

Module KSW5

Kent/Sussex/Wessex Routes

Sectional Appendix

Module 5

Network Rail/CTRL Interface Instructions

CONTENTS

- Part A Network Rail/CTRL Interface Instructions
 (Including Dollands Moor European Freight Operations Centre)
- Part B Network Rail/CTRL Interface Instructions
 (Fawkham Jn, Ashford West & East Chords and Dollands Moor Freight Chord)

NETWORK RAIL/CTRL INTERFACE INSTRUCTIONS

PART A

Network Rail/CTRL Interface Instructions
(Including Dollands Moor European Freight Operations Centre)

PART A

NETWORK RAIL/CTRL INTERFACE INSTRUCTIONS (INCLUDING DOLLANDS MOOR EUROPEAN FREIGHT OPERATIONS CENTRE)

Glossary	3
Section A – Introduction	
A1 Scope of these Instructions	5
A2 Operational Control Centres and the Boundaries of their control	6
A3 Lineside Signs	9
Section B – Communications	
B1 Radio Systems	11
B2 International Form Books (<i>Livret Formulaires</i>)	12
B3 "Train Ready To Start" Signal	12
B4 Telephone Numbers	12
Section C – General Arrangements	
C1 Access to the Concession	13
C2 Obstruction or Danger on the Track	13
C3 Management of an Incident at the Network Rail/CTRL Interface	14
Section D – Failure or Disconnection of Signalling Equipment	
D1 Principle	15
D2 Details of Controlled Signals and Points at the Boundary	15
D3 Communication Structure	16
D4 System Failures – Instructions	16
Section E – Electrification	
E1 A.C. System	18
E2 D.C. System	31
Section F – Electrification	
F1 All Trains	38
F2 Passenger Trains	39
F3 Freight Trains	39
F4 Eurotunnel Emergency Siding	41
F5 Shoe Gear Detection Equipment	41
Section G – Maintenance Works	
G1 Protection of Engineering Work	42
G2 Emergency Works	49
G3 Temporary Speed Restrictions	49
G4 Emergency Speed Restrictions	52

GLOSSARY

ADD	Automatic Dropping Device. A device on an A.C. electric traction unit that will automatically lower the pantograph to minimise damage to the overhead line equipment if the pantograph carbons are displaced or the head is damaged, if the pantograph head becomes damaged or detached, or if the pantograph height limit is exceeded.
AFC	CTRL operational control centre located at Ashford (Kent).
AFC Signaller	Responsible for the monitoring and control of trains within the area covered by the AFC.
ARS	Automatic Route Setting. A method of automatic signalling of trains by the computers in the ASC based on information contained in the Working Timetable and Special Traffic Notices.
Concession	The infrastructure owned by Eurotunnel.
Concession Radio	<p>Radio facility for voice communication within the cab-signalled area, chiefly in the event of failure of the International Train Radio or of incidents specified in the operating instructions.</p> <p>The Concession radio can be used by members of the various other organisations operating within the cab-signalled area. It must not be used to communicate with the IECC or AFC. This radio must be carried by a Driver who has to leave the train or cab.</p>
Coordinator Travaux	RCC Controller responsible for accepting OHLE isolation requests and arranging for the activation and maintenance of the required remote protection measures. He/she is the sole RCC interface with the other control centres. This function is normally carried out by the RCC Supervisor.
CSR	Cab Secure Radio
CTRL	Channel Tunnel rail Link: high-speed railway between London (St. Pancras) and Cheriton and associated chords and connecting lines.
Duty Control Manager	EUKL Duty Control Manager at Waterloo International Terminal
EFOC	European Freight Operations Centre at Dollands Moor
EMMIS Controller	Controller in the AFC responsible for control of the electricity supply to the AC overhead system on the CTRL.
Electrical Control Room Operator (ECRO)	Network Rail Electrical Control Room Operator located in Paddock Wood Electrical Control Room (ECR) responsible for the supply of the traction current to the Overhead Line Equipment west of the electrical control boundary at pk 7.953 (Down Fast) and pk 7.795 (Up Slow) and to the conductor rail system in its entirety
Engineer's Train	See Works Train
EUKL	Eurostar (UK) Ltd
EZP	Engineering Zone of Protection. CTRL track is divided into defined Engineering Zones of Protection (EZPs) protected by the AFC's signalling system. The limits of each Zone is indicated by "EZP" signs placed in the four foot. Each of these Zones, as they apply to the interface arrangements, is defined in Appendix 2 to Section G, and is allocated a unique identification code.

GLOSSARY – Continued

IECC Signaller	Responsible for the monitoring and control of trains within the area covered by Workstation 5 at Ashford IECC.
Kent Integrated Control Centre	Network Rail control centre with a Duty Control Manager responsible for the current train operations on Network Rail Kent infrastructure
Marker	CTRL signal indicating the commencement of a block section (for description –see point A3.1). A marker is "closed" when movements are not authorised to pass it. A marker is "open" when movements are authorised to pass it.
Nominated Person On Site (NPOS)	Qualified person responsible for local switching, testing, earthing, and issuing of Overhead Line Permits in accordance with the CTRL Rule Book, Module AC2, (C/02/OS/05/1012).
Possession	A section of running line on which there is a complete stoppage of trains in order to undertake maintenance.
RCC	Eurotunnel Railway Control Centre responsible for the safe operation of the railway within its jurisdiction, including the traction power supply.
Repère	Eurotunnel and SNCF terminology for a marker
Responsible Person on Site (RPOS)	The person responsible for arranging protection for works requiring normal train movements to be stopped.
Sel	<i>Section élémentaire</i> – Eurotunnel term for electrical section
SNCF	French National Railways
Task Supervisor	The person on the track who is responsible for the control of works activities, trains / on-track machines /plant within a worksite.
Track Protection Zone	A standard area of track as defined in Appendix 2 to Section G, and is allocated a unique identification code.
Unique Reference No.	Reference Number allocated by the IECC signaller to identify a message in connection with a possession or a traction current isolation.
Work	All activities that necessitate the stopping or diversion of trains, in order to undertake maintenance/repairs (either planned or unplanned) to the track and/or the traction supply equipment and/or signalling equipment or in connection with incident response.
Work Site	A predefined area within the possession where staff carry out work.
Works Train	A train requiring to work within a possession. Also includes on-track machines (OTMs).
Yard Master	Member of staff responsible for the current operations of Dollands Moor EFOC.

SECTION A INTRODUCTION

A1 SCOPE OF THESE INSTRUCTIONS

The Instructions contained in this document apply to the main lines between Saltwood Junction (exclusive) and the signalling boundary between the IECC and AFC, and within Dollands Moor EFOC. They apply to Network Rail and CTRL employees and contractors, and to Train Operators working within these areas.

This document details:

- The principles for the operation of trains between Network Rail and CTRL in both normal and degraded situations.
- Arrangements for the planning and execution of work on the infrastructure over the interfaces between Network Rail and CTRL.
- Arrangements for controlling the traction current supply, including the arrangements necessary for taking isolations (both planned and in an emergency)
- Communications principles.
- The principles to be adopted for the management of incidents in the interface area.

The following operational publications apply, as amended by the Instructions contained in this document.

Module Rule Book GE/RT8000 series

Network Rail Line Specification "Working on or about 25kV A.C. Electrified Lines" (RT/E/S/29987)

D.C. Electrified Lines Working Instructions (GO/RT/3091)

Working Manual for Rail Staff (GO/RM3056 & GO/RM3053)

Kent, Sussex and Wessex Sectional Appendix

International Forms Book (*Livret Formulaires*) Procedures

A2 OPERATIONAL CONTROL CENTRES AND THEIR BOUNDARIES OF CONTROL

A2.1 Signalling

The CTRL cab signalling system is controlled from its Ashford Control Centre (AFC)

The Track Circuit Block signalling system is controlled from the Network Rail Ashford Signalling Centre (IECC).

The boundaries between their areas of control are as follows. Refer to diagram shown in Figure 1.

	Down direction	Up direction
Ashford Control Centre (AFC)		
Down Fast	From CTRL marker AF363 (inclusive) as far as Eurotunnel marker 0834 (exclusive)	From CTRL marker AF366 (inclusive) as far as IECC signal AD832 (exclusive)
Up Slow	From CTRL marker AF365 (inclusive) as far as Eurotunnel marker 0871 (exclusive)	From CTRL marker AF364 (inclusive) as far as IECC signal AD830 (exclusive)
Up Fast	As far as Eurotunnel marker 0833 (exclusive)	From CTRL marker AF362 (inclusive)
Ashford Signalling Centre (IECC)		
Down Fast	As far as CTRL marker AF363 (exclusive)	From signal AD832 (inclusive)
Up Slow	As far as CTRL marker AF365 (exclusive)	From signal AD830 (inclusive)

A2.2 Traction power supply

The CTRL 25kv AC system is controlled from its Ashford Control Centre (AFC).

The Eurotunnel 25kv AC system is controlled from its Rail Control Centre (RCC).

The Network Rail 25kv AC system is controlled from its Electrical Control Room (ECR) located at Paddock Wood.

The boundaries between their areas of control are as follows. Refer to diagram shown in Figure 2.

Down Fast	Between Paddock Wood ECR and the RCC	Insulated overlap at pk7.935
Up Slow	Between Paddock Wood ECR and the RCC	Insulated overlap at pk7.780

Note: The Network Rail 750v DC conductor rail system in its entirety is controlled from its Electrical Control Room (ECR) located at Paddock Wood.

Figure 1
Rules change boundaries

(Note - Topological representation, not shown to scale)

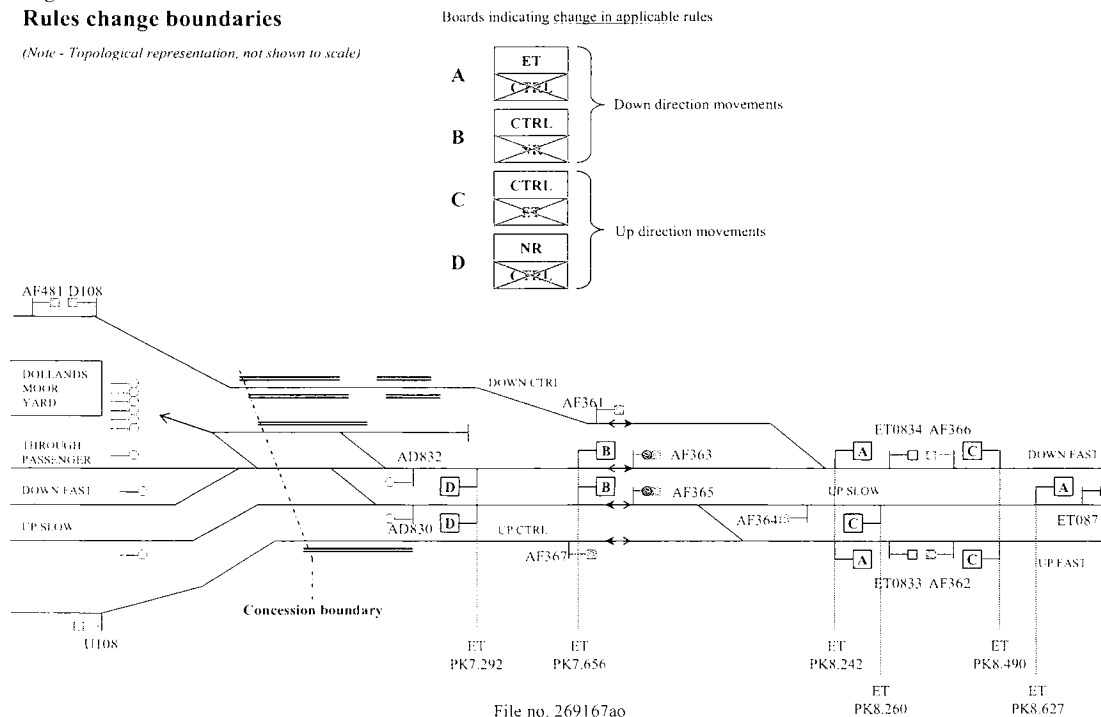
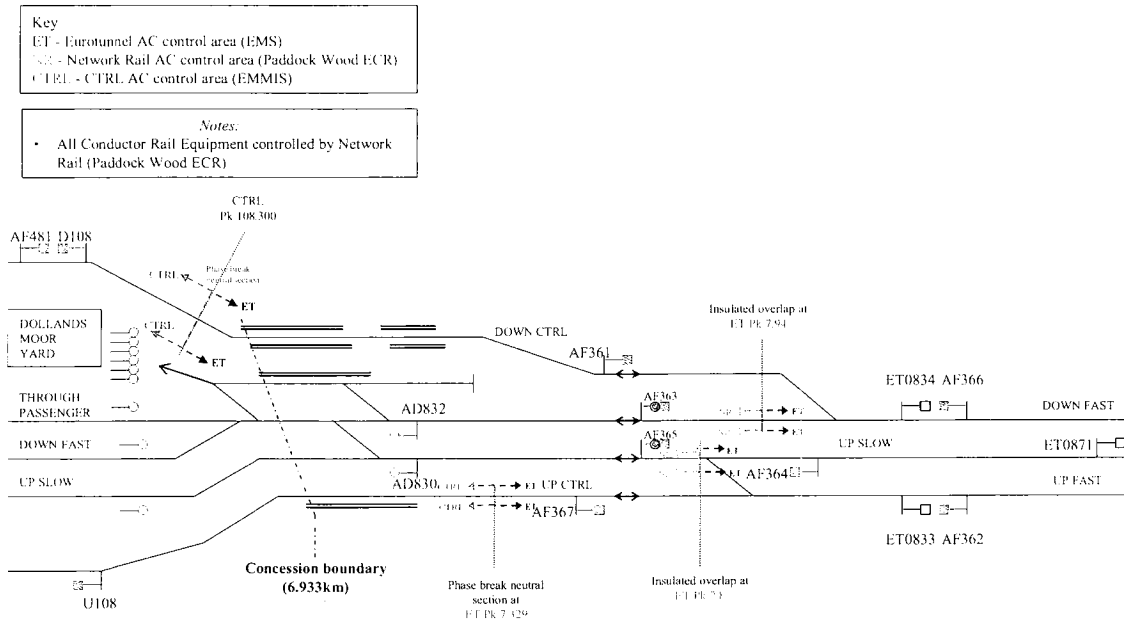


Figure 2
Electrical Control boundaries

(Note - Topological representation, not shown to scale)



File no. 269167ao

A3 LINESIDE SIGNS

A3.1 Description of CTRL markers

CTRL markers normally consist of a reflectorised square sign showing a yellow triangle on a blue background. The apex of the triangle points to the line to which the marker applies. Each marker is provided with a unique number plate, consisting of white characters on a black background, for identification purposes. Markers AF363 and AF365 have the yellow and blue sign formed by the illumination of appropriate LEDs. Markers are also provided with an auxiliary signal, consisting of a single white light which is normally extinguished. When illuminated, it indicates that a train may pass the marker under "Proceed on Sight" conditions.

A3.1.1 Marker AF363 (Down Fast line) "Secret repère"

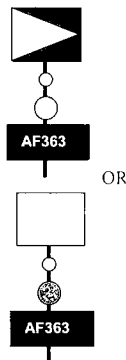
Marker AF363 can display:

- an illuminated marker, **OR**
- an illuminated marker with an illuminated auxiliary (proceed) light, **OR**
- a fixed red light

The red light is illuminated when the marker is not open.

The illumination of both the marker and the red aspect must be treated as an abnormal aspect.

This marker is mounted on a gantry directly above the line to which it refers. (Note – no light showing indicates a fault).



A3.1.2 Marker AF365 (Up Slow line) "Secret repère"

Marker AF365 can display:

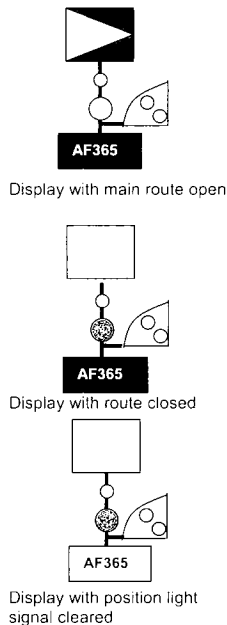
- an illuminated marker, **OR**
- an illuminated marker with an illuminated auxiliary (proceed) light, **OR**
- a fixed red light, **OR**
- a fixed red light and the illumination of a "Network Rail" type position light signal (two white lights at 45°).

The red light is illuminated when the marker is not open.

The illumination of both the marker and the red aspect must be treated as an abnormal aspect.

This marker is mounted on a gantry directly above the line to which it refers. (Note – no light showing indicates a fault).

This marker is provided with a position light signal for the purpose of controlling non-cab signalled shunting movements. Clearance of the position light signal indicates that the route is set to the Up Fast line (Eurotunnel marker 0833).



A3.2 Entering the cab signalling area

A3.2.1 Warning sign

Signs provided on the Down Fast and Up Slow lines between signals AD821/AD823 and markers AF363/AF365 advising Drivers that the train is approaching the cab signalled area.



A3.2.1 Execute Signs

Signs provided on the Down Fast and Up Slow lines between signals AD821/AD823 and markers AF363/AF365 advising Drivers of international trains that if the cab signalling system has not automatically armed on the train, the Driver must stop the train and arm it manually.



A3.2.3 Abort board

Signs provided on the Down Main and Up Main lines between signals AD791/AD793 and AD821/AD823 advising Drivers of international trains that if the voltage system changeover from 750v DC to 25kv AC has not been satisfactorily completed and the Driver does not have the correct indications for entry into the Channel Tunnel, the train must stop at markers AF363/AF365 and the AFC Signaller contacted.



A3.3 Leaving the cab signalled area

Signs provided on the Down Fast and Up Slow lines between markers AF362/AF364/AF366 and signals AD830/AD832 advising Drivers that the train is about to leave cab signalled area and that the fixed lineside signals must be observed. The sign consists of white letters "CAB" on a black background with a red cross.



A3.4 Boundaries between systems

At boundaries between systems, signs are provided to indicate the location at which the applicable rules change. On passing the sign, the Driver must understand the rules, regulations and instructions applicable to the infrastructure that the train is entering.

The signs consist of black letters on a white background. The uppermost sign shows the system area the train is entering and the lower sign shows the system area the train is leaving. Their locations are shown on the diagram in figure 1.

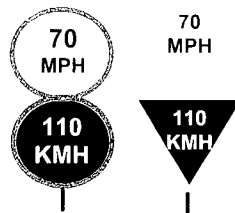


A3.5 Signing of Permanent Speed Restrictions

Signs and warning indicators associated with permanent speed restrictions also indicate the maximum speed restrictions in km/h. Differential speed restrictions are not permitted

The top board indicates the speed in mph in black letters on a white background

The bottom board indicates the speed in km/h in white letters on a black background



SECTION B COMMUNICATIONS

B1 RADIO SYSTEMS

B1.1 International Train Radio (ITR)

International Train Radio is a Cab Secure Radio system fitted to all international trains permitted to operate through the Channel Tunnel.

B1.1.1 No train will enter service if the International Train Radio equipment is defective. If the equipment becomes defective whilst the train is en route then the Driver must use Signal Post Telephones or a mobile phone to contact the Signaller.

B1.1.2 If the IECC Signaller receives information from the Driver of a train travelling towards the Continent, that his International Train Radio equipment is defective, then he must relay this information to the AFC Signaller.

B1.1.3 If the IECC Signaller receives information from the AFC Signaller that the International Train Radio equipment is defective on a freight train travelling towards England, then he must relay this information to the Yard Master at Dollands Moor EFOC.

B1.1.4 The Rule Book, Module TW1, Section 3, 'Communications', is amended as follows:
The International Train Radio equipment must be used in all circumstances where Driver to Signaller communication is required. The "Emergency Call Procedure" must be used in the following circumstances:-

(a) when necessary to give immediate advice of an accident, obstruction, or other exceptional incident.

(b) when necessary to call the emergency services.

B1.2 Concession Radio

Concession Radio is an internal Eurotunnel radio system to allow staff working within the Concession and the RCC to communicate. Concession Radio equipment is also provided in the driving cabs of trains that work over the Concession so that the Driver and RCC can communicate in the event of a failure of the International Train Radio or if the Driver has to leave the driving cab. Concession radio **cannot** be used to communicate directly with the IECC or AFC Signallers. however in an emergency and where there is no other means of communication available a Driver may contact the RCC to give details of an incident. The RCC will then pass the details on to the AFC Signaller who will carry out the necessary procedures.

B1.2.1 If the Concession Radio equipment on a train is a failure then it must be changed for a new unit before the train commences its journey.

B1.2.2 In the event of a failure of the Concession Radio, a train may continue to work over the Concession provided that the International Train Radio is operational.

B1.3 Failure of both the International Train Radio and Concession Radio Equipment

B1.3.1 No trains must enter the Concession with both the International Train Radio and the Concession Radio equipment defective. As soon as the Driver becomes aware that both sets of equipment have failed the Signaller must be informed by Signal Post Telephone or mobile phone and then await further instructions.

B1.3.2 Upon receiving information that a train travelling towards the Concession has both its Concession Radio and International Train Radio equipment defective, the IECC Signaller must inform the Shift Signaller Manager (SSM).

B1.3.3 The Shift Signaller Manager (SSM) must liaise with Network Rail Kent Integrated Control Centre to decide how to deal with the train, and keep everyone advised. Once it has been decided how the train will be dealt with, the Signaller must instruct the Driver accordingly.

B2 INTERNATIONAL FORMS BOOK (LIVRET INTERNATIONAL DE FORMULAIRES DE PROCEDURES)

- B2.1** When the Signaller communicates a Safety Critical Message to the Driver (either by the International Train Radio, Signal Post Telephone or mobile phone) the appropriate *Livret Formulaires* Procedure must be carried out. Each must have completed their copy of the appropriate form and the authorisation number exchanged before any movement is made. The authorisation number must be in the form AD5XXXX, where AD is the code for the Ashford IECC, 5 is the workstation number, and XXXX is the time (24 hour clock), e.g. AD51545. This Instruction does not apply to Drivers of Works trains, or South Eastern Trains TOC.

B3 “TRAIN READY TO START” SIGNAL

- B3.1** In the event of a failure of the “Train Ready to Start” signal from Dollands Moor EFOC, then the Yard Master must inform the Signaller by telephone that a train is ready to depart, quoting its identity number and the Siding number that it will be departing from.

