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The Flemington Racecourse line still has a number of unusual signalling features. It was (and is) the only line in Victoria to be signalled with two position automatic signals. Each signal shows stop or clear, and no advanced warning of the next signal is given. The signalling was brought into use in July 1919 and was a very early installation of light signals in Victoria. Drawings indicate that the signals were originally equipped with US&S Style M heads - another innovation as previously the VR had used its own design of light signal. The signal heads now in use appear to be Style R manufactured by McKenzie and Holland in Australia (the Style R was not introduced in the US until 1922). This photo is taken looking west towards Ascot Vale Road level crossing, with 'Flemington Racecourse Line Box G' (more usually known as 'Ascot Vale Road' signalbox) on the right hand side of the hand worked gates in the distance. This signal facing the camera on the overhead structure is not an automatic - it is the Down Home for Ascot Vale Road. The small light underneath is a call on signal. On the right hand leg of the overhead stanchion can be seen Up Automatic R212. A curious feature of the line was that the signalling was only brought into use when passenger traffic was being run to the Showgrounds or Flemington Racecourse. At other times the line was worked as a siding with the signals crossed, as seen here, and the points worked by hand. On the left are the Newmarket stock sidings - out of use when the photograph was taken and now removed. This photograph was taken in August 1986. Photo: Andrew Waugh

Society Contact Information

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EDITOR: Andrew Waugh, 28 Amelia St McKinnon, VIC, 3204

Phone (03) 9578 2867 (AH), (03) 9348 5724 (BH), email andrew.waugh@gmail.com

PRESIDENT: David Langley, P.O. Box 8, Avenel, VIC, 3664, Phone (03) 5796 2337

SECRETARY and MEMBERSHIP OFFICER: Glenn Cumming,

Unit 1/4-6 Keogh St, Burwood, VIC 3125. Phone (03) 9808 0649 (AH), (03) 9859 5844 (BH)

NSW CONTACT: Bob Taaffe, 63 Hillcrest Rd, Tolmans Hill, TAS, 7007, Phone: (03) 6223 6126

QUEENSLAND CONTACT: Phil Barker

PO Box 326, Samford, QLD, 4520, Phone: (07) 3289 7177, email: signal-1@bigpond.com

Minutes of Meeting held Friday 17 February, 2012, at the Menzies Creek Railway Station, Menzies Creek, Victoria

Present: - Glenn Cumming, John Dennis, Graeme Dunn, Michael Formaini, Darren French, Ray Gomerski, Chris Gordon, Judy Gordon, Bill Johnston, David Jones, Keith Lambert, Bruce McCurry, Andrew McLean, Peter Silva, David Stosser, Andrew Waugh, Andrew Wheatland and Ray Williams.

Apologies: - Wilfrid Brook, Chris King, David Langley, Steve Malpass, Tom Murray, Greg O'Flynn, Noel Reed and Laurie Savage.

Visitors: - Allan French, Catherine Gordon & Daughter & Son.

The Vice - President, Mr. Bill Johnston, took the chair & opened the meeting @ approximately 19:00 hours, and welcomed everybody to the Menzies Creek Railway Station.

General Business: - The February 2012 meeting consisted entirely of a visit to the Puffing Billy Railway locations at Lakeside, Nobelius Siding, Emerald and Menzies Creek.

PBR Narrow Gauge track trolleys were used to convey the participants to Lakeside with a brief pause at Emerald to change the staff and stops to photograph the signals on the approach to Lakeside.

Under the guidance of PBR Signals and Telegraphs Manager (and SRSV member) Andrew Wheatland, Members inspected the signalling equipment at Lakeside. A feature of the inspection was the demonstration of the five lever frame. The collection of home signals, hand plunger locks and Annett locks were inspected. The wig-wag signal and motorised pedestrian gates were demonstrated and the layout of the "Y" type points at the down end was explained.

The consist of the track trolleys was reversed before departing in the Up direction.

At Nobelius Siding, the staff locked points and rodded derail were inspected and operated. The track trolleys were run into the siding to prove that it can be done.

At Emerald, Members inspected the down end points which are "X" type points equipped with a hatchet detector and old style plunger lock. Staffs were exchanged at the station office before continuing on to Menzies Creek.

At Menzies Creek, the signal box was switched in to allow Andrew to demonstrate the features of this mechanical interlocking machine which is complemented by a relay interlocking. The opportunity was taken to inspect the interlocking underneath the operating floor.

Explanations were also given of the development of the signalling for the layout at Menzies Creek along with the staff and ticket working on the Puffing Billy Railway.

With darkness closing in, the decision was made to conclude the evening's activities.

No other business was transacted during the meeting.

At the conclusion of the visit, the Vice - President thanked Andrew Wheatland for making all the arrangements for the evening and for acting as our guide during the tour. Peter Silva was thanked for acting as Guard for the train of track trolleys.

Meeting closed at approximately 21:45 hours.

The next meeting will be on Friday 16 March, 2012 at the Surrey Hills Neighbourhood Centre, Bedford Avenue, Surrey Hill, commencing at 20:00 hours (8.00pm).

Minutes of Meeting held Friday 16 March, 2012, at the Surrey Hills Neighbourhood Centre, 1 Bedford Avenue, Surrey Hills

Present: - Wilfrid Brook, Brett Cleak, Graeme Cleak, Glenn Cumming, John Dennis, Graeme Dunn, Vance Findlay, Michael Formaini, Ray Gomerski, Chris Gordon, Judy Gordon, Andrew Gostling, David Jones,

Keith Lambert, David Langley, Steve Malpass, Andrew McLean, Tom Murray, Laurie Savage, Peter Silva, David Stosser, Andrew Wheatland and Bob Whitehead.

Apologies: - Jon Churchward, Steven Dunne, Bill Johnston, Chris King, Bruce McCurry, Greg O'Flynn, Brian Sherry, Rod Smith, Stuart Turnbull and Andrew Waugh.

The President, Mr. David Langley, took the chair & opened the meeting at 21:18 hours, following the 2012 Annual General Meeting.

Minutes of the November 2011 Meeting: - Accepted as published. Michael Formaini / Steve Malpass. Carried. Business Arising: - Nil.

Minutes of the February 2012 Meeting: - Accepted as read. Andrew McLean / Michael Formaini. Carried. Business Arising: - Nil.

Correspondence: - Letter from Surrey Hills Neighbourhood Centre requesting dates for 2012.
Letter to Surrey Hills Neighbourhood Centre with list of meeting dates for 2012.
Letter from Surrey Hills Neighbourhood Centre advising change of door codes.
Letter to Surrey Hills Neighbourhood Centre with completed Door Access Code Form.
Letter to David Jones of Scoresby welcoming him to membership of the SRSV.
Invoice from Surrey Hills Neighbourhood Centre for hire of meeting room for 2012.
Payment to Surrey Hills Neighbourhood Centre for hire of meeting room for 2012.
Vance Findlay / Steve Malpass. Carried.

Reports: - Glenn Cumming reported on the successful visit to the Puffing Billy Railway for the February 2012 Meeting.

General Business: - Glenn Cumming reported on a recent fire inside North Ballarat Junction Signal Box (Ballarat "C" Box) and asked if the frame was still inside? The answer was not known. (Confirmed at a later date that the frame still exists inside the building.)

Keith Lambert provided details about various works in the Metropolitan District. A summary of the discussion follows: -

* Keon Park - South Morang duplication has now been commissioned. Electric train services will commence on Sunday 22 April 2012.
* The track and signal alterations at Westall have now been commissioned.
* A new crossover is to be provided at the Down end of Sydenham in May 2012.
* Control of Sydenham will be transferred to Craigieburn.
* New connections at Newport South will be commissioned in late May 2012.
* The Cranbourne Line will be closed for 10 days over the Easter weekend for insertion of concrete sleepers and other works.
* Point and crossing work at the Up end of Dandenong will be rationalised over the Easter weekend. Siding "A" will be made a running line and old GRS point machines will be replaced.
* The Springvale grade separation project will commence in late 2012.
* Installation of TPWS (Train Protection and Warning System) will be done at Newport South, Altona Junction and Post No.38 at Essendon.
* Control of Greensborough - Eltham - Hurstbridge will be transferred to Epping when the new signalling is commissioned.

Bob Whitehead described a 10 day closure of the Seymour Line over the Easter weekend. Work to be carried out will include the rebuilding of one bridge, re-decking of eight other bridges, extension of the platforms at Donnybrook and rebuilding of the Up platforms at Wallan, Kilmore East and Broadford. This work will then be followed by two weeks of occupations during the off peak period to allow insertion of concrete sleepers in the Down Line.

Laurie Savage reported on a level crossing collision at Cheltenham this afternoon.

Chris Gordon advised that as part of the Regional Rail Link project, a Computer Based Interlocking will be provided at West Tower and the West Tower area will be controlled from Centrol. The Coburg Goods Lines have been abolished. The Arrival Roads in Melbourne Yard will be out of use from June 2012 to June 2013.

David Langley congratulated Brett Cleak on his recent wedding.

