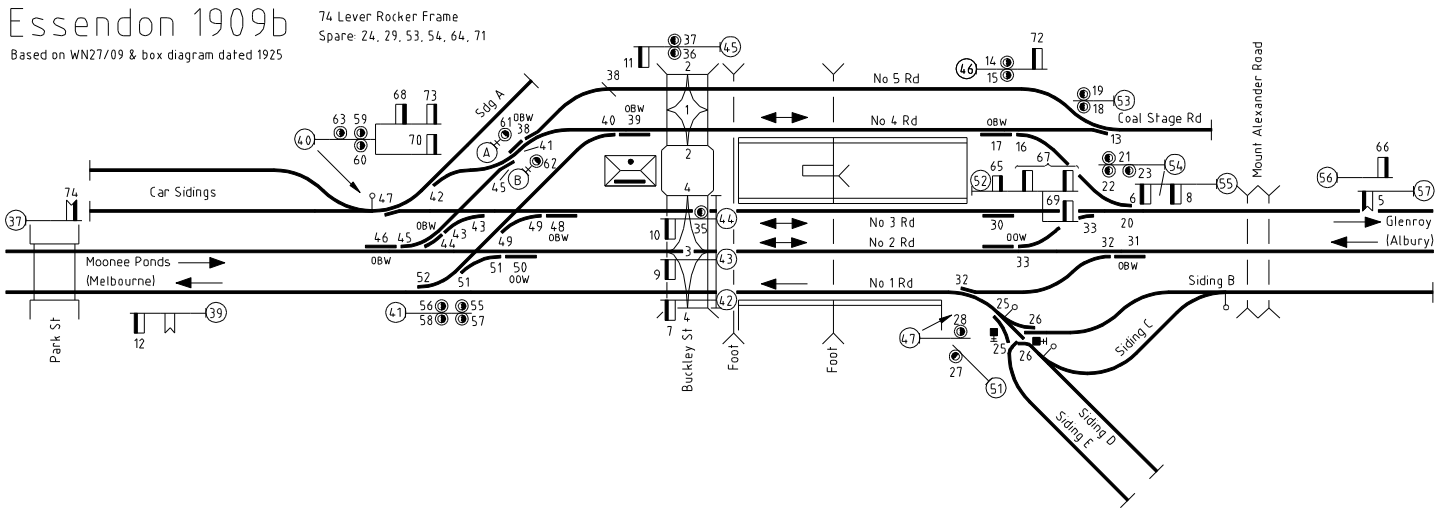
After reconstruction, special instructions stated that, as far as possible, Down Through trains were to be worked via No 2 Road, and Up Through trains via No 1 Road. Through Down trains were prohibited from passing behind the island platform on No 4 Road.

The main operational limitation of the new layout was that Up Broadmeadows trains could not access the island platform. These still had to terminate in the Up platform (No 1 Road) and then be shunted across to the island platform. This was even more inconvenient for passengers as Up suburban trains could not be conveniently docked at the Up platform, and the Broadmeadows line passengers would have had to traipse through the new centre subway to the island platform to continue their journey.

Electric bell communication was provided between the signal box and coal stage at the start of December 1909. This allowed the Drivers to inform the signalman when their engine was ready, and the signalman to inform the Drivers when they had to leave.

Block Rule VI (Section Clear, but Station or Junction Blocked) was formally authorised at Essendon for all Down trains in mid July 1909. The formal authorisation was a response to the Sunshine accident the previous year – previously Block Rule VI could be generally used except





at specific named stations. The need to use Block Rule VI arose from the need to cross originating Up suburban trains from the island platform to the Up line in front of arriving Down trains. In late December 1913 the acceptance conditions were varied and the use of Block Rule VI was prohibited. Instead Down trains could be accepted under the normal acceptance (Rule 3) when an Up suburban train was standing in No 4 Road and would need to cross to the Up line, provided the points were set to No 5 Road and the line was clear to Post 46. The road for the approaching Down train could not be altered until the approaching train had been brought to a stand at Post 40. No similar provision was necessary when Up suburban trains standing in No 3 Road as the Down suburban trains could be accepted with the route set for the train to arrive into No 4 Road.

In 1911 Essendon signal box was classified as Class 1, which indicated a complex box to work. To give some idea of how this rated, there were only four higher marked Special Class signal boxes at the time (Dudley St, Flinders St A, Flinders St C, and North Melbourne). The other Class 1 boxes were South Yarra, Richmond A, Flinders St E, Flinders St B, Viaduct Junction, No 1 Box, Franklin St, and Ballarat. Interestingly, the SM was well down in the ranks being only a Class 6 – equivalent, for example, to Box Hill, Kensington, and Oakleigh.

One special instruction that escaped comment in the last portion was that by 1902 trains could be signalled towards the Starting Signal (Post 46) during foggy weather, provided a fog signalman was on duty to inform the signalman that the previous train had passed the signal, the signal was at danger, and the line was clear to the signal. At this time it appears that this was the only place in Victoria where this was permitted. The permission remained in the General Appendix, but it appears it was removed in the early '50s, possibly with the issue of the 1953 General Appendix

