

SOMERSAULT  
MAY 1992  
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SIGNALLING RECORD SOCIETY (VICTORIA)

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Deadline for July 1991 issue is 22 June 1992.

*NEXT MEETING:* Friday, 15 May 1991.

*VENUE:* Uniting Church Hall, Hotham Street, Mont Albert, commencing at 2000 hours.

*EDITORS' NOTE*

*To ensure that members receive current news - both the signalling alterations and the minutes of the previous meeting - it has been decided to temporarily skip the missing issues of Somersault and recommence publication with this issue. The missing back issues will be completed and posted as time permits.*

*One consequence of this policy is that several issues of Somersault will be being produced at one time. This will mean that the stock of articles will be used up very quickly. We would like to urge all members to think about writing an article for Somersault - even a short article would help.*

*Finally, Brian Coleman is writing a book on Block and Signal Inspectors. If any member has any information that they think would be of interest, could they please write to Brian c/o Room 311, Flinders Street Station.*

MINUTES OF MARCH 1992 MEETING

Present:- G. Lowe, P. Silva, A. McLean, J. McLean, A. Jungwirth, G. O'Flynn, D. Langley, C. Rutledge, W. Brook, J. Churchward, K. Lambert, A. Gostling, R. Smith, S. McCurry, A. Waugh, & G. Cumming.

The President, Mr. Alan Jungwirth, took the chair and opened the meeting @ 2142, following the Annual General Meeting.

Minutes of the February Meeting:- Accepted as read. Langley/Silva.

Matters Arising:- The name of Graeme Lowe was erroneously excluded from the list of members present at the February meeting and should be included.

Correspondence:- Jack McLean received a letter from the S.R.S.U.K. suggesting that Jack is an Honorary Member of the S.R.S.U.K. Jack wrote back saying that he doubted it. A 2nd letter from the U.K. confirms that he is an Honorary Member of the S.R.S.U.K.

Keith Lambert has received a photo of the Yarra River circa 1891 showing a signal box and signals in the background, thought to be Port Melbourne/St. Kilda Junction.

General Business:- David Watson has run a course for tourist railway signalmen. More courses are to follow. Details through your local tourist railway.

Colin Rutledge gave details on the following projects.

South Kensington. Design 100% complete and work has commenced. The work will involve the replacement of the interlocking only with transfer of control of the passenger lines to Metrol and the control panel for the goods lines being transferred to West Tower. When South Kensington goes to Metrol, track indication will begin at Yarraville and Sunshine.

Caulfield. Design 75% complete. Work will involve the replacement of the interlocking and signals.

Spencer St. More details on track rearrangements. Work to be funded by a "city improvement" fund.

Clifton Hill. New signalling, controlled from Metrol, to be commissioned mid May. When controlled from Metrol, track indication will begin at Heidelberg. Emergency route setting control panel to be provided with limited functions.

Richmond - Caulfield. Future resignalling work will be 4 aspect automatic signalling. Electric trains will be allowed 80 kmh and loco hauled trains will be allowed 40 kmh.

North Melbourne. To be transferred to Metrol soon. To be "switched out" from Friday nights until Monday mornings.

Metrol. Implementation of policy of no suburban signal boxes. All to be controlled from Metrol. No emergency panels to be provided at interlockings, with the exception of Clifton Hill. Current emergency panels, i.e. control panels at Spencer St. No 2, Flinders St. "B" (2 panels), Flinders St. "D" and Flinders St. "E", are not used because no one now knows how to use the panels.

Aspendale. Control panel to be abolished soon.

Melton. Boom barriers to be provided at the down end of Melton.

Wodonga. Boom barriers to be provided at Melrose Drive.

Bunyip. Work to be done to overcome problems on the automatic working of the single line between Bunyip and Longwarry.

Ararat. More rationalisation to take place. (What else is left for them to pull out?)

Wangaratta. Rationalisation of the broad gauge tracks and signals to take place soon.

Mildura. New down home arrival signal to be provided for Section Authority working.

Redcliffs. Closed as a Train Order crossing station. Signals and interlocking frame to be retained for the time being.

Kyneton. Auxiliary frame abolished 12.03.1992. Points at the down end now worked by WSA levers and secured by plungers worked from the signal box. The plungers being used are the former crosslocks. Train crews now work the points at the down end of the yard.

Colin then spoke about the chopper controllers on the double deck train and the effects that they might have on the signalling circuits in use on the tracks over which the double deck train will run. Colin gave an extremely lengthy and very detailed description of the testing of the train and the operation of the signalling circuits.

In conclusion, chopper controllers don't cause any problems on track circuits provided that certain precautions are taken. Chopper controllers are not new to Victorian trains.

Rod Smith asked how far electric staff extended on the Mildura line. Answer - from Nth. Ballarat Junction ("C" Box) to Dunolly.

Considerable discussion took place on the subject of the recent power failure in the City Loop tunnels and in Jolimont Yard. All traction power and signal power failed in the morning peak causing considerable disruption.

Rod Smith gave a brief description of the tramway at the Maribyrnong munitions factory including the "interlocking" arrangements to prevent collisions between loaded munitions trolleys.

Meeting closed @ 2234

Then to 60 Kenmare St. for supper.

Next meeting Friday May 15, 1992 at the Uniting Church, Hotham St., Mont Albert commencing @ 2000.

## SIGNALLING ALTERATIONS

*The following alterations were published in WN 7/92 to WN 14/92. The alterations have been edited to conserve space. Dates in parenthesis are the dates of the Weekly Notice.*

### 18.02.1992 Carwarp - Yatpool - Redcliffs - Irymple

On Tuesday 18.2.92 between the hours of 0800 and 1200 a Block Point Location was established at Yatpool. Redcliffs was closed at a Train Order Crossing Station and became an Intermediate Siding. The Train Order Sections Carwarp Loop - Redcliffs - Irymple have been abolished and replaced with Train Order Sections Carwarp Loop - Yatpool Block Point and Yatpool Block Point - Irymple.

Yatpool Block Point, situated at 555.700 km, was equipped with Bi-Directional End of Train Detection, a telephone cabin, and Location Boards erected 1000 metres from the Block Point Indication Boards.

The Fixed Signals at Redcliffs are secured in the "Proceed" position and will be removed at a later date.

The Fixed Signals must be lit during the hours of darkness. When trains are to shunt, Redcliffs Intermediate Siding must be manned by a qualified Signaller who will operate the points and signals.

The Location Boards and Bi-Directional End of Train Detection System will be abolished and an Intermediate Location sign will be erected.

The following is to be particularly noted:

- Train Orders must clearly indicate Yatpool Block Point and not Yatpool;
- Trains cannot cross at Yatpool;
- Up trains are not to be permitted to leave Irymple, and Down trains are not permitted to leave Carwarp at the same time
- Trains are not permitted to be locked away at Redcliffs Intermediate Siding for the purpose of other trains to pass or cross.

This Circular supersedes O.2162/92.

[Amend Train Order Working Book of Rules Page 2]

(O.2174/92, WN 7/92)

### 19.02.1992 Broadmeadows

On Wednesday 19.2.92 the following alterations took effect:

1. Flashing Lights and audible alarms were provided at Dunkeld Street Pedestrian Crossing located at 20.268 km. Insert a reference on Signalling Diagram No 9/91
2. Alterations to the Track Circuits associated with the Down Starting Signal Post No 36 were commissioned. A track indication light was provided in Broadmeadows Signalbox to indicate when Down trains have passed Signal Post No. 36. (O.2130/92 & O.2131/92, WN 7/82)

### 25.02.1992 Wodonga 'A'

On Tuesday 25.2.92 Up Home Signal No. 38, on Signal Post No 6, was abolished. Signal lever No. 38 was sleeved in the "Normal" position. Insert a reference on Signalling Diagram No 32/90

(O.2211/92, WN 7/82)

### 25.02.1992 Woomelang - Gama - Speed Loop

On Tuesday 25.2.92 a Block Point was established at Gama. The Train Order Section Woomelang - Speed has been abolished and replaced with Train Order Sections Woomelang - Gama Block Point; and Gama Block Point - Speed Loop.

Gama Block Point, situated at 414.850 km, was equipped with Bi-Directional End of Train Detection, a telephone cabin, and Location Boards erected 1000 metres from the Block Point Indication Boards.

The following is to be particularly noted:

- Train Orders must clearly indicate Gama Block Point and not Gama;
- Trains cannot cross at Gama;
- Up trains are not to be permitted to leave Speed Loop, and Down trains are not permitted to leave Woomelang at the same time

[Amend Train Order Working Book of Rules Page 2]

(O.2217/92, WN 8/92)

### 03.03.1992 Birchip Loop - Curyo - Woomelang

On Tuesday 3.3.92 a Block Point was established at Curyo. The Train Order Section Birchip Loop - Woomelang has been abolished and replaced with Train Order Sections Birchip Loop - Curyo Block Point; and Curyo Block Point - Woomelang.

Curyo Block Point, situated at 374 km, was equipped with Bi-Directional End of Train Detection, a telephone cabin, and Location Boards erected 1000 metres from the Block Point Indication Boards.

The following is to be particularly noted:-

- Train Orders must clearly indicate Curyo Block Point and not Curyo;
- Trains cannot cross at Curyo;
- Up trains are not to be permitted to leave Woomelang, and Down trains are not permitted to leave Birchip Loop at the same time

[Amend Train Order Working Book of Rules, Page 2]

(O.2248/92, WN 9/92)

04.03.1992 **Broadmeadows**

On Wednesday 4.3.92 a Guards Indication Light was provided for the Home Signal (No 26) on Signal Post No 28. The Indication Light is situated on the Platform coping at the Up end of the Down Platform. Insert a reference on Signalling Diagram 9/91 (O.2262/92, WN 9/92)

[This notice was subsequently superseded by the following:]

A *Signal Indication Light* was provided for the use of train crews and works in conjunction with the Down Home Signal, Post No 28. The Signal Indication Light is fitted to the station verandah on the up end of the down platform. The indication of the Signal Indication Light is as follows: Green Light: Home Signal on Post 28 at "Proceed"; Light Extinguished: Home Signal at "Stop".

(O.2444/92, WN 13/92)

(10.03.1992) **Instructions for Absolute Occupation of the Running Line**

Delete all previous Instructions under the above heading, column 2, page 146. Insert in lieu the following Instruction which will apply forthwith.

