KiwiRail

Train Control and Signal Box Manual

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1. Train Control

1.1 Description

The Train Control system brings the movement of all trains in any particular area under the direction of one individual. The close supervision by Train Controllers combined with the cooperation of all Operating Personnel results in better timekeeping and utilisation of track access.

1.2 Features and Functions of Train Control

A principal feature of Train Control is direct communication with all terminals in the area. The radio is used for direct communication between Train Controllers, Operators and Infrastructure Personnel.

The Train Controller directs and records the movements of all trains, minimises en route delays by altering train crossings as required, authorises on-track maintenance movements and oversees arrangements made by rail operators.

When required, Terminal Personnel and Signallers are responsible for advising the Train Controller on the arrival and departure times of trains. This information is plotted on the Train Control diagram in red, enabling the Train Controller to see immediately whether the train is maintaining time or running late. This is done by comparing the red line of the actual run with the train schedule drawn on the diagram.

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2. Train Control Diagram

The Train Control diagram is a portion of rail network represented by a distance versus time scale. The diagram is printed in green providing either a 12 hour (midnight to midday / midday to midnight) or 24 hour (midnight to midnight) plan of the day's scheduled activity for that portion of the rail network. Each day's diagram includes:

- a header containing the area the diagram applies to, and the date of operation
- a Train Controller sign-on section where the actual hours of duty are recorded, located at the top right-hand side
- the master schedule of trains, plotted on the distance versus time scale
- planned track activity
- a train delays column in the right-hand margin that provides space to record information relating to delays or disruptions not obviously identifiable on the distance versus time scale
- the right-hand margin is also used to record any additional information, such as:
  - active authorities at the time of handover, e.g., safe working authorities, track and time permits (Mis.60s), manual track warrants
  - certificates from signal technicians
  - any additional comments required to be kept on record including ORA numbers
- a table where trains operating on the portion of the network the diagram relates to, are recorded including:
  - train number
  - locomotives
  - Operator's name
  - freight train – gross weight and length
    - leaving the departure station
    - during passage through the controlled network after shunting at stations or sidings
  - passenger trains – composition
  - light locomotives
- a table on the bottom right-hand side for:
  - any applicable special conditions, and/or
  - system testing requirements to be completed on the day

2.1 Maintaining Accuracy

The diagram is a primary tool utilised by a Train Controller to provide a view of actual and anticipated location of all trains and track activity necessary to make safe, informed decisions or checks defined by various rules, regulations, and safe working processes.

An accurately completed Train Control diagram that is kept up to date enables a Train Controller to safely plan track occupancies, train movements and correct application of relevant safe working arrangements. This ensures all Rail Personnel are afforded the best opportunity to maintain on-time performance in the safest and most efficient manner.

The result of poor planning can lead to incorrect priorities or actioning ill-informed decisions that disadvantage one track occupation or train over another. This not only effects train performance, but it can also have detrimental impacts on pre-planned train crewing arrangements, resulting in breaches of allowable hours of work policies and/or creating unnecessary network disruption.

Train Controllers are responsible for ensuring that the prepared diagrams are correct before the day of use. Where possible, the next day's diagrams must be reviewed by the late shift Train Controller.

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On the day, anticipated train movements are plotted on the diagram in pencil using knowledge of basic running times and expected train performance. Train times should be updated at least every 15 minutes in automatic signalling areas.

Train Control diagrams are an official record and as such any errors or changes made by Train Controllers must remain visible. Under no circumstances should these errors be corrected by use of masking methods.

WARNING
Failure to keep the Train Control diagram up to date and accurate may result in either poor, unsafe decisions or application of safe working procedures.

2.2 Train Control Diagram Conventions

The conventions described in this document utilise different mediums, colours, and standardised notations to identify specific actions / events that occur throughout the network. Train Controllers must consistently apply the required conventions as described.

Pencil	Convention Description
Graphite (e.g., HB)	• used in all areas by Train Controllers to plot train movements and occupancies • to make notations on the diagram for later removal
Brown Pencil	• Network Access only • plotting signalling, points, or communication outages

Ink Pen	Convention Description
Black	• plotting track occupancies, closures, and temporary reduction in line speed • endorsing train numbers • to correct an error on the diagram

Blue	• plotting of operating authorities:
	  • track warrants
	  • Mis.50 operating instructions when signalling suspended
	  • Mis.60
	  • safe working authorities - 01, 02, and 03
	• listing of signal blocking in Auckland Metro Areas

Green	• Network Access and Train Control
	  • plotting trains not included in the pre-printed master train plan
	  • endorsing cancelled trains

Orange	• Network Access
	  • plotting planned power outages
	• Train Control
	  • to endorse overhead power isolation details

Purple	• Network Access
	  • plotting pre-arranged occupancies
	  • rusty rail conditions
	• Network Control Manager
	  • diagram audits

Red	• record actual train progress, including times, through stations

Highlighter	Convention Description
Blue	• to identify areas affected by severe weather warning

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Highlighter	Convention Description

Green	• to identify areas affected by either a planned or unplanned:
	  • signalling outage
	  • set of points that are secured
	  • communication outage / failure

Orange	• to identify planned and unplanned power outages affecting:
	  • overhead traction areas in the North Island (an orange ink pen can be used to endorse limits or other pertinent information relating to the outage)
	  • signalling suspension on the Midland Line in the South Island only
	• to identify electric locomotives on the network

Pink	• to emphasise safety specific events in effect:
	  • temporary reduction in line speed
	  • protecting a line obstruction
	  • compulsory stop protection with a controlled signal held at stop

Purple	• to identify areas where rusty rail conditions are in force • to identify when a planned or actual 'step away' break has occurred.
Yellow	• to identify heat alarm activations • to highlight call sign and radio ID of compulsory stop protection worksites • to identify signal blocking that is used for more than one occupation in Auckland Metro Areas • can be used to increase visibility or awareness to a specific event that is not covered by any other convention

Correction Tape	Convention Description
Correction Tape	• Network Access only • to correct an error on the diagram

Standardised Notations	Convention Description

Arrowheads
 	
	• the use of arrowheads when recording track activity / events / rail vehicle movements are used in the following situations:
	  • indicates a rail vehicle movement has either originated from or is moving into another train control area or branch line
	  • indicates a rail vehicle movement has either originated from the previous day or continuing through to the next day
	  • indicates an activity or event is either continuing from the previous day or continuing through to the next day
	• indicates the authorised clearance time of a track user

Ⓐ	• indicates a train has been advised of a condition on the network, e.g., temporary reduction in line speed
Ⓑ	• used on the Midland Line to indicate an occupation is being protected by blocking at either one or both ends of the occupation. Confirms that blocking is the protection method and is endorsed on the diagram at the end of the occupancy where blocking has been applied
©	• used in ASR areas where the Addressee of an occupancy is expected to call clear of a specific location / time to clear a portion of the original limits. Once confirmation is received a line is put through the © or by using a single tick
✓	• indicates a particular task has been completed but work or authority not yet cancelled, such as a planned call from a Locomotive Engineer or Addressee
✓✓	• indicates a previously authorised occupancy, line closure / blockage is clear or a temporary reduction in line speed has been cleared for normal running of trains
/ /	• a black dashed line through an occupancy or restriction is used to indicate an error on the diagram
———	• in Auckland Metro Areas, cross out signal blocking that is used for an additional occupancy when the occupancy is terminated.
M	• indicates the main as an originating or termination / end limit for a train movement or occupancy
L	• indicates the loop as an originating or termination / end limit for a train movement or occupancy
S	• indicates the siding as an originating or termination / end limit for a train movement or occupancy
O	• indicates an occupancy or train limit ending / terminating outside a station
CC	• indicates a crew change
MHRV	• indicates authority for multiple HRVs
PNB	• indicates a personal needs break

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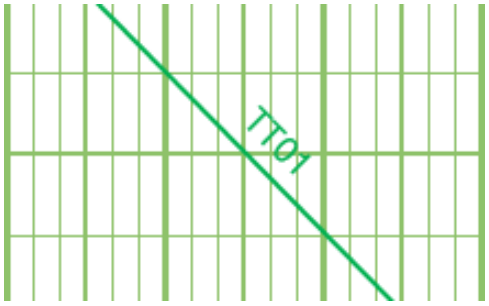
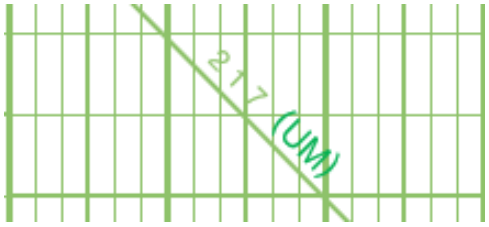
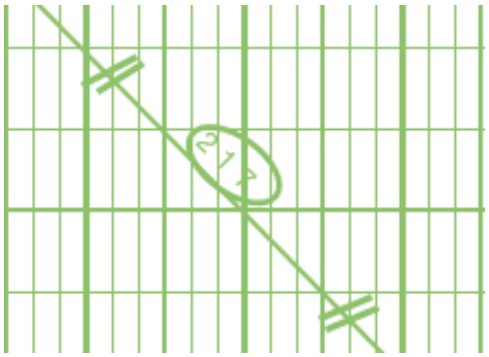
Standardised Notations	Convention Description
CM	• refers to the centre main
DM	• refers to the down main
UM	• refers to the up main
UDM	• refers to the up and down mains
EM or EL	• refers to the east main or loop
WM or WL	• refers to the west main or loop
WA	• indicates work at
WB	• indicates work between
PF or PT	• indicates proceed from or proceed to

NOTE
The Train Control diagram is a legal document that must be kept for seven years. Activity recorded must be accessible and remain legible when electronically scanned for storage.

2.3 Application of Conventions – Network Access

Trains	Examples
Scheduled / Extra / Shunts / Altered Timetable • Plotted and labelled in green pen	
ASR Bi-Directional or Wrong Line Running • Intended running line endorsed in green pen alongside train number, e.g., UM, DM	
Cancelled Trains • Train number circled in green pen with double dash along the train line	

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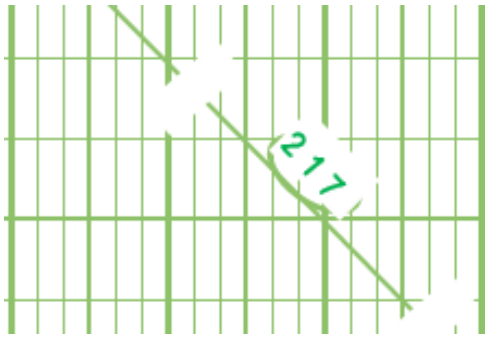
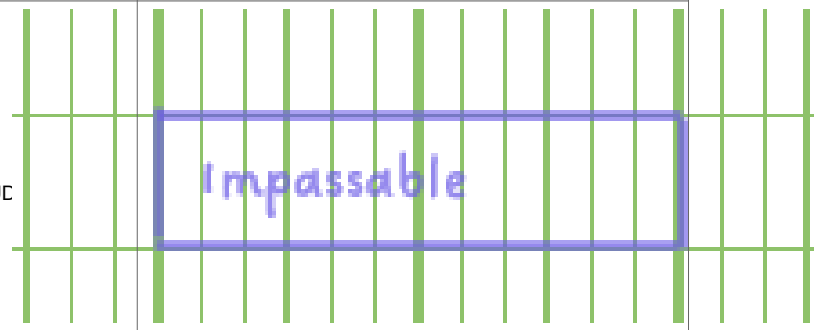
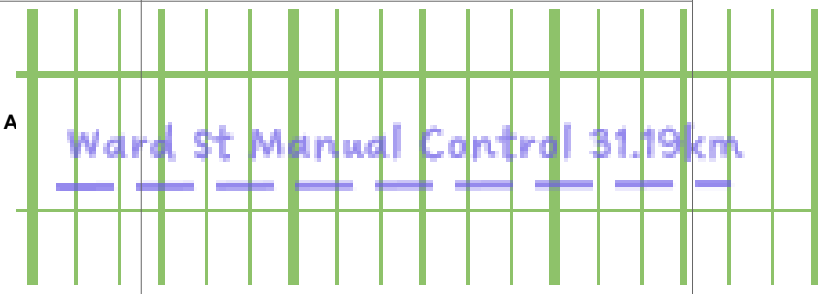
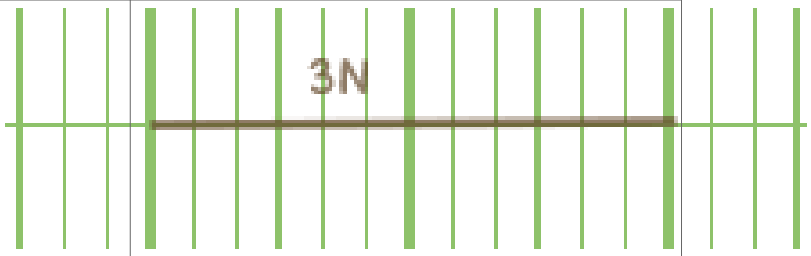
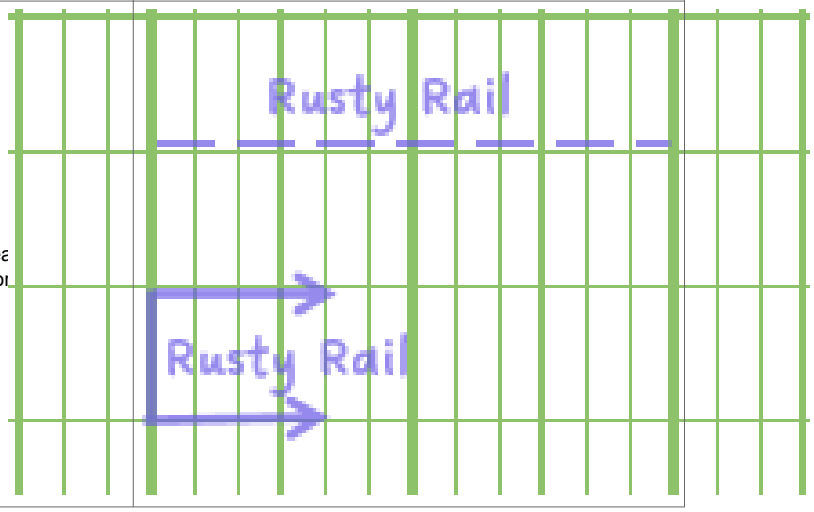
Trains	Examples
Reinstated Trains • Correction tape used • Train number reapplied alongside train line in green pen	

Restrictions and Outages	Examples
Line Impassable • Solid purple box endorsed with details, e.g., UM, DM, UD	
Level Crossing Manual Control and Disconnection of A • dashed purple line endorsed with level crossing details	
Points Secured • Solid brown line endorsed with points setting	
Rusty Rail • Dashed purple line (less than 2 km) or box with arrowhea (greater than 2 km) representing the area affected, endor **Rusty Rail**	

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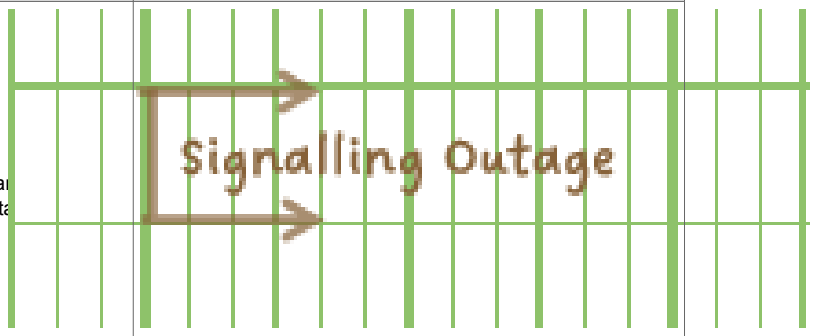
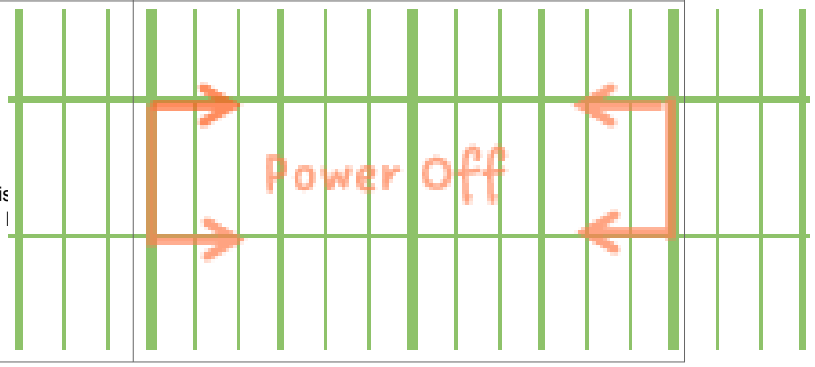
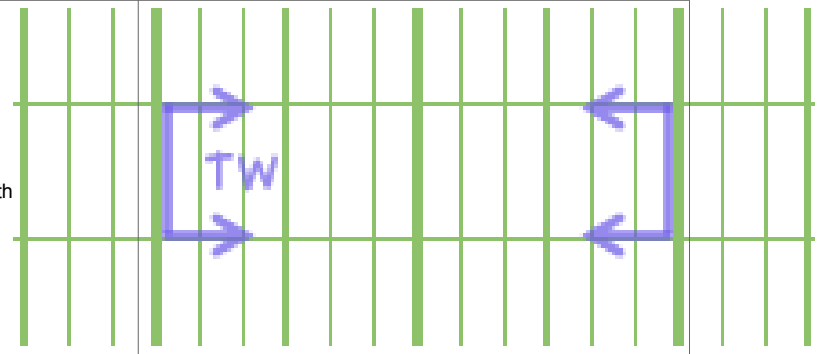
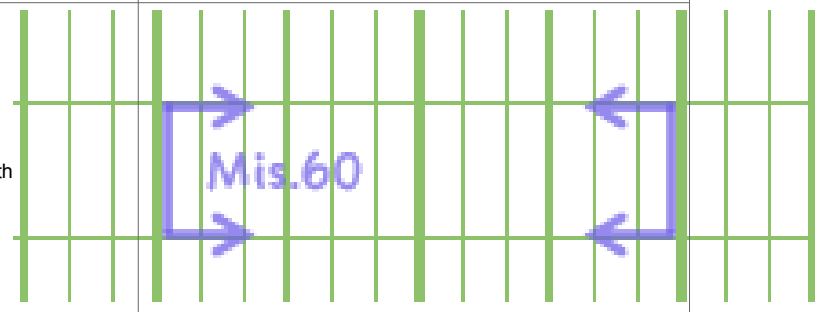
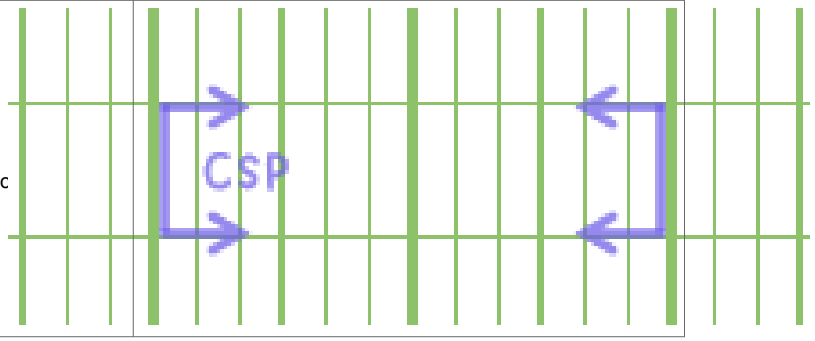
Restrictions and Outages	Examples
Signals, Radio, Communication Outage • Brown box with arrowheads covering the area affected a requested time for the outage, endorsed with outage deta	
Traction Overhead Power Isolation • Orange box with arrowheads at both ends covering the is area and requested time for the isolation, endorsed with	

Track Occupations	Examples
SO08 Track Warrant Control • Purple box with arrowheads at both ends representing th work area and requested timeframe	
TS03 Mis.60 Track and Time Permit • Purple box with arrowheads at both ends representing th work area and requested timeframe	
TS04 Compulsory Stop Protection • Purple box with arrowheads representing the planned wo and requested timeframe	

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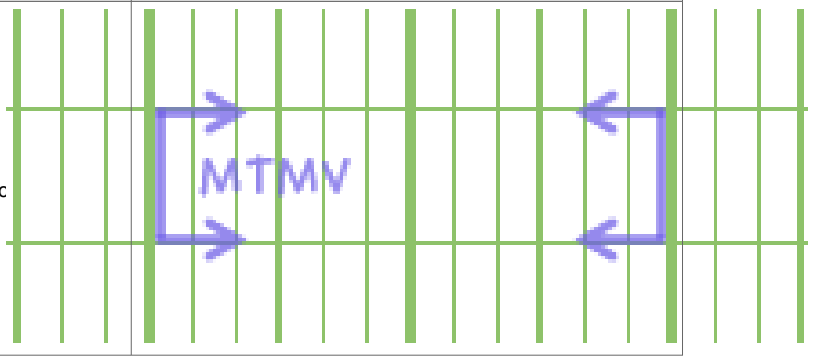
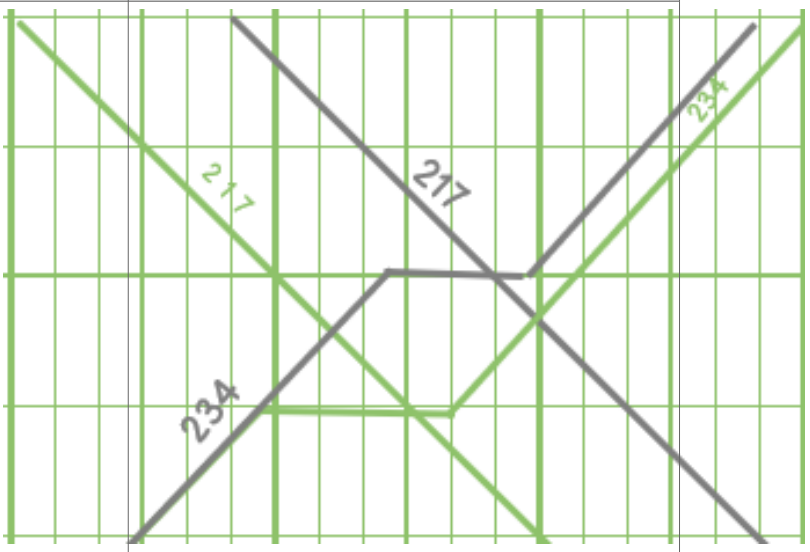
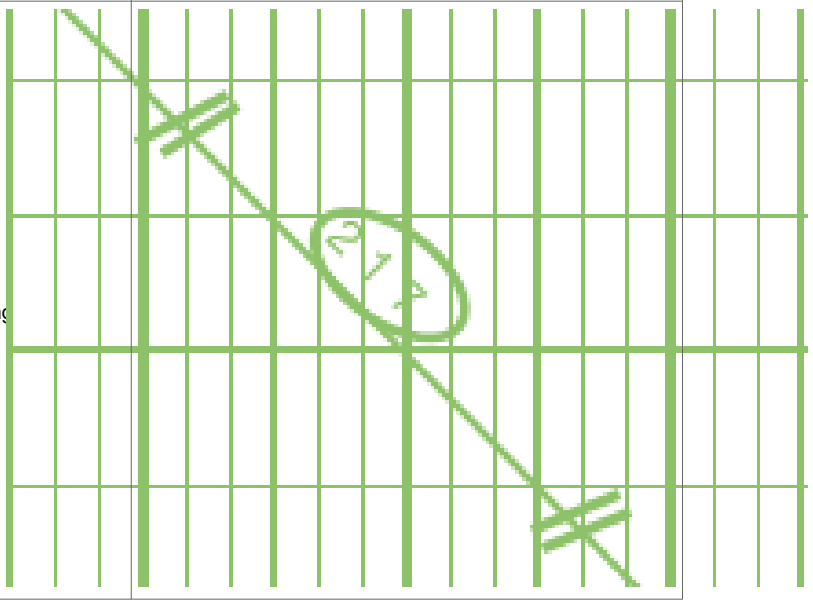
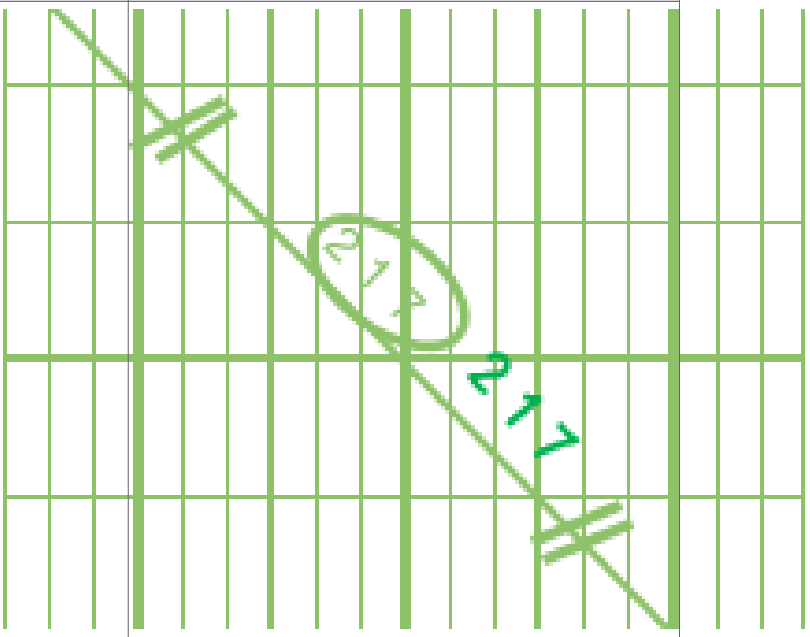
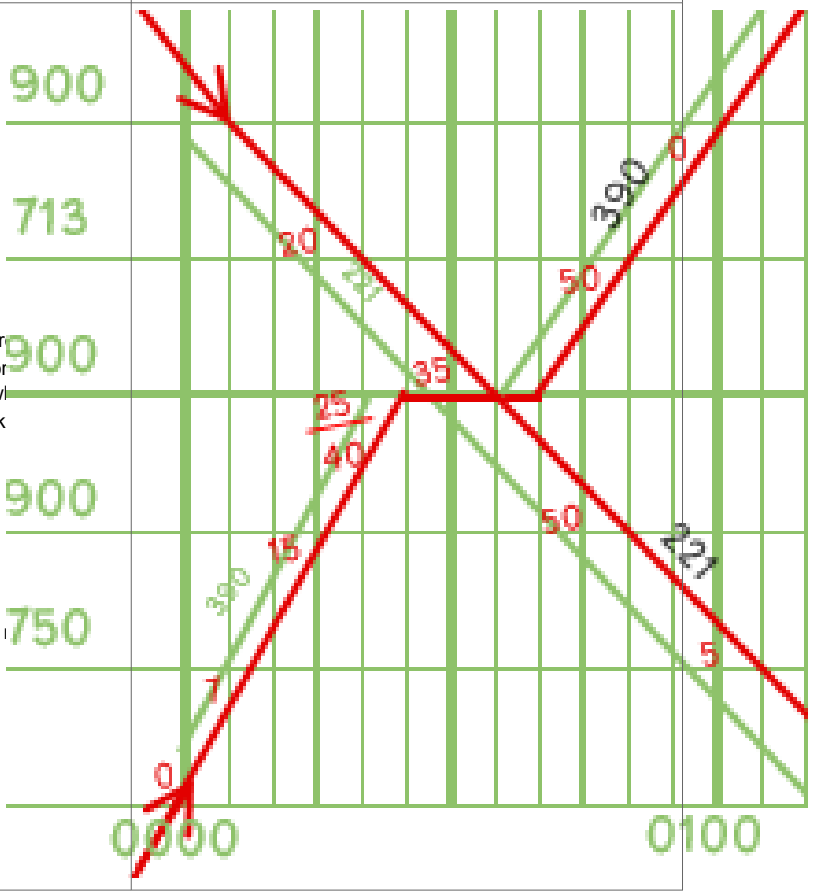
Track Occupations	Examples
TS11 Mobile Track Maintenance Vehicles • Purple box with arrowheads representing the planned wo and requested timeframe	

2.4 Application of Conventions – Train Control

Trains	Examples
Plotting • Drawn and labelled in pencil	
Cancelled Trains • Train number circled in green pen with double dash along line	

Trains	Examples
Reinstated Trains • Train number reapplied alongside train line in green pen	

Train Progress
• Drawn in red pen
• Time endorsed in minutes to the left of the red line
  • In congested metro areas, times endorsed where appr
• A train travelling to/from an adjacent area / branch line or from one day to the next will be represented by an arrowl
• Errors are to be drawn over in black pen with small black through the red line
Train Numbers
• Endorsed in black pen
  • Up trains – left of line
  • Down trains – right of line
• Not required in congested metro areas unless trains are minutes late or out of order
	

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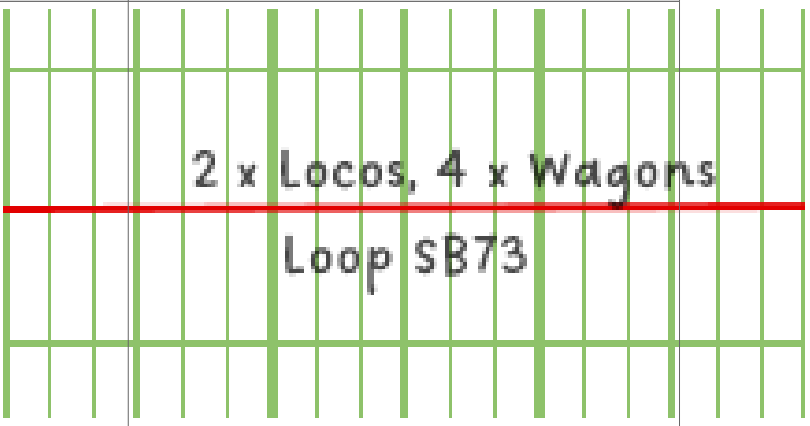
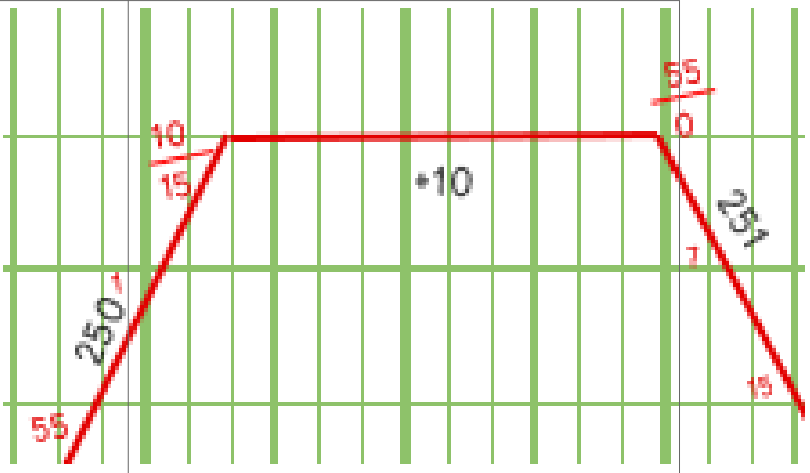
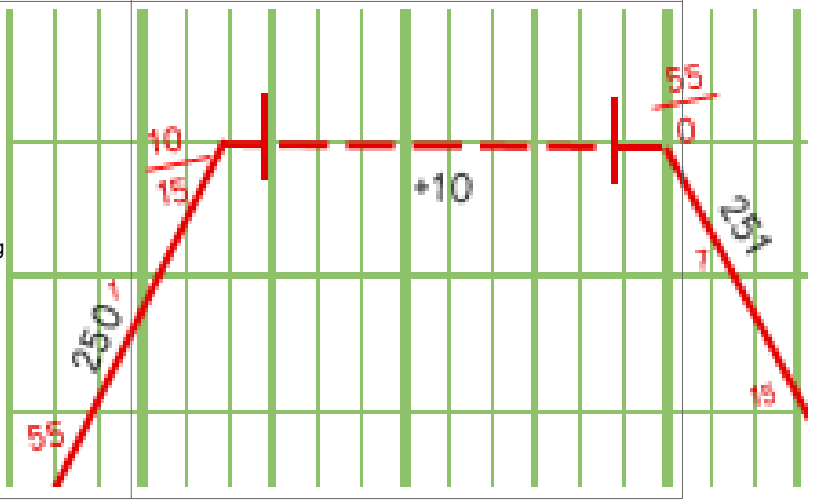
Trains	Examples
Occupying Main Line / Loop / Platform • Horizontal red line at the location • Line occupied and details endorsed in black pen	
Occupying Main Line Siding (not locked) • Horizontal red line at the location	
Occupying Main Line Siding (locked) • Red line closed off with | to indicate train locked in siding • Dashed red line to indicate train occupying siding • Red line with | to indicate train exiting siding	

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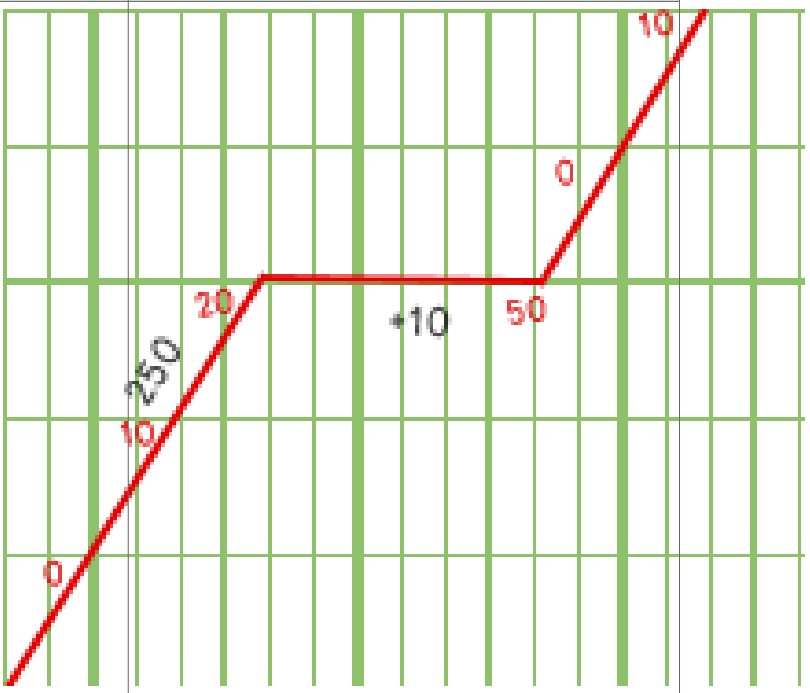
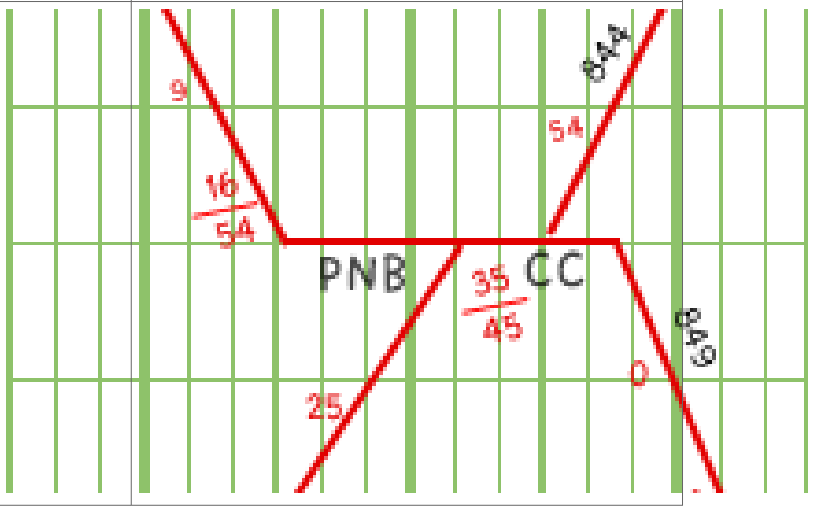
Trains	Examples
Shunting a Station or Siding • Horizontal red line at the location • Number of wagons added or removed endorsed in black underneath the red line	
Crew Change or Personal Needs Break • Endorsed in black pen, e.g., CC, PNB	

