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SIGNALLING RECORD SOCIETY OF VICTORIA INC



The station office at Anderson, on the Wonthaggi line, looked like a signalbox because it was. The Wonthaggi line was constructed rapidly in 1909/10 to serve the state coal mine at Wonthaggi. Anderson was interlocked on 8 August 1913 with a 30 lever A Pattern frame. The frame was housed in this small platform level box. The box design was uncommon. Other known examples were Creswick (1913), Murtoa (1913) and Korumburra (1915), however it is likely that the other signalboxes on this line at Dalyston (3 June 1913) and State Mine (provided 15 July 1913) were of similar design. The interlocking at Anderson was abolished on 22 August 1968 when plunger locking was substituted. The signalbox remained in use as the station office, and even after the line was closed, was used by the local shire as an office. Photo by David Langley.

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MINUTES OF MEETING HELD FRIDAY 16 NOVEMBER 2007,

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

Present: - J. Black, W. Brook, B. Cleak, G. Cleak, G. Cumming, M. Drew, G. Dunn, V. Findlay, C. Gordon, J. Gordon, W. Johnston, K. Lambert, D. Langley, I. Michaelson, T. Murray, B. Sherry, R. Smith & A. Wheatland.

Apologies: - G. O'Flynn, S. Malpass, L. Savage, F. Strik & R. Whitehead.

Visitors: - Bob Gibbons (UK) & Chris King.

The President, Mr. David Langley, took the chair & opened the meeting @ 20:15 hours.

Minutes of the September 2007 Meeting: - Accepted as published. W. Johnston / B. Sherry. Carried.

Business Arising: - Nil.

Correspondence: - Nothing to report. G. Cumming / V. Findlay. Carried.

The letter from the ARHS was discussed briefly. The SRSV will offer assistance where possible.

Reports: - Tours. Glenn Cumming noted no further progress with arranging future country tours.

Bill Johnston provided a brief report on progress on the work on the Market Street signal bridge.

Details of the next working bee were provided.

General Business: - Glenn Cumming thanked Rod Smith for providing a venue for the September 2007 meeting when access to the usual room was denied.

Glenn Cumming advised members that the usual date for the March 2008 meeting falls on Good Friday. After some discussion, it was agreed to move the March 2008 meeting back one week to Friday 28th March 2008.

Bill Johnston advised members that the February 2008 meeting would be at Belgrave for an inspection of the narrow gauge signalling facilities at Belgrave and Menzies Creek. Members are to meet at the Down end of the Belgrave Narrow Gauge Platform at 18:30 hours on Friday 15th February 2008.

Chris Gordon reported that the new signalling at Diamond Creek is expected to be commissioned on the weekend of 15th and 16th December 2007. The new signalling will be controlled from a Westcad unit in the station office. Closing facilities will be provided. Train staff & ticket working will remain.

Re - signalling of Greensborough - Eltham will follow, but no firm dates have been announced.

Other works on the Hurstbridge Line will follow at a later date when funding is allocated.

The new signalling between Broadmeadows - Craigieburn was discussed and recent signal failures in the area were noted.

A question was asked to what is the current length of Platform No.1 at Flinders Street. The answer was not known.

Vance Findlay spoke about works in January 2008 on the North East SG Line resulting in XPT services being cancelled. The XPTs will terminate at Albury due to track work in New South Wales requiring diversions via the South Coast Line.

Vance Findlay noted recent signal failures due to the theft of copper cable.

Brian Sherry asked about progress on the Clifton Hill - Westgarth duplication. It was noted that this project is about to tender.

Keith Lambert advised that signals at Somerville & Hastings would be abolished this weekend. It is expected that ATC between Frankston - Stony Point will be commissioned in December 2007.

Keith Lambert provided details on a proposal to abolish Donnybrook.

Keith Lambert tabled a locking sketch for Patterson Signal Box as mentioned in the recent edition of "Somersault".

Jim Black asked what the sidings at Somerton are used for. It was answered that the sidings are used for cement, the steel & pipe factory and the Austrac freight terminal.

Bill Johnston spoke about a recent report suggesting that 3000 concrete sleepers are being inserted in a day by the gang and asked if this was correct?

It was noted that BG trains on the Up Seymour Line are being checked past the worksite on the SG Line. It has been suggested that a new station will be provided at Coolaroo in 2010.

Brett Cleak advised that all signals at Crib Point have been abolished and the level crossing is now fitted with a predictor.

Brett Cleak noted that the Murray Valley Highway level crossing near Kerang is now equipped with boom barriers and advanced warning lights.

Jim Black reported on a level crossing accident at Virginia in South Australia today.

Rod Smith has sighted many level crossings fitted with "jiggle" bars in Northern Victoria during his recent travels.

Chris King spoke about a recent test he witnessed at Somerville where a fully loaded "B double" truck took 52 seconds from start to cross a level crossing.

Keith Lambert described a plan to provide stabling sidings at the Up end of Cranbourne in 2008.

Syllabus Item: - The President introduced member Roderick B. Smith to present the Syllabus Item.

Rod presented the annual screening of slides from the collection of the late Stephen McLean, this year featuring views of Indonesia from 1978.

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

Meeting closed at 21:55 hours.

The next meeting will be on Friday 15 February, 2008 at the Belgrave NG Station, commencing at 18:30 hours (6.30pm).

SIGNALLING ALTERATIONS

The following alterations were published in WN 41/07 to WN 50/07 (last issue for 2007) 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.

- 13.10.2007 **Spencer Street** (SW 251/07, WN 42)
On Sunday, 13.10., Points 495D were provided in No 6A Track. The points are secured normal.
- (16.10.2007) **Craigieburn - Wandong** (SW 157/07, WN 41)
Diagram 122/07 (Craigieburn - Wandong) replaced 82/07 as in service.
- 17.10.2007 **Highett** (SW 247/07, WN 42)
On Wednesday, 17.10., automatic pedestrian gates were provided at Wickham Rd (19.630 km). Amend Diagram 03/07 (Glenhuntly - Highett).
- 21.10.2007 **Dandenong** (SW 249/07, WN 42)
On Sunday, 21.10., Up Home DNG705 was replaced by a new mast with LED heads.
- (23.10.2007) **Swan Hill** (SW 161/07, TON 338/07, WN 42)
Permission is granted for Train 8045 to arrive at Swan Hill while a signaller is not in attendance. Operating Procedure 124 was reissued to remove the reference to the trains to which it will apply and to update the hours the station is attended.
Swan Hill is an Intermediate Train Order Terminal Station in the Bendigo - Piangil Train Order Territory. Train Orders are not permitted to be issued through Swan Hill.
A V/Line Network staff member will be on duty M-F 0600 to 1400, on Saturday and Sunday as required, and whenever a non passenger train is required to shunt at Swan Hill. When the V/Line Network staff member is not on duty, or is absent from Swan Hill due to train running requirements, the V/Line Passenger staff member will be responsible for signalling. The V/Line Passenger staff member will be on duty M-F 0630-1700, Sa 0630-1430, and Su 0630-1700. When handing over responsibility for signalling the provisions of Rule 1h, Section 6, Book of Rules must be complied with and the Train Controller advised.
A train may arrive at Swan Hill while it is unattended, but all run-around and shunting moves will be assisted by a signaller.
- 25.10.2007 **Kerang - Murray Valley Hwy** (SW 162/07, WN 42)
Between Tuesday, 23.10, and Thursday, 25.10, Boom Barriers will be provided at the existing flashing lights at Murray Valley Hwy (294.339 km). Road traffic active advance warning signs will be provided. The crossing is operated by a level crossing predictor. Trains travelling at more than 50 km/h at the predictor board may continue to accelerate while approaching the crossing. Trains travelling at 50 km/h or less must not accelerate after passing the predictor board.
- 26.10.2007 **Seymour** (TON 350/07, WN 43)
On Saturday, 26.10, the head to the head shunt was booked back into service. TON 258/07 is cancelled. TON 256/07 remains in force, and permission is granted for a qualified driver from the RTBU Heritage train crew pool to operate locomotives and heritage consists in the V/Line leased area and the SRHC

head shunt for docking and stabling heritage rolling stock in conjunction with special train operations vide S 07/6480.

