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One of the fascinating aspects of railway signalling is how different railways produced variations on the same theme. The New South Wales train staff and associated staff ticket box, for example, looks completely different to the Victorian one, but performs exactly the same function. This NSW example is the train staff and associated ticket box for Stockinbingal - Temora section. NSW staff sections are distinguished by a colour and a shape. The four colour/shape combinations are red (circle), blue (square), white (triangle), and green (heart). The ticket box is painted in the section colour, and this is also inscribed on metal staffs (wooden staffs were painted the appropriate colour, but I have never seen one). The staff heads incorporate the section shape, heart in this shape, and a medallion of the appropriate shape is fixed to the the ticket box. An Annett key is formed at the other end of the train staff and is used to unlock the mid section points. The two small pins on the body of the shaft unlock the ticket box. The ticket boxes all seemed to be fixed to the walls of the signalboxes, and the mounts incorporate brackets to hold the Train Staff. The General Appendix, Part II, required that the staff not be kept in the (ticket) box, but in these brackets. Photograph taken in Temora signalbox on 9 December 1993.

SOCIETY CONTACT INFORMATION

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EDITOR: Andrew Waugh, 1/28 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 (AH), (03) 5792 2823 (BH)

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,

12 Western Crescent, Westleigh, NSW, 2120, Phone: (02) 9481 9994.

QUEENSLAND CONTACT: Phil Barker

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

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MINUTES OF MEETING HELD FRIDAY SEPTEMBER 19 2008,

AT THE SURREY HILLS NEIGHBOURHOOD CENTRE, 1 BEDFORD AVENUE, SURREY HILLS

Present: - W. Brook, B. Cleak, G. Cumming, G. Dunn, V. Findlay, M. Formaini, R. Gomerski, C. Gordon, J. Gordon, W. Johnston, K. Lambert, B. McCurry, A. McLean, T. Murray, C. Rutledge, B. Sherry, R. Smith & A. Wheatland.

Apologies: - D. Langley, S. Malpass, G. O'Flynn, L. Savage, P. Silva, S. Turnbull & R. Whitehead.

Visitor: - Nil.

In the absence of the President, the Vice - President, Mr. Bill Johnston, took the chair & opened the meeting @ 20:07 hours.

Minutes of the July 2008 Meeting: - Accepted as read. V. Findlay / W. Johnston. Carried.

Business Arising: - Tom Murray advised that the Glen Iris Uniting Church could be hired for meetings for \$25.00 for the 1st hour and \$12.00 for the 2nd hour. Rod Smith advised that the LRRSA hire the hall at Ashburton Uniting Church. Michael Formaini noted that the AMRA clubrooms at Glen Iris are hired out for meetings.

Correspondence: - Letter to Mark Bau of Northcote welcoming him to membership of the SRSV.

Letter to David Stosser of East Bentleigh welcoming him to membership of the SRSV.

Membership pack sent to Micahel Formaini. Letter to Michael Formaini welcoming him to membership of the SRSV.

Membership pack sent to Ben Calcott in New Zealand.

Advice of change in address from Peter Silva. G. Dunn / B. Sherry. Carried.

Reports: - Tours. Glenn Cumming noted that there had been no progress in organising a tour of signal boxes at Wodonga. The arrangements, or lack of them, with V/Line Regional Network and Access were discussed.

Market Street Project. Bill Johnston provided an update on works at Newport. Signal arm carriers are being prepared for painting.

General Business: - Glenn Cumming provided an update on the late running of the mailout. Contributions for "Somersault" are required.

Glenn Cumming advised that the points at Winchelsea have been removed but the signals remain in service. Winchelsea is used as a block point. The block point at Moriac has not been commissioned.

Colin Rutledge described a proposal to provide a new crossing loop near Irrewarra with power signals & remote control. It is possible that this loop might use the track material from the loop at Boralma.

Rod Smith described the development of the goods yard at Mildura.

Keith Lambert advised that the stabling sidings at Cranbourne are expected to be commissioned in October 2008.

A proposal has been raised for the provision of an over pass at Kororoit Creek Road.

The installation of concrete sleepers on the Sandringham Line had commenced.

Tom Murray described works at Cranbourne that he had inspected.

Traffic on the Showgrounds Line was discussed.

Football specials are now reversing at Dandenong instead of Caulfield.

Rod Smith asked for a date for the closure of the Seymour - Albury BG Line. It was suggested that the line will be handed over to the ARTC on 2nd November but there has been no confirmation of this date.

Rod Smith asked who is financing the works on the Portland Line.

The proposal for the re - arrangement at Laverton was discussed.

The plans for the works at Westall were discussed. Work has not yet started.

Colin Rutledge confirmed that works at Camperdown are complete.

Murchison East will be converted to LED signals with points electrically locked.

Shepparton is to be re - signalled & remotely controlled from Melbourne.

Echuca Line to be upgraded to allow 115 km/h operation including level crossing works.

Interlocking at West Tower is being refurbished. A new control panel will be provided. The hump control panel has been removed.

GRS point machines at Reversing Loop Junction to be replaced.

Rod Smith asked about the Dynon "Missing Link" project. Brett Cleak described the proposed works including rearrangements & new crossovers at Dock Link Road, provision of Dual Gauge track on "W" track and the provision of double track from South Dynon Junction towards Appleton Dock.

Vance Findlay spoke about the works between Clifton Hill - Westgarth.

Keith Lambert described a nine day shutdown in January 2009 to commission the new bridge between Clifton Hill - Westgarth.

Chris Gordon advised that the centre road at Clifton Hill is expected to be removed in December 2008.

Colin Rutledge advised that the new SG loop at Tallarook is expected to be commissioned in late October 2008.

The operation of the extended crossing loops on the North East SG Line was discussed.

Brett Cleak advised that works between West Footscray - Tottenham were complete.

Re - signalling between South Dynon Junction - West Footscray expected to be commissioned starting 27th December 2008.

Donnybrook Loop is to be extended to 1800 metres.

Chris Gordon tabled drawings for proposed works in Auckland NZ and at Wendouree.

Bruce McCurry noted that a new crossover was under construction at Albistore.

Syllabus Item: - The Vice - President introduced member Andrew McLean to present the Syllabus Item.

Andrew presented a selection of slides from his collection featuring a variety of locations, both country and metropolitan, and from different decades.

At the completion of the Syllabus Item, The Vice - President thanked Andrew for the entertainment & this was followed by acclamation from those present.

Meeting closed at 22:20 hours.

The next meeting will be on Friday 21 November, 2008 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 33/08 to WN 41/08 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.

- 14.08.2008 **Murtoa - Hopetoun** (TON 338/08, WN 33)
On Thursday, 14.8., this line was booked back into service.
- 15.08.2008 **North Shore** (TON 341/08, WN 33)
On Friday, 15.8., the switch locked points leading to North Shore yard were booked out of use. Access is now only available to the yard from the Up end.
- 15.08.2008 **Gama & Turriff** (TON 343/08, WN 33)
On Friday, 15.8., the sidings at Gama and Turriff were booked back into service for use by Track Machines.
- 16.08.2008 **Spencer Street (No 1 Box)** (SW 306/08, WN 33)
On Saturday, 16.8., the SSI data for Home SST501 was altered to remove the requirement that Points 401 be normal, and the SIGMAP (display) data was altered to remove the yellow route line indication from SST501 to 206.
- (19.08.2008) **Metrol - Spencer Street No 1 Signal Box** (SW303/08, WN 33)
In addition to the instructions contained in SWP 7/08 (Failure of Signals applying to Gauntlet Track) the following additional instruction must be applied. When the Gauntlet Track has been released to No 1 Box for a standard gauge move, Metrol must not take back the release unless the Signaller No 1 Box has advised that the Gauntlet Track is no longer required.
- (19.08.2008) **Maribyrong River line** (TON 342/08, WN 33)
This line has been booked out of use due to infrequent rail traffic and no future intended traffic. The main line points have been secured.
- (19.08.2008) **Dunolly - Robinvale** (TON 347/08, WN 33)
The Network Operating Requirements has been updated to include the protected level crossing at the Calder Highway (262.958 km) near Inglewood. The locations of the other Calder Highway level crossings have been updated to their correct distance.

- (19.08.2008) **Glenroy** (SW305/08, WN 33)
Due to issues with the operation of the Glenroy Road co-ordinated traffic lights, the Signaller Craigieburn must ensure that all Up trains departing from Broadmeadows are signalled by selecting the correct stopping/express mode. Broadmeadows must not be switched out, and Home BMS514 must not be placed in 'fleeting' mode.
- (19.08.2008) **Seymour** (SW 141/08 & 146/08, WN 33 & 34)
Operating Procedure 101 has been amended. When a medium speed indication is displayed on Homes 32 or 36, the speed restriction only applies until all of the train has cleared the points protected by the signal.
- (19.08.2008) **Westall - Yarraman** (SW 310/08, WN 33)
Signal Diagram 39/08 (Westall - Yarraman) replaced 75/07 as in service.
- 23.08.2008 **Spencer Street** (SW 315/08, WN 34)
On Saturday, 23.8., the co-acting signal for Home 703 located between Tracks 12 and 13 was replaced by a WRSA U2L style LED signal located on the platform at cab height.
- 24.08.2008 **Euroa** (SW 143/08, WN 34)
On Sunday, 24.8., boom barriers were provided at Lydiards/Dudley Rd (152.525 km) on the Down side of Euroa. A level crossing predictor adjusted such that trains exceeding 50km/h at the predictor boards may accelerate. Amend Diagram 152/07 (Euroa - Baddaginnie).
- (26.08.2008) **Book of Rules, Operating Procedures 131** (SW 144/08, WN 34)
SW 136/07 and SW 268/06 detailing the status of Train Order locations and requirements for master keys has been replaced by the new Operating Procedure 131. The main changes were the authorising of return Train Orders between Bendigo and Eaglehawk platform (SW 1144/03), the altered status of Winchelsea (SW 77/08), and the closure of Colac as a safeworking location (SW 70/08).
- (26.08.2008) **Eaglehawk** (SW 145/08, WN 34)
Operating Procedure 118 has been revised to include the instructions for issuing return Train Orders between Bendigo and Eaglehawk platform when there is an opposing Train Order. SW 1144/03 is cancelled.
- 26.08.2008 **Mentone - Parkdale** (SW 318/08, WN 35)
On Tuesday, 26.8., traffic light co-ordination was provided at Como Pde/Warrigal Rd.
- 27.08.2008 **Spencer St No 1 Box** (SW 317/08, WN 35)
On Wednesday, 27.8., the R4 head on Home SST542 was replaced by a U2L head to improve clearances.
- 27.08.2008 **Upfield** (SW 316/08, WN 35)
On Wednesday, 27.8., Up Home Post 75 leading from Somerton was abolished. A Notice Board lettered "STOP Obtain permission from the Signaller Upfield before proceeding" was provided. Amend Diagram 143/06 (Batman to Upfield).
- 30.08.2008 **Spencer St No 1 Box** (SW 320/08, WN 35)
On Saturday, 30.8., the following alterations took place:
* Broad gauge Crossover 428 between Tracks 2A and 2B was commissioned.
* A dual gauge dead end extension of Track 2A South was commissioned. Derail 418 and Dwarf 533 were provided. Dwarf 533 is provided with 'V' and 'S' indicators.
* A broad gauge dead end extension of Track 2B South was commissioned. Derail 452 and Dwarf 541 were provided.
* U5A detectors were provided for the third blade detection at both ends of Crossovers 415 and 417.
Diagram 43/08 (Southern Cross Passenger Lines) replaced 37/08.
- 31.08.2008 **Bairnsdale** (SW 147/08, WN 34)
On Sunday, 31.8., road traffic active advance warning signs were commissioned at the Princes Hwy (270.944 km). The level crossing predictor was altered such that trains exceeding 50km/h at the predictor boards may accelerate. The existing notice board at Post 1 was replaced with a board permitting a maximum speed of 40 km/h to the Princes Hwy for trains that have been stopped at Post 1. The predictor indicator boards at Princes Hwy and Bosworth Road were replaced by new boards as described in the Book of Rules, Section 36 (RFR rules), Rule 9. Diagram 72/08 (Bairnsdale) replaced 130/07.
- 01.09.2008 **Bairnsdale** (SW 152/08, WN 35)
From Monday, 1.9., the Notice Board at Post 1 was replaced by a new board permitting a maximum speed of 35 km/h to the level crossing for trains stopped at Post 1. A new Notice Board was provided at the Up end of the Bosworth Rd siding lettered "Siding trains maximum speed to level crossing 25 km/h". Amend Diagram 72/08 (Bairnsdale).
- (02.09.2008) **Road traffic Active Advance Warning Signs** (SW 153/08, WN 35)
These warning signs are being progressively fitted to specific level crossings. Currently the following crossings are fitted: Princes Highway (139.906 km) near Birregurra; Murray Valley Highway (294.399) km near Kerang; Midland Highway (181.694) km near Tatura; and Princes Highway (270.944 km) near Bairnsdale.
- 07.09.2008 **Keilors Plains - Taylors Road** (SW 323/08, WN 36)
On Sunday, 7.9., the Taylors Rd level crossing was replaced by an underpass. The boom barriers and pedestrian gates were decommissioned. The interlocking between M697 and M704 and the boom barriers