B4 TELEPHONE NUMBERS

	BT	Racal
Ashford AFC		
Signaller	01233-739470	00-39450
EMMIS Controller		00-39410
Ashford IECC		
Shift Signaller Manager (SSM)	01233-617250	00-77250
Fax	01233-617423	00-77423
Dollands Moor		
Yard Master	01303-290150	00-80150
Fax	01303-290160	00-80160
Eurotunnel (RCC)		
RCC Supervisor	01303-283860	
Fax	01303-283031	
Emergency	01303-283000	
Eurotunnel (Security)Fax	01303-272747	
Paddock Wood ECR		
Electrical Control Room Operator	01892-833018	01-34700
Fax		01-37703
Emergency		172 (Short code)

SECTION C GENERAL ARRANGEMENTS

C1 ACCESS TO THE CONCESSION

- C1.1** Staff that are required to work in the Concession, to undertake preventative and remedial work on the Infrastructure must comply with the following instructions:-
- C1.2** Staff entering the Concession must comply with the Rule Book (GE/RT8000 series), Module G2 (as modified in these Instructions), must have been passed as competent in the Personal Track Safety Rules and must carry with them a current certificate of competence, endorsed "including AC and DC Electrified Lines". Personal Protective Equipment must be worn at all times, and High Visibility Clothing must conform to Railway Group Standard GO/RT3279, when entering Network Rail owned infrastructure.
- C1.3** Staff entering the Concession must have access to a mobile telephone in order to contact the IECC or AFC or a Concession Radio to contact the RCC.
- C1.4 Security**
- C1.4.1** For security reasons, before any member of staff enters the Concession, they must contact the Shift Signaller Manager (SSM) as soon as the requirement is known, and state their name, grade, company and, where applicable, number of staff in the group. On receipt of this information, the Shift Signaller Manager (SSM) must fax to Eurotunnel Security details of the staff that are about to enter the Concession.
- C1.4.2** Staff should beware that they may be challenged by Eurotunnel Security at any time whilst in the Concession and, if challenged, must be able to produce a current Personal Track Safety Certificate.
- C1.4.3** When the member of staff or group leaves the Concession, they must contact the Shift Signaller Manager (SSM) and state their name, grade, company and, where applicable, number of staff in the group. On receipt of this information, the Shift Signaller Manager (SSM) must fax Eurotunnel Security details of the staff that are leaving the Concession.

C2 OBSTRUCTION OR DANGER ON THE TRACK

- C2.1** If staff become aware of an obstruction, or other danger, on a line in the Concession that requires trains to be stopped immediately, the IECC Signaller or AFC Signaller must be informed by the first available means. The member of staff must first say "**This is an emergency call**" and then state:
- their name
 - their job title
 - their employer
 - the place from where they are speaking
 - the exact location and details of the incident
 - which lines are blocked
- C2.2** When the IECC Signaller receives the Emergency Alarm Signal or any other advice that there is an obstruction, or other danger, on the line(s) that requires trains to be stopped immediately, he must:
- send the Emergency Alarm Signal to the AFC (this alarm will be sent automatically to the RCC) unless this has already been received
 - place or maintain signals AD823, AD821, AD813, AD809, AD807, AD803, AD799, AD797, AD795, AD830 and AD832 at danger and use reminder appliances. However, movements may be made within Dollands Moor Yard for shunting purposes once it has been established that these lines are **not** affected. The reminder override facilities should be used for this purpose.
 - broadcast a general emergency radio call to **stop** all movements towards the Concession
 - make an entry in the Train Register

- C2.3** The IECC Signaller must advise the AFC Signaller and the Shift Signaller Manager (SSM) the reason for the Emergency Alarm Signal being sent and if the emergency services are required.
- C2.4** When the AFC Signaller receives an advice that there is an obstruction, or other danger, on the line(s) that requires trains to be stopped immediately, it will send the Emergency Alarm Signal to the IECC.
- C2.5** If after receiving the Emergency Alarm Signal from the AFC, the IECC Signaller is unable to stop a train proceeding past signals AD823, AD821, AD813, AD809, AD807, AD803, AD799, AD797 or AD795, towards the affected portion of line, he must immediately send the Emergency Alarm Signal to the AFC.
- C2.6** The AFC Signaller will advise the IECC Signaller the reason for the transmission of the Emergency Alarm Signal being sent.
- C2.7** The Shift Signaller Manager (SSM) must be advised of the circumstances.
- C2.8** If the delay of trains will be protracted, the Shift Signaller Manager (SSM) must liaise with Network Rail Kent Integrated Control Centre and the Yard Master at Dollands Moor in order to regulate trains.
- C2.9** If the obstruction cannot be removed immediately, then the Track Protection Zone(s) concerned must be protected in accordance with Section G of these Instructions.

C3 MANAGEMENT OF AN INCIDENT AT THE NETWORK RAIL/CTRL INTERFACE

- C3.1** The Shift Signaller Manager (SSM) to arrange for a Network Rail Incident Officer (RIO) to attend. The Network Rail RIO to be supplied with contact details for the CTRL RIO. On arrival at the incident location, the Network Rail RIO to liaise with the CTRL RIO in order to decide, according to the circumstances, who is best suited to manage the incident. The other RIO to assist the RIO managing the incident. The RIO managing the incident to lead any subsequent investigation.
- C3.2** The RCC is responsible for arranging the attendance of the emergency services (if required) at the site of an incident occurring in the Concession. If the emergency services are summoned directly by the IECC, the Shift Signaller Manager (SSM) must advise the RCC Supervisor.

SECTION D FAILURE OR DISCONNECTION OF SIGNALLING EQUIPMENT

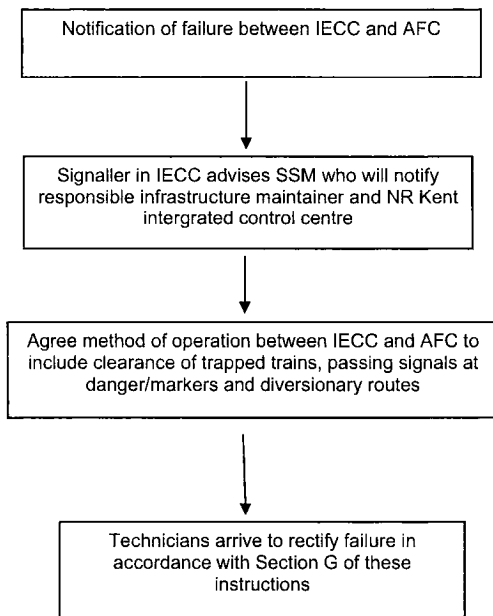
D1 PRINCIPLE

- D1.1** During a failure or disconnection of the signalling equipment the Instructions contained in this Section must be adhered to.
- D1.2** When a failure of Signals, Points, Track Circuits, Train Describers or Flow Indicators occurs the IECC Signaller must contact advise the AFC Signaller the extent of the failure.
- D1.3** The IECC Signaller must advise the Shift Signaller Manager (SSM) as to the nature of the failure and record the details accordingly. The Shift Signaller Manager (SSM) must then notify the Infrastructure Maintainer and Network Rail Kent Integrated Control Centre.
- D1.4** The IECC Signaller must reach a clear understanding with the AFC Signaller and agree a method by which train movements will be made.
- D1.5** The Rule Book, Module P2, "Working single and bi-directional lines by Pilotman" does **not** apply on the Down Fast and Up Slow lines between the IECC and AFC.

D2 DETAILS OF CONTROLLED SIGNALS AND POINTS AT THE SIGNALLING BOUNDARY

- | | | |
|-------------|--|---|
| D2.1 | <p>IECC Signals in the down Direction
AD823, AD821, AD813, AD809, AD807, AD803, AD799, AD797, AD795</p> <p>AFC Markers in the down direction
AF365 AF363</p> | <p>IECC Signals in the up direction
AD830, AD832</p> <p>AFC Markers in the up direction
AF362 AF364 AF366</p> |
| D2.2 | <p>IECC Point numbers
NIL</p> | <p>AFC Point numbers
2364, 2361, 2362</p> |

D3 COMMUNICATION STRUCTURE



D4 SYSTEM FAILURES – INSTRUCTIONS

D4.1 Failure of Train Describers

D4.1.1 To enable Eurotunnel to receive accurate train running information if the Train Describer system has failed at the Interface, i.e. Train Identity Nos. are not stepping through to the RCC, the following information must be passed to the AFC Signaller:

- (a) All international passenger and ECS trains must be reported when passing signal AD701 (Sevington)
- (b) All international freight trains departing Dollands Moor Yard must be reported before the exit signal is cleared.

D4.2 Failure of Automatic Route setting (ARS)

D4.2.1 If ARS has failed, the IECC Signaller must not clear any exit signal from Dollands Moor EFOC for a train that is ready before its booked departure time.

D4.3 Failure of Points, Signals and Track circuits

In the event of a failure of any points, signalling or track circuits at the signalling boundary the following procedure will apply:-

D4.3.1 The IECC Signaller upon becoming aware of a failure of any of this equipment must:

- (a) inform the AFC Signaller.
- (b) inform the Shift Signaller Manager (SSM).
- (c) prevent, where possible, any movement towards the failure.
- (d) where possible agree Diversionary Routes with the AFC Signaller.
- (e) inform the Technician Shift Manager at the IECC.

When technical staff are available to rectify the failure, work must proceed as in accordance with the Instructions contained in Section G.

D4.3.2 **Failure of Signal Nos. AD823,AD821,AD813,AD809, AD807,AD803,AD799, AD797 and AD795**
Before allowing any movement to pass any of the above signals the following procedure must be observed:

- (a) The IECC Signaller must receive an assurance from the AFC Signaller that the last train on the line concerned has passed clear of the affected section, that no conflicting route is set or is about to be set and that any slot request has been acknowledged.
- (b) The provisions of the Rule Book, Module S5, must be applied. If an associated track circuit is showing occupied, then the first affected train over the line concerned must examine it in accordance with Rule Book, Module TS2, Regulation 9.
- (c) The appropriate *Livret Formulaires* Procedure must be used.
- (d) The AFC Signaller will inform the IECC Signaller when the movement has passed clear of the affected section and, if the line has been examined, the driver's remarks.

D4.4 **Failure of Direction of Flow Indicators**

D4.4.1 Direction of flow indicators are provided on each line.

D4.4.2 The IECC Signaller must not attempt to set a route that conflicts with a Direction of Flow Arrow for a route already set by the AFC.

D4.4.3 If however, a "Direction of Flow Arrow" is not illuminated, the IECC Signaller must agree with the AFC Signaller the direction of flow for each line. This should always follow the primary direction for each line, e.g. Down direction on the Down Fast line.

SECTION E ELECTRIFICATION

E1 AC SYSTEM

E1.1 Description of the System

The following description replaces that shown in Section 3 "Description of the system", of Module 3 "General Requirements", of the Network Rail Line Specification "Working on or about 25kV A.C. Electrified Lines"

E1.1.1 System of Electrification

The system employs overhead conductors at 25,000 volts (25kV), 50 hertz, alternating current (AC).

E1.1.2 Supply of Electricity

The overhead line system on Network Rail lines is supplied with electricity from the Eurotunnel Overhead Line System via circuit breakers situated at the Electrical Control Boundary.

E1.1.3 The Electrical Circuit

Electrical supplies are taken to the overhead line equipment by means of bare overhead conductors and are terminated on or adjacent to feeder switches mounted on the overhead line equipment supporting structures.

The current is collected from the overhead line equipment by the train pantograph and taken to the train equipment. Having passed through the equipment on the train the current passes through the axles and wheels of the traction unit to the running rails. The current is returned to the Eurotunnel system by the traction return running rails. In addition, a part of the current is returned throughout the general mass of earth.

The supply of electricity to the overhead line system from Saltwood Tunnel (106.6 km) to the Electrical Control Boundary (including Dollands Moor EFOC) is under the control of the Network Rail Electrical Control Room Operator (ECRO) at Paddock Wood. The supply of electricity to the overhead line system from Electrical Control Boundary towards the Channel Tunnel is under the control of the Eurotunnel RCC.

The Circuit Breakers situated at the Electrical Control Boundary at 109.5 km are remotely controlled by a supervisory control located in Paddock Wood Electrical Control Room (ECR). In the event of supervisory failure they can be operated by the RCC.

Paddock Wood ECR, the AFC and the RCC are continuously staffed.

E1.1.4 Overhead Line Equipment

The overhead line equipment comprises a catenary wire and a contact wire supported over each track by steel structures. The catenary wire is carried on insulators or insulated supports attached to the structures and the contact wire is suspended from the catenary wire by means of droppers.

The height of the contact wire above rail level varies from 4.7 metres at the Saltwood Tunnel end to 5.93 metres at the Interface.

The contact wire is staggered at structures on straight track on alternative sides of the centre line of the track so as to maintain a smooth surface on, and prevent grooving of, the contact surface of the pantographs.

E1.1.5 Sectioning

The overhead line equipment fed from each Circuit Breaker is kept electrically separate from that fed by any other.

Each section is divided into subsections by means of switches mounted on the overhead line equipment structures. In consequence, a subsection of the overhead line equipment can be isolated and earthed in case of fault, or for maintenance purposes, whilst the electricity supply on other sections and subsections is maintained.

The overhead line equipment within the sidings is fed through siding switches, by which the siding equipment can either be made "live" or "isolated" and, in certain cases, "earthed"

E1.1.6 Isolation Diagrams and Isolation Instructions

The complete sectioning scheme is shown on isolation diagrams, appropriate copies of which are kept at Kent Integrated Control Centre, Paddock Wood ECR, the IECC, the AFC and the RCC, together with the appropriate Isolation Instructions.

In connection with any isolation of the overhead line system, the IECC Signaller must refer to the Isolation Instructions, when protecting an isolation of the Overhead Line Equipment. The Isolation Instructions give details of the signal protection required for any quoted electrical section or subsection. This applies whether the isolation is pre-arranged, local, or for an emergency.

E1.2 Switching off Electricity in Emergency and Rescue of Persons

E1.2.1 Instruction 1 of the Rule Book, Module AC1 (Part B) is modified as follows:

E1.2.2 A request for an emergency isolation of the traction current must be made to the Paddock Wood ECRO or the RCC (as appropriate) by the first available means. This request may be made via one of the other electrical controllers or via the EMMIS Controller, IECC Signaller or AFC Signaller if this would be quicker. Because of the complexities of the electrical control interfaces in this area, the person requesting the isolation must clearly specify which lines are involved and, as far as possible, the precise location of the incident. If there is any doubt as to how much of the catenary is to be isolated, e.g. lines involved, extent of the incident, the Paddock Wood ECRO, the RCC Controller and the EMMIS Controller, must liaise with each other and switch off the electricity from all lines in the area until the actual location of the incident is established.

E1.2.3 When the RCC isolates the traction current under its control, in an emergency, the supply of electricity to the overhead line system from Saltwood Tunnel (106.6 km) to the Electrical Control Boundary (including Dollands Moor EFOC) may also be isolated.

E1.2.4 If the isolation is prolonged, alternative feeding arrangements, may be arranged by the Paddock Wood ECO and the RCC in order to restore the supply of electricity to one or more electrical sections. In this connection the instructions contained in the Network Rail Line Specification "Working on or about 25kV A.C. Electrified Lines" must be applied to the electrical section(s) that is to remain isolated. These Instructions must have been carried out and the electrical section(s), which will remain isolated, must be protected by signals, before any other electrical section(s) is re-energised.

E1.2.5 In the event of an emergency isolation in the Electrical Control Boundary area which requires Eurotunnel Sel(s)/Network Rail electrical section(s) 602 & 602L together and/or 605 & 601A to remain isolated and earthed, then the attendance of a CTRL NPOS must be requested from the EMMIS Controller. The arrangements shown in point E1.6.6 to apply to the Sel(s)/electrical section(s) that are to remain isolated.

E1.3 Work near to the Overhead Line Equipment

- E1.3.1** Within Dollands Moor EFOC, in accordance with Module 8, "Local Isolation and Earthing of 25kV A.C. Overhead Line Equipment", of the Network Rail Line Specification "Working on or about 25kV A.C. Electrified Lines", specially authorised trained and competent staff are permitted to undertake the visual inspection of security seals on wagons and containers up to the cant rail safety line where provided.

E1.4 Use of Ladders

- E1.4.1** In connection with Instruction 3.8 of the Rule Book, Module AC1 (Part A), the cleaning of locomotive cab windows is authorised in Dollands Moor EFOC using an approved ladder.

E1.5 Examination of Overhead Line Equipment

- E1.5.1** The Overhead Line Equipment is carried on three different sets of headspans grouped as follows:-

- (a) Up and Down Main Lines
- (b) Through Passenger Line, Sidings 1 and 2, Run Round Line, and Loco Loop Line in Dollands Moor EFOC.
- (c) Sidings 3 to 7 in Dollands Moor EFOC.

E1.6 Overhead Line Equipment isolations in connection with engineering work

E1.6.1 Protection arrangements for electrical sections/Sels

- E1.6.1.1** These instructions apply to the isolation of electrical sections 601A & 602L (controlled by Paddock Wood ECR) and Sels 602 & 605 (controlled by the RCC). These instructions also apply to the isolation of Sel 603 (controlled by the RCC) and electrical section 717A (controlled by the AFC) on the Up CTRL line when they are required to be isolated to protect staff/equipment working on the adjacent Up Slow line. In addition, if Sel 610 (controlled by the RCC) is required to be isolated, then the AFC Signaller will request the IECC Signaller to send all down trains via the Up Slow line.
- E1.6.1.2** The protecting signals/markers for each electrical section/Sel are detailed in appendix 2 to this section. Except in the event of an emergency, before any electrical section or Sel is isolated and/or responsibility transferred, the ECRO or Controller must have received an assurance that the required electrical section(s)/Sel(s) has been blocked to electric train movements.
- E1.6.1.3** The forms are shown in appendix 1 of this section.

E1.6.2 Isolation of Network Rail electric sections 601A or 602L that are under the control of Paddock Wood ECRO.

Notes:

1. This point only applies if Network Rail electrical sections 601A and/or 602L are required to be isolated without the isolation of the adjacent Eurotunnel Sel(s) 605 and/or 602. If the adjacent Eurotunnel Sel is required to be isolated as part of the same isolation request, point E1.6.6 to be applied.
2. Eurotunnel personnel have no requirement to request the isolation of these electrical sections.

E1.6.2.1 Network Rail personnel initiates the isolation request

E1.6.2.1.1 Nominated Person requests ECRO to isolate the Network Rail electrical section(s) concerned.
(Form B)

E1.6.2.1.2 ECRO requests permission of Yard Master, Dollands Moor EFOC, to isolate electrical sections 600A – 600L and 602A – 602L.

E1.6.2.1.3 Yard Master, Dollands Moor, gives permission to ECRO to isolate electrical sections 600A – 600L and 602A – 602L.

E1.6.2.1.4 ECRO requests IECC Signaller to block to electric trains the Network Rail electrical section(s) concerned.
(Form AE)

E1.6.2.1.5 IECC Signaller consults the Isolation Instructions for the Network Rail electrical section(s) concerned, places/maintains designated signals to danger and applies reminder appliances.

E1.6.2.1.6 IECC Signaller requests AFC Signaller to block to electric trains the Network Rail electrical section(s) concerned.
(Part 4 of Form F)

E1.6.2.1.7 AFC Signaller applies the signalling protection arrangements shown in the Isolation Instructions for the Network Rail electrical section(s) concerned.

E1.6.2.1.8 AFC Signaller confirms to IECC Signaller that block to electric trains is in place.
(Part 5 of Form F)

E1.6.2.1.9 IECC Signaller confirms to ECRO that block to electric trains is in place.
(Form AE)

E1.6.2.1.10 ECRO carries out the switching instructions in order to isolate the Network Rail electrical section(s) concerned.

E1.6.2.1.11 ECRO confirms to Nominated Person that the Network Rail electrical sections concerned are isolated.
(Form B)

E1.6.2.1.12 Nominated Person carries out local protection measures and issues Overhead Line Permit(s).

E1.6.2.2 CTRL personnel initiates the isolation request

E1.6.2.2.1 NPOS requests EMMIS Controller to isolate the Network Rail electrical section(s) concerned.

E1.6.2.2.2 EMMIS Controller requests ECRO to isolate and/or handover responsibility for the Network Rail electrical section(s) concerned.
(Part 1 of Form CTRL)

E1.6.2.2.3 ECRO requests permission of Yard Master, Dollands Moor EFOC, to isolate electrical sections 600A – 600L and 602A – 602L.

E1.6.2.2.4 Yard Master, Dollands Moor EFOC, gives permission to ECRO to isolate electrical sections 600A – 600L and 602A – 602L.

E1.6.2.2.5 ECRO requests IECC Signaller to block to electric trains the Network Rail electrical section(s) concerned.
(Form AE)

- E1.6.2.2.6** IECC Signaller consults the Isolation Instructions for the Network Rail electrical section(s) concerned, places/maintains designated signals to danger and applies reminder appliances. (
- E1.6.2.2.7** IECC Signaller requests AFC Signaller to block to electric trains the Network Rail electrical section(s) concerned. (Part 4 of Form F)
- E1.6.2.2.8** AFC Signaller applies the signalling protection arrangements shown in the Isolation Instructions.
- E1.6.2.2.9** AFC Signaller confirms to IECC Signaller that block to electric trains is in place. (Part 5 of Form F)
- E1.6.2.2.10** IECC Signaller confirms to ECRO that block to electric trains is in place. (Form AE)
- E1.6.2.2.11** ECRO carries out the switching where required in order to isolate the Network Rail electrical section(s) concerned.
- E1.6.2.2.12** ECRO confirms to EMMIS Controller that the Network Rail electrical section(s) concerned are isolated, and transfers responsibility of the section(s) to the EMMIS Controller. (Part 2 of Form CTRL)
- E1.6.2.2.13** EMMIS Controller confirms to NPOS that the Network Rail electrical section(s) concerned are isolated.
- E1.6.2.2.14** NPOS carries out local protection measures and issues Overhead Line Permit(s).
- E1.6.3 Re-energisation of Network Rail electrical sections 601A or 602L that are under the control of Paddock Wood ECRO**
- E1.6.3.1 Network Rail personnel initiated the isolation request**
- E1.6.3.1.1** Nominated Person cancels isolation with ECRO. (Form B)
- E1.6.3.1.2** ECRO carries out the switching instructions in order to re-energise the Network Rail electrical section(s) concerned.
- E1.6.3.1.3** ECRO advises IECC Signaller that the block to electric trains for the Network Rail electrical section(s) concerned can be removed. (Form AE)
- E1.6.3.1.4** IECC Signaller removes signal protection for the Network Rail electrical section(s) concerned. (
- E1.6.3.1.5** IECC Signaller advises AFC Signaller that the block to electric trains for the Network Rail electrical section(s) concerned can be removed. (Part 6 of Form F)
- E1.6.3.1.6** AFC Signaller removes signalling protection for the Network Rail electrical section(s) concerned.
- E1.6.3.1.7** ECRO advises Yard Master, Dollands Moor EFOC that electrical sections 600A – 600L and 602A – 602L are re-energised.
- E1.6.3.2 CTRL personnel initiated the isolation request**
- E1.6.3.2.1** NPOS cancels isolation with EMMIS Controller.
- E1.6.3.2.2** EMMIS Controller requests ECRO to re-energise the Network Rail electrical section(s) concerned. (Part 4 of Form CTR)

E1.6.3.2.3 ECRO carries out the switching instructions in order to re-energise the Network Rail electrical section(s) concerned.