- 27.10.2007 **Glenroy** (SW 255/07, WN 43)
On Saturday, 27.10., traffic light co-ordination was provided between the boom barriers at Glenroy Rd and the traffic lights at Glenroy Rd/Pascoe Vale Rd, and Glenroy Rd/Wheatsheaf Rd/Hartington St.
- 27.10.2007 **Crib Point** (SW 256/07, WN 43)
On Saturday, 27.10., the existing signalling and sidings were abolished. Down Home E, Up Home (light) D, and Up Home F were abolished. No 2 Track was abolished and the points at the Up and Down end secured normal. The flashing lights at Naval Base Road were converted to be operated by a level crossing predictor. Amend Diagram 44/07 (Leawarra - Stony Point).
- 28.10.2007 **Flinders St** (SW 263/07, WN 43)
On Sunday, 28.10., a co-acting signal was provided for Down Home 950 (Platform 12). Amend Diagram 81/06 (Flinders St East).
- 28.10.2007 **Westgarth - Denis** (SW 257/07, WN 43)
On Sunday, 28.10., automatic pedestrian gates were provided at the Mason St foot crossing (7.858 km). Amend Diagram 131/06 (Jolimont - Merri & Westgarth).
- (30.10.2007) **North Melbourne - Macaulay** (SW 260/07, WN 43)
Signalling Diagram 101/06 (North Melbourne - Macaulay) replaced 21/03 as in service.
- (30.10.2007) **Sunshine** (SW 260/07, WN 43)
Signalling Diagram 71/06 (Sunshine) replaced 17/05 as in service.
- (30.10.2007) **Keilor Plains - Sydenham** (SW 260/07, WN 43)
Signalling Diagram 47/07 (Keilor Plains - Sydenham) replaced 35/05 as in service.
- (30.10.2007) **Albion - Broadmeadow** (SW 265/07, WN 43)
Signalling Diagram 57/07 (Albion - Broadmeadows) replaced 22/00 as in service.
- 30.10.2007 **Newport - Williamstown & Altona Junction** (SW 166/07 & 261/07, WN 43)
On Tuesday, 30.10., automatic pedestrian gates were provided at the Birmingham St foot crossing (12.170 km Newport Loop line).
Signalling Diagrams 93/06 (Newport - Williamstown) and 69/06 (Newport - Altona Junction) replaced 03/03 (Newport - Williamstown).
- 30.11.2007 **Winchelsea** (TON 351/07, WN 44)
Permission is given to book Winchelsea in for track machines.
- (07.11.2007) **Newport - Newport Workshops** (SW 270/07, WN 44)
Pending revision of Operating Procedure 18, Section 34, Book of Rules as a result of an incident, the following instructions must be followed when a train is to enter or leave Newport Workshops.
When a movement is required to enter Newport Workshops when Shunters are on duty, the Signaller at Newport must obtain permission from the Leading Shunter. The Leading Shunter must advise the Signaller whether the movement is to be routed via NPT730 or NPT732.
When a movement is required to leave Newport Workshops, the Leading Shunter must obtain permission from the Signaller Newport before allowing the movement to proceed towards NPT 730 or NPT 732. The Leading Shunter must inform the Signaller whether the movement will be towards NPT 730 or NPT 732.
- (07.11.2007) **Watsonia - Hurstbridge** (SW 269/07, WN 44)
Signalling Diagram 49/06 (Watsonia - Hurstbridge) replaced 09/06 as in service.
- 10.11.2007 **Chiltern** (SW 168/07 & 169/07, WN 44 & 45)
On Friday, 9.11., and Saturday, 10.11., boom barriers will be provided at Havelock St/Indigo Ck Rd (279.498 km) in addition to the existing flashing lights. The level crossing will be operated by a level crossing predictor.
- 11.11.2007 **Spencer St** (SW 285/07, WN 46)
On Sunday, 11.11., Crossover 467 was provided between the Down end No 4 & 4A Tracks. The crossover was secured normal.
- (13.11.2007) **Flinders Street (East)** (SW 279/07, WN 45)
Signalling Diagram 89/06 (Flinders Street (East)) replaced 81/06 as in service.
- (13.11.2007) **South Kensington** (SWP 12/07, SW 172/07, WN 45)
Operating Procedure 13A, Section 34, Book of Rules, dealing with empty passenger cars running around or empty DMUs reversing on the Through Goods Lines, has been amended.
- (13.11.2007) **Mangalore - Wodonga** (SW 170/07, WN 45)
Signalling Diagrams 136/07 (Mangalore - Creighton), 138/07 (Euroa - Baddaginnie), 140/07 (Benalla - Glenrowan Loop), 132/07 (Allumatta Loop - Bowser), 134/07 (Springhurst - Wodonga Loop), and 110/07 (Wodonga & Coal Sidings) replaced 46/07, 12/97, 104/07, 60/06, and 6/97 as in service.
- 16.11.2007 **North Melbourne** (SW 283/07, WN 46)
On Friday, 16.11., the signal heads on Post IAA510 were lowered 1200mm due to sighting issues associated with the station construction works.

- 16.11.2007 **Ballarat** (SW 173/07, WN 46)
On Friday, 16.11., the Down line at Ballarat East was returned to service. The baulks were removed from the Down line (on the Down side of Points 53 and opposite Post 40). The temporary circuit alterations to prevent Home 50 from clearing for moves to the Down line were removed.
- 17.11.2007 **Spencer St** (SW 286/07, WN 46)
On Saturday, 17.11., Points 175 (abolished WN 19/04) and the diamond crossing over the standard gauge line were removed.
- 17.11.2007 **Richmond Junction** (SW 284/07, WN 26)
On Saturday, 17.11., the point machines on Points 254 and 255 (Burnley Through Lines) were replaced by M3A type machines on concrete bearers.
- 18.11.2007 **Colac** (SW 174/07, WN 46)
On Sunday, 18.11., boom barriers were provided at the open level crossings at Swan Marsh Rd (169.082 km), Swan Marsh - Stoneyford Rd (172.638 km), and Settlement Rd (174.455 km) near the former station of Pirron Yallock. All these crossings are operated by level crossing predictors. Trains travelling at more than 50 km/h may accelerate after passing the predictor board, but trains travelling at or less than 50 km/h must hold a steady speed approaching the level crossings.
- 18.11.2007 **Frankston - Stony Point** (SW 277/07 & SW 288/07, WN 46)
On Saturday, 17.11., and Sunday, 18.11., the following signalling works were carried out.
Leawarra - Hillcrest Rd
Track circuit 11T was split into two track circuits 11T and 12T.
Somerville
The sidings and all signals were abolished. Down Home A, Up Home E, Down Home (light) F, Up Home (light) D and co-acting post were abolished. Nos 2 and 3 Tracks were abolished and the points secured normal. The boom barriers at Eramosa Rd were converted to level crossing predictor operation. Start and end station limit boards were provided in both directions.
Long Island Junction
Up Home C was converted to LED heads and renumbered LJC98. Track circuit alterations were carried out at Long Island Junction, Frankston - Flinders Rd, and Graydens Rd level crossings. A Down Notice Board lettered "Freight trains must stop here before operating points" was provided 20m on the Up side of the junction points.
Hastings
Up Home (light) G, Down Home (light) E, and Up Home D were abolished. Start and end station limit boards were provided in both directions. The boom barriers at Coolstore Rd and High Street were converted to predictor operation.
For Down trains, the Frankston - Somerville electric staff section applies from Frankston to the Down end 'END Somerville Station Limits' board. The Somerville - Hastings electric staff applies from the Down end 'END Somerville Station Limits' board to the Down end 'END Hastings Station Limits' board. The Hastings - Stony Point train staff applies from the Down end 'END Hastings Station Limits' board to Stony Point.
For Up trains, the Hastings - Stony Point train staff applies from Stony Point to the Up end 'END Hastings Station Limits' board, the Somerville - Hastings electric staff applies from the Up end 'END Hastings Station Limits' board to the Up end 'END Somerville Station Limits' board, and the Frankston - Somerville electric staff applies from the Up end 'END Somerville Station Limits' board to Post 19 at Frankston.
Amend Diagram 44/07 (Leawarra - Stony Point).
- 21.11.2007 **Traralgon** (SW 177/07, WN 47)
From Wednesday, 21.11., the Up end of No 3 Track will be temporarily taken out of service to allow removal of the west end of the old platform. The points at the Up end of No 3 Track (Points 3 worked by the ground frame) will be secured normal. A baulk was provided on the Down side of Derail 3 in No 3 Track.
- (27.11.2007) **North Geelong C** (SW 181/07, WN 47)
Operating Procedure 58 has been re-issued to reflect the provision of a Banner Indicator 40BI for Up Home 40 (vide ARTC Train Notice 1084/07 dated 7.6.2007).
- (27.11.2007) **Donnybrook - Tallarook** (SW 180/07, WN 47)
Signalling Diagrams 114/07 (Donnybrook - Wallan), 116/07 (Heathcote Junction - Kilmore East) and 118/07 (Broadford - Tallarook) replaced 36/90 and 46/06 as in service.
- 28.11.2007 **Bacchus Marsh** (TON 400/07 & 412/07, WN 48 & 49)
From Wednesday, 28.11., the turntable track will be booked out of use. A baulk is provided in the lead track to the turntable. The siding may be used for the stabling of track machines as locally arranged.
- 28.11.2007 **Benalla - Oaklands** (TON 403/07, WN 48)
From Wednesday, 28.11., this line has been booked out of use for track maintenance. Baulks have been provided at 196.000 km (at the Commence Train Order Working board), and the points leading to the line have been clipped.

MOORABBIN

The early history of Moorabbin, 10 miles 55 chains, 76 links, was almost identical to the other stations between Caulfield and Mordialloc. The line was officially opened between Caulfield and Mordialloc on 19 December 1881, and 'South Brighton' was open for passenger traffic when public services commenced the following day. South Brighton was situated between South Road and Point Nepean Road and these two level crossings were to shape its latter history.

Initially there appears to have been no safeworking on the line, but Staff and Ticket working was established between 1 March and 3 April 1882. South Brighton became a Staff station working with East Brighton (Bentleigh) and Highett Road (Highett)). The line was duplicated between Caulfield and Mordialloc on 9 December 1888. Staff and Ticket working was abolished and Double Line block with Winter's instruments was introduced on the same sections. From 14 November 1894, Highett had closed as a block post and the section south became South Brighton - Cheltenham.