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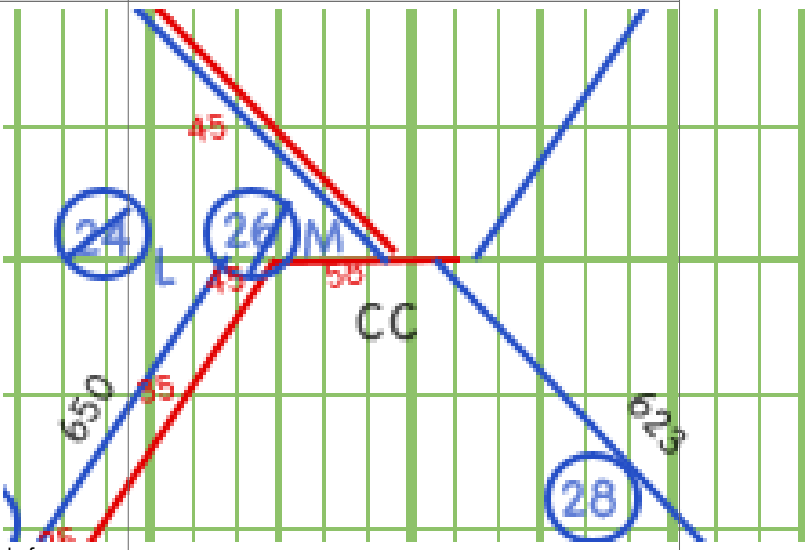
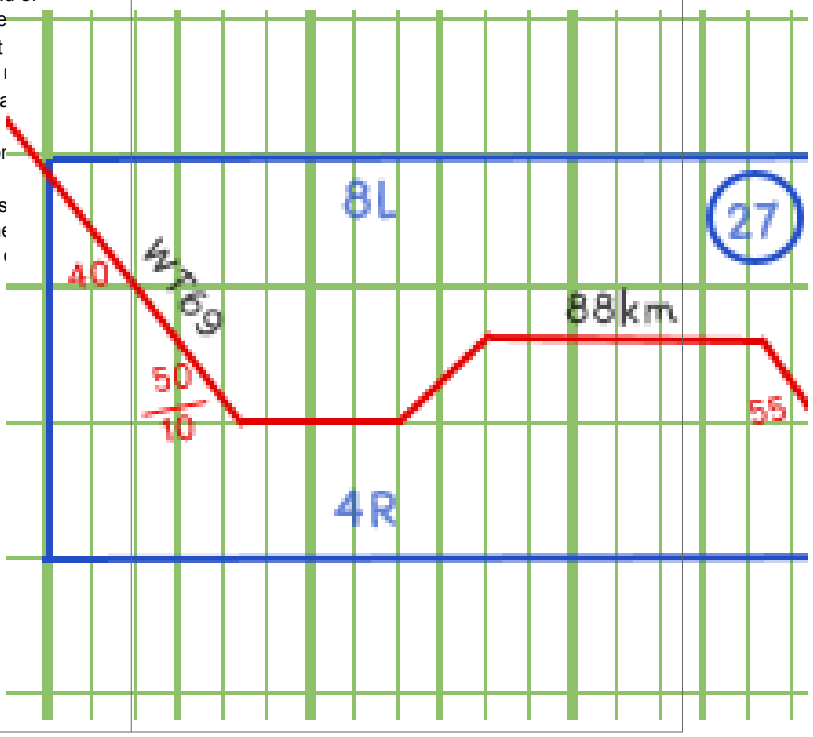
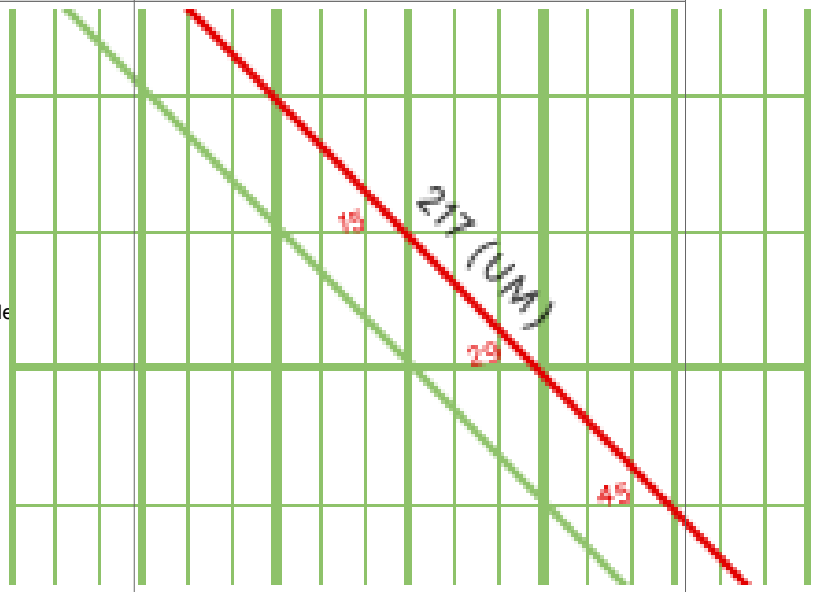
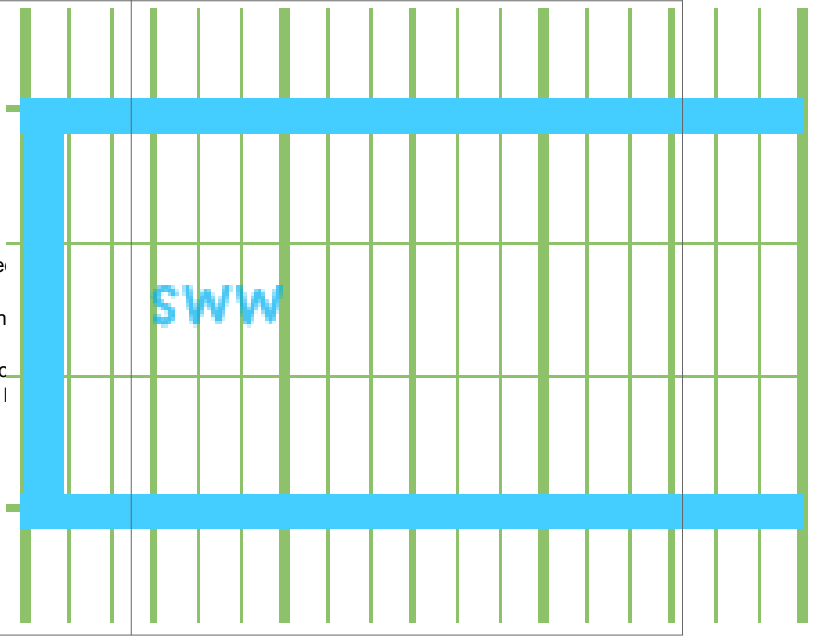
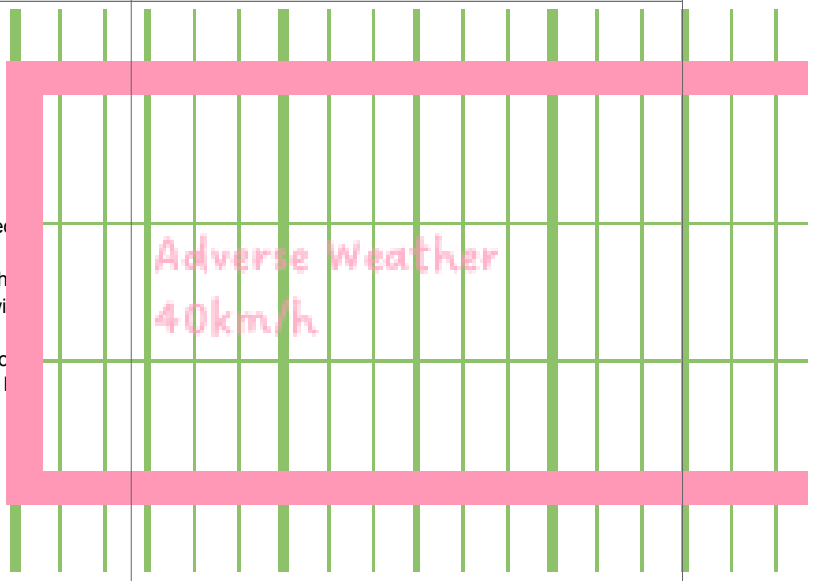
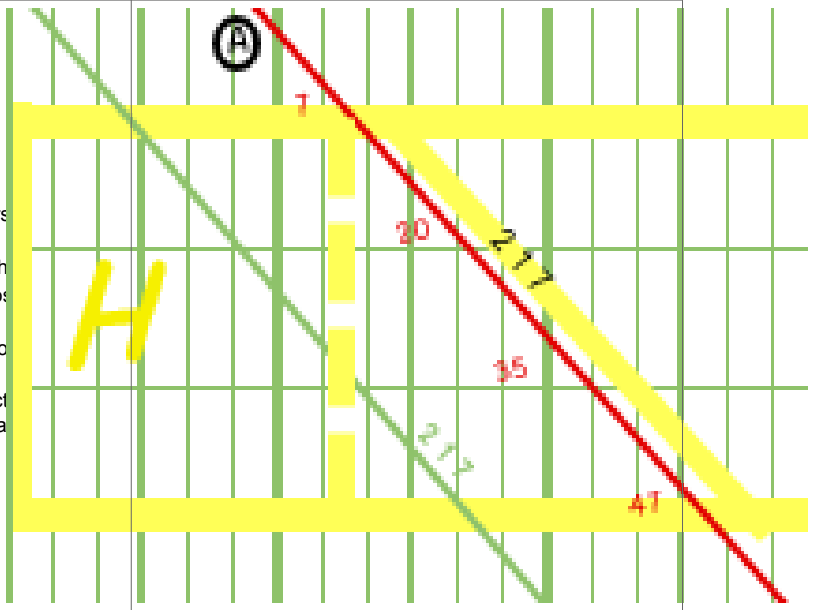
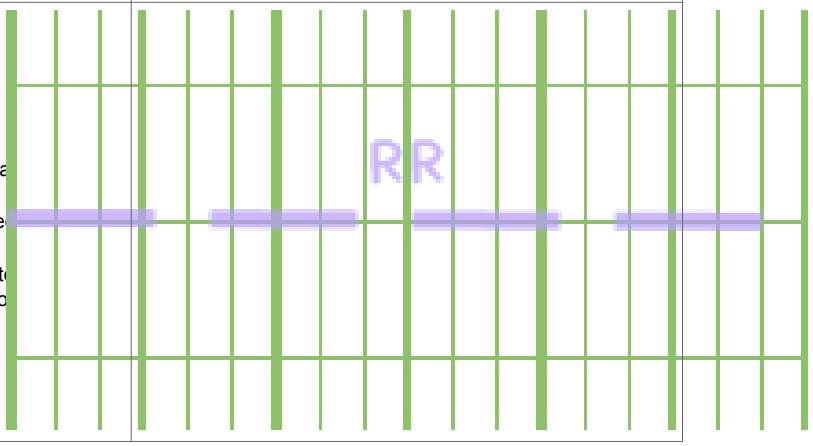
Trains	Examples
SO08 Track Warrant Control • Track warrant authority drawn in blue pen • Circled track warrant number endorsed in blue pen at end of authority and at check call locations to the left of the blue • Limits endorsed in blue pen at end of authority to the left line or inside work between box, e.g., M, L, S, O, signal, • Circled number is to be crossed out in blue pen on clear check calls, and cancellation of the warrant • The work between box to be closed off with a blue line or cancellation of the warrant • If a track warrant is to be carried over to the next day this represented by arrowheads and the circled number at the the line or box. The circled number must not be crossed	 

Trains	Examples
Signalling ASR Bi-Directional • Running line endorsed in brackets in black pen alongside number, e.g., UM, DM	
Safe Working Authorities • Refer to the guide tables in **Train Control and Signal Box Manual, 9. Safe Working Authority.**	

Conditions Affecting the Network	Examples
Severe Weather Warning • Blue highlighted box covering the area affected, endorse **SWW** inside box • When the warning is lifted the box is to be closed off with blue line • If condition continues for long periods, the box is to be cc drawn across the diagram with arrowheads to represent carried over to the next day	

Conditions Affecting the Network	Examples
Adverse Weather Restriction • Pink highlighted box covering the area affected, endorse details inside box • Notified trains endorsed with Ⓐ in black pen alongside th • When the restriction is lifted the box is to be closed off wi pink line • If condition continues for long periods, the box is to be co drawn across the diagram with arrowheads to represent carried over to the next day	
Heat Speed Restriction • Yellow highlighted box covering the area affected, endors inside box • Notified trains endorsed with Ⓐ in black pen alongside th • When a heat alarm returns to normal the box is to be clos a dashed yellow line • When the restriction can be removed, the box is closed o solid yellow line or alongside the train line • When the criteria can't be met to remove the heat restrict box must be continually drawn across the diagram with a to represent being carried over to the next day	
Rusty Rail • Purple highlighted dashed line or box covering the area a endorsed with **RR** alongside the line or inside box • When the condition has been lifted the box is to be close solid purple line or with two purple ticks ✓✓ • If condition continues for long periods, the line or box is t continually drawn across the diagram with arrowheads to being carried over to the next day	

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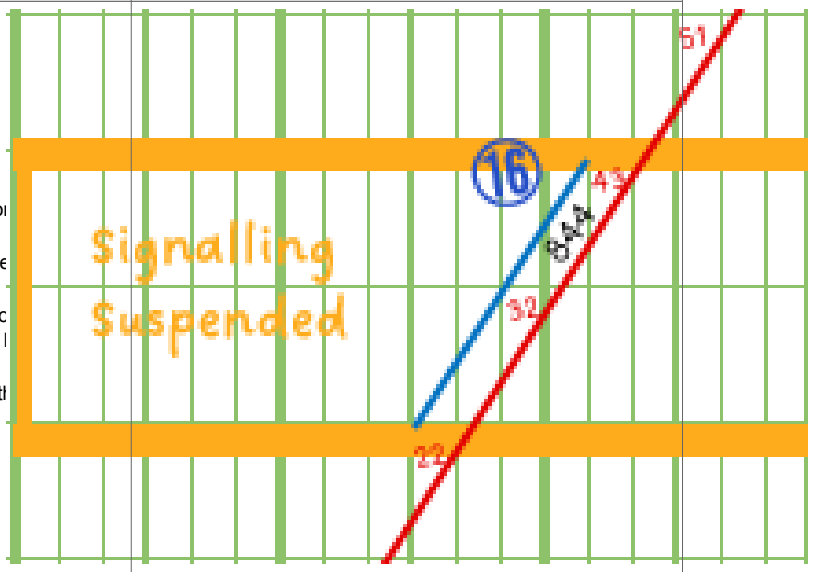
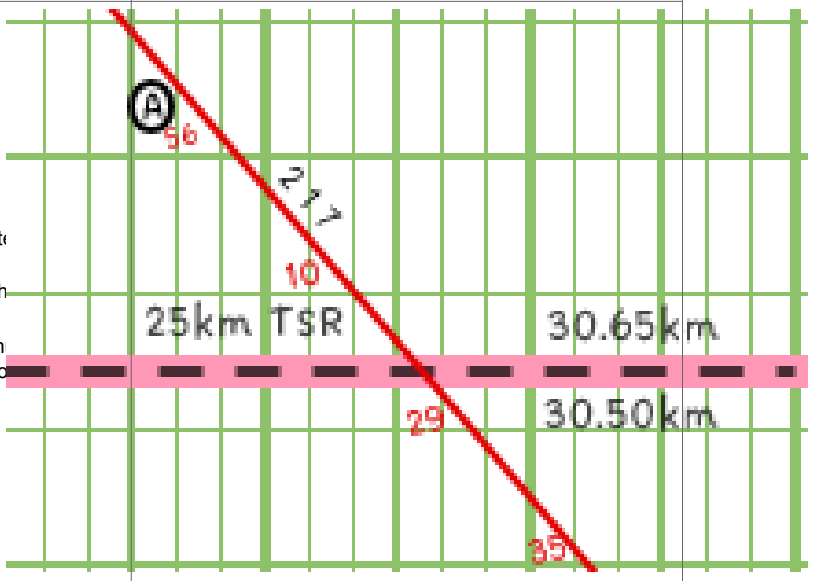
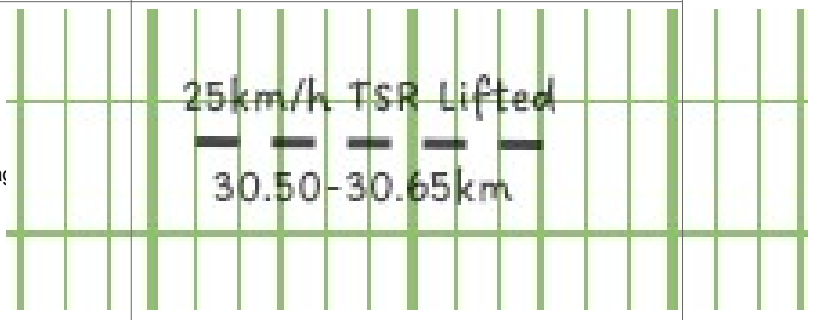
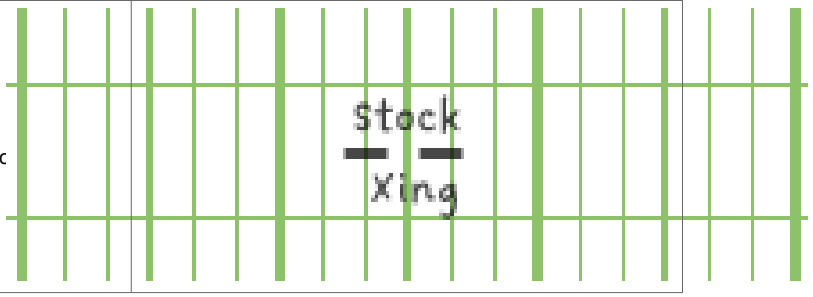
Conditions Affecting the Network	Examples
Suspension of Signalling (Midland Line) • Orange highlighted box covering the area affected, endo details inside the box • When the condition has been lifted, the box is to be close a solid orange line • If condition continues for long periods, the box is to be cc drawn across the diagram with arrowheads to represent carried over to the next day • Mis.50 drawn in blue pen with circled Mis.50 number at t the authority	
Temporary Speed Restriction • Dashed black line highlighted in pink, endorsed with met speed details • Notified trains endorsed with Ⓐ in black pen alongside th • Line clearance indicated by two black ticks ✓✓ • If condition continues for long periods, the dashed line m continually drawn across the diagram with arrowheads t being carried over to the next day	
Temporary Speed Restriction – Lifted • Dashed black line endorsed with 'Lifted', with the meter speed details of the lifted TSR	
Controlled Stock Crossing • Dashed black line endorsed with stock crossing at locatic • No requirement to show line clearance	

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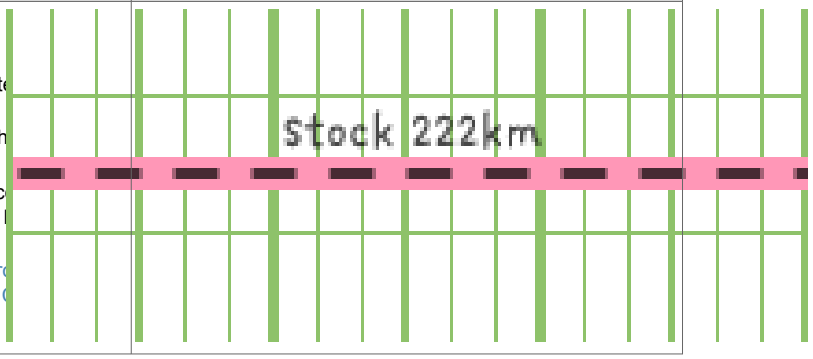
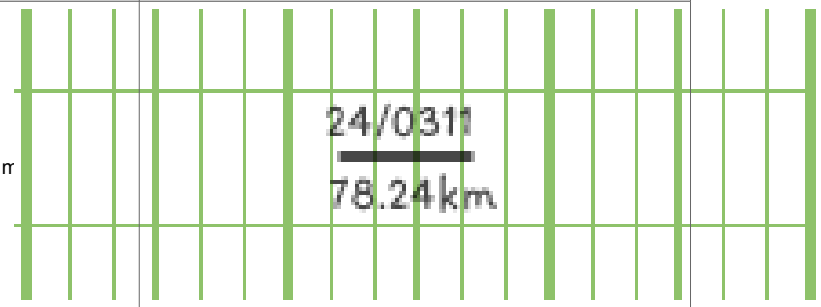
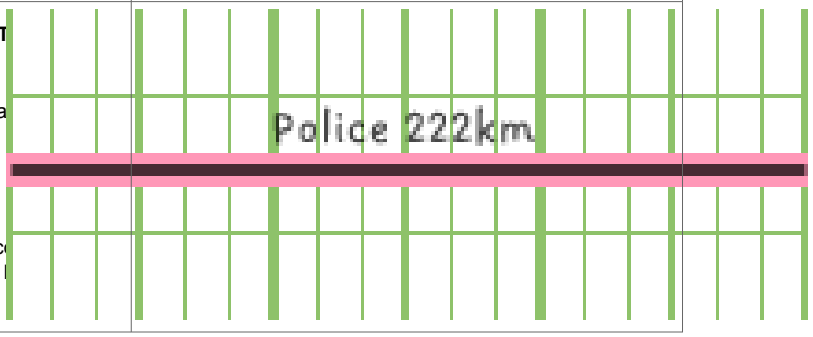
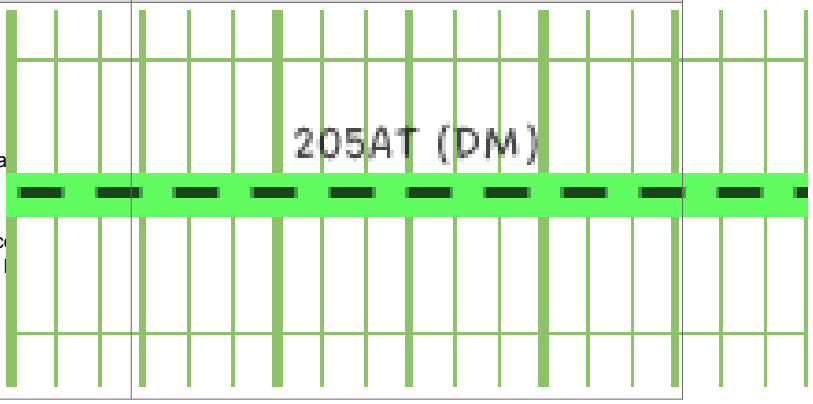
Conditions Affecting the Network	Examples
Uncontrolled Stock, Trespassers • Dashed black line highlighted in pink, endorsed with mete details • Notified trains endorsed with Ⓐ in black pen alongside th • Line clearance indicated by two black ticks ✓✓ • If condition continues for long periods, the box must be c drawn across the diagram with arrowheads to represent carried over to the next day • For speed restrictions / response, refer to Emergency Pr Manual, 15. Trespassers in Immediate Danger or GR06 Affecting the Network, 6. Railway Corridor Security.	

Unplanned Track Closures	Examples
Over Dimension Load Movement • Solid black line endorsed with ODL permit number and m • Line clearance indicated by two black ticks ✓✓	

Slips, Washouts, Track Defects, Emergency Services, T Emergency Protection
• Solid black line highlighted in pink, endorsed with metera details
  • Less than 2km – solid black line
  • Greater than 2km – black box
• Line clearance indicated by two black ticks ✓✓
• If condition continues for long periods, the line must be c drawn across the diagram with arrowheads to represent carried over to the next day
	

Outages and Failures	Examples
Dropped Tracks • Dashed black line highlighted in green, endorsed with tra and main if in multi-line areas • Normal operation indicated by two black ticks ✓✓ • If condition continues for long periods, the line must be c drawn across the diagram with arrowheads to represent carried over to the next day	

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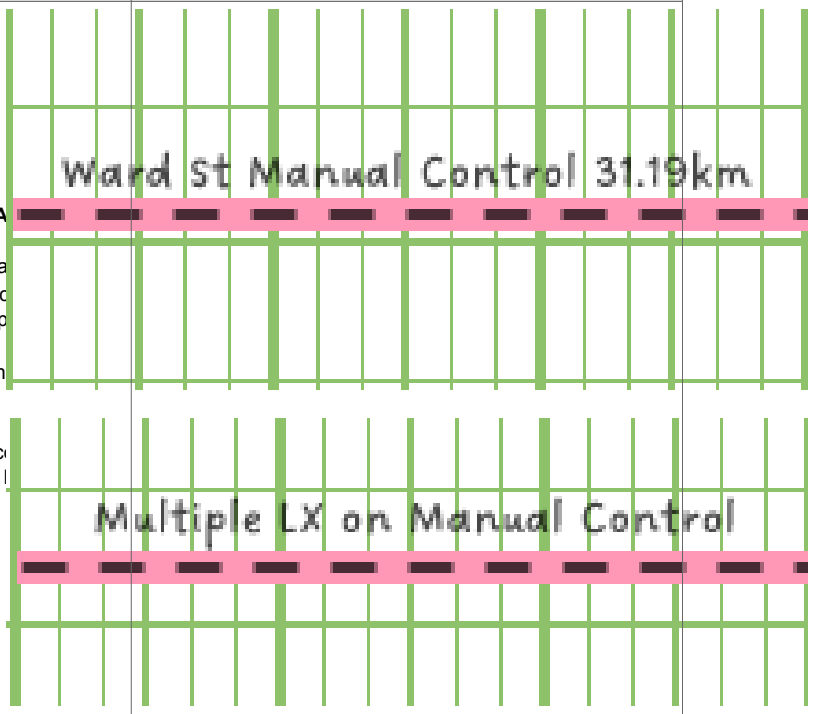
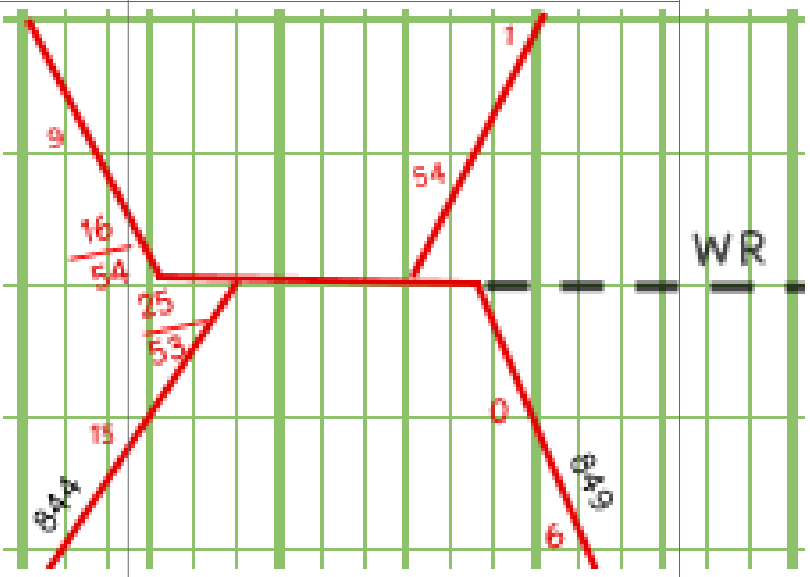
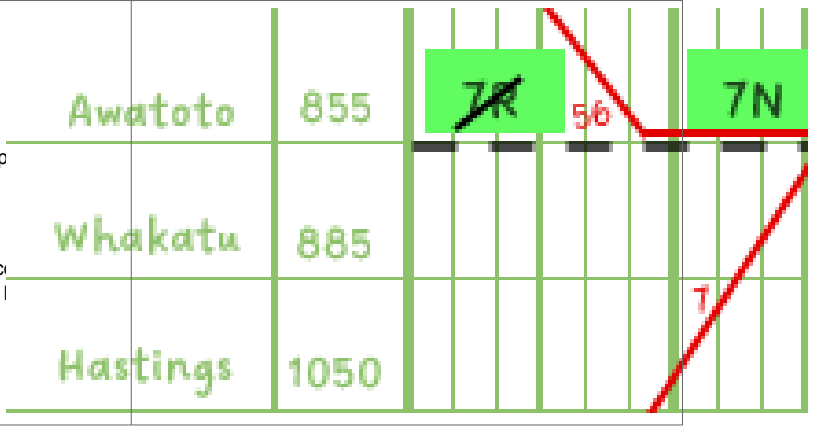
Outages and Failures	Examples
Level Crossing Manual Control and Disconnection of A • Dashed black line highlighted in pink, endorsed with deta • Multiple level crossings on manual control within a protec area are indicated by a dashed black line highlighted in p endorsed with **Multiple LX on Manual Control** • Level crossing details are to be recorded in the margin diagram or on a Level Crossing Manual Control form • Normal operation indicated by two black ticks ✓✓ • If condition continues for long periods, the line must be c drawn across the diagram with arrowheads to represent carried over to the next day	
Main Line Points Reversed (Midland Line) • Dashed black line with setting of points • Normal operation indicated by two black ticks ✓✓	
Points Failed / Secured • Dashed black line endorsed with number and setting of p • Setting of points highlighted in green • Previous setting crossed off in black pen • Normal operation indicated by two black ticks ✓✓ • If condition continues for long periods, the line must be c drawn across the diagram with arrowheads to represent carried over to the next day	

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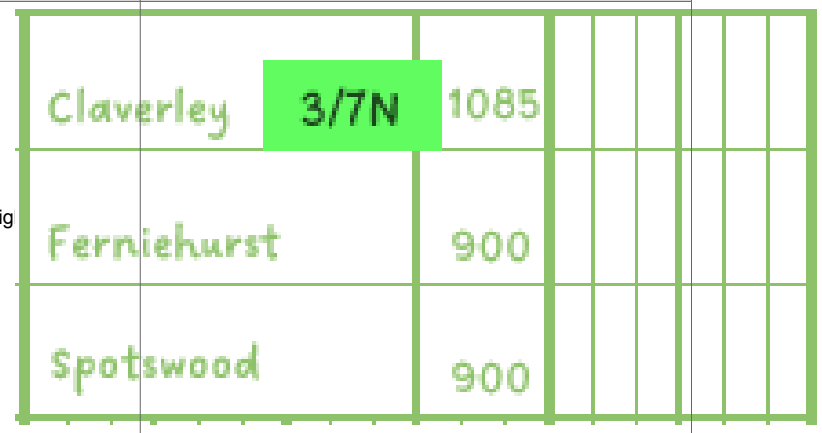
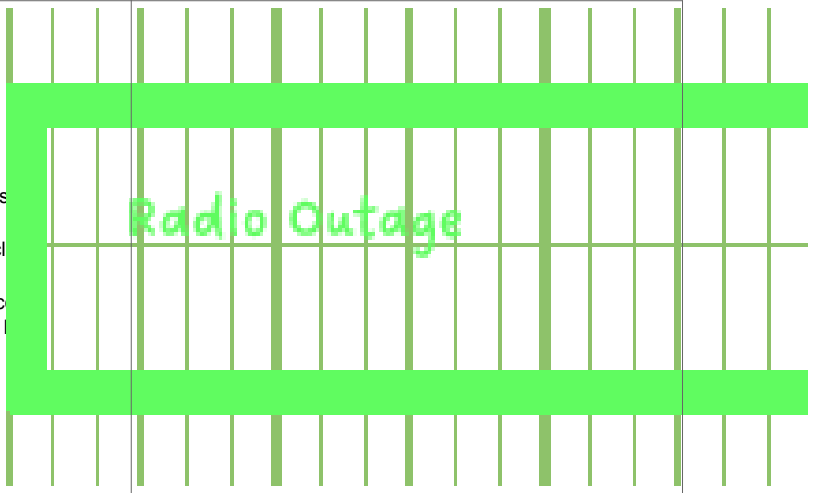
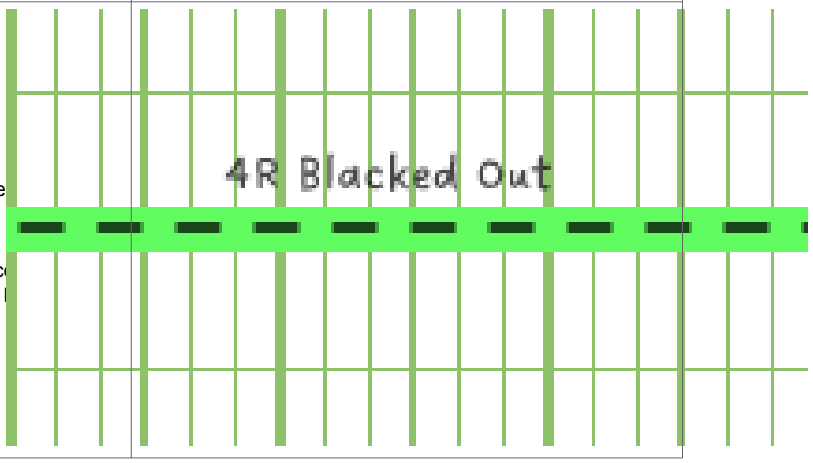
Outages and Failures	Examples
Points Secured Permanently • Setting of points endorsed in the diagram margin, highlig green • Normal operation indicated by two black ticks ✓✓	
Radio Outage • Green highlighted box covering the area affected, endors details inside box • When the condition has been resolved the box is to be cl with a solid green line • If condition continues for long periods, the box must be c drawn across the diagram with arrowheads to represent carried over to the next day	
Signals Fault • Dashed black line highlighted in green, endorsed with de outage or failure • Normal operation indicated by two black ticks ✓✓ • If condition continues for long periods, the line must be c drawn across the diagram with arrowheads to represent carried over to the next day	