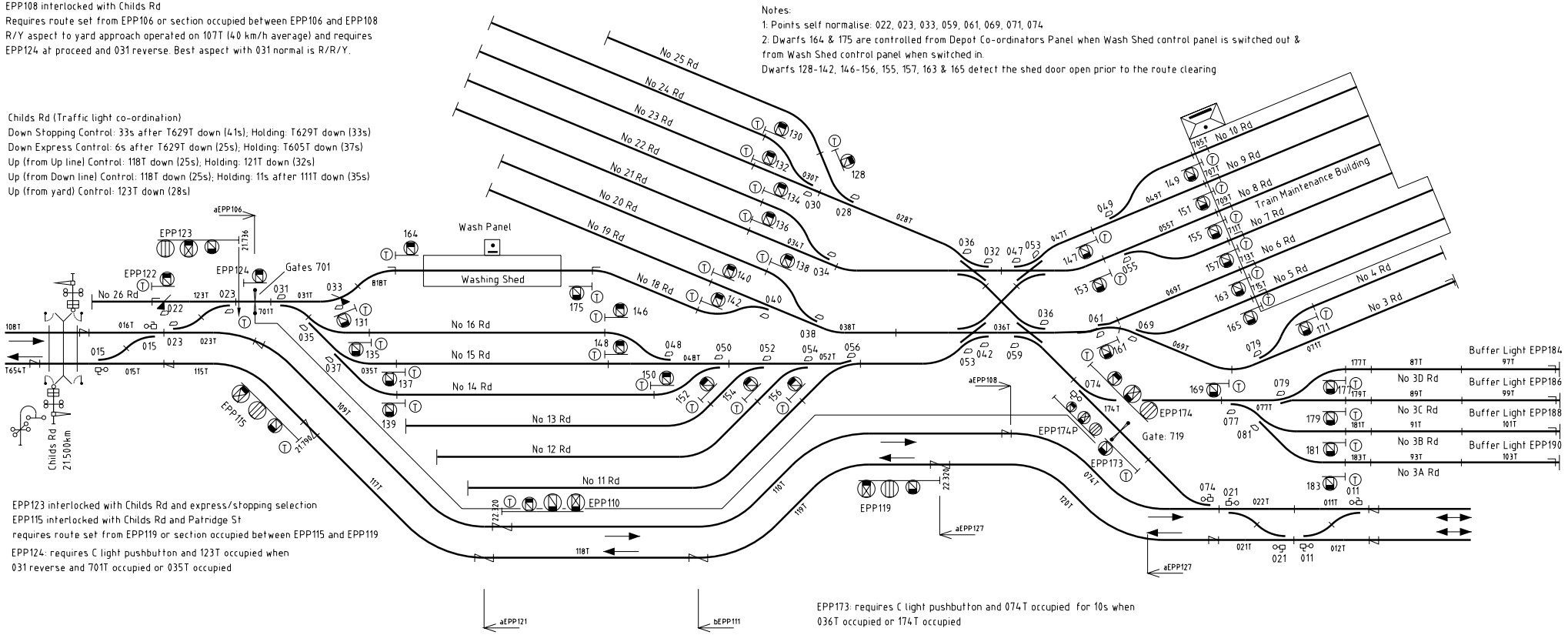
Brett Cleak provided details about various projects around the state. A summary of the discussion follows: -

* A new crossover will be provided at Albion to allow trains to terminate. The control panel at Sunshine will be replaced by screen based equipment.
* The duplication between North Geelong "C" Box - Moorabool was commissioned in January 2012.
* The extension of Laverton Loop has been commissioned including connections at the Up end for SCT Siding and Westgate Ports.
* The connection to CRT Siding is now fitted with motor points and signals.
* Barwon Park Loop near Inverleigh is now under construction.
* Works on the new siding at Dooen are progressing.
* Banner indicators have been provided at Seymour and Wangaratta. This task is believed to be that last works carried out by SIA (Southern Infrastructure Alliance).
* Work on the extended loop between McIntyre Loop - Tullamarine Loop has stalled and is now waiting additional funding.
* A proposal to provide BG and Sg sidings at McIntyre Loop to replace the Creek Sidings was dis-

EPP108 interlocked with Childs Rd
Requires route set from EPP106 or section occupied between EPP106 and EPP108
R/Y aspect to yard approach operated on 107T (40 km/h average) and requires
EPP124 at proceed and 031 reverse. Best aspect with 031 normal is R/R/Y.

Childs Rd (Traffic light co-ordination)
Down Stopping Control: 33s after T629T down (41s); Holding: T629T down (33s)
Down Express Control: 6s after T629T down (25s); Holding: T605T down (37s)
Up (from Up line) Control: 118T down (25s); Holding: 121T down (32s)
Up (from Down line) Control: 118T down (25s); Holding: 11s after 111T down (35s)
Up (from yard) Control: 123T down (28s)

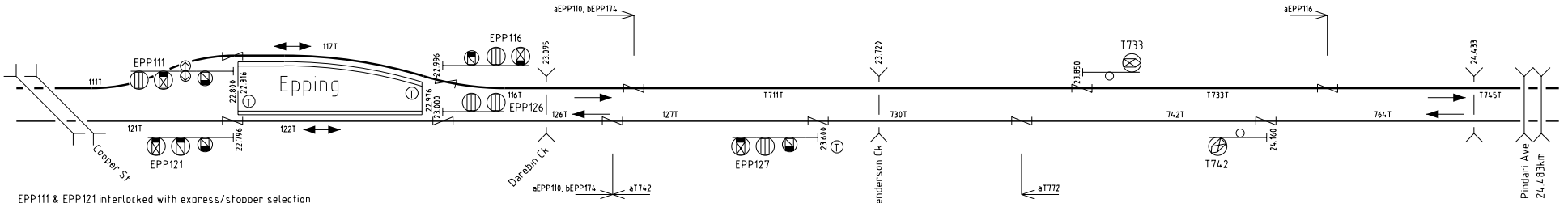
Notes:
1: Points self normalise: 022, 023, 033, 059, 061, 069, 071, 074
2: Dwarfs 164 & 175 are controlled from Depot Co-ordinators Panel when Wash Shed control panel is switched out &
from Wash Shed control panel when switched in.
Dwarfs 128-142, 146-156, 155, 157, 163 & 165 detect the shed door open prior to the route clearing



EPP123 interlocked with Childs Rd and express/stopping selection
EPP115 interlocked with Childs Rd and Patridge St
requires route set from EPP119 or section occupied between EPP115 and EPP119
EPP124: requires C light pushbutton and 123T occupied when
031 reverse and 701T occupied or 035T occupied

EPP173: requires C light pushbutton and 074T occupied for 10s when
036T occupied or 174T occupied

Epping 2012



EPP111 & EPP121 interlocked with express/stopper selection
EPP111 & EPP121 R/Y to yard approach operated on 112T or 122T
(40 km/h av in the case of 122T) and EPP173 at proceed.

cussed.

* Shepparton will be re-signalled over the Easter 2012 weekend and will be operated by remote control from Centrol.
* SCT at Laverton have a workstation to release moves from ARTC territory into SCT Siding.

Live testing for the replacement of Metrol is expected to be performed late in 2012.

Recent flood damage in North East Victoria was discussed.

Bob Whitehead described the proposed re-signalling at Toolamba.

Bob Whitehead noted an item from 1888 whereby a flag station was provided at the site of Tunstall. No platform was provided. A lady was appointed as Caretaker with a red flag and was paid six pence per day.

Meeting closed at 22:17 hours.

The next meeting will be on Friday 18 May, 2012 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 7/12 to WN 15/12 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 alteration.

17.02.2012 **Dimboola - Rainbow** (TON 43/12, WN 7)

On Friday, 17.2., the line between Dimboola and Rainbow was booked back into service. The line beyond Rainbow to Yaapeet remains booked out of use and baulks have been provided at 431.000 km. All intermediate sidings remain booked out of service and Rainbow is the only siding that can be shunted. The points at Rainbow are secured by hand locking bars and padlocks. A Master Key is not provided for the line (see SW 170/10). TON 692/10 is cancelled.

19.02.2012 **Brooklyn** (TON 44/12, WN 7)

On Sunday, 19.2., Points N were booked back into service. TON 462/10 is cancelled.

19.02.2012 **Officer - Pakenham** (SW 54/11, WN 7)

On Sunday, 19.2., automatic pedestrian gates were provided at McGregor Rd (57.071 km) between Officer and Pakenham. The gates are located 20 metres on the Up side of the level crossing. Amend Diagram 141/06 (Narre Warren - Pakenham).

20.02.2012 **Lynbrook Loop** (SW 62/12, WN 7)

On Monday, 20.2., Up Home LBK781 and Up Automatic LBK683 were replaced by new LED signals located 200 metres in the Down direction from their former location. This relocation was necessary to clear the site of the future Lyndbrook station platform. Signal LBK780 was also replaced by a LED signal. Diagram 55/11 (Lynbrook Loop - Cranborne) replaced 33/11.

(21.02.2013) **West Tower** (SW 12/12, WN 7)

The following instructions will apply for RRL Work Package A Stage 1 (SW 141/11). Prior to signalling a train from Home 256 to Home 258, the signaller must reverse Points 179 using the point key. Home 256 will then lock Points 179 reverse and display a low speed warning indication. Once the route has been set, the Signaller must return the point key for Points 179 to the 'C' position. This is to allow a subsequent route to be set from Dwarf 266 towards the arrival siding (as this move requires Points 179 normal).

(21.02.2012) **Sea Lake** (TON 41/12, WN 7)

The baulks on the line at 422.800 km have been relocated 200 metres further out to 423.000 km.

(21.02.2012) **Dennis - Macleod** (SW 71/12, WN 7)

Diagram 107/12 (Dennis - Macleod) replaced 99/10 as in service.

21.02.2012 **Albion - St Albans** (SW 64/12, WN 7)

On Sunday, 21.2., Automatics M517, M539, M573, M578, and M603 were converted to LED.

22.02.2012 **Miralie** (TON 46/12, WN 8)

On Wednesday, 22.2., the siding was booked out due to lack of use and sleeper condition.

22.02.2012 **Pira** (TON 47/12, WN 8)

On Wednesday, 22.2., the siding was booked out due to lack of use and sleeper condition. The siding is being used to store Pacific National wagons and V/Line infrastructure staff must be in attendance when the wagons are removed.

23.02.2012 **Bell** (SW 65/12, WN 7)

On Thursday, 23.2., remote control operation of Bell interlocking from Epping was brought into use. The panel at Bell will remain for emergency use. The signal post telephones at Bell are only available for use when Bell is in local control and switched in. SW 404/08 is cancelled.

25.02.2012 **Albion - St Albans** (SW 64/12, WN 7)

On Saturday, 24.2., the following Automatics were upgraded to multi-aspect LED heads: M517, M539, M573, M578, and M603.

(28.02.2012) **Manor Loop** (SW 14/12, WN 8)

Signalling alterations were commissioned at Manor Loop. Diagram 88/11 (Werribee Racecourse - Little River) replaced 86/11.

28.02.2012 **Marshall** (SW 13/12, WN 8)

On Tuesday, 28.2., the VDU display for Marshall was updated as follows:

* level crossing alarms and indications for Yarra, Swanston, and Woods Streets were added
* the static indications for Geelong Racecourse were removed
* workstation failure alarms for Marshall were provided

03.03.2012 **Spencer St - Viaduct Junction** (SW 84/12, WN 9)

On Saturday, 3.3., the out-of-use compound points 466D and 205D were removed. Points 469 and 467D were installed but not commissioned.