From the point of view of facilities, hand gates had been provided at both South Road and Point Nepean Road from the opening. A contract for erecting station buildings was gazetted on 17 February 1882 to Davies and Batty for £729/10/0. By 1 February 1882 a carriage dock had been provided, and by 1 December 1882 the station was open for light goods and a locomotive water supply had been provided. After duplication in December 1888, the goods siding was located behind the Down platform and trailed into the Down line just beyond the Point Nepean Road crossing. By 1 July 1898 the GA noted that South Brighton had home and starting signals in each direction (but not distant signals), and a crossover at each end of the yard.

The station was renamed 'Moorabbin' on 1 May 1907 in conjunction with the issue of the winter timetable.

The first interlocking frame

Moorabbin was interlocked on 30 November 1908 when facilities were provided to start Up trains from the Down platform. The 20 lever interlocking frame, almost certainly a rocker frame, was located in a signal box on the Up platform. The frame worked the crossovers at each end and the connection to the goods yard. A lockbar was provided on the Down end of the Up end crossover, together with a home for trains departing from the Down platform. Distant signals were provided, for the first time, together with

starting signals, and two disc signals. At this time disc signals were not generally provided in Victoria for all shunting moves, and at Moorabbin the two discs only applied across the crossovers, and were clearly only provided to signal the engine around its train. Shunting moves by the goods, for example, from the Down line back into the Down platform or Goods Siding continued to be hand signalled. The gates at South Road and Point Nepean Road remained worked by hand.

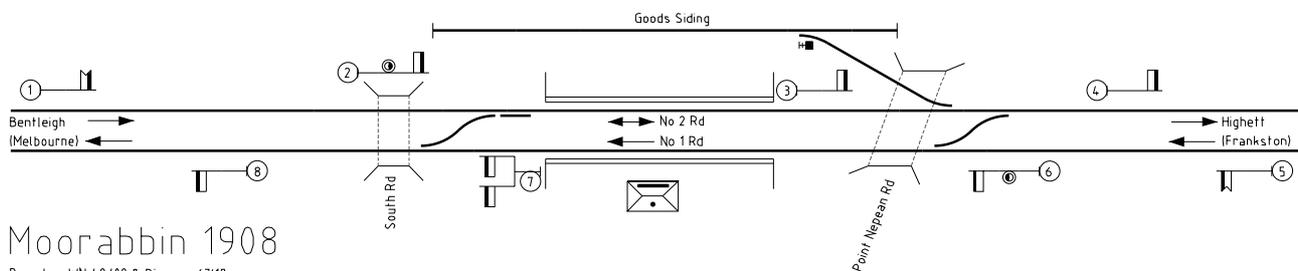
Curiously, despite providing the ability to terminate trains little use appears to have been made of the facility. The December 1909 WTT does not any trains terminating at Moorabbin, while the December 1913 issue shows just two trains in the morning peak.

The goods siding was connected to the Up line on 31 August 1910. This required just one additional working lever in the frame as discs for the move were not provided. The provision of access from the Up end must have made shunting by Up goods trains more convenient. In fact, I suspect that prior to this all shunting was performed by Down trains, with any trucks for the Up direction being taken to Mordialloc and returned on an Up service.

A Down refuge was provided on 26 August 1913. The refuge was situated at the Up end of the yard, beyond the South Road hand gates. The disc on Post 2 was altered to apply for moves from the new Refuge siding, and a new Ground Disc Post 2A was provided for the set back moves from the Up line to the Down platform. In preparation for this alteration, Post 2 had been relocated 42 yards further out in late August. The December 1913 WTT does not explicitly show any use of this refuge, but No 17 Down Goods (Sa excepted) was overtaken between Caulfield and Mordialloc by No 16 Down Pass. The other two Down Goods at this time nominally had time between passenger trains to run from Caulfield to Mordialloc.

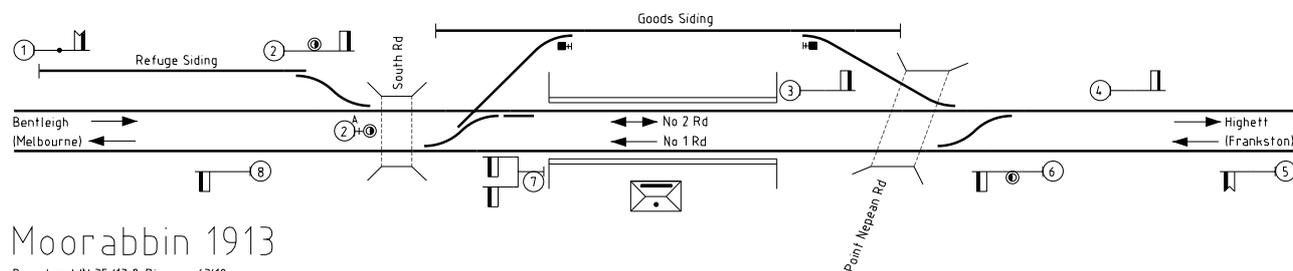
By the issue of Diagram 63'19, Ground Disc 2A had been replaced by a post mounted disc on a new Post 2A and the Goods Siding had been renamed Siding A, and the Refuge Siding renamed Siding B.

Electrification initially had little impact on Moorabbin. The main signalling alteration was the relocation of the Down Distant, Post 1, 70 yards further out on 14 May 1922. The overhead from Glen Huntly was made alive the week ending 4 April 1922, and that to Mordialloc in the week ending 30 May. The electric service to Mordialloc com-



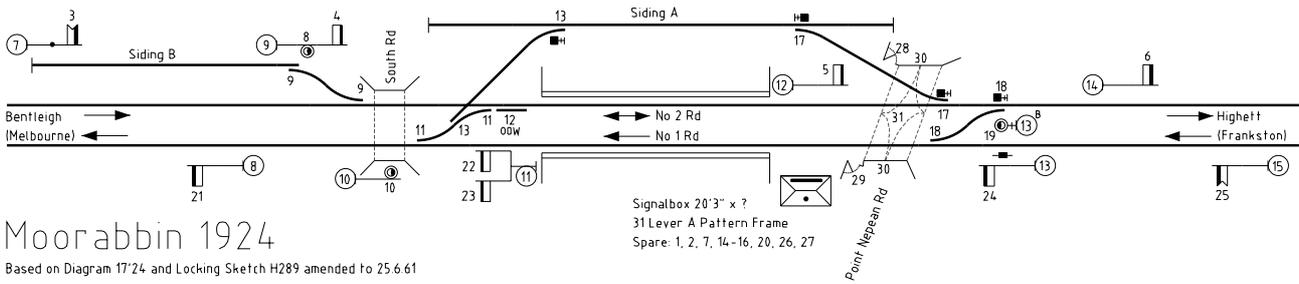
Moorabbin 1908

Based on WN 49/08 & Diagram 63'19



Moorabbin 1913

Based on WN 35/13 & Diagram 63'19



Moorabbin 1924

Based on Diagram 17'24 and Locking Sketch H289 amended to 25.6.61

menced on 6 June 1922. By December 1924, six trains terminated at Moorabbin, mostly in the middle of the day and in the evening.

Electrification resulted in the removal of watering facilities. Latterly a combined 6,000 gallon tank and crane had been provided on the Down line between the platform and the level crossing. The crane was removed when the electric trains commenced running, and the tank shortly afterwards.

Interlocked gates

In the middle of 1924 both level crossings at Moorabbin were upgraded.

At the end of June 1924 quadrants were provided at South Road to allow the gatekeeper to control the Down Home on Post 2 and the Up Homes on Post 7. The gatekeeper, however, did not control the Up or Down Distant signals. This meant that the signalman could clear the distant, but the home protecting South Road could remain on. On 22 December 1928 the Superintendent of Locomotive Running formally complained that this had occurred for a Down electric train. The gatekeepers were consequently suitably instructed. In January 1937 the gatekeepers were further instructed that once the Down Home had been cleared, the lever was not to be restored to normal until the train had passed (except, of course, in cases of emergency). In October 1926, the GST noted Mrs Murphy's appointment as an assistant gatekeeper and asked what action has been taken for the signalmen to attend to the South Road gates after 12.35 am so as to keep the gatekeeper's hours within limits. Instructions were issued, but I have not sighted a copy. In November 1926 the Secretary noted that the South Road gates were broken and asked about the fitting of a chain and standard padlocks. These were fitted by 23 November. In the middle of 1927, the Level Crossing Committee recommended providing a cabin at South Road. This was agreed to by the Traffic Branch and the Chief Architect was asked to report.