E1.6.3.2.4 ECRO advises IECC Signaller that the block to electric trains for the Network Rail electrical section(s) concerned can be removed.

(Form AE)

E1.6.3.2.5 IECC Signaller removes signal protection for the Network Rail electrical section(s) concerned.

E1.6.3.2.6 IECC Signaller advises AFC Signaller that the block to electric trains for the Network Rail electrical section(s) concerned can be removed.

(Part 6 of Form F)

E1.6.3.2.7 AFC Signaller removes signalling protection for the Network Rail electrical section(s) concerned.

E1.6.3.2.8 ECRO advises Yard Master, Dollands Moor EFOC that electrical sections 600A – 600L and 602A – 602L are re-energised.

E1.6.4 Isolation of Eurotunnel Sels 602 and/or 605 that are under the control of the RCC

Note: If Network Rail personnel require the isolation of Eurotunnel Sel(s) 602 and/or 605, point E1.6.6 to be applied.

E1.6.4.1 CTRL personnel initiates the isolation request

Note: This point only applies if Eurotunnel Sel(s) 602 and/or 605 are required to be isolated without the isolation of the adjacent Network Rail electrical section(s) 601A and/or 602L. If the adjacent Network Rail electrical section(s) is required to be isolated as part of the same isolation request, point E1.6.6 to be applied.

E1.6.4.1.1 NPOS requests EMMIS Controller to isolate the Eurotunnel Sel(s) concerned.

E1.6.4.1.2 EMMIS Controller requests AFC Signaller to block to electric trains the Eurotunnel Sel(s) concerned.

E1.6.4.1.3 AFC Signaller applies the signalling protection arrangements shown in the Isolation Instructions for the Eurotunnel Sel(s) concerned.

E1.6.4.1.4 AFC Signaller requests IECC Signaller to block to electric trains the Eurotunnel Sel(s) concerned.

(Part 1 of Form F)

E1.6.4.1.5 IECC Signaller consults the Isolation Instructions for the Eurotunnel Sel(s) concerned, places/maintains designated signals to danger and applies reminder appliances.

E1.6.4.1.6 IECC Signaller confirms to AFC Signaller that block to electric trains is in place.

(Part 2 of Form F)

E1.6.4.1.7 AFC Signaller confirms to EMMIS Controller that block to electric trains is in place.

E1.6.4.1.8 EMMIS Controller requests permission of ECRO for the Eurotunnel Sel(s) concerned to be isolated.

E1.6.4.1.9 ECRO consults and applies the Electrical Control Room instructions.

E1.6.4.1.10 If traction current supply is to be maintained to Network Rail electrical sections 600A – 600L & 602A – 602L or 601A & 603B

- ECRO contacts IECC Signaller to ensure no electric train movements are taking place.
- ECRO opens boundary circuit breakers.
- ECRO instructs Nominated Person to manually operate designated isolation switches.
- Nominated Person manually operates and secures designated isolation switches.
- Nominated Person confirms to ECRO that designated isolation switches are operated.
- ECRO closes relevant boundary circuit breaker.
- ECRO informs IECC Signaller that electric train movements can recommence.

E1.6.4.1.11 If traction current supply is NOT to be maintained to Network Rail electrical sections 600A – 600L & 602A – 602L or 601A & 603B

- ECRO requests permission of Yard Master, Dollands Moor EFOC, to isolate Network Rail electrical sections 600A – 600L and 602A – 602L.
- Yard Master, Dollands Moor EFOC, gives permission to ECRO to isolate Network Rail electrical sections 600A – 600L and 602A – 602L.
- ECRO requests IECC Signaller to block to electric trains the Network Rail electrical section(s) concerned.

(Form AE)

- IECC Signaller consults the Isolation Instructions for the Network Rail electrical section(s) concerned, places/maintains designated signals to danger and applies reminder appliances.
- IECC Signaller confirms to ECRO that block to electric trains is in place.

(Form AE)

- ECRO opens boundary circuit breaker(s).

E1.6.4.1.12 ECRO gives permission to the EMMIS Controller to isolate the Eurotunnel Sel(s) concerned.

E1.6.4.1.13 EMMIS Controller requests Coordinateur Travaux to protect and isolate the Eurotunnel Sel(s) concerned.

E1.6.4.1.14 Coordinateur Travaux arranges for the signalling protection arrangements and switching instructions to be carried out in order to isolate the Eurotunnel Sel(s) concerned.

E1.6.4.1.15 Coordinateur Travaux confirms to EMMIS Controller that the Eurotunnel Sel(s) concerned are isolated.

E1.6.4.1.16 EMMIS Controller confirms to NPOS that the Eurotunnel Sel(s) concerned are isolated.

E1.6.4.1.17 NPOS carries out local protection measures and issues Overhead Line Permit(s).

E1.6.4.2 Eurotunnel personnel initiates the isolation request

E1.6.4.2.1 Coordinateur Travaux requests AFC Signaller to block to electric trains the Eurotunnel Sel(s) concerned.

E1.6.4.2.2 AFC Signaller applies the signalling protection arrangements shown in the Isolation Instructions.

E1.6.4.2.3 AFC Signaller requests IECC Signaller to block to electric trains the Eurotunnel Sel(s) concerned.
(Part 1 of Form F)

E1.6.4.2.4 IECC Signaller consults the Isolation Instructions for the Eurotunnel Sel(s) concerned, places/maintains designated signals to danger and applies reminder appliances.

E1.6.4.2.5 IECC Signaller confirms to AFC Signaller that block to electric trains is in place.
(Part 2 of Form F)

E1.6.4.2.6 AFC Signaller confirms to Coordinateur Travaux that block to electric trains is in place.

E1.6.4.2.7 Coordinateur Travaux requests permission of ECRO to isolate the Eurotunnel Sel(s) concerned.
(Form ET)

E1.6.4.2.8 ECRO consults and applies the Electrical Control Room instructions.

E1.6.4.2.9 If traction current supply is to be maintained to Network Rail electrical sections 600A – 600L & 602A – 602L or 601A & 603B

- ECRO contacts IECC Signaller to ensure no electric train movements are taking place.
- ECRO opens boundary circuit breakers.
- ECRO instructs Nominated Person to manually operate designated isolation switches.
- Nominated Person manually operates and secures designated isolation switches.
- Nominated Person confirms to ECRO that designated isolation switches are operated.
- ECRO closes relevant boundary circuit breaker.

E1.6.4.2.10 If traction current supply is NOT to be maintained to Network Rail electrical sections 600A – 600L & 602A – 602L or 601A & 603B

- ECRO requests permission of Yard Master, Dollands Moor EFOC, to isolate Network Rail electrical sections 600A – 600L and 602A – 602L.
- Yard Master, Dollands Moor EFOC, gives permission to ECRO to isolate Network Rail electrical sections 600A – 600L and 602A – 602L.
- ECRO requests IECC Signaller to block to electric trains the Network Rail electrical section(s) concerned.

(Form AE)

- IECC Signaller consults the Isolation Instructions for the Network Rail electrical section(s) concerned, places/maintains designated signals to danger and applies reminder appliances.
- IECC Signaller confirms to ECRO that block to electric trains is in place.

(Form AE)

- ECRO opens boundary circuit breaker(s).

E1.6.4.2.11 ECRO gives permission to the Coordinateur Travaux to isolate the Eurotunnel Sel(s) concerned.
(Form ET)

E1.6.4.3.12 Coordinateur Travaux arranges for the signalling protection arrangements and switching instructions to be carried out in order to isolate the Eurotunnel Sel(s) concerned.

E1.6.5 Re-energisation of Eurotunnel Sels 602 and/or 605 that are under the control of the RCC

E1.6.5.1 CTRL personnel initiated the isolation request

E1.6.5.1.1 NPOS cancels isolation with EMMIS Controller.

E1.6.5.1.2 EMMIS Controller requests Coordinateur Travaux to re-energise the Eurotunnel Sel(s) concerned.

E1.6.5.1.3 Coordinateur Travaux arranges switching instructions to be carried out in order to re-energise the Eurotunnel Sel(s) concerned and for the signalling protection arrangements to be removed.

E1.6.5.1.4 Coordinateur Travaux confirms to EMMIS Controller that the Eurotunnel Sel(s) concerned are re-energised.

E1.6.5.1.5 EMMIS Controller informs ECRO that the Eurotunnel Sel(s) concerned are re-energised.

E1.6.5.1.6 ECRO consults and applies the Electrical Control Room instructions.

E1.6.5.1.7 If traction current supply was maintained to Network Rail electrical sections 600A – 600L & 602A – 602L or 601A & 603B

- ECRO contacts IECC Signaller to ensure no electric train movements are taking place.
- ECRO opens relevant boundary circuit breaker.
- ECRO instructs Nominated Person to manually operate designated isolation switches.
- Nominated Person manually operates and secures designated isolation switches.
- Nominated Person confirms to ECRO that designated isolation switches are operated.
- ECRO closes boundary circuit breakers.
- ECRO informs IECC Signaller that electric train movements can recommence.

E1.6.5.1.8 If traction current supply has NOT been maintained to Network Rail electrical sections 600A – 600L & 602A – 602L or 601A & 603B

- ECRO closes boundary circuit breaker(s).
- ECRO advises IECC Signaller that the block to electric trains for the Network Rail electrical section(s) concerned can be removed.

(Form AE)

- IECC Signaller removes signal protection for the Network Rail electrical section(s) concerned.
- ECRO advises Yard Master, Dollands Moor EFOC that Network Rail electrical sections 600A – 600L and 602A – 602L are re-energised.

E1.6.5.1.9 EMMIS Controller advises AFC Signaller that the block to electric trains for the Eurotunnel Sel(s) concerned can be removed.

E1.6.5.1.10 AFC Signaller removes signalling protection for the Eurotunnel Sel(s) concerned.

E1.6.5.1.11 AFC Signaller advises IECC Signaller that the block to electric trains for the Eurotunnel Sel(s) concerned can be removed.

(Part 3 of Form F)

E1.6.5.1.12 IECC Signaller removes signal protection for the electrical section(s) concerned.

E1.6.5.2 Eurotunnel personnel initiated the isolation request

E1.6.5.2.1 Coordinateur Travaux arranges switching instructions to be carried out in order to re-energise the Eurotunnel Sel(s) concerned and for the signalling protection arrangements to be removed.

E1.6.5.2.2 Coordinateur Travaux informs ECRO that the Eurotunnel Sel(s) concerned are re-energised.

(Form ET)

E1.6.5.2.3 ECRO consults and applies the Electrical Control Room instructions.

E1.6.5.2.4 If traction current supply was maintained to Network Rail electrical sections 600A – 600L & 602A – 602L or 601A & 603B

- ECRO contacts IECC Signaller to ensure no electric train movements are taking place.
- ECRO opens relevant boundary circuit breaker.
- ECRO instructs Nominated Person to manually operate designated isolation switches.
- Nominated Person manually operates and secures designated isolation switches.
- Nominated Person confirms to ECRO that designated isolation switches are operated.
- ECRO closes boundary circuit breakers.
- ECRO informs IECC Signaller that electric train movements can recommence.

E1.6.5.2.5 If traction current supply has NOT been maintained to Network Rail electrical sections 600A – 600L & 602A – 602L or 601A & 603B

- ECRO closes boundary circuit breaker(s).
- ECRO advises IECC Signaller that the block to electric trains for the Network Rail electrical section(s) concerned can be removed.

(Form AE)

- IECC Signaller removes signal protection for the Network Rail electrical section(s) concerned.
- ECRO advises Yard Master, Dollands Moor EFOC that Network Rail electrical sections 600A – 600L and 602A – 602L are re-energised.

E1.6.5.2.6 Coordinateur Travaux advises AFC Signaller that the block to electric trains for the Eurotunnel Sel(s) concerned can be removed.

E1.6.5.2.7 AFC Signaller removes signalling protection for the Eurotunnel Sel(s) concerned.

E1.6.5.2.8 AFC Signaller advises IECC Signaller that the block to electric trains for the Eurotunnel Sel(s) concerned can be removed.

(Part 3 of Form F)

E1.6.5.2.9 IECC Signaller removes signal protection for the electrical section(s) concerned.

E1.6.6 Isolation of Eurotunnel Sel(s)/Network Rail electrical section(s) 602 & 602L together or 605 & 601A together

Notes:

1. This point applies if Eurotunnel Sel(s) 605 and/or 602 and the adjacent Network Rail electrical sections 602L and/or 601A are required to be isolated together as part of the same isolation request.
2. Eurotunnel personnel have no requirement to request the isolation of these Eurotunnel Sel(s)/Network Rail electrical sections together.
3. Network Rail personnel working on the boundary isolation transformers and associated switchgear that requires the isolation of these Eurotunnel Sel(s)/Network Rail electrical section(s) together must request the attendance of a CTRL NPOS who will apply this procedure and issue them with an Overhead Line Permit.

E1.6.6.1 NPOS requests EMMIS Controller to isolate the Network Rail electrical section(s)/Eurotunnel Sel(s) concerned.

E1.6.6.2 EMMIS Controller advises AFC Signaller that there will be an isolation of the Network Rail electrical section(s) concerned and requests the Eurotunnel Sel(s) concerned be blocked to electric trains.

E1.6.6.3 AFC Signaller consults the Isolation Instructions for the Network Rail electrical section(s) and Eurotunnel Sel(s) concerned and inhibits the designated markers.

E1.6.6.4 EMMIS Controller requests ECRO to isolate and/or handover responsibility for the Network Rail electrical section(s) concerned and requests permission for the Eurotunnel Sel(s) concerned to be isolated.

(Part 1 of Form CTRL)

E1.6.6.5 ECRO requests permission of Yard Master, Dollands Moor EFOC, to isolate Network Rail electrical sections 600A – 600L and 602A – 602L.

E1.6.6.6 Yard Master, Dollands Moor EFOC, gives permission to ECRO to isolate Network Rail electrical sections 600A – 600L and 602A – 602L

E1.6.6.7 ECRO requests IECC Signaller to block to electric trains the Network Rail electrical section(s) concerned.

(Form AE)

E1.6.6.8 IECC Signaller consults the Isolation Instructions for the Network Rail electrical section(s) concerned, places/maintains designated signals to danger and applies reminder appliances.

E1.6.6.9 IECC Signaller requests AFC Signaller to block to electric trains the Network Rail electrical section(s) concerned.

(Part 4 of Form F)

E1.6.6.10 AFC Signaller confirms to IECC Signaller that block to electric trains is in place.

(Part 5 of Form F)

E1.6.6.11 IECC Signaller confirms to ECRO that block to electric trains is in place. *(Form AE)*

E1.6.6.12 ECRO carries out the switching in order to isolate the Network Rail electrical section(s) concerned.

E1.6.6.13 ECRO confirms to EMMIS Controller that the Network Rail electrical section(s) concerned are blocked to electric trains and isolated, and transfers responsibility of the section(s) to the EMMIS Controller and gives permission for the Eurotunnel Sel(s) concerned to be isolated.

(Part 2 of Form CTRL)

- E1.6.6.14** EMMIS Controller requests Coordinateur Travaux to protect and isolate the Eurotunnel Sel(s) concerned.
- E1.6.6.15** Coordinateur Travaux arranges for the signalling protection arrangements and switching instructions to be carried out in order to isolate the Eurotunnel Sel(s) concerned.
- E1.6.6.16** Coordinateur Travaux confirms to EMMIS Controller that the Eurotunnel Sel(s) concerned are isolated.
- E1.6.6.17** EMMIS Controller confirms to NPOS that all the Network Rail electrical section(s)/Eurotunnel Sel(s) concerned are isolated.
- E1.6.6.18** NPOS carries out local protection measures and issues Overhead Line Permit(s).
- E1.6.7** **Re-energisation of Eurotunnel Sel(s)/Network Rail electrical section(s) 602 & 602L together or 603/605 & 601A together**
- E1.6.7.1** NPOS cancels isolation with EMMIS Controller.
- E1.6.7.2** EMMIS Controller requests Coordinateur Travaux to re-energise the Eurotunnel Sel(s) concerned.
- E1.6.7.3** Coordinateur Travaux arranges switching instructions to be carried out in order to re-energise the Eurotunnel Sel(s) concerned and for the signalling protection arrangements to be removed.
- E1.6.7.4** Coordinateur Travaux confirms to EMMIS Controller that the Eurotunnel Sel(s) concerned have been re-energised.
- E1.6.7.5** EMMIS Controller informs ECRO that the Eurotunnel Sel(s) concerned are re-energised and requests ECRO to re-energise the Network Rail electrical section(s) concerned.
(Part 4 of Form CTRL)
- E1.6.7.6** EMMIS Controller advises AFC Signaller that the block to electric trains for the Eurotunnel Sel(s) concerned can be removed and that the Network Rail electrical section(s) concerned will be re-energised.
- E1.6.7.7** ECRO consults and applies the Electrical Control Room instructions.
- E1.6.7.8** ECRO carries out the switching instructions in order to re-energise the Network Rail electrical section(s) concerned.
- E1.6.7.9** ECRO advises IECC Signaller that the block to electric trains for the Network Rail electrical section(s) concerned can be removed.
(Form AE)
- E1.6.7.10** IECC Signaller removes signal protection for the Network Rail electrical section(s) concerned.
- E1.6.7.11** IECC Signaller advises AFC Signaller that the block to electric trains for the Network Rail electrical section(s) concerned can be removed.
(Part 6 of Form F)
- E1.6.7.12** AFC Signaller removes signalling protection for the Eurotunnel Sel(s) and Network Rail electrical section(s) concerned.
- E1.6.7.13** ECRO advises Yard Master, Dollands Moor EFOC that electrical sections 600A – 600L and 602A – 602L are re-energised.

E1.6.8 Isolation of Overhead Line Equipment on Up CTRL line for Network Rail work on the Up Slow line

E1.6.8.1 In order to provide protection from electrical risks associated with the Overhead Line Equipment on the adjacent Up CTRL line, Network Rail Personnel working on the Up Slow line may require Eurotunnel Sel 603 and/or CTRL electrical section 717A isolated, as well as the isolation of Network Rail electrical section 601A. Therefore the following additional instructions will apply:

E1.6.8.2 Isolation of Eurotunnel Sel 603

E1.6.8.2.1 This Eurotunnel Sel must only be isolated in association with the isolation of Eurotunnel Sel/Network Rail electrical section 605 and 601A. The arrangements shown in point E1.6.6 to apply with the addition of Eurotunnel Sel 603.

E1.6.8.3 Isolation of CTRL electrical section 717A

E1.6.8.3.1 Nominated Person to include CTRL electrical section 717A in the request for an isolation to the ECRO.

E1.6.8.3.2 ECRO requests EMMIS Controller to isolate CTRL electrical section 717A.

(Part 1 of Form NR)

E1.6.8.3.3 EMMIS Controller to isolate CTRL electrical section 717A in accordance with his control room instructions

E1.6.8.3.4 EMMIS Controller confirms to ECRO that CTRL electrical section 717A is isolated.

(Part 2 of Form NR)

E1.6.8.3.5 ECRO confirms to Nominated Person that the electrical section is isolated.

E1.6.8.3.6 When the isolation is no longer required, the ECRO to request EMMIS Controller to re-energise CTRL electrical section 717A.

(Part 4 of Form NR)

E1.7 Procedure for Isolating and Earthing Sidings where Local Isolation is allowed.

E1.7.1 Module 8 "Local Isolation and Earthing of 25kV A.C. Overhead Line Equipment" of the Network Rail Line Specification "Working on or about 25kV A.C. Electrified Lines", is authorised in each of sidings 1 to 8 inclusive and the West siding at Dollands Moor EFOC, in order to isolate the overhead line equipment to enable inspection of the upper portions of rolling stock, etc. Before arranging the local isolations, the member of staff nominated in the Local Instructions must contact the IECC Signaller, quoting their name, grade, and department, to arrange protection of the siding(s) concerned.

E1.7.2 In accordance with instruction 2.2 of Module 8 "Local Isolation and Earthing of 25kV A.C. Overhead Line Equipment" of the Network Rail Line Specification "Working on or about 25kV A.C. Electrified Lines", after protecting the local isolation, and applying reminder appliances, the IECC Signaller must allocate a "Unique Reference No.", and quote it to the Nominated Person, when confirming that the local isolation has been protected. An entry must be made in the Train Register.

E1.7.3 In accordance with instruction 2.2(d) of Module 8 "Local Isolation and Earthing of 25kV A.C. Overhead Line Equipment" of the Network Rail Line Specification "Working on or about 25kV A.C. Electrified Lines", the subsection must be proved to be isolated by testing with an approved testing device before local earths are applied.

E1.7.4 In accordance with instruction 2.3(h) of Module 8 "Local Isolation and Earthing of 25kV A.C. Overhead Line Equipment" of the Network Rail Line Specification "Working on or about 25kV A.C. Electrified Lines", when the traction current has been restored to the siding(s) concerned the Nominated Person must contact the IECC Signaller, quoting the "Unique Reference No.", and ask for the protection to be removed from the siding(s) concerned.

E1.7.5 The IECC Signaller must remove the reminder appliances from the signal(s) concerned and make an entry in the Train Register.

E2 DC SYSTEM

E2.1 The supply of electricity to the D.C. (conductor rail) system is under the control of the Network Rail Paddock Wood ECRO.

E2.2 Glossary

E2.2.1 With reference to the definitions of terms shown in the D.C. Electrified Lines Working Instructions (GO/RT/3091), the term "electric train" is modified to read "an electrically powered train or locomotive having collector shoes through which electric current is collected from the conductor rail, unless the collector shoes are in the raised position and isolated".

E2.3 Conductor Rail on the Down Fast Line

E2.3.1 The Conductor Rail on the Down Fast Line, between 1377 points (connection between the Down Fast and the Through Passenger Line) and marker AF363, is normally de-energised but may be recharged at any time without warning. Therefore it must be treated as being LIVE and DANGEROUS at ALL TIMES, unless the ECRO has given an assurance that it has been isolated in accordance with Instruction 6, or a Conductor Rail Permit has been issued in accordance with the D.C. Electrified Lines Instructions (GO/RT/3091).

E2.3.2 When CTRL personnel require the isolation of the conductor rail equipment in connection with maintenance work protected in accordance with Section G of these instructions, Procedure B (Instructions B26 to B39) of the D.C. Electrified Lines Working Instructions (GO/RT/3091) to apply.