Regrading

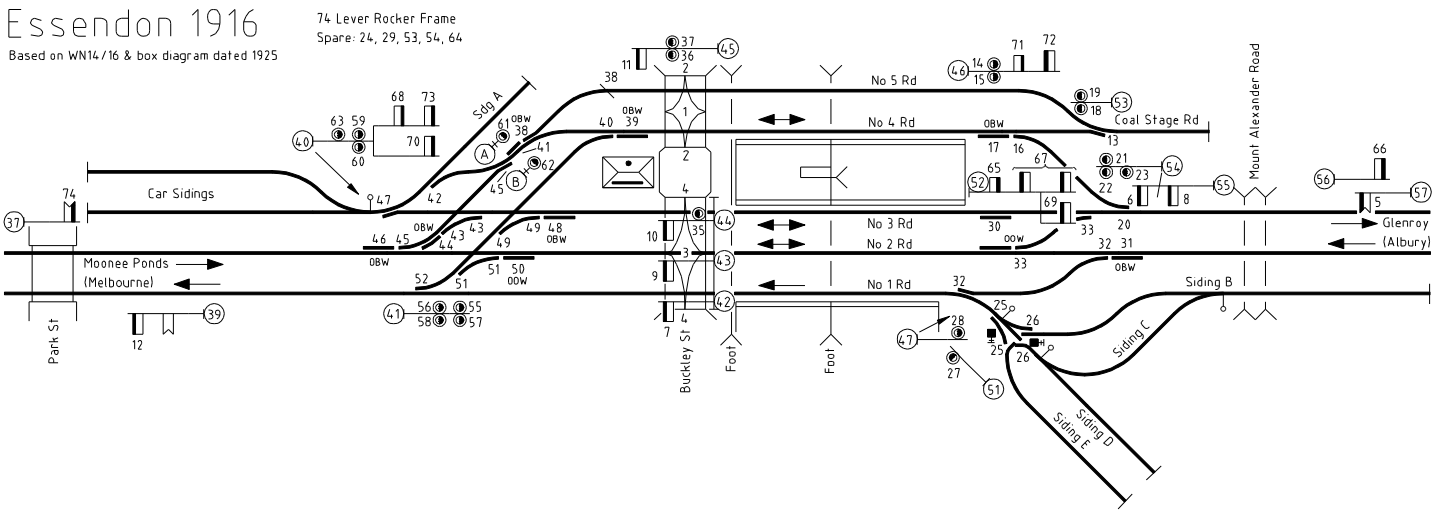
In late 1911/early 1912 the summit on the Down side of Essendon was lowered and the approaches regraded. Before 1912 the line passed through a shallow cutting at the top of the ridge before falling through the current site of Glenbervie station[1]. A level crossing with hand gates existed at Glass Street, roughly where the Glenbervie station buildings stand today. After the regrading, the Glass Street crossing was closed and a new overbridge was provided over the new cutting at Napier St. It is not clear exactly why this regrading was undertaken. It did not allow greater loads to be taken as the loads for Up and Down goods trains did not change between 1909 and 1916. Lowering the crest, however, may have increased the speed of trains over the section. It might also have eased the handling of trains over the crest.

On or around 19 October 1911, a block post was established at Glass Street. A three lever self-contained apparatus was provided which worked a trailing crossover and Up and Down Home signals. The Down Home was located on the Essendon Up Distant (Post 57) and the Up Home on a new post about 300 yards from the crossover. The block post was open Monday – Friday 0700 to 1730 hours, and on Saturday from 0700 to 1200 hours. Outside these hours the signal levers were secured reverse with a chain and padlock. The signal lights were not lit during darkness. Down trains were not accepted unless the line was clear for 300 yards beyond the temporary box (i.e. to the Up Home). To avoid stopping Up goods trains on the rising grade, they were not accepted from Glenroy until they had been accepted by Essendon.

The temporary box was closed in mid November 1911. The crossover was spiked normal and the signals secured reverse.

Glass St temporary box was reopened on or just after New Year's Day 1912. The instructions concerning the signalling were unchanged, however additional detail was given concerning the operation of the ballast train. The train came from the Melbourne direction and had to be marshalled with a brake van at each end. The loco ran around on arrival at Essendon and then pushed the empty vehicles to Glass Street. The Guard had to ride in the leading brake-van, which had to be loaded with three tons of deadweight. The handbrake in the brake van had to be tested on each trip and be in working order. Once at Glass Street, the train reversed through the crossover to the Up

[1] Glenbervie was opened on 11 September 1922.



line. Loading was done on the Up line and had to be properly protected.

In mid-March 1912 the temporary box was again closed. The crossover was spiked normal and the signals secured at reverse. The temporary box, three lever frame, crossover, and Home signals were abolished at the beginning of April 1912.

The final act occurred in mid August 1912 when the level crossing at Glass St was closed and the new overbridge at Napier St was opened.

Track locking and automatic signalling

The Up and Down lines between Newmarket and Essendon were track locked at the end of January 1914. On the Down line at Essendon, the track circuiting was provided to the Down Home signals on Post 40. On the Up line, track circuiting commenced at the Up Starting signal on Post 39. Track locking was purely an adjunct to working trains by means of the normal Winters block instrument, which remained in use on all sections between Newmarket and Essendon. Essentially, track locking was a form of lock and block. At Essendon, the Up Starting Signal on Post 39 was normally controlled by the track circuits up to the Up Advanced Starting signal at Moonee Ponds, but on special occasions this would be shortened to the Up Home at Moonee Ponds. Post 39 was fitted with a reverser, and possibly the Up Distant on Post 57. Note that no track circuits at this stage were provided over the pointwork at the Up end of Essendon, or through the platforms.

The Down line between Posts 52 and 56 had been track circuited since 1906. When the station had been resignalled in 1909, however, the calling on arm for moves from the back platform (No 4 Road) had been removed. Presumably it was felt that there would no longer be a need to shunt towards the Down line as the Coal Stage Road was available. However, on 29 March 1916 the calling-on was re-instated for these moves and lever 71 ceased to be spare.