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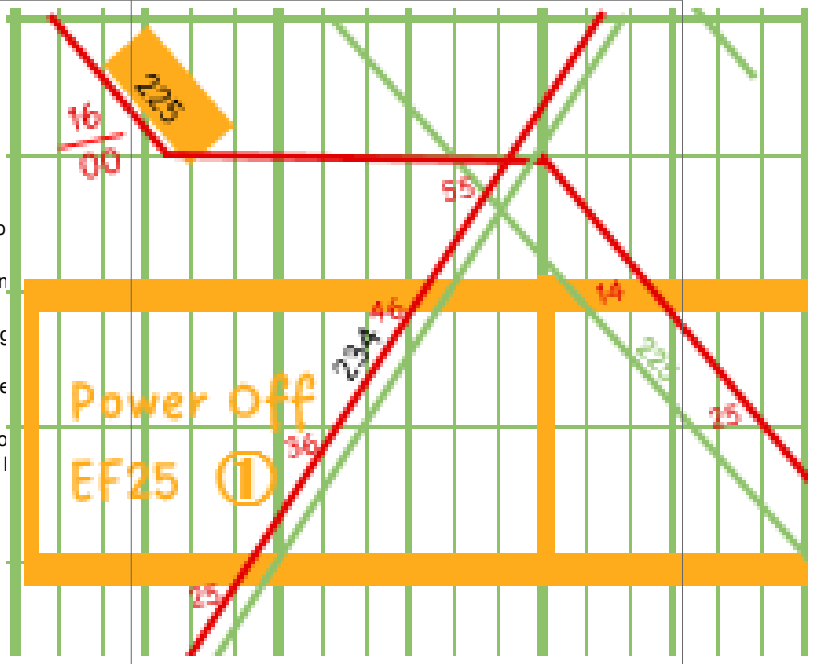
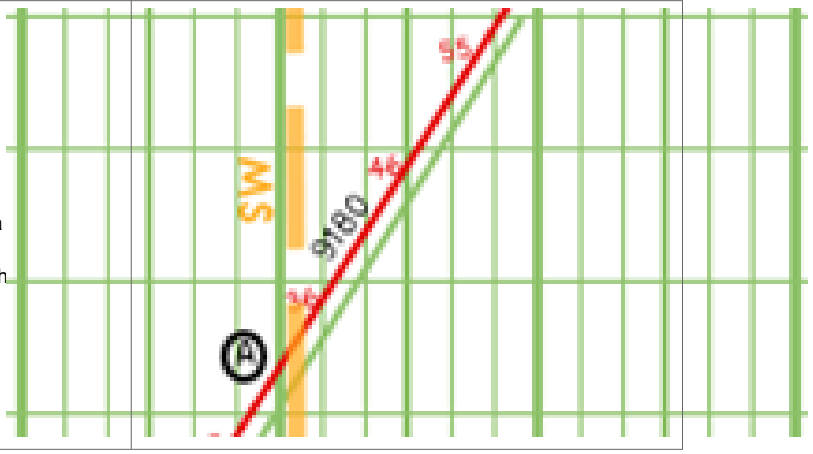
Outages and Failures	Examples
Tunnel Safety System Failure (CRL only) • Solid black box highlighted in green, endorsed with outag (e.g., TVS Outage) and main affected • When restored to normal operation, the box is to be close a black solid line highlighted in green • If the outage continues for long periods, the box must be drawn across the diagram with arrowheads to represent carried over to the next day	
Traction Overhead Power Isolation • Orange highlighted box covering the isolation area, endo details inside box, including EF number • Auckland Metro – power off reference number to be en provided • Train ID of electric hauled trains and light locomotives hig orange • When the power has been restored the box is to be close a solid orange line • If isolation continues for long periods, the line must be co drawn across the diagram with arrowheads to represent carried over to the next day	
Traction Overhead Power Switching • Orange highlighted dashed line or box covering the area endorsed with SW alongside the line • Notified trains endorsed with Ⓐ in black pen alongside th	

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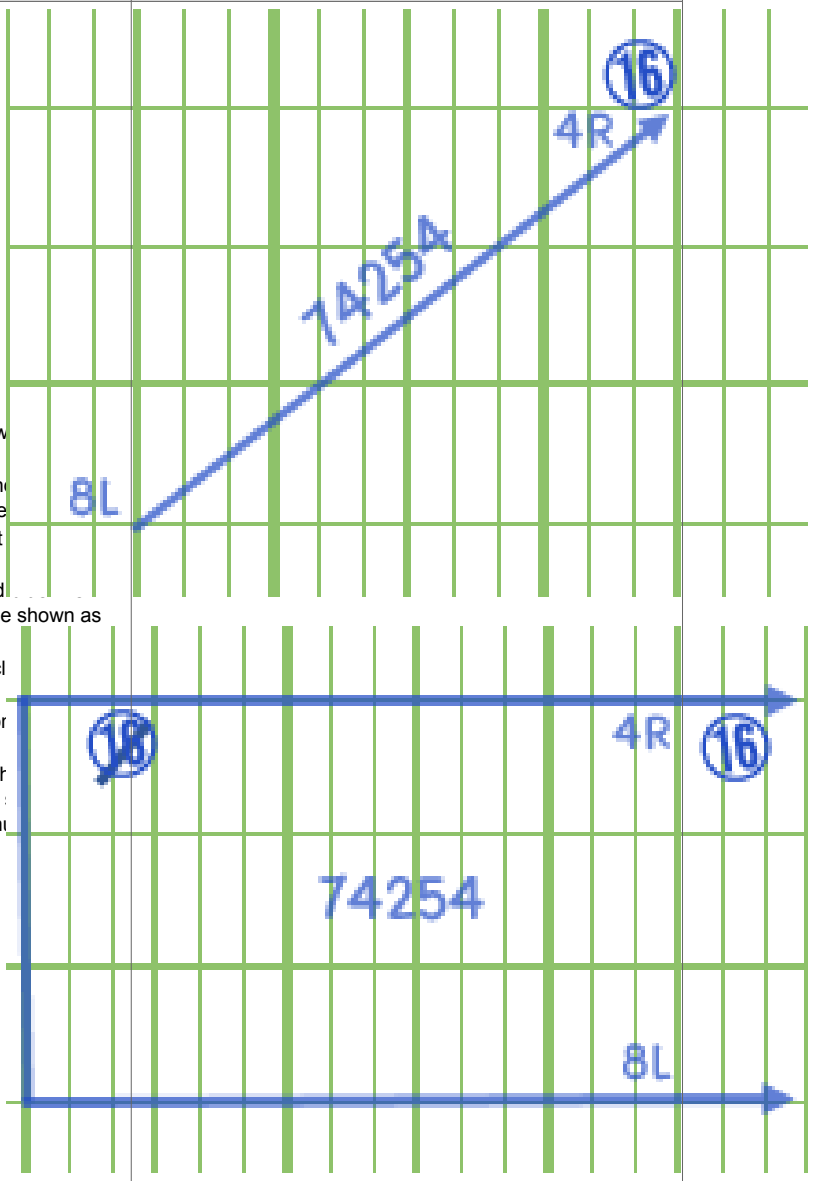
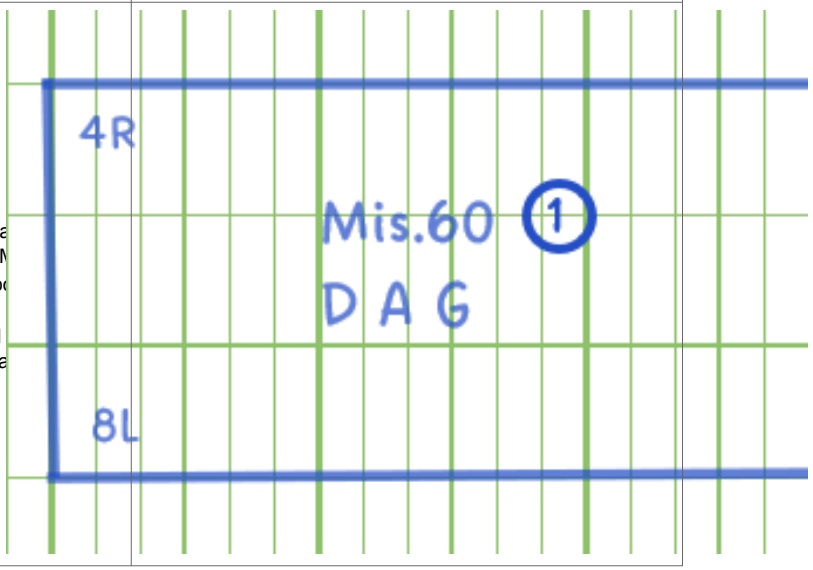
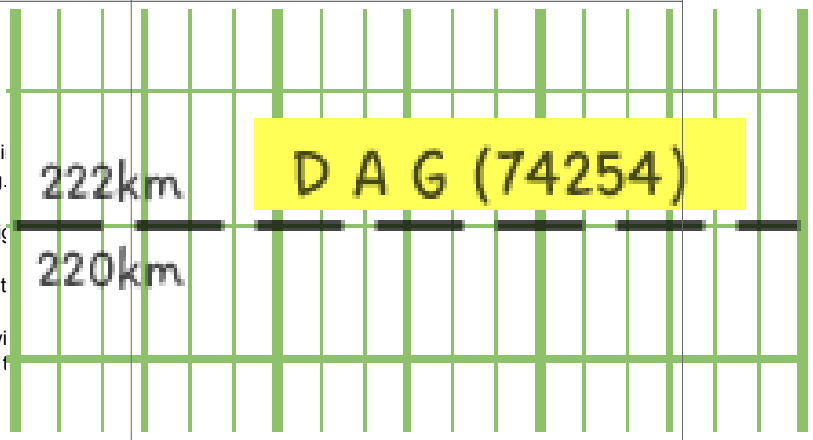
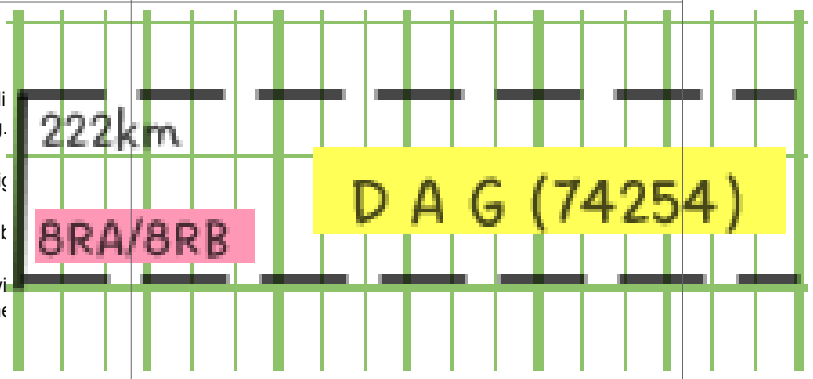
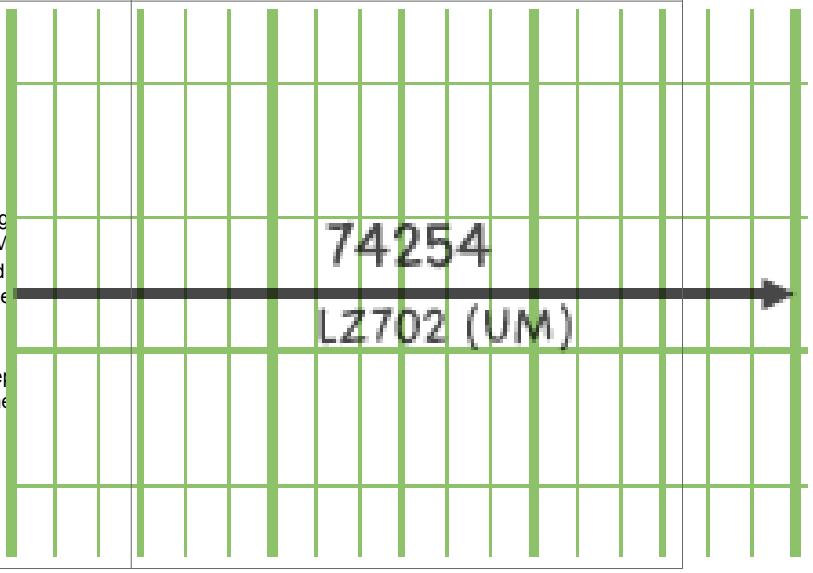
Track Occupations	Examples
SO08 Track Warrant Control **Proceed and Work Between** • Track warrant authority and call sign drawn in blue pen w arrowhead. Multiple HRVs endorsed with **(MHRV)** • Circled track warrant number endorsed in blue pen at en authority and at check call locations to the left of the blue • Limits endorsed in blue pen at end of authority to the left line or inside work between box, e.g., signal, meterage • An authorised extension of time is to be drawn as a solid with an arrowhead. An unauthorised time overrun is to be shown as a solid blue line without an arrowhead • The circled number is to be crossed out in blue pen on cl check calls, and cancellation of the warrant • The work between box to be closed off with a blue line or cancellation of the warrant • If the track warrant is to be carried over to the next day th represented by arrowheads with the circled number, call limits at the end of the line or box. The circled number mu crossed out	
TS03 Mis.60 Track and Time Permit • Solid blue box endorsed with circled authority number, ca limits and (if applicable) the line being used, e.g., UM, DM • Line clearance indicated by two blue ticks ✓✓ with the bo off in blue pen • If the Mis.60 is to be carried over to the next day this will represented by arrowheads with the authority number, ca and limits at the end of the box	

Track Occupations	Examples
TS04 Compulsory Stop Protection **Work Area – less than 2km** • Dashed black line endorsed with call sign, radio ID and li • Call sign to be abbreviated and highlighted in yellow, e.g. Alpha Golf to D A G • Compulsory stop protection at controlled signals to be hig pink • Line clearance indicated by two black ticks ✓✓, highlight yellow • If the worksite is to be carried over to the next day this wi represented by an arrowhead with call sign and limits at t the line	
Work Area – larger than 2km • Dashed black box endorsed with call sign, radio ID and li • Call sign to be abbreviated and highlighted in yellow, e.g. Alpha Golf to D A G • Compulsory stop protection at controlled signals to be hig pink • Line clearance indicated by two black ticks ✓✓ with the t off in black pen and highlighted in yellow • If the worksite is to be carried over to the next day this wi represented by arrowheads with call sign and limits at the the line	
TS05 Lockout Zones • Solid black line with an arrowhead, endorsed with call sig zone details and the line being used, e.g., UM, DM, UDM • An authorised extension of time is to be drawn as a solid with an arrowhead. An unauthorised time overrun is to be a solid black line without an arrowhead • Line clearance indicated by two black ticks ✓✓ • If work is to be carried over to the next day this will be rep by an arrowhead with call sign and limits at the end of the	

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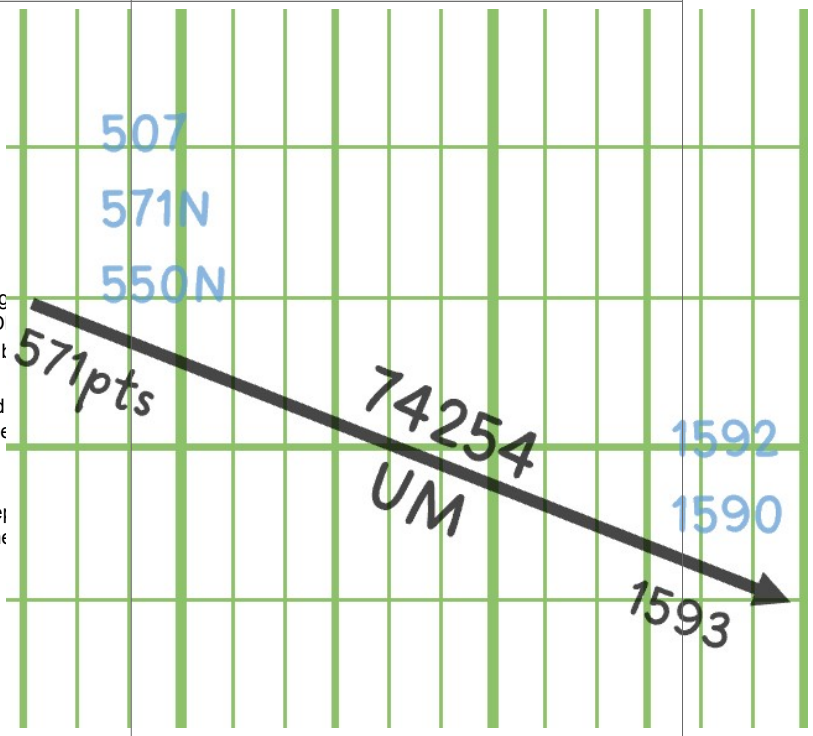
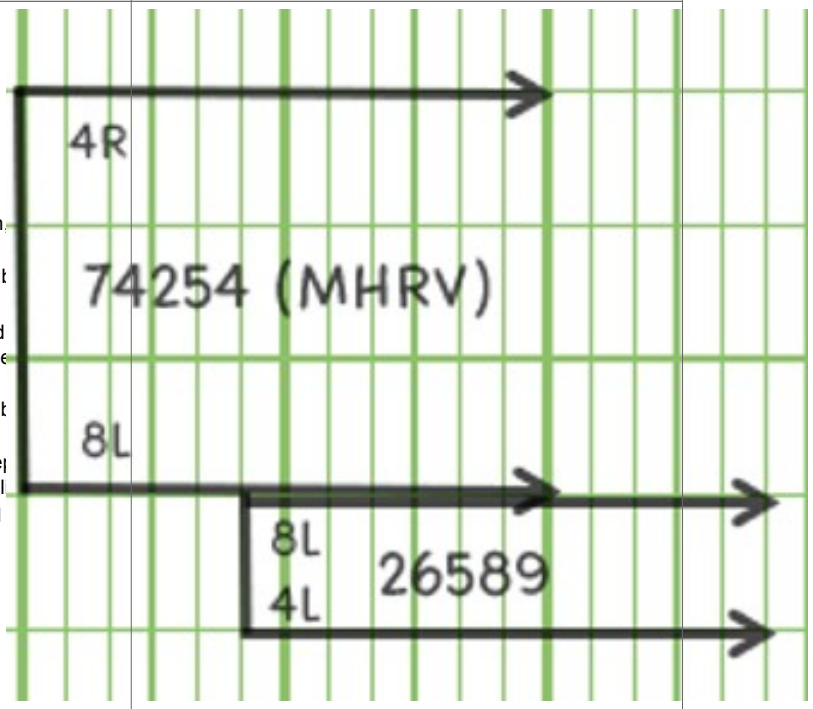
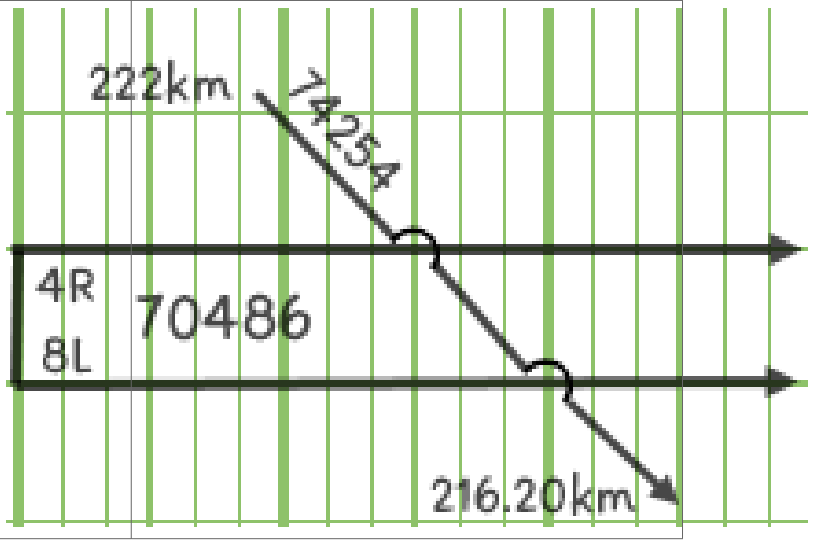
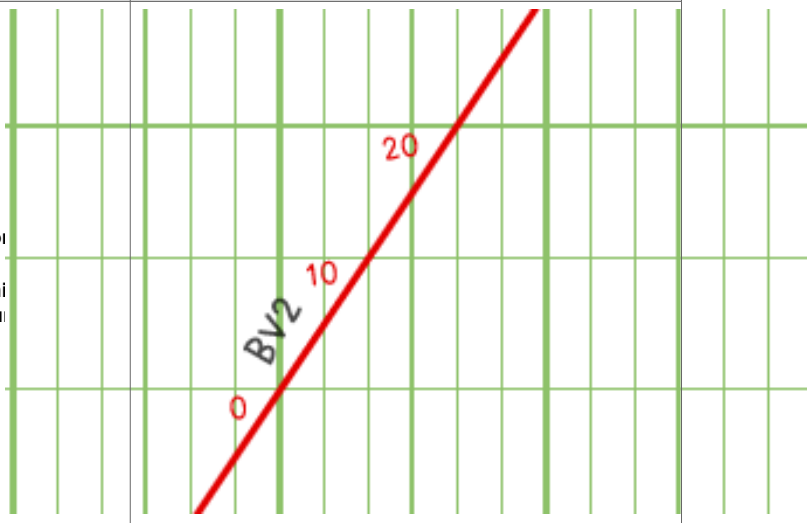
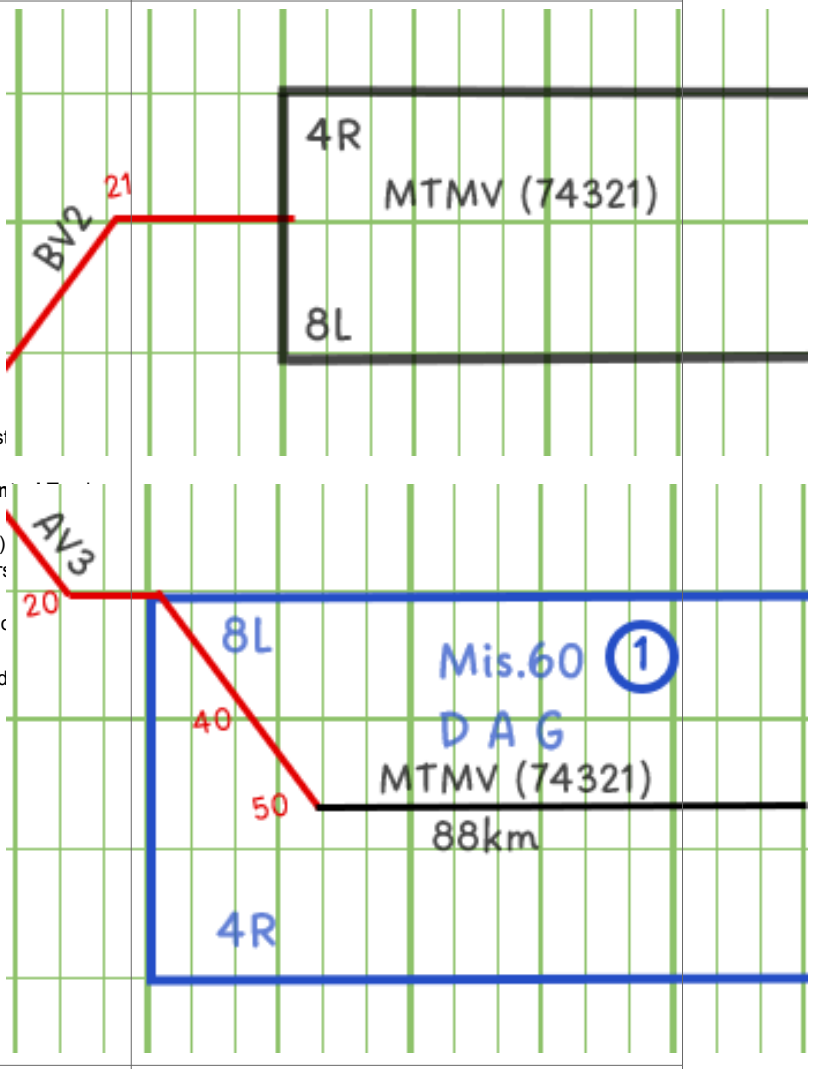
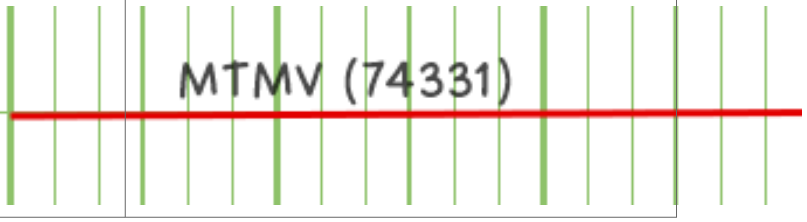
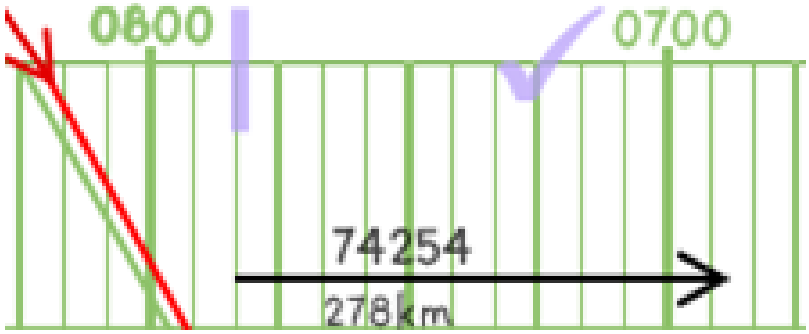
Track Occupations	Examples
TS06 Blocking, TS09 Foul Time **Proceed** • Solid black line with an arrowhead, endorsed with call sig and (if applicable) the line being used, e.g., UM, DM, UD • In Auckland Metro Areas, signal blocking endorsed with t • Multiple HRVs endorsed with **(MHRV)** • An authorised extension of time is to be drawn as a solid with an arrowhead. An unauthorised time overrun is to be a solid black line without an arrowhead • Line clearance indicated by two black ticks ✓✓ • If work is to be carried over to the next day this will be rep by an arrowhead with call sign and limits at the end of the	
Work At or Site less than 2km • Solid black line with an arrowhead, endorsed with call sig and (if applicable) the line being used, e.g., UM, DM • In Auckland Metro Areas, signal blocking endorsed with t • Multiple HRVs endorsed with **(MHRV)** • An authorised extension of time is to be drawn as a solid with an arrowhead. An unauthorised time overrun is to be a solid black line without an arrowhead • Line clearance indicated by two black ticks ✓✓ • If work is to be carried over to the next day this will be rep by an arrowhead with call sign and limits at the end of the	

Track Occupations	Examples
Work Between • Solid black box with arrowheads, endorsed with call sign, (if applicable) the line being used e.g., UM, DM, UDM • In Auckland Metro Areas, signal blocking endorsed with t • Multiple HRVs endorsed with **(MHRV)** • An authorised extension of time is to be drawn as a solid with an arrowhead. An unauthorised time overrun is to be a solid black line without an arrowhead • Line clearance indicated by two black ticks ✓✓ with the t off in black pen • If work is to be carried over to the next day this will be rep by arrowheads with call sign and limits at the end of the l • Adjacent worksites must be drawn as two separate solid boxes	
RP12 Conflicting Occupancy Request • Black curve drawn over the conflicting area(s)	

MTMVs	Examples
Travelling as a Train • Movements endorsed in red pen (refer to **2.4 Applicatio Conventions – Train Control**, Train Progress table) • Vehicle details endorsed in accordance with **Train Runni Timetabling Manual, 5.3.2 Work Trains and Trains Ru Under TS11 Mobile Track Maintenance Vehicles.**	

Working
• When working as a single worksite with Operator reques protection:
  • Refer to **2.4 Application of Conventions – Train Con** Occupations
  • Worksite to be endorsed as MTMV (including radio ID)
• When working within a multi worksite, movements endor
  • In red pen when coupled (refer to **2.4 Application of Conventions – Train Control**, Train Progress table), c
  • In black pen when uncoupled
  • Vehicle details to be endorsed as MTMV (including rad
	

Stabled • Endorsed in red pen (refer to **2.4 Application of Conver Train Control**, Train Progress table) • Vehicle details to be endorsed as MTMV (including radio	

Other	Examples
Step Away Break • Vertical purple dash at the time of planned step away • Purple tick at the time of actual step away	

2.5 Identifying Limits of a Track Occupancy or Safe Working Authority

From one location to another – a horizontal line with an arrowhead across the time scale with the start and finish limits identified by meterage, points, signal, or intermediate board, and in multi-line areas, the line being occupied, at the beginning and end of the line, and call sign identifier recorded alongside the plot line.

Working between meterages / locations – a box with arrowheads indicating the extent of the limits identified by meterage, points, signal, or intermediate board, and in multi-line areas, the line being occupied, and call sign identifier recorded inside the box.

Working at a single location – a horizontal line with an arrowhead across the time scale with the location of work identified by meterage, points, signal, main, loop, road, and in multi-line areas, the line being occupied, and call sign identifier recorded above/below the plot line.

2.6 Identifying Trains ‘still to be advised’ of Temporary Speed Restrictions

To identify trains ‘still to be advised’ of temporary speed restrictions:

- a dashed black line emphasised in pink highlighter (see figure below) must be drawn across the diagram at the meterage where a speed restriction is applied. This is to cover the period that will ensure approaching trains are advised before they are authorised to enter the section where the speed restriction has been applied
- the meterage details, level crossing name (if applicable), speed, and warning board status are to be endorsed alongside the dashed black line
- **SO07 Signal Blocking** or the Reminder function where provided, must be applied to prevent entry into the affected section of track for each movement, until the TSR has been advised
- as each train is advised, endorse the diagram with Ⓐ adjacent to the plot line for the train
- apply the process until the Train Controller has ensured that all future trains will have the restriction on the train work order at the point of departure or the restriction is lifted. For metro services, this can include advice from the passenger operator that all services have been provided with the new speed advice

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Example of trains advised

IMPORTANT
Not all en route trains receive new train work orders at intermediate stations, and some work orders may be printed hours before a train's scheduled terminal departure. Care is required to ensure en route trains are checked to confirm they have received the speed restriction information.

2.7 Train Control Diagram Folding and Endorsement Requirements

The Train Control diagram must be folded to enable the active portion of the diagram to remain visible at all times.

When an event has not been reported as completed, the outstanding event report must remain visible to the Train Controller.

The Train Control diagram must be folded to retain visible meterages and station names on either the left- or right-hand side (as appropriate). This practice is designed to permit the verification of meterages and locations when managing work.

Active – means a minimum of the last hour of completed events and the next four hours of planned / scheduled events.

Event – means an activity that has been scheduled or plotted on the Train Control diagram to occur at a defined time and location.

IMPORTANT
Care must be taken not to fold away events that are still active and may not have been drawn far enough into the future along the diagram time scale.

IMPORTANT
To maintain situational awareness, details of track occupancies, restrictions, outages, failures, and any other conditions affecting the network must be replicated on the Train Control diagram at regular intervals, and within one hour of a planned handover.

2.8 Train Control Diagram Self-Auditing and Overdue Events

This practice requires a Train Controller to continuously review outstanding events by reference to the time scale and plotted events to ensure operations are occurring as planned.

When an event is found to be overdue by more than 15 minutes, the Train Controller must initiate communications with the train or track user to identify why the event is overdue.

When communications cannot be established, the Train Controller must initiate emergency procedures in accordance with Emergency Procedures Manual, 9. Overdue Rail Vehicle to locate the train or track user.

2.9 Electronic Train Graph (ETG)

2.9.1 Application

The ETG is primarily used to display:

- scheduled and actual train movements
- protected work areas that use the Track Occupancy functions.

When using the ETG (except for the Auckland Metro area), the Train Controller is not required to record the movement of trains on the Train Control diagram unless:

- using **TS09 Foul Time**, then:
  - the last train cleared must be recorded, and
  - the approaching train must be plotted.
- issuing a Safe Working Authority, then:
  - the line clearance (last train or track occupancy) must be recorded
  - the opposing train must be plotted
  - the train receiving the SWA must be recorded within the limits of the SWA.
- in Track Warrant areas
- specified in Local Network Instructions.

IMPORTANT
Unscheduled trains must still be plotted on the Train Control diagram.

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IMPORTANT
If the ETG fails or the timetable is incorrect, the Train Controller must record all train movements on the Train Control diagram.

IMPORTANT
The ETG Notes function must not be used to record safety critical information.

2.9.2 Train Profiles

When the ETG is operational, each train must have a train schedule created on the ETG and be assigned to the train describer.

When a train schedule (such as a shunt) requires additional or return movements, you must add a suffix to the train number.

The suffix must be a different letter of the alphabet. For example:

- WT26 becomes WT26a, then WT26b etc.
- AV3 becomes AV3a, then AV3b etc.

NOTE
Suffixes may be omitted when issuing safe working or other authorities.

2.9.3 Conditions Affecting the Network (CAN)

The following Conditions Affecting the Network (CAN) must be recorded on the ETG:

- Compulsory Stop Boards (imported automatically from OMS)
- Adverse Weather
- Overhead Power (isolation or outage).

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3. Train Controller

3.1 Workload Management

Train Control shifts are assigned areas of control that normally afford the capacity to deal with unplanned and/or unpredictable events. Areas of control are set by subjective assessment based on the timetable, safe working systems, call levels, Controller experience and consultation.

When unplanned or irregular events occur within a Train Controller's area and the resulting workload exceeds their capacity to carry out their duties, Train Controllers are empowered to decline requests, prioritise calls and not respond to low-priority calls or tasks.