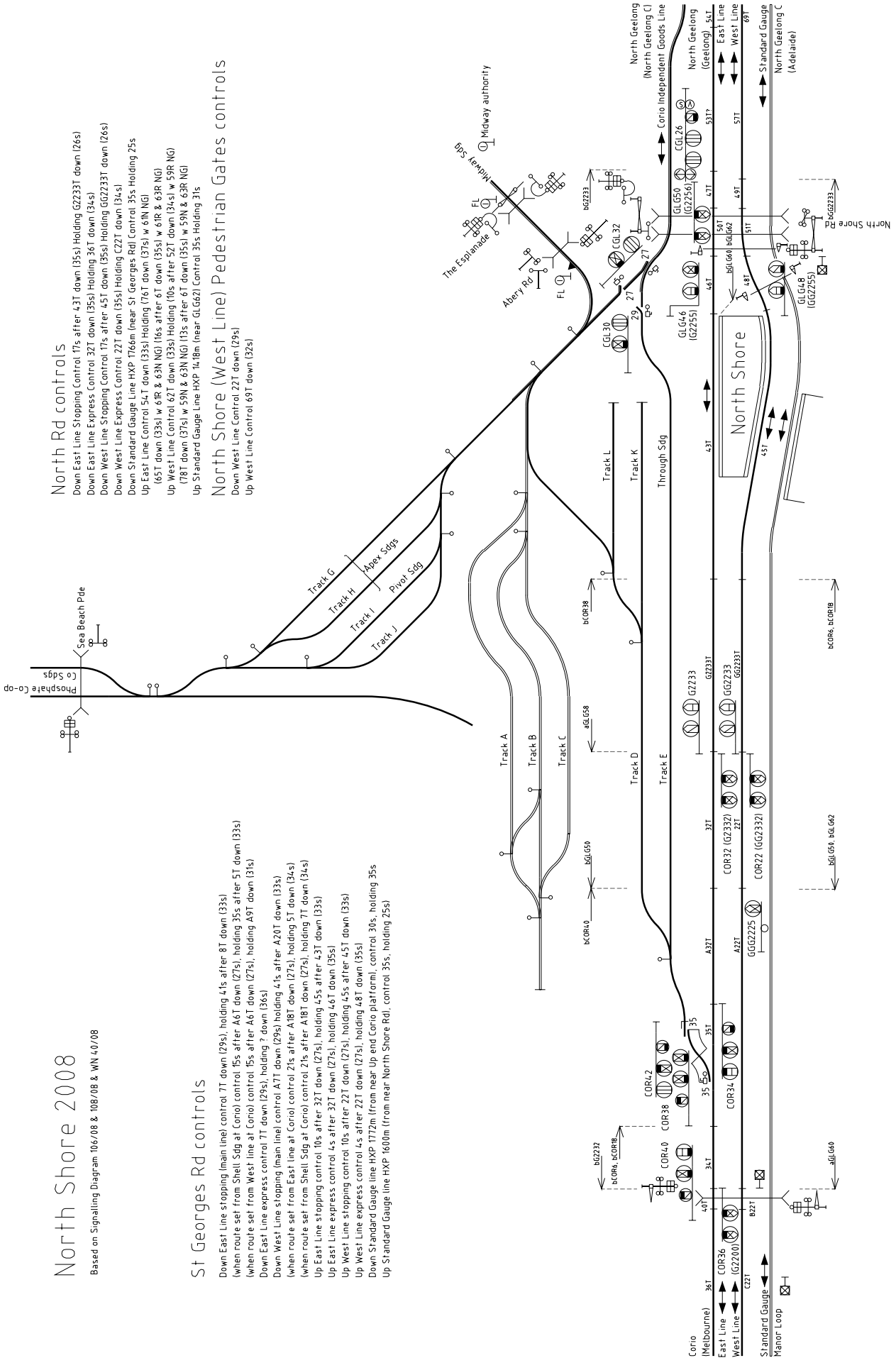
was removed. Amend Diagram 47/07 (Keilor Plans to Sydenham).

- (09.09.2008) **Eaglehawk** (TON 369/08, WN 36)
The distance of the Hopkins Rd level crossing has been amended.
- 10.09.2008 **Tarnagulla - Wimmera Highway** (SW 154/08, WN 36)
On Wednesday, 10.9., flashing lights and active advance warning signs were provided at Wimmera Hwy (224.127 km) on the Up side of Llanelly.
- 10.09.2008 **Swan Hill - Piangil** (TON 376/08, WN 37)
From Wednesday, 10.9., the line beyond Swan Hill will be booked out of use for track maintenance. Baulks will be provided at 347.250 km on the Down side of the Murray Valley Hwy.
- 14.09.2008 **Franklin St** (SW 331/08, WN 37)
On Sunday, 14.9., Posts 539, 557, and 711 were converted to United TC2 tri-colour LED heads. A screen was provided to prevent Down train movements from Spencer St No 1 Box reading through the co-acting signals Post 711.
- 14.09.2008 **Maroona - Portland** (TON 379/08 & 381/08, WN 37)
Rail traffic will resume on this line on Sunday, 14.9. Portland signalbox will be attended Monday - Friday 1500 hours until the departure of Train 9768 (approximately 2200 hours). Driver in charge conditions will apply at Portland for the arrival of Elzoro train 9767.
- (16.09.2008) **Train Order Territory Location Status & Master Key Requirements** (SW 157/08, WN 37)
Operating Procedure 131 has been amended to remove the requirement for trains to carry a Master Key between Maroona and Portland unless the train will shunt at Willaura, Glen Thompson, or Hamilton.
- (16.09.2008) **Portland** (SW 156/08, WN 37)
Operating Procedures 85 (Portland), 86 (Portland Signaller not in attendance) and 87 (Portland Kalari Sdg) have been amended. Procedure 85 has been amended to remove references to the road shunting tractor at the Portland Harbour Siding. Procedure 86 has been amended to remove the identities of the trains to which the procedure applies (separate advice will be subsequently issued as to the trains involved). Procedure 87 has been amended to require the train operator to obtain permission from the siding operator prior to commencing shunting operations.
- 16.09.2008 **Sutherland Loop - Donald Loop - Birchip Loop** (SW 155/08, WN 37)
On Tuesday, 16.9., road traffic active advance warning signs will be provided at the Sunraysia Hwy level crossings at 322.933 km (on the Up side of Donald) and 344.867 km (on the Down side of Donald)
- 17.09.2008 **North Geelong C** (SW 159/08, WN 37)
Between 0700 hours Monday, 15.9., and 1700 hours Wednesday, 17.9., the following alterations will take place.
The Grain Loop Departure Track was signalled for bi-directional movements and renamed the Grain Loop line. It will be used for all trains arriving and departing from the Grain Loop. The Grain Loop Arrival Track was abolished, and the gauge detection removed to the Grain Loop line. Points 17 were abolished and lever 17 became a pilot lever.
Points CGL41 were provided to form the junction between the two legs of the Grain Loop. A dual control point machine was provided on Points CGL41, but will initially only be operated in the hand mode. An Annett lock was provided on the points with a duplicate lock on lever 24 working the Home on Post 15 at North Geelong C. Removal of the key secures Points CGL41 for the arrival side of the Grain Loop. Removal of the key from lever 24 secures the Home at Stop. A Stop Board was provided to control train movements from the departure side of the Grain Loop over Points CGL41 to the Grain Loop Line towards Post 19B.
Instructions were issued for working trains from North Geelong C to the Grain Loop and back again. Points CGL43 were provided near the Melbourne Rd overbridge to provide access to the future Corio Independent Goods Line. Points CGL43 were secured normal.
Amend Diagram 60/06 (North Shore - North Geelong).
- 17.09.2008 **Ballarat** (TON 383/08, WN 38)
On Wednesday, 17.9., the Ballarat East Loco sidings were booked out of use for upgrading works. The lead to the Loco Sidings was baulked 5m on the Down side of Humffrey St. The Fish and Chip siding was also booked out of use.
- 20.09.2008 **Spencer Street No 1 Box** (SW 335/08, WN 38)
On Saturday, 20.9., rodded Derail 468 was replaced by a motorised derail operated by an M23A point machine, and Home 558 was changed from an R4 case to a U2L case.
- 20.09.2008 **Clematis** (PBR A10/08)
On Saturday, 20.9., the Up end crossover was restored to use. The small point lever is now fitted with a wedge lock to secure the point lever normal when not required for immediate use. A2/08 is cancelled.
- 21.09.2008 **Flinders Street** (SW 332/08, WN 38)
On Sunday, 21.9., the heads on Home 943 were converted to Style L heads fitted with United tri-colour TC2 LEDs, and U type heads fitted with LEDs were fitted to the existing mast of Home 933.