- 1) Whenever "Absolute Occupation" of the running line is required by any Division or Section, special instructions regarding such arrangements will be issued by the Superintendent Safeworking. A minimum of ten clear days notice must therefore be given by the respective Division or Section to the Superintendent Safeworking in order that the special instructions may reach all concerned in ample time.
- 2a) Prior to the application for "Absolute Occupation" being forwarded to the Superintendent Safeworking, the person requiring the Absolute Occupation, together with a Safeworking Inspector and, if Switching arrangements for the Overhead Wiring are required, an Officer of the Overhead Division, must visit the work area and (i) Clearly establish the boundaries of the area required; (ii) Clearly establish the protection of the area required; (iii) Clearly establish the positioning of the Line Gang protectors/flagmen.
- 2b) After agreement has been reached, each Officer will sign a copy of the diagram of the area. The diagram, properly signed, must accompany the application for Absolute Occupation being forwarded to the Superintendent Safeworking.
- 2c) If the Superintendent Safeworking agrees with arrangements in (a) above, he will countersign the diagram, returning same to the Manager of the Division or Section requiring the Absolute Occupation.
- 2d) It is to be particularly noted that, in the case of planned work, failure to give the application, accompanied by the diagram, by the due time will lead to the Absolute Occupation being refused.
- 3a) The person in charge of the work for which "Occupation" is required, must not occupy the line until written permission to do so is given by the Signaller, Area Controller, or such other person as may be named in the special instructions, who, before granting the "Occupation" must confer with the Signaller or Area Controller in advance and the Train/Line/Operations Controller and ascertain that there is no train in the section for which "Occupation" is required.
- 3b) The person in charge of the work must, except as shown in (c) below, sign for the written permission received in the Signaller's or Area Controller's Train Register Book. The Signaller or Area Controller must countersign the entry.
- 3c) Where the area required for Absolute Occupation is controlled by the Area Controller, Metrol, it will not be necessary for the person requiring the Absolute Occupation to go to the Metrol Building to receive the written permission.  
In this case, the Absolute Occupation Order is to be obtained via the Signal Post Telephone. Special Books/Forms are available which the person requiring the Absolute Occupation and the Area Controller, Metrol, must properly fill in. The Area Controller, Metrol, must dictate over the telephone to the person requiring the Absolute Occupation, the details of the Absolute Occupation order. The details, as received, must be entered in the Special Book/Form provided and repeated back. Both persons must exchange names, entering same in the Special Book/Form.
- 4a) A Special Train may be employed in connection with the work, in which case a separate notice will be issued and such train may be pushed as required under cover of the "Occupation". In every case in which a Special Train is employed and before it is permitted to enter the Occupied Section, the person in charge of the work must be present and accompany the Driver of such train to the work site.
- 4b) Should it be necessary for the Special Train employed in connection with the work to enter onto that portion of Line under "Absolute Occupation", the Fixed Signals applicable to that portion of the line must be operated for the Special Train.  
In the event of the Home Signal, or, in the case of non-token Single Line Systems, the Home Departure Signal, be unable to be placed to the "Proceed" position, then the appropriate "Caution Order", suitably amended if necessary, may be issued to the Driver.
- 4c) After permission has been given for "Occupation" of the line, no train or locomotive except the Special Train employed on the work (see separate notice) must be allowed to enter on that section of the line until the Signaller or Area Controller concerned has received a written certificate from the person in charge to the effect that the line is again clear and safe for the passage of trains.

- 4d) In the Area Controlled by the Area Controller, Metrol, the Absolute Occupation must be cancelled by the person in charge filling in the lower half of the Special Book/Form and telephone the details to the Area Controllers who must also take down the details as dictated in the proper Special Book/Form. Both names must be exchanged and inserted in the Special Book/Form.
- 4e) The written certificate issued and received must be forwarded to the Safeworking Inspector for the Region or Division.
- 5a) Whenever "Occupation" of a Section of line not worked under the Electric Staff or Train Staff and Ticket System is required, the operations must be protected in accordance with the Regulations. On a Section of Single line worked under the Electric Staff System or the Train Staff and Ticket System, the person in charge of the work must, unless he is in possession of the Staff for the Section, arranged for the operations to be protected at the regulation distance on both sides by Flagmen. When the person in charge of the work is in possession of the Staff for the Section, protection by Flagmen will not be necessary.  
The person to whom the staff is delivered must sign for it in the Train Register Book, and when it is returned, a record of the fact must also be entered in the same book, and the time at which it is handed to and received from such person must also be recorded.
- 5b) On Sections of Line worked under the Automatic and Track Control, Lever Locking and Track Control, Centralised Traffic Control System of Signalling, or in any other area under the direct control of an Area Controller, it will not be necessary for the Pilotmans' Key to be withdrawn from the Lock, prior to the Area Controller or Signaller granting the Absolute Occupation.  
The Signaller or Area Controller granting the Absolute Occupation must inform the Area Controller or Signaller at the Signalbox or Signalling Complex in advance and all levers giving access to the affected Section must either be sleeved in the normal position or the Blocking Command; Track Block Command; Point Sleeve Command applied, to prevent any train or Locomotive, other than that which may be working in conjunction with Occupation, from entering the area under Absolute Occupation.
- 5c) Should a Signal and/or System Failure of the Centralised Traffic Control System (Standard Gauge or North Western) or in any area controlled and operated by the Area Controller during the period of "Absolute Occupation", the Train or Area Controller must particularly ensure that no unauthorised train movements be permitted to enter onto that portion of Line under "Absolute Occupation".  
So soon as the failure has been rectified, the Train or Area Controller must, as his first duty, comply with the provisions of sub-clause (b) above.
- 6) When On Track Maintenance Machines are working in connection with an Absolute Occupation, under no circumstance must these Machines be permitted to pass Home Signals at the "Stop" position unless the authority of Signaller, Area/Train Controller has first been obtained.
- 7) When as a result of "Absolute Occupation" Single Line Working is necessary, the instructions contained in Regulations 250 - 262, Book of Rules and Regulations must be complied with.  
The Regional or Divisional Safeworking Inspector is to arrange for the necessary Hand Signallers and for a competent employee to act as Pilotman.  
Where there are level crossings protected by boom barriers or flashing light signals and Single Line Working is necessary, the person requiring the "Occupation" must arrange for competent persons to act as Flagmen for such level crossings during the period of "Occupation".
- 8) In all cases, before "Absolute Occupation" is granted, the signal levers leading onto the "Occupied" Sections must be secured at the normal position.

Insert this Instruction on page 46 of the General Appendix.

(O.2264/94 WN 9/92)

12.03.1992

**Wangaratta**

On Thursday 12.3.92 the following alterations took effect:

1. Siding "A" was abolished.
2. The top left hand Disc Signal on Post No 23, for movements from the main line to Siding "A", was abolished.
3. Disc Signal on Signal Post No 18 was abolished.
4. Signal Levers No 64 and 61, Point Lever No 55, and Plunger Lever No 56 were sleeved "Normal".

Amend Signalling Diagram No 34/90

(O.2296/92 WN 10/92)

12.03.1992

**Kyneton**

On Thursday 12.3.92 the following alterations took effect.

1. The auxiliary frame was abolished.
2. Signal Posts Nos 6, 8, and 12 have been abolished.
3. The Down end crossover points, between the Up and Down Lines, have been rodded together and operated from a small point lever.
4. The turnout points to Sidings 1, 2, and 3 have been rodded to a Hayes Derail and Crowder and operated from a small point lever.
5. The Crosslock Levers Nos 26 and 27 will operate plungers on the crossover and turnout on the main lines, which will release the small point levers and enable them to be operated by hand.  
Operation of the points will backlock the crosslock levers and the opposing signals.

Insert a reference on Signalling Diagram 22/89. This circular supersedes O.2314/92 which is hereby cancelled. (O.2332/92 WN 11/92)

17.03.1992 **Wodonga "A"**

Commencing Tuesday 17.3.92, Boom Barriers have been provided at Melrose Drive Level Crossing [299.004 km] in lieu of Flashing Lights. The operation of the Boom Barriers will be automatic for through movements on both the Broad and Standard Gauge lines in both directions. For Standard Gauge Shunting into and out of Milos Siding, a V5PSW Key Switch will be provided to allow movements over the Level Crossing. Operation of the V5PSW Key Switch will activate the Level Crossing Warning System, which will automatically cease after the passage of the train. N.S.W. Locomotives operating the Siding will be required to obtain a V5PSW Key from the Signaller at Wodonga "A" Signal box on the up journey and return it on completion. The existing Notice Board indicating the fouling point has been removed to allow more flexible operations. [Amend pages 62 & 63 Master Train Plan General Instructions] (O.2320/92 WN 11/92)

17.03.1992 **Korong Vale - Boort - Quambatook - Ultima**

On Tuesday 17/3/92 a Block Point was established at Quambatook and Boort Block Point was abolished. The Train Order Sections Korong Vale - Boort and Boort - Ultima have been abolished and replaced with Train Order Sections Korong Vale - Quambatook Block Point - Ultima.

Quambatook Block Point, situated at 344 km, was equipped with Bi-Directional End of Train Detection, a telephone cabin, and Location Boards erected 1000 metres from the Block Point Indication Boards.

An Intermediate Location sign has been erected at Quambatook Intermediate Siding.

The Block Point Location boards, Location Boards, and Bi-Directional End of Train Detection System have been removed from Boort Block Point.

The Fixed Signals at Boort Intermediate Siding have been secured in the "Proceed" position and will be removed at a later date.

The following is to be particularly noted:

- Train Orders must clearly indicate Quambatook Block Point and not Quambatook;
- Trains cannot cross at Quambatook.
- Up trains are not to be permitted to leave Ultima, and Down trains are not permitted to leave Korong Vale at the same time.
- Trains are not permitted to be locked away at Quambatook Intermediate Siding for the purpose of other trains to pass or cross

[Amend the Train Order Working Book of Rules, page 2]

(O.2343/92 WN 11/92)

18.03.1992 **Korong Vale - Charlton - Wycheproof - Berriwillock**

On Wednesday 18.3.92 Wycheproof was closed as a Train Order Crossing Station and established as a Train Order Block Point. Charlton was closed as a Train Order Block Point. The Train Order Sections Korong Vale - Charlton; Charlton - Wycheproof and Wycheproof - Berriwillock have been abolished and replaced with Train Order Sections Korong Vale - Wycheproof Block Point - Berriwillock.

The Block Point Location Boards, Location Boards, and Bi-Directional End of Train Detection System at Charlton have been abolished

The Fixed Signals at Charlton Intermediate Siding have been secured in the "Proceed" position and will be removed at a later date.