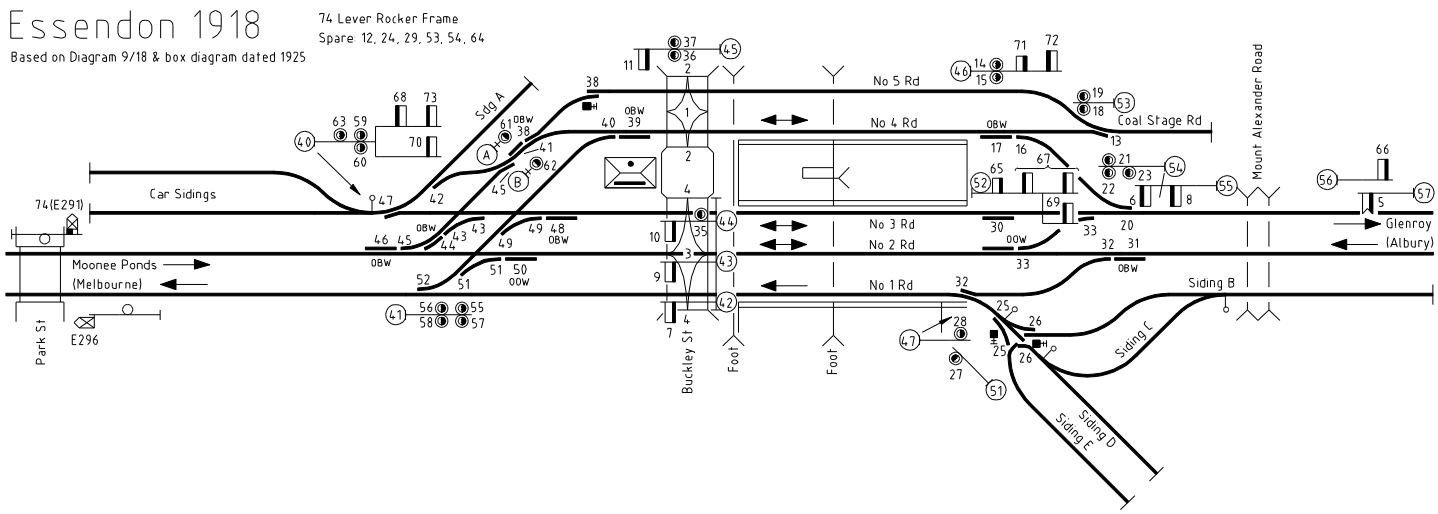
The May 1916 WTT gives a good snapshot of traffic at Essendon at the peak of the steam suburban service. There were 74 suburban services from Melbourne each weekday, and all terminated at Essendon. Given the facilities, it is likely that most terminated in No 4 Road. The section to Broadmeadows continued to be served by a shuttle service, with all passengers being required to change at Essendon. Fifteen Broadmeadows services were provided each day. It is worth considering the shunting moves required to turn around the Broady shuttle. The Up shuttle had to arrive in No 1 Road where it would discharge its passengers. The loco, however, couldn't run around in this road. The shuttle would need to be drawn forward on the Up line and then set back into Nos 3 or 4 Roads. The locomotive would then run-around. If the shuttle was in No 3 Road, this would require signalling the loco back to the Up line, then through No 2 Road to the Down line, and finally back onto its train. The Broady shuttle, and the last Down train each day were stabled at Essendon each night.

There were four Down country trains carrying passengers each day (five on Mondays, Saturdays and Sundays) ranging from the Sydney Express (non stop, of course) to a Sundays only car goods at 2300. With the exception of the two expresses, all these trains stopped at Essendon and would have had to be routed through No 3 Road. On the Up, there were five country passenger trains (six on Friday and Sunday).

There were 11 Down Seymour Goods trains scheduled each weekday, with paths listed for another 7. All Down goods trains were scheduled to take 4 minutes taking water at Essendon, although through trains hauled by DD class engines were excepted. There were 12 Up Goods trains ex Seymour scheduled each weekday, with paths for another 7.

The goods yard at Essendon was serviced by a daily Broadmeadows goods. This shunted Essendon on the Down between 0450 and 0550 and on the Up between 0855 and 0938.

By 1919 an interesting special instruction had been issued. When a Down goods train had been detained in No 2 Road to give preference to a more important train, and the tail of the train was foul of the level crossing at Buckley Street and likely to cause delays to road traffic, it was permitted for the train to draw forward onto the Up line to clear Buckley Street. The Signalman at Essendon had, of course, to block back to Glenroy before this move could be made. The Signalman had to instruct the Guard of the intended move, and then inform the Stationmaster



who instructed the Driver. The Driver was not allowed to set back until properly signalled by the signalman to do so.

Three position automatic signalling was provided between Newmarket and Essendon in mid June 1918 and double line block working was abolished. Alterations at Essendon appeared to be minimal – in fact no alterations were recorded in the interlocking register, although one lever should have become spare. The Down Distant (Post 37, lever 74) was replaced by Controlled Automatic E291. The Up Starting (Post 39, lever 12) was replaced by Automatic E296. It is likely that the Up end of the yard was track locked at this time, with reversers being provided on Homes 7, 9, 10, 11, 68, 70, & 73 and Distant 5.

Electrification to Melbourne

The provision of automatic signalling was in preparation, of course, for electrification. The overhead between Kensington and the Down end of Essendon was energised on 30 October 1918.

The first electric test train – a 6 car train – arrived at Essendon on Sunday, 10 November 1918. The section between Newmarket and Essendon was then used to test equipment and to train drivers.

Electrical services between Sandringham and Essendon (and Melbourne) were formally opened on 28 May 1919. A special train ran to Essendon where the electrification was declared open by the acting Prime Minister, Mr Watt. The train then proceeded to Sandringham where further speeches were made by the Minister of Railways. Commercial service began the following day, 29 May 1919, with three electric sets running to the steam timetable. The first public service left Flinders St at 0510, and services departed from Essendon during the morning peak at 0559, 0715, 0820, 0840, and 0926. It was not possible to run the full electric service due to trouble with the 'pony motors' at Middle Brighton substation and 'industrial troubles'. On 3 June, The Age reported that five electric trains had run during the previous day's service, six would run that day, and thereafter an additional train would be added each day until the full complement of 23 electric trains was in service. At this point the electric timetable could be commenced. By 24 June 1919, however, The Age was reporting that pending the rewinding of the blown out motors at the Middle Brighton substation, the current total of 12 electric trains would not be increased.

The all electric service using 21 six car trains was brought in on Sunday 14 September 1919 (interestingly, the full electric service on the St Kilda line had beaten this, being brought in on Sunday, 31 August 1919.) The off-peak service at this time was apparently at 25 minutes. Services were provided by 6 car trains composed of three MT units, probably marshalled MTTMTM.