Appendix 1:

Form F – Signalling protection procedure for OHLE isolations at the IECC/AFC/RCC Interface			
Record of messages between the AFC and IECC			
Eurotunnel Sels			
Part 1		Arranging Block to Electric Trains	
AFC to IECC			
Block to electric trains, electrical section(s) 602 605 *			
Time.....	Date.....	Message No.....	
Part 2		Confirming Block to Electric Trains	
IECC to AFC			
Reference your message no....., electrical section(s) 602 605 * are blocked to electric trains			
Time.....	Date.....	Message No.....	
Part 3		Removing Block to Electric Trains	
AFC to IECC			
Reference your message no.....,			
you may remove the block to electric trains for electrical section(s) 602 605 *			
Time.....	Date.....	Message No.....	
Network Rail electrical sections			
Part 4		Arranging Block to Electric Trains	
IECC to AFC			
Block to electric trains, electrical section(s) 601A 602L *			
Time.....	Date.....	Message No.....	
Part 5		Confirming Block to Electric Trains	
AFC to IECC			
Reference your message no....., electrical section(s) 601A 602L * are blocked to electric trains			
Time.....	Date.....	Message No.....	
Part 6		Removing Block to Electric Trains	
IECC to AFC			
Reference your message no.....			
you may remove the block to electric trains for electrical section(s) 601A 602L *			
Time.....	Date.....	Message No.....	
Part 7		Change of Signaller	
Name	Signature	Time	Date

* Delete as necessary

NETWORK RAIL / CTRL OHL INTERFACESTo be utilised Network Rail (Form NR/CTRL)

FORM CTRL

**DECLARATION OF ISOLATION AT INTERFACES FORMING OHL BOUNDARY BETWEEN
ASHFORD CTRL CONTROL CENTRE AND PADDOCK WOOD ELECTRICAL CONTROL ROOM**

Where CTRL request remote protection from Network Rail

Part 1 Request* (For CTRL Use only)**Part 2 Declaration**

From : Electrical Control Operator at Paddock Wood Control Room
 To : EMMIS Controller at CTRL Control Centre Ashford

The following overhead line equipment has been isolated :

<u>Electrical Section(s) or Sub-section(s) isolated</u>	<u>Line(s)</u>	<u>Limits of isolation *</u> <u>(Quote Structure</u> <u>Numbers)</u>	<u>Switches / Circuit</u> <u>Breakers Effecting</u> <u>the Isolation</u>
* for Network Rail use only			<u>Switches / Circuit</u> <u>Breakers not in</u> <u>Normal Position</u>

This declaration to be cancelled by hours dateMessage No..... Sent byDate Received by**Part 3 Issue (Not Used)****Part 4 Cancellation**

From : EMMIS Controller at CTRL Control Centre Ashford
 To : Electrical Control Operator at Paddock Wood Control Room

All authorities to work issued from this Control Centre within the limits of the isolation shown in Part 1 have been cancelled and this declaration is now cancelled.

Message No..... Sent byDate Received by**Part 5 Re-energisation* (For CTRL use only)**

NETWORK RAIL / CTRL OHL INTERFACESTo be utilised by Network Rail (Form CTRL/NR)

FORM N

**DECLARATION OF ISOLATION AT INTERFACES FORMING OHL BOUNDARY BETWEEN
ASHFORD CTRL CONTROL CENTRE AND PADDOCK WOOD ELECTRICAL CONTROL ROOM**

Where Network Rail request remote protection from CTRL

Part 1 **Request*** (For CTRL Use only)**Part 2** **Declaration**

From : EMMIS Controller at CTRL Control Centre Ashford
 To : Electrical Control Operator at Paddock Wood Control Room

The following overhead line equipment has been isolated :

Electrical Section(s) or Sub-section(s) isolated	Line(s)	Limits of isolation * (Quote Structure Numbers)	Switches / Circuit Breakers Effecting the Isolation
* for Network Rail use only			Switches / Circuit Breakers not in Normal Position
This declaration to be cancelled by hours..... date			
Message No..... Sent by			
Date Received by			

Part 3 **Issue *** For use of Network Rail Electrical Control Room at Paddock Wood only

The isolation referred to in Part 1 has been combined with the isolation implemented following the block to electric trains referred to on my form AE part 1.

Message No..... Date

The following Form "B" authorities have been issued within the combined isolation :

Issued		Cancelled	
Time	Date	Time	Date

Part 4 **Cancellation**

From : Electrical Control Operator at Paddock Wood Control Room
 To : EMMIS Controller at CTRL Control Centre Ashford

All authorities to work issued from this Control Centre within the limits of the isolation shown in Part 1 have been cancelled and this declaration is now cancelled.

Message No..... Sent by
 Date Received by.....

Part 5 **Re-energisation*** (For CTRL use only)

Network Rail/ET Interface De energisation form

NETWORK RAIL (Dollands Moor) / EUROTUNNEL OHL INTERFACE

To be utilised by Network Rail (Form ET/NR de-energisation)

FORM ET (De-energisation)

**DE-ENERGISATION OF EUROTUNNEL SEL 602/605 AT INTERFACE BOUNDARY
REQUESTED BY EMMIS ASHFORD AFC AND PADDOCK WOOD ELECTRICAL CONTROL ROOM
Where Eurotunnel request permission from Network Rail to de-energise OHL**

De-Energisation request

From : R.C.C. Controller at Eurotunnel Rail Control Centre Folkestone
To : Electrical Control Operator at Paddock Wood Control Room

Permission to de-energise electrical sel(s) [602 / 605] ⁺ .

⁺ Delete as necessary

Time _____ Date _____

Message/ Dépêche No _____

De-Energisation Permission Granted

From : Electrical Control operator at Paddock Wood Control Room
To : R.C.C. Controller at Eurotunnel Rail Control Centre Folkestone

Ref your Message/ Dépêche No _____ Permission granted to Isolate electrical Sel(s) [602 / 605] ⁺ .

⁺ Delete as necessary

Time _____

Date _____

Message No _____

Re-energisation

From : R.C.C. Controller at Eurotunnel Rail Control Centre Folkestone
To : Electrical Control operator at Paddock Wood Control Room

Ref your message No _____ , Sel(s) [602 / 605] ⁺ are re-energised.

⁺ Delete as necessary

Time _____

Date _____

Message/ Dépêche No _____

(Ref ET IMPR 2375/2376)

Appendix 2 - Electrical sections – Signalling Protection arrangements

Electrical sections	LINE	LIMITS	ROUTES PROHIBITED		REMARKS
			Up direction	Down direction	
601A	Up Slow/ Up Main	<u>Up direction</u> Insulated overlap at pk7.780 <u>Down direction</u> Switch T1 at Network Rail kilometerage 108.329	AF362 – AD830 AF364 – AD830	AD793 – AD823 AD795 – AF365 AD797 – AF365 AD799 – AF365 AD803 – AF365 AD807 – AF365 AD809 – AF365 AD813 – AF365 AD821 – AF365 AD823 – AF365 2167 – AF365 2171 – AF365	AFC Signaller to request RCC to send electric trains for Dollands Moor via the Down Fast line.
602L	Down Main/ Down Fast	<u>Up direction</u> Insulated overlap at pk7.935 <u>Down direction</u> Switch T2 at Network Rail kilometerage 108.325	AD830 – AD796 AD830 – AD798 AD830 – AD804 AD830 – AD808 AD830 – AD814 AD830 – AD816 AD830 – AD818 AD830 – AD824 AD830 – 2164 AF366 – AD832	AD795 – AF363 AD795 – AF365 AD797 – AF363 AD797 – AF365 AD799 – AF363 AD799 – AF365 AD803 – AF363 AD803 – AF365 AD807 – AF363 AD807 – AF365 AD809 – AF363 AD809 – AF365 AD813 – AF363 AD813 – AF365 AD821 – AF363 AD821 – AF365 2167 – AF363 2167 – AF365 2171 – AF363 2171 – AF365	

Appendix 2 - SELs – Signalling Protection arrangements

Sels	LINE	LIMITS	ROUTES PROHIBITED		REMARKS
			Up direction	Down direction	
602	Down CTRL/ Down Fast	<u>Up direction</u> Switch 0948JS <u>Down direction</u> Phase break neutral section at CTRL kilometerage 108.300 Insulated overlap at pk7.935	0976 – AF366	0871 – 0968 AD795 – AF363 AD797 – AF363 AD799 – AF363 AD803 – AF363 AD807 – AF363 AD809 – AF363 AD813 – AF363 AD821 – AF363 AD823 – AF363 AF363 – 0834 AF481 – AF361	
605	Up Slow	<u>Up direction</u> Switches 0925JS/0926JS <u>Down direction</u> Insulated overlap at pk7.780	0976 – AF364 0977 – AF364 AF362 – AD830	AD795 – AF365 AD797 – AF365 AD799 – AF365 AD803 – AF365 AD807 – AF365 AD809 – AF365 AD813 – AF365 AD821 – AF365 AD823 – AF365 AF365 – 0833 AF365 – 0871	AFC Signaller to request RCC to send electric trains for Dollands Moor via the Down Fast line.

SECTION F TRAIN WORKING

F1 ALL TRAINS

- F1.1** All traction units proceeding beyond markers AF363 or AF365 must be fitted with Cab Signalling Equipment in the driving cab in which the Driver is situated, unless specially authorised in a published notice or specially authorised by the AFC. A traction unit with cab signalling equipment defective must not be allowed to depart Dollands Moor EFOC if it is to proceed beyond markers AF363 or AF365.

Note: Traction units not equipped with working cab signalling equipment are authorised to proceed beyond marker AF365 when routed to Eurotunnel Folkestone Yard upon clearance of the associated position light signal.
Drivers of international freight trains and light locomotives must configure the cab signalling system in the driving cab with the weight and permitted speed of the train before the TRTS signal is given for departure from Dollands Moor EFOC.

F1.2 Failure of AWS to arm

Should the AWS system on a train fail to arm after the train has passed the “AWS” execute sign, the Driver must manually arm the AWS system. If this action subsequently causes the AWS system to arm, the Driver must:

- cancel the indication received and proceed normally
 - inform the IECC Signaller of the circumstances in accordance with the *Livret Formulaires* Procedure
- If this action fails to arm the AWS system, the Driver must:
- bring the train to a stand
 - inform the IECC Signaller of the circumstances in accordance with the *Livret Formulaires* Procedure
 - act in accordance with the instructions contained in the Rule Book, Module TW5.

F1.3 Exterior doors

All trains/traction units travelling through the Channel Tunnel must have their exterior doors locked before entering the Concession.

F1.4 Headlights and Tail Lamps

- F1.4.1** When travelling through the Concession three white lights (one of which must be a headlight) must normally be displayed at the front of the train.

- F1.4.2** When travelling through the Concession two tail lamps must normally be displayed on the rear of the train.

F1.5 Detention of Trains on Running Lines

- F1.5.1** The Rule Book, Module S4, Section1, is amended as follows:-

- F1.5.1.1** The normal means of reminding the Signaller is communication using the International Train Radio. As soon as the train has been brought to a stand, the Driver must remind the Signaller immediately by use of the “SG” button.

- F1.5.1.2** If the International Train Radio is a failure, the Driver must use any of the following, as appropriate:
- (a) Train Manager’s portable telephone
 - (b) Signal Post Telephone
 - (c) On-train payphone

F1.6 Failed train assisted out of the Channel Tunnel using the Eurotunnel Assistance Unit

- F1.6.1** Any locomotive approved by Eurotunnel is permitted to haul a train clear of the Channel Tunnel. The locomotive for this purpose may enter the Interface Zone.
- F1.6.2** The AFC Signaller will advise the Signaller in the ASC of the circumstances concerning the movement of a failed train from the Channel Tunnel.
- F1.6.3** When the movement arrives in the AFC signalled controlled area and the assisting locomotive requires to return to Eurotunnel via marker AF365, the AFC Signaller will advise the IECC Signaller.
- F1.6.3** The IECC Signaller must block the up line to other movements and maintain signals AD823 and AD830 at danger until the movement is completed.
- F1.6.4** The Eurotunnel Driver of the assisting locomotive will be accompanied by a member of traincrew conversant with the route.

F2 PASSENGER TRAINS

F2.1 Regulation of Trains

- F2.1.1** The IECC Signaller must inform the AFC Signaller as soon as it is known that there is a delay to a train coming from London, if the delay is in excess of 3 minutes.
- F2.1.2** If a passenger train which is to run to Ashford via the classic lines is more than 10 minutes late, the AFC Signaller must inform the IECC Signaller. The IECC Signaller to then inform the Shift Signaller Manager (SSM).

F2.2 Removal of a Passenger, ECS Train or light locomotive from CTRL to Network Rail

- F2.2.1** If a train travelling towards the Continent has to return to England once it has entered the control of the AFC, then the AFC Signaller will inform the IECC Signaller. The IECC Signaller to then inform the Shift Signaller Manager (SSM).
- F2.2.2** On receiving information that a train is to return, the Shift Signaller Manager (SSM) must liaise with the Network Rail Kent Integrated Control Centre, who will decide at which location the train will be dealt with.
- F2.2.3** The IECC Signaller must inform the AFC Signaller the line to which the train is to be signalled.
- F2.2.4** The train must be driven from the leading cab, in direction of travel, and be signalled normally.

F3 FREIGHT TRAINS

F3.1 Regulation

- F3.1.1** As soon as it is known that a train for the Continent will not be ready to depart Dollands Moor EFOC on time, the Yard Master must inform the IECC Signaller, who must inform the AFC Signaller. When the TRTS has been operated this indicates only that the train is ready to depart in its documented pathway. No Freight trains or Light Locomotives should leave Dollands Moor EFOC without a documented pathway.
- F3.1.2** Freight Trains or Light Locomotives should not be allowed to depart Dollands Moor EFOC early without the permission of the AFC Signaller.
- F3.1.3** As soon as the time is known when a delayed train will be ready to depart, or a Freight train is required to run substantially earlier, then the Yard Master at Dollands Moor EFOC must request CCF (Control Centre based at Lillie) for a revised pathway. This revised pathway must be faxed to the IECC in sufficient time to allow the train to depart to this revised timing.

F3.2 Cancellation

F3.2.1 In the event of an unscheduled cancellation of a train from Dollands Moor EFOC, the Yard Master must inform the IECC Signaller, who must immediately inform the AFC Signaller.

F3.2.2 In the event of an unscheduled cancellation of a train from the Continent, the AFC Signaller will inform the IECC Signaller, who must inform the Yard Master at Dollands Moor EFOC.

F3.3 Dangerous Goods Incident on a Freight Train within Eurotunnel

F3.3.1 If required, the RCC will ask the Yard Master at Dollands Moor EFOC for a detailed consist of the train concerned. The Yard Master must fax a copy of the consist direct to the RCC.

F3.4 Removal of a Freight Train from the Concession

F3.4.1 If a train travelling towards the Continent has to return to England, once it has entered the control of the AFC, then the AFC Signaller will inform the IECC Signaller of the circumstances and that an assisting locomotive will be required to haul it back to Dollands Moor EFOC.

F3.4.2 The IECC Signaller must contact the Yard Master at Dollands Moor EFOC, inform him of the circumstances and request an assisting locomotive together with a Shunter and a Concession Radio.

F3.4.3 Once the assisting locomotive is ready the IECC Signaller must ascertain from the AFC Signaller the line on the assisting locomotive is required.

F3.4.4 Having ascertained this information, the IECC Signaller must stop the assisting locomotive at signal AD823, AD821, AD813, AD809, AD807, AD803, AD799, AD797 or AD795 and inform the Driver of the circumstances and make sure the Driver clearly understands what to do. The Driver must be told the exact location of the failed train and where the failed train must be taken to. The *Livret Formulaires* Procedure must be used to pass the signal at Danger.

F3.4.5 When the assisting locomotive has been coupled to the train, it will haul it to Dollands Moor EFOC under normal signalling arrangements.

F3.4.6 The Driver of the rear locomotive in the direction of travel must not apply power.

F3.4.7 If a train travelling from the Continent has a defective brake whilst travelling through the RCC signalled control area, Eurotunnel will deal with the train as follows:-

- i. If the brakes are isolated on either the last vehicle, or a combination of any two of the last three vehicles, or the train has the brakes isolated on more than half of the total number of vehicles, assistance will be provided in the rear.
- ii. If the brakes are isolated on either one of the second or third vehicles from the rear (but not both), or there are two or more vehicles with brakes isolated on the rear half of the train and/or four or more vehicles in the front half, the train will be authorised to proceed at a maximum speed of 20 k.p.h. to Dollands Moor EFOC. The Rule Book, Module TW3, Section 3, is modified accordingly.

F3.5 Operation of freight trains or light locomotives between Dollands Moor Yard and Eurotunnel Folkestone Yard

F3.5.1 When a freight train or locomotive is ready to leave Dollands Moor Yard for Eurotunnel Folkestone Yard, the Yard Master must inform the IECC Signaller the number of the siding that the train is stood on and its required destination. Before clearing the exit signal from the siding the IECC Signaller must first inform the AFC Signaller the train's destination. On receiving the acceptance authority from the AFC Signaller, the IECC Signaller must route the train to marker AF365 on the Up Slow line.

F3.5.2 Drivers of trains not fitted with a working cab signalling system must only proceed beyond marker AF365 upon clearance of the associated position light signal.

F4 EUROTUNNEL EMERGENCY SIDING

F4.1 The RCC will inform the AFC Signaller about maintenance work/equipment failures which will prevent operational use of the Eurotunnel emergency siding.

F4.2 The AFC Signaller will inform the IECC Signaller who must liaise with the Dollands Moor Yard Master who will advise as to which sidings may be used until such time as operational use is restored to the Eurotunnel emergency siding.

F5 SHOE GEAR DETECTION EQUIPMENT

F5.1 When a Class 373 switches from D.C. mode to A.C. traction the shoe gear should automatically raise in order to prevent it fouling the loading gauge on SNCF lines. Equipment is provided in the concession to monitor Class 373 trains travelling towards France to detect any shoe gear that has not raised. If it detects any shoe gear that stays down, the Shoe Gear Detection Equipment will sound an alarm at the SNCF signalling centre at Fréthun, who should acknowledge it and stop the train for examination. This alarm is repeated in the IECC. When the alarm sounds in the IECC it will also record if Fréthun has acknowledged it. The IECC Signaller must check the record to ensure that Fréthun has received the alarm. If it has not been acknowledged, the IECC Signaller must advise Fréthun that the alarm has sounded and give the identity of the train concerned.

F5.2 If the Signaller becomes aware that the Shoe Gear Detection Equipment has failed, all passenger trains bound for the Channel Tunnel must be routed via the Through Passenger line at Dollands Moor in order for the shoe gear to be examined by the Driver.

SECTION G MAINTENANCE WORK ON OR NEAR THE LINE

G1 PROTECTION OF ENGINEERING WORK

G1.1 Principles

- G1.1.1** When work on or near the line is required to take place which overlaps the areas of control between the IECC and the AFC, the arrangements contained in this section will apply. In all cases, work on or near the line east of signals AD830/AD832 must only be carried out with the line blocked to all normal train movements. Work being carried out under the protection arrangements shown in the Rule Book, Module T2 must be wholly contained within the IECC signalled control area, i.e. west of signals AD830/AD832.
- G1.1.2** The Rule Book, Module T3 will not apply. The line must be blocked in accordance with the arrangements shown in this section. The arrangements for traction current isolations contained in RTE/S/29987 "Working on or about 25kV A.C. Electrified Lines" and Section "B" of the D.C. Electrified Lines Instructions (GO/RT3091) will apply as far as the Electrical Control Boundary.
- G1.1.3** The main line interface between the areas controlled by the IECC and AFC is divided into separate Track Protection Zones and CTRL Engineering Zone Protections (EZPs) for protection purposes, as detailed in Appendix 3 to this Section. A possession must consist of one or more Track Protection Zones and/or EGP.
- G1.1.4** If work is required to take place on or near the line within this interface, the appropriate Track Protection Zones and/or EGP must be protected in accordance with the arrangements shown in clause G1.3 of these instructions.

The CTRL is divided into areas called "Engineering Zones of Protection" (EZPs) which will allow work on or near the running line to be protected by maintaining markers closed or by maintaining signals at danger. Diagrams are provided to Works Planners, Signallers and RPOs giving details of the extent of individual EZPs. The extent of an individual EGP is marked on the track at each extremity by identification plates which give the EGP number located in the 4 foot.

- G1.1.5** Only EZPs TD11 and TU16 may be requested as part of a Network Rail possession. The adjacent Track Protection Zone D and/or J must be protected as part of the same possession.

G1.2 Planning and Publication

- G1.2.1** A programme of works will be agreed by both CTRL and Network Rail South East Territory. Works defined within the document will be contained within the stated limits of one or more Track Protection Zones or CTRL EZPs outlined in Appendix 2 to this section.
- G1.2.2** Planned track possessions and traction current isolations will be published in advance. (The Period Plan is finalised 26 weeks ahead of a 4 week period. The Draft version of the Weekly Operating Notice is published 4 weeks in advance and the final version is sent out two weeks from the start date.)
- G1.2.3** The following details of the possession must be published in the appropriate notices;
- Line(s) concerned
 - Possession limits by Track Protection Zone or EGP Identification
 - Details of work
 - AC/DC Electrical Isolation details (including AC Electrical Section/Sel numbers)
 - Works trains (where applicable)

G1.3 Method

G1.3.1 Appointment of Responsible Person on Site (RPOS)

G1.3.1.1 The department wanting to carry out the work will be responsible for initiating the standard possession arrangements and for appointing a RPOS for the possession. The RPOS will be responsible for the protection of the possession. The name of the RPOS and his telephone number must be advised to the IECC in advance.

G1.3.1.2 The RPOS must be certified as competent to carry out these duties and be in possession of a current certificate of competence. The RPOS must be familiar with the line and locations where the Worksite(s) is located and with the arrangements for the work to be carried out. The RPOS wears a yellow armband on the left arm with the words "Responsible Person on Site – RPOS" in red letters.

G1.3.2 Appointment of Task Supervisor (TS)

G1.3.2.1 A competent person must be appointed to be in charge of the work or activity and to control the movement of works trains or On-Track Machines within the worksite. This person will be known as the Task Supervisor (TS) and must be certified as competent to carry out these duties and be in possession of a current certificate of competence. The TS must be familiar with the line and locations where the worksite will be located and be competent to supervise the arrangements for the planned work to be undertaken. The TS wears a yellow armband on the left arm with the words "Task supervisor – TS" in blue letters. The RPOS may also undertake the duties of the TS for one worksite.

G1.3.3 Previous trains to pass clear

G1.3.3.1 Except when arranged in connection with the clearance of a derailment, etc., the possession must not be granted until the line is clear of all trains.

G1.3.4 Protection of possession

G1.3.4.1 Each possession must be protected by the "electronically barring" of appropriate track circuits by a Technician Shift Manager in the IECC thus preventing the signal/s leading to, from or across the possession from showing a proceed aspect. The track circuits that are to be "electronically barred" for each Track Protection Zone are detailed in Appendix 2 to this Section.