04.03.2012 **Maribrynong River Junction** (SW 70/12, TON 52/12, WN 9)

On Sunday, 4.3., Home SKN770 was permanently secured at stop. The reverse point calling function for Points 661, 662, and 670 were inhibited. The points remain detected normal, but the point motor fuses were removed and they are secured by point clips and are spiked. Track circuit 770T was isolated by the removal of the track fuses and termination pins. (The points had been booked out of use and secured normal on 7.8.2008 - see SW 299/08).

04.03.2012 **Centrol** (SW 18/12, TON 52/12, WN 9)

From Sunday, 4.3., for a trial period of around two weeks, the Train Controller at Centrol, Room 6, will be both the Signaller and Train Controller for the Pakenham - Traralgon line. The Mildura line and the North West Branch lines will be operated from Room 7 on day and afternoon shifts (as already occurs on night shift).

09.03.2012 **West Tower - North Melbourne Junction** (SW 17/12 & 70/12, WN 9)

Between Friday, 9.3., and Wednesday, 11.3., the Coburg Goods lines were abolished from Home 182/ Dwarf 176 to a point clear of Points 145. Baulks were provided on the Down side of Points 145. Access between the Main Goods lines at Franklin St and the Arrival Roads will now only be possible via the Down line. Direct access between the South Hump avoiding track and the Arrival Roads will no longer be possible.

Homes 114, 116, & 182; Dwarfs 174, 176, & 266; and Points 153, 177, 179, 181, 183, 193, 195, & 197 were abolished. Points 145 (West Tower), 463, 684, and 686 (North Melbourne) were secured normal. Home NME777 was secured at stop. With the removal of Points 177, 179, 181, and 183, a plain track connection was provided between Home 258 and Nos 3, 5, 6, & 7 Arrival Roads. Home 256 will only display stop and low speed warning, and will be approach released from stop for moves towards Signal 258. Home 258 will remain approach released from stop.

SW 12/12 is cancelled. Diagram 1/12 (West Tower) replaced 73/11.

(13.03.2012) **Tottenham Yard** (SW 19 & 20, WN 10 & 12)

Operating Procedure 21 (West Footscray - Tottenham - Sunshine) was reissued and Operating Procedure 21a (Tottenham Yard) was issued. SW 126/10 is cancelled.

Tottenham is divided into two areas: the Common User Area and the Pacific National Leased Area. The Common User Area is Tracks 3 - 6 of the Sunshine end of the West Yard, Tracks 9 - 12 of the (1st classification) West Yard, Tracks 2 - 8 of the East Yard, Tracks 14-20 of the (2nd classification) East Yard, Track 1 in the East Yard (including the Crossover from the East Yard to the Up Independent Track), the neck joining the East and West Yards, and the lead of Track 3 West Yard towards the PN Leased Area. The PN Leased Area comprises Track 3-8 of the (1st classification) West Yard and Tracks 2-13 of the (2nd classification) East Yard. Two sets of points in the Neck area are locked out to prevent a direct movement from the PN 1st classification yard towards the Common User Area of the East Yard. The keys for these points are held by V/Line Network Services Department.

Clearance Point boards are reflectorised triangular boards between the rails at the exit of East Yard Tracks 3, 4, 5, 7 and 8, and West Yard Tracks 3, 4, 5, 5A, and 6. These are used to indicate the clearance point in each siding for departing movements, and the track number for arriving trains. Note that East Yard Tracks 5 and 5A have been booked out to avoid conflict with the default arrival and departure tracks.

No Entry boards are similar to Clearance Point boards and are used to indicate that a siding cannot be entered from that direction. No Entry boards are provided at: the Down end of East Yard Track 8 (reserved for arriving trains ex Melbourne); Up end of East Yard Track 3 (reserved for departing trains to Melbourne); Up end of West Yard Track 6 (reserved for arriving trains ex Sunshine or Brooklyn); and the Down end of West Yard Track 4 (reserved for departing trains to Sunshine or Brooklyn).

East Yard Track 8 and West Yard Track 6 are to be kept clear for train arrivals. East Yard Track 3 and West Yard Track 4 are to be kept clear for train departures. All train schedules will show the arrival time clear into Tottenham Yard. Normally for the Common User Area this will be into East Yard Track 8 or West Yard Track 6, but an operator may choose to arrive into a different track. In this case it is the operator's responsibilty to ensure that the whole of the train can clear the main line and all fouling points, and that no other rail movement is being performed at the same time as the arrival. PN may access the PN leased area provided the competent employee with the train advises the Brooklyn

Loop Train Controller that they are entering the PN leased area, and will advise when they are clear of all fouling points of the Common User area.

Departing trains may do so from any track except East Yard Track 8 and West Yard Track 6. They must stop before the Clearance Point Boards and obtain permission from the Brooklyn Loop Train Controller.

When an operator has ceased operations in the Common User Area, the points painted white with black stripes (located near the neck) must be placed 'on' and locked with the lever sleeve and chain. The derails at the Up end of Tottenham Yard on the track on which vehicles are stored or rakes stabled must be locked on the rail. The derail on Track 1 (Common User Area) adjacent to the Up Independent Track must be locked on at all times except when it is required to be 'off' for a movement. A 'Derail' sign is erected adjacent to the derail.

The Annett locked crossvers between the Neck area and the Up and Down Independent Goods Lines are not available for use and are secured normal by points clips with independent padlocks.

14.03.2012 **Ballarat** (SW 16/12, WN 9 & 10)

On Wednesday, 14.3., banner indicator 24BI was provided on Platform 2, 81 metres in the rear of Home 24. Repeating signal 24P was abolished. Diagram 20/12 (Ballarat) replaced 78/10.

16.03.2012 **Centrol** (TON 64/12, WN 11)

On Friday, 16.3., the trial of combining Rooms 5 & 6 was concluded. TON 51/12 and SW 18/12 are cancelled.

17.03.2012 **Ballarat** (SW 16/12, WN 9)

Between Tuesday, 13.3., and Sunday, 17.3., the following signals will be fitted with LEDs: Homes 4, 8, 16, 18, 20, 24, 26, 28, 40, 46, 50, and 54; Dwarfs 14, 30, 32, 36, 38, and 44; and the illuminated 65 on Automatic AL1147.

19.03.2012 **Epping** (SW 93/12, WN 10)

On Friday, 16.3., and between Sunday, 18.3., and Monday, 19.3., co-acting signal EPP174P was provided. It is situated on the right hand side of the track. The new train stabling gates EPP719 will be tested and then secured in the open position.

(20.03.2012) **Ruthven - Epping** (SW 100/12, WN 11)

Signalling Diagram 47/12 (Ruthven - Epping) replaced 75/11 as in service.

20.03.2012 **Sale** (SW 24/12, WN 11)

On Tuesday, 20.3., boom barriers were provided at the existing flashing lights at Hunt Place (203.891 km) on the Up side of Sale. The crossing was already operated by predictor with remote monitoring. Amend Diagram 116/11 (Rosedale - Sale).

21.03.2012 **Malmsbury** (SW 21/12, WN 10)

On Wednesday, 21.3., boom barriers were provided at the existing flashing lights at Breakneck Rd (99.325 km) on the Up side of Malmsbury. The crossing was already operated by predictor with remote monitoring. Drivers travelling at more than 50 km/h may accelerate after passing the level crossing predictor boards. Amend Diagram 38/11 (Malmsbury - Elphinstone).

21.03.2012 **Bendigo** (TON 69/12, WN 12)

On Wednesday, 21.3., the Maintenance Shed Siding and Engine Repair Siding were booked out of service. The points at the entrance to these two sidings were spiked to lie for No 1, 2, 3, & 4 Roads (Carriage Shed) and No 6 Road (Fuel Point).

22.03.2012 **Sale** (SW 24/12, WN 11)

On Thursday, 22.3., boom barriers were provided at the existing flashing lights at Hunt Place (203.891 km) on the Up side of Sale. The crossing was already operated by predictor with remote monitoring. Amend Diagram 116/11 (Rosedale - Sale).

23.03.2012 **Kerang** (SW 32/12, WN 12)

On Friday, 23.3., Kerang was closed as a Train Order crossing location, but remains available for follow on movements. It is now an Intermediate Train Order Station.

The Up and Down end main line points were secured normal, and Dwarfs N and Q have been placed out of service. The signal quadrants and pushbuttons on the platform will remain available for use.

23.03.2012 **Traralgon** (SW 25/12, WN 11)

On Friday, 23.3., boom barriers were provided at the existing flashing lights at Minniedale Rd (163.016 km) on the Down side of Traralgon. The crossing was already operated by predictor with remote monitoring. Amend Diagram 114/11 (Traralgon).

26.03.2012 **Aircraft - Hoppers Crossing** (SW 103/12, WN 12)

Between Friday, 23.3, and Monday 26.3., the East line was slewed out to allow for construction of Williams Landing station. The slew extends from 23.080 km to 23.096 km. Automatics G824 and G825 were relocated from the signal bridge to ground masts at the existing location of 23.618 km.

(27.03.2012) **North Bendigo Junction** (SW 31/12, WN 12)

Siding A at the Up end of the Workshops Sidings has been abolished and the points leading to it have been removed. The level crossing providing road access to the North Bendigo Workshops (164.861 km) has been closed. Locked hand gates have been provided and the stop signs removed.

(27.03.2012) **Traralgon - Sale** (SW 30/12, WN 12)

Diagrams 14/12 (Traralgon) and 16/12 (Rosedale - Sale) replaced 114/11 and 116/11 respectively as in service.

28.03.2012 **North Bendigo Junction - Eaglehawk** (SW 27/12, WN 12)

On Wednesday, 28.3., boom barriers were provided at the existing flashing lights at Nelson St (168.399 km) on the Down side of North Bendigo Junction. Remote monitoring equipment was provided. The crossing was already operated by predictor with remote monitoring. Amend Diagram 74/11 (North Bendigo Junction).

29.03.2012 **Cudgee** (SW 28/12, WN 12)

On Thursday, 29.3., boom barriers were provided at the passive crossing at Dwarroon Rd (248.704 km). The boom barriers are operated by a level crossing predictor and remote monitoring equipment was provided. Trains travelling at more than 50 km/h may accelerate between the predictor boards and the level crossing. Diagram 18/12 (Panmure - Sherwood Park) replaced 14/11.