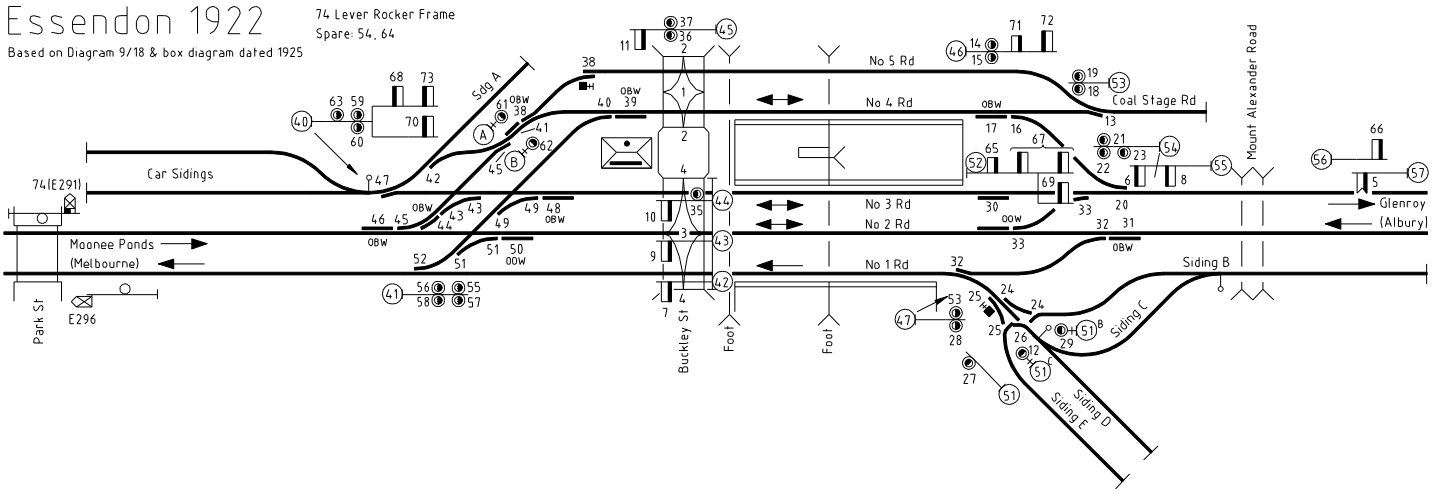
While the full electric service ran smoothly on the first Sunday, this was, unfortunately, not true on the Monday. A fault on one of the trains caused the power to fail on all three electrified lines (Essendon, Sandringham, and St Kilda) at 0815. Power was restored at 0831, but failed again at 0845. It was finally restored at 0857. A number of trains had to be cancelled. The Commissioners blamed the war – stating that not all of the equipment required for a reliable service had been installed in the substations, but, given the amount invested in the electrification, it was important to bring the electrification into service. During the Monday afternoon the Signalman at Viaduct Junction routed the 1538 Down Essendon onto the (unwired) Goods Lines. When it was attempted to set the train back the de-wired pantographs damaged the overhead. The train blocked traffic until it was pushed clear of the main lines about 1615 by the engine of a Newport workman's train.

As from 27 January 1920 the off-peak electric service was increased to run at 15 minute intervals.

Extension of electrification to Broadmeadows

Work continued on the Down side of Essendon to extend the electric service to Broadmeadows. Tests of the overhead were made in mid August 1921, and a trial trip operated on 29 August 1921. The Argus implies that passenger services commenced on 29 August running to the steam schedules, with the full electric service commencing on 4 September 1921. At the beginning of September, the Weekly Notice belatedly notified all concerned that the overhead to Broadmeadows was live.

The first Metro WTT I have after this was issued in December 1924. This showed that there were no less than 99 suburban services from Essendon to the city – the daytime off peak service ran every 15 minutes. By this date, there were 28 services from Broadmeadows and all



of these were through trains. Presumably, No 1 Road was used for Up trains originating from Broadmeadows, No 3 Road for Down through trains to Broadmeadows, and No 4 Road for terminating trains. Three trains stabled over night at Essendon – two would have stabled in the Car Sidings, and the third (the last Up service from Broadmeadows) probably stabled in the Back Platform or in No 5 Road.

The roaring twenties

The twenties saw a number of alterations at Essendon.

By April 1919 it was recorded that all roads and sidings were electrified at Essendon, except the goods yard (Sidings C, D, & E). The 1928 General Appendix was more nuanced. Roads which were not electrified were: Siding A, the old coal stage road, and the long siding "B". Note that it appears that the goods yard itself (Sidings C, D, and E) was electrified by this time. No change was then made in the electrified roads up to at least the 1953 General Appendix.

On 21 April 1922 the hand points at the entrance to Siding B (the Up refuge) were connected to the interlocking frame and additional signals were provided to control movements into and out of the goods sidings. The points at the entrance to the siding were now worked by lever 24, which also worked the catch points in Siding B. Ground discs 51B (Disc 29) and 51C (Disc 27) were provided to control movements from Siding B and Sidings C/D. Disc 28 relocated to right hand side of Post 28 and a new Disc 53 provided on left hand side for moves into Siding B

A co-acting signal was provided for the Up Home on Post 42 (on the signal bridge) on 14 October 1924. The co-acting arm was mounted on a ground post at the end of the platform and its provision may have reflected the growing use of this platform for Up through suburban trains from Broadmeadows.

The lead from the Down line to the island platform was renumbered on 18 May 1925. Points 43D and 45D swapped identity. It is not known why this occurred, but it may reflect an increasing use of No 3 Road for Down through trains. Dornan & Henderson state that in May 1925 the local shuttle service between Essendon and Broadmeadows was replaced by a through service. However, as already noted the Broadmeadows service had been all through trains by December 1924.