Wycheproof Block Point, situated at 347.620 km on the Down side of Wycheproof, was equipped with Bi-Directional End of Train Detection, a telephone cabin, and Location Boards erected 1000 metres from the Block Point Indication Boards.

The Fixed Signals at Wycheproof have been secured in the "Proceed" position and will be removed at a later date.

The following is to be particularly noted.

- Train Orders must clearly indicate Wycheproof Block Point and not Wycheproof;
- Trains cannot cross at Wycheproof Block Point.
- Up trains are not to be permitted to leave Berriwillock, and Down trains are not to be permitted to leave Korong Vale at the same time.
- Trains are not permitted to be locked away at Wycheproof Intermediate Siding for the purpose of other trains to pass or cross.

[Amend the Train Order Working Book of Rules, page 2]

(O.2347/92 WN 11/92)

(24.03.1992) **Willaura, Dunkeld, Myamyn, Gorae**

The temporary reduction of speed, for all trains to 40 kmh when passing over Templeton Street Level Crossing, situated at 287.258 km at Dunkeld, and when passing over the Main Line Points at Willaura, Dunkeld, Myamyn and Gorae, are cancelled forthwith (O.2348/92 WN 11/42)

24.03.1992 **Wycheproof - Berriwillock - Sea Lake - Kulwin**

On Tuesday 24.3.92 Sea Lake was closed as a Train Order Crossing Station and established as a Train Order Block Point. Berriwillock was closed as a Train Order Crossing Station and became an intermediate siding. The Train Order Sections Wycheproof Block Point - Berriwillock; Berriwillock - Sea Lake and

Sea Lake - Kulwin have been abolished and replaced with Train Order Sections Wycheproof Block Point - Sea Lake Block Point and Sea Lake Block Point - Kulwin.

The location Boards at Berriwillock have been abolished and an Intermediate Location Sign has been erected at Berriwillock Intermediate Siding. Trains are not permitted to be locked away at Berriwillock Intermediate Siding for the purpose of other trains to cross or pass.

Sea Lake Block Point, situated at 419 km on the Up side of Sea Lake, was equipped with Bi-Directional End of Train Detection, a telephone cabin, and Location Boards erected 1000 metres from the Block Point Indication Boards.

An Intermediate Location sign has been erected at Sea Lake Intermediate Siding.

The following is to be particularly noted:

- Train Orders must clearly indicate Sea Lake Block Point and not Sea Lake;
- Trains cannot cross at Sea Lake Block Point.
- Up trains are not to be permitted to leave Kulwin, and Down trains are not permitted to leave Wycheproof Block Point at the same time.
- Trains are not permitted to be locked away at Sea Lake Intermediate Siding for the purpose of other trains to pass or cross.

[Amend the Train Order Working Book of Rules, page 2]

(O.2383/92 WN 12/92)

26.03.1992

**Brooklyn**

On Thursday 26.3.92 the following alterations took effect:

1. The main line crossover points between the east and west lines (No S and T), situated between Francis Street and the Princes Highway overpass, on the Down side of signal post Nos 10 and 11, have been abolished and removed from service.
2. The Down end points No R, rodded to Catch Points and giving access into Little Brooklyn siding have been relocated 44 metres in an up direction (towards Newport).

Amend Signalling Diagram 40/81

(O.2376/92 WN 12/92)

29.03.1992

**Clifton Hill "A"**

On Sunday 29/3/92 mechanical points Nos 17U and 17D were converted to clamp lock points in preparation for the resignalling of Clifton Hill. Superintendent, Metrol and Signalling to arrange for a Signaller to be on duty at Clifton Hill "A" for the duration. This circular supersedes O.2344/92 which is hereby cancelled

[This alteration was to have occurred on Sunday 22.3.92 - see O.2344/92 and WN 11/92.]

(O.2357/92 WN 12/92)

29.03.1992

**Ballarat "D" (Linton Junction)**

Between the hours of 0800 on Sunday 29.03.92 and 1600 on Tuesday 31.3.92, the interlocked gates at Gillies Street [123.113 km] will be removed from service and replace with boom barriers. The boom barriers will be manually operated from Ballarat "D" box (Linton Junction) for all moves. [Amend Master Train Plan General Instructions, page 29]

(O.2367/92 WN 12/92)

[O.2367/92 was subsequently amended to include the removal of the Wicket Gates at Gillies Street]

(O.2436/92, WN 13/92)

29.03.1992

**Footscray**

On Sunday 29.3.92 the Signal Indication Lights on the Down Automatic Signal Post W223 were altered to a reverse stagger. Insert a reference on Signalling Diagram No 9/87

(O.2421/92, WN 13/92)

29.03.1992

**Laverton**

On Sunday 29.3.92 the "A" Light on the Up Home Signal, Post No 4, was lowered to improve signal lighting [sic]

(O.2420/92, WN 13/92)

31.03.1992

**Ballarat**

On Tuesday 31.3.92 Healthy State Indication Lights were provided at the following locations: Howitt Street (120.786 km, AM1207); Norman Street (121.597 km AM1215); and Heinze Lane (122.441 km AM1224). Yellow whistle posts have been provided to indicate that the crossing is fitted with Healthy State Indication. The Indication will be a white flashing light mounted on the top of a prominent mast. Its operation will indicate to train crews that the operation systems are satisfactory. Should the Healthy State Indicator not be operating, the Driver must in from the Train Controller. The Train Controller must immediately advise the Signal and Communications Supervisor for the area

(O.2387/92, WN 12/92)

(Continued on Page 58)

## MANGALORE

by Andrew Waugh

## Early Years

The North East line was opened between Seymour and Longwood in 1872. Avenel station, 10 1/2 miles from Seymour, was opened with the line and was the only intermediate station. On 13 January 1880 the first section of the Goulbourn Valley line was opened to Shepparton. The junction of the new line was not at Seymour. Instead, Goulbourn Valley line trains ran north for about 6 miles on the North East line. In this distance the North East line left the valley the Goulbourn River had cut in the Great Dividing Range. At 68 miles from Melbourne the North East line enters a 70 chain curve to turn north eastwards to run along the foot of the Great Dividing Range. As the North East line curved to the east, the new Goulbourn Valley line curved in the opposite direction on a 15 chain curve to take up a north westward course towards the Goulbourn River at Tabilk. The new station situated at the junction was named Mangalore. The name came from a nearby property which, in turn, was named after an Indian military camp.

Mangalore was a staff station at least from the opening of the Goulbourn Valley line and probably earlier to allow construction trains access to the new line. On the North East line, Mangalore divided the Seymour - Avenel Train Staff and Ticket section, the new sections being Seymour - Mangalore (6 3/4 miles) and Mangalore - Avenel (4 miles). On the Goulbourn Valley line, the Train Staff and Ticket section was Mangalore - Nagambie (10 1/4 miles). Curiously, these were the safeworking sections when Mangalore was closed 109 years later.

It appears that Mangalore was considered by the VR to be a station on the Goulbourn Valley line which just happened to be located adjacent to the junction with the North East line. For many years, for example, the annual traffic returns in the Commissioners' Report listed Mangalore with the Goulbourn Valley line stations rather than the North East line stations. It also appears that the goods sidings were only connected to the Goulbourn Valley line and the main passenger platform was also provided on this line.

Figure 1 consists of three diagrams taken from Keith Turton's history of the North Eastern line published in the August 1973 ARHS Bulletin. The 1880 diagram shows no sidings nor platforms and so is unlikely to reflect the station after opening. Indeed, this layout is contradicted in the text of the article which states that "[Mangalore] consisted of a platform in the vee formed by the junction with four sidings following the curve off the branch. There was, in fact, only one set of points in the main line."

The permanent station building was erected the middle of 1881; Lyster and Watson winning a contract in May 1881 for its erection costing £746/8/2.

## First Interlocking

Absolute block working, using Winters instruments, was provided on the section Seymour 'C' box - Mangalore on 23 July 1886.

Mangalore station was interlocked on 25 August 1886. A 27 lever frame N<sup>o</sup> 6 Pattern Rocker frame (with 4 spaces) was provided to work the yard. No interlocking sketch or diagram has survived of the layout at this time. The General Appendix published around 1888 does, however, contain a list of the whistles in use at Mangalore. This list is reproduced in Table 1.

Comparing this list of whistles with the layout in 1889 (see Figure 3) suggests that the 1886 track layout was similar to Figure 2. Signals have been added to Figure 2 based on contemporary practice. The number of levers required to work the layout is 23. That there was no crossing loop on the North East line is borne out by the October 1888 WTT which states "When North-Eastern trains cross at Mangalore, the train reaching that station first must shunt onto the Goulbourn Valley line to allow the other to pass." This WTT also notes that block instruments were also in use on Mangalore - Avenel section. The block working between Mangalore and Avenel might have been provided to allow the signalman at Mangalore to control the approach of up trains to avoid, as far as possible, the crossing of North East line trains at Mangalore.

Figure 2 differs considerably from that shown in Keith Turton's article (reproduced in Figure 1). Keith's diagram does not agree with the whistles shown in Table 1, nor do his 1889 amendments agree with the surviving 1889 locking sketch.

## Duplication

To work the single line between Seymour and Mangalore, the SM at Seymour would have had to act as

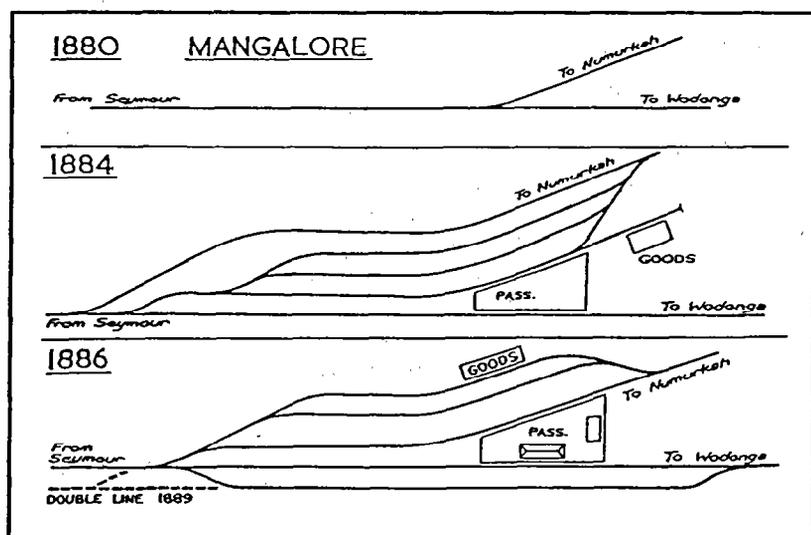


Figure 1 Layouts of Mangalore prior to 1889. From Keith Turton's article in the August 1973 Bulletin. As explained in the text, the 1889 amendments to the 1886 layout are incorrect and the 1886 diagram itself is unlikely.