29.03.2012 **North Bendigo Junction - Eaglehawk** (SW 28/12 & 31/12, WN 12)

On Thursday, 29.3., boom barriers were provided at the existing flashing lights at Prouses Rd (166.660 km) on the Down side of North Bendigo Junction. Remote monitoring equipment was provided. The crossing was already operated by predictor with remote monitoring. Diagram 186/11 (North Bendigo Junction) replaced 74/11.

30.03.2012 **South Geelong** (SW 33/12, WN 12)

On Friday, 30.3., switchout facilities were provided and Closing lever 18 was commissioned. When South Geelong is switched out the Track Block section will be Geelong - Marshall.

When South Geelong is switched out the signals at South Geelong will normally be at stop. For Down trains, the signals on Posts 5, 2, and 1 will be automatically cleared by clearing a Down Home or Dwarf at Geelong for a movement towards South Geelong. For Up trains, the signals on Posts 8, 4, and Marshall Post 1 (South Geelong Up Distant) will be automatically called by the operation of Post 3 at Marshall. Post 4 will clear automatically, but Post 8 is also controlled by Control lever 162 at Geelong. When South Geelong is switched out, the express/stopping selection for Posts 5 and 8 at South Geelong will default to express movements. Follow-on movements cannnot be performed when South Geelong is switched out.

Operating Procedure 62A (South Geelong - Switching in and out) was issued. Operating Procedure 64 (South Geelong - Marshall - Moriac Block Point, Issue of Train Orders) was re-issued.

The Track Block sections Geelong - South Geelong and South Geelong - Marshall must be unoccupied prior to switching South Geelong in or out. The Signaller at South Geelong must obtain permission from the Train Controller before switching in, and having obtained permission must inform the Signaller at Geelong. When the release light shows above lever 18 at South Geelong, the Signaller must press the push button and restore Lever 18 to the central position. The signal levers can then be restored to normal, and Lever 18 restored to the full normal position. This will illuminate the 'Switched in' indication on the Marshall VDU at Geelong. The Signallers at Geelong and South Geelong must then test the signalling. Switching South Geelong out is a similar process.

To reduce the delay to Down Warrnambool passenger trains when receiving Train Orders at Marshall, permission is granted to issue a Train Order to the Driver (or other suitably qualified person) at Geelong. When South Geelong is switched in, a Train Order for a Down Freight train can be issued to the Signaller at South Geelong in order to reduce the delay to the train. When South Geelong is switched out, a Train Order can be issued to the Driver (or other suitably qualified person) at Geelong. The Master Keys for the Warrnambool line are held at South Geelong. It is consequently necessary for the Train Controller to arrange for South Geelong to be switched in when it is necessary to issue or receive a Master Key from a freight train. When necessary, it is permitted to issue a Master Key to a freight train at South Geelong, and for it then to proceed to Marshall to wait for a Train Order.

A Train Order must not be issued at Geelong, South Geelong, or Marshall if there is a Train Order issued for the Marshall - Mout Moriac Block Point section.

02.04.2012 **Dandenong** (SW 110/12, WN 12)

Between Saturday, 31.3., and Monday, 2.4., the following alterations took place as part of the Dandenong signals renewal project. Homes DNG711, DNG715, DNG721, & DNG725 and Dwarfs DNG712 & DNG734 were converted from searchlights to tri-colour LED. The B light on Home DNG705 was converted from a colour light head to a tri-colour LED head. Crossover 624 was removed and a baulk was provided at the Up end of No 4 Road. There is now 280 metres standing room on No 4 Road. Note that Dandenong yard (Roads 4, 5, & 9 and Sidings A, 3, and 4) remain booked out. Homes DNG711 and DNG715 were provided with a new design of tilting mast.

(03.04.2012) **South Kensington** (SW 133/12, WN 13)

Diagram 35/12 (South Kensington) replaced 166/11 as in service.

(03.04.2012) **Craigieburn - Failure of Signals** (SWP 7/12, WN 13)

Northern Group Operating Procedure 18 (Craigieburn - Somerton - Broadmeadows) was reissued to take into accout the provision of the WestCAD interlocking and the updating of auto-normalisation points. SWP 7/07 is cancelled.

(03.04.2012) **Craigieburn - Operating Procedure 19 (Train Wash Plant)** (SWP 5/12, WN 13)

New Metro Northern Group Operating Procedure 19 (Craigieburn Train Wash Plant) was issued.

Train movements in Siding No 1 are jointly controlled by the Signaller and the Wash Plant operator. When the wash plant is in use the operator gives the Signaller a release that allows the Signaller to signal trains to a stop mark (two sleepers painted white). The operator then manages the movement of the train into the wash plant using white indicating lights. When the wash plant is not in use the Signaller may use the up end of Siding No 1 for train movements, however trains may not proceed past the stop mark.

The wash plant operators panel is provided with two key switches. The first is to switch the panel in or out. It is provided with two indications - orange (switched out) and red (switched in). The second key switch provides the release to the Signaller. It has three positions (release given, centre, and cancel release) and is spring loaded for the centre position. A green indication is provided for the release given position.

When the wash plant operator commences duty, the operator must inform the Signaller that the panel is to be switched in. Switching the panel in will show an 'In' indication on the Signaller's display. When the panel is switched in the Signaller must communicate with the operator about all trains that enter or leave Siding No 1. When it is necessary to signal a train into Siding No 1, the operator must insert the special key and give a release. This will show a 'Released' indication on the Signaller's display. When the train has entered Siding No 1, Points 442 will self normalise and be locked until a train has departed from Siding No 1 or a second release is given. The signalled train must come to a stand at the stop mark. When everything is ready to receive the train into the wash plant white indicating lights will light to authorise the train to enter. When a train is to leave Siding No 1, Points 442 will not reverse until a route is set from Dwarf CGB560 and the train has occupied the TR track circuit.

(03.04.2012) **Craigieburn - Operating Procedure 19A (Maintenance Facility)** (SWP 6/12, WN 13)

New Metro Northern Operating Procedure 19A (Craigieburn Train Maintenance Facility Sidings) was issued.

Train Maintenance Sidings 19-25 are under the control of the Fleet Maintenance Production Co-ordinator at Craigieburn who will arrange for train movements in conjunction with the Fleet Controller, Signaller, and Workshops Driver.

The Signaller can signal trains into Train Maintenance Sidings 19-21. If the Production Co-ordinator needs to restrict trains from entering one of these sidings, the siding can be 'locked out' by a key-switch to prevent the Signaller setting a route into the siding. When the keyswitch is operated a "Blue" road blocked symbol will be displayed on the Signaller's VDU.

The Production Co-ordinator must give a release before trains can enter the Train Maintenance Building (Sidings 22-25). The release is given by a keyswitch and will cause the display of a green release symbol adjacent to the respective track. All trains must stop at CGB551 and receive instructions from the Co-ordinator. When a train is to leave the Train Maintenance Building, the points will not reverse nor the signal clear until the train is at the TR point.

04.04.2012 **Cranbourne** (SW 109/12, WN 12)

On Wednesday, 4.4., Gates 687 for the train stabling compound were motorised and interlocked with the signalling system.

(10.04.2012) **Maribrynong River Line** (SW 38/12, WN 14)

The Maribrynong River line between Maribrynong River Junction and Maribrynong River Terminal has been closed to all traffic.

The tracks have been removed in the down direction from IRJ between track circuits 770T and 671T at Home SLN770 (4.534 km).

Operating Procedure 113 (Maribrynong River Goods Line) published in SW 1083/01 was cancelled.

10.04.2012 **Dandenong** (SW 118/12 & 138/12, WN 14)

Between Saturday, 7.4., and Tuesday, 10.4., the following alterations were carried out as part of the Dandenong Signals Renewal Program.

Dwarfs DNG722, DNG732, and DNG742 were converted to U2L LED signals. The GRS point machines on Points 604U, 612U, 622, 625, & 643 and Crossovers 605, 606, 632, 633, & 634 were replaced by M23A dual control point machines. Crossover 670 was renewed as a tangential layout with M23A dual control point machines. Catch 622 was relocated to a point 4 metres on the Down side of Dwarf DNG722. Derail and Crowder 632 will be provided in the lead to Sidings 3 & 4.

Diagram 39/12 (Dandenong - Hallam) replaced 11/12.

11.04.2012 **Malmsbury** (SW 45/12, WN 14)

On Wednesday, 11.4., boom barriers were provided at the existing flashing lights at Ritches Rd (97.595 km) on the Up side of Malmsbury. The crossing was already operated by predictor with remote monitoring. Amend Diagram 38/11 (Malmsbury - Elphinstone).

13.04.2012 **Brighton Beach** (SWP 10/12, WN 15)

On Friday, 13.4., Caulfield Group Operating Procedure 20 (Brighton Beach - Terminating Down Trains) was reissued due to the booking out of No 1 Platform.

15.04.2012 **Narre Warren - Berwick** (SW 145/12, WN 15)

Between Saturday, 14.4., and Sunday 15.4., a dual carriage was was provided at Clyde Rd. Four boom barriers with LED flashing lights were provided. The pedestrian boom barriers were replaced by automatic pedestrian gates. Diagram 15/12 (Narre Warren - Pakenham) replaced 141/06.

15.04.2012 **Lynbrook Loop** (SW 108/12 & 132/12, WN 12 & 13)

On Sunday, 15.4., Automatics LBK680 and Homes LBK782, LBK782P, and LBK783 were upgraded with new ladders, landings, and LED lights.

16.04.2012 **Donnybrook** (SW 40/12, WN 14)

On Monday, 16.4., the Down platform was extended 97 metres at the Down end (making the platform 160 metres in length). Amend Diagram 80/11 (Donnybrook - Wallan).

16.04.2012 **Wallan** (SW 40/12, WN 14)

On Monday, 16.4., the Down platform was extended 35 metres at the Up end (making the platform 160 metres in length). Amend Diagram 80/11 (Donnybrook - Wallan).

16.04.2012 **Broadford** (SW 39/12, WN 14)

On Monday, 16.4., Up Home Post 10 (at the Up end of the Up platform) was abolished. Lever 18 was sleeved normal. Up Starting Post 1 was converted to a LED signal. Amend Diagram 168/08 (Broadford - Tallarook).

16.04.2012 **Shepparton** (SW 43/12, 44/12 & 50/12, WN 14 & 15)

Between Saturday, 7.4., and Friday, 13.4., the existing signalling was replaced with power signalling. When brought into use on Monday, 16.4., the new signalling was temporarily controlled from a VDU at Shepparton. The local VDU will be operated under the direction of the Operating and Safeworking Supervisor at Shepparton after conferring with the Train Controller. Train Orders will be directly issued to drivers by the Train Controller, but shunting operations (including attaching and detaching locomotives from passenger trains) will be performed by local staff.