On 22 June 1927 all the red spectacles in the disc signals at Essendon were swapped for purple spectacles. In 1924 it had been agreed to use purple for the stop indication in shunting signals. After the installation at Essendon, Mr Colson, the senior Block and Signal Inspector for the Metropolitan district, stated that "these lights are not as suitable as the red lenses and there is an element of risk of their being taken as a proceed signal. The red lens is absolute and definitive." The AFULE then weighed in and complained that permanent way signals used purple lights as a warning aspect. The Chief Engineer S&T suggested that the lights in the permanent way signal be changed to yellow, but the assembled Block & Signal Inspectors in conference decided that they preferred not to change the permanent way lights, but instead to change shunting signals back to red as few had been installed. The Chief Engineer Signals & Telegraph then gracefully backed down, noting that it had been difficult to find an oil burner that would give a good purple light in service conditions. He proposed to change the shunting lights at Essendon, Box Hill, and Elsternwick back to red. This was agreed in April 1928, and on 4 May 1928 the purple lights in the disc signals at Essendon were changed.

On 9 August 1927 direct electric bell communication was provided between Essendon and Newmarket signal boxes with repeating bells at Moonee Ponds signal box. These were used to signal the departure of trains. This appears to have been the last act in a trial of train describers. Around the beginning of 1924 a set of train describers – of unknown type – was installed on trial between Newmarket and Essendon. In April 1924 the Chief Engineer Signals & Telegraph complained that no actual trial of the describers had been undertaken. The batteries were then connected and trials undertaken in June 1924. The Block & Signal Inspectors considered that the instruments were not giving satisfactory results and they were taken out of use in July 1924 pending improvements.

Provision of a facing crossover at the Down end

On 21 May 1928 the Broadmeadows service reverted to being a shuttle during off-peak hours. Just prior to this, on

1 April 1928 a facing crossover was provided between the Up and Down main lines at the Down end of the yard to provide access from the Down main to the island platform. The two events are almost certainly linked, and the provision of the crossover allowed cross platform transfers of passengers and parcels.

The first alteration connected with the provision of the crossover occurred in late March 1928 when Post 54 was relocated 103 yards further out, and Post 56 was moved 50 yards further out.

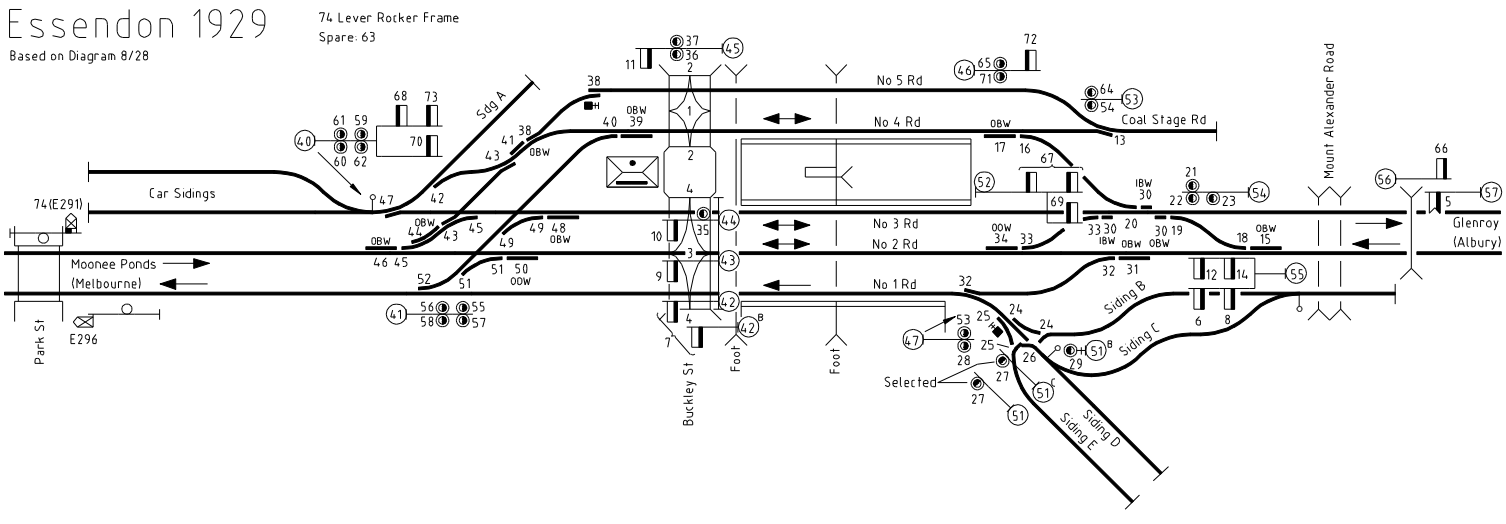
The crossover was brought into use on 1 April 1928. Due to the distance from the signal box each end of the crossover was worked by separate levers (18 and 19). As the Down line was track circuited a simple plunger was provided on Points 19, 20, and 33D. All three plungers were worked by one lever (30). The Up line was not track circuited, and so a plunger and lockbar was provided on the other end of the crossover. Post 55 was replaced by a new bracket post with four arms located 126 yards further out. To provide the necessary levers to work the crossover and the new signals, calling-on arms 65 and 71 were abolished (there would have been few shunting steam locomotives at Essendon by this time). The levers working a number of disc signals were rearranged. By this time, Ground disc Post 51C had been replaced by a disc on a mast.

Somewhat belatedly, WN 16, issued in mid April 1928, notified all that the new crossover had been wired for traction. It was also noted that the extension of the Coal Stage Road was also wired.

The October 1929 WTT shows that the Broadmeadows line services were through trains until the arrival of the 0812 Down at Essendon at 0830. This connected with an electric set that came on at Essendon and which then shuttled backwards and forwards between Essendon and Broadmeadows. This continued until the 'local unit' (probably a two car MD set) arrived at Essendon at 1650 when it was attached to a block (MTTM) to form the 1700 Up from Essendon. The peak hour Broadmeadows trains then ran through until the passage of the 1857 Down. The 1831 Down arrival had previously gone off at Essendon, and a unit (again, probably a two car MD set) was detached from this to form the evening shuttle. This came on at 1959 and ran the remaining services for that day. The unit was probably reattached to its block when services ceased for the day. At this date there were 83 suburban trains to Melbourne each day, and 35 services beyond Essendon to Broadmeadows. The goods service by this stage ran daily to Essendon, arriving at 1151. On Tuesdays and Thursdays it returned to Melbourne at 1326. On the other three days it was extended to Broadmeadows, returning to Essendon at 1500 and leaving at 1540.