At the other end of the yard, the hand gates at Point Nepean Road were replaced by interlocked gates on 14 July 1924. This appeared to be the result of a continual stream of complaints from the local shire (whose offices were just next to the station) about the working of the gates. The interlocked gates were worked from a new signalbox erected on the Up side of the line adjacent to the level crossing. The box contained a 31 lever A pattern frame which worked a largely unchanged layout. One alteration not

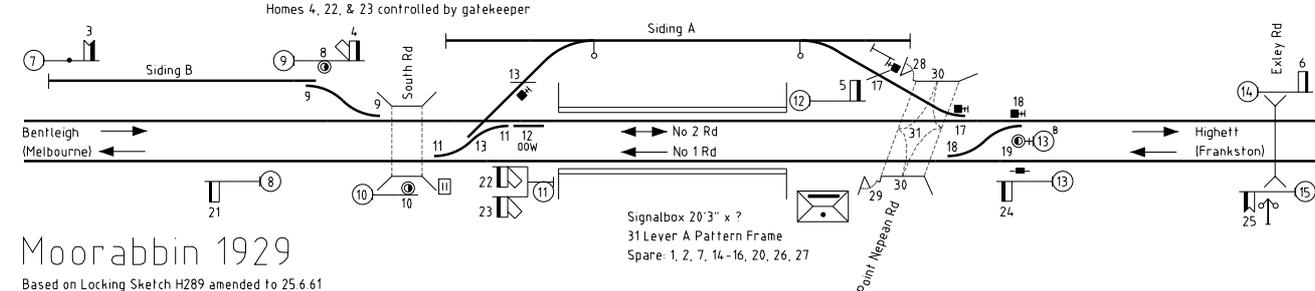
mentioned in the Weekly Notice, however, was that the interlocking in the new box allowed Disc 19 on Post 13 to be cleared for all three routes (from the Down line to No 1 Road, No 2 Road, or Siding A), presumably to protect the gates. This change was noticed by the Block and Signal Inspector during his inspection and he recommended that the disc should be moved to between the tracks or to a new post on the right hand side of the Down line. Head office then noted that point indicators would be required if Disc 19 did apply to more than one route. On 15 August 1924 the Signal Maintenance Engineer provided point indicators on Points 17 and 18D and relocated Disc 19 to become a new ground disc Post 13B.

By early December 1925, Moorabbin had been created a Block Terminal for Up trains in clear weather.

The goods siding

Closure of the goods sidings at Bentleigh and Highett in 1922 had apparently caused congestion at Moorabbin, and the Moorabbin Progress Association suggested in 1924 that Highett be reopened for goods traffic. At this time there was also a proposal to extend the dead end at the down end of Moorabbin, but this was deferred. This was raised again by the General Superintendent of Transportation in November 1925 and by the Chief Train Controller in September 1926. The Secretary then formally inquired about the capacity of the goods yard. The Metropolitan Superintendent considered that the yard had sufficient capacity for the ordinary traffic, but not for special traffic. However, the formal response from the Transportation Branch stated that congestion at Moorabbin frequently caused trucks to be left at Caulfield, causing congestion there. It was consequently proposed to connect the dead end at the Down end to the Down main line, but this was never carried out.

Apparently to give additional siding capacity, catch points were provided in the lead from the Down line, just clear of Point Nepean Road, on 22 June 1927. The existing safety points (Points 17U) were converted to hand operation. The Transportation Branch objected to the new arrangement as a truck rolling through the catch point would drop off the rail only 4 1/2 feet from the Down line. The Signal and Telegraph Branch noted that providing a deflecting rail would require the catch to be moved back 16 feet and would cost £44. Instead they suggested providing a Derail located at the toe of the existing catch. This would cost £18 and would give 13 feet before a derailed truck fouled the Down main. This was approved and the Derail



Moorabbin 1929

Based on Locking Sketch H289 amended to 25.6.61

was provided on 13 September 1927. A similar procedure was carried out at the Up end of the siding the following year, with Points 13D being replaced by Derail 13 and a point indicator on 5 December 1928.

Around 1928, the railways investigated the provision of a siding for the shire council. This was to have lead off the refuge siding at the Up end.

The goods siding was wired in November 1929 with the exception of the dead end at the Down end. This was in preparation for the working of the goods traffic by the electric locomotives. The two crossovers were already wired, and it appears that the refuge siding was also wired at this time.

On 28 August 1927 a wig wag was provided at Exley Road (10 miles 77 chains) on the Down side of Moorabbin. In preparation for this the Down Starting signal, Post 14, was moved out 150 yards on 20 June 1927 to be located at the level crossing. The relocation would have allowed goods trains to shunt Moorabbin without passing Post 14 and starting the wig wag.

Terminating trains

In early November 1929 permission was granted at certain stations for electric trains to be shunted by being pushed (i.e. driven in reverse). Moorabbin was one of these stations, and instructions were issued in the Weekly Notice as to the method of shunting terminating Down trains. The preferred option was for the crew to change ends in the Down platform and the train reversed over the Point Nepean Road level crossing clear of Post 13A and then driven forwards over Crossover 18 to the Up platform. If this was not possible, the crew would again change ends in the Down platform and the train would be driven forwards over Crossover 11 and then reversed back into the Up platform. The second move was probably not preferred as it

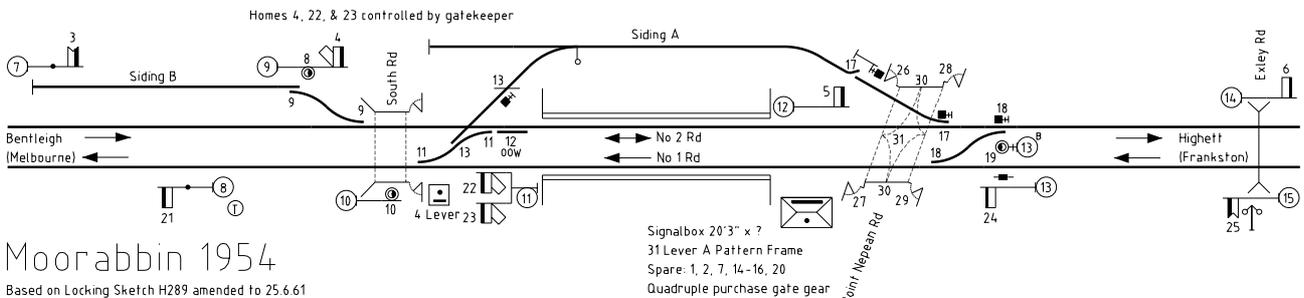
was unsignalled (Disc 10 applied only to No 2 Road or to Siding A). It was, of course, possible for the train to depart directly from the Down platform, but this does not appear to have been regularly performed.

Possibly in conjunction with terminating trains by shunting on the Down main at the Down end, permission was granted in early December 1929 to accept Down trains under full line clear, in clear weather only, provided the line was clear to Post 12.

The 1936 Working Timetable showed that ten trains terminated each weekday at Moorabbin. When followed by a stopping train, the terminating train had to shunt quickly to the Up platform and wait departure time there. The most interesting terminating train was the one that arrived at 1236. This could not cross to the Up line immediately as it had to wait the passage of the Up Stony Point pass (Mondays) or Petrol Electric rail motor (other days) which was timed (non stop) at Moorabbin at 1255. However, the terminating train then had to shunt promptly to clear the Down line for the next Down train due at 1256.

In September 1937 the Superintendent of Train Services requested permission for terminating Down trains to drive forward to the Down line and then push back through Crossover 18 to the Up platform where the crew would change ends. He noted that this would be required to prevent delays to Down trains when the new timetable, with additional trains, came into effect in November 1937. The necessary permission was granted in WN 42/37, but only when necessary to prevent delays to Down trains. The new timetable had 14 terminating trains at Moorabbin; two of these were additional morning peak trains, one was additional evening peak train, and the final train was an evening train.

The second world war changed the pattern of the terminating trains at Moorabbin. In 1943 there were still 12 terminating trains, however these were all in the morning



Moorabbin 1954

Based on Locking Sketch H289 amended to 25.6.61

Lever	When	Locks reverse	Locks both ways	Locks normal
(1)				
(2)				
3		4-5-6		
4				9-11-17-18-19
5				30-17-18-19
6			17-18	
(7)				
8		9		
	17-18			19
9				11
10		11	13	12-21
	13-17-18			19
	(13)-(17)			19
11				
12		11		13
13		11		
(14)				
(15)				

Lever	When	Locks reverse	Locks both ways	Locks normal
(16)				
17				18-30
18				
19			17-18	30
	17-18	9		
(20)				
21			11	
22		12		
23				11
24				11-18-30
25		21-23-24		
26				
27				
28				
29				
30				
31		30		

peak (5 trains), the evening peak (4 trains) or evening (3 trains). The main purpose appears to have been to minimise train mileage.

Minor alterations during and after the war

The only recorded alteration at Moorabbin during the war was the removal of the dead end siding at the Down end of Siding A on 2 February 1943. The points or rails were probably required elsewhere.

A number of minor alterations were carried out at Moorabbin in the decade after the second world war. The standard triple purchase gate gear in the signalbox was replaced by a quadruple purchase gate gear on 20 December 1948. A quadruple purchase gate gear was geared lower and consequently provided a greater mechanical advantage when swinging the interlocked gates, but at the cost of requiring more rotations of the gate wheel in order to open or close the gates.

On 29 May 1952 Post 8 was relocated 86 yards further out and a telephone and repeater were provided. This was probably to allow an Up train to wait line at Post 8 without blocking South Road. The Exley Road level crossing was closed on 18 April 1952 and the wig wag was abolished.

In late 1953 it appears that the crossing work around Point Nepean Road was relaid. On 12 October 1953 Post 13 was relocated 13 yards further out and Dwarf 13B was relocated 17 yards further out. At the same time Derail 17 was replaced by a catch. No concern was raised, however, about derailed trucks fouling the Down main.