In such situations, Train Controllers:

- should apply the following general priorities when deciding what to deal with:
  - Priority 1 - respond to emergency and safety situations, such as emergency calls, radio alarms, faults and speed restrictions
  - Priority 2 - apply safety processes such as reading out/back of authorities and authorisations and application of protection
  - Priority 3 - the movement of premier and passenger trains or the initiation of a major block of line
  - Priority 4 - the movement of other trains
  - Priority 5 - planned track maintenance using major plant/activity/resource
  - Priority 6 - routine maintenance or inspections.
- need to advise the Network Control Manager, who must then provide support by:
  - advising Area Managers and field personnel that delays and cancellations are necessary, and/or
  - taking steps to cancel appropriate lower-priority field activity, and/or
  - determine if control areas can be changed/split to balance workload, and/or
  - call in additional staff to assist.

Train Control Area Mergers

Network Control Managers may be required to merge Train Control areas at short notice to cover absence, provide relief on shift, or due to workload spikes for extended durations.

Once all resource options within the rostering framework have been exhausted, the workload of the proposed combination must be assessed:

- assess the ability to respond to metro disruption and serve metro timetables
- actively cancel activity in advance in accordance with the general priorities listed above to maintain a workload as low as practical. The workload must not exceed a Train Controller's normal capacity to transact all requests
- consult the affected Train Controller directly and obtain agreement
- decision to be reviewed by a member of the Network Access and Control Leadership team
- increase NCM shift monitoring at intervals of 30 – 60 minutes with entries endorsed in the 'Shift Log'
- continue to apply the general priorities listed above as required.

3.2 Forward Planning

All train movements and crossings must be anticipated for some hours ahead and be plotted in pencil on the diagram. This forward planning is vital to good train controlling.

It enables the Train Controller to summarise the situation quickly and avoids making hasty decisions as problems can be foreseen earlier. Emphasis should be placed on the accuracy of plotting train movements as the operation of motor trolleys, HRVs, and track maintenance work can be vitally affected.

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Train Controllers must obtain forward information on planned lifts and reductions at any station en route to gain a complete understanding and prediction of the work required and time likely to be taken. This information lets Train Controllers quickly summarise any consequential effects and efficiently plan crossings with opposing or overtaking trains.

3.3 Prompt Dispatch of Trains

Train Controllers are required to exercise sound judgement in all decisions regarding train movements. They must constantly be on alert to detect other matters likely to influence the timekeeping of trains. Many train delays can be avoided if these matters are detected or anticipated early.

A Train Controller should be alert and seek the cooperation of Rail Personnel concerned beforehand in cases where delays are likely to occur.

3.4 Standard of Work

The Network Control Manager will systematically check various aspects of the Train Controller's duty to monitor the standard of work being achieved.

3.5 Evacuation of Train Control Centres

Refer to Emergency Procedures Manual, 6.1 Evacuation of Train Control Centres.

3.6 Track Clearance after a Disruption

Disruptions to rail movements may occur where Infrastructure Personnel are not involved and are not called to supervise a site (e.g., Police attending a fatality). In such cases, track clearance will come from Rail Personnel designated as the Rail Incident Controller (RIC).

Any track clearance must contain a clear statement that the line is clear and safe for rail movements, and if required, the RIC must be questioned that this is so. The diagram is to be endorsed accordingly, together with the name of the person giving clearance.

If clearance is given subject to special restrictions, speed, and overhead power, then the diagram must still be endorsed clear and safe, but all consequent movements must be subject to these restrictions.

When Emergency Services attend a disruption, refer to **Train Control and Signal Box Manual, 25. Emergency Services**.

3.7 Clearance of Signals into TWC areas

A signal must not be set at ‘proceed’ for any movement, which requires the authority of a Track Warrant until the Track Warrant has been issued.

This is particularly important between Train Control desks (e.g., 1 desk controls the signals at a station), which enter a Track Warrant area, and this area is under the control of another desk from which the Track Warrant would be issued.

3.8 Train Control Desk Handover

Effective and comprehensive handover between Train Controllers is a critical safety element of the role. A Train Controller must be prepared to handover the areas being controlled or a portion of these at any time during their shift without warning.

To achieve this objective, the Train Controller must practice self-auditing to ensure the diagram and associated electronic/paper records are continuously updated, and movements forward plotted to ensure an accurate plan is maintained.

3.8.1 Preparation for Handover

The duties of an outgoing Train Controller when preparing for handover are:

- ensure the diagram is accurate with all completed, current and planned activities (including main line shunts, MTMVs, HRVs and track occupancies). Movements must be plotted to the boundary of the diagram or destination if terminating within the area
- check to ensure bulletins issued on the day have been plotted on the diagram
- check to ensure that TSRs requiring verbal notification are drawn across the diagram
- check and ensure work of trains to be completed is identified at the location and adjacent to the plot line for the train concerned
- check that all defects in track, signals and communications have been logged with 155 Operations Support and entered into the Incident Reporting System where required
- check that all occurrences requiring notification have been advised to the Network Control Manager and entered into the Incident Reporting System
- when a handover occurs between 2200hrs and 2359hrs, the next day's diagram must form a part of the process when movements run past 2359hrs
- ensure the number of each Manual Track Warrant in effect is noted for the signature of the incoming Train Controller
- ensure the number of each Mis.60 in effect is noted for the signature of the incoming Train Controller

3.8.2 Physical Handover

NOTE
References to the Electronic Train Graph (ETG), occupation list, reminder list, alarm list, and logging into the Train Control system only apply where relevant.

The duties during the physical handover (all handovers must be face-to-face) are:

Incoming Train Controller

- before commencing the diagram handover, the incoming Train Controller must be in a position where the Train Control diagram and signalling panel are easily visible whilst the outgoing Train Controller performs their handover duties

Outgoing Train Controller

- lead the diagram handover process in a position where the Train Control diagram, Electronic Train Graph (ETG), and signalling panel are easily visible
- using the vertical time scale, work down each ETG screen and diagram from top to bottom
- using the occupation, reminder and alarm lists, work through these lists from top to bottom
- describe the progress of each movement. This is to include the limits of each authority in effect. (i.e., movements signalled to TW/Mis.60/51, track occupancy limits, signal blocking and safe working authorities, etc.)
- advise on the arrangements made for the relief of late running trains
- highlight TSRs still to be notified to trains, including heat restrictions in effect
- highlight adverse weather conditions and the level of escalation that has been applied
- highlight all defects in track, signals and communications and the action taken and/or still required for rectification
- describe in detail any ongoing occurrences and the actions still requiring completion
- sign off each diagram as its handover is completed.

Incoming Train Controller

- sign each diagram as handover is accepted. This indicates that the handover has been completed releasing the outgoing Train Controller from their responsibilities for the area concerned
- log into the Train Control system at the completion of the handover.

IMPORTANT
The outgoing Train Controller must not leave the desk until this task has been fully completed.

3.8.3 Signing for Written Authorities on Handover

When Train Controllers are to be relieved, either for a portion of, or on completion of a shift, all safe working authorities, Mis.60s and manual Track Warrants in operation are to be recorded by the number on the diagram and the record signed by the incoming Train Controller.

3.9 Train Control ‘Remote Desk’ Handover

An effective and comprehensive handover between Train Controllers is critical to the safe operation of the network.

A Train Controller must be prepared to hand over the areas being controlled or a portion of these at any time during their shift.

For this reason, it is critical the Train Controller practices self-auditing (described in **Train Control and Signal Box Manual, 2.8 Train Control Diagram Self-Auditing and Overdue Events**) to ensure the diagram and associated electronic / paper records are continuously updated and clearly plotted to ensure accurate forward planning is maintained.

Primary Handover Process - must be undertaken using a complete scanned diagram sent to the incoming Train Controller.

Secondary Handover Process - must be undertaken using a scanned or photographed copy of the original diagram in conjunction with the Remote Handover template. The content must then be transferred onto a blank diagram by the incoming Train Controller.

Both processes require copies of all active authorities along with any other relevant hard copy information to be sent from the outgoing Control Centre to the incoming Control Centre.

Transmission of this information between Control Centres must be via an accepted electronic method that includes, scanning or taking a photo of the documents and sending via email[1] or by saving in shared location accessible to both parties.

NOTE
[1] If sending to an email address and the recipient is not known then use TrainControl-Northern@kiwirail.co.nz

All remote handovers must take place using a recorded telephone, or in the event of a phone system failure, a portable recording device must be used.

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3.9.1 Auckland Metro Areas

Preparation for Handover

Outgoing Train Controller – Primary and Secondary

Ensure the diagram is up to date with all movements, both completed and planned (including main line shunts, MTMVs and HRVs).

Movements must be plotted to the boundary of the diagram or destination if terminating within the area.

- Ensure bulletins issued on the day have been plotted on the diagram.
- Ensure TSRs requiring verbal notification are drawn across the diagram in accordance with diagram conventions.
- Ensure work of trains to be completed en route are identified at the location and adjacent to the plot line for the train concerned.
- All defects in track, signals and communications have been recorded on the diagram in accordance with diagram conventions, logged with Operations Support and an occurrence log completed where required.
- All occurrences requiring notification have been advised to the NCM and an occurrence log completed.
- For handovers that occur between 22:00 and 23:59 hours, the next day's diagram must form part of the process when movements run past 23:59 hours.
- Ensure the number of each Mis.60 in effect is noted for the signature of the incoming Train Controller.

Incoming Train Controller – Primary and Secondary Processes

As part of the Book-On process:

- Check the BIE Summary for changes.
- Check for new bulletins, rule change alerts and information bulletins (hard copy to be printed and held on desk).

Setup for Handover

Outgoing Train Controller – Primary Only

- Copies of all active authorities (i.e., SWAs, Mis.60s, etc) must be sent electronically to the incoming Train Controller.
- In addition, if relevant copies of Severe Weather warnings or daily Heat Restriction check sheet still in effect must also be sent electronically to the incoming Train Controller.

Outgoing Train Controller – Secondary Only

- All active track occupancies including written authorities (i.e., SWAs, Mis.60s, etc.) in effect must be recorded on the Remote Handover Template
- Copies of all active authorities (i.e., SWAs, Mis.60s, etc) plus any Severe Weather Warnings or daily Heat Restriction check sheet still in effect must be prepared for sending.
- The Train Control diagram, Remote Handover template and all active authorities must then be sent electronically to the incoming Train Controller.

Incoming Train Controller – Primary and Secondary

- All Train Control computer systems must be switched on and operational prior to beginning the remote handover (i.e., signalling panel).
- Obtain a copy of the Train Control diagram, which has been sent electronically.
- Copies of active authorities and other relevant documentation must be printed prior to commencement of handover

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Incoming Train Controller – Secondary Only

- In addition to above, active authorities and other relevant documentation with a copy of the completed Remote Handover Template must be printed prior to commencement of the remote handover.

Completing Handover

Outgoing Train Controller – Primary and Secondary

Using the vertical time scale, work down each diagram from the top to bottom and relay information relating to the status of current Metro operations, with emphasis on any specific disruption that may be occurring.

- In addition, advise:
  - progress on scheduled freight services, individual shunts, or special movements
  - define the limits of each authority in effect (i.e., Mis.60, track occupancy limits, blocking and safe working authorities, etc.)
  - confirm any arrangements made for relief of late running trains
  - TSRs still to be notified to trains including heat restrictions in effect
  - adverse or severe weather conditions and the level of escalation that has been applied
  - defects in track, signals and communications and the steps taken and/or still requiring action
  - any on-going occurrences and the actions still requiring completion, e.g., emergency response actions
- sign off each diagram to confirm handover is completed

Outgoing Train Controller – Secondary Only

Using the vertical time scale, work down each diagram in conjunction with the Remote Handover template from the top to bottom and relay information relating to the status of current Metro operations, with emphasis on any specific disruption that may be occurring.

- In addition to the above, for non-scanned diagrams, mark the diagram with each stated train and/or protected worksite and obtain a repeat back of the information before transacting the next train and/or protected worksite.

Incoming Train Controller – Primary Only

All activity must be verbally briefed to the incoming Train Controller, and the incoming Train Controller must cross-check from the scanned diagram and where required, repeat back each stated train / activity and/or protected worksite.

- Verbally confirm they have signed the diagram and all requirements of the handover process are completed, releasing the outgoing Train Controller from their responsibilities for the area concerned.

Incoming Train Controller – Secondary Only

All activity must be verbally briefed to the incoming Train Controller who must record such activity on the new diagram and repeat back each stated train / activity and/or protected worksite.

- Verbally confirm they have signed the diagram and all requirements of the handover process are completed, releasing the outgoing Train Controller from their responsibilities for the area concerned

NOTE
In the event of an emergency the Remote Handover must be restarted.

CAUTION
The outgoing Train Controller must not leave the desk until this task has been fully completed.

3.9.2 All Areas Excluding Auckland Metro

Preparation for handover

Outgoing Train Controller – Primary and Secondary

- Ensure the diagram is up to date with all movements, both completed and planned (including main line shunts, MTMVs and HRVs). Movements must be plotted to the boundary of the diagram or destination if terminating within the area.
- Ensure bulletins issued on the day have been plotted on the diagram.
- Ensure that TSRs requiring verbal notification are drawn across the diagram in accordance with diagram conventions.
- Ensure work of trains to be completed en route is identified at the location and adjacent to the plot line for the train concerned.
- All defects in track, signals and communications have been recorded on the diagram in accordance with diagram conventions, logged with Operations Support and occurrence logs completed where required.
- All occurrences requiring notification have been advised to the NCM and occurrence logs completed.
- When a handover occurs between 22:00 and 23:59 hours the next day's diagram must form a part of the process when movements run past 23:59 hours.
- Ensure the number of each Mis.60 and/or manual Track Warrant in effect is noted for the signature of the incoming Train Controller.

Incoming Train Controller – Primary and Secondary

As part of the Book-on process:

- Check the BIE Summary for changes.
- Check for new bulletins, rule change alerts and information bulletins (hard copy must be printed and held on desk).

Setup for Handover

Outgoing Train Controller – Primary Only

- Copies of all active authorities (i.e., SWAs, Mis.60s, etc) must be sent electronically to the incoming Train Controller.
- In addition, if relevant copies of Severe Weather warnings or daily Heat Restriction check sheets still in effect must also be sent electronically to the incoming Train Controller.

Outgoing Train Controller - Secondary Only

- All active track occupancies including written authorities (i.e., SWAs, Mis.60s, manual Track Warrants etc.) in effect must be recorded on the Remote Handover Template
- Copies of all active authorities (i.e., SWAs, Mis.60s, manual Track Warrants, etc) plus any Severe Weather Warnings or daily Heat Restriction check sheets still in effect must be prepared for sending.
- The Train Control diagram, Remote Handover template and all active authorities must also be sent electronically to the incoming Train Controller.

Incoming Train Controller – Primary and Secondary

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- All Train Control computer systems must be switched on and operational prior to beginning the remote handover (i.e., signalling panel).
- Obtain copy of diagram, which has been sent electronically.
- Copies of active authorities and other relevant documentation must be printed prior to commencement of handover.

Incoming Train Controller – Secondary Only

In addition to above, active authorities and other relevant documentation with a copy of the completed Remote Handover Template must be printed prior to commencement of the remote handover.

Completing Handover

Outgoing Train Controller – Primary and Secondary

Using the vertical time scale, work down each diagram from the top to bottom and relay information relating to all track activity. These will include the limits of each authority in effect (i.e., movements signalled, Mis.60, Track Occupancy limits, signal blocking and Safe Working Authorities, Track Warrants etc.).

- In addition, advise:
  - any arrangements made for relief of late running trains
  - TSRs still to be notified to trains including Heat restrictions in effect
  - adverse or severe weather conditions and the level of escalation that has been applied
  - defects in track, signals and communications and the steps taken and / or still requiring attention
  - any ongoing occurrences and the actions still requiring completion, e.g., Emergency Response actions
- Sign off each diagram to confirm handover is completed

Outgoing Train Controller – Secondary Only

Using the vertical time scale, work down each diagram in conjunction with the Remote Handover template from the top to bottom and relay information relating to all track activity. These will include the limits of each authority in effect (i.e., movements signalled, Mis.60, Track Occupancy limits, signal blocking and Safe Working Authorities, Track Warrants etc.).

- In addition to the above, for non-scanned diagrams, mark the diagram with each stated train and / or protected worksite and repeat back the information before transacting the next train and / or protected worksite.

Incoming Train Controller – Primary Only

All activity is to be verbally briefed to the incoming Train Controller, and the incoming Train Controller must crosscheck from the scanned diagram and repeat back each stated train / Safe Working Authority / Track Warrant / activity and / or protected worksite.

- Verbally confirm they have signed the diagram and all requirements of the handover process are completed, releasing the outgoing Train Controller from their responsibilities for the area concerned.

Incoming Train Controller – Secondary Only

- All activity is to be verbally briefed to the incoming Train Controller and must record on the new diagram and repeat back each stated train / Safe Working Authority / Track Warrant / activity and / or protected worksite.
- Verbally confirm they have signed the diagram and all requirements of the handover process are completed, releasing the outgoing Train Controller from their responsibilities for the area concerned

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NOTE
In the event of an emergency the remote handover **must be restarted.**

CAUTION
The outgoing Train Controller **must not** leave the desk until this task has been fully completed

3.10 E-Protect fails to load to Kupe Mobile Controller (KMC)

When E-Protect fails to upload to KMC, automated alerts will be sent to the NCM via OMS, E-text and E-Mail.

The NCM will advise the relevant Train Controller(s) of the failure.

The Train Controller is required to perform the following actions:

- Advise the Locomotive Engineer of the failure for the KMC to update E-Protect files for the area the train is scheduled to travel.
- Advise the Operator's Fleet Control or Service Manager of the failure
- Enter the occurrence into the Incident Reporting System

If a Train Controller modifies the E-Protect operational times, they must advise any Operator travelling through the area of the change and that KMC may not update.

3.11 GeVis use in the Train Control Centre

GeVis is an interactive online map showing rail vehicles and trains within the KiwiRail network. This online map provides Train Controllers with additional oversight of rail vehicle movements. GeVis connectivity is reliant on a cellular connection.

CAUTION
GeVis must not be used to confirm vehicle position when authorising a track occupancy and/or Safe Working Authority. In this case, vehicle position must be verified by the Driver / Operator of the rail vehicle.

GeVis should be used for:

- assisting Emergency Services in identifying exact location of an incident
- immediate recognition of Emergency / Vigilance alarm source locations
- providing some awareness of vehicle position which can improve Train Controller decision making and enhancing non-technical behaviours between Train Controllers and Infrastructure staff.

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4. Bulletins

4.1 Special Bulletins

Authorised Rail Personnel listed in **Train Running and Timetabling Manual, 5.1 Rail Personnel Authorised to Issue Bulletins** may issue special bulletins and modify Operating Rules and Codes.

4.2 Information Bulletins

4.2.1 Alteration of Information Bulletins

Authorised Rail Personnel listed in **Train Running and Timetabling Manual, 5.1 Rail Personnel Authorised to Issue Bulletins** and Train Controllers may:

- alter areas and hours of work for MTMVs
- run MTMVs as a train
- add/change hours of work under **TS03 Mis.60 / TS04 Compulsory Stop Protection**
- run work trains and alter hours and areas of their work.

IMPORTANT
Changes or additions to information bulletins must be endorsed in the appropriate space on the bulletin with particulars of those advised, then initialled and timed by the Train Controller.

All other matters requiring a special bulletin must be referred to authorised Rail Personnel listed in **Train Running and Timetabling Manual, 5.1.1 Officers Authorised to Control Train Running**.

4.2.2 Cancellation of Planned Work from Information Bulletins

When planned work is cancelled on the day, then this will be done by the Train Controller who writes the word ‘Cancelled’ across the work shown on the relevant bulletin. The Train Controller will verbally advise affected train crews for the duration that the work was to have taken place.

NOTE
Exception: When planned work is cancelled on the day in the Wellington and Auckland Metropolitan areas, the information bulletin will be amended and reissued to those concerned.

4.3 Issuing Special Bulletins and Updating Information Bulletins

Detailed procedures are contained in the **Train Running and Timetabling Manual.**

4.3.1 Reissue of Information Bulletins

When updated by authorised Rail Personnel listed in **Train Running and Timetabling Manual, 5.1.2 Network Access Planners Authorised to Issue Bulletins** and **5.1.3 Personnel Authorised to Issue Specified Bulletins**:

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- the alphabetic character in the top left corner of the document will automatically advance to the next alphabetic character
- the reissue will be uploaded to SharePoint and distributed to affected Rail Personnel, and
- the reissue will be stored electronically in the Network Access Planning drive.

4.4 Possession of Information Bulletins

A copy of the current information bulletin for the area must be held in Train Control.

If the Information Bulletin has been reissued after Infrastructure personnel have left their depot, the Train Controller must advise them if any of the changes affect them.

Before commencing all planned track occupancy for the day (including all HRV activity), Infrastructure Personnel may be challenged by the Train Controller of the letter on the current information bulletin.

NOTE

This may result in the Train Controller advising of any changes to the information bulletin or not authorising any track occupancy when they have left their depot without obtaining the information bulletin for the day.

The Train Controller must advise the Network Control Manager of the failure to hold the current information bulletin, who shall follow up with the Area Manager.

NOTE

Exemption: After normal hours, Infrastructure Personnel called to assist Train Control must advise the Train Controller they have been called to assist and must be supplied details of activities in the area concerned before gaining track occupancy.

5. Track and Time Permit (Mis.60)

Planned maintenance work will require a Mis.60 to be advised on an information bulletin.

An unplanned Mis.60 may be issued without bulletin notification, but any approaching train(s) must be verbally advised of it being in effect.

Before the Mis.60 is issued, the rule requires that the Train Controller confirms certain safeguards are taken so that trains do not enter the affected area while the Mis.60 is in operation.

5.1 Track and Time Permit Form (Mis.60)

The Mis.60 is to be completed for maintenance work on or alongside the line (when it is not practicable for protection in accordance with **TS04 Compulsory Stop Protection** to be provided).

5.2 Content and Preparation of the Mis.60

5.2.1 Authority Number and Date

The form will be given an authority number. They will be numbered consecutively, with each day starting at 1 for each Train Control desk. The date and time will be entered as the date and time of preparation.

If a Mis.60 authority is still in use from a previous day, the next consecutive number must be used for the new authority to prevent confusion.

5.2.2 Addressee

The Addressees are to be completed in the appropriate spaces for the issue.

The Rail Protection Officer's initials and surname must be used with the vehicles they are responsible for (e.g., Mr R.P. Brown, responsible for Work Train 11, Tamper 242 and Regulator 268). This shows what rail vehicles are being authorised within the Mis.60 limits.

When authorised by bulletin, a single track and time permit may be issued to the Rail Protection Officer:

- with the group identified on the bulletin. It is acceptable to use group names such as Spot Resleeper Group
- for multiple track activities that run for more than 1 work period
- the Mis.60 will be addressed to the Rail Protection Officer with a call sign ID, and the bulletin will also show the contact details of all the Rail Protection Officers.

The Rail Protection Officer will also be required to cross-check the bulletin when handing over the Mis.60.

5.2.3 Location

The location will be where the Addressee of the Mis.60 authority is located.

5.2.4 Reason

The explanation needs to convey ‘what and where’. This box must also include all affected lines in multi-line areas. Common examples are Concrete Sleeper Laying Operations, Hauone – Pongakawa.

The explanations will include a generic description of the section. Any other detail that may be relevant (e.g., due to derailment or washout) can be included in the information or special bulletin.

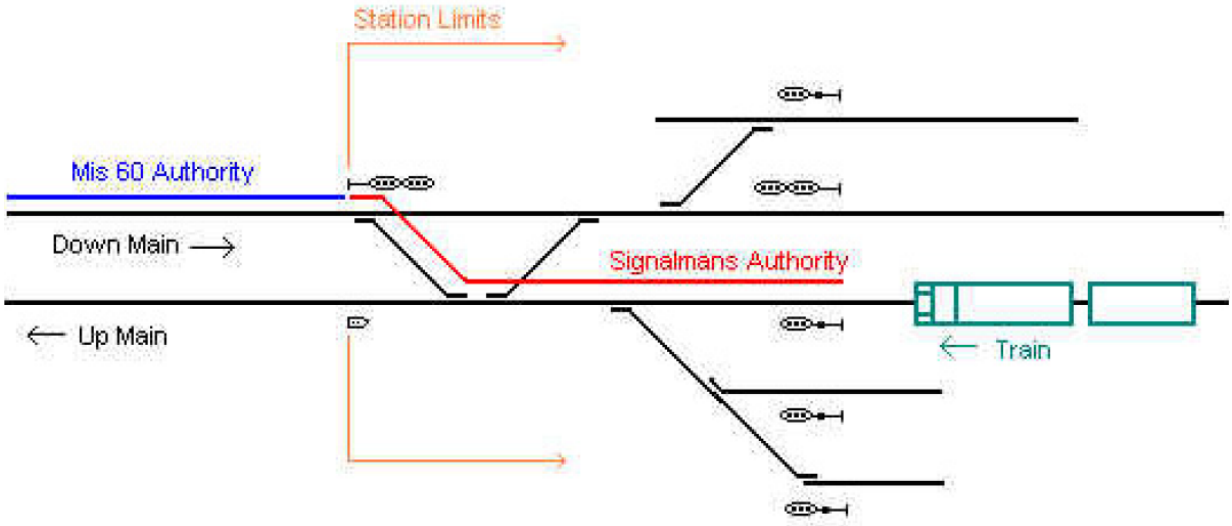
5.3 Locations

The ‘from’ and ‘to’ locations must be specific, clearly defined reference points. They may include:

- signals (stations between must be included for intermediate signals)
- points
- track meterage pegs (stations between must be included).

When choosing locations, reference to S&I diagrams should be made to ensure that lines at multi-track interlocked stations are not blocked by the Mis.60 (preventing shunting moves over crossovers).

The Mis.60 limits can start from outside station limits, and a train can enter those limits after obtaining authority from the Signaller (see figure below).



Mis.60 Limits

5.3.1 Hours

The hours of operation are to be written in the appropriate box. If the hours go through to the next day, the date must be included on both the ‘from’ and ‘to’ box.

5.3.2 Special Conditions

This box may include any conditions the Addressee must comply with or be made aware of. It must include reference to the information or special bulletin if they contain any instructions relating to the operation on the Mis.60.

This clause can also be used to detail the authority to pass:

- over points not protected by a signal, or
- work in either direction.

When a work train is required to work in either direction, the Mis.60 issued to a Rail Protection Officer must include this authority in an additional clause stating the work train (number) may work in either direction within these limits as directed by the Rail Protection Officer.

5.3.3 Line Clearance

As a check against conflicting movements, the time that the last train/track occupancy to clear the section must be shown on the Mis.60.

5.3.4 Encroaching Trains

Before issuing the Mis.60, the Train Controller must ensure that any trains affected by these arrangements are advised. If the issue of the Mis.60 has not been advised by bulletin, particulars of advice to any encroaching trains must be endorsed in the appropriate portion of the Mis.60.

5.3.5 Blocking Advice

The Mis.60 includes the safety assurances that signal blocking is applied to signals and/or points to prevent entry into the Mis.60 area.

WARNING

The movement of any points etc., to an alternate route, without the reissue of the Mis.60, may only occur when additional signal blocking has been applied to ensure the current protection is not compromised. This must ensure that entry to the Mis.60 limits remains protected.

5.4 Issuing and Recording the Mis.60

5.4.1 Pre-issue Checks

All relevant parts of the Mis.60 must be completed, and all the necessary checks must be carried out before any part of the Mis.60 is issued. The Train Controller must establish positively whether or not a Mis.60 is still in force within any part of the area the permit is about to be issued.

All movements authorised by Mis.60 must be plotted in accordance with the Train Control diagram conventions.

After establishing that it is safe to issue the Mis.60, the limits are to be drawn as a block for all activities and must encompass the stations stated on the Mis.60 and the time allowed. The number of the Mis.60 must be shown in blue adjacent to the permit line and circled. It should be located towards the terminating end of the Mis.60 line and crossed out in blue when the Mis.60 authority is completed.

After plotting the Mis.60 line, it must be checked against previous Mis.60 lines on the diagram to re-establish no conflict before preparing the Mis.60. If the Mis.60 terminates at a location where a current Mis.60 starts or terminates, and a check must be made to ensure the instructions do not conflict.

IMPORTANT

If an error is made in plotting the blue Mis.60 line, it must not be rubbed out. The incorrect line or portion of the line is to be crossed out and redrawn.

5.4.2 Issue Process

Before issuing a Mis.60, the Train Controller must verify with the Addressee their identity, train, mobile track maintenance vehicle number and location so that there is no doubt that the correct Rail Personnel receives the Mis.60.

When an Addressee reports that a Mis.60 has been lost, the correct permit issued to the Addressee must be identified, after which it can be reissued with a new Mis.60 using the Special Conditions portion to cancel the lost Mis.60.

5.4.3 Handling of Track and Time Permits

When Train Controllers are to be relieved, either for a portion of or on completion of a shift, all Mis.60s in operation are to be recorded by the number on the diagram and the record signed by the incoming Train Controller.

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The Mis.60s in operation can be handed over from one Train Controller to another without the Train Controller remaining on duty (i.e., work is in operation under a Mis.60, and there is no need for the Train Controller to remain on duty).

When receiving the Mis.60, the Addressee must be advised of the time the next Train Controller will be on duty.

In this instance, the Train Controller must record all Mis.60s still in operation by the number on the diagram for the incoming Train Controller who, on commencing duty, must sign for them.

Used Mis.60s are archived in Train Control. The Train Control Manager or their delegate will also regularly check track and time permit issues as part of the safety observation procedures.

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6. Midland Line Automatic Signalling Operating Instructions

Train Controllers direct train crossings in the **Midland Line Automatic Signalling** area using a Mis.50.

6.1 Mis.50 Issue Procedure

The Train Controller must cross-reference all crossings by inserting the opposite train operating instruction number in the appropriate box alongside each separate train crossing entry.

The train crossings at Rolleston, Arthur's Pass, or Otira will not be shown on the Mis.50, as these stations are outside the **Midland Line Automatic Signalling** area.

6.2 Suspended Signalling

When signalling is suspended, a second Competent Worker in Train Control will check and countersign the Mis.50 before being issued for:

- another train is within and has not fully cleared the suspended area, or
- there is a crossing within or at the suspended area's boundary.

6.2.1 Countersigning the Mis.50

The Mis.50 must be countersigned to signify that the operating instruction complies with **L6.2 Midland Line Automatic Signalling Rules.** The cross-check information will not be transmitted to the Mis.51 recipient.

The following movement requirement does not apply if the train running ahead has cleared the suspended area:

- two ink stamps are provided to enable additional information to be entered onto the Mis.50s for the suspended are as follows:
  - automatic signalling suspended stamp, which allows details of the suspended area to be entered
  - cross-check stamp, which provides cross-checks of the last train to clear the section(s) concerned and opposing train crossing checked

6.2.2 Train Crossings

When a crossing takes place within a suspended area or at the boundary of the suspended area, the ongoing operating instruction for the suspended area may only be issued when the opposing train has arrived at the crossing station.

6.2.3 Plotting Mis.50 when Signalling Suspended

When signalling is suspended, before the issue of a Mis.50, the journey (from and to) or work in either direction will be drawn on the diagram in blue ink.

6.2.4 Shunting Outside Departure Signals

When automatic signalling is suspended, shunting outside the departure signals at any station may only be carried out when the Operator is in the procession of a Mis.51 for that movement.

When the movement has been completed, the Mis.51 for the movement must be cancelled by a new Mis.50/51.

6.3 Plotting Mis.50 for Setting Back Movements

When authority is given to work in either direction/set back, this is to be 'blocked in' on the diagram in blue ink for the area concerned.

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6.4 Main Line Points Reversed

When main line points are left reversed at crossing stations, Train Controllers are to endorse this information on the appropriate station/timeline portion of the diagram for reference when asked for details by the Operators.

6.5 Setting Signals to Proceed

Trains other than shunting movements must not be signalled into the Midland Line Automatic Signalling area until the Operating Instruction has been received.

6.6 Light Locomotives to Assist Trains

When light locomotives (i.e., Banker locomotives) are used to assist trains/locomotives, the operating instruction of the train/locomotive being assisted must show in the general instruction as [Train Number] being assisted by light locomotives from [Station] to [Station].

This information is provided to the Operator of the assisted train to allow sufficient room for the light locomotives to attach.

6.7 Operating Instructions for working of Sidings in Midland Line Automatic Signalling Areas

- In accordance with **L6.2 Midland Line Automatic Signalling Rules**, all trains entering this territory will be issued with an operating instruction. This includes shunting services running from an interlocked or crossing station to a siding or vice-versa.
- With reference to **RP14 Operating Switch Lock Sidings**, as sidings are not crossing stations, and the Train Controller gives permission before a switch lock can be released, crossings will not be shown on operating instructions for trains passing another train locked in a switch lock siding.
- Should the Train Controller direct a train to run to and lock in a switch lock siding, it shall not be necessary to short issue the operating instruction of any opposing train as crossings are not required to be shown. The occupation of a block section by a train travelling to/from a siding is sufficient to hold the opposing departure signal. Once a train is locked in a switch lock siding, the block section will become free.
- If signalling is suspended, **L6.2 Midland Line Automatic Signalling Rules, 8. Suspension of Automatic Signalling** shall apply in all respects, and the operating instruction becomes an authority to move. Signals personnel may need to be in attendance to release a switch lock under Train Control authority in accordance with **RP14 Operating Switch Lock Sidings, 3. Switch Lock Unable to Release**.
- Track Occupancies using **TS09 Foul Time** must not be authorised when trains are locked in at the following locations:
  - Westland Milk Products Siding, between Rolleston and Darfield
  - MetroPort Siding, between Rolleston and Darfield
  - Racecourse Hill Siding, between Darfield and Springfield
  - Phoenix Meat Company Siding, between Kokiri and Stillwater

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7. Automatic Signalling

7.1 Introduction

The automatic signalling system controls trains movements over:

- single lines for movements in both directions
- multi-lines, for movements in either direction or 1 direction only.

Absolute/permissive signals or block/station entry boards can govern entry to and exit from sections of the line.

Automatic signalling is controlled by a Train Controller or Signaller who have control of some or all signals and points in their defined area or operate automatically.

In Signal Boxes, the control panel and illuminated track diagrams are essential pieces of apparatus, which show the progress of train movements over the section, showing signals at stop or proceed and main line points in normal or reverse setting. Panels comprise a series of switches, pushbuttons, lever controls or software for operating points and signals.

Train Controllers and Signallers use a computer-assisted system that allows the Train Controller and Signaller to set up train movements in advance by sending controls to the out-stations via computer. Under this system, the Train Controller and Signaller enters commands to their signalling screen using a mouse, and the computer responds by moving or clearing the relevant points or signals.

When enabled by the Train Controller or Signaller, computer-driven Automatic Route Setting may automatically set signals and points based on the timetable data loaded into the train control computer system.