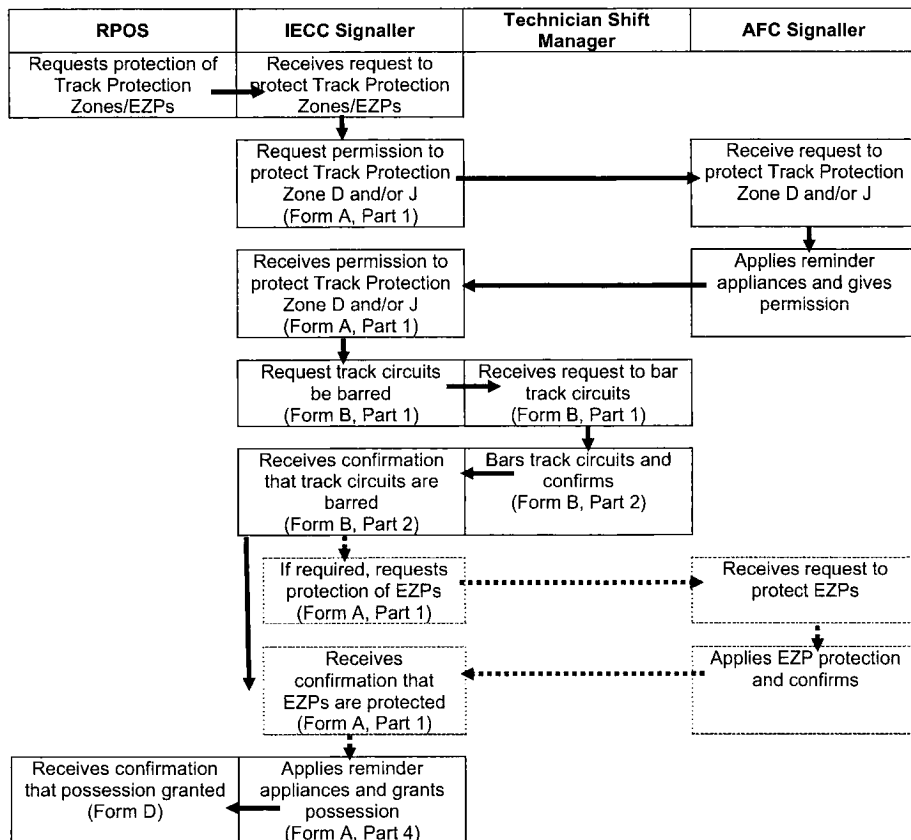
Note: The barring of Track Protection Zones D and J will close AFC markers.

G1.3.5 Indication of Work Sites

G1.3.5.1 Double-sided marker boards displaying two flashing red lights on one side and two flashing yellow lights on the reverse must indicate each work site.

G1.3.5.2 The marker boards must be positioned on the line concerned with the flashing red lights pointing away from the work site and the flashing yellow lights pointing towards and at a distance of at least 100 metres from the work.

G1.3.5.3 If however the limit of the possession comes within this distance then the marker board must be placed at the possession limit. If the marker boards for adjacent work sites would otherwise be closer to each other than 100 metres then only one pair of marker boards must be provided to protect both sites.

G1.3.6 Arranging the possession**G1.3.6.1 Summary of Communication process**

Forms A, B and D are shown in appendix 1 to this section.

G1.3.6.2 The RPOS must speak to the IECC Signaller and agree which Track Protection Zones and EZPs are required.

G1.3.6.3 The IECC Signaller must agree with the RPOS the actual time when the arrangements for taking the possession may start. The IECC Signaller must not grant the possession to the RPOS until the requirements in clause G1.3.7 of this section have been observed and the requirements recorded on Form A. The IECC Signaller and RPOS must also agree in what position the points are required to facilitate the work required.

G1.3.6.4 If Track Protection Zones D or J are required, the permission of the AFC Signaller must be obtained **PRIOR** to arranging signal protection.

G1.3.8 Signal Protection

G1.3.7.1 When the RPOS requests the protection and the IECC Signaller is in a position to do so, the IECC Signaller must:

- apply reminder appliances to the signals and points concerned
- if Track Protection Zones D and/or J are required, request AFC Signaller for permission to protect, recording time of request in part 1 of form A
- receive permission from AFC Signaller to protect Track Protection Zones D and/or J, recording the time in part 1 of form A
- specify the track circuits to be barred in part 1 of form B to protect the relevant Track Protection Zones
- give Form B to the Technical Shift Manager, asking for the relevant track circuits to be barred, recording the time of this request in part 2 of form A.

G1.3.7.2 After "electronically barring" the required track circuits, the Technical Shift Manager must:

- obtain a printout of "barred track circuits" from the Ashford IECC computer system
- check that the track circuits that are listed to be barred in Part 1 of Form B are included on this list
- confirm to the IECC Signaller that the specified Track Circuits have been barred, by signing Part 2 of Form B and returning this form, together with the printout of "barred Track Circuits".

G1.3.7.3 The IECC Signaller must:

- record the time that the signed Form B has been returned to him in Part 2 of Form A.
- check that the track circuits that are listed to be barred in Part 1 of Form B are included on the printout of "barred Track Circuits" and check track circuits are showing occupied.
- record the time that he did this in Part 3 of Form A.
- if EZP(s) are required to be protected, request the AFC Signaller to protect them, by giving a numbered message, recording the time in part 1 of form A

G1.3.8 Start of Work

G1.3.8.1 Before work starts at a work site, the signaller must give to the RPOS authority to start work and to make arrangements for the isolation of the D.C. (conductor rail) system (if required). The signaller must record details of this authority in Part 4 of Form A and the RPOS on Form D. The RPOS must then arrange for the necessary marker boards to be erected and, if an isolation of the D.C. (conductor rail) system is required, inform the Authorised Person or Paddock Wood ECRO that the limits of the isolation are protected by signals and that he may make arrangements to isolate the traction current.

G1.3.8.2 The Task Supervisor of each group at the Work Site is required to obtain the authority of the RPOS before starting work and will sign his Form D. The person relieving the Task Supervisor is required to countersign this Form. If the RPOS also acts as Task Supervisor, this must be noted on this Form.

G1.3.8.3 If the work involves an isolation of the A.C. (overhead) system, it must not commence until an overhead line permit has been issued by the Nominated Person.

G1.3.8.4 If the work involves an isolation of the D.C. (conductor rail) system, it must not commence until a Conductor Rail Permit has been issued by the Authorised Person.

G1.3.9 Movements towards possession

G1.3.9.1 The IECC signaller must inform the RPOS when a Works Train is ready to proceed into the possession. The train must be stopped at the signal protecting the possession until the RPOS has made arrangements with the signaller for the points to be correctly set to allow safe passage of the train into the possession, where applicable. If these points are locked in position by track circuit occupation the RPOS will arrange for them to be wound manually.

G1.3.9.2 If applicable, when the points have been correctly set to the required position for the safe passage of the train, the RPOS must confirm this to the signaller and authorise him to arrange for the train to proceed into the possession. The IECC Signaller must record receipt of this permission in Part 7 of Form A.

G1.3.9.3 The IECC Signaller must advise the Driver of the circumstances and instruct him to pass at Danger the signal protecting the possession and proceed cautiously in accordance with the Rule Book, Module S5, to the first marker board.

G1.3.9.4 If applicable, the RPOS must arrange for the points that have been operated for the passage of the train to be restored to their original position(s), in order to maintain the protection of the possession.

G1.3.9.5 If applicable, the signaller must not allow any further train to proceed towards the signal protecting the possession until the points have been restored to their original position(s), (if possible).

G1.3.10 Movements within the possession

G1.3.10.1 Movements into and within the possession must be authorised by the RPOS. Only one movement at a time is permitted.

G1.3.10.2 Movements out of the possession must be authorised by the IECC Signaller.

G1.3.10.3 Movements within the possession but outside a work site area and movements entering or leaving the possession must not be propelled, except in an emergency, unless agreed at the pre-planning meeting and published in the Weekly Operating Notice.

G1.3.11 Movements entering a Work Site

G1.3.11.1 Only the Task Supervisor can authorise movements past the marker boards into a work site. The Task Supervisor must make sure:

- The Works Train concerned has stopped at the marker board before it is removed
- The marker board is replaced as soon as the movement is within the work site

G1.3.12 Movements within a Work Site

G1.3.12.1 Only the Task Supervisor can authorise movements within a work site.

G1.3.13 Movements from a Work Site

G1.3.13.1 Only the Responsible Person on Site can authorise movements past a marker board at the exit from a worksite. The RPOS must make sure:-

- the Works Train concerned has stopped at the marker board before it is removed
- the marker board is replaced as soon as the movement has left the work site

G1.3.14 Movements from possession

G1.3.14.1 The RPOS must inform the IECC Signaller when a Works Train requires to leave the possession. The train must not proceed beyond the last marker board until the RPOS has received permission from the IECC Signaller.

G1.3.14.2 Before giving permission, the IECC Signaller must ensure that where appropriate the Network Rail signalled line outside the possession that the train is required to travel on is clear for at least one signal section in accordance with the Rule Book, Module TS2, or that the AFC Signaller has authorised the movement toward a CTRL signalled line and all required points are in their correct position for the movement.

G1.3.14.3 Having received this confirmation, the IECC Signaller may authorise the RPOS to permit the train to leave the possession, having made any necessary arrangements for the operation of any points to allow safe passage of the train.

G1.3.14.4 Having ensured any points are in the required position for the safe passage of the train, the RPOS must instruct the Driver to pass the marker board and to proceed out of the possession.

G1.3.14.5 If applicable, the RPOS must arrange with the IECC Signaller for the points that have been operated for the passage of the train to be restored to their original position(s), in order to maintain the protection of the possession.

G1.3.14.6 If applicable, the IECC Signaller must not allow any train to proceed towards the signal protecting the possession until he has confirmed that the points have been restored to their original position(s).

G1.3.15 Change of IECC signaller or RPOS

G1.3.15.1 The IECC Signaller must ensure his relief properly understands the details of the protection arrangements for the possession. He must hand Form A to his relief, who must acknowledge that he properly understands the details of the protection arrangements by making an entry in Part 5.

G1.3.15.2 The RPOS must give his relief the details of the arrangements within the possession and hand him Form D. He must also tell the IECC Signaller that he has been relieved and give the name of his relief. The IECC Signaller must note the new RPOS's name in Part 6 of Form A.

G1.3.16 When work is completed in the possession

- G1.3.16.1** The RPOS must ensure that the Task Supervisor for each group has signed his Form D to the effect that the work of his group is completed and everyone is clear of the line.
- G1.3.16.2** If an isolation of the D.C. (conductor rail) system has been taken, the RPOS must inform the Authorised Person to make arrangements to restore the traction current, and to confirm when this has been done.
- G1.3.16.3** The RPOS must assure the signaller that the possession is now clear and safe for the passage of trains, and that all marker boards have been removed. He must endorse his Form D accordingly and the IECC Signaller must record the time that he received this assurance in Part 8 of Form A.

G1.3.17 Possession to be given up

- G1.3.17.1** If EZP(s) were protected, request the AFC Signaller to remove the protection by giving a numbered message. He must record the time of this advice in Part 11 of Form A.
- G1.3.17.2** The IECC Signaller must state the Track Protection Zone(s), request the Technician Shift Manager to remove the "electronic barring" of the Track Circuits specified in Part 1, Form B and hand this form to him with Part 3 completed. The IECC Signaller must record the time of the request on Form A, Part 9.
- G1.3.17.3** After removing the "electronic barring" of the specified Track Circuits, the Technician Shift Manager must confirm this to the IECC Signaller, by signing Part 4 of Form B and returning this form to him. The signaller must record the time that the signed Form B has been returned to him in Part 9 of Form A.
- G1.3.17.4** The IECC Signaller must remove reminder appliances from the signals and points and remove any other protection as per additional instructions listed in column 6 Appendix 2 and test the routes concerned. He must record the time that he did this in Part 10 of Form A.

G1.3.18 Resumption of normal working

- G1.3.18.1** If Track Protection Zones D or J were protected, the IECC Signaller must advise the AFC Signaller that the possession has now been given up and normal working may be resumed. He must record the time of this advice in Part 11 of Form A.
- G1.3.18.2** The possession has now been given up and normal working may be resumed. The IECC Signaller must record the time of this advice in Part 12 of Form A.
- G1.3.18.3** The IECC Signaller must specially observe the operation of any track circuits during the passage of the first train over the lines affected by the possession.

G1.4 Protection of EZPs TD11, TD13, TU14 and TU16 for CTRL work

- G1.4.1** The protection of these EZPs holds IECC controlled signals at danger. The AFC Signaller must request permission of the IECC Signaller prior to operating the controls for these EZPs. When in a position to agree to the protection of these EZPs, the IECC Signaller must ensure that no trains are signalled from the signals concerned towards markers AF363/AF365, apply reminder appliances and give permission to the AFC Signaller.

G2 EMERGENCY WORKS

- G2.1** An emergency possession may be taken, without the details first being published in the Weekly Operating Notice.
- G2.2** Details of the emergency possession must be agreed between the AFC Signaller and the Shift Signaller Manager (SSM). This agreement must specify which Track Protection Zone(s)/EZP(s) are to be protected and what protection arrangements will apply.
- G2.3** The name of the RPOS must be advised to the Shift Signaller Manager (SSM) as soon as it is known. The possession will not be granted until a RPOS is appointed.
- G2.4** The Shift Signaller Manager (SSM) must advise the Network Rail Kent integrated Control Centre and the Yard Master at Dollands Moor EFOC, giving details of the emergency possession and its effect on train movements.
- G2.5 Removal of train 'trapped' by an emergency requiring zonal protection**
- G2.5.1** Should because of an incident, a passenger or Freight train requires to be moved from within the Limits of the Zonal Protection taken due to the incident, the following procedure must be used.
- G2.5.2** The IECC Signaller must obtain an assurance from the RPOS or Network Rail/CTRL appointed RIO that all personnel are clear and the train is ready. The IECC Signaller must carry out the instruction contained in clause G1.3.14.

G3 TEMPORARY SPEED RESTRICTIONS

To cover the transition between the lineside and cab signalling systems, the principles shown below must be complied with. Differential temporary speed restrictions are not permitted.

G3.1 Down Direction

In the down direction, Drivers are advised of temporary speed restrictions by means of temporary lineside boards and indicators in accordance with the Rule Book, Module SP, as far as markers AF363 or AF365 and thence by the cab signalling system. There are no temporary lineside boards and indicators after these markers.

The speed limit displayed by the temporary lineside boards and indicators in rear of markers AF363 or AF365 will depend on the temporary speed restriction shown by the cab signalling system in accordance with the table below :

Speed shown on cab signalling system in km/h	Speed limit displayed by temporary lineside boards & indicators in mph
30	20
60	40
100	60

Special case of temporary speed restriction of less than 30 km/h

If a temporary speed restriction of less than 30 km/h is imposed that extends east of markers AF363 or AF365, the temporary speed restriction boards and indicators are to display the following equivalent speeds in mph :

Temporary speed restriction in km/h	Speed limit displayed by temporary lineside boards & indicators in mph
10	5
20	10

In addition, the AFC Signaller must:

- stop trains at marker AF363 or AF365,
- advise the driver (using the *Livret Formulaires* Procedures), indicating:
 - the location and length of the restriction,
 - the speed limit in force,
- open the marker with the cab signalling system displaying a speed of 30 km/h

G3.2

Up Direction

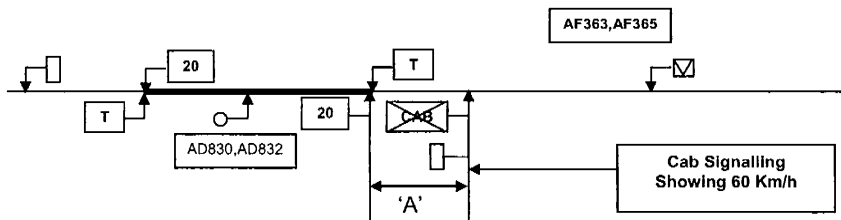
In the up direction, Drivers are advised of temporary speed restrictions by means of the cab signalling system as far as the **CAB** board and thence by temporary lineside boards and indicators. If the temporary speed restriction immediately follows the cab signalling area, Drivers may encounter a speed indicator without a prior warning board, but the cab signalling system will reduce the speed of the train to that of the speed restriction in accordance with the table below :

Temporary speed restriction in mph	Speed limit displayed by cab signalling system in km/h
20	30
25	
30	
35	
40	60
45	
50	
55	
60 and above	100

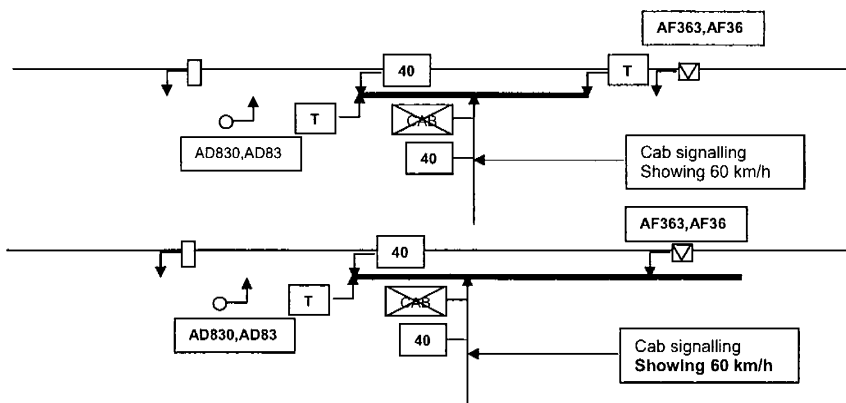
Special case of temporary speed restrictions of less than 20 mph

If a temporary speed restriction of less than 20 mph is imposed to the rear of signals AD830 or AD832: the AFC Signaller must:

- stop trains at marker AF362, AF364, or AF366,
- advise the driver (using the *Livret Formulaires* Procedures), indicating:
 - the location and length of the restriction,
 - the speed limit in force.
- open the marker with the cab signalling system displaying a speed of 30 km/h

G3.3 Examples of the application of temporary speed restrictions**Speed restriction is completely west of the CAB board**

Note: In the up direction, if the distance "A" is less than the required braking distance, then the warning indicator will be placed at the CAB board and the cab signalling system to show 30 km/h. If the speed restriction commences at the CAB board, a warning indicator will not be provided and the advice will be given by the cab signalling system showing 30 km/h.

Speed restriction is completely west of markers AF363 or AF365**G3.4 Planning of temporary speed restrictions**

When a temporary speed restriction has to be imposed in the interface between the IECC and AFC control areas, the person responsible for planning the restriction must consult with the maintenance contractor of the adjacent infrastructure controller regarding the provision of lineside boards and indicators or the operation of the switches within the lineside signalling room.

G4 EMERGENCY SPEED RESTRICTIONS

G4.1 Principle

Temporary lineside indicators are to be erected in accordance with point G3. However, because lineside indicators cannot be placed before the **CAB** board in the up direction, there may not be a warning board or space to erect an emergency indicator before its associated warning board. In these cases the function of the emergency indicator is to be carried out by the cab signalling system.

G4.2 Imposition

If an emergency speed restriction becomes necessary, the person responsible for imposing the restriction to advise the IECC Signaller, the speed limit to be applied, stating the kilometre points at its extremities and the estimated duration of the restriction. Arrangements must also be made to erect temporary lineside indicators.

G4.2.1 Down direction

Until such time that the temporary lineside indicators are erected, if any part of the emergency speed restriction is in rear of markers AF363 or AF365, then the IECC Signaller must stop trains at the signal in rear of the restriction and the drivers advised of its location and speed in accordance with the *Livret Formulaires* Procedure.

G4.2.2 Up Direction

Until such time that the temporary lineside indicators are erected, if any part of the emergency speed restriction is between the **CAB** board and signals AD830 and AD840, then the AFC Signaller must stop trains at markers AF362, AF364 or AF366 and the drivers advised of its location and speed in accordance with the *Livret Formulaires* Procedure.

Appendix 1: Form 'A'

Possession Management procedure for NR/CTRL Interface Signaller in IECC Form		
Form A : Checklist: WON ITEM No. _____, UNIQUE REFERENCE NO. _____		
Date : _____ Zone(s) to be protected. _____		
Part 1 AFC Signaller's actions (if required) AFC advised that Zone(s) _____ are required to be protected at _____ Hrs. AFC advised you that permission given to protect Zone(s) _____ at _____ Hrs AFC requested to protect EZP(s) _____ at _____ Hrs. Message number _____		
Part 2 Technician Shift Manager's actions Technician Shift Manager handed the Form B at _____ Hrs Technician Shift Manager returned the Form B completed at _____ Hrs. Record the name of the Technician Shift manager who returned the Part B form _____		
Part 3 IECC Signaller's actions Track circuit occupation according to Part B visually checked at _____ Hrs.		
Part 4 RPOS actions RPOS was given permission to start work at _____ Hrs. RPOS's Name _____ Contact Number _____ Signallers Signature _____		
Part 5 Change of Signaller in IECC I note the arrangements in hand for the Possession of Zone(s) _____ at the AFC Interface _____ at _____ Hrs on _____ Date. _____ at _____ Hrs on _____ Date.		
Part 6 Change of RPOS Advice received that the RPOS has been relieved. The New details are as follows _____ Has taken over as RPOS at _____ Hrs _____ Date. _____ Has taken over as RPOS at _____ Hrs _____ Date.		
Part 7(a) Train Movements into Possession The following trains were authorised to enter the Possession Train No _____ at _____ Hrs. _____ Date. Train No _____ at _____ Hrs. _____ Date. Train No _____ at _____ Hrs. _____ Date. Train No _____ at _____ Hrs. _____ Date.		
Part 7(b) Trains required to enter the Possession from Eurotunnel end Permission given to AFC at _____ hrs for Train No. _____ to enter the possession at _____ hrs for Train No. _____ to enter the possession at _____ hrs for Train No. _____ to enter the possession		

Appendix 1: Form 'A'

Possession Management procedure for NR/CTRL Interface Signaller in ASC Form (Continued)	
Part 8 RPOS cancelling his form D	
Time the RPOS cancelled his form _____ Hrs.	
Name of the RPOS cancelling his form _____	
Part 9 Request for Technician Shift Manager to restore Equipment	
Technician Shift Manager requested to cancel the Form B at _____ Hrs.	
Form B returned cancelled at _____ Hrs.	
Technicians Name _____	
Part 10 IECC Signaller's Actions	
Reminder appliances removed from the signals and points at _____ Hrs	
Routes concerned tested at _____ Hrs	
Part 11 AFC Signaller's Actions (if required)	
AFC advised that protection removed from Zone(s) _____ at _____ Hrs	
AFC advised to remove protection from EZP(s) _____ at _____ Hrs Message number _____	
Part 12 Resumption of normal working	
The arrangements as specified in the Sectional Appendix have now been cancelled and that normal running may be resumed on the _____ Line/s at _____ Hrs.	
Signallers signature _____	Date _____

Appendix 1: Form 'B'

Signallers Request for Technician to disable Track Circuits Technician Shift Manager Form			
Form B		Unique Reference No.	
Date :		Zone(s) to be protected.	
Part 1 In connection with the Sectional appendix Instruction for the NR/CTRL interface could you please bar the track circuits shown for the above mentioned Zone/s to show occupied:			
Signed	Signaller at	Hrs.	Date
Part 2 I can confirm that the track circuits requested in your Part 1 have been disabled to show occupied			
Signed	Technician Shift Manager at	Hrs.	Date.
Part 3 The track circuits disabled requested in Part 1 are no longer required could you please remove them.			
Signed	Signaller at	Hrs.	Date.
Part 4 I can confirm that the control on track circuits requested in part 1 have been removed. _____			
Signed	Technician Shift Manager at	Hrs.	Date.