On 10 September 1954 controlled wickets were provided at South Road. These were worked from a four lever non-interlocked ground frame, which also controlled the home signals. On 17 September 1954 controlled wickets were provided on the south side of Point Nepean Rd. These were controlled by the formerly spare levers 26 and 27.

Automatic signalling proposals and postwar traffic

In the late '30s there were detailed proposals to provide automatic signalling between Glenhuntly and Moorabbin. In 1937 the Way and Works Branch were preparing estimates for Carnegie - Oakleigh and Glen Huntly - Mordialloc and asked the Transportation Branch what headways were required running on clear normal aspects. The response was that a 2 minute headway was required to Moorabbin and a 3 minute headway to Mordialloc. After investigation it was found that a 2 minute headway was not possible to Moorabbin for stopping trains without a speed reduction due to the short distances between Ormond, McKinnon and Bentleigh, but a 2 1/2 minute headway was possible. This would, however, cost £4000 more than providing a 3 minute headway, which would provide a 2 1/2 minute headway on normal speed warning indication, and allow a stopping train to follow an express from Moorabbin after 2 1/2 minutes. The decision was for a 3 minute headway. The detailed estimates were prepared by September 1937 and were for a total of £32,809 for only the section to Moorabbin, and £77,787 for the whole way to Mordialloc. The estimates provided for searchlight signals and trainstops. The existing mechanical signals were to be retained at Moorabbin. In December 1939 the Way and Works Branch forwarded a detailed proposal still for a three minute headway (on clear signals) at 50 mph and 8 car sets. Moorabbin would be scarcely altered. The Down Distant would be replaced by a controlled automatic signal, the Up Starting abolished, and the Home signals at the Up end track controlled. The war, of course, killed this proposal, however the Way and Works Branch suggested that it should

be considered for the 1942/3 list of works.

Before the second world war the continuously built up area ended at Bentleigh, and photos of Moorabbin show open fields even adjacent to the station. During the '50s the subdivisions spread rapidly east and south of the station. The resulting train service was very impressive. During the late '40s and '50s there were around 10 trains an hour towards the city in the morning peak and away from the city in the evening peak. Any further improvement in capacity was constrained by the block signalling.

For Moorabbin, there was a slight reduction in the number of terminating trains as the runs were extended to terminate further out. In 1947, for example, there were only seven terminating trains; four empty cars forming Up trains in the morning peak, and three Down trains in the evening peak. By February 1950 there were eight terminating trains as there were now four Down locals in the evening peak. By June 1955 there were still eight terminating trains, but there was now an additional morning train and one less evening train.

With terminating trains, the signalman at Moorabbin was very busy indeed. Sometime in the early to mid '50s it was busy enough to be reclassified as a Class 1 box.

The Point Nepean Road gates

The Point Nepean Road was the major road access to the southern suburbs. Even before the second world war, road traffic caused problems during special events.

Some idea of the difficulties with regulating traffic over Point Nepean Rd during special traffic in the late '30s can be judged from the following memo, sent from the Metro Superintendent to the SM Moorabbin on 19 May 1939:

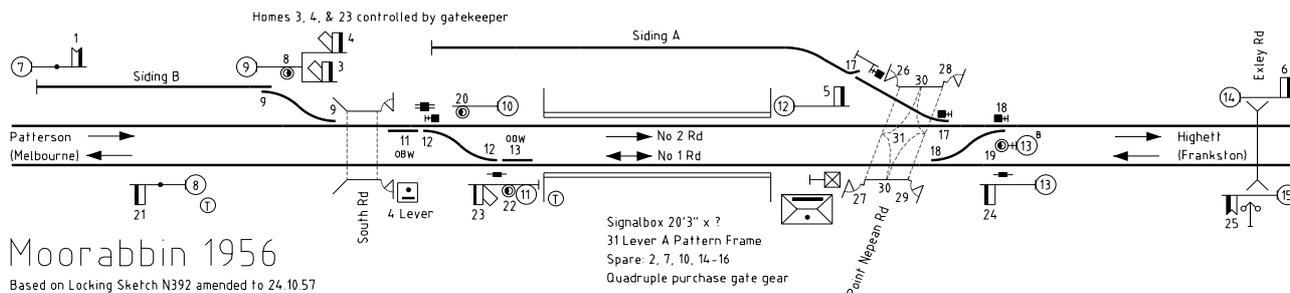
Under separate cover a sufficient number of whistles are being forwarded [to] you to supply each signalman with a whistle to be used on days when [there is] special traffic over the Point Nepean Rd level crossing.

When the signalman requires the traffic to be stopped for the operation of the gates across the roadway, the signalman must sound two blasts of the whistle at the open window nearest the roadside. This procedure must be explained to the policeman by the signalman on each occasion that police assistance is provided.

This improvement was the result of a suggestion made to the Betterment Board in 1939 that an electric bell be provided between the signalman and the policeman on crossing duty. The Level Crossing Committee reported that an electric bell would cost £15 and suggested that whistles be provided instead.

After the war the growth of both rail and road traffic meant that delays were caused at Point Nepean Road, possibly exacerbated by the quadruple purchase gate gear which was slower to operate than the normal gate gear.

In August 1952 a check on the operation of the gates was carried out on a Friday and a Monday during two hours in the morning and evening peaks. It revealed that the gates were closed to road traffic for 3 minutes 16 times, 3 1/2 minutes 5 times, 4 minutes 2 times, 4 1/2 minutes 4 times, 5 minutes 2 times, and once for 6 minutes. Three trains were delayed 2 minutes at the gates, but other trains were checked. In October 1952, the City of Moorabbin complained about delays to road traffic, particularly when the goods was shunting. A check for two hours in the morning peak showed that the Point Nepean Road gates were closed 16 times for periods from 1 minute to 5 1/2 minutes. A further check between 0730 and 1200 (including when the



Moorabbin 1956

Based on Locking Sketch N392 amended to 24.10.57

goods was working) showed that the gates were closed 31 times for a total of 93 minutes. The longest delay was 6 minutes when the goods was shunting. The operation of the gates at South Road was also observed as far as possible during this check, and it was noted that they were closed 29 times with delays up to 5 minutes. The Secretary was informed that the operation of the gates was considered satisfactory and no alteration to the goods running was recommended.

Tied up with the gates is the long saga of Signalman Campbell, duly recorded in the journals of the AGST correspondence register. Campbell was first mentioned in May 1940 when the Metropolitan Superintendent noted delays had occurred to road traffic at Point Nepean Road. Checks were performed in February and April 1940 with the result that Campbell was suitably instructed. All went quiet until a letter from a Mr Laily on 14 January 1953 who complained that he had waited for 12 minutes at the gates. Signalman Campbell denied the delay, and a check of the train register showed that the gates would probably have been closed for around 5 1/2 minutes. This interpretation was flatly rejected by the Assistant Chief Traffic Manager who definitely stated that the gates were closed for 10 and then 9 1/2 minutes.

In October 1953 the Town Clerk at Moorabbin complained about delays at the Nepean Highway and the Secretary forwarded a letter from Mr C.L. Evans who complained about delays to intending passengers at the gates, particularly when Signalman Campbell was on duty. After investigation it was reported that Campbell closed gates earlier than necessary and was not always prompt about opening them. The Block and Signal Inspector instructed Campbell and issued the following instruction regarding the shunting of terminating trains:

When a down local train is to be shunted at the down end of Moorabbin, the down departure home signal, Post 12, need not be placed to proceed until the train is ready to move from the platform toward the down departure road.

In those cases when it is required that the train is to be shunted to the up platform before the crew change ends, it is still not necessary that the down departure home signal be placed to proceed until the train has arrived at the platform.

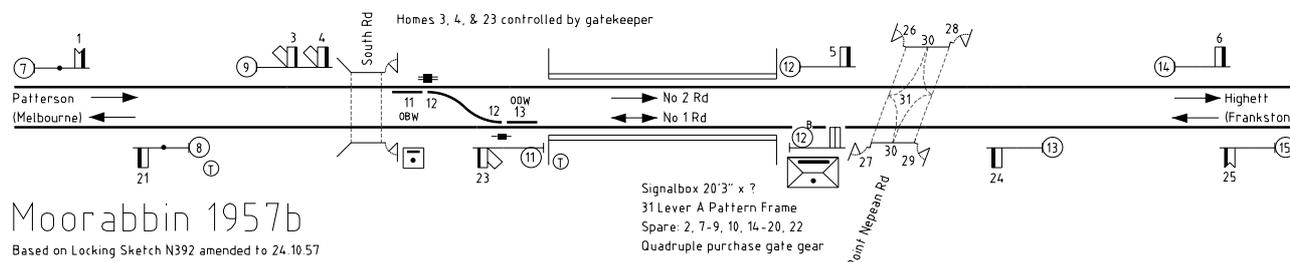
The Metro Superintendent and the Block and Signal Inspector also recommended the provision of a Block Re-

order who would work Monday - Friday from 0700 to 0900 and 1700 to 1730. The ACTM queried whether the other signalmen had any problems in working the traffic and was told that the opposite shift Signalman handled the traffic better - Campbell was reluctant to risk delays to rail traffic and operated the signals and signalled the train before opening the gates. The Block Recorder was duly provided from Monday 15 March 1954 working weekdays from 0700 to 0900 and 1700 to 1830.