- (23.09.2008) **Laverton** (SW 334/08, WN 38)
 In a recent incident Automatic G555 reverted to stop in the face of an approaching train due to a deficiency in the signalling circuits.
 The lead up to this incident involved a train being signalled from the Laverton Loop to the West Line platform via Points 11 and Crossover 3 reverse. Points 11 were restored to normal immediately the train was clear while Crossover 3 was still reverse and before the rear of the train passed the block joint at Home 16. The signalling circuits treated this as a train in the East Line block section and restored Down East Line signals G631, G555, and Home 220 at Newport South to stop.
 Until circuit alterations have been carried out, Signallers who carry out this movement must not restore Points 11 until the train has arrived in clear of Home 16 or Crossover 3 has been restored to normal.
- 24.09.2008 **Sherwood Park** (SW 162/08, WN 38)
 On Wednesday, 24.9., an Up Two Position Automatic was provided to protect Jubilee Ave (261.293 km). The signal is located 36m on the Up side of the platform and is controlled by a V5PSW keyswitch on the platform.
 The normal position of the signal is at clear. If an Up train is delayed at the platform, the keyswitch may be placed to 'Cancel' to restore (after 40s) the Automatic signal and stop operation of the flashing lights. To clear the signal, the keyswitch must be placed to 'Proceed'. The keyswitch will not restore the Automatic to stop unless the platform track is occupied.
 Amend Diagram 76/05 (Sherwood Park), and delete Operating Procedure 65A (Sherwood Park).
- 25.09.2008 **Spencer St No 1 Box - Franklin St** (SW 338/08, WN 39)
 The following changes to signalling were carried out on Thursday, 25.9.:
 * The overlaps on SST516, SST546, SST556, and SST558 were reduced
 * Re-instated the yellow route line on the display from Post 501 to 206.
 * Altered the Gauntlet track release on the panel to a flashing green indication when a route is not locked in
 * Commissioned the low speed indication on Home 527.
 A line speed of 35 km/h now applies to all Up trains between the signal bridge at Franklin St (Posts 516/546/556/558) and the Latrobe St bridge (Posts SST508/SST538/SST542/SST548/SST586).
- (30.09.2008) **Kensington - Essendon** (SW 340/08, WN 39)
 Signal diagram 83/07 (Kensington - Essendon) replaced 53/07 as in service.
- 01.10.2008 **Swan Hill - Piangil** (TON 406/08, WN 40)
 From 1110 hours Wednesday, 1.10., the line between Swan Hill and Piangil was booked into service. The baulks on the Down side of the Murray Valley Hwy (347.250km) have been removed. TON 398/08 is cancelled.
- 02.10.2008 **Flinders St** (SW 342/08, WN 40)
 On Thursday, 2.10., Crossover 855 was booked out of service and will be removed. Amend Diagram 89/07 (Flinders St East)
- 02.10.2008 **Spencer St No 1 Box** (SW 343/08 & 347/08, WN 40)
 On Thursday, 2.10., the following alterations took place:
 * The standard gauge Car Dock Road was provided. Dwarf 503 and Derail 403 were commissioned.
 * Dwarf 591 and Derail 496 in No 6A South Track were commissioned.
 Signalling diagram 47/08 (Southern Cross Passenger Lines) replaced 43/08.
- 04.10.2008 **North Melbourne** (SW 346/08, WN 40)
 On Saturday, 4.10., Posts NME577, NME481, and NME800 were converted to United Tri-colour TC2 LEDs.
- 04.10.2008 **Altona Junction - Seaholme** (SW 347/08, WN 40)
 On Saturday, 4.10., Down Automatic WR507 was converted to a United Tri-colour TC2 LED.
- (07.10.2008) **Warrnambool** (SW 169/08, WN 40)
 Operating Procedures 65 (Warrnambool) and 66 (Warrnambool - West Vic Sdg) have been amended.
- 07.10.2008 **North Geelong - East Yard** (TON 415/08, WN 41)
 From 7.10., Sidings Nos 2 to 4 have been booked out of use and are reserved for track maintenance activity. All points are secured for Siding No 1 which is the only track available for sidetracking through freight trains. TON 403/08 is cancelled.
- 09.10.2008 **North Shore - North Geelong** (SW 166/08, 167/08, & 170/08, TON 416/08, WN 40 & 41)
 On Thursday, 9.10., the dual gauge Corio Independent Goods Line (CIGL) was brought into use between the Grain Loop near Melbourne Road and North Shore yard. Standard gauge sidings have been provided at North Shore yard and the remaining sidings rearranged. A broad gauge connection to the CIGL was provided at North Geelong from the East Yard.
 Traffic over the CIGL is controlled using three position signalling controlled from a WestCAD system located at North Geelong C box. Post phones will not be provided. All communication between the CIGL signaller and train crews will be by a local radio channel.
 North Geelong East Yard

North Shore 2008

Based on Signalling Diagram 106/08 & 108/08 & WN 4/0/08



North Rd controls

- Down East Line Stopping Control 17s after 43T down (35s) Holding G2233T down (26s)
- Down East Line Express Control 32T down (35s) Holding 36T down (34s)
- Down West Line Stopping Control 17s after 45T down (35s) Holding G2233T down (26s)
- Down West Line Express Control 22T down (35s) Holding C22T down (34s)
- Down Standard Gauge Line HXP 1760m (near St Georges Rd) Control 35s Holding 25s
- Up East Line Control 54T down (33s) Holding (76T down (37s) w 6IN NG)
- (65T down (33s) w 6R & 63N NG) 16s after 6T down (35s) w 6R & 63R NG
- Up West Line Control 62T down (33s) Holding (0s after 52T down (34s) w 59R NG)
- (78T down (37s) w 59N & 63N NG) (13s after 6T down (35s) w 59N & 63R NG)
- Up Standard Gauge Line HXP 1418m (near GL662) Control 35s Holding 31s

North Shore (West Line) Pedestrian Gates controls

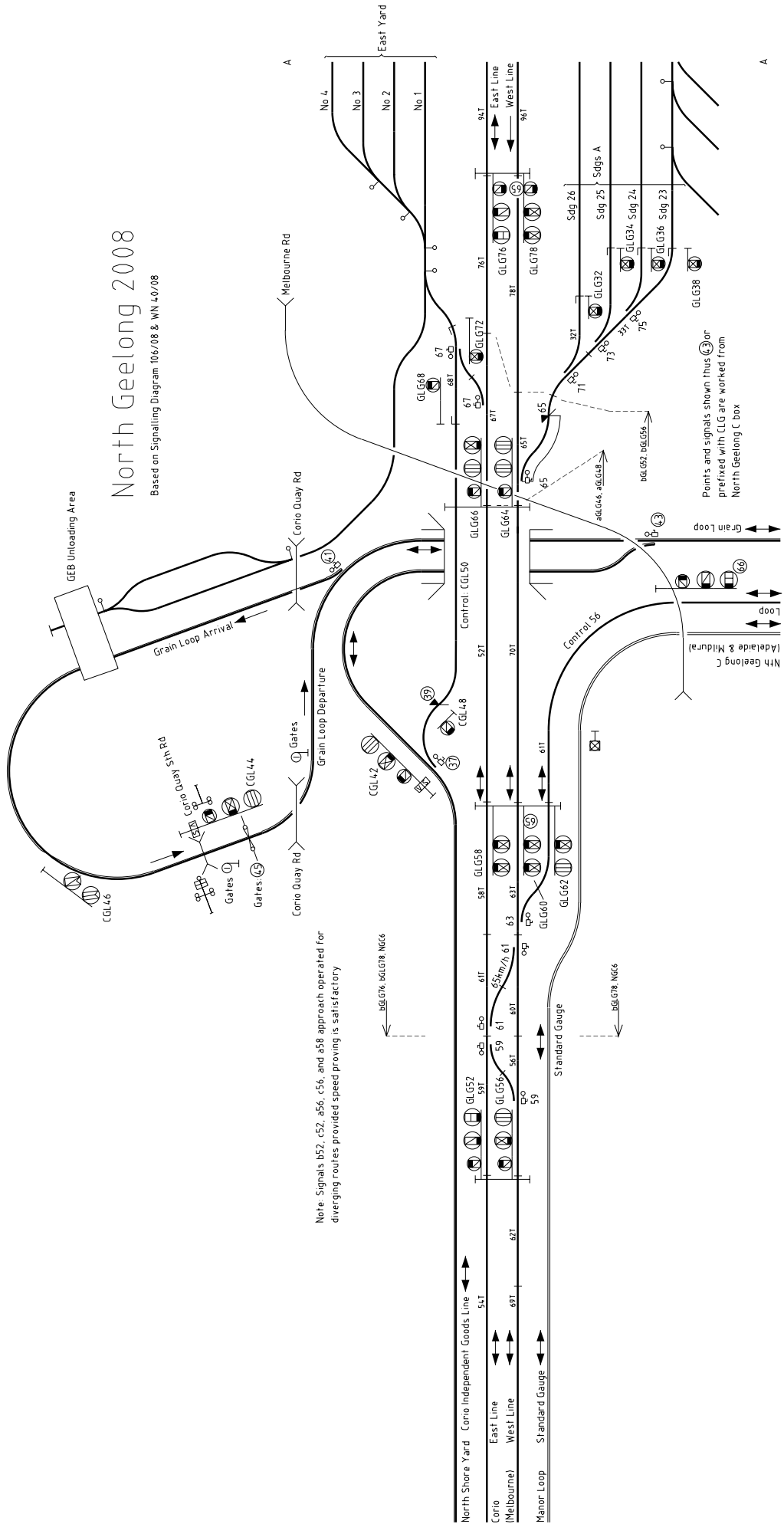
- Down West Line Control 22T down (29s)
- Up West Line Control 69T down (32s)

St Georges Rd controls

- Down East Line Stopping (main line) control 7T down (29s), holding 41s after 8T down (33s)
- (when route set from Shell Sdg at Corio control 15s after A6T down (27s), holding 35s after 5T down (34s)
- (when route set from West line at Corio control 15s after A6T down (27s), holding A9T down (31s)
- Down East Line express control 7T down (29s), holding ? down (36s)
- Down West Line stopping (main line) control A7T down (29s) holding 41s after A20T down (33s)
- (when route set from East line at Corio control 15s after A18T down (27s), holding 5T down (34s)
- (when route set from Shell Sdg at Corio control 21s after A18T down (27s), holding 7T down (34s)
- Up East Line stopping control 10s after 32T down (27s), holding 45s after 43T down (33s)
- Up East Line express control 1s after 32T down (27s), holding 46T down (35s)
- Up West Line stopping control 10s after 22T down (27s), holding 45s after 45T down (33s)
- Up West Line express control 1s after 22T down (27s), holding 48T down (35s)
- Down Standard Gauge line HXP 1772m (from near Up end Corio platform), control 30s, holding 35s
- Up Standard Gauge line HXP 1600m (from near North Shore Rd), control 35s, holding 25s)

North Geelong 2008

Based on Signalling Diagram 106/08 & WN 4/0/08



GEB Unloading Area

Grain Loop Arrival

Grain Loop Departure

Corio Quay Rd

Corio Quay Rd

Melbourne Rd

East Yard

No. 4

No. 3

No. 2

No. 1

East Yard

East Line

West Line

Manor Loop

Standard Gauge

Standard Gauge

Control CGL48

Control CGL50

Control S6

Standard Gauge

Standard Gauge

Standard Gauge

Standard Gauge

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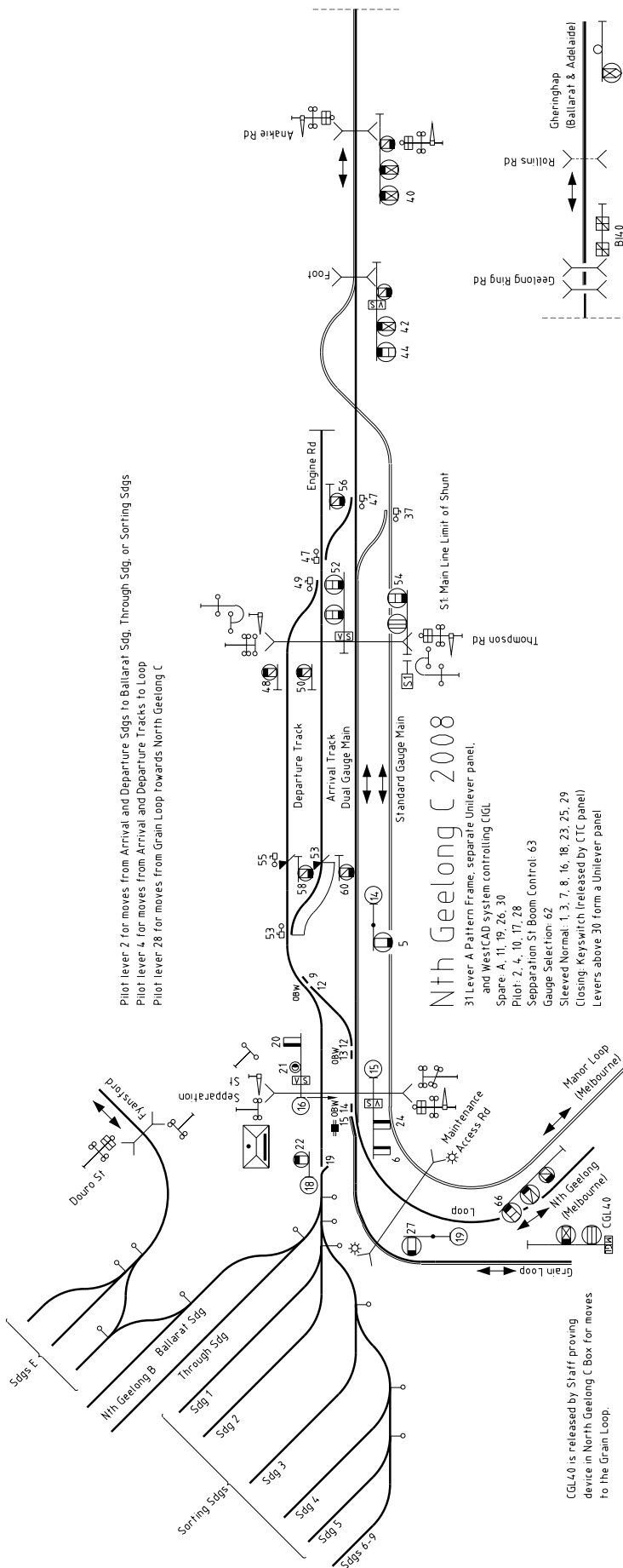
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The tracks in the East Yard have been renamed from Grain Siding X/Grain Sidings Y/Wool Siding to East Yard Nos 1 to 4.