The current track, points and signals indications are displayed on a signalling screen. Among the various commands utilised in the system are signal blocking, control tag, or reminder function. These are used when circumstances dictate that particular points or signals are not to be moved or cleared and ensure there is no inadvertent use of the equipment, or they are not used until a reminder message is acknowledged.

The Train Controller and Signaller retain control of the signals and motor points during shunting, and most switch locks, within station limits and between single-line stations, are locked until released by the Train Controller or Signaller.

An indication is displayed to show when controlled switch locks are being operated. The Train Controller can signal trains through on the main line. At the same time, shunting continues uninterrupted from the loop, where the yard layout provides sufficient headroom to permit normal shunting movements without fouling the main line points.

Local signalling panels are operated by Signallers who must act in accordance with the instructions issued by the Train Controller.

Apparatus is also provided at some stations to enable the operation of points and signals by train crews for shunting movements or when communications have failed.

Local signalling panels are installed for this purpose at some crossing stations, and control of the local signalling panels is handed over from the central panel by operation of a lever and/or pushbutton. An indication is displayed on the illuminated diagram showing whether local panels are under central or local operation at any particular time.

After signals are passed in the stop position, it must always be assumed that any level crossing alarms in the section ahead may fail to operate.

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7.2 Automatic Signalling Failures

As with all equipment, automatic signalling is subject to occasional failure. However, the system is fail-safe. A common cause of failure is power supply disturbances. However, disruption can be kept to a minimum when a standby power supply is available for that station or at Train Control.

Unless the Train Controller has kept their diagram up to date, they may not know the exact location of all trains. The consequence of this is magnified if several services are involved, as the advancement of a train and its crossings with opposing services may not be controlled by signal indications.

If the Electronic Train Graph (ETG) is in use, the Train Controller must verify the location of trains by radio and transfer information to the paper train control diagram before undertaking further actions to move trains.

IMPORTANT

In some failure scenarios, signals that are fleeted or stations that have automatic route setting active will still operate automatically for trains.

Should signalling in an automatic signalling area become disrupted to the extent that it is necessary to provide alternative methods for advancing trains, suitable arrangements must be made for train crossings.

Only in the Midland Line Automatic Signalling area is it possible to suspend signalling.

Acceptance of Computer-Based Signalling Points Indications

In the event a signal will not clear over a set of points, the Train Controller / Signaller must verify that the points are in the correct setting.

To verify the correct setting and indication of points:

- move the appropriate points and observe they respond in the expected time and correctly indicate the setting commanded,
- ensure that points are keyed to the required setting if the station is a route-setting type interlocking, and
- operate the 'Indication Check' feature (if provided).

Provided the appropriate points respond in the expected time and indicate the commanded setting, and (when applicable) the panel indications then extinguish and correctly restore by the ‘Indication Check’, the setting of the points may be accepted as correct without the need to isolate and hand operate the points.

IMPORTANT

Local Signal Box Instructions may authorise acceptance of the illuminated ‘N’ or ‘R’ light displayed on the signal panel as proof that motor-operated points are safe for traffic without isolating and hand-operating the points. In all other cases, motor points must be isolated.

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After signals are passed in the stop position, it must always be assumed that any level crossing alarms in the section ahead may fail to operate.

Bi-directional Running

When Automatic Signalling fails and while repairs are being undertaken trains may be advanced beyond Departure signals in the `Stop' position by Safe Working Authority / 'R' Light (if available).

When a Safe Working Authority has been issued, collars are placed on the signal panel or 'Control Tag / signal blocking commands' are utilised in Train Control to draw the Train Controller's / Signaller's attention to this.

The Train Controller must not issue a further Safe Working Authority or clear an 'R' Light (if available) for a following train until the Operator of the first train has confirmed clear of the entry signal into a Protected Work Area / Intermediate Signal / Block Section.

A further Safe Working Authority must not be issued for an opposing train until the Operator of the first train has confirmed clear of the block section concerned.

Multi Line – Single Direction Running

When Automatic Signalling fails and while repairs are being undertaken, trains may be advanced beyond:

- Starting signals in the "Stop" position by Signaller authority as set out in **SO02 Automatic Signalling Rules**.
- Intermediate signals within the block section in accordance with **SO02 Automatic Signalling Rules**. When required, signals personnel may install signal cover plates with red reflectorised aspects to assist with the location of signals.

Instructions relating to trains passing Home signals in the 'Stop' position are set out in **SO02 Automatic Signalling Rules**.

7.3 Switch Lock Sidings and Signal Failure

A signalling failure could occur in the block section or at the switch lock. The situation could also arise when through trains have been worked through the section on a SWA.

If it becomes necessary to issue a SWA for a train to pass through a section whilst another train is locked in a switch lock siding in that section, the Train Crew of the train in the siding must, before the SWA is issued, be advised of the circumstances, and instructed that the main line must not be obstructed.

7.3.1 Switch Lock Siding

Should a train enter a switch lock siding and the apparatus subsequently fail:

1. The Train Crew of the shunting train must be assured that no other train is occupying the section, nor will any train enter the section whilst the shunting train is occupying it.
2. The Operator's attention must also be drawn to the need to travel at a restricted speed. After ensuring no other train is on the section, advise the Rail Personnel concerned and take appropriate action to ensure no other train enters the section before the shunting train has cleared the section.
3. The Train Controller must ensure that the signals which protect the movement are at stop and that a:
   a. label or collar, or
   b. signal blocking command or control tag has been placed on the levers/buttons controlling those signals at the station concerned.
4. Authorise a Signals Maintenance Representative to open the switch lock as provided in **SO02 Automatic Signalling Rules**.

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5. The Train Controller must ensure the train has cleared the section before normal working (or safe working in accordance with **SO02 Automatic Signalling Rules**) is resumed.

7.4 Wrong-Side Failures

All modern signalling is designed to be fail-safe. However, several failures are classified as right-side failures (e.g., a broken wire in a signal circuit causing the signal to remain in the stop position and prevent it being cleared, or a stone in a set of points which would prevent a signal from being cleared due to an improperly set route).

As opposed to right-side failures, wrong-side failures are those in which a potentially dangerous situation is produced. For example, an automatic permissive signal displays a proceed indication immediately after a train has passed it, or a level crossing alarm fails to operate when a train occupies the approach circuit.

Should a wrong-side failure occur, the interlocking normally provided must not be relied upon, and action must be taken immediately to provide alternative protection in accordance with the rules.

This should normally require issuing a bulletin to take the affected signalling out of use until it has been tested and safe.

The Signals Maintenance Representative and the Network Control Manager must be advised immediately.

7.5 Power Failures Affecting Operations

Signals are designed on fail-safe principles. Therefore, when the signal power fails, all signals will revert to stop. In some instances, all signals may be extinguished.

In many localities, automatic standby power plants are provided, but where they are not, the signals and crossing alarms are powered by the station's electric power supply only. When the supply source fails, either through a power cut-off or supply fluctuation, signal lighting and battery charging of crossing alarms may be disconnected.

The Train Controller and other Rail Personnel concerned must be alert to the implications of such a power interruption and are to take steps necessary for the safe passage of trains and the protection of road traffic using an affected level crossing.

Although level crossing warning devices have a battery supply, the control circuits could be rendered inoperative.

On restoring power from the mains or standby plant, automatic signals in automatic signalling areas will automatically re-clear. At stations controlled locally or by remote control, it will be necessary for the signal to be re-clear them.

Although level crossing alarms are fed from a battery supply to ensure continuity during a mains power failure, such an interruption may, in certain circumstances, affect the crossing alarm or barrier control directional circuits so that they could fail to operate for a train. For this reason, after signals are passed in the stop position, it must always be assumed that any level crossing alarms in the section ahead may fail to operate. The speed of trains over these level crossings must therefore be restricted to 10 km/h.

7.6 Signals Passed at Danger

A SPAD event occurs when a train or MTMV passes a signal displaying a danger stop aspect. Signal refers to in-cab, signalled, paper and/or computer-based occupancy authorities.

Two categories are provided:

- SPAD A 1-4: The train interface / operation of the train

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- SPAD B 1-4: The operating interface / signalling / network and network irregularity

Further information on SPAD classifications can be found in the National Rail System Standards documents here.

For all SPAD A events:

- any conflicting movement must be stopped immediately, and signals reverted to danger if relevant
- the NCM must be advised immediately
- the train must not be moved, and the incident managed in accordance with GR01 Railway Corridor Safety, 5. Fit for Duty.
- the Signals Maintenance Representative and the Signals Field Engineer must also be immediately advised. The Signals Field Engineer will then decide whether the signal concerned is to be taken out of use
- an occurrence log must be entered into the Access Provider's Incident Reporting System.

For all SPAD B events:

When a signal has reverted (from displaying a proceed aspect) and has been passed at stop.

- the Signals Maintenance Representative must be advised through 155 Operations Support with a priority 2, and
- an occurrence log must be entered into the Access Provider's Incident Reporting System.

Where the signal is placed to danger in front of an approaching train or MTMV by the Signaller due to an emergency or error, and the train / MTMV was unable to stop before passing the signal.

- an occurrence log must be entered into the Access Provider's Incident Reporting System.

When the train / MTMV ran out of control and could not be stopped from passing a signal at danger, you must:

- apply the runaway vehicle procedure in Emergency Procedures Manual, 11. Runaway Rail Vehicle/ Uncontrolled Movement
- immediately advise the NCM
- enter an occurrence log into the Access Provider's Incident Reporting System.

7.7 Signal Blocking Intermediate Signals

Before applying signal blocking to an absolute intermediate signal, the Train Controller must first place the signal to stop by running a cancellation on the signal.

IMPORTANT

Permissive intermediate signals must not be blocked when using approved protection methods, as it will not prevent a train from entering the section.

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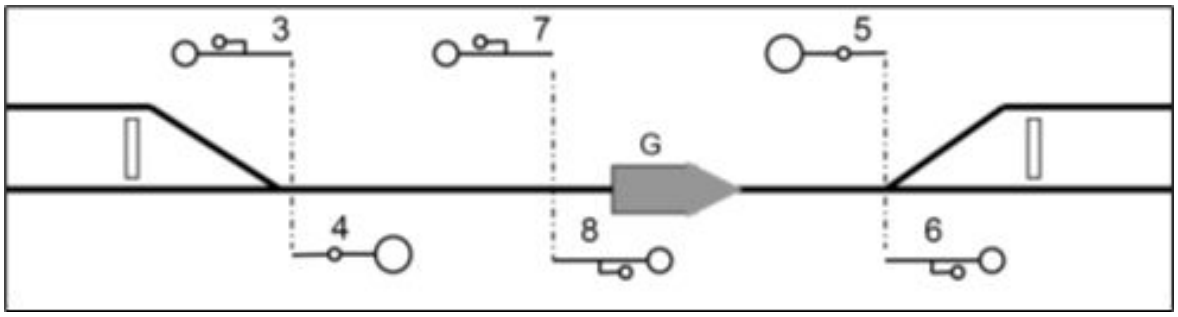
8. The Ghost Train Fault

The Ghost Train fault can create a hazard in some automatic signalling areas.

It can only occur on a single line block signalling system equipped with intermediate signals for following movements; this means any automatic signalling section where following movements are permitted.

The cause is the failure of a track relay to pick up behind a train in a section beyond an Intermediate signal after that signal has been passed at proceed.



ASR - Midland Line Signalling

For the fault to occur, the train must have passed the No.8 intermediate signal at proceed.

When a track circuit in the intermediate section between signals 8 and 6 is in the condition where a relay voltage is greater than the drop-away characteristic but less than the pick-up characteristic (due to flooding or a broken rail) when this track circuit is shunted by an up train (‘G’). In that case, the track relay will not pick up after the passage of the train.

The train leaves its ghost behind it after it has passed out of the intermediate section, and the directional stick relay associated with No.8 signal will remain in the operated position, which authorises a following movement past No.4 Departure signal. The Ghost Train remains as shown at ‘G’ until the track circuit is restored or until the Signaller restores the directional stick relay to normal.

The Ghost Train fault's special significance is that although the No.5 departure signal is held at stop, signal No.4 may be cleared to yellow (or even to green if the train had passed two Intermediate signals before leaving its ghost behind it).

When an opposing (down) train is allowed into the block section past No.5 departure signal on a SWA before the fault is cleared, signal No.4 may still be set at proceed any time until the down train has reached No.8 signal, after which No.4 signal will be held at stop until the down train clears the block section.

This Ghost Train fault emphasises the need for the Train Controller not to issue a Safe Working Authority to a train, which will make a crossing at the next crossing loop before ensuring that the opposing train has been advised.

In the case of the Midland Line, this opposing train does not shunt outside the fouling board until it has made all of its crossings at that station.

In the case of automatic signalling, the diagram will show the Ghost Train. The controller will not give local control to any train waiting for a crossing with another proceeding under a Safe Working Authority.

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Summarising, ordinary track circuit failure will not cause the Ghost Train fault. It can only occur when a track circuit failure is left by a signalled train after it has passed an Intermediate signal in a block section where the following movements are permitted.

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9. Safe Working Authority

9.1 Types of Safe Working Authority

The SWA-01 is used in all situations except disabled train situations. The SWA-01 is required to:

- pass a failed or imperfectly displayed departure signal, and/or include:
  - failure of 'R' illumination
  - travelling to a switch lock siding and immediately return to the station in the rear
  - travelling to a switch lock siding and continuing to the next station in advance
  - SPAD.
- pass a departure signal at stop for a following movement into a block section when the train ahead has cleared the intermediate section
- pass a signal or block entry board to enter or within a Protected Work Area
- pass a starting signal or block entry board to enter the wrong line (includes SPAD)
- set back within a block section after the movement has:
  - cleared station limits to proceed to the next station
  - entered station limits but has not cleared the block section
  - set back short distances within a block section.
- authorise a train to work in either direction in a section.

The SWA-02 is used to manage disabled trains situations, including to:

- pass departure or starting signals at stop, or a block entry board to assist a disabled train
- pass an absolute intermediate signal to assist a disabled train
- set back a disabled train within a block section with relief to the station in the rear.

The SWA-03 is used to manage all MTMV and work train situations into and within Protected Work Areas to operate past signals for single or multiple movements, including to:

- pass an absolute signal at stop or block entry / station entry board within ASR interlocked stations and block sections, and Track Warrant interlocked stations (not warrant stations), and
- authorise all movements under the direction of the Rail Protection Officer within the Protected Work Area.

9.1.1 Safe Working Authority Withdrawal

When the situation has changed and the requirement for a SWA is no longer required, and provided the SWA has not been acted upon, the SWA is to be endorsed 'Withdrawn at (time)'.

9.2 Safe Working Authority Form (SWA-01)

The SWA-01 has 11 clauses, which must be completed dependent on the operating requirements.

Clause 1 - Authority Number and Date

Printed booklets of the SWA-01 form are uniquely numbered between 1000 and 1999. The day and date to be entered at the time of preparation. The SWA-01 forms must stay in the book and not be removed.

Clause 2 - Operator

Identifies the Rail Vehicle (i.e., Train 200, Tamper 665, DC4465) and the location where the SWA-01 is being transmitted to (i.e., Station, Intermediate signal, meterage peg or meterage from which a setting back movement will commence).

When the SWA-01 is issued:

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- in a multi-line area, the relevant main being occupied must be included (e.g., Operator of train 200 at Pukekohe, **up main**)
- to a meterage peg/meterage, the location must also include the names of the stations the meterage is between, and the relevant line (e.g., Operator of Tamper 317 at 201.50km **between Porewa and Hunterville NIMT**).

Clause 3 - Single Line Areas – Pass Signal / Block Entry Board

Must be used to identify when the movement is operating in or proceeding into, a single line area. The Train Controller must enter the:

- signal number (departure) to be passed at stop, or
- block entry board to be passed.

A further selection is required to determine whether the movement is to:

- proceed in accordance with fixed signals, or
- for shunting purposes only.

Clause 4 - Multi Line Areas – Pass Signal / Block Entry Board

Must be used to identify the movement is operating in a multi-line area and enter the:

- signal number (departure or starting) to be passed at stop, or
- block entry board to be passed.

A further selection is required to determine whether the movement is to:

- proceed on the specified line in accordance with fixed signals / station entry board, or
- for shunting purposes only.

Clause 5 - Set back

Must be used to identify a setting back authority.

The starting location and end limit of the setting back movement must be specified e.g.:

Set back from [starting location] in accordance with fixed signals/station entry board to [end limit location].

The location may include the meterage and line.

Check Clause 11.

Clause 6 - Points

Must be completed with points numbers and the location of the points for points en route for which the movement has been authorised that have been:

- correctly set, or
- isolated and secured.

Switch lock points in single-line areas are to be included when detection is confirmed from the signal panel.

Clause 7 - Call Clear and Complete

Must be used to request clearance of a section of line for either:

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- clear of an intermediate signal - to allow a following movement only
- clear of a block section - to allow a following/opposing movement
- clear of the signal/board - for entry into or within the Protected Work Area.

Clause 8 - Other Instructions

Must be used to enter additional safeguards and instructions, e.g.:

- the Rail Protection Officer authority is also required before entering the protected work area
- pick up the Pilot for movement over the derailment site at Langdons Rd level crossing 5.48km between Christchurch and Belfast
- call clear and complete of signal number xx (entering or within a Protected Work Area)
- a ballast discharge en route may require a freight/work train to ‘work in either direction between xxxx and xxxx’
- HRV activity is prohibited when a train or MTMV has been authorised to work in either direction
- when a SWA has been issued and the scope has changed. Use Clause 8 Other Instructions, to cancel the previous SWA.

Safety Assurances

Clause 9 - Line Clearances

- Clause 9a must be used to enter details of the last train movement to clear the section/block section.
- Clause 9b must be used to enter details of the last track occupancy to clear the section/block section when this occupancy occurred after the last train movement.

Clause 10 - Blocking

- Clause 10a must be used to confirm that signal blocking has been applied to prevent conflicting movements.
- Clause 10b must be used to confirm that the Operator(s) of any opposing trains have been advised of the authority when a crossing will occur at the next station. Must include the time that the Operator(s) were advised.

Clause 11 - Following Movements

- Clause 11a must be used to identify and confirm a following train has stopped short and is stationary at a specified location, clear of the authorised setting back movement.
- Clause 11b indicates that the following movements are clear of the section before another setting back movement can be authorised to follow (this may be used to remove following trains behind a disabled train before the disabled train is issued a SWA-02).

Authorised by

The Train Controller must enter their name (reads out initials and surname) and endorse the time at which the read back has been correctly repeated.

The Signaller involved with the Safety Assurances must be provided a copy before the Operator. The Signaller must read back the SWA correctly and the Signaller’s location and time of correct repeat recorded.

Limits Clear and Complete at

- the Operator must advise the Train Controller when they are clear and complete of the limits of the SWA
- when a short setting back movement is confirmed to arrive at the setting back destination (completed instructions), the SWA can be cancelled

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- endorse the clearance received time and cancellation of the authority.

Confirmation of Limits Clear

Particular care must be taken after the ‘limits clear and complete’ portion on the SWA-01 has been completed to ensure the correct authority is crossed off the diagram.

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KiwiRail **Safe Working Authority** **SWA-01**

1 ☐ **Authority Number** 1XXX _____ day ____/____/____ date

2 ☐ **Operator** of _____ at _____

between* _____ and* _____ _____ Line is authorised to:

Single Line Areas

3 ☐ **Pass No.** _____ Signal* / Board* at Stop
- and proceed in accordance with fixed signals*
- for shunting purposes*

Multi Line Areas

4 ☐ **Pass No.** _____ Signal* / Board* at Stop
- and proceed on the _____ main in accordance with fixed signals / Station Entry Board*
- for shunting purposes*

5 ☐ **Set back** from _____

between* _____ and* _____ _____ Line

to _____ in accordance with fixed signals / Station Entry Board

6 ☐ **Points Nos.** ____/____/____ at _____ are secured for the movement

7 ☐ **Call clear and complete of** Intermediate Signal No.* _____ / Block Section*

8 ☐ **Other Instructions**

_____

_____

_____

Safety Assurances

Line Clearances

9a ☐ Last train No. _____ cleared limits at _____ hours / previous day*

9b ☐ Last track occupancy cleared limits at _____ hours / previous day*

Blocking

10a ☐ Blocking has been applied to prevent conflicting movements

10b ☐ Opposing Train No. _____ / _____ advised of this authority at _____ / _____ hours

Following Movement

11a ☐ Following Train No. _____ confirmed stationary at _____ Location

11b ☐ Following movements cleared section at _____ hours

Authorised by _____ Train Controller
Name

Repeated correct at _____ hours

Repeated correct by Signaller _____ at ____hours*	Repeated correct by Signaller _____ at _____hours*

SWA _____ limits clear and complete at _____ hours *Delete not required

Safe Working Authority SWA-01 Version 1.0 February 2024

SWA-01

Table for SWA-01 Authority preparation:

Diagram Conventions	Blue Lines ↗ ↘ Situations for SWA-01 Authorities	Blue Box ▢ Single Lines Must Use	Ma
211 / 1042	Passing failed / imperfectly displayed Departure signal / Block Entry board	1, 2, 3, 7, 9a or 9b, 10a#	6#, 8,
211 / 1042	Passing an Absolute signal or Block Entry board into or within a Protected Work Area using signals and or points for protection	1, 2, 3, 7, 8, 10a#	6#
211 / 1042	SPAD – signal / Block Entry board	1, 2, 3, 7, 9a or 9b, 10a#	6#, 8,
211 (UM) / 1042	Wrong line running		
935 / 1021	Setting Back to clear section	1, 2, 5, 7,10a#	6#, 8, 11
639 / 1021	Setting Back short distance	1, 2, 5	6#, 8 11
229 / 1025	Shunting purposes	1, 2, 3, 7, 9a or 9b, 10a#	6#, 8,
769 / 1028	Freight Trains discharging in either direction – Mis.60 not being used	1, 2, 3, 5, 6#, 7, 8, 9a or 9b, 10a#	3, 1

- **A separate authority must be issued each time a movement is authorised to re-enter a Blo**
- **When a SWA has been issued and the scope has changed, use Other Instructions clause**
- **# Optional for Midland Line**

SWA-01 Guide

9.3 Safe Working Authority Form (SWA-02)

The SWA-02 Disabled Train form has 12 clauses, which must be completed dependent on the operating requirements.

The disabled train only receives clauses 1 – 3 except when double banking, when clauses 4 to 12 may also be needed. The double banked train may not need to be given clause 2.

Clause 1 - Authority Number and Date

Printed booklets of the SWA-02 form are uniquely numbered 2001 and 2999. The day and date will be entered at the time of preparation. The SWA-02 forms must stay in the book and not be removed.

Clause 2 - Operator Disabled

Identifies:

- the Rail Vehicle (i.e., Train 200, Tamper 665, DC4465) and
- the location where the SWA-02 is being transmitted to (will be the end of train where relief will be supplied from and allows for protection of the train)

When the SWA-02 is issued:

- in a multi-line area - the relevant main being occupied must be included (e.g., Operator of 200 at 669.00km **up main** between Westfield and Tamaki NIMT)
- to a meterage peg/meterage - the location must also include the names of the stations the meterage is between, and the relevant line (e.g., Operator of 201 at 198.50km **between Porewa and Hunterville NIMT**).

Clause 3 - Protection

Must be used to identify whether detonator protection:

- has been provided (3a), or
- cannot be provided (3b). This may be due to physical restrictions (i.e., a bridge with no walkway, the train is in a cutting and the Operator is unable to get past the train).

Refer to Local Network Instructions for detonator protection requirements in Auckland and Wellington Metro areas.

Clause 4 - Operator of Relief Train

Identifies the Operator of the relief locomotive (use vehicle ID) or train number and the location.

Clause 5 - Single Line Areas – Pass Signal/Block Entry Board

Must be used to identify when the relief locomotive or train is operating in or proceeding into, a single line area.

The Train Controller must enter the:

- signal number to be passed at stop, or
- block entry board to be passed

before the relief locomotive or train proceeds in accordance with fixed signals to the disabled train (see clause 7).

Clause 6 - Multi Line Areas – Pass Signal/Block Entry Board

Must be used to identify the relief locomotive or train is operating in a multi-line area.

The Train Controller must enter the:

- signal number to be passed at stop, or
- block entry board to be passed

before the relief locomotive or train proceeds on the <main> line being used, in accordance with fixed signals to the disabled train (see clause 7).

Clause 7 - Stop Train at Signal Number

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Is used only in conjunction with either clause 5 or 6 when the relief locomotive enters a block section and will be given the authority to pass absolute intermediate signals at stop.

NOTE
When a relief train is required to pass more than one absolute intermediate signal at stop within a block section, all absolute intermediate signals must be recorded in Clause 7 of the SWA-02.

The Operator receives the complete instructions before entering the affected block section. However, the train must stop at the signals recorded in this clause and proceed at Restricted Speed.

Clause 8 - Remove Train Instructions

Used to identify the train, or portion of the remaining train to be removed, and providing the location that the combined relief/disabled train is to be taken to, in accordance with fixed signals or station entry board.

NOTE
This is an authority for a relief train to set back or propel with the disabled train to clear the section.

Clause 9 - Points

Must be entered with details of the interlocking for the route for which the initial movement has been authorised. All motor points that do not have a confirmed indication must be isolated and secured, and switch locks secured.

Rail Personnel who are instructed to set and secure points must confirm the setting with the Train Controller.

Clause 10 - Other Instructions

Must be used to enter additional safeguards and instructions for the safe relief of the disabled train, such as:

- when a SWA has been issued, and the scope has changed, use the clause 10 Other Instructions to cancel the previous SWA, or
- if the relief train becomes disabled, use this clause to cancel the SWA for the relief only (now disabled) on the SWA issued for its relief.

NOTE
The SWA for the first disabled train will be cancelled by using this clause when the new relief is issued a SWA (both the first disabled and new relief will be issued the SWA).

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Safety Assurances

Clause 11 - Blocking

Must be used to confirm that signal blocking has been applied to prevent conflicting movements.

Clause 12 - Following Movements

Indicates that the following movements have been cleared from the section before the disabled train can be authorised to set back in accordance with clause 8.

Authorised by

The Train Controller must enter their name (reads out initials and surname) and endorse the time at which the read back has been correctly repeated.

The Signaller involved with the Safety Assurances must be provided a copy before the Operator. The Signaller must read back the SWA correctly and the Signaller's location and time of correct repeat recorded.

Limits Clear and Complete at

The Operator must advise the Train Controller when they are clear and complete of the limits of the SWA.

The Train Controller must endorse the clearance received time and cancellation of the authority.

Confirmation of Limits Clear

Care must be taken after the 'limits clear and complete' portion on the SWA-02 has been completed to ensure the correct authority is crossed off the diagram.

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Safe Working Authority – Disabled Train SWA-02

Operator of Disabled Train only receives Clauses 1 – 3

1 ☐ **Authority Number** 2XXX _____ day ____/____/____ date

2 ☐ **Operator** Disabled Train No._____ **must not move from** _____

between _____ and_____ _____ Line

until arrival of _____ as relief locomotive from _____

Protection

3a ☐ Detonator protection has been provided, or

3b ☐ Detonator protection **cannot** be provided

Authorisations

4 ☐ **Operator** of Relief _____ at _____ is authorised to:

Single Line Areas

5 ☐ **Pass No.** _____ Signal* / Board* at Stop and proceed in accordance with fixed signals to the disabled train

Multi Line Areas

6 ☐ **Pass No.** _____ Signal* / Board* at Stop and proceed on the _____ main in accordance with fixed signals to the disabled train

Absolute Intermediate Signals

7 ☐ **Stop Train** at Signal No(s)._____ then continue at Restricted Speed to the disabled train

8 ☐ **Remove** train* _____ or portion of* _____ to _____

in accordance with fixed signals / Station Entry board

9 ☐ **Points Nos.** ____/____/____ at _____ are secured for the movement

10 ☐ **Other Instructions**

_____

_____

Safety Assurances

Blocking

11 ☐ Blocking has been applied to prevent conflicting movements

Following Movement

12 ☐ Following movements cleared section at _____ hours

Authorised by _____ Train Controller
Name

Repeated correct at:		**Repeated correct at:**	
Operator of Disabled Train	_____ hours	Signaller*	_____ hours
Operator of Relief	_____ hours	Signaller*	_____ hours

SWA _____ limits clear and complete at _____ hours *Delete not required

Safe Working Authority SWA-02 Version 1.1 August 2025

SWA-02

Table for SWA-02 Authority preparation:

Diagram Conventions	Situations for SWA-02 Authorities	Blue Box ▢ Single Lines	
		Must Use	May b
212 2028	**Relief from front** Pass Departure / Starting signal / Block Entry board, then propel or set back	1, 2, 3a or 3b, 4, 5, 8, 11#	7, 9#, Sig
227 2028	**Relief from rear** 'R' light not illuminated, 'A' light not illuminated, Pass Departure / Starting signal / Block Entry board, then propel or set back	1, 2, 3a or 3b, 4, 5, 8, 11#	7, 9# Sig
227 2028	**Relief from rear** Pass Absolute Intermediate signal at Stop, then propel or set back	1, 2, 3a or 3b, 4, 5, 8, 11#	7, 9#, Sig
227 2028	**Double Banking**	1, 3a or 3b, 4, 5, 8, 9#, 11#	7, 10
	Relief from rear 'R' light illuminated,	TC authorisation after advising Operators	
	Relief from rear Pass Permissive Intermediate signal, at Stop (includes 'A' light illuminated)	Operator Self Authorisation after stopped 10 sec	
227 2028	**After arriving at disabled train, requires to set back**	1, 4, 8, 11#	9#, Sig

- **A separate authority must be issued each time a movement is authorised to re-enter a Blo**
- **When a SWA has been issued and the scope has changed, use Other Instuctions clause 1**
- **# Optional for Midland Line Automatic Signalling Areas**

SWA-02 Guide

9.4 Safe Working Authority Form (SWA-03)

The SWA-03 has 9 clauses, which must be completed dependent on the operating requirements.

Clause 1 - Authority Number and Date

Printed booklets of the SWA-03 form are uniquely numbered between 3001 and 3999. The day and date to be entered at the time of preparation. SWAs must stay in the book (do not remove them).

Clause 2 - Operator

Identifies the MTMV (i.e., tamper xxx, regulator xxx /work train) and the location where the SWA-03 is being transmitted to (e.g., Station, Intermediate signal, meterage peg or meterage) from which a setting back movement will commence.

When the SWA-03 is issued to a multi-line area, the relevant main being occupied must be included (e.g., Operator of Tamper xxx at Pukekohe, **up main**).

When the SWA-03 is issued to a meterage peg/meterage, the location must also include the names of the stations between the meterage and the Line being occupied (e.g., Operator of Tamper xxx at 644.50km **between Drury Junction and Papakura NIMT**).

Clause 3 - Pass Signal Number

Must be used to identify the signals required to carry out movement(s) and enter the absolute signal numbers.

Clause 4 - Pass Station Entry Board

Must be used to identify the movement operating in a multi-line area, enter the station entry board, which requires to be passed at stop.

Clause 5 - Pass Block Entry Board

Must be used to identify the movement operating in a multi-line area, enter the block entry board, which requires to be passed at stop.

Clause 6 - Pass Intermediate Signals

Must be used to identify the signals required to carry out movement(s) and enter the absolute intermediate signal numbers.

Clause 7 - Other Instructions

Must be used to enter:

- additional safeguards and instructions for the movement to pass safely through the intended route
- additional safeguards and instructions or work train No. xx is authorised to move in either direction, within the Protected Work Area, as directed by the Rail Protection Officer, or
- stopping at the above signals does not apply when:
  - in rail grinding mode, or
  - undertaking dynamic track stabilisation.

NOTE

This procedure is provided to prevent rail damage, or to allow effective track stabilisation when the Rail Grinder or Dynamic Track Stabiliser machines are in rail grinding mode or track stabilisation mode.

Safety Assurances

Clause 8 - Points

Must be entered with details of points for which the movement(s) has been authorised that have been correctly set or isolated and secured. Switch lock points in single-line areas are to be included when detection is confirmed from the signal panel.

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IMPORTANT
If the route is required to be changed, the SWA-03 must be cancelled, a new route setup and then a new SWA-03 issued.

Clause 9 - Blocking

Must be used to confirm that signal blocking has been applied to the signals and points authorised in the above clauses for the authorised movements.

Authorised by

The Train Controller enters the name (reads out initials and surname) and endorses the time after reading back confirmed correct.

The Signaller involved with the safety assurances must be provided with a copy before the Operator. This must be repeated correctly. Insert the Signaller's location and time of the correct repeat.

Cancellation

- The Operator must tell the Train Controller when the requirements for the issued SWA-03 have been completed. Then the SWA can be cancelled.
- Endorse the cancellation time of the authority. Particular care must be taken to ensure the correct authority is crossed off the diagram.

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KiwiRail **Safe Working Authority** **SWA-03**

For MTMV / Work Train use only, into and within Protected Work Area limits

1 ☐ **Authority Number** 3XXX _____ day ___/___/___ date

Working under the directions of the Rail Protection Officer _____

(advised at _____ hours)

2 ☐ **Operator** of _____ at _____ is authorised to

3 ☐ **Pass Signal Nos.** ___/___/___/___/___/___ at _____

☐ **Pass Signal Nos.** ___/___/___/___/___/___ at _____

4 ☐ **Pass Station Entry Board No.** _____ at _____

5 ☐ **Pass Block Entry Board No.** _____ at _____

6 ☐ **Pass Intermediate Signal Nos.** ___/___/___/___/___/___/___/___/___

The Operator must stop at each signal / board to positively identify the signal / board listed above, then wait 10 seconds before proceeding.

This authority to pass the signals / boards listed above continues to apply until this authority is cancelled.