A check carried out in May 1954 when Campbell and the recorder were on duty revealed several occasions when the gates were not operated in a way to reduce delays to road traffic. Campbell was subsequently asked for an explanation, but the ACTM considered that the Block and Signal Inspector should have immediately instructed Campbell. A further check in June 1954 showed a slight improvement (in Campbell's favour, a strong wind was blowing during this check). During 105 minutes during the morning peak, the gates were operated 18 times for 30 rail movement. In total the gates were closed for 55 1/2 minutes (over half of the time - no wonder there were complaints), with the longest closure being 4 3/4 minutes. The Secretary asked for a further review. This was carried out in November 1954 which showed that the longest closure was 2 1/2 minutes, though some trains were delayed.

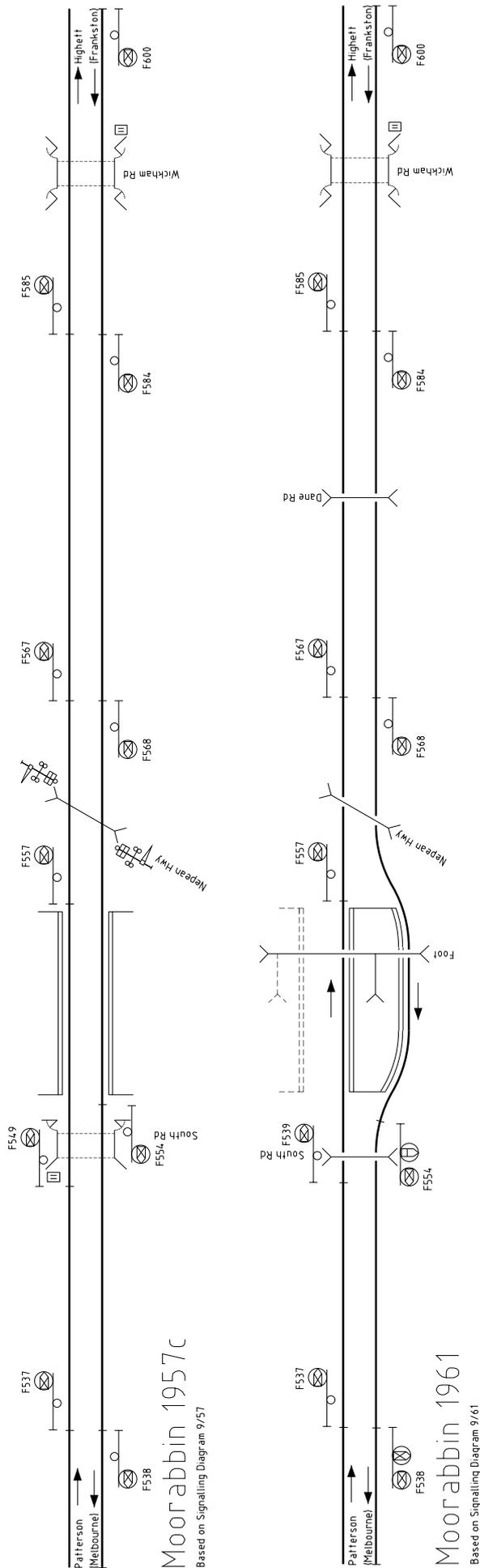
A further complaint was received by the Secretary about Campbell delaying road and pedestrian traffic on 6 December 1954, this time from the City of Moorabbin. This was investigated by a Block and Signal Inspector and a Traffic Inspector who noted that while rail traffic between 1815 and 1835 on this day had been unusually heavy due to late running, Campbell had failed to take advantage of opportunities to open the gates for road and pedestrian traffic. As Campbell had been at Moorabbin for many years and was fully familiar with the traffic, it was concluded that Campbell could not handle the box now it had been reclassified to Class 1. It was noted that he had previously been tried in a Class 1 box (Essendon, in 1945), but he had found it was too much for him and had asked to transfer to a Class 2 box. In view of this and the number of complaints, the Metro Superintendent stated that he did not consider Campbell suitable for this signalbox.

In January 1955 the Secretary forwarded a further complaint about Campbell's operation of the gates. A Mrs N Collins complained that the wicket gates had been closed to pedestrians and five children had to use the road to cross



Moorabbin 1957b

Based on Locking Sketch N392 amended to 24.10.57



the line. As they were doing so Campbell commenced to swing the gates and two children on tricycles were knocked down. Campbell was instructed that the wickets should have been left open until the road gates were shut so as not to force pedestrians to go through the road gates. The ACTM personally interviewed Campbell and noted "In his desire to keep the [rail traffic] moving Signalman Campbell comes under notice from time to time for causing delays to road users." In the interview Campbell, not surprisingly, agreed that his judgement had been faulty, and was informed that unless he exercised better judgement he would be transferred from Moorabbin. The ACTM further noted that Campbell was approaching 60 years of age and lived in the area.

A further complaint was lodged by Mr R.E. Knowles of the Council Chambers at Mentone that the gates had been closed for 11 minutes around 0815 on 17 June 1955. The Block and Signal Inspector reported that rail traffic had been disrupted due to an open truck door striking a signal ladder between Armadale and Malvern. However, the Inspector still considered the delays to road traffic at Moorabbin excessive. The TR book showed 5 train movements and 4 shunt movements over Nepean Road between 0817 and 0830. Campbell had felt that road traffic was so heavy that the gates could not be opened without further delaying trains. This explanation was not accepted and Campbell was further instructed. Incidentally, the VR received a second complaint about delays on this day, this time from a Mr J Gough about delays at South Road.

The final complaint recorded about Campbell at Moorabbin was received on 23 December 1955 when the Claims Agent forwarded a letter from a Mr G.H. Broadbent that Campbell had locked his nine year old daughter inside the crossing while the 0949 Up Express passed on 20 October 1955. A further four checks were subsequently made of Campbell's operation of the level crossing with satisfactory results.

Revised terminating facilities

As previously noted, it appears that the ability to originate Up trains in the Down platform was rarely used after electrification. In the middle '50s it was apparently decided to improve the terminating facilities at Moorabbin by providing a direct facing connection between the Down line and the Up platform. This allowed terminating Down trains to arrive direct into the Up platform, ready for their return journey.

Work on the revision commenced on 25 March 1956 when bracket Post 11 was replaced by a straight mast with two arms located 40 yards closer to the platforms. On 8 April, Post 9 was replaced by a bracket post (possibly the former Post 11). Initially the right hand doll of this mast was empty. The new terminating facilities were brought into service on 17 April 1956. The trailing crossover (Crossover 11) and the lead into the good yard (Points 13) were replaced by a new facing Crossover 11 with lockbars at each end. Home 3 was provided on Post 9 for moves into the Up platform, and a 'Limit of Shunt' board at the Down end of the platform to prevent terminating trains from departing towards Frankston. However, at the request of the Traffic branch, Home 3 required Crossover 18 reverse, so any trains overrunning the platform would pass back onto the Down line. Discs 20 and 22 were provided for moves from either platform back into the refuge. On the same date Patterson signalbox was brought into service to divide the Bentleigh - Moorabbin section.

602 in the Down line on 29 September 1985. High speed Points 610 were provided on 8 December 1985. Both of these points were spiked for the Down line. The Down line was slued and connected to the new Crossover 611 at the Down end on 22 March 1986.

The new Down line between Bentleigh and Moorabbin was brought into service on 23 March 1987 and the unused third platform was brought into use. The former Down line became the Centre line, but at this point was only signalled for Up movements. The Up line was taken out of use. All signals to F567 (including F568) were replaced by new signals. Signals F535, MRN 603, MRN702, MRN703, MRN704, and MRN711 were provided, but dressed as automatics. All these signals displayed normal and medium speed aspects. In addition, medium speed aspects were provided on Up Automatics F584 and F600 between Moorabbin and Highett. Automatic F567 was renumbered MRN604.

On 27 June 1987 the Up track was commissioned between Caulfield and Moorabbin and the full signalling at Moorabbin was brought into service. Moorabbin was controlled from a panel in the signalbox at Caulfield. The Centre line was taken out of use the following day and all Up trains used the Up line. The points at Moorabbin were spiked. The full triplication was brought into use on 5 July 1987. Since then the use of the tracks towards Melbourne has been as follows. Out of peak hours, Up trains use the Up line and Down trains use the Down line. This means that both Up and Down trains serve the island platforms between Glenhantly and Moorabbin. Switchout facilities are provided at Moorabbin and when it is switched out trains run in this fashion. The relevant Home signals are fitted with illuminated letter 'A's. In the morning peak, Up stopping trains use the Up track, Up expresses use the Centre track, and Down trains use the Down line. In the evening peak, Up trains use the Up track, Down stopping trains use the Centre track, and Down expresses use the Down line.

The points at the Down end of Moorabbin (Points 610 and Crossover 611) are 'high' speed points and it is here that trains are switched between the Centre track and the Up and Down lines. Illuminated '65' indicators were not, however, initially provided. These indicators were provided on 29 July 1992 on Up Automatic F584, Up Home

MRN711, and Down Homes MRN708 and MRN710. Crossovers 602 and 603 are provided so that trains can terminate in No 1 Road; note the fixed red signal at the Down end of this track. This rarely happens.