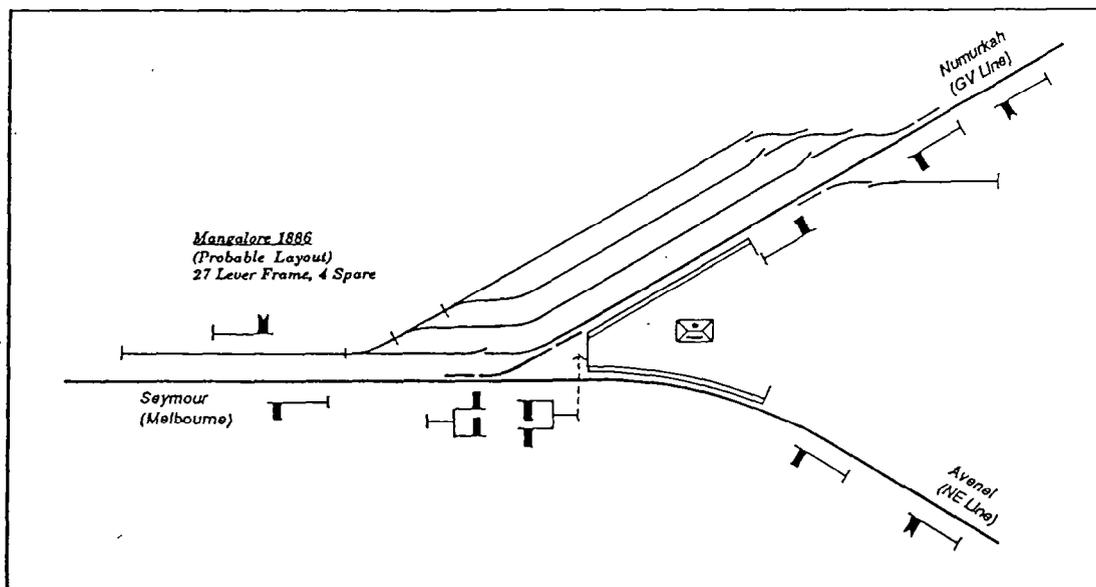


Figure 2. Suggest Layout 1886-89. This layout has been based on the list of whistles in use at Mangalore in 1888 and contemporary signalling practices.

a train controller and use the telegraph to anticipate the arrival of up trains so that movement of the staff over the Seymour - Mangalore section could be planned. An unexpected delay to a train could throw his plan into chaos with the staff at the wrong end of the section. As the country between Seymour and Mangalore presents no major engineering obstacles, it is not surprising that this section was quickly duplicated. Duplication work appeared to start in early 1889 when Scott and Younger were awarded the contract for duplicating the bridges between Seymour and Mangalore. The department apparently undertook the earthworks and track laying.

The layout at Mangalore was rearranged for the duplication and a 54 lever frame replaced the 27 lever frame. The new frame was also a N<sup>o</sup> 6 Pattern Rocker frame. Figure 3 has been taken from the locking sketch prepared by McKenzie and Holland for the new layout. The new frame was brought into use on 25 August 1889. Traffic was apparently worked over the future down line until the duplication was brought into service on 22 September. The new double line was worked by Winters Block instruments with one section: Seymour 'C' box - Mangalore.

It appears that a number of minor alterations were made to the layout shown in Figure 3 before being brought into use. Neither set of interlocked gates were installed and the gap in the frame for levers 1 to 4 was boarded over. It is likely that neither the down North East line starting signal (signal 51) or the up starting signal (signal 12) were provided. A short arm was probably provided under the bracket of the down junction home instead of disc shown and the lay of points 35 (at the up

end of No 1 Road) was altered so that they normally led towards the sidings.

Yet more alterations were made after the layout was brought into service. A lockbar, worked by lever 19, was provided on No 21 points on 12 October 1889 and on 13 December the up starting signal (lever 12) was provided after all.

An inspection of Mangalore box in 1989 suggests that the original (1886) signal box was extended to house the larger frame. Vertical posts neatly divide the signal box into roughly equal halves and are probably the original corner posts. It is possible that extension was constructed from the original Seymour 'C' Box. 'C' box was constructed at roughly the same time as the original Mangalore box and so could be expected to be of similar design. Both boxes housed frames of similar length ('C' box had 34 levers instead of 27) and so would have been similar in size. The original 'C' box was replaced by a new box in March 1889; five months would allow plenty of time for its re-erection at Mangalore.

**The Booking Office**

The booking office and signal box were combined at Mangalore during the 1897/8 financial year. The signal box was extended northwards to form the new booking office. A plan of the proposed extension exists and shows that a William Barry tendered for the work on 14 March 1898. It is doubtful, however, that the contract was actually let as no such announcement appeared in the Government Gazette. It is likely that the railways executed the alteration themselves as the extension eventually constructed was slightly different that shown on the plan.

**Regrading Avenel Bank**

Also during 1897/8 the Victorian Railways spent £14,000 regrading the Avenel bank. Three miles of the southbound bank, commencing at Hughes Creek near Avenel, was regraded from 1 in 75 to 1 in 125. The regraded line was brought into use on 28 November 1898 when the

From:-	To:-	Whistle	Comment
Seymour	Wodonga	1 long	in and out
Seymour	Shepparton	2 long	in and out
Platform 'B'	Siding 'C'	1 long, 1 short	
Platform 'B'	Goods Shed Sdg	1 short	
Main G.V. line	No 2 Sdg	2 short	in and out
Main G.V. line	No 3 Sdg	3 short	Catch points for
Main G.V. line	No 4 Sdg	4 short	outward traffic

Table 1. List of Whistles in use at Mangalore in c1888

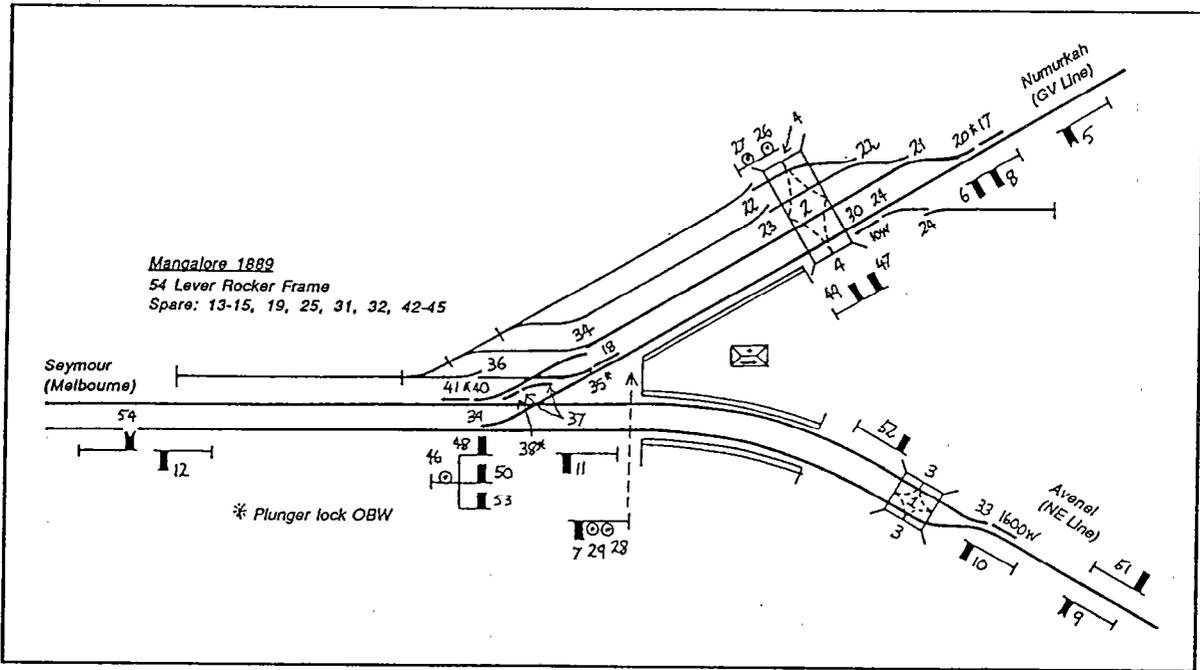


Figure 3. Proposed layout for duplication, 1889. This layout was constructed with only minor alterations. Neither set of gates nor the down North East line starting signal (51) was provided. The up starting signal (12) was not initially provided, but had been installed by the end of 1889. Also by the end of 1889, a lockbar (19) had been provided on Points 21. It appears that, when the duplication was brought into use, disc 46 was actually a short arm and the lay of Points 35 was reversed.

Weekly Notice announced that the loads from Benalla to Avenel could be taken through to Seymour - an increase of 61%. Previously, trains were double headed from Avenel to Seymour and light engines were sent out to meet up trains.

No alteration was made to the northbound bank and this remained at 1 in 75 and the 1898 General Appendix did not authorise double heading between Seymour and Avenel.