This form is not an authority to pass "Site Limit Boards"

7 ☐ **Other Instructions**

_____

_____

_____

Safety Assurances

Points

8 ☐ **Points Nos.** ___/___ at _____ are secured for the movement(s)

☐ **Points Nos.** ___/___ at _____ are secured for the movement(s)

Blocking

9 ☐ Blocking has been applied to the above signals and points to prevent conflicting movements

Authorised by _____ Train Controller

Name

Repeated correct at _____ hours

Repeated correct by Signaller _____ at _____hours*

SWA _____ cancelled at _____ hours

*Delete not required

Safe Working Authority SWA-03 Version 2.0 September 2024

SWA-03

Table for SWA-03 Authority preparation:		
Diagram Conventions	**Blue Lines ↗ ↘** **Situations for SWA-03 Authorities**	**Blue Box** **Single Lines** **Must Use** / **Ma**
MTMV 3086	MTMV / Work Train passing only an Absolute signal (Departure/Starting signal / Block/Station Entry board) into a Protected Work Area protected by signalling (**TS03 Mis.60 / TS06 Blocking**)	1, 2, 7, 8#, 9# / 3, 4
MTMV	MTMV / Work Trains passing an Absolute signal (Departure/Starting signal / Block/Station Entry board) into a Protected Work Area protected by signalling (**TS03 Mis.60 / TS06 Blocking**), then intermediate signals	1, 2, 6, 7, 8#, 9# / 3, 4
WT78 3077	MTMV / Work Trains passing only intermediate signals within a Protected Work Area	1, 2, 6, 8#, 9# / 7
WT78 3086	Work Trains discharging in either direction	1, 2, 7, 8#, 9# / 3, 4
MTMV 3077	MTMV / Work Trains passing Absolute signals (Home / Starting) into / through an Interlocked station, (may include an Intermediate signal) within a Protected Work Area authorised by Track Warrant	1, 2, 3, 8, 9

- **A separate authority must be issued for each Rail Protection Officers (RPO) area**
- **SWA-03 allows multiple movements, until cancelled**
- **When a SWA has been issued and the scope has changed, a new SWA must be issued a**
- **Rail Grinder only – insert in Clause 7 Other Instructions: "*Stopping at the above signals***
- **# Optional for Midland Line Automatic Signalling Areas**

SWA-03 Guide

9.5 Completion of SWA Procedures

When the Operator advises the line is clear, or the authority is required to be changed or is no longer required:

- cross out the circled authority on the diagram
- endorse the SWA-01 or SWA-02 or SWA-03 cancelled:
  - enter the limit clear and complete portion for SWA-01 or SWA-02 forms
  - enter the cancellation portion for SWA-03 forms
- tell all Addressees.

10. Restricted Speed Signals

10.1 Restricted Speed Aspect

An ‘R’ light in axle counter areas is on a departure/starting signal below the medium speed/marker unit. It is a short-range light. The ‘R’ indication is used when the signal is unable to be cleared due to the following:

- where the axle counters do not restore due to miscount or failure
- a disabled train is in the affected section, and assistance is being provided in the following direction
- train frequency requires trains to be stacked (passenger services awaiting loadings at platforms near stadium events)
- when a unit aspect of a signal has failed, or is imperfectly displayed.

The ‘R’ light is interlocked such that it will only be able to clear if:

- that the interlocking is correctly set for the movement
- that the movement into the block section is requesting to travel in the same direction as the previously cleared movement, and the block arrow is also in the same direction
- block open light from the opposing end of the block section is not available.

10.2 ‘R’ Light Failure

SO02 Automatic Signalling Rules, 4. Block Section Entry Authority and **7. Disabled Trains** will apply if an ‘R' light is unavailable.

‘R’ light failure may be due to the previous movement being an opposing movement. An ‘R’ light aspect will extinguish after the rear of the train passes the signal (last axle reset). If another train stands in the same section, behind the initial movement, the ‘R’ light may not extinguish. It will need to be manually cancelled by the Signaller (e.g., 2 passenger services on the main line at a station or close-running trains at a junction).

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11. Absolute Signals with ‘A’ Lights

The controlled intermediate signal ‘A’ light:

- is normally not illuminated
- may be individually illuminated
- is a short-range light.

The ‘A’ light indication may be fitted when the Intermediate signal needs to be cleared due to the following:

- where the axle counters do not restore due to miscount or failure
- a disabled train is in the affected section, and assistance is being provided in the following direction
- train frequency requires trains to be stacked (passenger services awaiting loadings at platforms near stadium events).

NOTE
The ‘A’ light indication will automatically illuminate when the signal communications link fails.

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12. Track Warrant Control (TWC)

12.1 Introduction

TWC protects trains and other equipment on the main line, including the main line within station limits. This is achieved by the Train Controller issuing a written instruction (Track Warrant) authorising occupancy of the track. It is used in place of other forms of block signalling for the occupation of the main line.

A track warrant is required before any train, shunting movement, or track vehicle occupies or fouls the main line, including the main line within station limits.

A track warrant is also required before any main line points operated by a hand lever are unlocked and before any other movement or work is permitted to foul the main line, except when the movement or work is carried out in accordance with **TS04 Compulsory Stop Protection** or **TS09 Foul Time**.

Safe operation under TWC is achieved by permitting only one movement to occupy any part of the main line simultaneously, except where the regulations make special provisions for shared occupancy.

In TWC areas:

- crossing stations are provided at intervals along the main line
- interlocked stations are equipped with signals which can be manually controlled
- warrant stations are equipped with either points indicators, 3 position arrival signals or hand points
- all other diversions from the main line are sidings.

Track Warrant Begins and Ends Boards

Trains are not permitted up to a TWC begins board without a track warrant for the section ahead unless the TWC begins board has a home, outer home, or all trains stop board beyond it, creating an overrun buffer for a train approaching from the TWC section.

Track Warrant Computer System (TWACS)

A TWACS is provided to assist the Train Controller in preparing and verifying warrants. When this system is available, it must be used. The procedures in the TWACS operator’s manual must be followed in addition to these instructions and **SO08 Track Warrant Control**.

12.2 The Track Warrant Form (Mis.87)

The Mis.87 (Train Controller's copy) and Mis.88 (Addressee's copy) are identical, except that the Mis.87 has a space to insert details of when and through whom a Track Warrant is relayed.

The Mis.87 must not be removed from the pad except for audit / investigation purposes. Fanfold paper with copies of Track Warrants from the TWACS printer must be kept continuous as far as practicable.

Clauses 2, 5 and 6 of the form are multifunctional and require words to be deleted in some circumstances. This action serves to prompt the Train Controller to consider which of the conditions apply.

The printed wording of clauses must not be modified except where deletion of some words is provided for in clauses 2, 5 and 6. Any conditions not provided for in the standard clauses must be included in Clause 12 - Other Instructions.

The area authorised by each Track Warrant must be continuous. Therefore, when clauses 3 and 4 are used in the same Track Warrant, the area specified in clause 3 must be next to the area specified in clause 4. No part of the area specified in 1 clause may be included in the other clause.

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A handwritten Mis.87 must be retained in Train Control for 3 months.

Track warrants must be numbered consecutively commencing with No.1 at the start of each day.

Each Track Warrant must show the train number or machinery description and numbers together with the designation of the person responsible for carrying out the instructions (i.e., Addressee) and the location of the train or machines at the time of issue.

Addressee

When the Addressee is an Operator, the warrant is addressed to the Operator (train number / MTMV group).

NOTE
When 2 or more MTMVs work together, the Track Warrant may be issued to the Operator in charge of the group without reference to the machinery description and numbers provided this information has been included on the bulletin.

When the Addressee is a Driver / Rail Protection Officer (RPO) authorised by the issue of a bulletin who is in charge of multiple activities, the single warrant is issued to the Driver / Rail Protection Officer.

- Driver/Rail Protection Officer
  - When multiple activities are authorised on the bulletin there is no requirement to list all HRV numbers in clause 12. Clause 12 to show ‘includes authority for multiple activities’

NOTE
If multiple work sites have not been authorised by bulletin, the warrant is addressed to:

- Driver / Rail Protection Officer (HRV number / MTMV number)

Details of subsequent MTMVs may be included either in the ‘To’ field or in ‘clause 12’

When clause 12 is used, the phrase 'includes authority for (vehicle number(s))' is used.

NOTE
If a single work site has more than 1 HRV, a single track warrant may be issued to:

- Driver / Rail Protection Officer (HRV number)

Details of subsequent HRVs need not be included.

Clause 12 must show ‘includes authority for multiple HRVs’.

When a single Track Warrant is issued to an RPO to be in charge of a work train and a HRV or MTMV, it must be addressed to:

- the person responsible (i.e., designation, person's name and work train / vehicle numbers), or
- when operating under **SO08 Track Warrant Control, 6. Occupying the Same Limits**, the Track Warrant is issued to the RPO, with all the vehicles that are unable to be off-tracked (work trains / MTMVs) listed on the bulletin.

NOTE
HRVs will be managed on the TS90 form and the bulletin will advise this.

To be read in conjunction with **Train Control and Signal Box Manual 12.9.14 Single Track Warrant – Multiple Activities** (**SO08 Track Warrant Control, 6. Occupying the Same Limits).**

Should the Addressee be at a track meterage, then the locations between which the meterage lie must be shown in clause 12.

A Track Warrant may only be issued to someone other than the Addressee when it is relayed.

It is, however, permissible to issue a Track Warrant to an Operator when the 'AT' is outside of TWC territory, and the Operator is to take up the running of the train concerned.

The locomotive number must be shown when a Track Warrant is issued for other than a numbered train or shunt. For example, loco DXC5517, shunt DSG3005, or Tamper 799.

When a train arrives at a TWC station and is left unattended until the next Operator takes up the running of the service, the Track Warrant issued should only authorise the train to run to the location where the change will take place.

The Operator taking over the train's running will be issued a Track Warrant to continue once they have contacted the Train Controller.

12.3 The Mis.87 Clauses

Clause 1

It is to be used when it is necessary to alter the instructions contained in a Track Warrant before the limits of that warrant have been cleared. When the Track Warrant referred to in this clause was issued on a previous day, the day of issue must also be shown.

A correct repeat of a Track Warrant which cancels a previous Track Warrant must be received before any movement, which could conflict with the previous Track Warrant, is authorised.

When the reissued warrant covers the track on which the train is standing, particular care must be taken to ensure that the limits of the new Track Warrant cover all of the tracks occupied by the train.

If a limit of the new Track Warrant is at the same station or siding as the Mis.87 'at', a specific indicator, signal or points must be used as that limit, not just the station or siding name.

Generally, this clause would not be used if the train intends to proceed further on its journey on a new Track Warrant.

Clause 2

It is to be used when a movement is authorised behind a departing train or must not occur until an incoming movement has arrived. In either case, the relevant phrase 'after departure/arrival of ..... from/at .....' must be completed.

Clause 3

It will be used for a movement proceeding in 1 direction through a section. When the movement authorised must not occur until an incoming movement has arrived, the relevant phrase ‘after arrival of ..... at .....’ in (clause 2) must have been completed.

Clause 4

It is to be used for work or a movement that may need to work in either direction within the limits of the Track Warrant. Examples of when this clause is used are for:

- MTMVs
- track work
- work trains
- working in conjunction with another movement in the same area
- shunting between a station and siding
- making several moves onto the main line at a station or siding, or
- making 1 or more return trips between stations under the 1 Track Warrant.

Clause 4 can also be used with clause 2 to allow for movement after an opposing train arrives or behind a departing train. In most cases that clause 4 is used, clause 11 can be used to provide a time by which the ‘work between’ movement is to be clear of the main line.

When meterages are used in clause 3 or 4, the stations or sidings between which these meterages lie must be shown in clause 12. This will provide a cross-check in case a meterage has been transposed, or there are two lines with similar meterages.

Clauses 3 and 4

When ‘proceed and work’ or ‘work and proceed’ Track Warrants with either a station or a double-ended siding as the common limit between clauses 3 and 4, a specific signal, indicator or set of points must be used to designate the limit of the Track Warrant at that locality.

Clause 5

Must be used whenever a movement is to enter a station or siding, which is the limit of the Track Warrant, and the station (or siding) name is used to designate that limit. This extends the limits as specified in **SO08 Track Warrant Control, 7.1 Authority of a Track Warrant**. Clause 5 is not required to authorise entry to a loop or siding between limits (or between outer limits if both clauses 3 and 4 are used).

Clause 5 can only provide for entry into 1 road at 1 location. This is usually where the movement will be when the Track Warrant is cancelled. When a Track Warrant authorises ‘work between’ and it is necessary to provide for entry into more than 1 road (for example, a siding at 1 limit and a loop at the other, or work on the loop and main at the 1 station) it will not be possible to use station or siding names to designate both limits.

In this case, 1 of the limits must be an intermediate board, signal, points indicator, points or a track meterage peg beyond the entrance to the road concerned.

At warrant stations, particularly those equipped with points indicators, the crossing of trains is more conveniently achieved if the first train to arrive is berthed on the main.

Clauses 6 and 7

Either clause 6 or 7 must be used on every Track Warrant. These Clauses show that the main line within the limits of the Track Warrant being issued is not occupied (except by a train or work referred to by clauses 2 or 12 of the Track Warrant).

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These clauses indicate to the Addressee that the necessary checks have been carried out and that the section is clear. The information for these clauses must be obtained by referencing the diagram and previous Track Warrants.

Care must be taken, particularly when a Track Warrant covering several sections is being issued, to ensure that all previous authorities within the limits of the authority being issued have been reported clear.

The time shown will be the time the limits of the Track Warrant about to be issued were (apart from any arriving train shown in clause 2 or work in clause 12) reported completely clear.

IMPORTANT
Clause 7 - must be used when the last occupancy of all the area covered by the Track Warrant was by the movement referred to in clause 2, and this warrant is not for ‘shared’ occupancy of any part of the limits.

IMPORTANT
Clause 6 - Must be used whenever clause 7 is not applicable.

When the section was reported clear on a previous day, the day (abbreviated) must also be shown (e.g., 1800 Mon). The words ‘except for’ must be deleted unless clause 2 authorises a movement ‘after the arrival or departure of .....’ or clause 12 provides for ‘shared’ occupancy.

Clause 8

When clause 2 (after arrival / departure) is used on a Track Warrant for an Addressee with a Gang profile, clause 8 must also be used.

1. When the on-tracking location of a Gang is at a km within a track warrant section, clause 8 must verify that the rail vehicle has either passed clear of:
   a. the next Intermediate Board (IB), or TW Siding, or
   b. section of line clear of the on-tracking location, (next crossing station).
2. When the on-tracking location of a Gang is at an Intermediate Board or Siding within a track warrant section, clause 8 must verify that the rail vehicle has either passed clear of:
   a. the next Intermediate Board (IB), or TW Siding, or
   b. section of line clear of the on-tracking location, (next crossing station).
3. When the on-tracking location of a Gang is within station limits at a TW crossing station, clause 8 must verify that the rail vehicle has passed clear of:
   a. that station limits

Clause 9

This is not used. There are now no stations at which signalling can be suspended.

Clause 10

It is to be used when it is necessary to confirm with the Addressee their whereabouts. This information can also be used to determine that a train has cleared its limits sufficiently to allow a following movement to be authorised.

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Clause 11

It is to be used to control the length of time the track is occupied. This clause will usually be used when clause 4 is used (e.g., MTMVs, shunting services etc.) and must be restricted by time to ensure they do not delay other services. This clause can also be used on proceed warrants for HRVs/MTMVs.

Clause 12

This clause must be used when it is necessary to include additional instructions not provided for in clauses 1 to 11. These include ‘shared’ occupancy of the limits and instructions for safe working (e.g., a work train and mobile track equipment working in a common area or relief locomotive proceeding to obstruction).

When a warrant contains instructions for ‘shared’ occupancy, it becomes necessary to change instructions or limits for that ‘shared’ occupancy. Care must be taken to ensure that all concerned know the changes before the Track Warrant is reissued.

Instructions given in clause 12 must be clear and precise and adequately provide for any necessary protection or safe operation.

The Train Controller's signature (initials and surname), repeat details and details of when the limits are reported clear must be inserted in the spaces provided at the bottom of the form. When a Track Warrant is relayed through another member, this member's name, and the time the instructions were relayed to them (i.e., after they have repeated it) must be shown in the space provided.

12.4 Summary of Procedures

The sequence for issuing and cancelling a Track Warrant is as follows:

- establish positively either from your requirements or from the member requesting the Track Warrants the exact purpose for which the authority is to be issued and the limits which will be applied
- carry out the checks as prescribed herein to establish that it is safe to issue the Track Warrant
- plot the movement on the diagram
- prepare the Track Warrant
- transmit the Track Warrant to the Addressee and obtain a correct repeat
- record the status of DAS as advised by the Locomotive Engineer
- when the Addressee reports clear of the limits, endorses the diagram, and cancels the Track Warrant.

12.5 Issuing and Recording Track Warrants

TWC depends on communication between the Train Controller and the Addressee. In the event of a complete failure of the normal communication system, public facilities should be used where necessary (e.g., an Operator at a station could be called to the public telephone, if provided, to take the track warrant).

When TWACS is not in use, all details included in a track warrant must be prepared with a pen and not altered. If an error is made in preparing the track warrant, it must be ‘non-issued’ and a new one prepared. Abbreviations of station names must not be used.

All relevant parts of the Track warrant must be completed, and all necessary checks carried out before any part of the track warrant is transmitted.

Before issuing a track warrant, the Train Controller must verify their identity, train, or track vehicle number and location with the Addressee. This allows for no doubt that the track warrant is received by the correct Driver/Operator/Rail Protection Officer.

When TWACS is in use, the Train Controller must:

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- verify that all details contained in the track warrant are correct before confirming that the track warrant is to be issued
- if an error is noticed, stop transmission and tell the addressee of the error and to stand-by
- non-issue the track warrant in TWACS
- prepare and issue new correct track warrant to the addressee.

Correct radio procedures must be complied with where radio is used to transmit track warrants. Track warrants must not be transmitted while the recipient is driving a moving train or machine.

When TWACS is not in use, and a Train Controller is to be relieved, either for a portion of or on completion of a shift, all uncancelled track warrants are to be recorded by the number on the diagram and the record signed by the incoming Train Controller.

12.5.1 Lost Track Warrant

When an Addressee reports that a Track Warrant has been lost, the correct warrant issued to the Addressee must be identified, after which it must be cancelled by reissuing the Track Warrant using clause 1.

12.5.2 The Rear of Signals and Indicators

The rear of signals/indicators may only be used to designate the limits for the movement of trains when:

- that limit is required as a transition point between ‘proceed and work’ or ‘work and proceed’ warrants, or
- as a limit for a ‘work’ warrant.

12.5.3 DAS Use in TWACS

After the Locomotive Engineer confirms the repeated correct time, they will tell the Train Controller the status of DAS. The Train Controller must select the appropriate box for:

- ‘OK – DAS SET’, or
- ‘OK – NO DAS’

NOTE
When DAS is in use, TWACS will automatically set the location to the limit of the track warrant.

NOTE
A Locomotive Engineer may tell you that DAS is set to a station beyond the track warrant ends area, however the TWACS system will automatically select the DAS location as the end of track warrant territory.

12.6 Checks and Train Control Diagram

Before a Track Warrant is issued, the Train Controller must establish positively whether or not a Track Warrant is still in force within any part of the limits of the warrant about to be issued.

All movements authorised by Track Warrant must be plotted in blue on the diagram. This will assist in establishing whether it is safe to issue a Track Warrant. The Train Controller must establish by

reference to these ‘warrant lines’ (and to uncancelled Track Warrants if TWACS is not in use) that either:

- there are no other Track Warrants in effect for any part of the area covered by the Track Warrant, which is about to be issued, or
- it is safe to issue the Track Warrant in accordance with **SO08 Track Warrant Control, 6. Occupying the Same Limits**.

After establishing that it is safe to issue the Track Warrant, the warrant line (corresponding to the limits of the Track Warrant being prepared) will be drawn along the pencil plot line for the train concerned. If the Track Warrant being issued contains clause 4 ‘work between’, the warrant line must be shown as a block and encompass the limits of the authority and the time allowed.

Where track meterages or other points apart from stations and sidings are used to define the limits, these must be shown beside the warrant line.

The Track Warrant line will correspond to and replace the pencilled plot line (i.e., will show the anticipated progress of the train, including intermediate stopovers for the shunts).

After plotting the warrant line, it must be checked against previous warrant lines on the diagram to re-establish no conflict before preparing the Track Warrant.

If the limit of the Track Warrant terminates at a station or siding and the berthing arrangements, as shown in the Track Warrant, must be indicated in blue on the diagram (at the station concerned) using the following abbreviations:

- entering main - M
- entering loop - L
- entering siding - S
- not instructed to enter - O (i.e., stop outside).

The number of the Track Warrant must be shown in blue adjacent to the warrant line and circled. It should be located towards the terminating end of the warrant line and crossed out in blue when the Track Warrant is cancelled.

When a following movement is to be authorised to proceed into the limits of the train in front, in that case, the warrant line for the leading train is to be marked off in sections to indicate the limits which must be cleared before the following movement is authorised. The circled number of the Track Warrant for the leading train is to be shown adjacent to each of these sections, and as each section is reported clear, the relevant circled number must be crossed out and endorsed with the time the call was made.

If the Track Warrant terminates at a location where a current Track Warrant starts or terminates, a check must be made to ensure that the instructions issued do not conflict with the instructions in the other Track Warrant. In other words, it must be established that it is safe to authorise the movement to that limit.

IMPORTANT

A Track Warrant must not authorise a movement to ‘proceed to’ a location similar to another Track Warrant unless that location is a crossing station.

If an error is made in drawing the blue warrant line, the incorrect line or portion of the line is to be crossed out and redrawn.

Blue only must be used to indicate Track Warrants. Other endorsements on the diagram, such as the actual running line of a train, special trains, and trolley movements, will be shown in the following manner:

- actual running line of trains - to be shown in red
- special trains, timetable changes, block of line etc. - to be shown in green
- trolley movements or other track occupancies - in black.

Remember before issuing a Track Warrant:

- check whether a previous Track Warrant is still in effect for any part of the limits being authorised
- plot the warrant line and number in blue on the diagram
- establish that there is no conflict with other movements at the terminating limit.

12.7 Cancelling Track Warrants

Particular care must be exercised when cancelling Track Warrants to ensure that the correct warrant is crossed off the diagram and is cancelled in either the Mis.87 pad or TWACS. When TWACS is in use, the Addressee and the limits of the Track Warrant selected for cancellation must be checked to ensure it is the correct Track Warrant.

WARNING

The system will become unsafe if the wrong Track Warrant is cancelled.

If the wrong Track Warrant is accidentally cancelled in TWACS, a new one covering the same limits must immediately be prepared and stepped through the issue function. The replacement Track Warrant should not be read out to the Addressee, but the printed copy should be endorsed with the particulars. Where it is impossible to prepare the replacement Track Warrant or step through the issue function, then TWACS must be treated as having failed, and the manual method must be resumed immediately.

The TWACS Supervisor (Super01) must be called before the manual TWC.

12.8 Failure of TWACS

If TWACS should fail or if a ‘database error’ message is displayed on the screen, an attempt must be made to change to the alternate TWACS II server. If this fails, then follow this procedure:

- verify each active track warrant against the Train Control diagram and obtain a printout of these track warrants from the relevant electronic archive.
- a standard Mis.87 pad should be used when preparing, issuing, and cancelling all subsequent track warrants. The TWACS printout should be used when cancelling those track warrants produced by TWACS
- DAS details are to be endorsed on the Mis.87
- the numbering sequence used when manually issued:
  - manual - M
  - desk numbers - 01, 02, 03, 04, 05
  - Track Warrant numbers 01 – 99.

When TWACS is not in use, all Mis.87s must be cross-checked and initialled for correctness by a second TWC-qualified Train Controller to signify that the track warrant has been prepared in accordance with **Train Control and Signal Box Manual, 12.4 Summary of Procedures, 12.5 Issuing and Recording Track Warrants,** and **12.6 Checks and Train Control Diagram** before being issued.

12.8.1 Database Error

If a ‘database error’ has been displayed on the screen, the system must not be restarted until the TWACS programme and database have been reinstalled. In this circumstance, refer the problem to the TWACS Supervisor (Super 01) before the reinstallation. Full details, including keystrokes before the failure, must be recorded and advised to the ICT Service Desk.

12.9 Instructions Relating to Specific Rules

12.9.1 SO08 Track Warrant Control Rules and RP02 Using Track Warrant Control

SO08 Track Warrant Control and **RP02 Using Track Warrant Control** must be followed to ensure safety and provide uniformity so that everyone has the same understanding of what is required. When a particular action is necessary, but is prohibited by the rules, then that action can only be done by conforming with this instruction. The circumstances must be carefully assessed to determine whether any other method within the rules can achieve a satisfactory result. The action which requires a departure from the rules must not be taken until a special bulletin is issued. That special bulletin must include any instructions necessary to ensure safety.

All actions must strictly follow the rules unless a special bulletin has specifically authorised the action. The following examples are provided as guidance:

- A major line blockage has occurred, and it is necessary to release the crew and leave the train unattended on the main line. A special bulletin will be issued in accordance with this instruction. The special bulletin would need to include the following:
  - safety procedures must be followed to provide for the safety of the train, and
  - advice on what must happen to the Track Warrant held by the Operator.
- A derailment has occurred on the main line, and the front part of the train must move on before a suitable Addressee is available to issue a warrant for the rear of the train. A special bulletin will be issued in accordance with this instruction. If it were necessary to cancel the warrant while part of the train still obstructed the line, then that special bulletin would need to include the following:
  - safety procedures that must be followed to provide for the safety of the train
  - advise the circumstances under which the Operator may cancel the Track Warrant
  - instruct Train Control regarding the issue of a further warrant for the section.

12.9.2 SO08 Track Warrant Control, 3. General

A Track Warrant which authorises work or a movement will be sufficient authority to operate any main line points necessary to carry out the work or movement authorised by the Train Controller within the limits of that Track Warrant.

Any other operations which require main line points to be unlocked (such as cleaning points, trolley movements etc.) will require the authority of a Track Warrant. A Track Warrant is not required for operating motor points. This should be arranged verbally with the Train Controller.

12.9.3 SO08 Track Warrant Control, 4. Issuing a Track Warrant

The use of this rule should generally be restricted to those circumstances where other protection methods are either impracticable or undesirable, such as:

- a Ganger repairing a track fault with limited resources or where the time is taken to provide alternative protection would incur unacceptable delays, and
- major work authorised by bulletin.

Where a Track Warrant is issued under this rule, the Addressee, in addition to holding the appropriate current operating certificate, must be able to be contacted by the Train Controller. If this is not possible, the Addressee must be instructed to call the Train Controller regularly as appropriate. If the work or movement is to be carried out without a Track Warrant, the procedures and responsibilities as provided for in the rules will apply.

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12.9.4 RP02 Using Track Warrant Control, 4. Issuing Track Warrants

As the Addressee (or relaying member) repeats the instructions in a Track Warrant, the Train Controller must mark each written word or number on their copy of the Track Warrant and each relevant clause number to indicate the correctness of the repeat.

If an error is made in the repeat:

- the Train Controller, after the repeat is finished, must advise the Addressee (or relaying member) of the error in the following manner “negative - clause 5 should read - enter the loop at *'station'* to cross No.363 – over”, and
- the Addressee (or relaying member) must then correctly repeat the whole clause or instruction which was wrong before the Train Controller confirms, “that is correct".

When TWACS is in use, the read-back of the warrant will be carried out in accordance with the **TWACS User Manual** (read-out/read-back instruction), and it will not be necessary to mark each word on a copy of the Track Warrant.

When an Addressee cannot be contacted directly and must relay a Track Warrant, the relaying member must communicate directly with the Addressee. The member who relays the Track Warrant must be certified as competent in the rules applicable to TWC.

No more than 1 relaying member may be used to transmit Track Warrants unless specially authorised by a special bulletin. Before authorising the use of more than 1 relaying member, the Officer Controlling Train Running must be satisfied that the Addressee will receive the Track Warrant in its correct form.

12.9.5 SO08 Track Warrant Control, 4.1 Proceed Warrant

This rule does not prohibit reverse movements on the main line while shunting or double banking. A train can be considered to be proceeding in 1 direction if the rear of the train does not move in the other direction except when shunting at stations and sidings. A train that holds a Track Warrant to ‘proceed’ through an area may carry out shunting movements within that area under the authority of the Track Warrant held.

12.9.6 SO08 Track Warrant Control, 4.2 Work Between Warrant

A Track Warrant issued to work between two stations does not authorise entry into those stations unless provided for in the Track Warrant. Similarly, a movement that has departed a station cannot re-enter that station unless clause 5 authorises entry into that station.

12.9.7 SO08 Track Warrant Control, 4.3 Through Warrant

Advice to the Operator or Driver of the second rail vehicle should be given in clause 12 of the track warrant if the rail vehicle's presence in the loop is known when the track warrant is issued. Otherwise, the advice is to be given verbally, and reissuing the track warrant will not be necessary to show the rail vehicle in the loop. The Operator or Driver of the rail vehicle in the loop should also be advised verbally that the other rail vehicle will pass through.

12.9.8 SO08 Track Warrant Control, 4.4 Conditional – All Cases

This rule enables some Track Warrants to be issued before advice is received that the limits are clear for the movement. This is achieved by providing instructions (in clause 2) that the Track Warrant must not be acted upon until after the arrival (or departure) of another movement.

A Track Warrant must not be issued to authorise a movement ‘after’ a train, HRV or MTMV, which has the authority to ‘work between’.

A Track Warrant must not be issued for a train movement after the arrival/departure of a HRV or MTMV.

Track warrants which must not be acted upon until ‘after’ the arrival or departure of a train, are only to be issued when the Addressee is at the locality where the stipulated arrival or departure of that train is to occur. (The ‘AT’ in the heading of the Track Warrant must be the same as the ‘from/at’ in clause 2).

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The purpose of this ‘after’ provision is to save time by giving the Train Controller the opportunity of issuing a Track Warrant while the movement is waiting for an opposing train or the Track Warrant for that train is still in effect. However, the issue of such Track Warrants too far in advance of the arriving or departing train should be avoided and generally should not be more than 15 minutes in advance.

A train to arrive or depart before the movement for which a Track Warrant is being issued must be the next train at the time of issue.

Example: If a track gang requires a warrant to work on-track but must wait for two trains to pass, then a conditional Track Warrant must not be issued for the gang until the first train has passed and the second is either close or has already passed.

IMPORTANT
The words ‘after arrival of .....’ in clause 2 must also be included when the Track Warrant is issued after a train/HRV/MTMV has arrived if the Track Warrant for that movement has not been cancelled.

Similarly, if a train has departed when a shunting movement or other work on or alongside the main line is authorised to enter into the limits of that train, the words ‘after departure of .....’ must still be included.

12.9.9 SO08 Track Warrant Control, 4.5 Conditional – After Arrival and 4.6 Conditional – After Departure

Clause 8 reinforces the requirement for the Train Controller to confirm the previous movement has cleared the ‘at’ location.

GPS position reporting is an additional tool to provide situational awareness for approaching trains. The information provided must not be used in making safety critical decisions for a train being clear of an on-tracking location. The information should be used to provide Track Warrant addressee information that a train may not be clear of on-tracking location.

12.9.10 SO08 Track Warrant Control, 5.1 Warrant in Effect Once Issued

When it is necessary to change the limits which are in effect for that portion of the line on which the train (or other rail vehicles) is standing, care must be taken to ensure the limits of the new Track Warrant encompass that portion of the line on which the train (or other rail vehicles) is standing. This will be accomplished by specifying 1 limit in the rear of the train and the other limit in advance of the train.

Where it is necessary to alter the berthing arrangements, the correct sequence to be followed when Track Warrants have been issued for a crossing is:

- advise both Addressees what is going to happen
- the Track Warrant for the train to enter the loop must be reissued. The last limit of that reissued Track Warrant must be at, or short of, the entrance to the station. If possible, it should terminate at a limit before the station concerned, as this will allow a further crossing warrant to be issued for that station
- the Track Warrant for the train which was to enter the main must then be reissued for it to enter the loop
- the other train must then be issued with a Track Warrant to enter the station. This may be either a reissue or a new Track Warrant.

12.9.11 SO08 Track Warrant Control, 5.3 Calling Train Control En Route

A proceed Track Warrant is issued to an Addressee with an anticipated 2 hours or more to run from the ‘repeat correct time’ before the limits are cleared. This must have a clause 10 call specified from a

warrant station at approximately every hourly interval and a warrant station within 25 to 30 km from the terminating limit.

The circled number of the Track Warrant must be shown adjacent to the blue line on the diagram alongside each of these clause 10 calls.

When the Addressee calls, they will advise the location from where the call is being made and the terminating limit of the Track Warrant they hold. A check to confirm this information must be made against the warrant line drawn on the diagram. In addition to the call being logged in TWACS (if in use), the time must be endorsed alongside the call location on the diagram and the relevant circled Track Warrant number crossed out.

If it is noticed that a call has not been received, then the Addressee should be contacted and their whereabouts established. Such lapses must be reported to the Network Control Manager for appropriate action.

12.9.12 SO08 Track Warrant Control, 5.9 Clear Time

If it is necessary to continue working beyond the time shown in clause 11 of the Track Warrant (either by mutual agreement between the Train Controller and the Addressee or because it is impossible for the work to be clear), then a new Track Warrant must be issued. This will cancel the first Track Warrant and authorise work to continue to a newly agreed time.

12.9.13 SO08 Track Warrant Control, 6. Occupying Same Limits

Once a Track Warrant is issued, no other work or movement may be authorised by Track Warrant within any part of those limits until the first Track Warrant is cancelled or unless the provisions of **SO08 Track Warrant Control, 6.3 Multiple Track Warrants – Common Limits** bullet points apply.

12.9.14 SO08 Track Warrant Control, 6.1 Single Track Warrant – Multiple Activities

When more than 1 maintenance operation is working separately in the same area but is under the direction of 1 person, only 1 Track Warrant is necessary to cover the work. The Track Warrant must be addressed to the member responsible for their safe operation.

Except when authorised by bulletin, separate Track Warrants must be issued for each train whether or not it is carrying out maintenance work or working in conjunction with machinery.

When authorised by bulletin, a single Track Warrant may be issued to the Rail Protection Officer of the work to cover the track occupancy of a work train working under this person’s direction.

12.9.15 SO08 Track Warrant Control, 6.3 Multiple Track Warrants – Common Limits

A following movement must not be authorised behind a train with authority to ‘work between’. The clauses below also apply to HRVs and MTMVs when travelling on proceed warrants.

Referring to the third bullet point:

This rule provides for the safe operation of following movements when the Track Warrant for the train ahead is still in effect.

Some limits are defined by a single point, such as an intermediate board or single-ended siding. An Operator may report arriving at such a location before the whole of their train has passed, or they may not be able to ascertain when the rear of their train has cleared that location. In addition, there is no signal or warning board to remind the Operator of the following train that they are close to that limit unless it is a warrant station or interlocked station.

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Therefore, to ensure sufficient spacing for the following movement, there must be at least 1 clearly defined section of track (i.e., between stations, sidings, or intermediate boards) intervening between the limit of the Track Warrant issued for the following train and the last reported position of the train in front.