Since the triplication only minor alterations have occurred at Moorabbin.

On 7 February 1998 the fixed train stop at Home MRN712 was replaced by a motorised train stop fixed at stop. This was as a result of an accident in 1996 at Broadmeadows where a driver started a train away from the platform against a signal at stop and ran on the wrong line. There was supposed to be a train stop to prevent this occurring, but it had been removed during trackwork. Motorised train stops, fixed at stop, were subsequently provided at locations where a train driver could pass a signal and continue on the wrong line. The use of a motorised train stop allowed the position of the stop (and its integrity) to be proved in the signal circuits and this prevented simple removal of the train stop.

The foot crossing at Exley Rd (18.885km) was provided with automatic pedestrian gates on 1 August 1999. LEDs were provided in Homes MRN704 and MRN710 on 19 October 2003. As a consequence of this conversion, the co-acting signal for MRN710 was temporarily taken out of use on 2 March 2004 to determine if it was still required with the LED heads. The decision appears to have been that it was required. The co-acting signals for MRN709 and MRN710 were converted to LED on 13 May 2005.

A major circuit alteration occurred on 29 August 2004. On this date the controls for Down Homes MRN702 and MRN708 and Up Automatic F584 were altered so that they would be held at Stop if the signal in advance was held at Stop until an approaching train was checked. After a time delay the signal would clear to medium speed warning. This ensured that there was a normal speed overlap before fouling an opposing track. This was the result of the Epping accident where a train passed a signal at stop, entered a single line section, and collided with an opposing train. The errant train was, of course, tripped at the signal, but the overlap was only long enough to stop a train travelling at medium speed (40 km/h) and the train was travelling faster than this.

ERRATA

Alan McKenna informed the editor that Patterson signalbox definitely had an A pattern frame. He also noted that Patterson was provided to shorten the Bentleigh - Moorabbin section. Des Jowett kindly provided a reference to a Secretary's Branch file that confirms the reason

MEMORIES OF MACLEOD

The photographs opposite, taken by David Langley in the middle '70s, brought back a lot of memories for your editor. I spent a lot of years living at Macleod watching trains and signals.

The first memory I have of Macleod was in the early '70s. We then lived a couple of kilometers east of Watsonia. A then new Hitachi was to give a demonstration run to Macleod and return, and my father took me to Macleod to ride on the train. Unfortunately the run was cancelled at short notice and I don't remember much of the station.

Shortly after this we moved to a house in Macleod. My primary school was situated adjacent to the railway line halfway between Macleod and Rosanna, so I did not regularly see the station. But we caught the train often enough in the school holidays. I can remember standing on the Up platform and working out that when the signal arm on Post 6 (opposite) was angled it meant the train could go. When it was horizontal, the train had to stop.

In 1976 I started at Macleod High, located conveniently adjacent to the station, and I had to cross the line at the foot crossing next to the platforms at least twice every day.

At this time Macleod was the end of the short section of double track from Rosanna (see the diagram on the following page). The double track was equipped with three position automatic signalling, while the single line onwards to Greensborough was worked by miniature electric staff. The end of the double line was immediately on the Down side of the platforms, but there was a facing crossover (22) at the Up end of the platforms which allowed Down trains access to the Up platform.

Behind the Down platform there was a long siding used to stable suburban sets between the peaks and at night. It could hold two seven car trains. The siding was the remnants of the former Mont Park branch, although the portion actually behind the platform had been slewed from the Mont Park formation. The footpath that I used to cross the line, incidentally, cut right through an embankment of the former branch and was overshadowed by the last remaining overhead stanchion on the branch. Trains to and from the siding accessed the Up main line by means of a motor operated trailing crossover (14) adjacent to the Ruthven St level crossing.

Macleod had a 30 level A pattern mechanical frame located in a signalbay at the Down end of the Up platform. All points and signals were worked mechanically except Crossover 14 which was worked by dual control point machines, and the Down signals on the Up side of the level crossing which were all Style R colour lights. The electric staff instrument (and magneto generator) were located in the station office immediately underneath the window onto the platform. Here they could not be seen, but the beats of the bell could be clearly heard.

During the day Down trains used No 1 Road, and Up trains No 2 Road. From memory, trains were timetabled to actually cross between Rosanna and Macleod, but it seemed normal for a Down train to have to wait for the opposing train in the platform. The Up train would enter the platform at (relatively) high speed. The speed limit over the Points 24 for Up trains was 25 mph, but the speed when delivering a miniature electric staff using a cane carrier was only 15 mph. I don't know the actual speeds involved, but I do remember that the Driver always dropped his side window and held out the carrier which was caught on the arm of the station assistant standing immediately opposite the office door. The carrier would always whip around the assistant's body and hit his back. I would suspect the delivery was normally done at more than 15 mph! The assistant would re-enter the office and the mysterious sounds of

bells, whirrings, and metallic clanks would mark the acts of inserting the staff and withdrawing the next. By the time this ritual was completed the Up train would have left and the signal assistant would jump into the pit and climb into the leading cab of the Down (the staff foot crossing was conveniently located where the cab would stop). The staff would be delivered and the assistant would step onto the platform from the other door and give the guard the tip to depart. After the train had departed the assistant would return to the office.

At quiet times the Down platform was closed and Down trains used the Up platform via Crossover 21 and Homes 6 and 26. This may have been more convenient to the passengers, but I suspect the real reason was that it saved manning the Down platform. There used to be a very faded board on the end wall of the station building telling intending passengers when this would occur, but I don't recall the times now. I think it occurred in the evenings, Saturday afternoon, and Sunday. I didn't often see it as I wasn't hanging around the station much at these times.

Down terminating trains normally arrived direct into the Up platform via Crossover 22 and Home 6. They then pushed back over the Ruthven Street crossing and behind Dwarf 4. From there they drove forward over Crossover 14 into the Siding. I can remember once when an Up was late the Signaller brought the terminating train into the Down platform where it waited for the Up train to pass. The terminating train was then signalled into the single line section behind Home 29 and then set back through No 2 Platform to the Up line. In the meantime the following Down train was held at Home 3, and then Home 5.

Up originating trains were normally docked by signalling then from the Siding to the Up line, and then reversing along the Up line to the platform where they departed. The box diagram shows that trains could also be signalled back across the Crossover 14 to Post 5, but I never saw this move performed. It would, presumably, only be carried out if a train had to be brought from the siding and sent towards Greensborough.

The mechanical signalling was abolished on the 11 August 1979 when the section to Greensborough was duplicated. The yard at Macleod was rearranged and a relay interlocking provided.

In the lead up to the abolition the future Up line from Greensborough was provided and connected to No 1 Road immediately on the Down side of the foot crossing. The points were worked by a WSA lever and were normally spiked reverse. I do not remember any rollout protection from line, but there was probably a scotch block. The connection was used for ballast trains. I can remember a B class sitting on the track at the head of a string of empty ballast wagons one afternoon.

I can remember being surprised by the speed of the changeover from the mechanical frame to the relay interlocking. On the day the relay interlocking officially came into service, I went to the station very early to watch the dismantling. However, by this time all the mechanical signals had been removed and the relay interlocking at least partially commissioned. Only one mechanical mast was still at Macleod and this was lying in the grass next to the boundary fence. The two trains normally stabled at Macleod were stabled in the new car sidings. The main item not already removed was the frame itself. This was slowly dismantled over the following week and the parts carefully sorted and stacked adjacent to the foot crossing. I spent some time trying to work out how it all worked; at that stage I had not heard of cam and tappet frames.



(Above) Looking in the Up direction from the Up platform at Macleod with Home 9 off for a Melbourne bound service. On the right a Harris set is stabled in the siding. Crossover 22 can be seen immediately in advance of the Home signal. Today this crossover forms the beginning of the lead into the stabling sidings. (Below) Looking in the Down direction from the Down platform as a Tait comes off the single line from Greensborough. The Driver will be getting ready to pass over the staff. Home 29 can just be seen off above the train. Both photos David Langley.



MACLEOD

Signal & Telegraphic Engineer

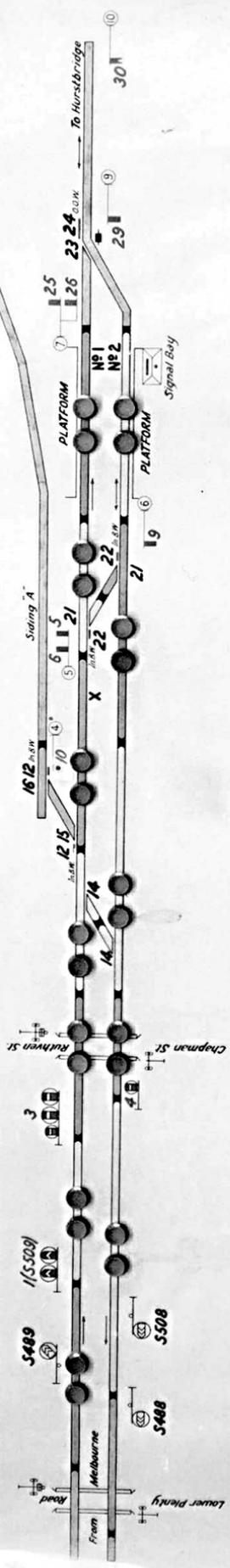
— DOWN SIGNALS —

MELBOURNE TO HURSTBRIDGE VIA N^o 1 1. 3. 23. 25. 5.
 " " " N^o 2 1. 22. 21. (22). 3. 26. 6.
 UP LINE TO SIDING A 12. 15. 16. (12). 14. 4.
 " " " " " " 14. 4.
 " " " N^o 2 4.