Minor alterations around the turn of the century  
 Splitting distants - a rarity in Victoria - were provided on 19 December 1899 when a down distant was provided for the Goulbourn Valley line. A bracket post replaced the original down distant post. It was probably in conjunction with the provision of this distant signal that the locking on the frame was altered to the more modern arrangement where the distant was released by all of the home signals in advance instead of acting as a repeater for

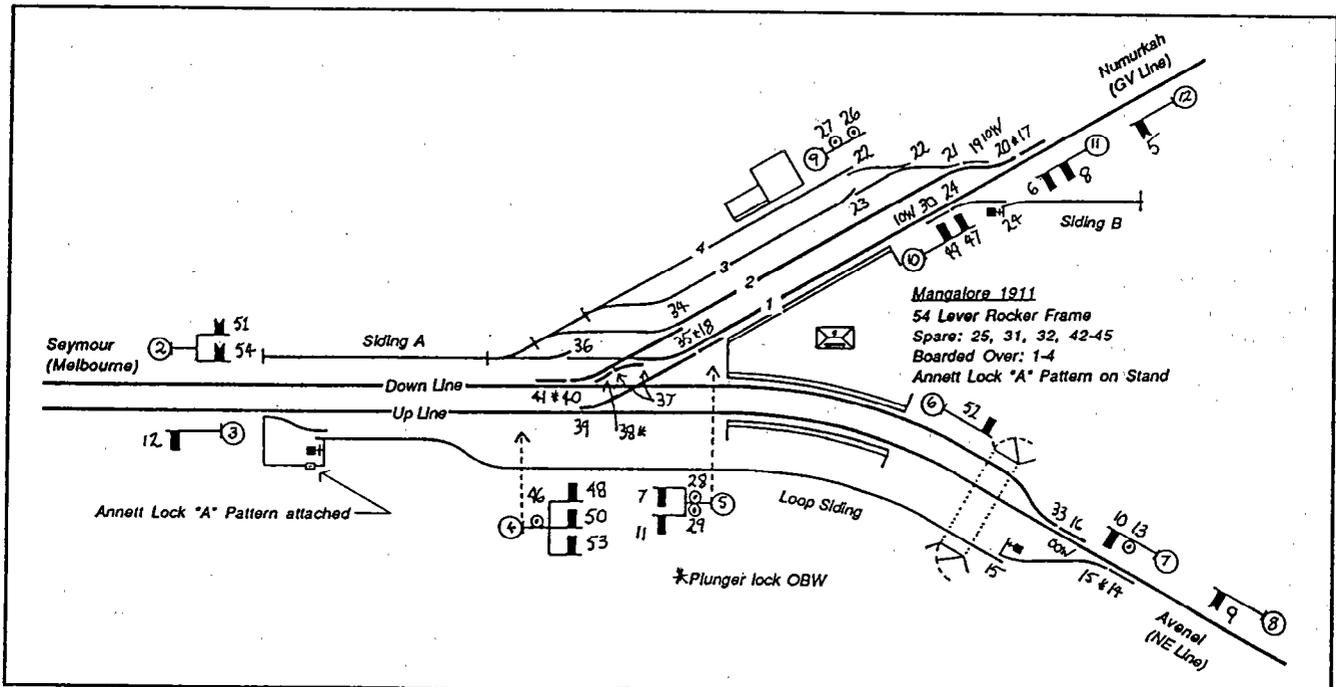


Figure 4. Layout after provision of the Loop Siding. Since the duplication in 1889 a number of minor alterations had been made: the splitting distants (1899); the provision of the new Post 5 (1906); and the provision of the loop siding (1911). Siding 'B' would be removed before the end of 1911.

the first home signal.

Located on the inside of the curve and beyond the up platform, up home signal 11 must have been difficult for the Drivers of up trains to see as they entered the station. On 2 March 1906 a new bracket post was provided at the end of the down platform to carry the two up home signals (7 and 11) and discs 28 and 29. At roughly the same time, the short arm underneath the bracket of Post 4 was replaced by a disc.

### The Loop Siding

A long loop siding was laid behind the up platform in 1911. Preliminary work for the work began around the beginning of the year; the up starting signal was moved an extra 30 yards south at the end of January 1911. The loop was brought into service on 8 February and was probably intended to hold up North Eastern goods trains clear of the main line until the congested yard at Seymour could accept them. The new layout at Mangalore is shown in Figure 4.

The down end of the loop was connected to the North Eastern main line beyond the end of the double line. The points and signals at this end were connected to the frame and levers 13 to 15 worked the new disc on Post 7, the lockbar, and the points.

At the up end, the points to the main line were to far out to be worked from the signal box. Instead, the points were worked by a small point lever rodded to the catch points in the loop line. The point lever was secured by an 'A' pattern Annett Lock; the key for which was usually kept in a duplicate lock on the interlocking frame. I would imagine that the loop would have been used only when necessary as it would have been a long walk down to the point lever to release a refuged goods train. The injunction "The Loop Line is to be used for Goods Trains only" was included in the 1913 Book of Signals.

The duplicate Annett Lock on the frame was mounted on a stand at the left hand end of the frame. The lock was directly connected to the rocking shafts under the floor. This arrangement was quite common on Rocker frames and was cheaper than providing a pilot lever (and associated cam) just to mount the Annett Lock on. This particular lock was the last such Annett Lock in Victoria and survived until the frame was abolished in 1989. It was rarely used towards the end and I suspect that the Signalmen tended to forget that it was there. I was told of one occasion when the signalman on duty went to pull off for an up North East train and found the frame locked. He went up and down the frame trying to work out what had gone wrong. Eventually the penny dropped. One of the local children had been visiting the signalman working the previous shift and, just before the shift change, the child had quietly turned the Annett key in its lock and departed.

### More minor alterations

The unusual spur siding leading from the down end of No 1 Road was taken out of use on 21 December 1911. Points 24 and lockbar 30 were abolished and removed. The 1913 Book of Signals, however, still included a reference to this siding.

It appears that the position of signal 11 was not a success in its new location at the up end of the down platform and the signal was relocated back to its original position in August 1917. Perhaps a few trains had started

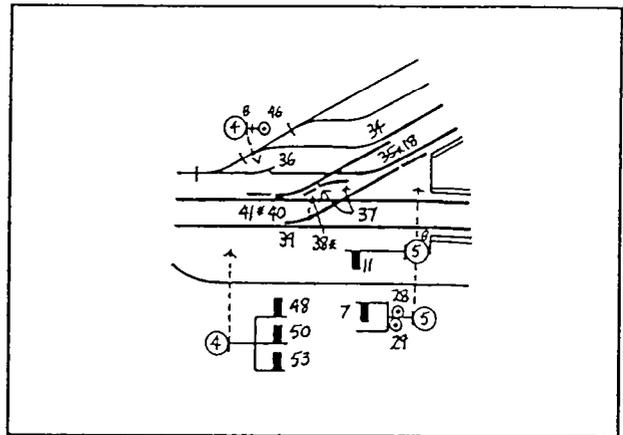


Figure 5. The junction after 1929. This shows the position of the new ground disc 4B (1929) and the relocation of Home signal 11 back to its original site (1917)

from the up platform, against the signal, when the Driver received the Guard's all clear!

Post 11 was renewed as a bracket post between 1919 and 1923.

The red arms and lens on the distant signals were replaced by yellow ones on 12 September 1929. Eighteen days later, the disc on Post 4 was replaced by a ground disc situated adjacent to the catch points in Siding 'A'. The layout of the junction at this time is shown in Figure 5.

### The Station

As an important traffic source or destination, Mangalore was always overshadowed by Seymour to the south and Avenel to north. Both these stations had better train services.

By 1911, Mangalore was in charge of a class 7 Stationmaster. To give some idea of the relative status, the adjacent stations in the 'class 7' list were Maffra, Malvern, Mansfield, and Mildura. Mangalore retained this status until 31 March 1932 when it was reduced by one grade to class 8, a position it held until after the Second World War.

Sometime in the period 1913 to 1916, the signalbox was taken out of the hands of the general station staff and a signalman was appointed. Mangalore was classified as a class 4 signalbox, the lowest grade, and it remained so until the stationmaster was withdrawn.

It is difficult to know the number of the remaining local staff. We know, however, that in June 1928 Mangalore was the head quarters of the local four man track gang who maintained the main line from the Seymour side of Gravelside to the top of the Avenel bank and the Goulbourn Valley line out to Nagambie.

At this time, Mangalore averaged roughly 3500 outwards passenger journeys per year. Outwards goods loading per year was roughly 6000 tons, although this fluctuated widely from a low of 2000 tons in 1915 to a high of 11000 tons in 1921. Most of this outwards loading was probably firewood. It is possible that the beer supply to Mangalore pub formed the major inwards loading as it was only about 120 tons per year. This corresponds to weekly traffic returns of roughly 70 passengers outwards, 115 tons out and 2 tons in.

Apart from the normal loading and unloading of trucks, the yard at Mangalore was also used transfer a

small number of trucks from Goulbourn Valley line trains to North East line ones. In August 1933 the District Superintendent instructed the SM at Mangalore:

*Re: Placing of trucks loaded with Sydney fruit ex Goulbourn Valley line, on the main Up passenger platform road at Mangalore for clearance by a Down North Eastern train.*

*Commencing forthwith when No 2 Road is not available, trucks loaded with Sydney fruit arriving from the Goulbourn Valley line may be placed on the main up passenger platform road subject to the following instructions being strictly observed:-*

*1) Before the trucks are placed on the up main passenger platform road, a staff must be withdrawn at Mangalore for the section Mangalore - Avenel for the down train that will clear the loading. When the trucks have been placed on the running line, a red light must be shown at both the front and rear of the vehicles so placed and the lever controlling the up home signal on Post 7 must be sleeved.*

*2) On each occasion that trucks are placed on the main up platform road a record must be made in the Train Register Book showing the time the vehicles were placed and number of vehicles.*

*3) When vehicles are being cleared the Officer-in-charge must arrange for the red lights to be removed and personally see that all trucks have been picked up and that the line is again clear.*

The 1929 Transportation of Goods book also notes that, during certain times of the Wool season, Mangalore would be used to reload trucks of wool so that full truck loads could be despatched to individual destinations.

**Safeworking - Seymour to Mangalore**

Southwards to Seymour, the normal block section had always been Seymour 'C' box ('B' from 1925) - Mangalore. During single line days, Mangalore Ballast Pits (Gravelside) was occasionally opened as a staff and block post when ballast trains were working the siding. It was open, for example, between late 1888 and early 1889. The block instruments remained after duplication and it continued to be switched in as a block post as necessary. Gravelside was only switched in when the pits were in use for loading ballast trains and the divided section was only used to allow the ballast train to clear the down main line for main line trains. It is known that Gravelside was open as a block post in November 1890, August 1894, and in the later half of 1910. It is likely that it was open at other times as well. The last known period of use as a block post commenced on 15 August 1929. Gravelside was permanently closed as a block post in September 1935.