Control lever CGL50 is provided to allow the Geelong signaller to operate Dwarf GLG72 for moves towards the CIGL. When a train is to operate between the CIGL and North Geelong yard, the two signallers must confer and apply the following signal blocks. For moves to the CIGL (to Dwarf CGL48), the CIGL signaller must block Home CGL42. For moves from the CIGL (to Dwarf GLG68), the Geelong signaller must block Dwarf GLG72.

Points 37 and Derail 39 will automatically return to the normal position 45 seconds after a train clears them.

North Geelong C

Down Home Post 19B was abolished and lever 28 became a Pilot lever. The Annett locks on Points 41 (at the entrance to the Grain Loop) and lever 24 were abolished.

North Geelong C must be staffed for all trains crossing North Shore Rd. It must cater for the following scheduled trip movements: 9232 (0740), 9233 (0900), 9234 (1030), 9235 (1200), 9236 (1330), and 9237 (1500). The operating hours of North Geelong C will be:

Monday - Friday:
0730 hours - 1530 hours

Geelong Grain Loop

Train movements over the Grain Loop are controlled by a Train Staff normally held at North Geelong C box (staff tickers will not be issued). A staff proving device is located in North Geelong C and must be operated by the Staff before Home CGL40 can be cleared for a move into the Grain Loop. To operate the staff proving device, the staff must be placed in the proving device and turned. The adjacent V5PSW keyswitch must then be operated to give the release to the WestCAD system to allow operation of Home CGL40. If the release is not taken within 5 minutes it is automatically cancelled and the staff proving device must be operated a second time. If Home CGL40 is restored to stop before the passage of the train, a second release must be obtained before the signal can be cleared a second time.

Repeating signal CGL46 is provided 95m in the rear of Home CGL44 in the Grain Loop. Repeating signal CGL46 is not controlled by the CIGL signaller, but solely by the aspect of CGL44. A berth track circuit is provided in the rear of the repeating signal. A train must not pass the repeating signal unless it indicates that Home CGL44 is at clear, or when authorised by the signaller at North Geelong C.

Motorised security gates are provided on the Grain Loop in advance of Home CGL44. Home CGL44 cannot be cleared unless the gates have been detected as fully open. The gates operate automatically when Home CGL44 is cleared, but can also be separately commanded to open from the WestCAD system. The gates will close automatically after the passage of a train. Local keyswitches are provided to operate the gates for emergency operation. Permission must be obtained from the North Geelong C signaller before operating the emergency keyswitches.

North Shore Yard

Three standard gauge sidings (A, B, and C) have been provided and the broad gauge sidings re-arranged. Points 27 and 29 will automatically return to the normal position 45 seconds after a train clears the

points.

The Up end of North Shore Yard is controlled by the Geelong Signalling Control Centre signaller, while the Down end is controlled by the North Geelong C (CIGL) signaller. Prior to signalling a train into the North Shore yard, the signaller must obtain permission from the signaller controlling the other end of the yard. Before granting permission, the signaller at the other end must sleeve Home CGL26 at stop (CIGL signaller) or Points 35 normal (Geelong signaller), and make a note in the TRB. The sleeve is to remain applied until the signaller has been informed that the train has arrived in the North Shore yard. Prior to ceasing duty, the signaller at North Geelong C must sleeve Home CGL26 at stop and inform the signaller at Geelong and the Train Controller accordingly. When commencing duty, the signaller at North Geelong C must confer with the signaller at Geelong as to the train movements in the North Shore yard.

Midway Siding

The siding was converted to dual gauge. The method of operation is unchanged.

The level crossings at Bayside Rd and The Esplanade are controlled by keyswitches located on the Up side of Bayside Rd and the Down side of The Esplanade. Motorised gates are provided on the Down side of The Esplanade and are also controlled by the keyswitches. A Fortress keyswitch is provided inside Midway and is operated by an independent key held by the operator of the Midway Siding.

When it is required to enter the Midway Siding, the competent employee must bring the train to a stand at the derail in the siding and the derail removed. If the siding is clear of road traffic, the Midway employee will operate the independent keyswitch to release the keyswitch at the entry to the siding. The competent employee will then operate the keyswitch to open the gates and start the flashing lights operating. Each set of flashing lights will cease operating as the train clears the crossing.

A similar procedure will be followed when a train needs to leave the Midway Siding. The competent employee must lock the derail block onto the line after the train has cleared it. Once a departure moves has commenced the train must clear the derail block before reversing into the Midway Siding.

Diagrams 108/08 (Little River - Corio) replaced 64/05 and 106/08 (North Shore - North Geelong) & 112/08 (North Geelong) replaced 108/07 (North Shore - North Geelong - Fyansford). Circulars SW 159/08 (North Geelong Grain Loop interim procedures) and TON 303/08 (North Shore Yard, Multiple operators) were cancelled. Circular TON 244/07 (Management Corio Quay Rd) will continue to apply. Operating Procedures 57 (Corio Independent Goods Line), 57A (North Shore Yard), 57B (Midway Siding), 57C (North Geelong A - Signal power supply switches), and 59 (Geelong Grain Loop) were issued.

12.10.2008 **Franklin St** (SW 353/08, WN 41)

On Sunday, 12.10., signals SST501, 521, 525, and 531 were converted to a LED type.

13.10.2008 **Shepparton** (SW 171/08, TON 424/08, WN 41)

On Sunday, 12.10., the junction to the Dookie line was relocated to the Down side of New Dookie Rd at 184.441 km. The former junction, Points F, between High St and Fryers St, was secured for the main line. The section of the Dookie line between Points F and the Up end of the Shepparton Oil Sdgs was taken out of service. The section of the Dookie line between the Shepparton Oil Sdgs and the new junction was slewed. The new junction points are secured for the main line by a lockable point clip and the Dookie line remains booked out of use. Amend Diagram 40/07 (Mooroopna - Shepparton).

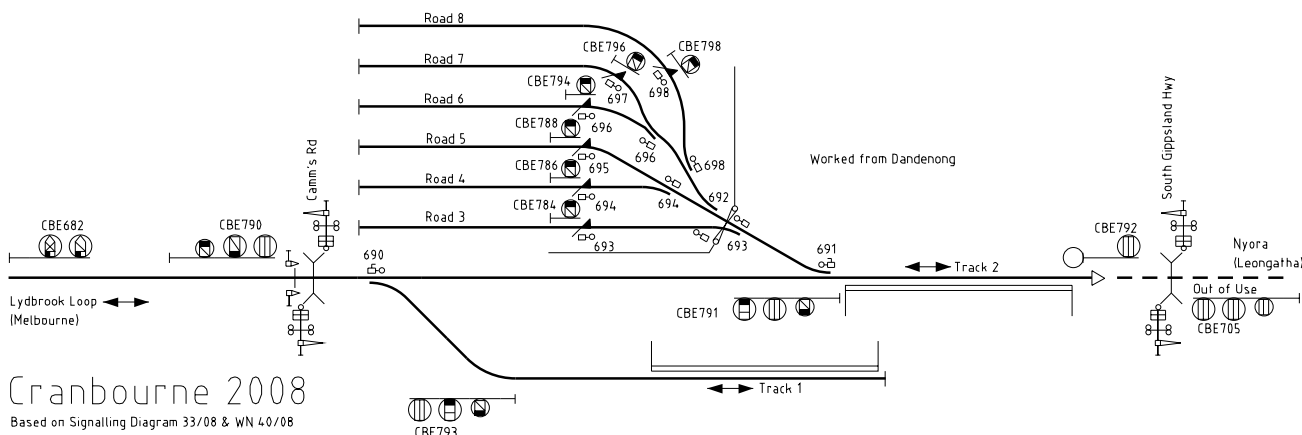
13.10.2008 **Cranbourne** (SW 352/08 & 358/08, SWP13/08, WN 40& 41)

Between the passage of the last train on Friday, 10.10., and 0300 hours Monday, 13.10., the new stabling sidings at Cranbourne were commissioned (although will not be available for train operations until further notice). The portion of the unit lever panel at Dandenong controlling Cranbourne was decommissioned and a Sigview VDU panel was provided to work the Cranbourne area.

At Cranbourne the following alterations took place:

- * Automatic CBE682 and Homes CBE790, CBE791, CBE792, and CBE793 were converted to LED.
- * The feather route indicator was removed from Down Home CBE790 and replaced by LED arrows. CBE790 will now display Medium Speed Warning for moves to either platform.
- * Platform No 2 was relocated in the Down direction. Up Home CBE791 was relocated 106 metres in the

(Continued on Page 108)



Cranbourne 2008
Based on Signalling Diagram 33/08 & WN 40/08

VICTORIAN SIGNALLING BY ACCIDENT OR DESIGN A CRITICAL ASSESSMENT

C L Rutledge

The book *Victorian Signalling by Accident or Design* written by Peter Fisher by its title poses a question that to my mind is never answered. Many statements are made and purported facts cited as evidence of various trends or the decision processes of the VR.

As a student of VR signalling for around 38 years and an employee in the field for around 33 years with extensive access to historical information, I have concerns with many of the facts and statements made in the text. This document has been written in that context and addresses numerous specific details.

Page x

"the variety increased again when American GRS2A style upper quadrants were introduced in 1915." A photo dating from 1918 (VR CEE 23) shows B91 and C91 signals when configured as automatics and the opposing up signals with T2 mechanisms. The arms appear to be wood with the rear side of the arm all over black. The lamps are oil type and there are no train stops installed although the longer sleepers are in place. The original South Yarra signals were DC mechanisms. With the advent of DC traction the signalling was changed to AC circuits with the availability of reticulated power from the traction substations. Another photo from before electrification to Caulfield but with signal prefixes altered to B and F shows signals B103 and F103. These signals are GRS type mechanisms with electric lighting; train stops and pressed steel arms. The rear of arms of up signals a little closer to South Yarra is visible and are white with a dark chevron. As far as is currently known, all AC mechanisms were GRS2A type.