Shepparton will continue to be an Intermediate Train Order Terminal Station. Through Train Orders may be issued through Shepparton provided a train is not stabled in No 1 Road.

The Up and Down Location Boards, the Homes on Posts 1, 2, 10, & 12, and the interlocked frame and the signal panel on the platform were abolished.

Down Repeating U1779, Up Repeating U1868, Homes SHP6, SHP10, SHP12, SHP14, SHP26, SHP28, SHP30, SHP32, & SHP34, and Dwarfs SHP16, SHP20 were provided. The two Dwarf signals will display purple as the stop signal. The dual control point machines on Points 5, 7, 9, 27, and 29 were converted to motor operation. The derail signs at the Up and Down ends of No 3 Road will be abolished. Pedestrian gates were provided on the Up and Down side of High Street.

Down Home SHP34 is situated between the Up side pedestrian gates and High Street. There is 36 metres standing room between Up Home SHP26 and Down Home SHP34. When a shunting movement is signalled past Homes SHP30, Home SHP32, or Dwarf SHP20 towards SHP34 at Stop the Up side gates at High St will operate independently of the level crossing.

Due to the close proximity of SHP34 to High Street, a 5P key switch is provided on the outside wall of the relay room to work the level crossing under failure conditions. This is to ensure the correct operation of the level crossing and co-ordinated traffic lights. When it is necessary to pass SHP34 at Stop, the driver must first obtain permission from the Train Controller. The driver must then operate the key switch to the 'clear' position. This will place a call on the traffic lights and then start the boom barriers. The train can pass over the level crossing when the boom barriers are horizontal. If it is necessary to cancel the call, the key switch must be operated to the 'cancel' position. The boom barriers will cancel after a rundown period.

To prevent unnecessary operation of the level crossings at High St and Fryers St, routes past the Down Homes or Dwarf must not be called until the driver has confirmed that the movement is ready to proceed.

Nos 1 and 2 Roads are classified as running roads. Passenger trains may stable in No 1 Road provided a locomotive is attached. When trains are stabled in No 1 Road, through services can operate via No 2 Road or the yard tracks.

Local Train Radio Channel 1 will be provided for communication between the local operators at Shepparton and the Train Controller.

Master Keys for the Seymour - Tocumwal corridor will no longer be held at Shepparton. Tocumwal freight services must be issued with a Master Key at Seymour.

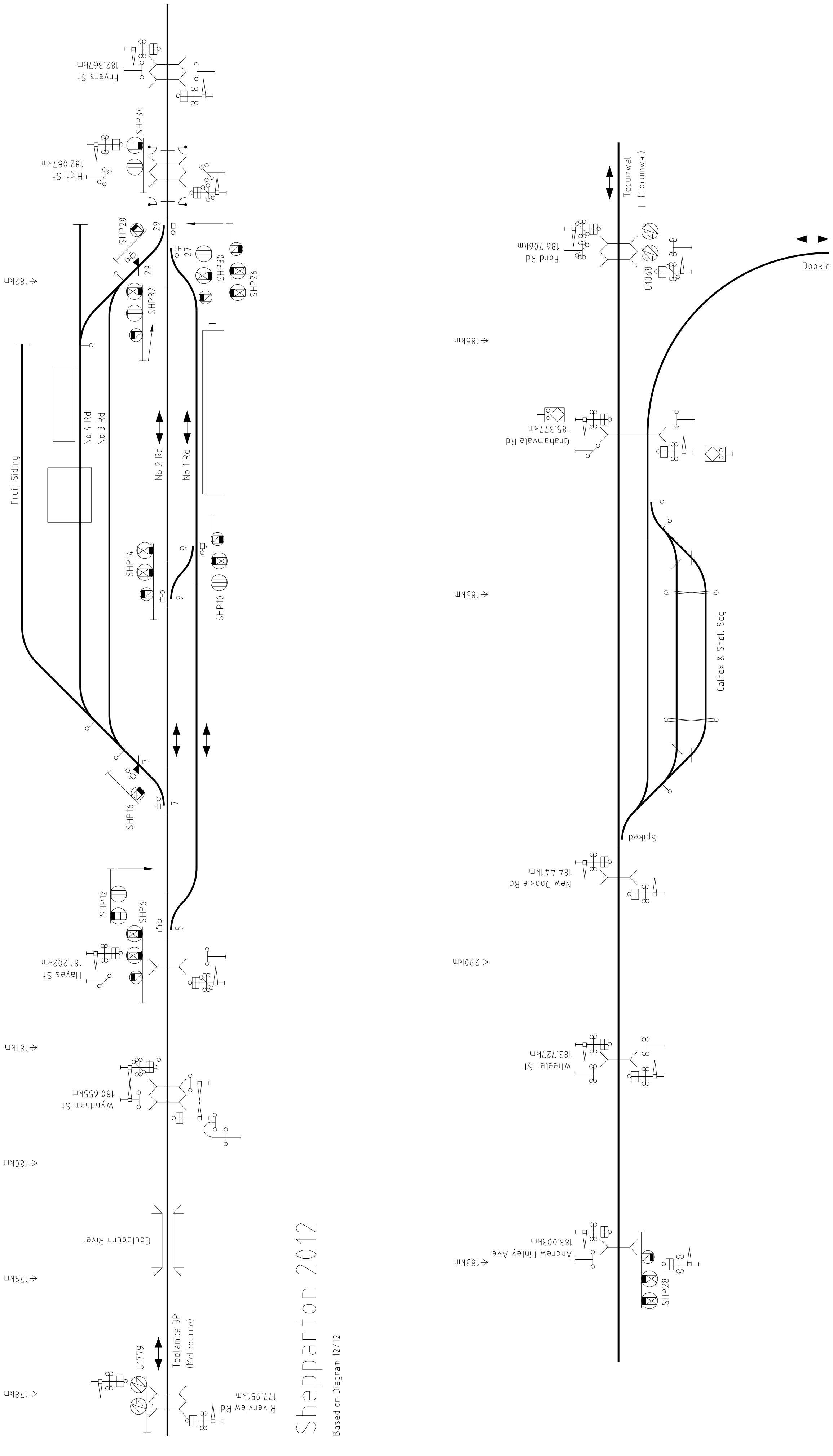
Diagram 12/12 (Mooroopna - Shepparton) replaced 158/11 (Shepparton).

Operating Procedures 110 (Shepparton) (SW 155/07), 110B (Shepparton - Dookie) (SW 72/10) and 131 (Status of Train Order Locations) (SW 131/10) were re-issued.

16.04.2012 **Noble Park - Yarraman** (SW 144/12, WN 15)

On Monday, 16.4., the pedestrian boom barriers at Chandler Rd (28.422 km) were replaced by automatic pedestrian gates. Amend Diagram 9/12 (Sandown Park - Yarraman).

Continued on Page 54


Shepparton 2012
Based on Diagram 12/12
Toolamba BP
(Melbourne)
Riverview Rd
177.951km
U1779
178km
179km
Goulbourn River
180km
Wyndham St
180.655km
181km
Hayes St
181.202km
SHP6
SHP12
SHP16
Fruit Siding
No 4 Rd
No 3 Rd
No 2 Rd
No 1 Rd
SHP14
SHP10
SHP32
SHP20
SHP30
SHP26
182km
High St
182.087km
SHP34
Fryers St
182.367km
Andrew Finley Ave
183.003km
183km
SHP28
Wheeler St
183.727km
290km
New Dookie Rd
184.441km
Spiked
Caltex & Shell Sdg
185km
Grahamvale Rd
185.377km
186km
Ford Rd
186.706km
U1868
Tocumwal
(Tocumwal)
Dookie

Purple Lights in Disc Signals

The Correspondence Registers of the Assistent Superintendent of Transportation (AGST) (later the Assistent Chief Traffic Manager (ACTM)) contain much interesting information about signalling and safeworking practice. This particular story is about the use of purple lights in disc signals.

In the original 1919 Rulebook, the signal indications for disc signals were defined as:

> 50. (a) The Signal Indications of Disc Signals are displayed as described hereunder:- (i) "STOP" Signal. - By a red disc [...] or by the exhibition of a Red Light. (ii) "PROCEED" Signal. - By the Disc being turned off (to either side) [...] or by the exhibition of a Green Light.

It appears that a new printing of the 1919 Rulebook was produced in 1924, and, unfortunately, in this issue the Stop aspect of a disc signal was given as a Purple light in Regulation 50 (a) (i). This was noted by the General Superintendent of Transportation on 14 March, and on 18 March he wrote to the Heads of the branches proposing to issue Circular C7/24 to correct this error. It is not clear what it was proposed to say in C7/24, but it appears that this circular was not issued..

On 30 September 1924 the Secretary asked the Transportation Branch if the "Stop" signal of a disc signal should be a red or purple light. He noted that the two print runs of the Book of Rules and Regulations differed, with the first showing red and the second purple, and asked what action should be taken to amend either print of the existing stock. The Secretary was informed on 27 November 1924 of the circumstances in which the word 'purple' was inadvertinetly substituted for 'red' in Regulation 50, clause a (i). Unfortunately, the report prepared by the Safeworking Officer was not summarised and so we can only guess at why this mistake was made.

In the meantime, on 13 November 1924 the Commissioners forwarded a minute from the Chief Engineer of Signal and Telegraphs in which the Chief Engineer stated "The want of distinctiveness in our purple lights is due to the fact that, through an error, roundels made to the RSA specifications for oil lighting have been used for electric lighting. Have now obtained from USA the standard electric purple roundel and are convinced that with these there is not the remotest chance of confusion with any other colour. Test made was satisfactory." On Christmas Eve 1924 the Secretary notes that the Commissioners have approved of the purple light, as recently demonstrated, being adopted for use as a shunting signal. (It should be noted that this would also refer to Dwarf signals - the stop aspect of both two and three position Dwarf signals was a purple light from at least 1919.)

In consequence of this decision, it was stated on 24 February 1925 that "as the purple light has now been adopted, the books are, of course, in order." However, on 4 March, the CES&T suggested that Rule 50 be altered to allow for red or purple as the change from red to purple lenses would need to be spread over several years. This was agreed to, and the Commissioners approved of this change on 1 April 1925. Regulation 50 was subsequently amended by C17/25 and confirmed by the Governor in Council on 20 July 1925. In this amendment, the Stop signal was given by "the exhibition of a Red or of a Purple Light.