The down starting signals at Mangalore were well short of 440 yards from the down home signals on Post 4. There was only 283 yards to Post 6 (North East line) while Post 10 (Goulbourn Valley line) was 294 yards distant. Consequently, down trains would have been regularly accepted under the 'Section Clear but Station or Junction Blocked' signal which only required the down line to be clear as far as Post 4. In May 1909 the acceptance of trains under the 'Warning' signal was prohibited except at specified locations. Mangalore was not one of those locations and this undoubtable caused extensive delays and, from September 1909, the conditions for accepting down North East line trains were relaxed:

*"An Up and a Down North-Eastern Line train may be allowed to approach Mangalore at the same time, but in any such case, the Down train must be brought to a stand at the Down Home Signal (Post No 4) before being allowed to proceed to the platform, unless the Up train has already arrived and is clear of the Down line."*

Some of this freedom was taken away again in October 1921 when an additional special instruction was provided at Mangalore:

*"At Mangalore the 'Is Line Clear?' Signal may be accepted in accordance with Rule 3, for a Down train, provided the Line be clear as far as Post No 7 on the Main Line, or Post No. 11 on the Branch Line, and the Points set for the Clear Road. After permission has been given for a train to approach, in accordance with Rule 3, no obstruction of the Line for which the Signaller has set the Points must be allowed until the train has been brought to a stand at the Home Signal (Post No. 4), or has arrived in the Station Yard, or the 'Cancelling' Signal has been received from the Signal-box in the rear."*

Note that before a down train could be accepted with the points set for the down main line, Points 33 had to be reversed. Once reversed, they could not be restored to normal for an up train to run on to the up main line until the down train had come to a stand at Mangalore. A similar problem with up Goulbourn Valley line trains arose when a down train was accepted with the points set for either No 1 or No 2 Roads.

These local instructions were redrafted in September 1929 to allow the acceptance of a down train provided the line was clear clear to Posts 6 or 10, allowing up trains

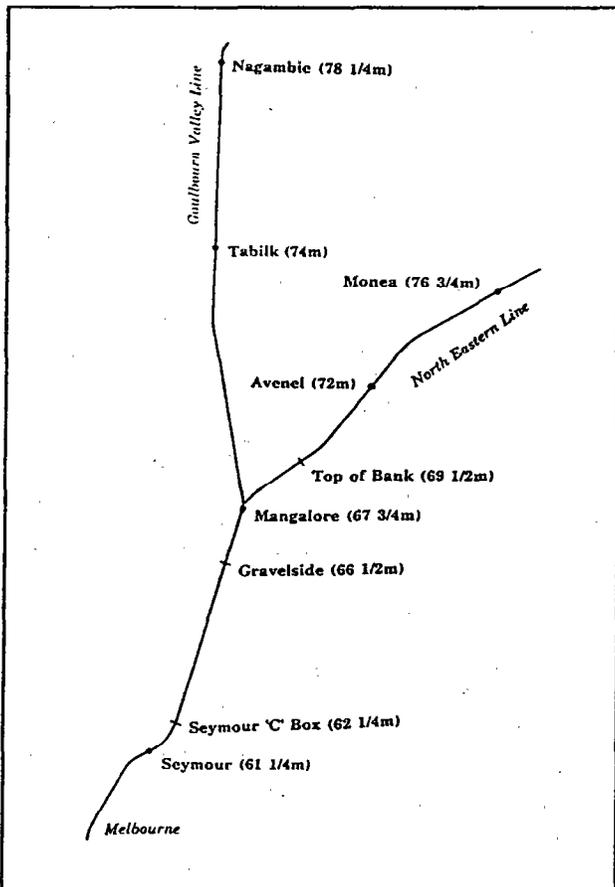


Figure 6. Stations and Signalboxes around Mangalore

to enter the station after a down train had been accepted. The new instruction read:

*At Mangalore the Is Line Clear? signal may be accepted for a Down train, provided the line be clear as far as Post No. 6 on the Main Line, or Post No 10 on the Branch line, and the Points set for the Clear Road. After permission has been given for a train to approach, in accordance with Rule 3, no obstruction of the line for which the Signaller has set the Points must be allowed until the train has been brought to a stand at the Home Signal (Post No 4), or has arrived in the station yard, or the Cancelling signal has been received from the Signal-box in the rear.*

*An Up and Down North-Eastern line train may be allowed to approach Mangalore at the same time, but in any such case the Down train must be brought to a stand at the Down Home Signal (Post No 4) before being allowed to proceed to the platform, unless the Up train has already arrived and is clear of the Down line. Similarly, a Down Branch line train, when crossing an Up Branch line train, must not be permitted to proceed towards Post No 10 on the clear line without first being brought to a stand at Post 4, unless the Up Branch line train has already arrived, and is clear of fouling point at Down end.*

#### **Safeworking - Mangalore to Avenel**

On the North East line the single line section was always Mangalore - Avenel. The train staff and ticket system was replaced by tablet instruments (No 5 pattern) on 6 February 1896. These, in turn, were replaced by Miniature Electric Staff instruments in October 1913.

Automatic staff exchange apparatus were provided in October or November 1926. The up exchanger was situated 60 feet from the up platform, opposite Post 6. The down exchanger was situated 48 feet from the down platform near the down end of crossover 35. It appears that this was too close to the platforms as the down staff exchanger was relocated 116 feet from the platform on 8 March 1927 (the up staff exchanger had already been moved to a new position 150 feet from the up platform).

From 14 January 1927 a bank engine key was provided in the Avenel section. This allowed an engine to assist a down goods train by pushing the train up the 1 in 75 Avenel bank from Mangalore to a "Stop" board at the summit (69 1/2 miles).

Previously, heavy trains were double headed from Seymour to Avenel where the assisting engine was cut off and returned light engine back to Seymour. The 1926 Loads Books shows that a single 'K' or 'N' class engine (the most powerful engines permitted north of Seymour at that time) could haul 914 tons between Avenel and Benalla, but only 580 tons between Mangalore and Avenel. With the assistance of a 'D1' or 'D2' class engine, the full through load of 914 tons could be hauled all the way from Seymour to Benalla.

In the late 1920s, however, the North East line was being relaid to handle the heavier 'C' and 'X' class locomotives. Double heading of these powerful

locomotives was prohibited because of the weak drawgear then in use and so another way had to be found to assist a full train over the Avenel bank.

Pushing from the rear got around the drawgear limitation. Initially, the banking engine was coupled to the rear of the train at Seymour and was not uncoupled until the train came to a stand at the top of the Avenel bank. Uncoupling the bank engine there took 5 minutes. Use of the bank engine key at Mangalore, however, involved showing the Driver of the lead locomotive the bank engine key and obtaining his signature on a form which was then given to the Driver of the bank engine. It apparently did not take someone long to realise that five minutes could be saved if the Bank Engine crew uncoupled at Mangalore while the paperwork was being attended to at the front end. Permission to do this was included in the 1928 General Appendix.

From 26 September 1927 the Signaller at Mangalore was authorised to obtain an Mangalore - Avenel staff for shunting purposes while the Avenel Signaller was off duty.

On 20 June 1942 the Block & Signal Inspector at Seymour issued the following instruction to the signallers at Mangalore:

*Owing to the short section between Mangalore and Avenel and the time Train Departure Signal is being sent from Mangalore for non stopping trains, which does not permit Avenel to erect his Staff Exchanger Apparatus and exhibit his signals without checking the train, please note commencing forthwith, the "Train Departure" signal must be sent from Mangalore to Avenel as hereunder:-*

*When two employes are on duty at Mangalore, i.e. one in the signal box and the other observing the Exchange Apparatus, "Train Departure" signal to be sent when train is approaching Post 4.*

*When only one man is on duty, prior to Signaller leaving his Signal Box he must sent [sic] "Train Departure" signal then proceed to observe the working of his Exchange Apparatus.*

At roughly the same time the Assistant General Superintendent directed that the Exchanging Apparatus had to be tested not later than 9 am; the up exchanger to be gauged first.

#### **Safeworking - Mangalore - Nagambie**

The staff and ticket working to Nagambie was replaced by large electric staff instruments on 30 November 1898. The Nagambie section was divided in December 1911 (probably on the 15th) when Tabilk was opened as an electric staff station. Tabilk was closed as a staff station in June 1912. It was seasonally opened as a staff station in 1913, 1913/4 and 1915. It then appears to have remained closed until permanently opened as an electric staff station in the middle of February 1920. Tabilk remained a permanent staff station until 30 May 1940 when it was equipped with 'without train' switching equipment. Mangalore consequently gained an additional large staff instrument, the long section being Mangalore - Nagambie.

(To be continued)

## ELECTRIFIED TRAMWAY CROSSINGS

*The following description of the equipment used at locations where the electrified Melbourne suburban railway system crossed electric tramlines on the level was published in "The Electrification of the Metropolitan Railway System of Melbourne". This booklet was written by the Victorian Railways and published as a supplement to the "Australian Mining and Industrial Standard" during 1919.*

At points where the electric tramway crosses the railway lines special sectioning arrangements are made. The tramway trolley wire and the railway contact wire are connected together, and the system thus formed above the rail crossing is insulated from both the tramway and railway systems. The insulated portion of wire work over the crossing can be made alive to either the 1500-volt railway supply or the 500-volt tramway supply. For this purpose two switches of the circuit breaker type are used; one controlling the 500 volt supply for railway operations, the other controlling the 1500-volt supply for tramway work. The switches are operated from the signal cabin, and all precautions are taken to prevent a circuit being established between the tramway and railway wires. To this end the circuit breakers are arranged to operate in response to the influence of solenoid coils. If one circuit breaker is closed it opens circuit controlling the operating solenoid of the other circuit breaker, making it impossible to operate both breakers at the same time.

The circuit controlling the solenoid is taken through contacts to the gate stop lever in the signal cabin; this lever is interlocked, in the usual way, with the railway signal levers and the tramway signals and derails. And the switches cannot be operated if the signal is against the train or if the gates are set to tramway traffic. If a train does approach the closed gates the 500-volt circuit breaker will automatically open.

There are installed automatic train stops at a sufficient distance from the points at which the pantograph would parallel the contact wires over the crossing and the main contact wire, to pull up a train, travelling at the permissible speed, if it passes a signal set against it.

The arrangement of circuits is shown in Figure 19, from which it is seen that the 500-volt circuit breaker is fed through switches from either, or both, tramway overhead lines. The control circuit is taken through contacts which are controlled by a relay (500 R.). The relay is controlled, in turn, by the circuit breaker contact on the gate stop lever, No 2, in the signal cabin. The gate stop lever is interlocked with the tramway signals and derails and the railway signal levers. The circuit is also passed through contacts on the track relay, Nos 12 and 34, track circuits. Before the circuit breaker can be closed all these contacts must be made.