When commenting on a network featuring both two and three position signals we find the following. "Overcoming the mismatch between the two out on the tracks gave rise to an unusual hybrid, an upper quadrant semaphore repeater that had a notched arm and a colour scheme identical with mechanical free-standing distant." As stated this is quite wrong. There is no requirement for any special arrangements when progressing from two position areas to three or visa versa. A two-position signal can lead directly on to a three-position signal because a proceed aspect on a two position signal indicates that the route is set and the track is clear only as far as the next fixed signal. In the case of a three-position signal leading on to a two-position signal, the aspect of the three-position signal is controlled by the two-position signal ahead, the occupancy of the track circuits either side of the two-position signal and in some cases the aspect of the next two-position signal in advance as well. The Repeating signal (not Repeater as often stated) is used where a train exits an area where movement is not regulated by fixed signals such as a double line block section or a staff section. Although a signal is often used to admit a train to a block or staff section, the signal is not the authority and has no interconnection with the signal at the end of the section. Three-position signals always provided information about the occupancy of the section beyond the signal and the aspect of the signal ahead. In this case a distant signal would be inappropriate as it cannot offer information beyond the aspect of the signal immediately ahead. In this environment the Repeating Signal was developed as a three-position version of the distant.

Page 12

Starting on the previous page it is noted that the lack of interlocking was usual into the 1870s and 1880s. Echuca is said to be an intricate junction that was only dealt with in 1926. The first interlocking on the Victorian Railways was commissioned at Essendon Junction near North Melbourne in mid 1876. Following on from there was North Melbourne to Spencer Street and then various significant places including junctions. Places not on the busiest lines or at relatively far places from Melbourne did not get prompt attention. The general program of interlocking was curtailed after about 1910, which resulted in many places not being interlocked. A few further places were interlocked but many were in the simplest form such as Plunger Locking only rather than the comprehensive style used until then. Echuca was one such place where an abbreviated arrangement was installed.

Air brakes are referred to as Westinghouse air brakes. Westinghouse is only one form of air brake albeit the most famous and widely used type.

The following paragraph mentions the British 1889 Regulation of Railways Act. "Interlock" should be "interlocking"; and "brake" should be "continuous brakes".

The claim is made that "the Stevens lattice post looks to have been commonplace on Victoria's Main Line". Evidence for this statement is lacking and is called for.

Page 13

It is said that signals that only dropped to 45 degrees had partial slots rather than full slots. There is no evidence for this claim provided. The home arrival signal from Mirboo North was a former slotted post. It was recovered upon line closure and featured a full slot. This suggests that in Victoria the slots possibly were always full no matter how far and arm may be required to drop.

The last paragraph on the page quotes an ECR rule but would benefit from an explanation of the term "advance of the semaphore" which is actually reversed in current day terminology where the expression would be 'in the rear of the semaphore'.

Page 14

The statement is made that "although Victorian Railways were using semaphores for auxiliaries from the outset, their uptake in this role was quite low in the UK...". This seems to be a significant feature of 'Signalling by Design' that is not commented upon or examined in any way.

Page 15

There is a photo (plate 7) and a reference to the distant signal at Nateby. Where is Nateby? Is the distant signal at Nateby significant?

Page 19

"Nevertheless there was a gradual shift to the distant signal being a speed indicator". Most railway staff would consider a distant signal as a braking indicator rather than a speed indicator because a driver looks earnestly for the distant to know if he has to brake to a stop at the signal in advance. A distant at proceed means, no braking is required, continue on.

Page 22

In discussing the outcomes of the Abbots Ripton accident it is said that the process to change the normal position of signal arms required the reversal of the counterweight configuration. A paper by T S Lascelles, a famous UK signalling engineer, discussing the circumstances behind the development and application of the centrally balanced semaphore was published in the 1950s. He makes the observation that during the inquiry into the Abbots Ripton accident it was recommended the provision of double wires to provide positive return for the signals. The benefit of a double wire system is the ability to pull a signal to proceed and also to stop as one wire pulls each direction whilst the other "trails". This means that the signals at Abbots Ripton had worked conventionally in that they were pulled to proceed and the counterweight at the signal returned the arm and wire to stop when the lever is released. It was also recommended that the usual position of the signals should be stop rather than proceed to reduce the risk of the arms being frozen within the signal post amongst other reasons.

Page 28

"the Americans began to favour orange instead of yellow and this colour was increasingly seen in Victorian semaphore glasses and always in colour light signals." The colour of signal glasses used in Victoria has since around the 1920's been defined in accordance with the American Association of Railroads (AAR) engineering standards.

In my own observation, the colours were yellow and were always described as such in both local and US materials. Colour light signal lenses sometimes had a label attached by the manufacturer stating the colour to be yellow. In sunlight the colour displayed was different to that displayed in a signal due to the spectrum of the light given from the poor quality lamps used, particularly in the style VR signals. Many early light signals featured a dimming arrangement that reduced the lamp voltage by around 20% with a considerable spectral shift due to the changed filament temperature.

A colour shift was seen in distant signal spectacles in the last 25 years or so when the original specification moulded glass was no longer supplied for replacement. In the place of the correct glass, Perspex and similar substitutes were used with no attempt to ensure conformity to spectral specifications.

Page 32

The Harcourt signal is shown in plate 26 not 28. The fact that there is no back marking on this signal is similar to that seen in photo H1475 of Castlemaine. Examination of various photographs suggests considerable non-conformity between 1884 and 1910 (give or take a year or so). A detailed analysis could be undertaken to get a better understanding of this feature.

Page 34

"Why were there not even more of these remnant reverse-Ks?" The standard drawing of semaphore arms is H156 and the earliest version available, dated 25.10.1927, shows standard chevrons. It could be assumed that all manufacture from that time was for standard arms. All references in the supply department and signalling department that discuss arms for distant signals are for standard chevrons. Experience has shown that arms deteriorate relative to the number of times they are operated. The signals that have survived into the

modern area featuring K chevrons are all associated with large country locations where the distant signals were rarely used due to most trains stopping for extended periods. Most if not all other red distant arms would have seen sufficient use to cause replacement due to wear and tear.

The comment about the fading of the yellow glass in the distant at Moreland in later years is misleading because the spectacle shown in plate 16 has Perspex fitted. This was a very common practice in the suburban area from the late 1970s onward.

"Early photographs of somersaults show that a pale green glass was deployed in Victoria (eg Somerton, Merri) the last example being the up Coburg distant signal". As far as green spectacle glasses are concerned, the situation is very similar to the distant yellow. The special blue-green glass used to provide a correct green light in front of a yellow kerosene flame and in front of low wattage electric lamps was the same. Because of the more intense electric light the final colour was different but there was no instruction ever issued to compensate in any manner. Around the mid 70 to late 70s some green glasses were supplied as laminated clear glass with a plastic colour film between. These composition glasses were well known for fading as well as going opaque when water migrated between the glass sheet and mingled with the film. By the beginning of the 1990s the only form of glass available was green Perspex. This was a very deep green colour but faded quickly necessitating frequent replacement. Local maintenance staff made a concerted effort to recover as many spectacles as possible from abolished signals. By swapping spectacles, signals that mattered (i.e. those that were lit at night) were kept in suitable condition. Any shade of green was considered suitable for use where a signal had a fixed arm. In reality, the green spectacle was not required but leaving the colour out brought erroneous reports that the spectacle had a broken glass and therefore the signal was defective. The up distant at Coburg is an example of this.

With the advent of LED illumination of various mechanical signals (beginning with a signal at North Geelong B), Perspex green and red 'glasses' were used but were quickly altered to have two 3mm thick pieces material in each colour to overcome a washed out appearance.

Page 35

The purple aspect in dwarf signals was never totally abolished. The rules were altered to permit either colour. There are some signals still in existence that have never shown a stop aspect other than purple since commissioning in the early 1960s.

Page 36

Plate 18 shows a Style R (McK & H naming that is derived from the parent version developed by Union Switch & Signal of the USA) dwarf signal and notes the "prismatic style of lens". Most signal lenses are prismatic or stepped in design but the shaping is on the inside of the lens. The lens concerned in the photograph, which has a noticeable different appearance, is 'outside ribbed'. The ribbing consists of parallel raised curved projections on the outer surface. Its purpose is to cause the light beam to spread in either a horizontal or vertical plane depending on how the lens is installed. This type of lens is usually found in Style R dwarf signals and is used to produce a short range spread light beam effect to suit the angles of visibility required. Conventional or main line signals with Style R optical systems have a narrow beam, of light and this is a feature of this general design that features a two lens arrangement. The inner lens

is unusually outside stepped and 5 3/8" diameter and coloured whilst the outer clear lens is 8 3/8" diameter.

Page 37

It is suggested that searchlight signals are immune from phantoms and that phantom aspects are related to sunlight directly shining into a lens. Whilst this is generally true, and often the justification for adoption of these relatively expensive mechanisms, phantoms are also caused by sunlight reflecting on ballast, platform surfaces etc and entering the signal lens. In this case a red searchlight can show a phantom green at close range.

Page 40

The discussion on this page and the following is drawn out and without further research pointless. Previously accepted records (from Victorian Railways sources) note the interlocking of Richmond in 1873. The extent to which these works extended is not yet known and therefore such speculation is pointless.

Page 41

"Further down the track at Windsor, a photograph taken during the construction of the station in 1885 shows a relic Stevens two spectacle, three aspect semaphore circa 1854" An examination of the whole photograph suggests that although the station building is under construction in the background (probably a government response following purchase of a run down private concern), the works in the foreground relate to rearrangement of the junction area to what would have been the St Kilda line. The signal in question is in the middle region of the picture. It is clear when compared to other pictures and still existing parts that the signal is a McKenzie and Holland slotted post two position signal.

Page 42

From this point onwards in the book the style changes to one of detailed analysis of dates all of which is over played compared to the point that is trying to be established. There is discussion on three position signals but no conclusion.

Page 43

"There was a second wave of three position slotted post signals illustrated by the three styles found in plate 30". There is unfortunately no prior discussion on the 'first wave' of three position semaphores.

The signals shown in plate 30 at Echuca appear to be more likely to be two position signals and if the whole picture were considered, the signals would appear to be at proceed for a train to come off the river bridge and enter the station. Apart from the locomotive the platform track is unoccupied so maybe the locomotive has arrived from that direction. The so-called third signal on the right side of plate 30 may in fact be something different.

Page 48

Reference is made to drawings of various VR semaphore signals but no drawings or discussion as to appearance, and chronological significance.

The Echuca signal noted at the top of the second column can be seen in plate 31 to have a cast iron base assembly. On the side of the post near the ground a cast iron mounting

plate that had an elegant "VR" monogram supported the operating mechanism. Some of the signals on the Bendigo line must have been of the same style as a stone foundation remains at Taradale that has a matching footprint for a post.

The claim of the "Echuca down auxiliary (later distant) now lies preserved at that location" is not credible.

Page 49

"A similar post survived at Glenroy into the 1930s and is shown in plate 36". This signal is no such thing or anything like it. It is a B615 signal using a standard light signal mast on a B117 butt. It is of interest though as the only known example of a Victorian Railways somersault signal with the lever plate assembly at the top of the post rather like the NSW style. To provide maintenance access to the arm and lever plate assembly an unusual landing arrangement was needed.

To say that the signals in plate 30 may have been the very last of their type to be erected draws a long bow partly because it fails to acknowledge there could be many other places with signals. This is quite possible but cannot be supported or repudiated due to no records being available.

The quote from Gavan Duffy suggesting the reason for distant signals being rare in Victoria at un-interlocked stations does not deal with why distants were converted to homes. It is more likely that it was determined that in single line environments (where the vast majority of the places relevant occur) to enable both additional protection for station yards and to facilitate train movements within station limits, those limits needed to be defined and the existing station semaphores were useless. This may have coincided with a spread of staff working of single lines. The moderate speeds being operated coupled with the adoption of power brakes associated with the rules specific to staff working on single lines is probably the true reason. A few places are shown in the records to have had distant signals and this can be attributed to unusual sighting or approach matters.