The number of special trains being run to cater for the Essendon/Richmond football match at Windy Hill on Saturday, 26 May 1928, resulted in some interesting working at Essendon involving stabling trains on the Up line outside the Home signal. Presumably a single line service was maintained on the Down line using pilot working. The instructions were as follows:

> Essendon – Shunting of empty passenger trains.
>
> Owing to heavy race and football traffic on Saturday next, 26 May, it will be necessary to place more than one empty race or football special train on the Up road towards Broadmeadows, outside Home signals on Post 55. The following precautions must be adopted before the first train is placed on the up line outside Post 55.
>
> 1) The signalman at Essendon must comply with Rule 14 of Appendix IV [This deals with the use of the Obstruction Danger Signal, not as you would expect the Blocking Back signal]. In this case Rule 32 of Appendix IV [warning trains on parallel lines when Obstruction Danger has been sent] need not be complied unless an emergency arises for its use.
>
> 2) In addition, a Signalman must be stationed at North Essendon (Pascoe Vale Road level crossing) who must place the home signal at the stop position and maintain it in such position until he has received information from Signalman at Essendon that the up line is again clear and that the "Obstruction Removed" signal has been sent to the station on the rear.
>
> 3) Telephone communication exists between Essendon signal box and the Gatekeeper's Cabin at Pascoe Vale road, North Essendon. All communications between the signalman at



> Essendon and North Essendon must be made out on the proper forms and each message repeated back "OK".

It is likely that this working was resorted to on other occasions.

Goods trains

Traffic through Essendon changed significantly after the goods line from Albion to Broadmeadows was opened on 1 July 1929. Most of the north eastern goods services were rerouted to operate via this line through Tottenham Yard, Sunshine, Albion, and Broadmeadows.

The October 1927 WTT shows that before the opening of the new line there were nine Down goods trains scheduled each day, with another 11 'as required'. On the Up the equivalent numbers were eight regularly scheduled goods trains (plus two mixed trains), with an additional 13 'as required'.

After July 1929, almost no Down north east goods trains were scheduled to run via Essendon, but the situation with Up goods was more complex. A significant traffic from the north east was livestock bound for the Newmarket sale yards. This traffic was time sensitive, and rerouting it via Albion would not only mean a longer journey, but would also add significant extra time to the journey due the necessity to trip the livestock from Melbourne yards. Accordingly, permission was granted for Up full trains of livestock for Newmarket to be routed via Essendon while the suburban service was running (i.e. 5 a.m. until 12.30 a.m. the following morning) provided this did not cause detention to country or suburban traffic. Up full trains of livestock could be handled quickly at Newmarket by stopping them on the Up main line and reversing them directly onto the Racecourse branch. Outside these hours this restriction was eased and Up goods trains consisting of mixed loads of either livestock or perishables and goods could also be routed via Essendon.

By 1939 these instructions had been augmented. Before letting an Up livestock train leave Essendon while passenger traffic was running, the signalman at Essendon had to confer with his colleague at Newmarket, who, in turn had to confer with the OiC Cattle Yards. If the Cattle Yards could not accept the train, the signalman at Essendon had to refuge it, presumably in Siding B.

A second special instruction concerned Up Goods trains that shunted at Newmarket after passenger traffic had ceased. These were shunted on the main line, with the tail of the train standing on the Up main line outside the Up Home signal. For this reason, the signalman at Essendon was not to allow a second Up Goods to leave Essendon until Newmarket had reported the first train clear of that station.

Changes up to the Second World War

A further minor rearrangement occurred on 3 July 1929 when the two ground discs A (Disc 61) and B (Disc 62) were abolished. These two ground discs had facilitated locomotives running around, but, of course, were no longer needed. The discs were relocated to Post 40 and Disc 63, which had formerly led up to them, was abolished.

On 30 August 1929 the Up Homes on Post 55 were track locked by Nos 1, 2, 3, and 4 Roads. Reversers were fitted to the four Home signals (6, 8, 12 & 14). Plunger 30 was altered to stand normally in on Points 20 and 33. A special instruction was issued at the same time. When a Down train was entering No 2 Road, or was already at a stand in No 2 Road at Post 52, the Signalman was not to allow a simultaneous move from No 3 Road to the Down line or from the Up line to No 1 Road. The Signalman was required to give preference to the most important train.

An interesting instruction was issued by the Superintendent of Melbourne Yards on 6 July 1931:

> Complaint has been made that up trains stopping at Essendon to detach loading invariably stop too far inside the up home signal (Post 55). This applies particularly to the 8.40 pm up goods and results in bar No 31 and points No 32 being fouled and train having to set back.
>
> In future, the Guard running any train requiring to detach loading at Essendon will be held responsible for instructing Driver to stop train say eight or ten truck lengths [i.e. 200 to 250 feet] inside home signal in question.

The issue here was probably that the drivers of Up Goods trains did not realise that Points 32 in the Up line formed a crossover with the points to the goods yard. When they needed to shunt the yard, they would bring the train forward from Post 55 until it was at the clearance point to the sidings. At this point, of course, the signalman could not put Crossover 32 normal to allow the train to shunt into the sidings.

Only small alterations were made at Essendon in the following 21 years – reflecting the limited funding in the '30s and '40s. In 1938 work was done with Pascoe Vale Road hand gates as part of work to improve braking distances from Distant signals. The Spirit, no doubt, could come down the hill very fast. On 4 May 1938 a co-acting arm was provided on the Down Starting signal Post 56. On 13 July 1938 electric bell communication was provided between Essendon signal box and the gatekeeper's cabin at Pascoe Vale Road. Only Down trains were announced. On 18 August 1938 the existing Down Distant for the Pascoe Vale Road gates was relocated substantially further out to Post 56. The distant arm was, of course, motorised, and the control circuits detected the starting signal off.