Despite this decision, all was still not well. On 23 August 1926 the Block and Signal Inspector reported that the ASM at Elsternwick was complaining that the Dwarf signal lights showed both red and blue lights, or a poor display of purple with red on side. The CES&T was subsequently asked for his views on the want of distinctiveness of purple lights at Box Hill and Elsternwick.

On 13 June 1927 the CES&T notes that purple lights would replace red lights at Essendon on 22 June (A1665/27). After a month's trial, Mr Colson, Senior Block & Signal Inspector, reported 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 end for purple lights in disc signals came in late December 1927 and was precipitated by a complaint from the AFULE. On 17 November 1927 the Superintendent of Locomotive Running queried the use of purple lights in discs and permanent way signals. The AFULE had noted that in discs a purple light meant Stop, whereas in a permanent way signal it meant Proceed. The permanent way warning and caution signals were defined in the 1919 General Appendix pp85-7. In essence, two purple lights on a 'warning' sign were advanced warning of a per way slack, while one purple light on a 'caution' sign indicated the commencement of the slack. The union contended that this would confuse drivers and lead to accidents. In response, the CES&T noted that purple lights had been in use in Dwarf signals for stop for about 10 years, and contended that, as the purple light in the permanent way signal indicated warning or caution, it should be changed to yellow. Consultation, of course, then followed, but the consensus of the Metropolitan Block and Signal Inspectors was that the permanent way signals should not be altered. Mr Colson was not in favour of a change to yellow, and wanted the instructions in the GA p86 clause 6 to be observed. Mr Beddoe was not in favour of changing the colour. Mr Murfitt was also not in favour, and suggested changing the purple lights in discs and dwarfs to red. Mr Anderson was the only person quoted as being in favour of the change to yellow. On 13 December 1927 the CES&T was informed that the Block and Signal Inspectors did not favour a change to yellow in permanent way warning and caution signals. The AGST instead considered that the better approach would be to abolish the use of purple lights in disc signals as so few had been installed. Note, interestingly, there was no mention of Dwarf signals which, presumably, would be equally likely to be confused with permanent way signals..

On 15 March 1928 the CES&T admitted that it had been difficult to find suitable burners to produce a satisfactory colour under service conditions, although the light was satisfactory when using electric light. He proposed replacing the purple lights at Box Hill and Essendon with red glasses. The Transportation Branch agreed on the 12 April. On 26 April the CES&T reported that this would be carried out on 4 May 1928. Despite this the Rulebook continued to allow for purple lights in disc signals up to the 1966 reissue.

As a postscript, in June 1937 the NE Fuel Committee suggested (No 209) that purple lights be placed in ground discs in shunting yards instead of red lights. The DS was informed that the red light was quite satisfactory and no change was recommended.

Misrouting Trains in Three Position Signalling Territory

One of the main issues with a speed signalling system, as adopted in Victoria, is the potential misrouting of trains. A driver passing a medium speed aspect on a home signal merely knows that the train must proceed at medium speed, but he does not know which route has been set up. Travelling at medium speed (25 mph or 40 km/h), the driver would probably not be able to stop even if he saw that the lay of the points was wrong for the route he was expecting to take. The problem of misrouting was made worse in Victoria by the way functions were assigned to levers in interlocking frames. Where a frame (particularly a power frame) was provided to work three position signals, the practice was to control each three position signal by one lever (indeed, where possible, a lever would be used to control several three position signals). The actual signal that cleared, and the aspect it displayed, depended on the route set up. Consequently, it was easily possible for a train to be misrouted when the signaller set up the wrong route (or left a route set up from a previous train) and reversed the signal lever. The final difficulty with Victorian practice was that train describers were not used to signal trains between signalboxes. Instead, trains were described using bell codes. Misrouting was consequently quite possible when a train was misdescribed, or the signalman misinterpreted the description.

Given the fundamental difficulty of communicating routes via speed signalling, the practice of laying out frames, and the lack of train describers, it might be surprising that in the period under review (1925-1940) the Transportation Branch viewed the problem of misrouting trains as one of lack of discipline of the signallers at power boxes. The Transportation Branch did not consider that drivers were to blame, even when they should have been able to detect the misrouting due being given a normal speed route in lieu of a medium speed route (or vice versa).

In this period there were relatively few signalboxes where trains could be misrouted in this way. Three position signalling was not widespread, and many locations within the three position area retained two position (route) signalling. By the end of the war, the boxes that could be affected were: Viaduct Junction (power), Franklin St (power), North Melbourne (power), South Kensington (power), Footscray (power), Spotswood? (mechanical), West Footscray (mechanical), Albion (mechanical), Kensington (mechanical), Newmarket (Mechanical), Flinders St D (power), Flinders St E (mechanical), Camberwell (power), South Yarra (power), Caulfield (power), and Brighton Beach (power). It is interesting to note that only a few of these boxes were mentioned in the debate on misrouting that occurred over the roughly 15 years.

Early days - providing mechanical devices

On 25 February 1925 the 11.11 pm Up Essendon suburban train was diverted to the Up Goods Arrival Road at Kensington - at this time an unwired road. The Board's Report suggested the provision of a route indicator and a wooden trip arm on the goods line just clear of the lead to the flyover track. The General Superintendent was minuted on 25 April 1925 as follows:

> The attached list [not given in the precis] shows 13 instances in which trains have been diverted to wrong routes at junctions due to speed signalling since January 1921. In 9 instances the Motorman was not in a position to challenge the accuracy of the signals displayed as they were common to both routes, whilst in three cases the irregularity should have been noticed and the signal challenged. In the last instance the Motorman accepted the Low Speed Signal and took the loaded train back into the siding at Flinders Street out of which the empty train had just been docked.
>
> Eleven of the trains wrongly diverted were passenger trains, and whilst there was little personal risk directly involved by the irregularity, it was necessary to take some corrective action which would tend to make accidents possible. In the case at Kensington which occurred on 25.2.25 the loaded Passenger train was taken clear of the Passenger lines to the Up Goods line where it was plunged into darkness and had to be hauled back into position by a locomotive.
>
> Seeing that it is not practicable to obtain and maintain 100% efficiency amongst Signalmen, I am strongly of opinion that the Motorman or Engine Driver should be in a position to comply with clause f of Regulation 176 ["When a Fixed Signal is at the Proceed position, each Driver must satisfy himself that the Signal refers to the Line he is on, and applies to the Line on whiich he is to proceed"] and thus provide a check on Signalmen or correct an error which may have arisen through incorrect belling on from the Box in the rear.
>
> Under our two position system of signalling at junctions the arrangement as viewed by the Driver is definite, see Regulation 48, whilst in the three position system of Speed Signalling there is a certain amount of doubt and the Driver is not, in many cases, called upon to accept responsibility in respect to route.
>
> The Motorman of a train for the Camberwell line may start from either No 2 or 3 platform [Flinders Street] and in the course of his shift may travel either via the Country or Camberwell lines towards Jolimont Junction. If on the former, the Medium Speed signal applies to both the Camberwell and Oakleigh lines, whilst from the Camberwell lines the Normal Speed route is exhibited, the Medium Speed being applicable to the Oakleigh line and the possiblitity of a Low Speed signal being exhibited from either the Country or Camberwell lines under certain conditions is always present. Note the variety.
>
> In conclusion I would stress the point that any inconvenience or uneasiness that the travelling public may be subjected to by the incorrect diversion of trains cannot be adequately met or allayed by the fact that an employee has made a mistake. In this connection I still urge and feel that where practibable whatever improvements can be reasonably provided to ensure satisfactory service should receive careful consideration.

The Chief Mechanical Engineer and the General Superintendent of Transportation endorsed the proposal to install an over-run or wooden trip block on the line leading from the wired passenger road to the goods line at Kensington. However, the Acting Chief Electrical Engineer disagreed and convinced Commissioner Molomby that the proposal should not proceed. Unfortunately, I do not know the arguments used on either side.

As for the provision of route indicators, the Chief En-

gineer of Signals and Telegraphs noted in December 1926 that the approximate cost of providing the cheapest type of route indicator at diverging junctions would be approximately £22,000 for the signals currently in use. He continued "in view of the high cost of installation and maintenance, and the problematic advantage of the indicators, considering that they would only be visible at short range (and therefore not in time to pull up at) I do not recommend the expenditure." In view of the heavy cost, the Transportation Branch agreed that the existing arrangements should stand.

Painting arrows on signals

On 20 January 1933 the SGTS wrote about the incorrect routing of trains in three position signalling areas where three position light signals were in operation. Commissioner Canny was informed that in view of the many incorrect routings which have recently occurred, it was evident that something was required to assist the Drivers when a Signalman inadvertantly set up the wrong route. The CME agreed on 28 January to give Mr Bayles' proposal a trial. The idea appears to have been to paint arrows on the backgrounds of the normal and medium (a and b) heads of the signals to emphasise the direction in which the normal and medium speed routes applied. Arrangements were made to have the signals painted on 16 May 1933. Mr Colson reported the following day that arrows have been painted on signals mentioned in A912/33 and are easily discerned by Drivers approaching these signals. Unfortunately, I do not know precisely what signals were involved. It is likely that only two Homes were involved: one at Viaduct Junction and the second at Footscray. It is known that the arrows were painted on Home 20 at Albion and Home 33 at Burnley in 1948.

Route indicators on frames

Around 1930 the Betterment Board received a suggestion (30/23833B) to reduce the incorrect routing of trains by signalmen at power signalboxes. It appears that the suggestion took the form of a light mounted behind key signal levers. The light indicated the route currently set. The purpose of the indicator was, of course, was to make it easy for the signalman to check which route was actually set before reversing the signal lever.

It appears that one of these route indicators was provided on lever 34 at Franklin St in the early thirties. Home 34 applied from the Centre Lines from North Melbourne to the East Suburban Lines, the Special Lines or West Lines, or along the Centre Lines. In June 1933 it was suggested that the "opal" cap on the indicator be replaced by a "jewel" cap to allow the light to be more readily seen. If this was successful a quote was to be obtained for providing route indicators on No 69 lever which "in reality is the governing section at that signal-box". Home 69 applied from the East Lines from North Melbourne to virtually any of the lines towards Viaduct Junction or No 1 Box. The Way & Works Branch was instructed to make the substitution in July 1933, but six months later they admitted that they could not provide a "Jewell" cap, but new indicating lamps had been fitted that could be readily seen by the signalmen when operating any of the levers on the interlocking machine. A additional indicator was ordered for No 69 lever on 24 February (at an estimated cost of £6/15/0) and this was provided on 23 June 1934.