Page 50

"The replacement signals were the end-pivot, single (red glass) spectacle lower quadrant with Stevens-style lattice posts". McKenzie & Holland provided these signals under contract terms to the VR. The lattice posts were McK&H's design that was latter copied by the VR and adopted as their standard. The VR version typically was about 20% heavier in cross section of the metal components of angle and flat.

The discussion about a signal at Echuca has erroneous reasoning. The symbolic representation of the up home signal is in total conformance with a slotted signal, which that signal was. The actual mechanical slot, which is now in the author's collection, was provided to give the Pakenham Street gatekeeper control over the signal that was worked from the platform.

Semaphore posts up to 20 metres high were very rare. The highest post the author is aware of is 60 ft or 18 metres high. That signal was that high for sighting on a 70 mph line. Very tall posts are not associated with low and moderate speed lines.

Page 52

Essendon Junction signal box was commissioned on 11th July 1876 not 27th October as stated.

The concept of green indications for movements over points and through junctions seems to only apply to non-interlocked places. The signals used to illustrate the point made here are at Spencer Street that was interlocked in 1880.

Page 59

There is a confusing discussion about green and white lights. The point is made that hand signals use green as the caution indication and in fact that is still the case today where the rules indicate that a green light when used for shunting indicates caution where a white indicates all right. Reading of the rule books for 1885 and 1891 indicate identical wording for the indications for fixed signals. The 1885 and 1891 books both say "Two signals only are shown on the Semaphore Posts, viz., 'Danger' and 'All Right'. The 'Danger' Signal to stop ... at night by a Red Light. At night, the 'All-right' Signal is shown by a White Light". Quite clearly green has no relevance for fixed signals and there is no provision for other than two indications on signals. Interestingly a couple of pages on, the particular part of the rule book is reproduced.

The 1898 rule book reflects the change to green lights for proceed and goes as far as to make the statement in bold text that "A white light exhibited on a Semaphore Signal post will indicate that the Signal is defective and it must be treated as a 'danger' Signal". The inference here is that this is different to that which previously applied and the reader needs to pay particular attention.

The statement from the text "However an anomalous three position signalling system cannot be ruled out at a time when there was a lot of latitude" has no foundation. If the current use of green in shunting is considered (which is the same application as in 1898) then the statement could be said in the logic of the preceding; that there is still a lot of latitude and a three position mechanical system could exist even today. The comment about Echuca in the same paragraph is simply nonsense.

A claim that the signals photographed at Korong Vale had tapered arms is difficult to confirm from the image provided. It is just as likely that all arms were parallel.

The discussion about arms at differing angles on posts at South Yarra makes one wonder how this could have been achieved considering the fittings they used that are all arranged for square wooden posts. The photo does suggest arms at differing angles by apparent length, spectacle and lamp configuration. In the same photo the down Windsor line starter is an interesting post in that it is a slotted post that has been in filled. This is signified by the additional width of the front face of the post for about five feet of height starting a few inches below the finial. The Richmond signal that is said to be at 90 degrees of angle may be a short arm relatively low on the post but the reproduction lacks the clarity to illustrate the point claimed.

Page 64

The discussion on the timing of the change from white to green for night indications of signals seems to this author to be aimed at linking somersault signals with colour change. A copy of a memo from the South Australian Railways to the Victorian Railways dated 21 January 1889 discussing the proposed arrangements for Serviceton station says,

"We beg to call attention to the following features in the general arrangement of signals interlocking gear we consider should be altered.

The system of colours in use here is not in accordance with that adopted by the South Australian Railways, inasmuch as the signals exhibit a red light for "danger" and a white light for "all right" - whereas ours is Red for "danger" and green for "all right". The backlight in the signals shews green when the arm is "on" and "white" when "off" - whereas our back lights shew "white" when "on" and red when "off". We recommend that this be altered as it will be

most misleading to South Australian drivers who are accustomed to a uniform system of signals in force at all stations excepting Serviceton."

It is apparent that the arrangements at Serviceton were not altered to the proposal of the SAR as we have no reference as to differing arrangements there. The VR would have no doubt indicated that their drivers would have the same problem that their SA counterparts claim. In retrospect it is probable that the VR chose not to make any change to signal indications until such time as it was absolutely necessary. The time period is known as one of some austerity as evidenced by various cost reduction strategies being implemented during the 1890s.

Page 66

The two reverse K distant arms that survived into the early 1990s were baked enamel. There have been no painted signal arms in service for many years although in the late 1990s some arms were touched up by painting rather than being re-enamelled.

The writer has seen a red steel distant signal arm that had a reverse K chevron but that had been re-enamelled over a home signal band suggesting it had been made by altering a home arm.

It is possible that when steel red distant arms were introduced they had reverse K chevrons. A later development could have been change to standard chevrons. As noted in remarks about page 34 arms that are rarely worked do not deteriorate very rapidly compared to frequently used arms.

Page 68

The repeating signal element of the table has some inaccuracies. In one place they are incorrectly called repeaters that they are not.

It is suggested that repeating signals with arms were rare. Beside the signals mentioned there were a few more at places such as Viaduct Junction and Kensington. Additionally it is technically wrong to describe the signalling beyond South Yarra towards Elsternwick. The signalling should be described at three position signalling displayed by three or normal speed aspects only.

Page 69

Right at the end of the page it is suggested that double yellow aspects have not been applied in Victoria because of the speeds not requiring it. This is not the case as the double yellow aspects are a feature of standard British four aspect signalling and have no relationship to three position speed signalling as adopted in Victoria.

Page 72

The move away from multiple distant signals at junctions is attributed to elimination of a driver reaction to distant signals at proceed. It was determined that because the usual interpretation of a distant at proceed by a driver was that all home signals at that location were showing proceed, the sub-conscious reaction was a relaxation in concentration. This contributed to some drivers not lowering their speed when the distant for the diverging move was at proceed occasionally resulting in serious consequences. The examples claimed for the interpretation of some distant signals speed indicators is odd to say the least. The places where light distants have been installed in relatively recent times are solutions to sighting, reaction and braking matters. At Kerang the home signal has poor sighting, at Gheringhap

sighting and falling grade is a concern and Frankston is a gradient concern as highlighted by a collision in the 1970s where a train overran the distant and home arrival signal.

At Carlsruhe the junction was at the up end of the station on the approach side for a down train approaching the distant signals.

Daylesford lost the line to Ballarat in July 1953 and so the second distant was not removed on 27/10/65 as stated.

Page 74

As mentioned previously some of the initial signal mechanisms installed between Richmond and South Yarra were Union Switch and Signal Company T2 mechanisms not GRS types.

The signals installed between Richmond and South Yarra in 1960 are on a few signal bridges not only one structure.

The signals installed on the Belgrave Gembrook line in recent years are not re-installed but recreations utilising parts from both Victoria and South Australia.

Page 75

Plate 72 is the up departure signal at Seymour.

Plate 73 showing signals between Upper Fern Tree Gully and Belgrave illustrate signals complying with the standard drawings of the day. That was F144 dated 8/8/1917 describing the mast as a "tramway pole as obtained". There is no connection with contract 450 what so ever.

Page 78

In the first column it says, "UAL displayed MEDIUM SPEED CAUTION". The name of the aspect is Medium Speed Warning.

Page 80 - 81

The name of the aspect is Medium Speed Warning.

A statement is made "From 1915 to 1928 the Victorian Railway had five different means of indicating Warning or Caution:" which is followed by five diagrams extracted from the rulebook. The text though is not from the rulebook. There is no explanation of the meaning of the reference to Warning and Caution or the selection of the period 1915 - 1928

Reading the various editions of the rule book for the period and beyond we find (see table at foot of page).

The only thing that relates to the discussion is the changes to aspect names and observance with respect to distant signals. There is only one definition for each of "Danger, Cau-

tion, and Warning" and these apply to different types of signal.

The text applied to the low speed aspect displayed on a home signal calls the low speed light as a "marker light". This is incorrect as the light is a low speed aspect that can be displayed or not as needed. A marker light is provided as a fixed continuously illuminated light to signify by its placement on the post, the type of signal.

Page 81

The origin of the forward chevron is unlikely to have Scottish ancestry as far as Victoria is concerned. It would more likely be related to the American parentage of the speed signalling model used as the basis for the VR's version. It is probable that like the development of the chevron on the distant signal arm, the pointed arm logically required a chevron to match.

Page 84

The Broadmeadows up distant shown here has a faded yellow spectacle probably Perspex. The light unit behind the spectacle has a clear lens. The yellow appearance of the lens is the true colour of the spectacle whereas the sky background to the remainder is distorting the colour.

Page 85

The photograph of the Jewell up distant shows the distant signal with the wrong spectacle assembly. It supports an assembly only used on yellow armed signals and as such red glasses were not available. The difference can be seen in the spectacle by comparing to the home arm above. The actual colour of the distant is hard to determined from the photograph as published.

Page 86

The Style R dwarfs at Broadford have now gone but three at Wodonga A that show purple are still in service. The Broadford signals remained in service because the private companies managing the railway network did not want to fund the necessary alterations to signalling to permit their removal.

Page 91

The Kilmore East down distant mast photographed in motor worked by a McK & H- USS T2 mechanism rather than

Signal Aspect	1918	1926	1946	1966	1987
2 Position Distant	Danger Red Light Train to stop if line not clear to home	Danger Red Light Train to stop if line not clear to home	Danger Yellow Light Train to stop if line not clear to home	Caution Yellow Light Prepare to stop at next signal	Caution Yellow Light Prepare to stop at next signal
3 Position Normal Speed Warning	Warning Prepare to stop at next signal	Warning Prepare to stop at next signal	Warning Prepare to stop at next signal	Warning Prepare to stop at next signal	Warning Prepare to stop at at next signal
3 Position Medium Speed Warning	Warning Prepare to stop at next signal	Warning Prepare to stop at next signal	Warning Prepare to stop at next signal	Warning Prepare to stop at next signal	Warning Prepare to stop at next signal
3 Position Low Low Speed	Caution Line may be occupied	Caution Line may be occupied	Caution Line may be occupied	Caution Line may be occupied	Caution Line may be occupied
Repeating Signal	Warning Prepare to stop at next signal	Warning Prepare to stop at next signal	Warning Prepare to stop at next signal	Warning Prepare to stop at next signal	Warning Prepare to stop at next signal

the more common GRS 2A type. It is a pipe mast making it even more unusual.

Two of the other masts shown on the page are batten type being examples of the last style of mechanical signal mast. This is not noted anywhere in the main text of the book.

Page 92

“Conventional repeating signals remain in colour light form, but these are reduced to precious few examples as two position signalling draws to a close in Victoria.” This is just wrong. Repeating signals are not related to the absence or otherwise of two position signals. They are used when a train needs to exit an area where the authority to occupy a line section is not a signal aspect, and enter a three position signalling area. As power signalling expands, repeating signals will reduce in number if there are less sections of line controlled by staff or train order working.

Other Observations

As the reader comes to the end of the text the obvious question that arises is what does the author believe is the answer to the title question? No conclusion is reached and in that respect the reader is cheated.

Personally I believe that signalling on the Victorian Railways developed not by accident but by design in that change was driven by progress and sometimes by the experience of others. When change was called for it sometimes came slowly and occasionally in a manner where by when later developments suggested a need for revision or variation, a piecemeal or ad-hoc reaction occurred.

Given the considerable discussion on signals from the 19th and early 20th centuries, it is remarkable that no drawings of any type are reproduced. Many of the signals mentioned in the text are shown in technical drawings that are still in existence.

A very significant element of the signalling development of the VR was the decision to adopt power signalling. This was the single greatest decision made at any time in the entire history of signalling on the state's railways. There is no exploration into the investigations and decision process that adopted three position signalling as motivated by electrification in the early 1900s. Neither is there any consideration of the variations of equipment used; either manufacturer or configuration. More recent variations to the original concepts are also ignored.