Some main line sidings are too close to each other or adjacent stations to allow them to be used to give the required spacing between movements. Care must be taken to ensure the stations or sidings which are used to establish such spacing are of sufficient distance apart to ensure safety. Generally, any which are less than 2 kilometres apart are of doubtful suitability.

Referring to the third clause under the third bullet point:

This clause allows a following movement to be closer than in the first clause when the train in front has entered a station. A following movement can be authorised right up to a station once the rear of the train in front is inside or through that station. Even if the Track Warrant for the train in front terminates at that station, it is still occupying its limits until it clears the main, and therefore the following train will share occupancy of those limits.

This provision is necessary, particularly to achieve overtaking movements and is the only occasion where a clear intervening section is not required between following movements. The Train Controller must, however, establish with the Operator of the train in front before authorising the following movement that their train not only has arrived but is berthed in clear at/or passed completely through the station.

If the train in front berthed on the loop, the following movement would only be authorised after the Operator of the train in front had reported clear of the limits of their Track Warrant.

This clause can also authorise a following train through a junction on 1 line when the train in front has passed completely through the junction onto the other line.

NOTE

All interlocked stations and warrant stations have some advance warning for an approaching train. A following movement may therefore be authorised right up to these stations, even while the train in front is occupying the main, providing the rear of the train is within station limits. No such facility is provided at sidings and other locations, and therefore greater spacing must be provided as in **SO08 Track Warrant Control, 6.3 Multiple Track Warrants – Common Limits**.

In TWACS, the following movements in accordance with this rule are accomplished by ‘clearing limits’.

This function must not be used to clear to a station where the movement is standing except when a following movement is going to occur.

Referring to the fifth bullet point:

Provides for HRVs, MTMV or Rail Personnel to on-track after a ‘proceed’ movement passes, or for shunting at or near a station or siding behind a departing ‘proceed’ train. In these cases, the Addressee will be responsible for visually establishing safe working distances. The use of this provision for a shunting movement to a nearby siding must be restricted to a distance of not more than 2 km.

12.9.16 SO08 Track Warrant Control, 7. Limits of a Track Warrant

Track meterage pegs may be used to designate the limits for the movement of trains only when they are authorised from a meterage (not to a meterage) or to ‘work between’.

Meterages up to 2 decimal places may be used for limits in Track Warrants issued to Gangs.

Where signals or points are used to define limits, the signal or points number must be used, and the station at which they are located must be included. Intermediate boards are to be defined by name.

Where sidings are used, the name of the siding must be shown, and if the siding bears the same name as a station in the area, the word ‘Siding’ must be included after the name.

12.9.17 SO08 Track Warrant Control, 7.1 Authority of a Track Warrant

These clauses refer to using a station or siding name to designate the limit. A Track Warrant authorising entry onto the main line at a station or siding remains in effect until the movement vacates the main line within station limits or between main line points at a siding.

A Track Warrant which authorises entry into the loop or sidings at the terminating limit allows the movement to proceed to any part of the loop or sidings clear of the main line. Once the movement has cleared the main line, the Track Warrant can be cancelled.

12.9.18 SO08 Track Warrant Control, 7.2 Signals Controlled by the Signaller

The Signaller must be verbally advised whenever a Track Warrant is issued authorising a movement which will require to be signalled or pass over the main line points at their stations. They must also be advised of any movements where their station is the limit of the Track Warrant.

12.9.19 SO08 Track Warrant Control, 9. Fouling the Loop in TWC Territory

Although loops are not part of Track Warrant territory, they must be placed under the jurisdiction of the Train Controller so that they can arrange crossings and berthings. Any authorised fouling of the loop other than authorised by a Track Warrant must be suitably endorsed on the diagram.

When rail vehicles must be left unattended on a crossing loop, and TWACS is in use, a gang is to be created as follows:

- ID: Tonnage
- Addressee: Tonnage
- Addressee short name: Tonnage
- a special bulletin must be issued in all cases.

The outer limits of the gang must include the crossing loop where the vehicles are being left unattended.

The ‘tonnage’ gang that has been created is then to be placed on the crossing loop using the status function. This will ensure that the Operator on through warrants will receive advice on the vehicles on the crossing loop in clause 12 of Track Warrants.

When TWACS is not in use, the necessary advice to Operators of the vehicles on the crossing loop will be included in clause 12 of Track Warrants.

12.19.20 SO08 Track Warrant Control, 10. Crossing Trains at Warrant Stations

When other members are instructed to carry out procedures laid down for Train Crews, such as an Officer in Charge instructed to assist with crossing or berthing trains at a warrant station. Train Crews concerned must be verbally advised of any changes to normal procedures.

12.9.21 SO08 Track Warrant Control, 10.3 Hand Points

When ATC trains enter or depart from a crossing loop at a warrant station equipped with hand points only, the Operator must have assistance from another Competent Worker to unlock and lock up the main line points promptly after the train has cleared them.

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12.9.22 RP02 Using Track Warrant Control, 7. Cancelling Track Warrants

Track warrants may only be cancelled by the Addressee reporting clear of the limits or by clause 1 of a subsequent warrant. In conjunction with **SO08 Track Warrant Control, 3. General**, this rule ensures that no train, shunting movement, or track vehicle occupies the main line without a Track Warrant.

A train that has been instructed to enter the main at a station still occupies the limits of its Track Warrant while standing on the main at that station. The limits cannot be reported clear until the movement has vacated the main. This will generally be after the departure of the movement into the section ahead.

Because the Track Warrant applies only to the main line, the limits can be reported clear once the movement enters a loop.

A warrant which cancels another must be addressed to the Addressee of the warrant it cancels, except as provided in **SO08 Track Warrant Control, 5. Track Warrant Use**.

Before issuing a Track Warrant which cancels another Track Warrant, the Train Controller must ensure that the parts of the original Track Warrant which are not included in the replacement Track Warrant are clear, or that any occupation of those limits is included in another issued Track Warrant.

When transferring responsibility for rail vehicles on the main line from 1 Addressee to another, it must be carried out within the overlapping limits of the 2 Track Warrants. Neither Track Warrant may be cancelled nor reissued with limits clear of the rail vehicles until there is a clear understanding between Addressees as to who is responsible for the rail vehicles.

The advice of the responsibility must be included in the Track Warrant to the Addressee taking over the rail vehicles if they are not an Operator or if the original Addressee cannot personally advise the new Addressee of the circumstances.

If a derailment occurs when a train has a ‘scheduled’ profile in TWACS, the Track Warrant must be re-issued at the derailment site to work with another suitable Addressee (Infrastructure Personnel or Site Manager called to the scene). If this is not done, it will not be possible to re-issue the Track Warrant in TWACS once the train passes the next station.

It is unnecessary for a train to cancel a work between warrants as soon as it clears its limits if it is convenient to use that authority to re-enter the limits within a reasonable time instead of issuing a new Track Warrant. However, the Track Warrant must be cancelled if the train passes into another Train Controller's territory.

A Track Warrant which contains a ‘time’ by which the main line must be clear must not be considered cancelled, nor a conflicting Track Warrant issued until the Addressee has reported clear of the limits, even though the time may have expired.

There are no special instructions regarding the action to be taken when the Addressee does not directly communicate with the Train Controller when they must report that they have cleared the main line. This should be carried out similarly to relaying a Track Warrant.

When a ‘work between’ warrant has been issued to other than a train and the hours have expired without a call from the Addressee, then the Train Controller is responsible for trying to make contact.

Should contact not be made and it is desired to recommence normal operations, all the necessary precautions must be made to ensure that the Addressee will not again act on the authority of the Track Warrant concerned. A track inspection must be arranged through the area where the warrant was applicable to ensure the track is clear and safe before normal operations are resumed. The Track Warrant may then be cancelled, and the particulars entered in the incident reporting system.

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12.9.23 RP02 Using Track Warrant Control, 8. Warrant Stations with Arrival Signals and/or Points Indicators

The following circumstances occurring at the same end of the station where the failure occurs are possible causes of points failure:

- the door of 1 of the pushbutton control boxes may not be properly closed
- the Ganger's control switch may have been left ‘On’, or
- if provided, the control switch for the backshunt arrow may have been left ‘On’.

If the points are hand wound, it may be necessary to leave them isolated as described in **Local Network Instructions**.

The Ganger's control switch does not operate the motor points. When the main line points are in normal, the operation of the Ganger's switch to ‘On’ will illuminate the points indicators and lock the main line points in normal. Infrastructure personnel are not supplied with a key to the pushbutton controls and cannot, therefore, gain entry to or exit from the loop unless the machines are accompanied by locomotive running personnel, or the station is attended by Operating Personnel.

NOTE

Exception: MTMV Infrastructure personnel are certified to have possession of relevant keys.

12.9.24 RP02 Using Track Warrant Control, 10. Working Sidings

Certification of the main line points, as required in **RP02 Using Track Warrant Control, 10.1 Allowing Trains to Pass**, must be recorded on the diagram showing the name of the certifying member and the time the advice is received.

12.9.25 RP02 Using Track Warrant Control, 11. Train Divided or Stalled

A SWA-02 must not be used in Track Warrant territory. The disabled train must be instructed by Track Warrant to remain stationary at a specified point until the relief locomotive removes it.

The Track Warrant issued to the disabled train must:

- cancel the original Track Warrant
- authorise the train to ‘work between’ the station to which the relief locomotive will assist and the nearest meterage peg on the other side of the train
- advise the train which direction assistance will come from
- instruct the train to remain where it is until the arrival of the relief locomotive
- the location of the disabled train on the Track Warrant must be the nearest meterage peg or other permanent fixture authorised in **RP13 Identification and Verification of Location** that is clear of the end of the train in the direction the relief train will arrive from.

The Track Warrant issued to the relief locomotive must:

- authorise the relief locomotive to ‘work between’ limits which must encompass the location of the disabled train
- advise the location of the disabled train
- instruct where to assist the train to.

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IMPORTANT
You must ensure you comply with the provisions of **TO05 Damaged and Disabled Rail Vehicles, 6. Disabled Trains.**

The relief locomotive becomes part of the train while it is attached. Therefore, any subsequent Track Warrant to authorise movement beyond the limit of the Track Warrant held by the disabled (or partly disabled) train must be addressed to that train. It will also apply to the relief locomotive while it remains with the train.

It can also be considered that the initial arrangement allows ‘joint occupancy’ of the area by the relief locomotive and the disabled train where the limits of the two warrants overlap. It is, therefore, not necessary for the relief locomotive to cancel its Track Warrant when it couples to the train.

If the train is only partially disabled and does not require assistance beyond the ‘shared’ limits, it is for the relief locomotive to detach at that point. If that locomotive already holds the authority to occupy the main line in the area adjacent to that point, it may not be necessary to issue a further Track Warrant.

TWACS User Manual, Appendix B, contains Work in Conjunction Warrants (WICs) examples.

12.10 Infrastructure Work / Inspections

When Track Warrants are required for Infrastructure work and track inspections, Infrastructure Personnel and Train Controllers must use the following guidelines:

- where practicable, Infrastructure Personnel should give early prior notice to the Train Controller of their day requirements
- Train Controllers are to plan Track Warrants accordingly, taking account of the planned maintenance notice
- If prior notice cannot be given by Infrastructure Personnel to the Train Controller, then it is expected co-operation will exist to meet both train operations and maintenance requirements. This will necessitate, on occasion, the cancellation and reissuing of Track Warrants in some circumstances.

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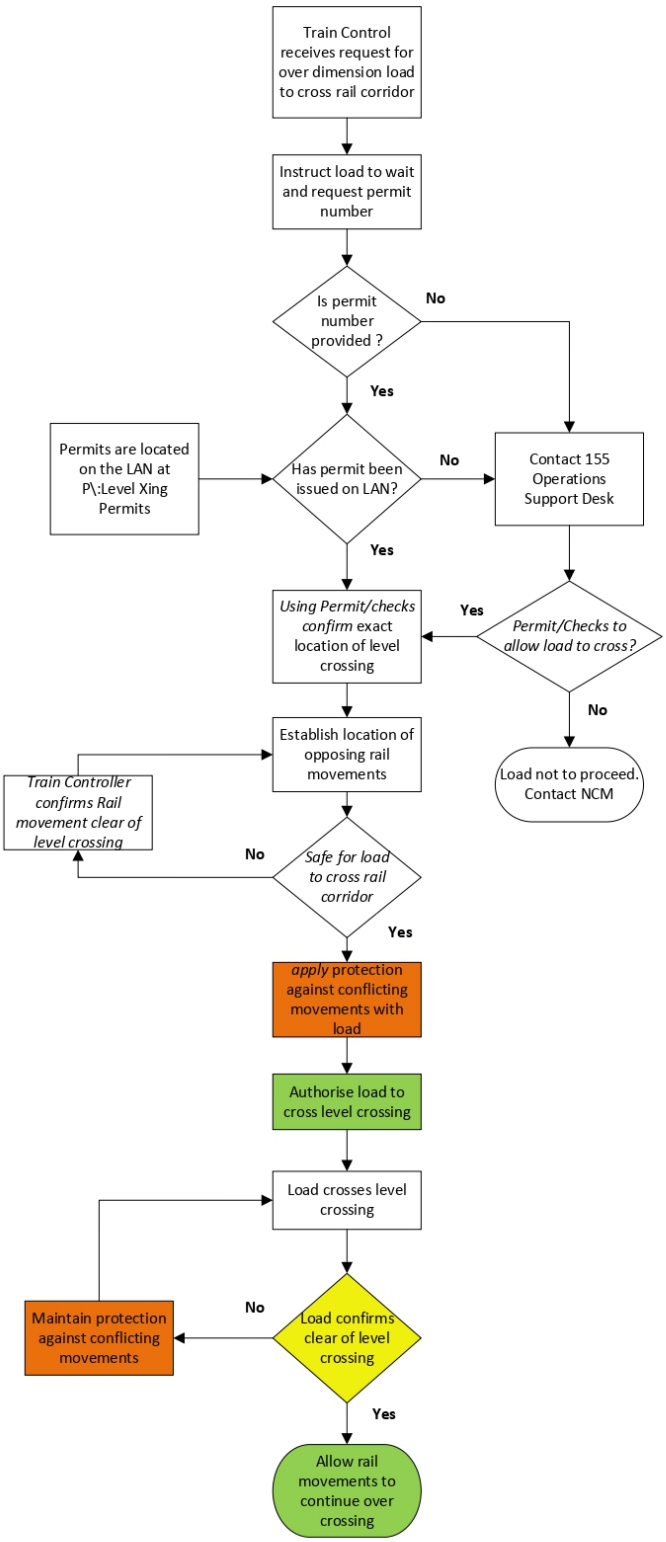
13. Track Crossing Requests

13.1 Over Dimension Loads



Over Dimension Load Flowchart

13.2 Stock Movements

When a call is received for a stock movement over or near the track, only relevant train and HRV whereabouts information should be given to the caller. Rail movement location information is provided solely for the crossing user to determine if they can cross the line and to assist them to give way to any rail vehicle movements. It should also be pointed out to the caller that rail movements will be travelling at normal speed. There is no obligation to inform Operators to slow down in these circumstances.

NOTE
Stock movements are not to be treated as a track occupancy request.

If circumstances alter after the request for the stock movement, the Train Controller must advise all rail movements of the stock movement, before they enter the affected section.

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14. Track Occupancy Requests

14.1 Accurate and Updated Information

The necessity for absolute accuracy when dealing with inquiries from trolleys, HRV users and Infrastructure Personnel working on or near the track is vital.

There is no margin for error, oversight or indifferent approach concerning the movement of trains, HRVs, or trolleys when handling enquiries from these callers. Safety depends on the accuracy of information supplied by the Train Controller, and there should be no possibility of misunderstanding by the inquirer. A Train Controller must not adopt abbreviated speech or shortcuts in procedure when handling these inquiries.

The following matters must be watched carefully by a Train Controller when dealing with the movement of HRVs, trolleys and Infrastructure work:

IMPORTANT

When the caller uses meterages, you must ensure that you follow the procedures of **RP13 Identification and Verification of Location.**

14.2 Summary of Track Occupancy Procedures

14.2.1 Establishing Details for Track Occupancy

Train Controllers must establish the following details before starting the pre-authorisation checks:

- the identity of the caller
- type of protection requested
- on tracking location* at location (the exact location of the caller)
- in multi-line areas, check lines being occupied or obstructed
- the limits of the occupation being requested (including off-tracking location*)
- time required for the work
- nature of the work/task being undertaken.

Use the principles of Crew Resource Management to clarify aspects of the occupancy (e.g., a digger operating more than 4 metres from the track centre line; will the boom encroach within 4 metres? If so, apply for appropriate protection as shown in the track occupancy protection matrix in **TS01 Planning Work in the Railway Corridor**).

14.2.2 Pre-Authorisation Check

Pre-authorisation check and diagram use for track occupancy (applies to all areas).

WARNING

Before track occupation is authorised, the Train Controller must establish positively whether any conflict exists

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The Train Controller must establish and ensure by reference to these plot lines that:

- there is no conflict for any part of the area covered by the plot line which is about to be authorised with:
  - train(s)
  - a rail vehicle movement
  - existing occupations, or
  - track maintenance machinery.
- should a conflict with an existing occupation or track maintenance machine exist, the caller must be advised so that arrangements can be made to pass through the area concerned.

Refer to **RP12 HRV Operations, 2. Existing Track Occupancy** and **3. Conflicting Occupancy Request**.

The Train Controller must verify the location of any conflicting Rail Vehicle movement(s) before the occupation is authorised, as described in instruction 14.2.3 Verification Procedure.

IMPORTANT
All movements and work authorised must be plotted on the diagram as prescribed in **Train Control and Signal Box Manual, 2.2 Train Control Diagram Conventions, 2.4 Application of Conventions - Train Control,** and **2.5 Identifying Limits of a Track Occupancy or Safe Working Authority.**

14.2.3 Verification Procedure

ASR and Midland ASR Areas

When the conflicting rail vehicle is a train, before granting any track occupancy authority the Train Controller must verify the last train's location to ensure that it has passed clear of the section of line or arrived at the platform clear of the on-tracking location.

Verification must occur by either:

- Automatic Signalling panels -
  - Observing all track circuits are clear within the on-tracking location when within station limits of an interlocked station, **or**
  - Observing all track circuits are clear between adjacent stations for any continuously detected block section, **or**
  - Where the on-tracking location is in dark territory or non-continuously detected section -
    - Obtaining verbal advice and confirmation of a train's location from the Operator that it is confirmed arrived at or clear of the next station (including Metro Platforms).

Track Warrant Controlled Areas

Before granting any track occupancy authority requesting to on-track:

- within a Track Warrant section, or
- within station limits (at an interlocked or Track Warrant station), and
- the conflicting rail vehicle is a train,

the Train Controller must verify the last train's location to ensure that it has passed clear of the next Intermediate Board / section of line clear of the on-tracking location, or clear of station limits.

Verification must occur by:

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- obtaining verbal advice and confirmation of a train's location from the Locomotive Engineer to confirm that the train has arrived at, or is clear of, the next station or Intermediate Board, or clear of station limits.

Table 1 provides practical examples of the application of this rule for Track Warrant areas.

Table 1

Request	Rule requirement before allowing authorisation
On-track on main inside station limits Kawerau	Last train must have verbally confirmed departed clear of station limits Kawerau
On-track between 4R / 4L signals Takapau PNGL	Last train must have verbally confirmed departed clear of station limits Takapau
On-track at 458.43km MSL Baker Street between Milton and Balclutha	Last train must have verbally confirmed arrived at or departed Balclutha, or clear of Benhar IB

Table 2 provides practical examples of the application of this rule for ASR or Midland Line Automatic Signalling Areas.

Table 2

Request	Rule requirement before allowing authorisation
On-track on Up Main at 633.5km NIMT Crown Rd Paerata	Last train must have verbally confirmed arrived at or departed Papakura
On-track on Down Main at 606.6km NIMT Oram Rd Mercer - Amokura	Last train must have cleared Amokura Junction by panel observation
On-track on Up Main at 621.6 Harrisville Rd between Pukekohe and Mercer	Last train must have verbally confirmed arrived at or departed Pukekohe
On-track on the Up Main at 2.6km Wairarapa Line Kaiwharawhara	Last train must have verbally confirmed arrived at or departed Ngauranga Station Platform
On-track at 60.0km Midland Line between Springfield and Staircase	Last train must have verbally confirmed arrived at or departed Springfield or Staircase
On-track at main inside station limits Staircase	Last train must have verbally confirmed departed clear of station limits Staircase
On-track at 37.0km ECMT between Morrinsville and Kereone	Last train must have arrived at or departed Kereone or Morrinsville by panel observation
HRV on loop waiting to follow train into section	Last train has cleared the points giving entry to follow
On-track at 346.0km MNL between 2R and 4R Picton	Last train must have cleared track between 2R and 4L by panel observation

NOTE

Pending blocking allows sections beyond the on-tracking section to follow a train. This instruction does not affect or limit the use of after departure / arrival Track Warrants

IMPORTANT

TS12 Hi-Rail Vehicles, 4.7 HRV Rail Greasing

When a track occupancy request is received from a lube truck, the authorisation must only apply to sections of track that are completely clear of all rail movements.

Lube trucks cannot be authorised to follow trains / HRVs.

Reason: Lube Trucks are required to travel at 50 km/h for correct application of grease, on curves, this greatly increases the risk of not being able to stop short on curves.

The following provides a summary of locations that trains must be clear of are:

- ASR single line blocks – at or clear of station
- ASR multi-line – arrived at or clear of next interlocked station or passenger platform
- station limits – clear of any fixed controlled signal clear of the on-tracking location
- foul time in TWC areas only – confirm arrived at or clear of next station or clear of intermediate board.

14.2.4 Application of TS06 Blocking

Protection by blocking applies for track occupations within automatic signalling areas and interlocked stations (including TWC interlocked stations).

Establishing protection when the Signaller provides signal blocking for Train Control

Where signals/points governing entry into an area controlled by the Train Controller are operated by another Signaller, the Train Controller must receive confirmation from the Signaller that signal blocking is applied to protect the occupancy before authorising occupancy.

NOTE

When using the Mis.72 form and a Signaller provides signal blocking, you must detail the signal blocking in the Other Information box.

Double Blocking (more than 1 occupancy)

Double blocking (must be applied, if available),

- for more than 1 occupation in the same section, and
- requires an additional right mouse click on the signal blocking and placing the control tag command on top of the blocking, noting occupation details.

IMPORTANT

When using blocking in Track Warrant control territory, the primary protection on the main line must be a Track Warrant. If blocking is also used for the main line, it must be in addition to the PWA authority.

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WARNING

Blocking Switch-in / Switch-out Stations

Before applying blocking to a Switch-in / Switch-out station the Train Controller must first switch in the station to 'Central' Control and restore any affected signals to stop by running a cancellation on each signal.

Adjacent Signal Blocking (RealFlex signalling system only)

When two PWAs are established using adjacent track circuits, the Train Controller / Signaller must record the HRV number or RPO call sign on the control tags for each PWA's adjacent track circuit(s).

14.2.5 Foul Time Safety Buffer Requirements

The termination/clearance time must include a minimum safety buffer of 30 minutes before the anticipated arrival time of the next train(s) when using:

- Foul Time – signals not available to apply blocking or conflicting rail vehicle other than a train, or
- HRV/trolley occupations in Midland Line Automatic Signalling areas

Except where the location of the conflicting train has been verified verbally within the previous 15 minutes, a call must be made to the Operator concerned to obtain the current location of the train and to establish it is clear

The determination of the track occupancy duration must be such that a train is not anticipated to encroach inside any limits of the occupancy area until after the 30-minute safety buffer has expired.

IMPORTANT

HRVs are permitted to stop and remain stationary for the duration of the authorised time limits if work requires, and therefore may not have travelled beyond their start location.

Encroaching Trains

Trains must not be dispatched into the authorised occupancy area before the safety buffer time elapses unless ‘clearance’ has been received from the track user.

14.2.6 Safety Buffer Requirement

TS09 Foul Time, 6.1 Safety Buffer requires using a 30-minute buffer between the clearance time and the anticipated rail vehicle arrival time to the occupancy area. The figure below illustrates this.

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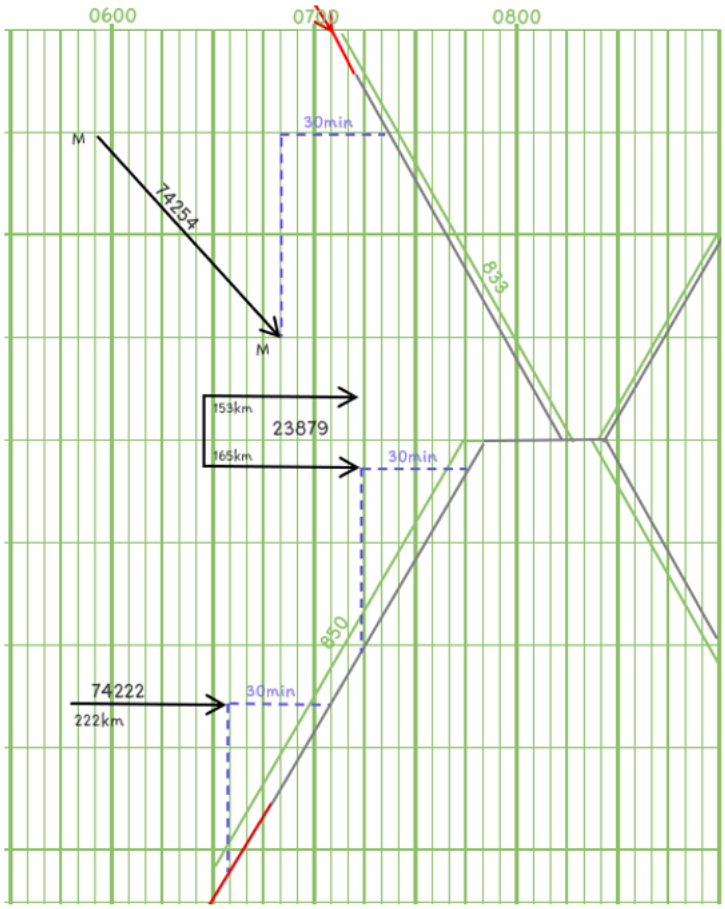

Safety Buffer Requirement

14.2.7 Track Occupancy Short of Shunt Movements

When HRVs or similar movements are authorised to follow a shunt/train which is planned to shunt a switch lock siding, a track occupancy must only be authorised:

- to a non-conflict location
- short of the switch lock siding location

Unless signal blocking is available to prevent the shunt/train from departing a switch lock siding, further authorisation must not be given until confirmation has been received that the shunt/train has departed the switch lock siding.

14.2.8 Authorisation Process

Once the track occupancy request details have been established and pre-authorisation checks have been completed including:

- cross-check plotting on the diagram
- execute required protection or safety buffer as provided in the relevant track occupancy rules (i.e., Track Warrant, blocking, 30-minute safety buffer).

When authorised by bulletin, **TS06 Blocking** may be issued to the Rail Protection Officer (RPO) responsible for multiple track activities that run for more than one work period.

The Mis.71 / Mis.72 will be addressed to the RPO with a call sign ID and the bulletin will also show the contact details of all RPOs.

All incoming RPOs are required to cross check the bulletin and Mis.71 / Mis.72 during the handover process.

The Train Controller can authorise the occupancy in accordance with the relevant track occupancy rules.

WARNING
All signal blocking must be applied before commencing any authorisation process.

IMPORTANT
The Train Controller and the Addressee ensure that signal blocking confirmation is included in the cross-check. The clear time will become the designated clearance time to be clear of the line.

14.2.9 Partial Clearance of Signal Blocking applied for Track Occupancy

The Train Controller may request the Addressee to make a call when clear of a specified location to enable a train or other occupancy to occupy the section cleared. Updated details of the signal blocking applied must be given to the Addressee and repeated back to the Train Controller.

IMPORTANT
Except when substituting blocking. Signal blocked areas are not to be removed to allow an opposing or following train to enter a section, or permission is given for a train to enter onto the main line from a switch lock siding in that section until advice has been received that the occupation is clear of the section.

14.2.10 Substituting Blocking

Refer to **TS02 Protected Work Area, 13.1 Substituting Blocking**.

14.2.11 Protection Provided by Blocking

When the occupation is protected by **TS06 Blocking**, the holder of the Mis.71 / Mis.72 must advise the Train Controller when they are clear of the line to enable **TS06 Blocking** to be removed. The Train Controller will confirm the **TS06 Blocking** removed and state the time. This is to be repeated back to the Train Controller.

14.2.12 Working Between Meterages

When a track user works from or to a meterage, a reference must be made to the meterage scale on either side of the Train Control diagram to ensure the start/finish locations are correctly plotted. A small error in plotting the exact location may greatly expose the track user to encroaching trains; therefore, extreme care must be taken.

NOTE
Meterages shown on Train Control diagrams for stations are the mid-point of the station.

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The diagram will be folded, retaining visible meterages, as events become history to permit this checking procedure.

NOTE
The meterage scale can run up or down the diagram and vary by area.

14.2.13 Completion of Shift

After a shift, the outgoing Train Controller must draw the attention of the member taking over the shift to the location of infrastructure work, HRVs or trolleys, trains running late and any other unusual circumstances.

14.2.14 Correct Setting of Points

When a HRV or trolley is moving through an automatic signalling area or a remote station controlled by Train Control, the Train Controller must advise the HRV or trolley of where any main line points may not be correctly set or could be moved to ensure there is no possibility of derailment or points damage.

14.2.15 Berthing on Crossing Loops

HRVs travelling in automatic signalling areas may berth on crossing loops to allow trains to pass. They must be protected by applying blocking to prevent a conflicting movement from entering the crossing loop.

The Train Controller must verify that the HRV is clear of the fouling point and stabled between departure signals in automatic signalling areas for train crossings. If this is impossible for work situations, then protection must be established.

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TRACK AUTHORISATION VERBATIM Rule TS06 Blocking and Rule TS09 Foul Time		
VERIFY	1	Plot
	2	Details of Request
	3	Conflicts: Last Train / Next Train / Other Occupancy
	4	Block or Buffer
	5	Authorise
CROSS CHECK	1	Addressee
	2	At / On Tracking Location
	3	Commencement Time
	4	Clear By Time
	5	Track: Single / Up / Down / Both
	6	Limits: Proceed / Work Between / At
	7	Last Train Clear: Station / Section / Platform
	8	Signal Blocking Applied or Buffer (30 mins minimum)
	9	Other Information (i.e., Multiple HRV's)

Track Authorisation Verbatim

14.3 Infrastructure Personnel Detonator Signals

In no circumstances shall the Train Controller act to override detonator signals placed for the protection of Infrastructure Personnel, even if aware that the line has been cleared. Responsibility is with the Infrastructure Personnel concerned to remove any protection and inform the Train Controller.

Should the person who placed the danger stop signal detonators not be contactable, the line must be inspected before any train movements.

14.4 Planned Track Occupancy Protection

Track safety rules detail the procedures for safe working applicable to the various protection methods. Details of the work to be undertaken under **TS03 Mis.60, TS04 Compulsory Stop Protection, TS06 Blocking** (more than 120") and **TS11 Mobile Track Maintenance Vehicles** are included in information bulletins. The matter must be referred to the Network Control Manager if planned work is omitted from the information bulletins for an unknown reason.

14.4.1 Position of Stop Signals and Boards (TS04 Compulsory Stop Protection)

When it is realised that the selected location of the compulsory stop board is likely to affect the ability of Operators to restart heavily loaded trains from standing start due to adverse gradients, then this matter is to be referred to the Network Control Manager immediately.

14.4.2 Establishing Protection

The erection of compulsory stop boards at the commencement of work for the day may be undertaken by road or HRV working under **TS12 Hi-Rail Vehicles**.

Before erecting boards, the Rail Protection Officer must ensure all approaching rail movements are advised that protection is being established. Stop boards must not be erected before the stated time on the bulletin.

The Rail Protection Officer, when erecting boards, must erect the advanced warning and inner warning boards before the compulsory stop board.

14.4.3 Permission to Obstruct Line

Once compulsory stop protection has been established, the Rail Protection Officer operating under the call sign identified on the information bulletin assumes responsibility for the safe passage of trains and other rail vehicles through the protected area.

The Train Controller is responsible for providing the Rail Protection Officer with the estimated time of arrival of trains at the compulsory stop protection board to enable the Rail Protection Officer to make full use of the time available between trains to complete their planned work. It is the responsibility of the Rail Protection Officer to be clear by this time and ensure there is minimal disruption to trains.

If trains are delayed unnecessarily at compulsory stop boards, this matter must be referred to the Network Control Manager.

14.4.4 Extension of Hours of Work

Work within compulsory stop boards must be completed by the time specified on the information bulletin:

- if the Train Controller receives a request to extend the planned work hours, then all affected train services must be advised, or
- if a work time extension exceeds approximately 2 hours, a re-issued information bulletin should promulgate the altered hours.

14.5 Standard Occupancy Function Terminology

When using the Occupancy functions of the train control system, the ‘at’ location and work limit description box must be completed with the following standard information:

- ‘At’ Location
- Proceed, Work At, or Work Between
- Work Limit Description.

The ‘Other Information’ box must be used when applicable notes need to be recorded, e.g., MHRVs (Multiple HRVs).

NOTE

Refer to **Train Control and Signal Box Manual, 2.2 Train Control Diagram Conventions** for standardised notations.

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15. Mobile Track Maintenance Vehicles

Unlike HRVs or trolley movements, the protected work area for MTMVs is promulgated to all concerned by bulletin. While they are on track, the machines are protected on both sides unless they have a Track Warrant giving sole occupancy of the section of the line involved.

Infrastructure Personnel are responsible for obtaining the anticipated train movements for the protected work area from the Train Controller before the machines are placed on the track and ensuring the line is cleared before a train is expected. During this discussion with the Ganger, the Train Controller should be careful to provide accurate information.

For instance, the operation of a ballast tamper entails anywhere between 4 and 5 people, which involves considerable expenditure. The Train Controller should consider this economic consideration when dealing with track maintenance machinery enquiries and provide as much on-track time as possible, even if this means holding trains running considerably ahead of time.

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16. Defects in Signals and Communications

All signals and communication faults must be reported to 155 Operations Support stating the action required or the action is already taken, and an occurrence log entered where necessary.

All dropped track circuits must be immediately advised to 155 Operations Support. A Signals Maintenance Representative must be notified to investigate non-axle counter circuits for possible broken rails.

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17. General Alarms of Signalling Panels (Scada)

The signal panel SCADA system activates alarms for:

- tunnel ventilation or train occupancy duration
- slips
- high rainfall
- dragging equipment
- wagon weight imbalance defects.