In the meantime, on 15 December 1933, the Metropolitan Superintendent recommended that route indicators be provided at the new power box at Caulfield (opened 26 November 1933) behind lever 30. This worked the Down Home applying from No 3 Track (the current No 2 Platform) to either the Dandenong or Frankston lines - both of these routes were Medium Speed moves. (Down Home). The indicator technically showed which of No 45 and 46 point lever have been operated. The cost was estimated at £7, and the work was completed on 6 July 1934.

Sometime later, probably in mid 1934, the Betterment Board asked "In view of the experience gained from the trial installation & the fact that 4 years have elapsed since the proposal to equip certain levers with route indicators was first brought under notice, during which time it has been considered expedient to provide the indications on two levers only (Nos 34 & 69 at Franklin St) we should appreciate your views as for the necessity of extending the practice." On the 30 August 1934, the Metropolitan Superintendent responded that the following levers at North Melbourne should be equipped with route indicators: 43 (4 routes), 45 (4 routes), 47 (2 routes). Homes 43, 45, and 47 applied (respectively) from the East Lines, the Centre Lines, and the West Lines through North Melbourne Junction. Provision of these indicators was approved in June 1935 and completed on 23 November 1935.

It would appear that this route indicator took the form of separate lights, one for each route, mounted behind key signal levers.

On 24 April 1936 the Signalmen at North Melbourne asked that the blue lights in the route indicators be allowed to remain. The S&T Engineer reported that the lamps had been covered in blue paint until frosted glasses could be obtained. The frosted glasses have now been fitted. The S&T Engineer considered that the "use of colors in a signal-box should be restricted to certain definite functions and a general use of multi-colors avoided". However, he had no objection if the indicators could be improved, but cautioned that any changes should be suitable for application at all boxes to retain, as far as possible, standard indications. The S&T Engineer was informed that the dull white light now in use, which indicates when the normal route is set and the bright white light when a diverging route is set is quite satisfactory and no alteration is recommended.

Someone suggested an improved route indicator in 1938 (Betterment Board suggestion 37121) that enforced a check and would prevent the delay when the signalman set up the wrong route, but this was rejected as the Way and Works Branch did not think the cost of £30 per indicator was justified, and the Transportation Branch noted that it would not protect against the case where the signalman was confused over the destination of the train.

Assisting the signalman

On 16 April 1935 the General Superintendent of Transportation wrote to the Metropolitan Superintendent about the wrong routing of trains by signalmen:

> There has recently been a number of incorrect routing or electric and steam trains by signalmen at junction signal-boxes and these irregularities suggest that the signalmen are not concentrating on their work. Although there may be nothing unsafe in regard to the incorrect routing of the trains, it should be realised that inconvenience is caused to the travelling public and discredit reflected on the departmental systems when these irregularities take place. Signalmen should at all times understand that unceasing vigilance is imperative in order that their duties may be properly carried out

and in this respect they should do their utmost to see that all bell signals are correctly sent and acknowledged, that the route for the approaching train is properly set up before reversing the lever controlling the signals, and if in any doubt as the description or destination of the approaching train, definitely check up before operating the signal. Particular attention should also be give to the destination board or head lights on the trains. I shall be glad if you will again arrange to impress on all signalmen concerned the necessity for the greatest care being exercised in order to minimise any further cause for complaint. Block and Signal Inspectors must also avail themselves of every opportunity to impress upon the signalmen that incorrect routing is a thing that can and must be avoided. If the signalmen themselves can offer any suggestion which will assist in this direction,the should be encouraged to do so in order that the possiblitiy of irregularities may be minimised. I shall be glad to know what action you are taking.

The Metropolitan Superintendent duly arranged for a conference in late April between the Block and Signal Inspectors, representative Signalmen, Mr Bell and one of Mr Bell's assistants. The Secretary was informed on 18 May 1935 that:

The question of incorrect routing of trains by signalmen at power signal boxes was the subject of a special conference held by the Metro Supt on 26.4.35. The question was discussed at length and the suggestions submitted by the signalmen for effecting improvements are summarised as follows [all of the suggestions do not appear to have been recorded in the precise]. In the case of Albion and Werribee, where wrong routings have occurred, investigations disclose that it is due to the points not being restored to the required position after the previous movement. It is considered that this difficulty can be overcome with very little cost by altering the circuit control. At Caulfield a similar attachment to that provided on lever 45 indicating when this lever is reversed for the Mordialloc line could with advantage be attached to No 42 lever and I have arranged with the S&T branch for this to be done. The principle cause, however, of incorrect routing is lack of concentration on the part of the signalmen concerned, and I feel confident that if the men at power boxes are first definite as to the destination of the train and then before operating the controlling signal lever they have the thought as to what position the vital point lever should be in and observe that it is in the required position, no incorrect routings will occur. It is also felt that the personal appeal made to the signalmen will have the desired result. Papers are forwarded for the information of the commissioners.

The attachment to lever 45 at Caulfield appears to have been a small badge that was painted with the colour (and possibly the pattern) of the route disc used for Frankston line trains. The purpose seems to have been to make it clear if Points 45 (leading from No 3 Track to the Frankston line) were reverse. On 14 June 1935 the Secretary responded:

The action taken is noted but it is considered that we have not yet reached anything like perfection because even since the date of your minute there have been instances of wrong routing. So far as the suggestion that a more distinctive bell to be provided in signal-boxes is concerned, the Commissioners will be glad if the Chief Engineer Way & Works will investigate the matter and submit a recommendation as to the installation of an improved bell in signal-boxes at the more important junction points in the suburban area, and also arrange for the provision of route indicators on levers 43, 45, & 47 at North Melbourne, as recommended, as well as the equipment of lever No 42 in the Caulfield box with a similar attachment to that existing on lever No 45. Whilst the commissioners are prepared to assist signalmen in every reasonable way, they cannot help holding the view that it rests with the signalmen themselves to avoid wrong routing and after reference to the Chief Engineer Way & Works the correspondence should be forwarded to the General Superintendent of Transportation to furnish a report in a month's time as to the position then obtaining.

In late June the Chief Engineer noted that providing bells of distinctive tone had been provided in some cases, and their general provision was being investigated. The provision of route indicators at North Melbourne and Caulfield was in hand.

The alteration at Caulfield was suggested to the Signal and Telegraph Engineer on 18 May 1935, "A light indicator was provided behind signal lever No 30 but it is understood this indication is not being made use of by the signalmen and it has been substituted by a device which has been attached to levers 45 & 46. In order that the signalmen will be covered for all through routing in the down direction (i.e. Nos 3 & 6 Rds) I shall be glad if you will arrange for a similar device to that attached to No 45 lever to be also attached to No 42 lever." Home 30 was the Down Home applying from No 3 Track (the present No 2 Platform) to either the Dandenong or Frankston line - both lines being medium speed routes. Points 45 formed the actual junction points in this route, and Points 46 were the trailing points in the Dandenong line. One of levers 45 or 46 would have to be reversed before Home 30 could be cleared. Points 42 formed the junction between the Dandenong and Frankston line for moves from No 6 Track (the present No 4 Platform). On 20 August the Metropolitan Superintendent suggested that "If symbol were provided [on lever 42] as suggested it is likely that the signalmen would mistake this lever for No 45 and vice versa. The driver is in a position to check up his route by the indication displayed on Signal 28." Home 28 controlled Down movements from No 6 Track and showed a normal speed aspect for the Frankston line, and a medium speed aspect for the Dandenong line. Four days later it was suggested "This matter has been given further consideration and it was suggested that as the route indicator now provided for No 30 signal indicates the position of No 45 points, the existing symbol attached to No 45 lever should be transferred to No 42 lever Do you agree?" The Metropolitan Superintendent consulted Mr Colson and agreed that the existing arrangements met all requirements. He was asked to review the arrangements as the posibility of incorrect routing existed at Home 28, but on 7 October Mr Colson reported that some confusion might arise if the signal levers were changed. On 11 October 1935 the Metropolitan Superintendent was asked if provision of a route indicator similar to those provided at Franklin St was necessary for Home 28. The Superintendent responded that no use was being made of the light route indicator that applied to Home 30 and it could be transferred to Home 28. On 4 November 1935 the Way and Works Branch was informed that "the symbols attached to Nos 45 & 46 levers at Caulfield are satisfactory,

but a similar symbol on No 42 lever would be confusing. The light route indicator now provided on No 30 Signal lever is of little use and might be transferred to No 28 lever with advantage." The response was that "the estimated cost of transferring the indicator over lever 30 to lever 28 is £7, but a new lever indicator could be fitted over 28 for £10 leaving the present indicator over 30 lever. Regarding the symbols fitted on Nos 45 & 46 levers, although these may be considered satisfactory for local conditions the arrangements cannot be generally applied and for this reason it is considered that the standard type light indicator, which can be used in all boxes, would be easier to read and of greater value to relieving signalmen. Under these circumstances, it is recommended that the indicator over 30 lever remain in its present position and an new light indicator be fitted over 28 lever at the estimated cost of £10." This was agreed to as frequent wrong routing has occurred with trains proceeding from No 6 Road past Home 28. As already noted, the two routes past this signal were easily distinguished by the aspect shown. Interestingly, there is no expectation in the correspondence that Drivers should be able to make this distinction. The new indicator was provided on 3 August 1936. The Block and Signal Inspector duly inspected the working of the route indicating lights and considered them to be satisfactory, however, suggested that a distinction in either the color or the brightness of the normal from the diverging light would be an added advantage, enabling the signalman to see at a glance which route was set up.