It could be said that the title of the book might have more appropriately been titled “a consideration of some elements of Victorian railway signalling with a particular emphasis on some mechanical signals”.

SIGNALLING ALTERATIONS

(Continued from Page 102)

Down direction to the new end of Platform 2.

- * Siding Nos 3 to 8 were provided. Points 691, 692, 693, 694, 696, and 698, Derail/Crowder 692, 693, 694, 695, 696, 697, and 698, and Dwarfs CBE784, CBE786, CBE788, CBE794, CBE796, and CBE798 were provided. All Dwarf signals have a LED head and display purple for stop.
- * Gates are provided across the lead to the Stabling Sidings. These are opened and closed by Drivers and are not detected in the signalling system.
- * Two position Down Home CBE792 was brought back into service and is now located 48 metres on the Up side of the South Gippsland Hwy. CBE792 is fixed at stop and is provided with a detected train stop.
- * A friction arresting buffer stop will be provided between CBE792 and the South Gippsland Highway.

Signalling Diagram 33/08 (Lyndbrook Loop to Cranbourne) replaced 9/07.

Operating Procedure 44 was cancelled. New Operating Procedure 44 (Failure of Signals Dandenong - Lyndbrook Loop - Cranbourne) was issued.

16.10.2008

Pyramid

(SW 173/08, WN 41)

On Thursday, 16.10., the flashing lights at Victoria Street (249.088 km) were converted to a level crossing predictor. The predictor is set so that trains travelling at 50 km/h or more at the predictor indicator boards may accelerate.

The following amendments are to hand:

22.04.2008

Clematis

(PBR A2/08)

Effectively immediately, the Up end crossover has been booked out of use due to poor timber foundations of the small point lever and rodding cranks.

CHELTHENHAM

(Continued from Vol 31 No 5)

The back platform

In 1956 facilities were provided at Cheltenham to terminate Down trains clear of the through lines. These facilities took the form of a third platform located behind the Up platform. Access to the new platform from the Down line was via a facing crossover situated on the Up side of Park Road. The new platform replaced the former refuge siding (Siding B) which had been abolished on 8 February 1956. Crosslock lever 9 was secured normal at this time. Subsequently, Post 10 was relocated 42 yards further out on 18 March, and on 8 April Post 8 was relocated 100 feet further out and 18 feet from the centre of the Up line. Post 9 was replaced on 15 April 1956 with a new post located 20 yards further out.

The new back platform was commissioned on 22 April 1956. The platforms were numbered with the back platform becoming No 1 Road, the Up line No 2 Road, and the Down line No 3 Road. The new Post 9 had the junction homes leading to either the Down line (No 3 Road) or back platform (No 1 Road) arranged vertically. Normally, a bracket post would have been provided, but visibility issues with the overhead probably dictated the use of a straight mast with the two Home signals arranged vertically. A telephone was provided at the Up end of the new platform to allow the Guard of a Down terminating local train to inform the signalman that the train was complete. At the Down end, Crossover 14 was abolished.

The use made of the new terminating facilities can be judged by that November 1959 there were 11 trains terminating each weekday at Cheltenham, compared with one in June 1955. The last terminating train stabled overnight in the back platform. This level of use remained until after 1972. By 1973, however, only nine trains terminated each day and by 1977 this had been reduced to four trains per weekday (with none stabling overnight).

On the same day that the back platform was commissioned, the Highett - Cheltenham block section was divided by the provision of Bay Road signalbox. Bay Road's Down starting signal was placed above Cheltenham's Down Distant on Post 7.

With experience of the new layout, Post 10 was relocated 47 yards closer to the platform (5 yards further in than its original position, and close to the end of the Up platform) on 6 May 1956.

The signalmen subsequently suggested the provision of a post telephone at Post 9. The estimated cost was £40 and it was duly provided on 24 July 1957.

Less successful was a suggestion by the signalmen in January 1958 that two additional wicket levers be provided in the frame to give greater control over pedestrian traffic (i.e. that each wicket gate at Charman Road be worked by a separate lever). This was rejected as the policy was only to provide more than two levers for wickets where special conditions existed. In particular, it was noted that the provision of extra levers could result in an increase in the

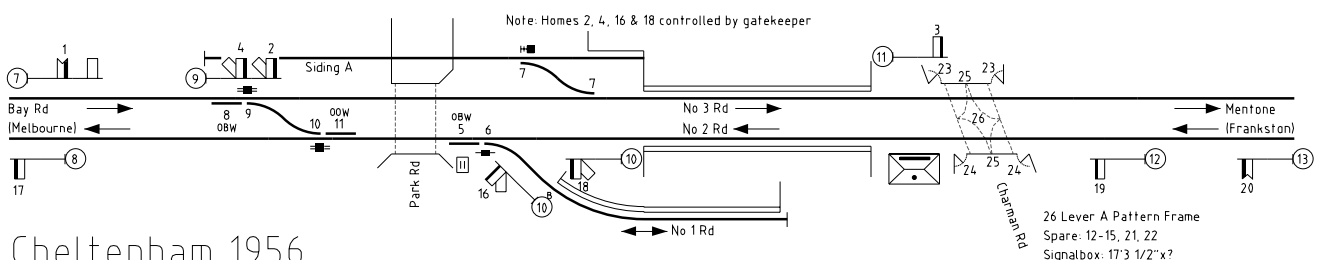
signalbox classification. The suggestion was revived in November 1964 and the S&T Engineer asked to provide a cost (if he did, it was not recorded). In March 1968 the Metropolitan Superintendent noted that the large volume of pedestrians made it difficult for the signalman to close the wicket gates and the provision of separate levers for each wicket was again suggested. The additional wicket levers were never provided, probably because of the impending replacement of the mechanical frame.

Returning to August 1959, the W&W Branch estimated that it would cost £8/2/0 to provide an additional window in the signalbox to improve the view of the pedestrian wickets. It is not known if this work was carried out. After a memo from the Claims Agent, the Block and Signal Inspector suggested replacing a small section of the picket fence near the south east gate to allow the signalmen to see children standing at the wicket. This was completed by 19 April 1968.

The Guards of Down trains complained through their union in June 1958 that it was difficult to see the Down Departure signal (Post 11). It was agreed that that this signal was difficult to see from the rear of a train, but it was noted that Guard's were excused from complying with Regulation 195a where the signal could not be seen.

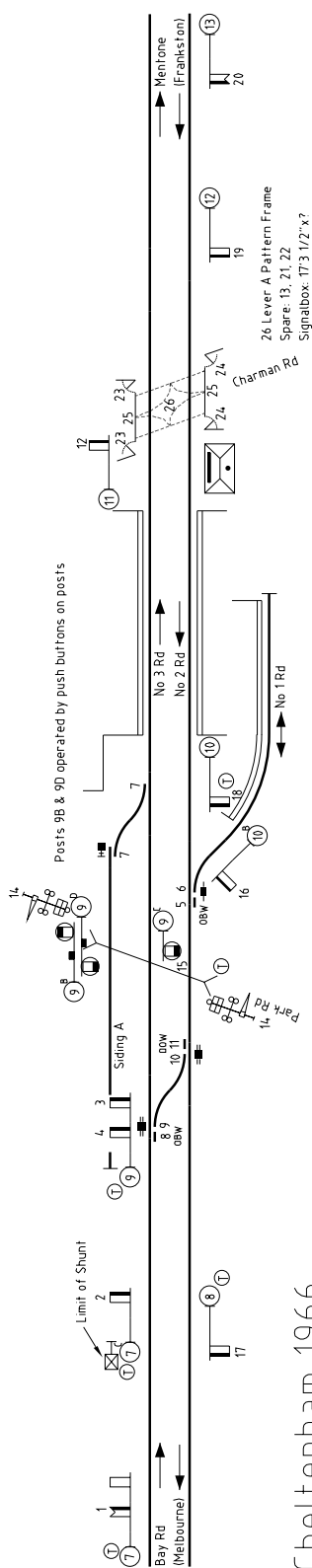
The Way and Works Branch prepared plans in 1959 for the provision of a commuter car park with the consequent abolition of the Down end dead end extension of Siding A into the cart dock. It is believed that nothing came of these plans. However, in late May 1961 Siding A was shortened by 66 feet at the Down end in connection with the construction of a goods shed at the Up end of the Down platform. Temporary baulks were provided in the siding. It is believed that the construction of this good shed marks the introduction of the 'Railway Road Motor Service' at Cheltenham in which less than car load goods were transported by road to and from the Melbourne yard. Two months later the Block and Signal Inspector noted that the new goods shed obstructed the view of Post 11 and recommended that the arm on Post 11 be raised and a co-acting arm provided. The CCE was instructed to carry this out, but there is no record of these changes taking place. However, on 30 November 1967 the fittings on Post 11 were rearranged and three days later the post was relocated 8 feet in the Down direction. Both these alterations were probably to improve the sighting of the signal.

In August 1963 the Rolling Stock Branch complained about irregular signal aspects. Investigations revealed that the distant had failed to go back to caution after the preceding train. After the driver complained, the ASM secured the offending distant at caution. The signalman was subsequently cautioned for failing to check the operation of the signal and fined 5 shillings. Another signal failure was recorded on 13 January 1966. On this occasion the 0746 Down Cheltenham was approaching the station with both arms



Cheltenham 1956

Based on box diagram dated 22.4.56 & Locking Sketch B485 amended to 30.11.66



Based on box diagram dated 22.4.56 & Locking Sketch BA.85 amended to 30.11.66

on Post 9 at stop. When the home was pulled off for the move into the back platform, both arms on Post 9 came off. The cause was a tight wire between the Gatekeeper's lever and the post, and when the wire was adjusted the signals worked normally.

Boom barriers replaced the hand gates at Latrobe Street (13 miles 59 chains) on the Down side of Cheltenham on 29 June 1965.

On 30 November 1966 boom barriers replaced the hand gates at Park Road (13 miles 3 chains). The new boom barriers not automatically operated. Instead, they were manually operated by lever 14 in the signalbox for signalled moves, and by local pushbuttons for shunting moves along Siding A. Three new dwarf signals were provided. Two dwarfs were provided to protect the level crossing from shunting moves along the siding, and one dwarf was provided to protect the crossing from set back movements along the Down main. No signals were provided to control moves into or out of Siding A and these must have continued to be controlled by means of hand signals from the signalbay. An Outer Home signal, Post 7C, was provided together with an adjacent 'Limit of Shunt' board. A wire adjusting apparatus was subsequently provided for the Outer Home signal on 8 March 1967.

Subsequently, in April 1967, the City of Moorabbin complained about the noise of the bells at Park Road. A check was performed on the operation of the boom barriers and the minimum detention to road users was one minute and the maximum was two minutes. For Up train the period of operation varied from 1 minute to 90 seconds. Signalmen had been instructed not to operate the booms for Up stopping trains until the train was entering the platform, however, the booms had to be operated for Up expresses well before this so that the distant could be cleared. Subsequent investigations did, however, show unnecessary operation of boom barriers particularly when trains were delayed.

The signalbox was sewered in August 1968 - just three years before its abolition. It is not known if the box was equipped with a septic tank system or pans prior to this.

In November 1969, the Metro Superintendent noted that the signalmen had difficulty in determining the position of approaching Down trains and suggested the provision of a 'ground bell' (approach bell) at the Down Distant at a cost of \$1400. Probably due to the imminent abolition of the mechanical frame, nothing was done.