Appendix 1: Form 'D'

RPOS' Form	
Form D	Unique Reference No.
Date :	Zone(s)
START OF WORK Authority is given by Signaller No. _____ for work to start within the Zone(s) Signed _____ RPOS at _____ Hrs. _____ Date _____ Form noted by relieving RPOS Signed _____ at _____ Hrs. _____ Date _____ Signed _____ at _____ Hrs. _____ Date _____	
WHERE RPOS IS ALSO ACTING AS TASK SUPERVISOR I am acting as Task Supervisor for the _____ (description) work. Signed _____ RPOS at _____ Hrs. _____ Date _____ I now certify that the work for which I am responsible as Task Supervisor is completed and everyone is clear of the line. Signed _____ RPOS at _____ Hrs. _____ Date _____	
COMPLETION OF WORK I, being the RPOS in the above Zone(s), certify that: the portion of the line affected by the work is now clear and safe for trains to pass all marker boards have been removed all staff are clear of the line Signed _____ RPOS at _____ Hrs. _____ Date _____	

Appendix 1: Form 'D'

<p>Authority is given by. _____ (RPOS) to _____ (Task Supervisor) of _____ (department) to start _____ (description) work. within Zone(s) _____</p> <p>Signed _____ RPOS at _____ Hrs. _____ Date _____</p> <p>Noted by _____</p> <p>Signed _____ Task Supervisor at _____ Hrs. _____ Date _____</p> <p>I now certify that the work for which I am responsible as Task Supervisor is completed and everyone is clear of the line.</p> <p>Signed _____ Task Supervisor at _____ Hrs. _____ Date _____</p>
<p>Authority is given by. _____ (RPOS) to _____ (Task Supervisor) of _____ (department) to start _____ (description) work. within Zone(s) _____</p> <p>Signed _____ RPOS at _____ Hrs. _____ Date _____</p> <p>Noted by _____</p> <p>Signed _____ Task Supervisor at _____ Hrs. _____ Date _____</p> <p>I now certify that the work for which I am responsible as Task Supervisor is completed and everyone is clear of the line.</p> <p>Signed _____ Task Supervisor at _____ Hrs. _____ Date _____</p>
<p>Authority is given by. _____ (RPOS) to _____ (Task Supervisor) of _____ (department) to start _____ (description) work. within Zone(s) _____</p> <p>Signed _____ RPOS at _____ Hrs. _____ Date _____</p> <p>Noted by _____</p> <p>Signed _____ Task Supervisor at _____ Hrs. _____ Date _____</p> <p>I now certify that the work for which I am responsible as Task Supervisor is completed and everyone is clear of the line.</p> <p>Signed _____ Task Supervisor at _____ Hrs. _____ Date _____</p>
<p>Authority is given by. _____ (RPOS) to _____ (Task Supervisor) of _____ (department) to start _____ (description) work. within Zone(s) _____</p> <p>Signed _____ RPOS at _____ Hrs. _____ Date _____</p> <p>Noted by _____</p> <p>Signed _____ Task Supervisor at _____ Hrs. _____ Date _____</p> <p>I now certify that the work for which I am responsible as Task Supervisor is completed and everyone is clear of the line.</p> <p>Signed _____ Task Supervisor at _____ Hrs. _____ Date _____</p>

Appendix 2 - Track Protection Zones – Protection arrangements

1	2	3	4	5			6
ZONE	LINE	LIMITS ①	TRACK CIRCUITS ②	PROTECTION			REMARKS
				Track Circuits ③	Signals		
					Up dir.	Dn. Dir.	
B	'G' Neck	<u>Ashford end</u> (Network Rail datum point 108.469) Signal 2166	DSC	DSC	AD832	AD795 AD797 AD799 AD803 AD807 AD809 AD813 2167 2171	If work requires 1378 points to be maintained in reverse, Zone D to be protected additionally.
C	Exit from Dollands Moor Yard	<u>Ashford end</u> Clear of points 1363A <u>Eurotunnel end</u> (Network Rail datum point 108.469) Signal 2166	DPN/DSB	DPN DSB	AD830 AD832 2166	AD795 AD797 AD799 AD803 AD807 AD809 AD813 2167 2171	If work requires 1376 points to be maintained in reverse, Zone E to be protected additionally.
D	Down Fast	<u>Ashford end (pk7.054)</u> <u>Clear of points 1381A</u> <u>Eurotunnel end (pk7.191)</u> <u>Signal AD832</u>	DFR	DFR	AD832	AD795 AD797 AD799 AD803 AD807 AD809 AD813 AD821 2167 2171	Signaller in IECC to request permission of the Signaller in AFC to protect this Zone

① Approximate limits – Limits of track circuits shown in column 4 will be the actual limits.

② Track circuits that comprise the zone shown in column 1.

③ Track circuits to be shown occupied by Technician Shift Manager in Ashford IECC, which will prevent the protecting signals from opening/showing a proceed aspect.

Appendix 2 - Track Protection Zones – Protection arrangements

1	2	3	4	5			6
ZONE	LINE	LIMITS①	TRACK CIRCUITS ②	PROTECTION			REMARKS
				Track Circuits ③	Signals		
					Up dir.	Dn. Dir.	
E	Down Fast	<u>Ashford end</u> (Network Rail datum point 108.304) Clear of points 1377 <u>Eurotunnel end</u> (pk7.054) Clear of points 1378B	DFN/DFP	DFN DFP	AD830 AD832	AD795 AD797 AD799 AD803 AD807 AD809 AD813 AD821 2167 2171	If work requires 1376 points to be maintained in reverse, Zone C to be protected additionally. If work requires 1381 points to be maintained in reverse, Zone J to be protected additionally.
F	Through Passenger Line	<u>Ashford end</u> (Network Rail datum point 107.210) Signal AD796 <u>Eurotunnel end</u> (Network Rail datum point 108.304) Clear of points 1377	DJE/DJG/DJJ	DJE	AD830 AD832 2160 2162 2164	AD755 AD757 AD807 AD809 AD813 2153 2157 2159	
G	Down Fast	<u>Ashford end</u> (Network Rail datum point 107.309) Signal AD794 <u>Eurotunnel end</u> (Network Rail datum point 108.304) Clear of points 1377	DFG/DFH/DFJ/DFK/DFL	DFG DFL	AD830 AD832	AD755 AD757 2157 2159	

① Approximate limits – Limits of track circuits shown in column 4 will be the actual limits.

② Track circuits that comprise the zone shown in column 1.

③ Track circuits to be shown occupied by Technician Shift Manager in Ashford IECC, which will prevent the protecting signals from opening/showing a proceed aspect.

Appendix 2 - Track Protection Zones – Protection arrangements

1	2	3	4	5			6
ZONE	LINE	LIMITS ①	TRACK CIRCUITS ②	PROTECTION			REMARKS
				Track Circuits ③	Signals		
					Up dir.	Dn. Dir.	
J	Up Slow	<u>Ashford end</u> (pk6.933) Clear of points 1381 <u>Eurotunnel end</u> (pk7.191) Signal AD830	DJZ	DJZ	AD830	AD795 AD797 AD799 AD803 AD807 AD809 AD813 AD821 AD823 2167 2171	Signaller in IECC to request permission of the Signaller in AFC to protect this Zone Signaller in AFC to request the RCC Supervisor to send Up trains via the Down Fast line If work requires 1381 points to be maintained in reverse, Zone E to be protected additionally.
K	Up Main	<u>Ashford end</u> (Network Rail datum point 107.309) Clear of signal AD792 <u>Eurotunnel end</u> (pk6.933) Clear of points 1381	DSR/DST/DSV/DS W/DSY/DSZ	DSR DSY	AD830	AD757 2159	
N	Exit from Dollands Moor Yard	<u>Ashford end</u> <u>Clear of signals AD795/AD797</u> <u>Eurotunnel end</u> <u>Clear of points 1373</u>	DPM	DPM	AD830 AD832 2160 2162 2164	AD795 AD797 AD799 AD803	

① Approximate limits – Limits of track circuits shown in column 4 will be the actual limits.

② Track circuits that comprise the zone shown in column 1.

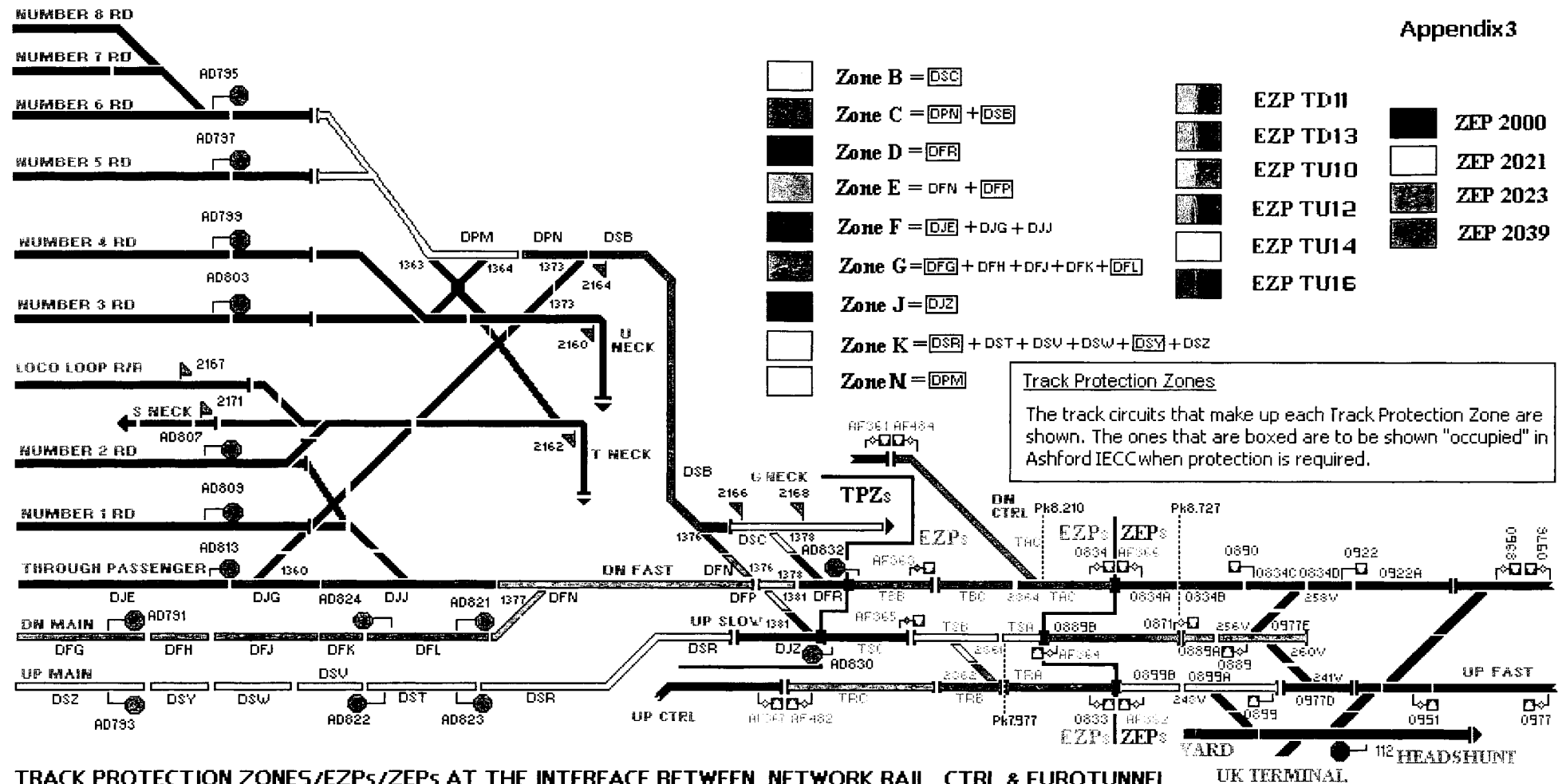
③ Track circuits to be shown occupied by Technician Shift Manager in Ashford IECC, which will prevent the protecting signals from opening/showing a proceed aspect.

Appendix 3 – Engineering Zones of Protection (EZP) – Protection arrangements

EZP	LINE	LIMITS	ROUTES PROHIBITED		REMARKS
			Up direction	Down direction	
TD11	Down Fast	<u>Up direction</u> – pk7.757 <u>Down direction</u> – pk7.192	AF366 – AD832	AD795 – AF363 AD797 – AF363 AD799 – AF363 AD803 – AF363 AD807 – AF363 AD809 – AF363 AD813 – AF363 AD821 – AF363	Signaller in AFC to request permission of Signaller in IECC to protect this EZP
TD13	Down CTRL/ Down Fast	<u>Up direction</u> – AF366 <u>Down direction</u> – AF361/AF363	0976 – AF366 AF366 – AD832 AF366 – AF484	AD795 – AF363 AD797 – AF363 AD799 – AF363 AD803 – AF363 AD807 – AF363 AD809 – AF363 AD813 – AF363 AD821 – AF363 AF361 – 0834 AF363 – 0834 AF481- AF361	Signaller in AFC to request permission of Signaller in IECC and RCC Supervisor to protect this EZP
TU10	Up CTRL	<u>Up direction</u> – pk7.829 <u>Down direction</u> – AF367	AF362 – AF482	AF367 – 0833 AF483 – AF367	
TU12	Up Fast/ Up CTRL	<u>Up direction</u> – AF362 <u>Down direction</u> – pk7.829	0976 – AF362 0977 – AF362 AF362 – AD830 AF362 – AF482	AF365 – 0833 AF367 – 0833	Signaller in AFC to request permission of RCC Supervisor to protect this EZP

Appendix 3 – Engineering Zones of Protection (EZP) – Protection arrangements

EZP	LINE	LIMITS	ROUTES PROHIBITED		REMARKS
			Up direction	Down direction	
TU14	Up Slow	<u>Up direction</u> – AF364 <u>Down direction</u> – AF365	0976 – AF364 0977 – AF364 AF362 – AD830 AF364 – AD830	AD795 – AF365 AD797 – AF365 AD799 – AF365 AD803 – AF365 AD807 – AF365 AD809 – AF365 AD813 – AF365 AD821 – AF365 AD823 – AF365 AF365 – 0833 AF365 – 0871	Signaller in AFC to request permission of Signaller in IECC and RCC Supervisor to protect this EZP
TU16	Up Slow	<u>Up direction</u> – pk7.757 <u>Down direction</u> – pk7.192	AF362 – AD830 AF364 – AD830	AD795 – AF365 AD797 – AF365 AD799 – AF365 AD803 – AF365 AD807 – AF365 AD809 – AF365 AD813 – AF365 AD821 – AF365 AD823 – AF365	Signaller in AFC to request permission of Signaller in IECC and RCC Supervisor to protect this EZP



This diagram is schematic only and NOT to scale

(

(

(

(

NETWORK RAIL/CTRL INTERFACE INSTRUCTIONS

PART B

Network Rail/CTRL Interface Instructions
(Fawkham Jn, Ashford West & East Chords and Dollands Moor Freight Chord)

PART B

NETWORK RAIL/CTRL INTERFACE INSTRUCTIONS (FAWKHAM JN, ASHFORD WEST & EAST CHORDS AND DOLLANDS MOOR FREIGHT CHORD)

Glossary	65
Section A – Introduction	
A1 Scope of these Instructions	66
A2 Operational Control Centres and the Boundaries of their control	67
Section B – Signalling	
B1 Identification of signals and markers	69
B2 Lineside signs	71
Section C – Failure or Disconnection of Signalling Equipment	
C1 Principle	74
C2 Details of Controlled Signals and Points at the Boundary	74
C3 System Failures – Instructions	75
Section D – Electrification	
D1 A.C. System	77
D2 D.C. System	88
Section E – Train Working	
E1 Normal Operation	97
E2 Degraded Operation	97
Section F – Maintenance Works	
F1 Protection of Engineering Work	99
F2 Temporary Speed Restrictions	110
F3 Emergency Speed Restrictions	119

GLOSSARY

AFC	CTRL operational control centre located at Ashford (Kent).
AFC Signaller	Responsible for the monitoring and control of trains within the area covered by the AFC.
ASC Signaller	Network Rail employee responsible for the monitoring and control of trains within the area covered by Panel 10 at Victoria Area Signalling Centre.
CTRL	Channel Tunnel rail Link: high-speed railway between London (St. Pancras) and Cheriton and associated chords and connecting lines.
EFOC	European Freight Operations Centre at Dollands Moor
Electrical Control Room Operator (ECRO)	Network Rail Electrical Control Room Operator located in Paddock Wood Electrical Control Room (ECR) responsible for the supply of the traction current to the AC overhead system on Network Rail infrastructure and to the conductor rail system in its entirety
EMMIS Controller	Controller in the AFC responsible for control of the electricity supply to the AC overhead system on the CTRL.
EZP	Engineering Zone of Protection. CTRL track is divided into defined Engineering Zones of Protection (EZPs) protected by the AFC's signalling system. The limits of each Zone is indicated by "EZP" signs placed in the four foot.
IECC Signaller	Responsible for the monitoring and control of trains within the area covered by Ashford IECC.
Kilometerage	Datum point of any specific location on the CTRL infrastructure expressed as a 6 digit number based in the distance (in kilometres)
Marker	CTRL signal indicating the commencement of a block section (for description –see clause B1.2). A marker is "closed" when movements are not authorised to pass it. A marker is "open" when movements are authorised to pass it.
Protected Area	A section of line on CTRL protected within the signalling system by the controls associated with one or more EZPs.
Protection Arrangements	The arrangements applied to protect personnel when they are required to go on or near the line to carry out their duties. These arrangements could be afforded by detonator protection on Network Rail controlled lines or implementation of EZPs on CTRL.
Responsible Person on Site (RPOS)	The person trackside who is responsible for arranging protection. In the context of these interface instructions the RPOS will be certified competent in the duties of a PICOP in arranging protection in accordance with the DC Electrified Lines Working Instructions (GO/RT/3091).
Task Supervisor (TS)	The person on the track who is responsible for the control of works activities, trains / on-track machines /plant within a worksite. In the context of these interface instructions the TS will be certified competent in the duties of an Engineering Supervisor in accordance with Section T3 of the Network Rail Rule Book.
Yard Master	Member of staff responsible for the current operations of Dollands Moor EFOC.

SECTION A INTRODUCTION

A1 SCOPE OF THESE INSTRUCTIONS

The Instructions contained in this document apply to:

- the interface between Network Rail controlled infrastructure and CTRL controlled infrastructure on the up and down Waterloo Connections between Fawkham Junction and Southfleet.
- the interface between Network Rail controlled infrastructure and CTRL controlled infrastructure on the East and West chords at Ashford, Kent.
- the interface between the EWS controlled infrastructure (signalling controlled by Network Rail) and CTRL controlled infrastructure on the Dollands Moor Freight chord.

At these points the signalling system changes from the Track Circuit Block system to the TVM430 cab signalling system.

This document details:

- The principles for the operation of trains between Network Rail and CTRL in both normal and degraded situations.
- Arrangements for the planning and execution of work on the infrastructure over the interfaces between Network Rail and CTRL.
- Arrangements for controlling the traction current supply, including the arrangements necessary for taking isolations (both planned and in an emergency)
- Communications principles.

The following operational publications apply, as amended by the Instructions contained in this document.

Network Rail Rule Book (GO/RT3000 to 3013)
Network Rail Rule Book Modules AC - A.C. Electrified Lines
Signalling General Instructions (GO/RT3062)
Regulations for Train Signalling by the Track Circuit Block System (GO/RT3062/1)
Network Rail Line Specification "Working on or about 25kV A.C. Electrified Lines"
(RT/E/S/29987)
D.C. Electrified Lines Working Instructions (GO/RT/3091)
Working Manual for Rail Staff (GO/RM3056 & GO/RM3053)
Southern Region Sectional Appendix
International Forms Book (*Livret Formulaires*) Procedures

All formal messages between the AFC Signaller and the VASC/IECC Signaller used in connection with arranging signalling protection for OHLE isolations must be considered as safety critical.

A2 OPERATIONAL CONTROL CENTRES AND THEIR BOUNDARIES OF CONTROL

A2.1 Signalling

The CTRL cab signalling system is controlled from its Ashford Control Centre (AFC)

The Track Circuit Block signalling system is controlled from the Network Rail Ashford Signalling Centre (IECC) and Victoria Area Signalling Centre (VASC).

The boundaries between their areas of control are as follows:

	Down direction	Up direction
Waterloo connection		
Ashford Control Centre (AFC)		
Down	From CTRL signal AF185 (inclusive)	Line not bi-directionally signalled
Up	Line not bi-directionally signalled	As far as VASC signal VS296 (exclusive)
Victoria Area Signalling Centre (VASC)		
Down	As far as CTRL signal AF185 (exclusive)	Line not bi-directionally signalled
Up	Line not bi-directionally signalled	From VASC signal VS296 (inclusive)
Ashford West chord		
Ashford Control Centre (AFC)		
Down	As far as IECC signal AD947 (exclusive)	From CTRL signal AF318 (inclusive)
Up	As far as IECC signal AD949 (exclusive)	From CTRL signal AF312 (inclusive)
Ashford Signalling Centre (IECC)		
Down	From IECC signal AD947 (inclusive)	As far as CTRL signal AF318 (exclusive)
Up	From IECC signal AD949 (inclusive)	As far as CTRL signal AF312 (exclusive)
Ashford East chord		
Ashford Control Centre (AFC)		
Down	From CTRL signal AF313 (inclusive)	As far as IECC signal AD956 (exclusive)
Up	From CTRL signal AF319 (inclusive)	As far as IECC signal AD954 (exclusive)
Ashford Signalling Centre (IECC)		
Down	As far as CTRL signal AF313 (exclusive)	From IECC signal AD956 (inclusive)
Up	As far as CTRL signal AF319 (exclusive)	From IECC signal AD954 (inclusive)
	Down direction	Up direction
Dollands Moor Freight chord		
Ashford Control Centre (AFC)		
Single	As far as IECC signal AD759 (exclusive)	From CTRL marker AF342 (inclusive)
Ashford Signalling Centre (IECC)		
Single	From IECC signal AD759 (inclusive)	As far as CTRL marker AF342 (exclusive)

A2.2 Traction power supply

The CTRL 25kv AC system is controlled from its Ashford Control Centre (AFC).
 The Network Rail 25kv AC system is controlled from the Network Rail Electrical Control Room (ECR) located at Paddock Wood.