In October 1939 the suburban timetable had hardly altered in a decade, despite the depression. Eighty four train served Essendon daily, of which 66 terminated at Essendon, and 18 of the 43 Broadmeadows services were through trains. Through trains ran predominantly during the peak. Of note, however, was that by this time nearly every second Essendon service connected with a Broadmeadows service during the interpeak period.

The local goods service now only ran three days a week (Monday, Wednesday, and Friday), and was extended to Broadmeadows on Mondays. It appears that the local goods was steam hauled as loads for electric locomotives were not given in the WTT.

The Broadmeadows shuttle was withdrawn as from 13 October 1941 and all trains ran through Essendon. It is likely that this reflected patronage derived from the

military base at Broadmeadows. The actual service, however, barely altered. The 1943 WTT shows that there were 85 trains to Essendon, of which 41 terminated at Essendon, and 44 ran through to Broadmeadows.

Like many Victorian locations, the Home signals governing departing moves at Essendon did not detect the facing points in advance. On 19 July 1943 electrical detection was provided for the facing points in the Down line at the Down end and Homes 67, 69, & 72 now electrically detected the points.

In these days of OH&S, it is interesting to record that a complaint was made in 1947 about the ladders to the dolls on the signal bridge at Essendon. The Block and Signal Inspector Mr Saunders personally checked this matter and reported that the ladders in question were only 8 inches wide and unprotected. As both hands were required to light these signals this was not considered safe. In August 1953 – no one could have accused the VR from being fast – the Chief Civil Engineer reported that top landings had been provided on the three dolls on the signalbridge.

The last decade of mechanical signalling

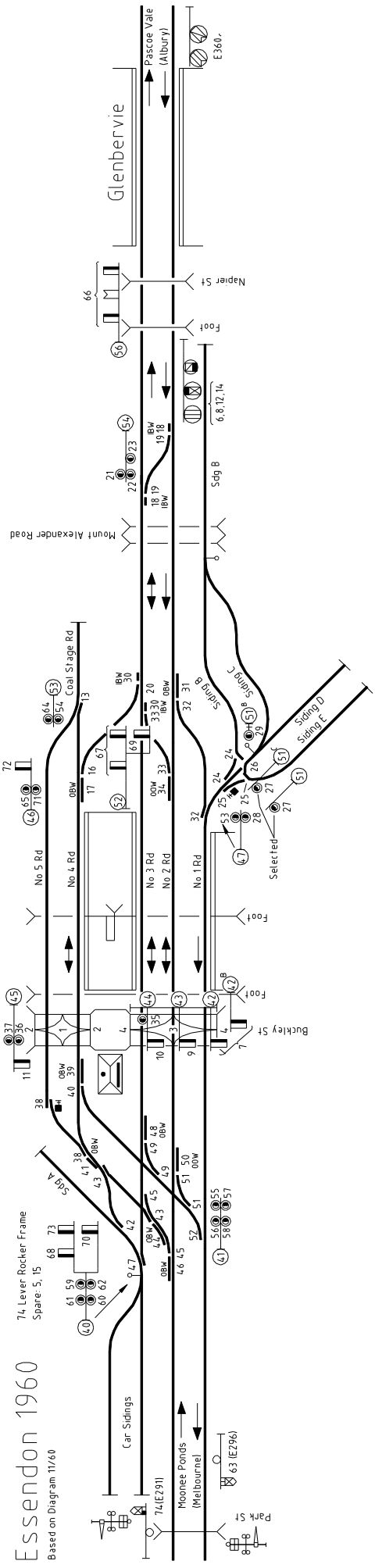
Post war the suburban service was still barely altered. There were 82 services which served Essendon, of which 38 terminated at Essendon.

No further signalling alterations took place at Essendon until 1959, when the Park Street hand gates (4 miles 47 chains) were replaced by boom barriers. This occurred on the 23 March 1959. The boom barriers were completely automatic. The only change at Essendon was the provision of a control on Up Automatic E296. This control allowed the Automatic signal to be held at stop when it was necessary to shunt on the Up line and prevent the boom barriers operating.

A reflection of the growth in suburbia beyond Essendon was that on 1 June 1959 most suburban trains were extended to Broadmeadows, and only a few peak hour trains now terminated at Essendon. No doubt to reduce the cost of this improvement to the service, the new timetable increased the off-peak headway between Melbourne and Essendon from 15 to 20 minutes. The services through Essendon had been reduced to 74 per day. Of these only eight now terminated at Essendon – mostly during the peak period.

The goods yard was only serviced on Tuesday. The Essendon goods arrived at 0923 and departed back towards the city at 1135. The service for the other two stations on the line open for goods (Glenroy and Broadmeadows) was more interesting. These stations were served on Tuesday, Thursday, and Friday. The Down train ran via Tottenham and Albion, but the return journey ran via Essendon so as to service Glenroy.

In 1960 the facing crossover at the Down end was relocated to the Down side of the Mount Alexander Road bridge. This occurred on 18 December 1960. In its new location it was well beyond the limits of mechanical operation, and it was now operated by point machines. Both ends of the crossover were now worked from one lever (19), with lever 18 operating as a pilot lever. Post 55 was replaced by a three position light signal located significantly further out (in fact near the Down starting signal). It is interesting that no normal speed route was



provided from this signal. The Up distant was replaced by a repeating signal E360 situated on the Down side of Glenbervie platform. Post 54 was also relocated further out.