The panel

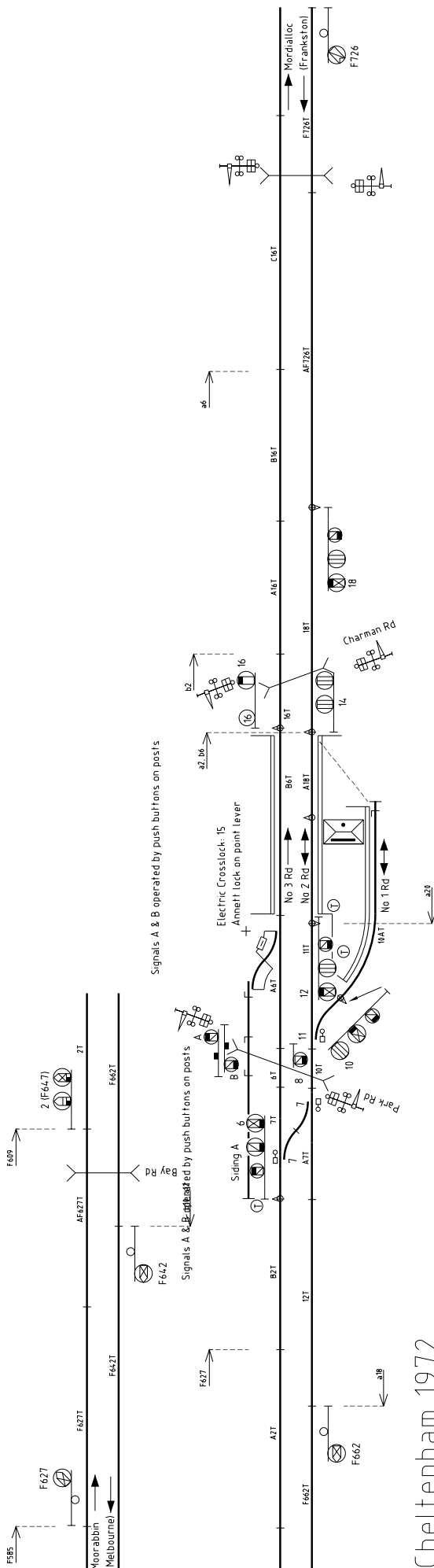
On 10 December 1972 the mechanical signalling was replaced by a relay interlocking situated in the former signalbay on the Up platform. All the existing two position mechanical signalling were replaced by three position light signals (except for the Down Starting signal which became a two position light signal). The interlocked gates at Charman Road were replaced by boom barriers which worked automatically for all trains. The boom barriers at Park Road were converted to automatic operation. The terminating facilities were expanded as the Transportation Branch wished to be able to terminate Down trains in No 2 Track (the Up platform). This led to the provision of a home signal fixed at stop at the Down end of the Up platform. Siding A was retained, but the points were not connected to the new interlocking. Instead a small point lever was provided to work the trailing main line points and catch points. The lever was secured normal by an Annett lock, the key of which normally resided in an adjacent electric crosslock, which, in turn was released by lever 15 on the panel

The double line block sections Highett - Bay Road - Cheltenham were replaced by three position automatic signalling, however the section onwards to Mentone remained worked by the block. This meant that the signal leading into the section was a light two position Home signal, and an Up Repeating signal was provided. It also meant that Cheltenham signalbox continued to be staffed for all trains. Express/stopping buttons were provided on the panel to select the appropriate approach track sections for trains running non stop through Cheltenham. It was not until 9

April 1974 that Express/Stopping pushbuttons were provided to select the length of the Up control and holding sections of the level crossings at Centre Road (Bentleigh), McKinn Road (McKinn) and North Road (Ormnd).

In the early seventies plans were prepared for the provision of a third track between Caulfield and Mordialloc (this was eventually provided in 1987, but only between Caulfield and Moorabbin). Plans of Cheltenham were sent to the Transportation Branch in November 1973 for approval. These were approved, but subsequently that branch required the retention of the crossovers at Cheltenham for the parcels coach. In July 1976, responding to an ARU request as to the future of the signalboxes on the Frankston line, it was noted that Cheltenham signalbox was expected to be abolished around 1980 with the provision of the third track.

On 3 April 1978 Cheltenham was closed to rail borne goods. It remained open for goods traffic, however, with the goods shed continuing to be served by road by the 'road motor service' from the Melbourne or Dynon Freight Terminals. Siding A was subsequently baulked on the Up side of Park Road and the siding north of Park Road was removed. This portion of the good yard became a commuter car park. The decommissioning of the overhead wiring over Siding A was



Cheltenham 1972

Based on Signalling Arrangement RA1S1774/R3 amended to 12.11.06 & Box Diagram c1972

notified on 8 May 1984. It is not known when the remaining portion of Siding A was removed, but it is likely to have been associated with the provision of automatic signalling to Parkdale in 1985.

Pedestrian boom barriers were provided at Charman Road on 18 August 1982.

Automatic signalling to Mordialloc

The double line block system on the sections Cheltenham - Mentone - Parkdale was replaced by three position automatic signalling on 7 December 1985. The Down Starting signal (Home 16) was converted to an automatic and renumbered F687. The control over this signal from the panel was removed, but a 5P keyswitch was provided on the Up platform to hold the signal at Stop when a Down train was delayed at the platform. Up Arrival Home 18 was relocated 212 metres in the Up direction, and a controlled automatic F716 (worked by lever 20) was provided 573 metres in the rear of the Home. Up Repeating F726 was, of course abolished. Train Number Transmitter facilities were provided between Cheltenham and Mordialloc.

With three position signalling on each side, Cheltenham no longer had to be attended for each train and switchout facilities were provided. Illuminated letter 'A's were provided on Homes 6, 12, and 18. A 5P keyswitch was mounted on the Up station building to allow Home 12 to be held at stop when the panel was switched out. In late January 1986 it was notified that Cheltenham would only be switched in as arranged by the Superintendent, Metrol and Signalling.

The opportunity was also taken with the alterations to remove the signalling facilities for the goods siding. The set back move from No 3 Track to the Down line was abolished (this, presumably, means that Dwarf 17 was abolished). Down Outer Home 2 was converted to a Controlled Automatic and renumbered F647. Although the Weekly Notice does not say so, the electric crosslock 15, points to Siding A, and Limit of Shunt Board were probably all removed at this time.

Since 1985 there have only been small changes to Cheltenham.

On 10 August 1988 pushbuttons were provided on the control panel to provide additional control over the Park Road booms. Operating the 'Park Road Boom Hold Down' button prevented the Park Road booms from rising behind a departing Up train and meant that a Down terminating train could be signalled straight into No 1 Track without waiting for the booms to rise and then lower again.

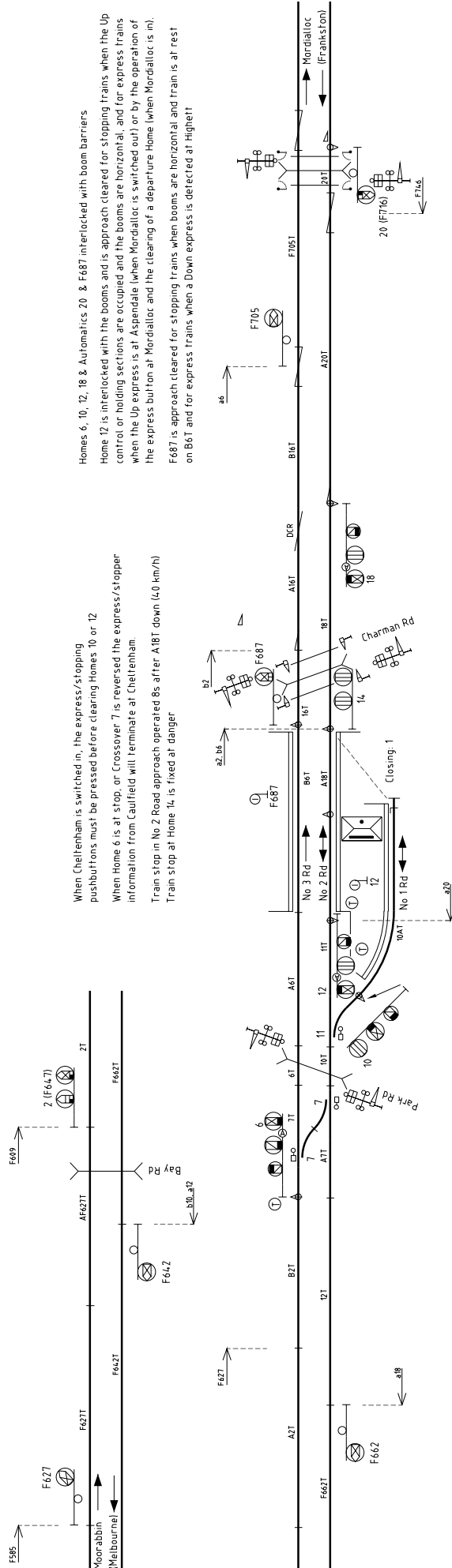
The fixed train stop at the Down end of No 2 Track was replaced by a motorised train stop on 8 February 1998. The train stop was still, of course, fixed at stop, but the provision of a normal train stop allowed the presence and position of the stop to be detected in the signalling system. Like the similar provision at Moorabbin, this came about due to an incident at Broadmeadows where a train was driven along the wrong line - a fixed train stop had been provided to stop this, but it had been removed at some time.

As from 27 August 2001, Cheltenham was once again only switched in as required.

On 22 June 2003 the Teletype based train number transmitters were replaced by PC based train describers between Caulfield - Cheltenham - Mordialloc - Frankston.

Track circuit 11T was provided on 20 February 2005 as part of the 'TF' project.

The last recorded change occurred on 26 November 2006 when automatic pedestrian wickets were provided at Park Road.



Homes 6, 10, 12, 18 & Automatics 20 & F687 interlocked with boom barriers. Home 12 is interlocked with the booms and is approach cleared for stopping trains when the Up control or holding sections are occupied and the booms are horizontal, and for express trains when the Up express is at Aspendale (when Mordialloc is switched out) or by the operation of the express button at Mordialloc and the clearing of a departure home (when Mordialloc is in). F687 is approach cleared for stopping trains when booms are horizontal and train is at rest on B6T and for express trains when a Down express is detected at Highett

When Cheltenham is switched in, the express/stopping pushbuttons must be pressed before clearing Homes 10 or 12. When Home 6 is at stop, or 'Crossover 7' is reversed the express/stopper information from Caulfield will terminate at Cheltenham. Train stop in No 2 Road approach operated 8s after A18T down (4.0 km/h). Train stop at Home 14 is fixed at danger.

Park Rd
 Down control (Nos 1 & 2 Rds) B2T down (365m 25s), holding 7 down (605m 27s@80km/h)
 Down control (No 3 Rd) 5s after A2T down (670m 25s), holding 7s after 7 down (936m 35s@80km/h)
 Up stopping control 20s after A18T down (290m 25s), holding after 18T down (320m 39s)
 Up express control after 18T down (600m 27s@80km/h), holding 12s after F732T down (1045m 35s@80km/h)
 Down holding and part of the control will be not be effective for a following train until the first train has cleared B6T.

Charman Rd
 Down stopping control B6T down (29s), holding 5s after A2T down (815m, 36s)
 Down express control B2T down (680m 30s@80km/h), holding 935m 35s@80km/h
 Up control 10s after A20T down (770m 25s@80km/h), holding F732T down (550m 38s@80km/h)
 Up holding and part of the control sections ineffective for a second train until the first has cleared A18T.

LaTrobe St
 Down control from B6T down (25s@80km/h)
 Down stopping holding 23s after B6T down (35s), express holding 8s after B2T down (35s)
 Up control 4s after F744T down, holding 7s after F742T down (35s@80km/h)
 Up holding & control sections ineffective for a second train until the first has occupied 11T

Cheltenham 2006
 Based on Signalling Arrangement RA1S1774/83 amended to 12.11.06