The boundaries between their areas of control are as follows:

Waterloo connection	
Down & Up	All under the control of the AFC
Ashford West chord	
Down & Up	Isolation switches 715/10 & 716/5 on Catenary mast YA1/20 at kilometerage 89.506
Ashford East chord	
Down	Isolation switch 716/12 on Catenary mast YA2/55 at kilometerage 91.237
Up	Isolation switch 715/5 on Catenary mast YA2/62 at kilometerage 91.325
Dollands Moor Freight chord	
Single	Neutral section at kilometerage 106.955

Note: The 750v DC conductor rail system in its entirety is controlled from Network Rail Electrical Control Room (ECR) located at Paddock Wood.

SECTION B SIGNALLING




B1 IDENTIFICATION OF SIGNALS AND MARKERS

B1.1 Description of lineside signals





- B1.1.1** The following lineside colour light signals are controlled by the AFC and are identified by a signal post plate showing the signal number in white letters on a black background. They control entry to the cab-signalled area:

Signal	Location	Line	Type
AF185	Waterloo connection (202.170)	Down	3 aspect
AF312	Ashford West chord (089.269)	Up	4 aspect
AF313	Ashford East chord (091.480)	Down	4 aspect
AF318	Ashford West chord (089.322)	Down	4 aspect
AF319	Ashford East chord (091.476)	Up	4 aspect

- B1.1.2** Signal AF185 will display the following indications:

Description of Aspect	Colour of aspect	Meaning
 DANGER	Red light	STOP
 CAUTION	One yellow light	PROCEED: Be prepared to find '000 warning – STOP' indication when the cab signalling arms
 CLEAR	Green light	PROCEED: Be prepared to find appropriate movement authority displayed when the cab signalling arms

B1.1.3 Signals AF312, AF318, AF313 and AF319 will display the following indications:

Description of Aspect	Colour of aspect	Meaning
 DANGER	Red light	STOP
 CAUTION	One yellow light	PROCEED: Be prepared to find '000 warning – STOP' indication when the cab signalling arms.
 PRELIMINARY CAUTION	Two yellow lights (vertically displayed)	PROCEED: Be prepared to find 'Warning – Speed Restriction' displayed when cab signalling arms.
 CLEAR	Green light	PROCEED: Be prepared to find appropriate movement authority displayed when the cab signalling arms

B1.2 Description of CTRL markers

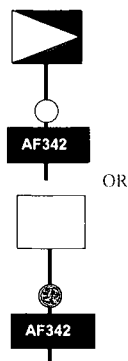
- B1.2.1** CTRL markers normally consist of a reflectorised square sign showing a yellow triangle on a blue background. The apex of the triangle points to the line to which the marker applies. Each marker is provided with a unique number plate, consisting of white characters on a black background, for identification purposes. Marker AF342 on the Dollands Moor Freight chord has the yellow and blue sign formed by the illumination of appropriate LEDs.

B1.2.2 Marker AF342 (Dollands Moor Freight chord) “Hidden Marker”

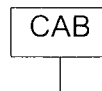
This illuminated route origin marker is located on the freight chord for movements in the up direction. The marker is provided with TPWS in addition to the normal cab signalling controls. It can display:

- an illuminated marker, **OR**
- a fixed red light

The red light is illuminated when the marker is closed and is provided as a limit for shunting movements onto the freight chord from Dollands Moor Yard. The illumination of both the marker and the red aspect must be treated as an abnormal aspect. When the marker is opened for movements onto the CTRL the marker will become illuminated and the red light extinguished. If neither the red light or marker is illuminated the marker must be regarded as “closed”, i.e. a stop aspect.

**B2 LINESIDE SIGNS****B2.1 Entering the cab signalling area****B2.1.1 Warning sign**

Signs provided as detailed below advising drivers that the train is approaching the cab signalled area:



	Down direction	Up direction
<u>Waterloo connection</u>		
Down	Between VS291 signal and AF185 signal	
<u>Ashford West chord</u>		
Down		Between AD672, AD674, AD676 & AD678 signals and AF318 signal
Up		Between AD672, AD674, AD676 & AD678 signals and AF312 signal
<u>Ashford East chord</u>		
Down	Between AD665, AD667, AD669, & AD671 signals and AF313 signal	
Up	Between AD665, AD667, AD669, & AD671 and AF319 signal	

B2.1.2 Execute Signs

Signs provided as detailed below advising drivers that the train is approaching the cab signalled area and that if the cab signalling system has not automatically armed on the train, the Driver must stop the train and arm it manually.


 A rectangular black sign with the word "CAB" in white capital letters.

	Down direction	Up direction
<u>Waterloo connection</u>		
Down	At AF185 signal	
<u>Ashford West chord</u>		
Down		At AF318 signal
Up		At AF312 signal
<u>Ashford East chord</u>		
Down	At AF313 signal	
Up	At AF319 signal	
<u>Dollands Moor Freight chord</u>		
Single		Between Dollands Moor Level Crossing (AHBC) and marker AF482

B2.2 Leaving the cab signalled area

Signs provided as detailed below advising drivers that the train is about to leave cab signalled area and that the fixed lineside signals must be observed.

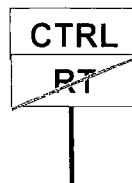

 A rectangular black sign with the word "CAB" in white capital letters.

	Down direction	Up direction
<u>Waterloo connection</u>		
Down		Between AF410 marker and VS296 signal
<u>Ashford West chord</u>		
Down	Between AF455 marker and AD947 signal	
Up	Between AF453 marker and AD949 signal	
<u>Ashford East chord</u>		
Down		Between AF464 marker and AD956 signal
Up		Between AF462 marker and AD954 signal
<u>Dollands Moor Freight chord</u>		
Single	Between AF471 marker and AD759 signal	

B2.3 Boundaries between systems

At boundaries between systems, signs are provided to indicate the location at which the applicable rules change. On passing the sign, the Driver must understand the rules, regulations and instructions applicable to the infrastructure that the train is entering.

The signs consist of black letters on a white background. The uppermost sign shows the system area the train is entering and the lower sign shows the system area the train is leaving.

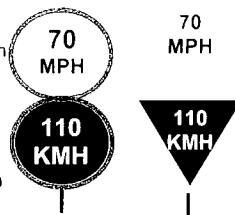


B2.4 Signing of Permanent Speed Restrictions

Signs and warning indicators associated with permanent speed restrictions also indicate the maximum speed restrictions in km/h. Differential speed restrictions are not permitted

The top board indicates the speed in mph in black letters on a white background

The bottom board indicates the speed in km/h in white letters on a black background



SECTION C FAILURE OR DISCONNECTION OF SIGNALLING EQUIPMENT

C1 PRINCIPLES

- C1.1** During a failure or disconnection of the signalling equipment the Instructions contained in this Section must be adhered to.
- C1.2** When a failure of Signals, Points, Track Circuits, Train Describers or Flow Indicators occurs the VASC/IECC Signaller must contact advise the AFC Signaller the extent of the failure.
- C1.3** The VASC/IECC Signaller must reach a clear understanding with the AFC Signaller and agree a method by which train movements will be made.

C2 DETAILS OF CONTROLLED SIGNALS AND POINTS AT THE SIGNALLING BOUNDARY

C2.1 Between the VASC and the AFC on the Waterloo connection

**VASC Signal in the down
Direction**
VS291

**VASC Signal in the up
direction**
VS296

**AFC Signal in the down
direction**
AF185

**AFC Markers in the
up direction**
AF206, AF410

C2.2 Between the IECC and the AFC on the Ashford West chord

**IECC Signals in the down
Direction**
AD947, AD949

**IECC Signals in the up
direction**
AD672 AD674, AD676, AD678

**AFC Markers in the down
direction**
AF301, AF303, AF453, AF455

**AFC Signals in the
up direction**
AF312, AF318

C2.3 Between the IECC and the AFC on the Ashford East chord

**IECC Signals in the down
Direction**
AD665, AD667, AD669, AD671

**IECC Signals in the up
direction**
AD954, AD956

**AFC Signals in the down
direction**
AF313, AF319

**AFC Markers in the
up direction**
AF326, AF328 AF462, AF464

C2.4 Between the IECC and the AFC on the Dollands Moor Freight chord

**IECC Signal in the down
Direction**
AD759

**IECC Signals in the up
direction**
AD808, AD814, AD816, AD818

**AFC Markers in the down
direction**
AF335, AF337, AF471, AF593

**AFC Marker in the
up direction**
AF342

C3 SYSTEM FAILURES – INSTRUCTIONS

C3.1 Passing signals at danger and closed markers

C3.1.1 If the failure of signalling equipment in the interface of the VASC/IECC and AFC control area prevents the Signallers in the VASC, IECC or AFC clearing or opening any of the signals/markers shown in clause C2 the following procedure must be observed:-

- The Signaller in the VASC/IECC or AFC who controls the signal or marker must check the conditions for clearing the signal/opening the marker. If necessary, an assurance must be received from the other Signaller that the last train on the line concerned has passed clear of the affected section, that no conflicting route is set or is about to be set and that any slot request has been acknowledged.
- If a track circuit is showing occupied, the Signaller in the VASC/IECC or AFC must arrange for an examination of the line to be carried out, if necessary using the first affected train over the line concerned in accordance with the appropriate procedure
- The Signaller in the VASC/IECC must use the appropriate procedure to instruct the drivers of trains to pass the signal at danger in accordance with Network Rail Rule Book Section D Clause 3.2
- The Signaller in the VASC/IECC or AFC must inform the other Signaller when the movement has passed clear of the affected section and, if the line has been examined, the driver's remarks.

C3.2 Failure of direction of flow indicators

C3.2.1 The Signaller in the IECC or AFC must not attempt to set a route that conflicts with a Direction of Flow Arrow for a route already set by the other Signaller

C3.2.2 If however, after setting a route, a "Direction of Flow Arrow" is not illuminated or if a failure occurs that causes the indicators for both directions to be shown, the Signallers in the IECC and AFC must agree with each other the direction of flow for each line. This should always follow the primary direction for each line, i.e. down direction on the Down line, up direction on the Up line.

C3.2.3 The Network Rail Rule Book, Section P (Part ii) "Working of single and bi-directional lines by pilotman" does **not** apply on the bi-directionally signalled lines between the IECC and AFC.

C3.3 Failure of the cab signalling arming beacon on the Dollands Moor freight chord

C3.3.1 The failure of the cab signalling arming beacon on the Dollands Moor freight chord will prevent the IECC controlled signals AD808, AD814, AD818 and AD818 being cleared. The AFC Signaller will advise the IECC Signaller that the cab signalling arming beacon has failed. When instructing Drivers to pass these signals at danger, in accordance with clause C3.1.1, the IECC Signaller must advise them that the cab signalling equipment will not arm automatically.

C3.4 Failure of AWS to arm

C3.4.1 Should the AWS system on a train fail to arm after the train has passed the "AWS" execute sign, the Driver must manually arm the AWS system. If this action subsequently causes the AWS system to arm, the Driver must:

- cancel the indication received and proceed normally
- inform the VASC/IECC Signaller of the circumstances in accordance with the *Livret Formulaires* Procedure

If this action fails to arm the AWS system, the Driver must:

- bring the train to a stand
- inform the VASC/IECC Signaller of the circumstances in accordance with the *Livret Formulaires* Procedure
- act in accordance with the instructions contained in the Network Rail Rule Book, Section H (Part ii)

SECTION D ELECTRIFICATION

D1 AC SYSTEM

D1.1 Scope of these procedures

These instructions apply to the isolation of the electrical sections controlled by the AFC and Paddock Wood ECR at the following interfaces between CTRL and Network Rail:

- Waterloo connection
- Ashford West and East chords
- Dollands Moor Freight chord

For full details of the electrical sections involved, see the appendix to this section.

D1.2 Isolation Diagrams and Isolation Instructions

D1.2.1 The complete sectioning scheme is shown on isolation diagrams, appropriate copies of which are kept at Network Rail Operations Control, Paddock Wood ECR, Victoria ASC, Ashford IECC, and the AFC, together with the appropriate Isolation Instructions.

D1.2.2 In connection with any isolation of the overhead line system, the VASC/IECC Signaller must refer to the Isolation Instructions when protecting an isolation of the OHLE. The Isolation Instructions give details of the signal protection required for any quoted electrical section or subsection. This applies whether the isolation is pre-arranged or for an emergency.

D1.3 Principles

D1.3.1 General

D1.3.1.1 CTRL or Network Rail personnel (including maintenance contractors) to apply the rules and procedures of the organisation they are working for.

D1.3.1.2 CTRL or Network Rail personnel to request isolations of the OHLE from the control centre defined in the rules and procedures of the organisation they are working for.

D1.3.1.3 A request for an emergency isolation of the traction current must be made to the Paddock Wood ECO or the EMMIS Controller by the first available means. This request may be made via one of the other electrical controllers or via the VASC Signaller, IECC Signaller or AFC Signaller if this would be quicker. If there is any doubt as to how much of the catenary is to be isolated, e.g. extent of the incident, the Paddock Wood ECO and the EMMIS Controller, must liaise with each other and switch off the electricity from all lines in the area until the actual location of the incident is established.

D1.3.2 Isolation arrangements

D1.3.2.1 The EMMIS Controller is responsible for the isolation of the CTRL electrical sections. The isolation switches for certain CTRL electrical sections (as detailed in the appendix) are operated by the ECO. The ECO isolates/re-energises these CTRL electrical sections on instruction from the EMMIS Controller. Note: If the ECO receives a request for an emergency isolation of these CTRL electrical sections, he/she will switch off the electricity without receiving an instruction from the EMMIS Controller.

D1.3.2.2 The ECO is responsible for the isolation of the Network Rail electrical sections. Because CTRL supplies the traction power to the Network Rail OHLE, the isolation of CTRL electrical sections can cause the traction power to be switched off from part (or all) of the Network Rail OHLE unless alternative switching arrangements are implemented.

D1.3.2 Isolation arrangements

- D1.3.2.1** The EMMIS Controller is responsible for the isolation of the CTRL electrical sections. The isolation switches for certain CTRL electrical sections (as detailed in the appendix) are operated by the ECO. The ECO isolates/re-energises these CTRL electrical sections on instruction from the EMMIS Controller. Note: If the ECO receives a request for an emergency isolation of these CTRL electrical sections, he/she will switch off the electricity without receiving an instruction from the EMMIS Controller
- D1.3.2.2** The ECO is responsible for the isolation of the Network Rail electrical sections. Because CTRL supplies the traction power to the Network Rail OHLE, the isolation of CTRL electrical sections can cause the traction power to be switched off from part (or all) of the Network Rail OHLE unless alternative switching arrangements are implemented.
- D1.3.2.3** Except in the event of an emergency, before any electrical section(s) is isolated and/or responsibility transferred, the ECO or EMMIS Controller must have received an assurance that the required electrical section(s) has been blocked to electric train movements.
- D1.3.3. Signal protection arrangements**
- D1.3.3.1** The AFC Signaller is responsible for arranging the signal protection for CTRL electrical sections when requested by the EMMIS Controller.
- D1.3.3.2** The VASC/IECC Signaller is responsible for arranging the signal protection for Network Rail electrical sections when requested by the ECO.

- D1.3.3.3** The detailed signal protection arrangements for each individual electrical section is shown in the appendix. As the same signal or marker often protects more than one electrical section, this signal protection can be simplified as shown in the table shown below.

Line	Electrical sections	Protecting signal at Network Rail end of section	Protecting marker / signal at CTRL end of sections
CTRL electrical sections			
Down Waterloo connection	710Q/710R/710S	VASC signal VS269	
Up Waterloo connection	709E/709F/709G		AFC marker AF206
Down Ashford West chord	716A/716B/716C	IECC signals AD672/AD674/AD676/AD678	AFC marker AF301
Up Ashford West chord	715G/715H/715J	IECC signals AD672/AD674/AD676/AD678	AFC marker AF303
Down Ashford East chord	716J/716K/716L	IECC signals AD665/AD667/AD669/AD671	AFC marker AF328
Up Ashford East chord	715A/715B/715C	IECC signals AD665/AD667/AD669/AD671	AFC marker AF326
Dollands Moor Freight chord	718E/718F	IECC signals AD808/AD814/AD816/AD818	AFC markers AF335/AF337/AF593
Network Rail electrical sections			
Down Ashford West chord	716D	IECC signals AD672/AD674/AD676/AD678	AFC marker AF301
Up Ashford West chord	715F	IECC signals AD672/AD674/AD676/AD678	AFC marker AF303 IECC signal AD947
Down Ashford East chord	716F	IECC signals AD665/AD667/AD669/AD671	AFC marker AF328 IECC signal AD954
Up Ashford East chord	715D	IECC signals AD665/AD667/AD669/AD671	AFC marker AF326
Ashford station area	715E 716E/716G/716H	Sections protected by IECC signals	
Dollands Moor Yard	600B	Section protected by IECC signals	

- D1.3.3.4** Safety Critical Messages must be used for communications between Signallers when arranging the signal protection arrangements to block the line to electric trains for an OHLE isolation.
- D1.3.3.5** A Safety Critical Message must be read back by the recipient to the sender to ensure it is correct and both sender and recipient must record the details of message in their respective log books. The originator of the Safety Critical Message must issue a message number in accordance with local instructions when he/she is sure that the recipient has understood the message to validate it.
- D1.3.3.6** Safety Critical Messages to be in the format shown in the following examples:

AFC Signaller to VASC Signaller

"Block the Down Waterloo connection to electric trains at VS269 signal because of an OHLE isolation.
My message no. 123456"

VASC Signaller to AFC Signaller

"Reference your message no. 123456, Down Waterloo connection blocked to electric trains at VS269 signal.
My message no. 987654"

AFC Signaller to VASC Signaller

"Reference your message no. 987654, the block to electric trains of the Down Waterloo connection at VS269 signal may be removed.
My message no.123457"

D1.4 Isolation of CTRL electrical sections that are under the control of the EMMIS Controller

Note: This point applies if the CTRL electrical sections are required to be isolated without the isolation of the adjacent Network Rail electrical sections. If the adjacent Network Rail electrical sections are required to be isolated as part of the same isolation request, point D1.6 to be applied.

D1.4.1 CTRL personnel initiates the isolation request

D1.4.1.1 EMMIS Controller requests AFC Signaller to block to electric trains the CTRL electrical section(s) concerned.

D1.4.1.2 AFC Signaller requests VASC/IECC Signaller to block the line concerned to electric trains because of an OHLE isolation.

(Safety Critical Message)

D1.4.1.3 VASC/IECC Signaller

- places/maintains designated signals to danger and applies reminder appliances
- confirms to AFC Signaller that the line concerned is blocked to electric trains.

(Safety Critical Message)

D1.4.1.4 AFC Signaller confirms to EMMIS Controller that block to electric trains is in place.

D1.4.1.5 EMMIS Controller instructs ECO to isolate the CTRL electrical section(s) concerned.

D1.4.1.6 Additional instructions in connection with the isolation of CTRL electrical sections 715B, 715C, 715G, 715H, 716B, 716C, 716J & 716K (Ashford West & East chords)

D1.4.1.6.1 ECO consults and applies the Electrical Control Room instructions for the Network Rail electrical sections.

D1.4.1.6.2 If traction current supply is to be maintained to Network Rail electrical sections 715D – 715F & 716D – 716H (Ashford station)

ECO

- contacts IECC Signaller to ensure no electric train movements are taking place.
- arranges alternative feeding to the Network Rail electrical sections.
- informs IECC Signaller that electric train movements can recommence.

D1.4.1.6.3 If traction current supply is NOT to be maintained to Network Rail electrical sections 715D – 715F & 716D – 716H (Ashford station)

- ECO requests IECC Signaller to block to electric trains the Network Rail electrical section(s) concerned.

(Form AE)

- IECC Signaller

- consults the Isolation Instructions for the Network Rail electrical section(s) concerned, places/maintains designated signals to danger and applies reminder appliances.
- confirms to ECO that block to electric trains is in place.

(Form AE)

D1.4.1.7 ECO

- carries out the switching instructions in order to isolate the CTRL electrical section(s) concerned.
- confirms to EMMIS Controller that the CTRL electrical section(s) concerned is isolated.

D1.4.1.8 EMMIS Controller carries out the switching instructions in order to isolate the CTRL electrical section(s) concerned.

D1.4.2 Network Rail personnel initiates the isolation request

D1.4.2.1 Nominated Person requests ECO to isolate the CTRL electrical section(s) concerned.

(Form B)

D1.4.2.2 Additional instructions in connection with the isolation of CTRL electrical sections 715B, 715C, 715G, 715H, 716B, 716C, 716J & 716K (Ashford West & East chords)

D1.4.2.2.1 ECO consults and applies the Electrical Control Room instructions for the Network Rail electrical sections.

D1.4.2.2.2 If traction current supply is to be maintained to Network Rail electrical sections 715D – 715F & 716D – 716H (Ashford station)

ECO

- contacts IECC Signaller to ensure no electric train movements are taking place.
- arranges alternative feeding to the Network Rail electrical sections.
- informs IECC Signaller that electric train movements can recommence.

D1.4.2.2.3 If traction current supply is NOT to be maintained to Network Rail electrical sections 715D – 715F & 716D – 716H (Ashford station)

- ECO requests IECC Signaller to block to electric trains the Network Rail electrical section(s) concerned.

(Form AE)

- IECC Signaller
 - consults the Isolation Instructions for the Network Rail electrical section(s) concerned, places/maintains designated signals to danger and applies reminder appliances.
 - confirms to ECO that block to electric trains is in place.

(Form AE)

D1.4.2.3 ECO requests EMMIS Controller to isolate the CTRL electrical section(s) concerned.

(Form NR)

D1.4.2.4 EMMIS Controller requests AFC Signaller to block to electric trains the CTRL electrical section(s) concerned.

D1.4.2.5 AFC Signaller requests VASC/IECC Signaller to block to electric trains the line concerned because of an OHLE isolation.

(Safety Critical Message)

D1.4.2.6 VASC/IECC

- places/maintains designated signals to danger and applies reminder appliances
- confirms to AFC Signaller that the line concerned is blocked to electric trains..