The Train Controller must respond to these alarms immediately in accordance with **Local Network Instructions** applicable for each alarm type or site.

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18. De-Rusting of Track Circuited Loops or Specific Track

Track circuits rely on electric continuity to operate. If rail vehicles do not pass over the track circuits on a regular time frame, then continuity of connection will be lost or be interment due to the build-up of rust.

When the signal panel indicates that a loop or specific track requires de-rusting, the Train Controller must route the next suitable train via the track-circuited area to de-rust.

Factors in deciding the next suitable train are:

- trains running early, and
- length or weight of the train (approaching an uphill gradient).

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19. Reporting and Protection of Track Irregularities

When brought to attention, track irregularities must be promptly investigated.

The Infrastructure Personnel concerned must be advised, and rail vehicles must be held pending a response or instruction from that person regarding the movement of trains through the affected area.

Minor track defects such as slumps and dips can indicate a significant bridge fault, collapsed culvert, major rail burn or similar problems.

The Train Controller must draw reported faults on the diagram (i.e., reported time and clearance time) and apply emergency protection in accordance with **TS07 Emergency Protection.**

When called out, in the event of Infrastructure Personnel not calling at the agreed time, the Train Controller must ascertain the reason for the delay in the call.

The defect may require a temporary speed restriction over the area until the track can be examined or repaired. This should be arranged promptly, and the instruction should be delivered to the Operator before they enter the affected section. Speed boards at this stage may not be available.

If advised of a broken weld or rail, the Train Controller must not allow any trains to proceed into the affected section of track until authority has been obtained from the Infrastructure Personnel at the site and arrangements made for trains to pass safely over the broken weld/rail.

There is no margin for error in such circumstances. Where any doubt exists concerning the safety of the track, arrangements must be made to have it inspected before any train movements.

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20. Dragging Equipment (On Wagons)

Immediate action is required if dragging gear or bond chains are suspected of causing trackside problems or loss of points detection.

At selected sites, dragging equipment detectors are provided. These send an automated message to the Train Controller and, at some locations, all radio users near the detector when activated.

When a dragging equipment alarm is activated or dragging equipment is suspected:

- the train must be stopped immediately
- the train consist must be examined for possible dragging equipment
- if possible, the train is to be held outside the station in advance until it is checked (to protect points)
- if the problem requires Mechanical Personnel to rectify, then the Mechanical Field Manager for the area is to be advised.

In electrified areas, trip-outs may occur when diesel-hauled services are the only service in the area. The train must also be stopped and checked for loose tarpaulins in these cases.

All dragging equipment activations must be logged in the incident reporting system.

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21. Overload & Imbalance Wagons

Coupled in-motion weighing (CIMW) sites are installed at:

- Takanini (649.50km NIMT down main)
- Tauranga (92.63km ECMT)
- Bunnythorpe (147.48km NIMT)
- Paremata (19.50km NIMT up main)
- Casebrook (7.20km MNL)
- Rolleston (28.30km MSL)
- Stillwater (193.30km MID)
- Sergeants Hill (140.70km SNL)

Weighbridge Alerts

These sites will generate alerts and be managed by the instructions set out in the Train Control Instructions.

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22. Radio Communication: Train Crew to Train Controller

There are many operating advantages to be gained from the use of the radio system. The Train Controller can locate trains quickly, making forward planning more accurate. It enables the Train Controller and the Operator to have ready access to each other regarding conveying up-to-date information affecting the running of trains.

Track Personnel can also secure more up-to-date information on train movements, reducing the risk of accidents and enabling more time for track work. The ability of the Train Controller to locate opposing and preceding trains more quickly if it becomes necessary to issue a SWA also assists in improved timekeeping.

SWAs and Mis.51/60/88 must not be completed while a rail vehicle is in motion. The MPU must be stopped, and the form completed in accordance with **TO01 Train Movements, 8.5 Receiving Instructions and Authorities.**

22.1 Radio Failure under ATC Conditions

To assist the Operator in radio failure situations, the procedures are further clarified as follows:

Radio failures can be 1 of 3 different types:

1. Train Control computer system - usually, when the computer system has failed, the radio repeaters may be operational.
2. Repeater link - when a repeater link fails, there may be no radio coverage in a certain area. 155 Operations Support must be advised, who then will advise telecommunications personnel for the area.
3. Locomotive radio - when a locomotive radio completely fails, other means of communication are necessary.

The failures described in (2) and (3) are concerned, and the train en route is proceeding with only the Operator. Then in some situations, alternatives to the Operator leaving the cab may be arranged, for example:

- in Midland Line ASR areas when a train crossing is to take place, and the radio backup system is not available, the train that has arrived first may be able to make the call for both trains, and
- in automatic signalling areas, the signalling of the train may be sufficient to proceed.

Should the Operator be required to call the Train Controller, the home or departure signal could be held at stop.

In some areas (including multi-line areas), other Rail Personnel may be on hand at stations which can pass information onto the Operator, whether written or verbal. Roving Shunters can ensure points are left set for the main line at stations where they have been working or at stations they may pass on their way to another station or returning to their home station.

NOTE
Alternative communication will be provided in areas where Train Control phones are unavailable.

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However, when considering these arrangements, they must be discussed with the Operator. A clear understanding must be obtained of what is expected while the train is running en route.

The instruction also implies that if a radio link failure (i.e., computer system or repeater) occurs before a train departs a terminal (terminal meaning Wellington, Palmerston North, Te Rapa, Westfield, Picton, Middleton, Dunedin or a starting station), then a second crew person is required.

However, when en route and a failure occurs, the train must continue its journey. A second person is to be arranged to join the train at a convenient station, but the train is not to be unnecessarily delayed.

Passenger trains will continue as normal when a locomotive radio or radio link failure (Operator to be advised) occurs. The Operator must advise the Train Manager/Guard of the situation so that they are aware of the need to take special action in any unusual situation.

22.2 Train Control ASP Radio Operation

Audio shunting procedure (ASP) radio channels are connected to the Train Control radio computer system to contact shunt crews at various locations (i.e., Auckland, Westfield, Te Rapa, Tauranga, Christchurch).

ASP shunting involves transmitting safety critical instructions between Operators and Rail Operators on channels allocated exclusively to that shunt crew.

WARNING

Interruption of transmission could cause a collision or injury.

The following operating instructions apply to the use of ASP radio channels.

Contact from the shunt crew to Train Control:

- the Train Controller will continuously monitor ASP channels that are allocated exclusively for communication with Train Control
- calls to the Train Controller will be initiated by the base call.

Contact from the Train Controller to shunt crews:

- the Kupe Radio Channel Changer application is used by Train Control to select ASP channels allocated to shunt crews
- channel selection must be set at disabled when not in use to prevent shunting audio from being broadcast into Train Control.
- to initiate contact with a shunt crew:
  - select the radio site
  - select the required channel and push ‘set channel’
  - listen to the channel for a minimum of 10 seconds and ensure the channel is clear of all communication
  - push the ‘call’ button and wait for the shunt crew to respond
  - after communication is completed, return the channel setting to disable.

22.3 Crew Resource Management Communications

Crew Resource Management is a practice of communicating plans, intentions, and instructions between parties to allow opportunity for error detection and correction. The issuing of authorities (Safe Working, Track Occupancy, Track Warrant) has a prescribed read-out and read-back check process, however

there are other types of communication where the communication of plans can improve the situational awareness of field personnel and help reduce errors caused by assumption. The following proactive communication principles should be applied by Train Control:

- Scheduled trains should be advised in advance (without causing delay) wherever practicable if they will be:
  - routed to an unexpected track or platform (this excludes standard use of loops for crossing or metro stations where alternate platform use is normal), or
  - signalled onto an occupied track when not expected, or
  - deliberately detained for an extended period, or
  - passing a train stopped on the opposite main line by failure, or
  - when the advice will enhance situational awareness.
- Loose trains (Shunts, Empties, Work Trains, Test Trains etc.) do not normally need proactive routing advice due to their movement always being 'as directed by Train Control'.
- Track Occupancy movements should be advised in advance wherever practicable if they will be:
  - following a train in section, or
  - encountering stock crossing or known line side activity, or
  - when the advice will enhance situational awareness.

IMPORTANT

To minimise the alternate risk of field personnel taking pro-active advice as a form of authority, care must be taken to use advisory statement such as “Be advised that you may be routed via …” or “be advised that you may pass 228 stopped on the Up Main at …” or “be advised that you may be routed via a different platform at … because of..."

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23. Voice Recording Facilities

23.1 Introduction

Voice recording facilities are provided in Train Control and for the Network Control Manager, Traction Control, Operations Support, Network Access Planning and some Signal Boxes.

The voice recorders record all communication that passes through Train Control, Signal Boxes, Traction Control, including telephones and radios, and telephones of Network Control Manager and Operations Support Representatives.

23.2 Voice Communications

Unless otherwise directed, the following arrangements will apply:

- all communications between Train Control and outside agencies (e.g., emergency services, rail operators, infrastructure providers etc.) must be conducted on monitored lines/channels. The only exception to this is when servicing is being undertaken by a technician or in case of equipment failure, and
- playback of voice records will be arranged and managed by the Network Control Manager.

23.3 Play Back of Voice Recordings

Any voice records may be extracted following an operating accident/incident or irregularity and may be played back only under the following conditions:

- all Rail Personnel thought to be involved in any incident will be informed of the reasons for playing back voice recordings
- the presence of the person’s Organisation Representative, if required, is considered to be both courteous and adequate to protect an individual’s right, and it will not be necessary for all persons affected to be present at the playback
- those concerned may listen to the voice recordings early if they desire.

Regarding Operations Support and other functions, the voice records can only be played following a non-safety incident with the individuals' agreement. A non-safety incident is an occurrence where a communication dispute exists between individuals.

23.4 Extraction of Voice Communications

Train Control / Wellington Signal Box voice logs will be randomly extracted as part of the safety observation procedure to check the compliance of all rules, regulations and code procedures. Operations Support, Network Control, and Traction Control functions will not be subject to random audit.

23.5 Unable to Attend Playback

If Rail Personnel involved are at a locality other than where the voice recorder/playing equipment is located and desire to listen to the voice record playback, this can be accomplished by transferring an extract of the recording, which can then be replayed at the Rail Personnel location.

23.6 Voice Recording Equipment Failure

If the voice recording equipment is not operating and it is necessary for accordance with the relative operating regulations to authorise a train to pass an absolute intermediate signal at stop or authorise a train to set back.

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The instruction from the Train Controller to the Operator must be witnessed by another member either personally or listened to over the telephone. A suitable notation of the action taken is to be made on the diagram alongside the plot line of the train concerned.

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24. Alternative Train Crewing

24.1 Personnel Required to Assist the Operator

When the Operator requires assistance, the Train Controller will arrange for either:

- other Operating Personnel, or
- Rail Personnel certified in on-call emergencies.

Managers will update the on-call details and advise the Network Control Manager.

24.2 Locomotive Vigilance Alarms

When a vigilance alarm is received from a locomotive, the Train Controller must investigate the cause and clearly determine the reason for the activation. Any of the following can activate vigilance alarms:

- Operator has not responded to the vigilance light / whistle within the random 30 to 50 second cycle, or vigilance has gone to whistle 5 times within 7 cycles
- activation of brakes due to loss of air on the train
- the Operator has applied emergency brakes
- the E-Protect system has activated brakes.

If an Operator reports the activation is caused by other than fatigue:

- notify the Network Control Manager who will arrange for the Operator’s Duty Manager to be advised if the activation involves an incident, or for second or subsequent activations from the same Operator
- give the Operator permission to move the train (in accordance with GR06 Conditions Affecting the Network, 7.3 Clearing the Main Line)
- log the event in the incident reporting system if the activation involves an incident or occurs on a running train

If an Operator reports fatigue:

- instruct the Operator not to move the train
- notify the Network Control Manager will arrange for the Operator’s Duty Manager to be advised
- the Operator's manager will then determine arrangements for the train to continue
- log the event in the incident reporting system.

24.3 Failure of the Locomotive Vigilance Device

The Train Controller will:

- instruct the train to stop at the first crossing station #
- arrange for a replacement locomotive or supply a second crew member until the locomotive can be replaced #
- log the incident if the regulatory notification criteria apply
- notify the Operator’s Locomotive Fleet Control

does not apply to trail locomotives.

24.4 Failure of the Train End Monitor (TEM)

When a TEM taillight fails, the Train Controller will:

- establish whether the TEM has red reflectorised material attached to the face of it
- if not, give instructions for the train to proceed, non-stop if possible (that is, not being stopped in station limits), to the next terminal listed as holding TEMs

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- if that terminal does not have a replacement TEM then the train may proceed non-stop if possible (that is, not being stopped in station limits) to the next terminal listed as holding TEMs. If there is no TEM available at that terminal, then a second crew member will be assigned to the train from that point
- if the TEM is changed, advise Network Control Manager accordingly.

TO03 Train Lights, 12.2 Train End Monitor Locations specifies where replacement TEMs are held. Alternatively, it may be possible to arrange for a replacement from an opposing train conveying a spare TEM or arrange for a TEM to be delivered to the train, particularly when that train has recently departed a terminal.

24.5 Call-Out of Personnel Emergency Procedures

When operating personnel are required to be called out to assist with an emergency under ATC arrangements, terminal personnel on duty are to be consulted. Any conflict with rosters will be avoided, and the decision regarding the most suitable member can be made.

24.6 Portable Timer Alert

When the Portable Timer Alert is activated on the Train Control radio screen, the Operator can press the talk switch on the portable which will reset the Portable Timer Alert. This is an acceptable means to confirm that contact has been made between the Train Controller and the Operator.

If the Portable Timer Alert has been activated and the Train Controller attempts to contact the Operator with a voice call, the Operator must respond verbally to the Train Controller to confirm that contact has been made between the Train Controller and the Operator.

If the first attempt is unsuccessful: continue to call frequently for the next two minutes. If a reply is not received within two minutes, send a person to the train to find out what has caused the alarm and advise you. This person should be a suitable rail personnel who is near the train and has access to a radio equipped vehicle.

When the train is to be approached from the front, wait for the normal time of the train through the section to lapse before permitting the person to proceed.

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25. Emergency Services

25.1 Contacting Emergency Services

The Train Controller must contact emergency services for any incident that could or does cause a risk of:

- injury
- fire
- dangerous goods spill
- criminal activity.

Emergency services require the following 6 items of information to assist them in effectively dealing with an emergency:

1. state that you are calling from the Train Control Centre and provide a one sentence summary of the event (e.g., train vs car)
2. state the location, verified with a cross street or landmark (e.g., Waitematā train station, off Britomart Place)
3. advise if the parties are still there or leaving. If leaving, include the direction of travel with a street or landmark (e.g., south towards Customs Street) and the method of travel (e.g., foot, vehicle)
4. if possible, provide a description of offender(s) with specific details
5. advise type of train involved (e.g., passenger, freight, freight with dangerous goods)
6. advise any other information that may assist (e.g., alcohol, drugs, other persons involved).

IMPORTANT

When the Train Controller calls emergency services, the status of train traffic, protection and OLE (where applicable) must be advised in the initial call. The Train Controller must proactively apply TS07 Emergency Protection if the railway corridor is likely to be fouled.

25.2 Requests to Contact Police

The Train Controller must contact the Police when requested by Operators and other Rail Personnel. This must always be done, even though some incidents may seem trivial. The Police should make their judgement on whether to respond. An occurrence log is to be prepared on each occasion the Police are called, and a Police event number is recorded.

25.3 Requests to Call for an Ambulance

When the Train Controller is requested to call for an ambulance, they must:

- Check whether anyone who is with the person requiring medical assistance can call 111 directly to receive treatment instructions.
- Call 111 and request an ambulance (in addition to any call from the site/train) to coordinate the location an ambulance is to respond to.
- Give active consideration to a train travelling to a station that will achieve the closest and fastest connection with an ambulance. This will require active liaison between the ambulance dispatcher and the Train Crew.

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25.5 Emergency Response and Requests to Close Railway Corridor

The New Zealand Police and Fire and Emergency NZ have legal powers to close any rail corridor and stop train services.

When the Train Controller is notified that emergency services are responding to an emergency in or near the railway corridor, or receives a request to stop train services and/or cut off overhead power in an emergency, the Train Controller must:

- confirm if the railway corridor will be fouled or if there is a hazard to rail traffic
- establish all lines that may be affected and close greater areas of the track if the exact location of the emergency cannot be established
- stop all train services in the affected area
- restore signals to stop and apply TS07 Emergency Protection to protect the emergency
- arrange an emergency OLE isolation (if applicable).

If the railway corridor will not be fouled, the Train Controller must advise emergency services that:

- trains are operating, and
- the OLE is live (if applicable).

25.6 Communicating Railway Corridor Access Authority and OLE Status

For any communication with emergency services about railway corridor access and OLE status, the Train Controller must provide a clear statement using the following standard phrases:

- "Warning trains are running, *Overhead Lines are live", or
- "All trains are stopped between [location] and [location], and it is safe to enter the railway corridor, *overhead lines are live”; or
- "All trains are stopped between [location] and [location], and it is safe to enter the railway corridor, *the overhead line is De-energised between [location] and [location], but no isolation earths are applied. Treat as live and apply minimum and rescue approach distances”; or
- "All trains are stopped between [location] and [location], and emergency services are safe to enter the railway corridor, *the overhead line is isolated, earthed and safe to touch between [location] and [location]”.

* State when in an electrified area.

IMPORTANT
When describing locations between, use the nearest street names or station name that provide the best accuracy for emergency services.

IMPORTANT
It is important that the full statement about railway corridor access and OLE status is spoken in full each time as this message will be electronically recorded and read by emergency services staff on mobile devices.

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25.7 Clearance from Emergency Services and Rail Incident Controller

Trains must not recommence nor power re-energised without permission from the Emergency Services Incident Controller through the relevant communications centre or the Rail Incident Controller (RIC).

When the incident site is supervised by an appointed Rail Incident Controller, the Train Controller must confirm that:

- The RIC is physically on-site; and
- The RIC has received clearance with the incident controllers (i.e., Site Leaders) for each emergency service (Fire, Police, Ambulance) and any investigation agency (i.e., NZTA, TAIC, Worksafe) in attendance at the site; and
- Seek clarification if there are any limitations on services such as temporary speed restrictions.

When the incident site is not supervised by an appointed Rail Incident Controller (i.e., a RIC is not onsite):

- Trains must not recommence until confirmation has been received through the Emergency Services Incident Controllers Communication Centre that all attending emergency services (may include Police, Fire and Ambulance) have cleared the site and are clear of the railway corridor.

In all cases, track clearance must be received on a voice recorded line.

CAUTION

If emergency services attend a site, any track clearance from Rail Personnel must be cross-checked with the emergency services communications centre requesting a track closure. This ensures all emergency services personnel are clear of the track and understand rail movements will recommence.

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26. Emergency Calls to Train Control

26.1 Telephone Response

The Train Control Centres monitor dedicated telephone lines for emergency calls directed simultaneously to at least 3 Train Control desks. All telephone calls to the emergency lines must be answered as a priority over other tasks.

When an emergency call is to be transferred to another desk, in that case, it should be transferred to the direct extension for the recipient's emergency phone or passed to the general queue, and the receiving Train Controller promptly advised of the urgency of the call.

If an alternate controller cannot be connected:

- The controller that answered the call must obtain details of the issue and personally action the request. This may include stopping trains urgently at the request of the Police or Fire and Emergency NZ.
- If the location of the emergency is in an alternate Rail Operations Centre (and therefore the Train Controller receiving the call is unable to personally action the call), the call must be transferred to 49111 (WROC), or 99111 (AROC).
- Train Control must answer calls coming into the Emergency Transfer queues with urgency.

26.2 Message Alarms

Recorded messages advising Train Controllers of emergency conditions, such as flood warnings or lahar alerts, will be received on the emergency telephone line.

A Train Controller may receive these messages for an area where the alert does not apply. In such situations, the Train Controller for the area affected by the message must be immediately advised of the full message. It is not normally possible to transfer recorded messages to an alternate telephone extension, and this should not be attempted.

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28. Dangerous Goods

28.1 Train Moving

If a dangerous goods wagon is reported to be leaking, spilling, venting or on fire, the Train Controller must:

- check the train loading list in OMS and if shows as hazardous, click on the wagon for details
- advise the Locomotive Engineer of the reported incident and validate the wagon is conveying dangerous goods
- arrange with the Locomotive Engineer to bring the train to a stop at a safe location. Where possible this must:
  - be at least 1 km from the nearest town to reduce threat to life and property
  - be clear of tunnels, bridges, and waterways (i.e., lakes, streams, rivers, ocean) to reduce the risk of damage to the environment
  - have suitable road access for emergency services to attend to the train
- then follow **Train Control and Signal Box Manual 28.2 Train Stationary**.

GR06 Conditions Affecting the Network, 3.2 Responding requiring trains to stop immediately is modified accordingly.

28.2 Train Stationary

If a wagon conveying dangerous goods is reported to be leaking, spilling, venting or on fire, the Train Controller must:

- check the train loading list in OMS and if shows as hazardous, click on the wagon for details
- advise the Locomotive Engineer of the reported incident and validate the wagon is conveying dangerous goods
- review the UN number in the 'Dangerous Goods – Initial Emergency Response Guide' in conjunction with the Locomotive Engineer to identify any immediate hazards and the most suitable action for the Locomotive Engineer to take, if any
- call emergency services on 111 and advise:
  - the nature of incident,
  - the location, and
  - the UN number(s), quantity, and location of the dangerous goods on the consist
- prevent any opposing / following trains from encroaching into the affected area until it is ascertained that it is safe to do so.

If a leak or spill is from a wagon not conveying dangerous goods, contact the KiwiRail Linehaul Service Manager for further instructions.

If additional assistance is required while waiting for emergency services to attend to the scene, contact 0800 Chemcall (0800 243 622).

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29. Failure of Electric Motive Power Units

29.1 Class 30 EF Locomotives

Cab heating in this locomotive type is ineffective when power is cut from the locomotive after approximately 20 to 30 minutes, depending on weather conditions. It is therefore, unreasonable to expect train crews to stand by in sub-zero temperatures while alternative arrangements are made.

In these circumstances, the following procedures are to be followed:

- when a Class 30 electric locomotive fails en route, the Train Controller is to ascertain from the train crew the nature of the fault
- Locomotive Team Leaders or Linehaul Operations Managers in Te Rapa and Palmerston North, and the Network Control Manager are to be advised of the circumstances immediately they are known
- if a relief locomotive cannot be provided within 60 minutes of the failure occurring, the Train Controller is to arrange for the train crew to secure the train and arrange with the Network Control Manager for a taxi or other convenient means of transport to convey the train crew to the nearest attended station or depot from where relief is likely to be obtained
- should the failure occur within a section, the section must be cleared before the Train Crew are relieved
- the Network Control Manager and Locomotive Team Leader from the home depot of the train crew involved are to continue monitoring the situation. In addition, they must make any necessary arrangements for the relief of the train crew should the maximum shift hours are likely to be exceeded.

29.2 Passenger Electric Multiple Units (EMUs)

After loss of power due to a local defect or overhead power outage, auxiliary battery power for air conditioning, lighting and communications systems on electric passenger units will last no longer than 90 minutes.

The Train Crew, Train Controller and Passenger Operating Company need to be aware of the possible need to evacuate a service operated by an EMU within 90 minutes to prevent passenger exhaustion.

The Train Controller must make arrangements so that within 90 minutes from power loss:

- all affected trains are recovered to platforms, or
- arrange for the power to be restored, or
- have passengers evacuated / moved to alternate transport.

Timed-Based Decision Process

Any response should be driven by a basic timeline of 90 minutes. The considerations and actions within each 30-minute segment are as follows:

0 – 30 Minutes – Situation Assessment

- the Operator contacts the Train Controller
- set radio timer for 30 minutes
- the Train Controller determines the cause of power failure, what services are affected and likely recovery actions
- a significant safety factor will be whether the overhead is down.

30-minute Decision Point

- does the Train Controller believe that the disabled train can be recovered to a safe point for evacuation or power recovered within 60 minutes (from the time of loss of power)

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- reset the radio timer for 30 minutes
- if yes – monitor the situation
- if no – planning should commence for eventual evacuation.

30 – 60 Minutes – Planning

- the Operator/Train Manager works with the Train Controller and the Passenger Operating Company to plan evacuation (safe route, safe point of assembly, alternative transport)
- the Train Manager keeps passengers informed using the PA system
- monitor the situation – if it changes, plans can be amended.

60 – 90 Minutes – Action

- manage safe evacuation, and
- reset the radio timer for 30 minutes.

The Train Controller's responsibilities are:

- identify trains affected and their location
- determine the cause of the power outage
- assess options and determine appropriate actions required
- determine likely timings
- communicate with Operator(s)
- manage recovery actions
- authorise evacuation (when and if safe).

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30. Irregularities

30.1 Operating Irregularities

You must follow GR01 Railway Corridor Security, 5. Fit for Duty for Operators, Remote Control Operators and Gangers in Charge/Drivers of MTMVs involved in operating irregularities.

30.2 Crossing Irregularities

Midland Line Automatic Signalling areas

When a crossing irregularity occurs, the Train Controller must inform the Network Control Manager, who must report the matter to the appropriate Operator's Manager, who will instruct on train crew relief in accordance with the **Emergency Procedures Manual**. When contact is made with the train crew, reissue the Mis.50/51 operating instruction to the train crews of the services concerned to remedy the crossing.

30.3 Advice to Network Control Manager

Any irregularity of safe working whatsoever must be reported immediately to the Network Control Manager so investigations can commence, and reports can be obtained as soon as practicable.

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31. Excessive Train Speeds

When a fast run is noticed, and the speed of a train appears to be appreciably greater than scheduled, the Train Controller must immediately:

- contact the Operator
- contact the Network Control Manager
- make a notation on the train control diagram

When it is not possible to advise Operators immediately about excessive speeds, the Operator's manager must be advised so that the matter can be raised with the Operator concerned, and an event recorder extraction requested.

Where freight trains are concerned, judgement will be required as the length and weight of the train will often have a bearing on the time taken to complete a section with due regard to the running times for other freight trains traversing the same section.

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32. Operation of Air Brakes on a Train

Rail Operating Code 4.2 Air Brake and Park brake Operation and **TO02 Train Brakes** set out the procedures to be followed when there is evidence of a possible failure or irregularity of the working of the air brakes on a train. The Train Controller must advise the Network Control Manager of any brake failure, who will advise details of the incident to the relevant manager for immediate action.

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33. Operating Signalling

33.1 Switching In, Using, and Switching Out of a Signal Box

Before taking charge of a Signal Box, the Signaller must be satisfied that the electrical instruments, signals, points, and gear are in good working order.

When relieving another Signaller, they must ascertain from the person relieved whether:

- there are any special circumstances or instructions requiring attention
- the trains due to pass have done so, and, if not, what are the exceptions
- any trains are in the section or are signalled; whether any special trains are to run
- details of any track occupation that has been authorised, signal blocking put in place
- must also obtain information on all other matters necessary to enable them to discharge their duty correctly.

The Signaller being relieved must give full information on these points before leaving.

Matters requiring special attention or defects in the gear, signals, levers, or points must be noted in the train register and initialled by each Signaller.

The Signaller switching in a Signal Box or commencing duty at a Signal Box that has been unattended:

Before operating the signal controls, the Signaller must contact Train Control and ascertain the following:

- where approaching trains are
- track activity, including compulsory stop protection work areas occurring in the Signal Box area
- HRV movements planned to travel into the Signal Box area.

The Signaller will advise the Person in Charge of the compulsory stop protection work site that:

- signalling at the station will now be under the control of the Signaller, and
- reach a clear understanding with the Person in Charge on any signals that should be held at stop.

Method of Switching in and out a Signal box:

A switch in Signal Box has an interlocking machine or panel consisting of control levers and levers to operate the signals and points. An illuminated diagram is also provided.

Network Local Instructions are available in each Signal Box detailing the procedure for switching in and out.

When a Signal Box must be switched in or out, the apparatus must be operated as follows:

- **To Switch In**: The Rail Personnel operating the Signal Box must replace to ‘normal’ the control lever (or levers) applicable to the line (or lines) affected. This will illuminate the diagram and extinguish the ‘A’ lights on the signals, converting them from permissive to absolute signals. If an approaching train is indicated on the diagram, no other lever should be operated until the train has cleared the station or has stopped. The signal levers applicable to the main line must then be placed to normal, after which points and signal levers may be operated subject to time delays, as explained in the local instructions.
- **To Switch Out**: All signal and points levers must be replaced to ‘normal’; the signal levers controlling running on the main line and the control levers must then be reversed in that order, extinguishing the diagram lights and displaying the ‘A’ lights on the signals.

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33.2 Working and Care of Signals

The Train Controller / Signaller must:

- not display a proceed indication without being satisfied that all points are in the correct setting.
- be assured by observation of the signals or by other apparatus provided that signals are showing their correct indications
- keep locking platform signal levers locked when not in use, where applicable
- frequently test interlocked points to ensure they work correctly and are in good working order
- operate levers controlling points or signals so that the catch will fit firmly down in the notch after each movement of the levers
- ensure unauthorised persons do not operate signals except in case of danger
- must not delegate their duties to another person.

33.3 Privacy and Cleanliness of Signal Boxes

The Signaller must keep their Signal Box strictly private and not allow persons other than Rail Personnel authorised to enter it or interfere with the levers or other appliances. The Signal Box, instruments, and other apparatus must be kept clean and in working order.

33.4 Absence from Signal Box

A Signaller must not leave the immediate vicinity of their Signal Box for any purpose unless all the signals are in their normal setting and permission has been obtained from the Train Controller.

33.5 Working of Levers in Signal Boxes and Computer Signal Controls

The Train Controller / Signaller must:

- not apply undue force in the operation of levers in a signal box
- ensure that the conditions are suitable for the intended movement using the indications provided, before attempting to operate any lever or control
- keep all signals under their control at stop except as required for train movements, unless instructions are issued to the contrary
- place signals to proceed in sufficient time to avoid checking trains.

33.5.1 Conditions Necessary Before Proceed Signal Given

A shunting signal must not be set at proceed unless the Train Controller / Signaller knows it is safe.

A clear signal must not be given unless the Train Controller / Signaller knows positively, either from their observation or from signals given by the Shunter, Operator or other Rail Personnel, that the line is clear of all obstructions and safe for the movement signalled and the signals covering all fouling points are at stop.

The Train Controller / Signaller must not display a proceed indication without first satisfying themselves that all points are in the correct setting and where stations are worked under special instructions, those instructions have been complied with.

33.5.2 Precautions to Prevent Points Freezing

During severe frosts or falling snow, points must be worked frequently by the Train Controller / Signaller when sections are clear, and trains have not been signalled to prevent the frost or snow from impeding the free working of the points.

33.5.3 Signaller to Replace Signal Levers to Normal

When a train or shunt has passed a fixed signal at proceed, the Train Controller / Signaller must immediately replace the lever controlling the signal to the normal position the interlocking arrangements require, or as required by any special instructions that have been issued.

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If a train is brought to a stand with its rear portion outside a home or outer home signal, the signal must be placed at stop immediately.

33.6 Signalling Conflicting Trains into a Station

When trains that have to cross each other are approaching a station from opposite directions or converging lines and the signals have been placed at proceed for 1 train, the Train Controller / Signaller must not place the signals to proceed for the other train until the first train has come to a stand and the line on which the other train is to arrive is clear.

This does not apply to stations on multi-lines where the approaching trains cannot foul each other, or to stations which are interlocked and arranged so that 2 trains can be berthed in simultaneously.

33.7 Altering Order of Trains at Junction

When 2 or more trains approach a junction at nearly the same time and the Train Controller / Signaller has placed the signal to proceed for a train which should have been kept back for the passage of another, the Train Controller / Signaller must not attempt to alter the order of the trains by reversing the signals but must place all the signals at stop and keep them so until all trains have been brought to a stand when precedence can be given to the correct train.

33.8 Recording Information in Train Registers

The train register must be used by Signallers to record the times when trains arrive and depart.

When recording the times, parts of a minute less than half a minute must not be counted, and the half minute or more than half a minute must be counted as a minute:

- thus, 15 minutes 10 seconds must be entered as 15 minutes, and
- 15 minutes 30 seconds as 16 minutes.

Local Network Instructions provide that all trains leaving attended Signal Boxes are advised to the next attended Signal Box, and details are entered in the train register. The arrival and departure times of all trains must be entered in the train registers at permanent Signal Boxes.

Anything unusual in connection with the working of signals or the running of trains, and particulars of alterations to the Signal Box clock, must be noted in the margin of the **Signal Box – Signals, Points and Power Register**.

The Signaller must record in the register provided the time they take up duty immediately after their arrival. They must enter when they cease duty immediately after their last train entry, recording their name in each instance.

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34. Train Control Radio Alarms

34.1 Line Side Alarms

Rail temperature sensing (heat) and dragging equipment detection units are installed at various locations throughout the country. These units will send a transmission to the Train Controller when activated. The transmission is repeated 30 seconds later. The Train Controller will be required to plan based on the type of alarm received when the alarm is received.

34.1.1 Rail Temperature Sensing (Heat) Detection Units Alarm

The Train Controller must advise the Track Maintenance Representative for the area (via Operations Support), and the Operator of the trains affected. An alarm tone followed by a verbal warning "Over temperature at (location)" will be heard twice on channel 1 of the MPU radio within 3 km of these units. On receiving the transmission, the Operator must call the Train Controller.

34.1.2 Dragging Equipment Detection Unit Alarm

The Train Controller must advise the Operator concerned to stop the train immediately and check the train for the reason the alarm was activated. You must tell the Rail Operating Company's Service Manager if a mechanical problem is found. An alarm tone followed by a verbal warning "Dragging equipment at (location)" will be heard twice on channel 1 of the locomotive radio within 3 km of these units. On receiving the transmission, the Operator must call the Train Controller.

34.2 Signalling Panel Alarms - Dragging Equipment

When activated, these units will illuminate a visual display on the relevant signalling panel screens in Train Control. The alarm wording displayed on the panel describes the nature of the alarm and its location.

The signalling panel screen alarms do not provide an audible warning to passing trains.

The Train Controller will follow the same arrangements detailed in the additional Train Control radio alarms section when these alarms are activated.

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36. Reminder Function

When a reminder is placed on the signalling panel, the Signaller / Train Controller must record the reason.

The reminder must only be removed when the conditions no longer exist.

When there is more than one reason for a reminder, the Signaller / Train Controller must:

- create a list for each reason, and
- record each reason on a separate line.

IMPORTANT
A reminder must not be used as signal blocking.

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