— UP SIGNALS —

SIDING A TO MELBOURNE 14. 12. 15. 16. (12). 10.
 HURSTBRIDGE " " " 24. 9. 29. 30.

1 NEED ONLY BE PUT NORMAL WHEN 14 OR 15 IS REQUIRED.



The 30 lever frame at Macleod was provided on 24 April 1955, but this illuminated diagram probably dates from the duplication to Rosanna Junction on 14 December 1958. The version shown here was signed by K.C.H Cousins, the S&T Engineer, on 29 March 1967 and shows the signalling after the Mont Park branch was converted into a stabling siding. The diagram remained unaltered until the mechanical signalbox was abolished on 11 August 1979.

- 02.12.2007 **Newmarket** (SW 290/07, WN 48)
On Sunday, 2.12., the point machines on Points 45 and 47 were replaced by M23A dual control machines. Flashing red 'out of correspondence' indications were provided at Kensington signalbox. Amend Diagram 53/07 (Kensington - Essendon).
- 02.12.2007 **Craigieburn** (SW 291/07, WN 48)
On Sunday, 2.12., the Westrace software was upgraded to allow CGB510 to be operated in 'fleeting' mode. Circuit alterations were also carried out to allow reverse detection of the trainstop at Automatic E637. A 240V backup power supply was also commissioned at the Craigieburn sidings.
- 07.12.2007 **Mildura** (TON 408/07, WN 49)
From Friday, 7.12., Track No 4 will be booked out of use. The points at the up end will be clipped to lie for No 3, and points at the Down end for No 5 Track. The siding may be used for stabling track machines as arranged locally, but when this occurs the hand derails at each end of the siding must be locked on.
- (11.12.2007) **Craigieburn - Wallan** (SW 300/07, WN 49)
Signalling diagram 120/07 (Craigieburn) and 114/07 (Donnybrook - Wallan) replaced 122/07 (Craigieburn - Wallan) as in service.
- 12.12.2007 **Warrnambool - West Vic Siding** (SW 188/07, WN 49)
On Wednesday, 12.12., the existing hand operated derail at the Up end of the siding was relocated to the main line 10 metres on the Down side of Walsh Road (269.895 km). Boards lettered 'Derail' will be provided opposite the derail block facing both Up and Down trains. A board lettered 'Attend to Derail' will be provided 200 metres on the Up side of the derail facing Down trains. The hand locking bars on the Up and Down end points were abolished.
Operating Procedure 66 (covering the operation of the rail tractor at Dennington) was cancelled and replaced by a new procedure covering the operation of the West Vic siding.
- 12.12.2007 **Maryborough** (SW 186/07, WN 49)
On Wednesday, 12.12., flashing lights and electronic bells were provided at Dooleys Road (227.218 km) on the Dunolly line. Operation will be by a level crossing predictor. Trains travelling at more than 50 km/h at the predictor board may continue to accelerate approaching the level crossing, however trains travelling at 50 km/h or less must hold a constant speed. Remote monitoring will be provided. As standard gauge services have been suspended (SW 2214/04) only broad gauge operation will be tested. Diagram 142/07 (Maryborough) will replace 64/07.
- 15.12.2007 **Spencer St - Franklin St** (SW 304/07, WN 50)
On Saturday, 15.12., a new broad gauge crossover (17TR4 and 401) was provided between the Country Line and the Standard Gauge line. The crossover is secured normal.
- 16.12.2007 **Dennis** (SW 301/07, WN 50)
On Sunday, 16.12., automatic pedestrian gates were provided on the Down side of Victoria Road (8.561 km). Amend Diagram 111/06 (Denniss - Macleod).
- (18.12.2007) **Stratford - Bairnsdale** (SW 190/07, WN 50)
Signalling diagrams 128/07 (Stratford) and 130/07 (Bairnsdale) replaced 16/04 and 12/05 as in service.

LEVEL CROSSING ACCIDENT KALGOORLIE 14 MAY 2007

The ATSB has released its report into a collision between a train and a car at the Chapple St level crossing, Kalgoorlie, on 14 May 2007. The level crossing protection equipment was not operating at the time.

Train 2478 was operated by the Australian Railroad Group (ARG) and consisted of locomotives L3108 and 42211 hauling 26 wagons for a gross length of 515m and weight of 2318 tons. Around 1900, when the train was about 10 to 12 km from Kalgoorlie, the train crew contacted the signal controller for permission to enter the yard. The signal controller set the route and cleared the yard entry signal. The train entered the yard at around 40 km/h and passed the Indian Pacific in the platform. When the train was around 100m from the Chapple St crossing the train crew noticed that the boom barriers were still vertical and that cars were continuing to cross the level crossing. The driver sounded the whistle and made an emergency brake application. However, a car had just entered the crossing and was struck by the train. Fortunately the driver suffered only minor injuries.

The failure of the level crossing protection equipment was due to a wiring strap that had been left in place during circuit alterations at Kalgoorlie earlier in the day.

Early in 2007 WestNet Rail (WNR) decided to undertake wiring work in the relay room adjacent to Chapple Street. This work was associated with track modifications previously carried out at the eastern end of Kalgoorlie yard. The wiring work consisted of the removal of redundant wiring and the installation of new wiring.

A WNR risk assessment classified the project as a 'minor commissioning' which meant that the work could be undertaken between trains and would be managed in consultation with the West Kalgoorlie signal controller. A special train notice was not issued. A flag attendant was not provided at Chapple St as the work would not affect the operation of the level crossing.

Preparatory work was carried out on 24 April 2007 when the redundant wiring was identified and labelled. The final work was to be carried out 14 May 2007.

The commissioning engineer flew from Perth to Kalgoorlie that morning, arriving at Kalgoorlie airport at 0725 where he was met by a local signal technician. They called at the Kalgoorlie signal maintenance depot before arriving at the relay room at around 0830. After consulting with the signal controller about time slots, they commenced to remove the redundant wiring, install new wiring, and test.

Around 1140 the removal of some wiring from a common loop circuit caused the Chapple St level crossing to operate. As a flag attendant was not available, the engineer and technician decided to insert a temporary wiring strap into the crossing control circuit to suppress the operation of the crossing. This was successful and the crossing ceased to operate. The engineer and technician knew that no trains would be signalled over the level crossing. The temporary wiring strap was removed immediately the common loop circuit was reinstated and the level crossing was returned to normal operation.

The engineer and technician broke for lunch around 1245 and recommenced work around 1330.

Around 1730 a further modification to the common loop circuit again caused to the level crossing to operate. Again, a temporary wiring strap was inserted into the circuit. However, this time the crossing continued to operate. To prevent road delays the technician immediately went to the crossing to flag road traffic through before returning to

the relay room to help identify the fault. This was eventually identified as the loss of the 50V power supply. However, the wiring strap was inadvertently left in place which disabled the level crossing protection equipment.

Work was completed around 1815 and the signal controller was requested to perform a route availability check during which the controller attempted to set all available train routes through the yard. However, the operation of the level crossing was not checked as the wiring changes did not affect it. When the route availability check was completed, control was handed back to the signal controller. The engineer and technician finished work, with the intention of returning the following morning to complete some outstanding wiring alterations. The accident occurred with the first train to pass through the level crossing.

A number of issues were identified.

- * The engineer and technician did not follow WNR's code of practice for commissioning signalling with respect to test straps. This code requires test straps to be kept in a locked box, and counted and recorded at the start and end of each day's work to ensure that they had

- p not been left in position. In their haste to prevent delays to road traffic they did not record the use of the test strap. In accordance with the code the test strap used was a distinct colour (orange) and should have been clearly visible against the black permanent wiring.

- * Both the engineer and technician were probably fatigued when they completed their work at 1830 on the 14th. The commissioning engineer had woken that morning at 0430 to travel to Kalgoorlie. Further, he had suffered acute chest pains and attended hospital in the early hours of the 13 May, resulting in disrupted sleep and anxiety. The technician had commenced work at 0645 before driving to the airport to pick up the engineer.

- * WNR had a formal risk assessment procedure as part of its safety management system. The work was assessed as a 'minor commissioning', which is essentially defined as one which does not affect an actively managed level crossing and consequently does not require a flag attendant. The ATSB generally supported this risk assessment, however notes that the risk assessment was ineffective in that no consideration was given to what would happen if the level crossing should operate. If the work had then been reclassified as a major commissioning and a flag attendant provided, the accident would not have happened.

- * There were divided responsibilities between the commissioning engineer and the technician. The contract engineer was in charge of the commissioning, but was not qualified in WNR's signalling procedures. The technician was consequently effectively the 'signalling officer in charge'. Consequently, the ownership of safeworking decisions was not clear. The ATSB considers this was particularly important when the appropriate response to the first inadvertent operation of the level crossing would have been to reclassify the work as a major commissioning and request a flag attendant.

The report is available from the ATSB web site (www.atsb.gov.au).