When a train runs on to the lines it bridges the railway tracks in the immediate vicinity of the tramway crossing, the track relays are de-energised, and their contacts placed in the off position. When all the tracks are cleared the relays automatically close their contacts, and, if the gate stop lever is in the position that sets the gates for tramway traffic, the operating circuit of the 500-volt circuit breaker will be complete. It is the operation of these track relays that opens the 500-volt circuit breaker if a train runs on to these particular track circuits

when the gates are set for tramway traffic, thus avoiding the danger of connection between the tramway and railway systems through the pantograph bridging the air space between the contact wires of the two systems.

The circuit breaker controlling the 1500-volt supply is fed, through a manually operated horn type switch, from one of the main contact wires. A resistance is employed to reduce the voltage, across the controlling solenoid coil, from 1500 to 750 volts; the circuit passing through contacts controlled by relay, 1500 R., which, in turn, is controlled by the circuit breaker on the gate stop lever, "made" when the lever is normal to railway traffic. Interlock of the 1500-volt circuit breaker is further obtained by leading the control circuit to two contacts on the 500-volt circuit breaker. These contacts are bridged when the 500-volt circuit breaker is open and the 1500-volt breaker may be closed, so far as that switch is concerned. The 500-volt circuit breaker is provided with an interlock on the 1500-volt breaker in a similar way.

The circuit breakers are of a similar type to those used in the train equipment. Each is fitted with an overload device to open the circuit if connection is made between the tramway and railway wires.

The overload coil of the circuit breaker operates a mechanical trip. The main solenoid circuit to be broken at the re-setting solenoid contacts is carried by the mechanical trip. The circuit breaker does not require re-setting in case of no voltage, as it is only tripped in the event of overload or intentional tripping. It opens circuit due to loss of current in the solenoid coil, but picks up when the supply is resumed.

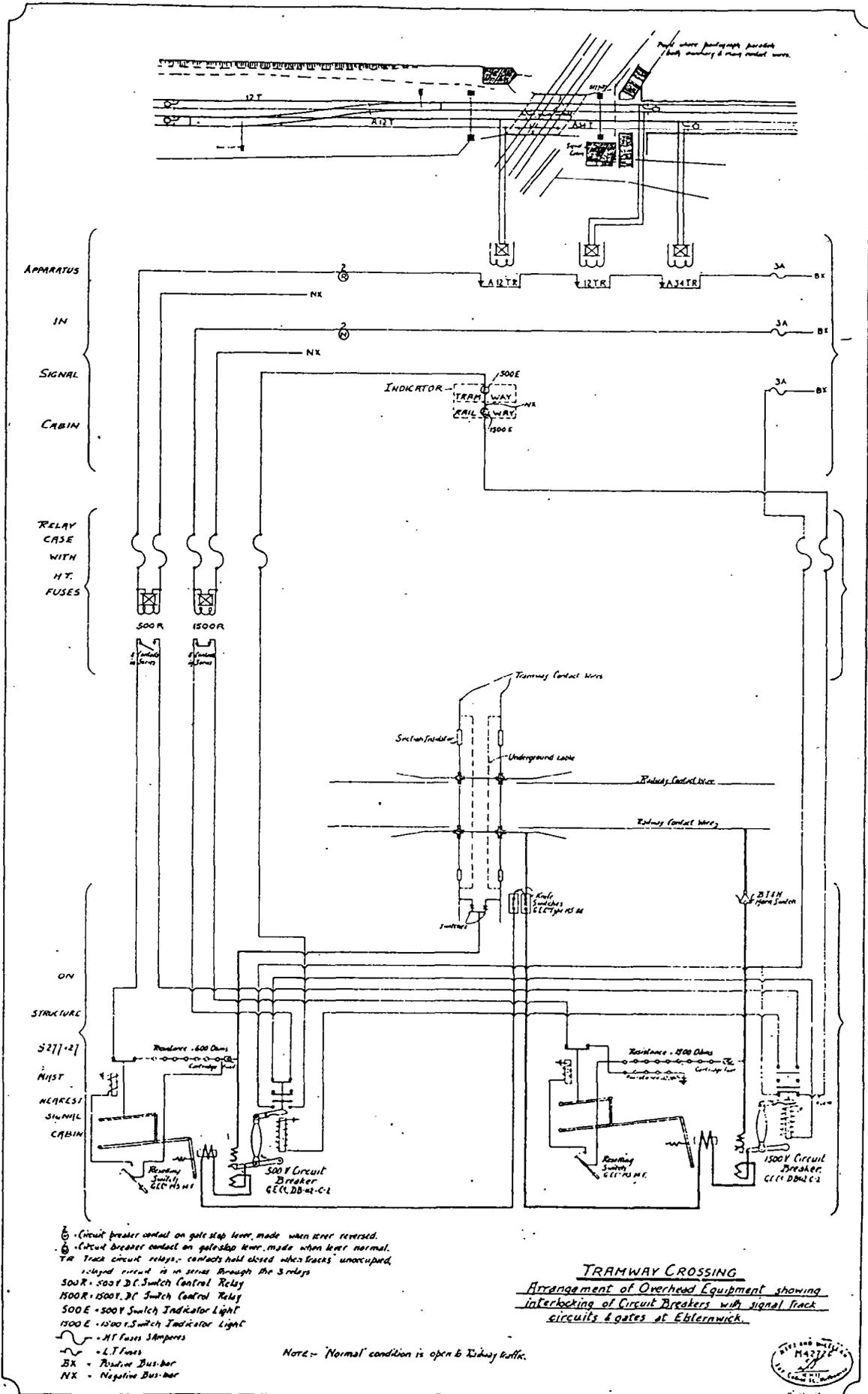
The overload device is re-set by the operation of a locked switch.

Both circuit breakers are provided with knife switches between the breakers themselves and the crossing wires, in order that the service can be maintained on one system if the circuit breaker on the other system is under repair.

Where control circuits enter the signal cabin high tension fuses are installed in the relay box outside.

If the circuit breaker does not respond to the movement of levers in the cabin the signalman is informed of the fact by a lamp placed in his cabin.

The crossing of the tramway and railway contact wires is arranged through a channel frame work. The tramway trolley is attached to the inside of a channel section, 3 in x 1.75 in., extending for 3 ft. The channel trough guides the trolley wheel, and ensures that the train pantograph slides clear from the tramway wire. The railway contact wire terminates on the framework on a level with the bottom of channel flanges. Due to the crossing wires not being at right angles, the railway pantograph gradually passes diagonally over the channel trough.



## ODDS &amp; ENDS

*The following odds and ends have been taken from the Station Order Books kept by the Superintendent of Safeworking from the mid 1920s to the mid 1970s. These books are now in the AFULE collection held at The University of Melbourne Archives. Transcription of the contents of these book has now nearly been completed and a copy of the transcription will eventually be deposited with the Society archives.*

*Memo from District Superintendent to SM, Seymour, dated 26 September 1952*

Seymour 'B'

Delivery of Annett Key to Driver of Bank Engine assisting in rear of goods train.

In connection with the use of this Annett Key which authorises the Driver of the Bank Engine to assist to mileage 63-50-0 in accordance with instructions contained in the Working Timetable pages 138-9 [...]

A special wooden apparatus has been provided for the purpose of handing the Annett Key which is to be secured in a cane carrier to the Fireman.

After the train engine has passed the Home Signal on Post 20, the signal must be placed to the stop position and key released from the switch, the ward end is to be placed in the loop end of carrier and name plate end secured with the buckle and strap with name plate showing so as to be visible to the Driver.

Carrier with Key is to be placed into the bracket of the holder securely so as to prevent same from falling out. Signalman to then place himself in a suitable position on pedestrian crossing and hold the apparatus with the back facing the Bank Engine at such a height to enable the Fireman to receive the Cane Carrier from the engine gangway above the safety chain. [...]

Above apparatus to be brought into use on Monday 29th September

*Telegram from AGST to Centrol, Metro & Block Flinders St, SM Moe, dated 7/10/39*

Today, 7th inst, a privately owned locomotive will be transferred from Moondarra to Knott's Sdg [...]. No 1 Mixed will travel from Moe to Erica on Ticket and Master Key and a qualified Driver and Guard must accompany the train to Moondarra the Driver being in possession of the Moe - Erica Train Staff. On arrival of No 1 at Erica the Guard will take charge of signalling and send the 'Acre' message to the Guard and Driver who alighted at Moondarra. On receipt of the 'Acre' message the Guard at Moondarra may operate the points for the engine to precede from the siding and when the points are again locked the Staff is to be handed to the Driver to run the engine to Erica the Driver being accompanied by the Guard. The engine will cross No 4 Mixed and No 8 Postal Motor at Erica then proceed to Knott's Sdg on Erica - Walhalla Train Staff. When engine is securely locked in Knott's Sdg Driver and Guard are to return Train Staff to Erica and local arrangements will be made by the Company to convey Driver and Guard to Moe Zany Zebu

*Telegram from AGST to Centrol; Metro & Block, Flinders Street; & SMs Moe & Erica date 7.10.39*

Today, 7th inst, a privately owned locomotive will be transferred from Moondarra to Knott's Siding. The locomotive is to be dealt with under the rules applying to a train. A qualified Guard is to travel by No 1 Mixed to Erica where he will take charge of signalling arrangements. No 4 Mixed is to be despatched from Erica to Moe on Ticket and Master Key and extra Guard will accompany train to Moondarra where he will alight. Extra Guard will be in possession of the Train Staff for Moe - Erica section. This will operate points to permit locomotive to move from siding to main line at Moondarra after departure of No 4. When locomotive is on main line points are to be restored to Normal and secured and Train Staff handed to departmental Driver who will be in charge of locomotive from Moondarra to Knott's. Guard to accompany locomotive and change staffs at Erica. When locomotive placed and secured in siding at Knott's, Driver and Guard will be returned by car Knott's to Moe. Guard to arrange transfer of staffs for Monday's train. Driver who is taking charge of private locomotive at Moondarra will travel by car from Moe to Moondarra with Engineer from Melbourne. Zany. Zebu.

*Portion of S.4082/31 dated 22 December 1931 which concerns the running of a Special on Wednesday 23rd December from Bendigo to Axedale and return. Special to pick up approximately 60 men working on Eppalock Weir. Train to depart Bendigo, tender first, at 4.10 pm; Axedale arrive 5.00 pm; depart 5.45 pm; arrive Bendigo 6.16 pm.*

Safeworking Arrangements.