With regards to Albion and Werribee, the S&T Engineer was informed by the AGST on 20 May 1935 that "Recently trains were incorrectly routed at Albion and Werribee and in each case it was due to the Signalman failing to restore the points to normal after the passage of the preceeding train, resulting in a passenger train being signalled to the Broadmeadows line at Albion and No 2B Road at Werribee. When the preceeding train was signalled the points were left in the reverse position and when the following train approached the controlling track section was clear and the signalman, failing to observe that the points were reverse, operated the controlling signal lever. It is suggested that this difficulty can be overcome by altering the circuit control which would compel the signalman to restore the points to normal after the passage of a preceeding train before he could again operate the controlling signal. Is this practicable?" The necessary circuit alterations were costed at £3 at St Albans and £13 for the two sets of points at Werribee. The S&T Engineer continued "I do not consider that this alteration should be made generally, each case should be dealt with individually." The Commissioners approved of the work in early August 1935 and the work at Albion was completed on 21 October 1935 and that at Werribee on 22 November 1935. It is interesting to note, again, that these misroutings should have been easily distinguished by the drivers. At Albion, one route would indicated by a normal speed aspect and the other by a medium speed aspect. At Werribee, the signals concerned were two position light signals mounted on a bracket post, although one lever worked both signals on the bracket.

Engineering fails

On 14 August 1935, the AGST noted:

> Since my minute of 18.5.25, nine cases of incorrect routing have occurred. It is a very difficult matter to completely overcome this problem. Whilst the troubles are due to the failure of the individual, an analysis of the records indicates that very seldom does the same employe offend twice. In those instances where a signalmen has come under notice on more than one occasion it can be unhesitatingly stated that the man concerned is one who we find to be generally reliable. Where it is possible at reasonable cost to provide facilities to prevent the incorrect routing of trains we have arranged for it to be done but it is quite impracticable by this means to entirely eliminate the trouble. In the further endeavor to minimise such irregularities, I have arrange to release Mr Colson, Senior Block and Signal Inspector, from his ordinary duties for a period. He will visit all signal-boxes and discuss the matter with each signalman in turn, explaining fully the effect of wrong routing and impressing on him the necessity for the deepest concentration on his work so that he will at all times definitely satisfy himself as to the destination of each train and the positions of the vital point levers before operating the controlling signals. I am hopeful that personal appeal will have a good effect.

This was followed by a further report to the Secretary on 21 September 1935:

> Since my minute of 14.8.35 two cases of incorrect routing have occurred. This indicates an improvement which to some extent no doubt is due to the personal appeal made to each signalman by the Senior Block and Signal Inspector. We will contine to keep the matter prominently before the notice of the signalmen & it is hoped that further improvement will take place.

A further report was submitted to the Secretary on 22 November 1935 stating that a further seven cases of incorrect routing had occurred.

On 10 December 1935 the Chief Traffic Manager of the NSWGR asked about the wrong routing of trains and asked to be advised of the principle in operation of indicating to signalmen the destination of trains – particularly where there are several routes. He particularly inquired if there were any mechanical appliances in use in Victorian signal-boxes for the purpose. The response was illuminating:

> Wrong routing of trains in our Metro 3-position signalling area occur from time to time. The wrong routings haveen brought about through varying causes, such as the failure of the signalman to place the junction points to the required position prior to operating the controlling signal lever, failure to satisfy himself as to the destination of an approaching train, and error in sending or interpreting bell signals. A contributory cause in many cases is the failure of the driver to satisfy himself as to the correct signal aspect being displayed when his train is approaching the signal. Distinguishing head signals are carried on all our electric trains to indicate the destinations of the trains and, in addition the trains are described from cabin to cabin by electric bell code. A copy of our distinguishing head signals and also of our electric bell code is forwarded herewith. In order to assist the signalman and to reduce the probability of wrongly routing a train, route indicators have been proovided in some cabins. At one locality a small symbol painted in accordance with the colour of the destination disc on the train has been attached to the miniature lever operating the junction points whereby the signalman can readily see that this particular lever is reverse before he operates the signal le-

ver. At other localities electric bulb light route indicators which show what particular route is set up have been provided over the lever operating the junction signals, and at two other locations where there is only one diverging route, which is used infrequently, the circuits have been arranged so that when a train has been routed to a diverging line the signalman is compelled to restore the junction points to the normal position before a proceed signal can be again exhibited.

No mention is made of train describers, although in the UK train describers were beginning to be installed in busy metropolitan power signalling areas to indicate the destinations of trains. The earliest widely used train describer was Walker's in which a clockwork driven pointer at the transmitter synchronously drove a matching pointer at the receiver. Although invented in the 19th century, this form had limited use in power signalling areas as it could only describe one train at a time. The Metropolitan District Railway, one of the London underground railways, developed a train describer around 1906 in which had a mechanical storage device. The store consisted of a drum with rows of pins which could be pressed in under the control of signals from the transmitter. The pin patterns indicated the destinations of trains approaching the receiver. In 1929 a train describer with an electrical storage device was introduced between London Bridge and Bricklayers Arms on the Southern Railway. This used relay technology and was subsequently widely adopted in the London area of the Southern Railway. The system was described in detail in the trade publication 'The Railway Engineer' in January 1930, a publication for which the VR had a subscription. The VR had experimented with train describers, particularly a locally developed describer, but these had not been perservered with as the signalmen apparently preferred to describe trains using bell codes.

The report submitted to the Secretary on 19 December 1935 showed that attitudes in head office were hardening. Three cases of incorrect routing had occurred in the month. Encouraging signalmen had not eliminated the problem of misrouting and now "each case is seriously regarded and suitable disciplinary action has been taken." In the nine months to the end of August 1936 there were 22 instances of wrong routing (roughly 2.5 per month), which the Transportation Branch rightly considered a reduction since 1935 (for which there were 32 misroutings - 3.5 per month - in the same period). However, they simply stated "These cases were avoidable and suitable disciplinary action has been taken." No excuses for the signalmen were now being made to the Commissioners.

Probably not co-incidentally, in August 1936, the ARU requested that a better system of signalling trains be provided to eliminate the risk of wrong routing, that is train describers. The Assistant General Superintendent of Transportation responded: "The principle cause of incorrect routing is lack of concentration on the part of the signalmen concerned or through misunderstanding between the signalmen of two boxes in the actual belling of the trains. In order to assist the signalmen at certain power boxes, however, at where a number of incorrect routings have occurred, electric route indicators have been installed. The signalboxes provided with electric indicators are: Franklin St, North Melbourne, and Caulfield, whilst at Albion the locking has been altered to guard against inadvertently operating the controlling signal lever for a down northern train without first restoring the junction points to normal."

The Transportation Branch continued to report periodically to the Secretary until at least early 1942 on the number of instances of incorrect routing of trains. These showed between 1 and 4 trains misrouted every month (4 and 12 trains each quarter). No further comments are made about the signalmen being punished.

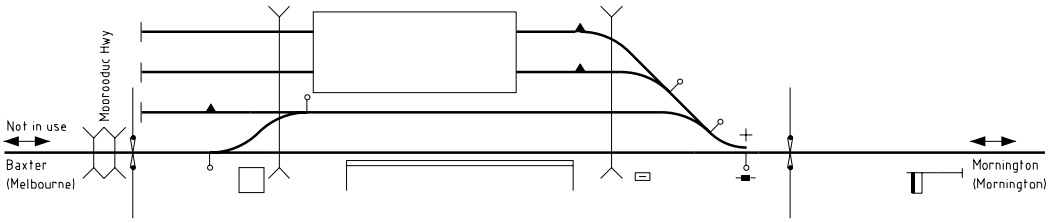
Conclusion

It is hard to escape the conclusion that the problem was that the signalmen were, in general, too good but not perfect. The number of misrouted trains was extremely low when the total number of trains run is considered. The low number of misrouted trains meant that it would have been extremely difficult to justify the expense of installing improved technology such as train describers. But the signalmen were not perfect, and some mistakes could be expected to be made. Lacking any investment in technology, the option chosen was first to encourage signalmen to be more careful. When the limits of this approach was reached, the next option was to punish the signalmen. Not surprisingly, this approach also had limits to its effectiveness.

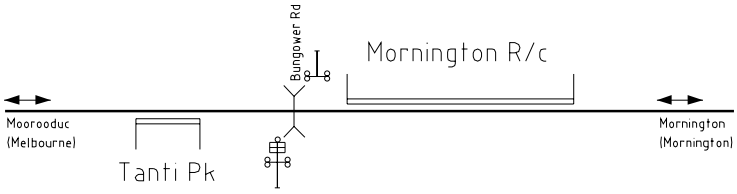
Train describing by bell code remained the primary mechanism for routing trains in Victoria until the commissioning of Metrol.

Mornington Railway 2011

Brian Coleman has kindly forwarded details of the stations on the Mornington Railway. This line runs from Baxter (on the Stony Point line) to Mornington, though only the section from Moorooduc to Mornington is currently in use.



Moorooduc 2011



Tanti Park/Mornington R'course 2011

Mornington (Yuilles Rd) 2011

Signalling Alterations

(Continued from Page 46)

16.04.2012 **Dandenong** (SW 143/12, WN 15)

Between Saturday, 14.4., and Monday, 15.4., the following alterations took place. Homes DNG717 & DNG727, and Automatics DNG749 & DNG759 were converted from searchlight heads to TC2 Tri-colour LEDs. Dwarfs DNG707 & DNG756 were converted to U2L LED heads. The GRS point motors on Crossover 606 were replaced by M23A dual control point machines.

17.04.2012 **Elmore - Rochester - Echuca** (SW 47/12 & 48/12, WN 15)

On Tuesday, 17.4., boom barriers were provided at the passive crossings at Burnewang North Rd (216.906 km), on the Down side of Elmore, and Strathallan Rd (235.619 km), on the Down side of Rochester. The boom barriers are operated by level crossing predictors and remote monitoring equipment was provided. Trains travelling at more than 50 km/h may accelerate between the predictor boards and the level crossings. Amend Diagrams 90/11 (Goornong - Elmore) and 96/11 (Rochester - Echuca).

22.04.2012 **Epping - South Morang** (SW 150/12, WN 15)

On Sunday, 22.4., the line between Epping and South Morang was opened for passenger traffic. South Morang (26.053 km) was opened for passenger traffic. It has two 174 m platforms.

22.04.2012 **Cardina** (SW 150/12, WN 15)

On Sunday, 22.4., Cardinia (53.796 km) was opened for passenger traffic. It has two 160 m platforms. Amend Diagram 15/12 (Narre Warren - Pakenham).

22.04.2012 **Lynbrook** (SW 150/12, WN 15)

On Sunday, 22.4., Lynbrook (39.585 km) was opened for passenger traffic. It has two 160 m platforms. Amend Diagram 55/11 (Lynbrook - Cranbourne).