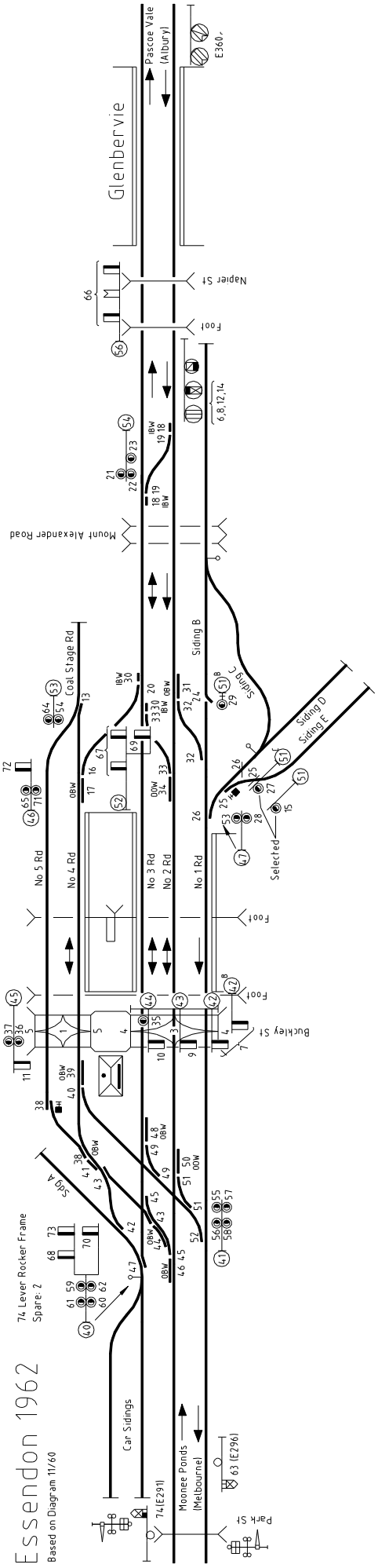
On 11 June 1961 Points 20 were relocated 58 feet further out and converted to motor operation. Points 32D and Crossover 33 were renewed on 18 November 1962.

The standard gauge line between Melbourne and Wodonga was opened for freight traffic on 3 January 1962, although this had little effect on the traffic through Essendon. More symbolically significant was the last broad gauge Spirit of Progress on 15 April 1962. From the following day the standard gauge Southern Aurora and Spirit of Progress were introduced and these, of course, ran via Albion.

Around April 1961 an application was received from the signalmen at Essendon that Gatewheel 3 be moved to allow more room to operate it. The Signal & Telegraph Engineer suggested moving Gatestop 2 to lever 5 at a cost of £100. This was approved and the work was brought into service on 19 August 1962.

On 19 December 1962 the connections to Sidings B, C, D, and E were re-arranged. The most important feature of this re-arrangement was to connect Siding B directly to No 1 Road. Posts 51 and 51C were relocated 4 yards further out. The mechanical selection of the two Discs 27 was abolished, and the disc on Post 51 was worked from lever 15.

To be continued



More From Gardiner

When looking for photos of Gardiner for the last issue, these photographs turned up as well, and it occurred to me that they might be of interest.

(Left) Gardiner had three panel gates, and the length of the gates required braces to prevent the bottom of the flying style from dragging on the ground. The brace ran from the iron reinforcing at the bottom of the flying style (as can be seen on the gate in the background) to the top of an extended gate shaft. The weight of the gate, acting through the brace, would have bent the gate shaft, and so the shaft was supported by a medium sized cast iron gate post. This particular gate post was clearly second hand at Gardiner as the lettering shows that the post was manufactured at 'McKenzie & Holland' / 'Worcester England', and could well have been manufactured before the Burnley – Waverley Road line had even been opened. On the right is the rotating red light provided at many gated crossings in Melbourne to assist the signaller in stopping the road traffic to close the gates. Above the crossing can be seen part of the tramway square, and the older style of overhead designed for trams with trolley poles.

(Below) The Cottew operating mechanism at the foot of this gate post. The drive to the gate was via the channel rod at the bottom of the photo, through the massively constructed Cottew Lift Crank to the casting mounted on the bottom of the gate. The lift crank gets its name from its function of lifting the drive from the level of the rodding to the bottom rail of the gate. The force to move the gate is applied close to its pivot at the gate shaft, and the forces in the various components are consequently high. This explains the massive construction of the lift crank. The quality of the ballast in the track in 1986 is to be noted!

(Left) The tramway disc for southbound trams along Burke Road, with the disc showing 'clear' for tramway traffic. This is a standard disc signal mounted on a long shaft running through the centre of the cast iron pillar. The lamp, converted to electric lighting by this date, is fixed to the pillar and does not rotate with the disc. One interesting feature of these tramway signals is that they are not failsafe. Unlike railway signals there is no mechanism to ensure they return to danger if the drive mechanism breaks. The road works in progress relate to the widening of Burke Road at part of the provision of the South Eastern Arterial (now transformed into the Monash Freeway). To give some idea of the road changes in this area since this photo, the road level in the intersection is now well above the roof of the Ford truck.

(Right) The drive mechanism for the tramway catchpoints and southbound disc. Normally this is in a pit and covered by a plate, but the roadworks have stripped this protection away (the rotten remains of the wooden sides of the pit can be seen in the photo). The mechanism is a simple escapement crank. The drive from the signal box comes in from the left, the drive to the catch points exits at the top, and the drive to the tramway disc on the right. When the signaller hauls on the lever, the tramway disc starts rotating immediately. When the lever is a little under half way over, the escapement crank lever engages with the other jaw of the crank and moves the catch point. Note that at this point the disc has completed about half its travel. The final half of the lever movement simply finishes turning the disc.

(Right) The northbound tramway disc was of a different design due to the shop verandahs on the southwestern corner of the level crossing. The disc itself was the same, but it was mounted above the verandah, and the pillar was a simple steel tube mounted in a cast iron foot (a standard foot for a tubular steel signal?). This disc is also at clear for tramway traffic. The northbound disc at the nearby Kooyong tramway crossing was similar to this, for the same reason.

(Below) Down Home 8, which protected the Burke Road crossing, was a reasonable distance from the crossing in order to provide a short overlap in case an arriving train overran the signal. This meant that it was actually mounted on the Down platform itself, an unusual, position in Victoria. This, in turn, meant a problem locating the train stop at the Home signal as the gap between the rails and the platform wall was too narrow for the old style GRS train stop. The solution was to locate the train stop mechanism between the rails, with the train stop itself mounted on an extended shaft. The mechanism has been fitted with a sheet metal cover to protect it from oil and grease leaking from the gear cases on the motor bogies of electric cars.