The 4.10 pm special to be despatched from North Bendigo Junction to Axedale on the Ticket "A" portion of the Composite Staff and train to be accompanied by the Block and Signal Inspector. On arrival of train complete at Axedale, and when it has been shunted clear of the running line, the Block and Signal Inspector must obtain the Ticket 'A' portion of the Composite Staff from the Driver, then send the 'Acre' message to North Bendigo Junction. The 5.0 pm Rail Motor may then be despatched from North Bendigo Junction on the Ticket 'B' and Staff portions of the Composite Staff. On arrival of the 5.0 pm Rail Motor at Axedale, the Block and Signal Inspector must obtain the Ticket 'B' and Staff portions of the Composite Staff from the Driver and join the complete Composite Staff together and retain it for the 5.45 pm Special to run to North Bendigo Junction. The 5.0 pm Rail Motor will then be despatched to Heathcote on the following Train Order.

Train Order to be signed by the Block and Signal Inspector and cut out of the circular and handed to the Driver of the 5.0 pm Rail Motor.

Train Order

To Driver of the 5.0 pm Rail Motor---

You are hereby authorised, after seeing the complete Composite Staff for the section, to proceed from Axedale to Heathcote without the Staff. I am retaining the complete Composite Staff for the 5.45 pm Special to run to North Bendigo. On arrival at Heathcote you must hand this order to the Signaller.

Signed \_\_\_\_\_ Block and Signal Inspector  
Date \_\_\_\_\_

On arrival at North Bendigo Junction of the 5.45 pm Special (return of 4.10 pm) the Block and Signal Inspector must communicate with the Signaller at Heathcote and ascertain whether the 5.0 pm Rail Motor has arrived complete at that station and on receipt of advice to that effect and the section North Bendigo Junction - Heathcote is again clear, the Composite Staff may then be inserted in the proper instrument under the "Cancelling" Signal and ordinary working resumed.

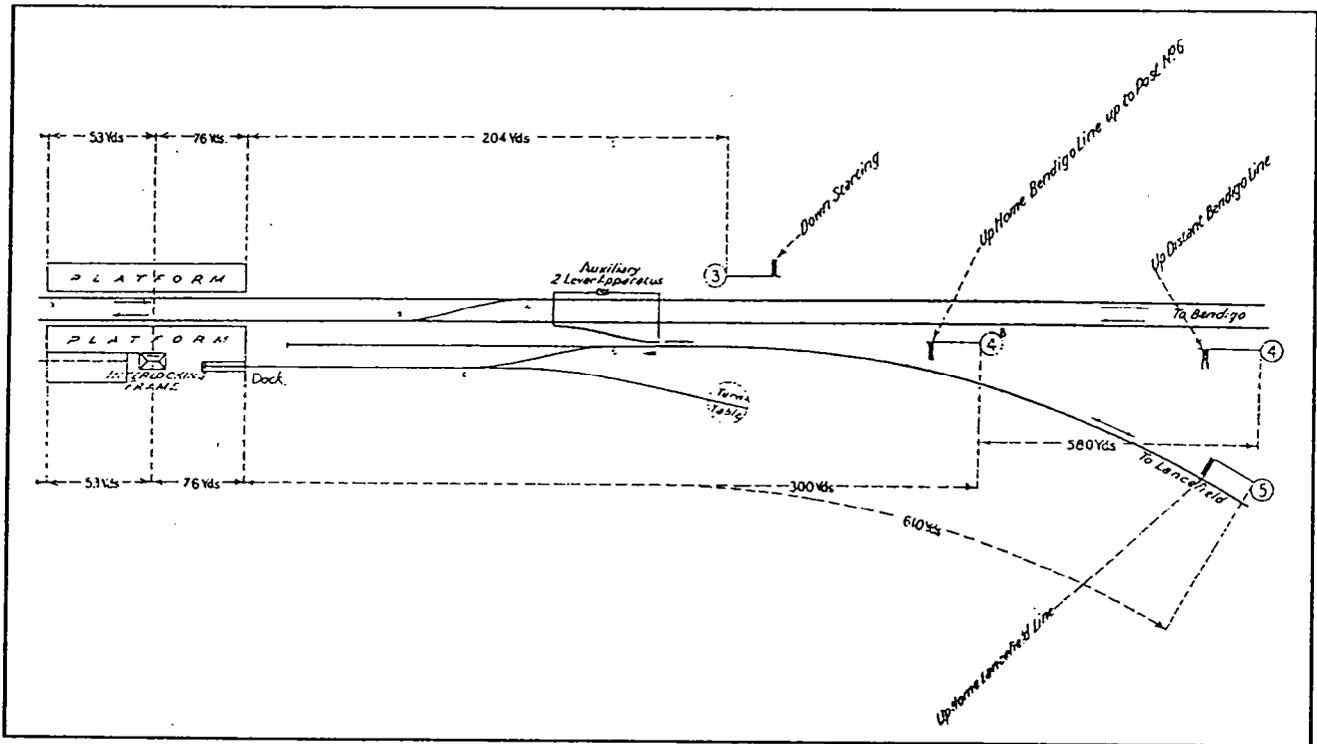
The telephone messages between the Block and Signal Inspector and the Signaller, Heathcote, must be entered on the proper telegraph form and the instructions respecting the use of telephones pages 141 - 142 General Appendix strictly observed.

Memo from the Block & Signal Inspector dated 18.7.28, SGTS 71510/2

Commencing today Nos 2 & 8 Rail Motors are to be put into the Dock at Clarkefield on arrival. Drivers of Up Rail Motors must approach Clarkefield cautiously and note that the Rail Motor will be dealt with as under. The Rail Motor must be stopped at the Home Signal after which the points must be set towards the main line. The Home Signal must then be placed at proceed and the Rail Motor again brought to a stand at the Interlocked points by the exhibition of a red hand signal. The points must then be altered to lay for the Dock and the hand points leading from the dead end siding towards the dock locked by means of the locking bar. The Rail Motor Driver must then be verbally warned by the Signaller that the Rail Motor is being turned into the Dock. A green hand signal must at the same time be exhibited by the Signaller to the Motorman. At night time or during foggy weather conditions a red light must be placed on the buffer stops in the dock or on the leading vehicle when vehicles are standing in that road.

The above movements may be done after permission has been given to Riddell for an Up train to approach, but the up main line must not be fouled and the instructions as set out must be strictly adhered to.

This cancels previous instructions dated 12.6.26 and 17.9.26



Clarkefield

## SIGNALLING ALTERATIONS (Continued from Page 47)

- 31.03.1992 Quambatook - Ultima - Manangatang**  
 On Tuesday 31/3/92 Ultima was closed as a Train Order Crossing Station and established as a Train Order Block Point. The Train Order Sections Quambatook Block Point - Ultima and Ultima - Manangatang have been abolished and replaced with Train Order Sections Quambatook Block Point - Ultima Block Point and Ultima Block Point - Manangatang  
 Ultima Block Point, situated at 396 km on the Down side of Ultima, was equipped with Bi-Directional End of Train Detection, a telephone cabin, and Location Boards erected 1000 metres from the Block Point Indication Boards.  
 An intermediate location sign has been erected at Ultima Intermediate Siding and Ultima Sub-Terminal Siding.  
 The following is to be particularly noted:
- Train Orders must clearly indicate Ultima Block Point and not Ultima;
  - Trains cannot cross at Ultima Block Point.
  - Up trains are not to be permitted to leave Manangatang, and Down trains are not permitted to leave Quambatook Block Point at the same time.
  - Trains are not permitted to be locked away at Ultima Intermediate Siding or Ultima Sub-Terminal Siding for the purpose of other trains to pass or cross.
- [Amend the Train Order Working Book of Rules, page 2] (O.2428/92, WN 13/92)
- 01.04.1992 Hastings**  
 On Wednesday 1.4.92, Boom Barriers were provided at Graydens Road Level Crossing located at 62.747 km [Amend Metropolitan WTT, Volume II, page A14 and MTP General Instructions page 101]  
 (O.2419/92, WN 13/92)
- 05.04.1992 Clifton Hill**  
 On Sunday 5/4/92 the mechanical Points Nos 13 and 31 were converted to clamp lock points in preparation for the resignalling of Clifton Hill. Locking Bars Nos 14 and 30 were abolished and the levers sleeved in the "Normal" position. Superintendent, Metrol and Signalling, to arrange for a Signaller to be on duty at Clifton Hill "B" Box for the duration (O.2443/92, WN 13/92)
- 07.04.1992 Ultima Block Point - Manangatang - Robinvale**  
 On Tuesday 7.4.92 Manangatang was closed as a Train Order Crossing Station and established as a Train Order Block Point Location. The Train Order Sections Ultima Block Post - Manangatang and Manangatang - Robinvale have been abolished and replaced with Train Order Sections Ultima Block Point - Manangatang Block Point and Manangatang Block Point - Robinvale.  
 Manangatang Block Point, situated at 457.280 km on the Down side of Ultima [sic], was equipped with Bi-Directional End of Train Detection, a telephone cabin, and Location Boards erected 1000 metres from the Block Point Indication Boards.  
 An intermediate location sign has been erected at Manangatang Intermediate Siding.  
 The following is to be particularly noted:
- Train Orders must clearly indicate Manangatang Block Point and not Manangatang;
  - Trains cannot cross at Manangatang Block Point.
  - Up trains are not to be permitted to leave Robinvale, and Down trains are not to be permitted to leave Ultima Block Point at the same time.
  - Trains are not permitted to be locked away at Manangatang Intermediate Siding for the purpose of other trains to pass or cross.
- [Amend the Train Order Working Book of Rules, page 2] (O.2483/92, WN 13/92)
- 12.04.1992 Clifton Hill**  
 On Sunday 12.4.92 Crossover 27 was converted from mechanical to clamp lock operation in preparation for the resignalling of Clifton Hill. Locking Bar Lever No 25 and Point Lever No 27 have been disconnected and the levers sleeved in the "Normal" position. Superintendent, Metrol and Signalling, to arrange for a Signaller to be on duty at Clifton Hill "B" Box for the duration (O.2474/92, WN 14/92)
- (14.04.1992) Standard Gauge Line**  
 Advice has been received that commencing forthwith, all curve speed boards relating to the XPT on the Standard Gauge Line will be progressively removed from service. All standard curve speed boards are to remain (O.2492.92, WN 14/92)
- 14.04.1992 Portland**  
 On Tuesday 14.4.92, the Up end Points leading from the Main Line to Thomas Borthwick and Sons (Pacific) Ltd Sidings were abolished. Insert a reference on Signalling Diagram No 8/90  
 (O.2467/92, WN 14/92)