(Safety Critical Message)

- D1.4.2.7** AFC Signaller confirms to EMMIS Controller that block to electric trains is in place.
- D1.4.2.8** EMMIS Controller instructs ECO to isolate the CTRL electrical section(s) concerned.
- D1.4.2.9** ECO
- carries out the switching instructions in order to isolate the CTRL electrical section(s) concerned.
 - confirms to EMMIS Controller that the CTRL electrical section(s) concerned is isolated.
- D1.4.2.10** EMMIS Controller
- carries out the switching instructions in order to isolate the CTRL electrical section(s) concerned.
 - confirms to ECO that the CTRL electrical section(s) concerned is isolated.
- (Form NR)*
- D1.4.2.11** ECO confirms to Nominated Person that the CTRL electrical section(s) concerned is isolated.
- (Form B)*
- D1.4.2.12** Nominated Person carries out local protection measures and issues Overhead Line Permit(s).
- D1.5 Re-energisation of CTRL electrical sections that are under the control of the EMMIS Controller**
- D1.5.1 CTRL personnel initiated the isolation request**
- D1.5.1.1 EMMIS Controller**
- carries out the switching instructions in order to re-energise the CTRL electrical section(s) concerned.
 - instructs ECO to re-energise the CTRL electrical section(s) concerned.
- D1.5.1.2** ECO carries out the switching instructions in order to re-energise the CTRL electrical section(s) concerned.
- D1.5.1.3 Additional instructions in connection with the isolation of CTRL electrical sections 715B, 715C, 715G, 715H, 716B, 716C, 716J & 716K (Ashford West & East chords)**
- D1.5.1.3.1** ECO consults and applies the Electrical Control Room instructions for the Network Rail electrical sections.
- D1.5.1.3.2 If traction current supply was maintained to Network Rail electrical sections 715D – 715F & 716D – 716H (Ashford station)**
- ECO
- contacts IECC Signaller to ensure no electric train movements are taking place.
 - arranges cancellation of the alternative feeding to the Network Rail electrical sections.
 - informs IECC Signaller that electric train movements can recommence.

D1.5.1.3.3 If traction current supply has NOT been maintained to Network Rail electrical sections 715D – 715F & 716D – 716H (Ashford station)

- ECO advises IECC Signaller that the block to electric trains for the Network Rail electrical section(s) concerned can be removed. *(Form AE)*
- IECC Signaller removes signal protection for the Network Rail electrical section(s) concerned.

D1.5.1.4 ECO confirms to EMMIS Controller that the CTRL electrical section(s) concerned are re-energised.

D1.5.1.5 EMMIS Controller advises AFC Signaller that the block to electric trains for the CTRL electrical section(s) concerned can be removed.

D1.5.1.6 AFC Signaller advises VASC/IECC Signaller that the OHLE has been re-energised and the block to electric trains for the line concerned can be removed. *(Safety Critical Message)*

D1.5.1.7 VASC/IECC Signaller removes signal protection for the line concerned.

D1.5.2 Network Rail personnel initiated the isolation request

D1.5.2.1 Nominated Person cancels isolation with ECO. *(Form B)*

D1.5.2.2 ECO requests EMMIS Controller to re-energise the CTRL electrical section(s) concerned. *(Form NR)*

D1.5.2.3 EMMIS Controller

- carries out the switching instructions in order to re-energise the CTRL electrical section(s) concerned.
- instructs ECO to re-energise the CTRL electrical section(s) concerned.

D1.5.2.4 ECO carries out the switching instructions in order to re-energise the CTRL electrical section(s) concerned.

D1.5.2.5 Additional instructions in connection with the isolation of CTRL electrical sections 715B, 715C, 715G, 715H, 716B, 716C, 716J & 716K (Ashford West & East chords)

D1.5.2.5.1 ECO consults and applies the Electrical Control Room instructions for the Network Rail electrical sections.

D1.5.2.5.2 If traction current supply was maintained to Network Rail electrical sections 715D – 715F & 716D – 716H (Ashford station)

- ECO
- contacts IECC Signaller to ensure no electric train movements are taking place.
 - arranges cancellation of the alternative feeding to the Network Rail electrical sections.
 - informs IECC Signaller that electric train movements can recommence.

D1.5.2.5.3 If traction current supply has NOT been maintained to Network Rail electrical sections 715D – 715F & 716D – 716H (Ashford station)

- ECO advises IECC Signaller that the block to electric trains for the Network Rail electrical section(s) concerned can be removed. *(Form AE)*
- IECC Signaller removes signal protection for the Network Rail electrical section(s) concerned.

- D1.5.2.6** ECO confirms to EMMIS Controller that the CTRL electrical section(s) concerned are re-energised.
- D1.5.2.7** EMMIS Controller advises AFC Signaller that the block to electric trains for the CTRL electrical section(s) concerned can be removed.
- D1.5.2.8** AFC Signaller advises VASC/IECC Signaller that the OHLE has been re-energised and the block to electric trains for the line concerned can be removed.
(Safety Critical Message)
- D1.5.2.9** VASC/IECC Signaller removes signal protection for the CTRL electrical section(s) concerned.
- D1.6 Isolation of CTRL and Network Rail electrical sections together**
- Note:** This point applies if CTRL electrical sections and the adjacent Network Rail electrical sections 715D – 715F & 716D – 716H (Ashford station) or 600B (Dollands Moor Yard) are required to be isolated together as part of the same isolation request.
- D1.6.1 Network Rail personnel initiates the isolation request**
- D1.6.1.1** Nominated Person requests ECO to isolate the CTRL and Network Rail electrical sections concerned.
(Form B)
- D1.6.1.2** ECO requests IECC Signaller to block to electric trains the Network Rail electrical section(s) concerned.
(Form AE)
- D1.6.1.3** IECC Signaller consults the Isolation Instructions for the Network Rail electrical section(s) concerned, places/maintains designated signals to danger and applies reminder appliances.
- D1.6.1.4** Additional instruction in connection with the isolation of Network Rail electrical section(s) 715D, 715F, 716D & 716F
- D1.6.1.4.1** IECC Signaller requests AFC Signaller to block to the line concerned to electric trains because of an OHLE isolation.
(Safety Critical Message)
- D1.6.1.4.2** AFC Signaller
 ➤ inhibits the designated marker for the line concerned.
 ➤ confirms to IECC Signaller that block to electric trains is in place.
(Safety Critical Message)
- D1.6.1.5** IECC Signaller confirms to ECO that block to electric trains is in place.
(Form AE)
- D1.6.1.6** ECO
 ➤ carries out the switching instructions in order to isolate the Network Rail electrical section(s) concerned.
 ➤ requests EMMIS Controller to isolate the CTRL electrical section(s) concerned.
(Form NR)
- D1.6.1.7** EMMIS Controller instructs ECO to isolate the CTRL electrical section(s) concerned.
- D1.6.1.8** ECO confirms to EMMIS Controller that the CTRL electrical section(s) concerned is isolated.

D1.6.1.9 EMMIS Controller

- carries out the switching instructions in order to isolate the CTRL electrical section(s) concerned.
- confirms to ECO that the CTRL electrical section(s) concerned is isolated.

(Form NR)

D1.6.1.10 ECO confirms to Nominated Person that the Network Rail electrical sections concerned are isolated.

(Form B)

D1.6.1.11 Nominated Person carries out local protection measures and issues Overhead Line Permit(s).

D1.6.2 CTRL personnel initiates the isolation request

D1.6.2.1 EMMIS Controller requests ECO to isolate and/or handover responsibility for the Network Rail electrical section(s) concerned and instructs ECO to isolate the CTRL electrical section(s) concerned.

(Form CTRL)

D1.6.2.2 ECO requests IECC Signaller to block to electric trains the Network Rail electrical section(s) concerned.

(Form AE)

D1.6.2.3 IECC Signaller

- consults the Isolation Instructions for the Network Rail electrical section(s) concerned, places/maintains designated signals to danger and applies reminder appliances.
- confirms to ECO that block to electric trains is in place.

(Form AE)

D1.6.2.4 ECO

- consults and applies the Electrical Control Room instructions and carries out the switching in order to isolate the CTRL and Network Rail electrical sections concerned.
- confirms to EMMIS Controller that the CTRL and Network Rail electrical sections concerned are isolated and transfers responsibility of the Network Rail electrical sections to the EMMIS Controller.

(Form CTRL)

D1.6.2.5 EMMIS Controller carries out the switching instructions in order to isolate the CTRL electrical section(s) concerned.

D1.7 Re-energisation of CTRL and Network Rail electrical sections together

D1.7.1 Network Rail personnel initiated the isolation request

D1.7.1.1 Nominated Person cancels isolation with ECO.

(Form B)

D1.7.1.2 ECO requests EMMIS Controller to re-energise the CTRL electrical section(s) concerned.

(Form NR)

D1.7.1.3 EMMIS Controller

- carries out the switching instructions in order to re-energise the CTRL electrical section(s) concerned.
- instructs ECO to re-energise the CTRL electrical section(s) concerned.

D1.7.1.4 ECO

- consults and applies the Electrical Control Room instructions and carries out the switching instructions in order to re-energise the CTRL and Network Rail electrical sections concerned.
- confirms to EMMIS Controller that the CTRL electrical section(s) concerned are re-energised.
- advises IECC Signaller that the block to electric trains for the Network Rail electrical section(s) concerned can be removed.

(Form AE)

D1.7.1.5 ECC Signaller removes signal protection for the Network Rail electrical section(s) concerned.

D1.7.1.6 Additional instruction in connection with the isolation of Network Rail electrical section(s) 715D, 715F, 716D & 716F

D1.7.1.6.1 IECC Signaller advises AFC Signaller that the OHLE has been re-energised and the block to electric trains for the line concerned can be removed.

(Safety Critical Message)

D1.7.1.6.2 AFC Signaller removes signalling protection for the line concerned.

D1.7.2 CTRL personnel initiated the isolation request

D1.7.2.1 EMMIS Controller

- carries out the switching instructions in order to re-energise the CTRL electrical section(s) concerned.
- requests ECO to re-energise the CTRL and Network Rail electrical sections concerned.

(Form CTRL)

D1.7.2.2 ECO

- consults and applies the Electrical Control Room instructions and carries out the switching instructions in order to re-energise the CTRL and Network Rail electrical sections concerned.
- confirms to EMMIS Controller that the CTRL electrical section(s) concerned are re-energised.
- advises IECC Signaller that the block to electric trains for the Network Rail electrical section(s) concerned can be removed.

(Form AE)

D1.7.2.3 IECC Signaller removes signal protection for the Network Rail electrical section(s) concerned.

D1.8 Isolation of Network Rail electrical sections 715D – 715F & 716D – 716H (Ashford station) that are under the control of Paddock Wood ECO

Note: This point applies if the Network Rail electrical sections 715D – 715F & 716D – 716H (Ashford station) are required to be isolated without the isolation of the adjacent CTRL electrical sections. If the adjacent CTRL electrical sections are required to be isolated as part of the same isolation request, point D1.6 to be applied.

D1.8.1 Nominated Person requests ECO to isolate the Network Rail electrical section(s) concerned.

(Form B)

D1.8.2 ECO requests IECC Signaller to block to electric trains the Network Rail electrical section(s) concerned.

(Form AE)

- D1.8.3** IECC Signaller consults the Isolation Instructions for the Network Rail electrical section(s) concerned, places/maintains designated signals to danger and applies reminder appliances.
- D1.8.4** **Additional instruction in connection with the isolation of Network Rail electrical section(s) 715D, 715F, 716D & 716F**
- D1.8.4.1** IECC Signaller requests AFC Signaller to block the line concerned to electric trains because of an OHLE isolation.
(Safety Critical Message)
- D1.8.4.2** AFC Signaller
 > inhibits the designated marker for the line concerned.
 > confirms to IECC Signaller that block to electric trains is in place.
 (Safety Critical Message)
- D1.8.5** IECC Signaller confirms to ECO that block to electric trains is in place.
(Form AE)
- D1.8.6** ECO
 > carries out the switching instructions in order to isolate the Network Rail electrical section(s) concerned.
 > confirms to Nominated Person that the Network Rail electrical sections concerned are isolated.
 (Form B)
- D1.8.7** Nominated Person carries out local protection measures and issues Overhead Line Permit(s).
- D1.9** **Re-energisation of Network Rail electrical sections 715D – 715F & 716D – 716H (Ashford station) that are under the control of Paddock Wood ECO**
- D1.9.1** Nominated Person cancels isolation with ECO.
(Form B)
- D1.9.2** ECO
 > carries out the switching instructions in order to re-energise the Network Rail electrical section(s) concerned.
 > advises IECC Signaller that the block to electric trains for the Network Rail electrical section(s) concerned can be removed.
 (Form AE)
- D1.9.3** IECC Signaller removes signal protection for the Network Rail electrical section(s) concerned.
- D1.9.4** **Additional instruction in connection with the isolation of Network Rail electrical section(s) 715D, 715F, 716D & 716F**
- D1.9.4.1** IECC Signaller advises AFC Signaller that the OHLE has been re-energised and the block to electric trains for the line concerned can be removed.
(Safety Critical Message)
- D1.9.4.2** AFC Signaller removes signalling protection for the line concerned.

D2 DC SYSTEM

- D2.1** The Network Rail DC Electrified Lines Working Instructions (GO/RT3091) apply to the DC Electrified Lines on the Waterloo connection.
- D2.2** With reference to the definitions of terms shown in the D.C. Electrified Lines Working Instructions (GO/RT/3091), the term "electric train" is modified to read "an electrically powered train or locomotive having collector shoes through which electric current is collected from the conductor rail, unless the collector shoes are in the raised position and isolated".
- D2.3** When CTRL personnel require the isolation of the conductor rail equipment in connection with maintenance work protected in accordance with Section F1.3 of these instructions, Procedure B (Instructions B26 to B39) of the D.C. Electrified Lines Working Instructions (GO/RT/3091) to apply.
- D2.4** In connection with any isolation of the conductor rail equipment, the VASC Signaller must refer to the Isolation Instructions (appendix 2 of this section), when protecting an isolation of the conductor rail equipment. The Isolation Instructions give details of the signal protection required for the quoted electrical section. This applies whether the isolation is pre-arranged or for an emergency.

Appendix – Electrical sections – Signalling Protection arrangements

Electrical sections	LINE	LIMITS	ROUTES PROHIBITED		REMARKS
			Up direction	Down direction	
Waterloo Connection					
OHLE electrical sections					
709E	Up Waterloo connection	Switch 709/10 at Southfleet Jn. Switch 709/12 at catenary mast YF203/20	AF206 – AF410		CTRL section
709F	Up Waterloo connection	Switch 709/13 at catenary mast YF203/16 Switch 709/14 at catenary mast YF202/28	AF206 – AF410		CTRL section (switches operated by Paddock Wood ECR)
709G	Up Waterloo connection	Switch 709/15 at catenary mast YF202/24 Limit of OHLE at kilometerage 201.308	AF206 – AF410		CTRL section (switches operated by Paddock Wood ECR)
710Q	Down Waterloo connection	Limit of OHLE at kilometerage 201.308 Switch 710/31 at catenary mast YF202/24		VS291 – AF185	CTRL section (switches operated by Paddock Wood ECR)
710R	Down Waterloo connection	Switch 710/32 at catenary mast YF202/28 Switch 710/33 at catenary mast YF203/16		VS291 – AF185	CTRL section (switches operated by Paddock Wood ECR)
710S	Down Waterloo connection	Switch 710/34 at catenary mast YF203/20 Switch 710/36 at Southfleet Jn.		VS291 – AF185	CTRL section
DC conductor rail electrical sections					
P500	Down Waterloo connection	Fawkham Jn. (exclusive) Limit of conductor rail at kilometerage 202.170		VS269 – VS291 VS291 – AF185	
P501	Up Waterloo connection	Limit of conductor rail at kilometerage 202.170 Fawkham Jn. (exclusive)	VS296 – VS294 VS292 – VS268		

Appendix – Electrical sections – Signalling Protection arrangements

Electrical sections	LINE	LIMITS	ROUTES PROHIBITED		REMARKS
			Up direction	Down direction	
Ashford West and East chords					
715A	Up East chord	Switch 713A/715A at catenary mast Y92/26 Switch 715/1 at catenary mast Y92/24	AF326 – AF462	AD665 – AF319 AD667 – AF319 AD669 – AF319 AD671 – AF319	CTRL section
715B	Up East chord	Switch 715/2 at catenary mast Y92/19 Switch 715/3 at catenary mast Y91/13	AF326 – AF462	AD665 – AF319 AD667 – AF319 AD669 – AF319 AD671 – AF319	CTRL section (switches operated by Paddock Wood ECR)
715C	Up East chord	Switch 715/4 at catenary mast Y91/12 Switch 715/5 at catenary mast YA2/62	AD954 – AD672 AD954 – AD674 AD954 – AD786 AD954 – AD788 AF326 – AF462	AD665 – AF319 AD667 – AF319 AD669 – AF319 AD671 – AF319	CTRL section (switches operated by Paddock Wood ECR)
715D	Up East chord/ Down Slow	Switch 715/5 at catenary mast YA2/62 Switch 715/6 at catenary mast YA2/47	AD954 – AD672 AD954 – AD674 AD954 – AD786 AD954 – AD788 AF326 – AF462	AD665 – AD691 AD665 – AF319 AD667 – AD691 AD667 – AF319 AD669 – AD691 AD669 – AF319 AD671 – AD691 AD671 – AF319	Network Rail section Dual – voltage trains may operate through this isolation on DC traction power
715E	Platform 3 Ashford station	Switch 715/6 at catenary mast YA2/47 Switch 715/9 at catenary mast YA1/48	AD954 – AD672 AD954 – AD674 AD954 – AD786 AD956 – AD672	AD667 – AD693 AD667 – AD695 AD669 – AD693 AD669 – AD695 AD947 – AD671 AD949 – AD671	Network Rail section Dual – voltage trains may operate through this isolation on DC traction power

Appendix – Electrical sections – Signalling Protection arrangements

Electrical sections	LINE	LIMITS	ROUTES PROHIBITED		REMARKS
			Up direction	Down direction	
715F	Up West chord	Switch 715/9 at catenary mast YA1/48 Switch 715/10 at catenary mast YA1/20	AD672 – AD854 AD672 – AD856 AD672 – AF312 AD672 – AF318 AD674 – AD660 AD674 – AD662X AD674 – AD854 AD674 – AD856 AD674 – AF312 AD676 – AD660 AD676 – AD662X AD676 – AD852 AD676 – AD854 AD676 – AD856 AD676 – AF312 AD678 – AD660 AD678 – AD662X AD678 – AD852 AD678 – AD854 AD678 – AD856 AD678 – AF312	AD947 – AD671 AF303 – AF453	Network Rail section Dual – voltage trains may operate through this isolation on DC traction power
715G	Up West chord	Switch 715/10 at catenary mast YA1/20 Switch 715/11 at catenary mast YA1/07	AD672 – AF312 AD674 – AF312 AD676 – AF312 AD678 – AF312	AF303 – AF453	CTRL section (switches operated by Paddock Wood ECR)
715H	Up West chord	Switch 715/12 at catenary mast YA1/06 Switch 715/13 at catenary mast Y88/18	AD672 – AF312 AD674 – AF312 AD676 – AF312 AD678 – AF312	AF303 – AF453	CTRL section (switches operated by Paddock Wood ECR)

Appendix – Electrical sections – Signalling Protection arrangements

Electrical sections	LINE	LIMITS	ROUTES PROHIBITED		REMARKS
			Up direction	Down direction	
715J	Up West chord	Switch 715/14 at catenary mast Y88/16 Switch 713C/715J at catenary mast Y88/15	AD672 – AF312 AD674 – AF312 AD676 – AF312 AD678 – AF312	AF303 – AF453	CTRL section
715 complete	Up East chord Platform 3 Ashford station Up West chord	Switch 713A/715A at catenary mast Y92/26 Switch 713C/715J at catenary mast Y88/15	AD674 – AD854 AD674 – AD856 AD674 – AF312 AD676 – AD660 AD676 – AD662X AD676 – AD852 AD676 – AD854 AD676 – AD856 AD676 – AF312 AD678 – AD660 AD678 – AD662X AD678 – AD852 AD678 – AD854 AD678 – AD856 AD678 – AF312 AF326 – AF462	AD665 – AF319 AD667 – AF319 AD669 – AF319 AD947 – AD671 AF303 – AF453	Dual – voltage trains may operate through this isolation on DC traction power
716A	Down West chord	Switch 714E/716A at catenary mast Y88/15 Switch 716/1 at catenary mast Y88/16	AD672 – AF318 AD674 – AF318 AD676 – AF318 AD678 – AF318	AF301 – AF451	CTRL section
716B	Down West chord	Switch 716/2 at catenary mast Y88/18 Switch 716/3 at catenary mast YA1/06	AD672 – AF318 AD674 – AF318 AD676 – AF318 AD678 – AF318	AF301 – AF451	CTRL section (switches operated by Paddock Wood ECR)
716C	Down West chord	Switch 716/4 at catenary mast YA1/07 Switch 716/5 at catenary mast YA1/20	AD672 – AF318 AD674 – AF318 AD676 – AF318 AD678 – AF318	AF301 – AF451	CTRL section (switches operated by Paddock Wood ECR)

Appendix – Electrical sections – Signalling Protection arrangements

Electrical sections	LINE	LIMITS	ROUTES PROHIBITED		REMARKS
			Up direction	Down direction	
716D	Down West chord	Switch 716/5 at catenary mast YA1/20 Switch 716/8 at catenary mast YA1/47	AD672 – AF318 AD674 – AF318 AD676 – AF318 AD678 – AF318	AD947 – AD669 AD947 – AD783 AD949 – AD669 AD949 – AD783 AF301 – AF451	Network Rail section
716E	Platform 4 Ashford station	Switch 716/6 at catenary mast YA1/36 Switch 716/9 at catenary mast YA2/35	AD676 – AD660 AD676 – AD662X AD676 – AD852 AD676 – AD854 AD676 – AD856 AD676 – AF312 AD678 – AD660 AD678 – AD662X AD678 – AD852 AD678 – AD854 AD678 – AD856 AD678 – AF312 AD954 – AD674 AD956 – AD674	AD947 – AD669 AD947 – AD783 (via 1260 points) AD949 – AD669 AD949 – AD783	Network Rail section Dual – voltage trains may operate through this isolation on DC traction power

Appendix – Electrical sections – Signalling Protection arrangements

Electrical sections	LINE	LIMITS	ROUTES PROHIBITED		REMARKS
			Up direction	Down direction	
716F	Down East chord	Switch 716/10 at catenary mast YA2/30 Switch 716/12 at catenary mast YA2/55	AD954 – AD674 AD954 – AD786 AD954 – AD788 AD956 – AD672 AD956 – AD674 AD956 – AD786 AD956 – AD788 AF328 – AF464	AD665 – AD691 AD665 – AF313 AD665 – AF319 AD667 – AD691 AD667 – AD693 AD667 – AD695 AD667 – AD873 AD667 – AD878 AD667 – AF313 AD667 – AF319 AD669 – AD693 AD669 – AD695 AD669 – AF313 AD669 – AF319 AD671 – AF313	Network Rail section Dual – voltage trains may operate through this isolation on DC traction power
716G	Platform 5 Ashford station	Switch 716/7 at catenary mast YA1/47 Switch 716/10 at catenary mast YA2/30	AD954 – AD786 AD956 – AD786	AD947 – AD783 AD949 – AD783	Network Rail section Dual – voltage trains may operate through this isolation on DC traction power
716H	Platform 6 Ashford station	Switch 716/8 at catenary mast YA1/47 Switch 716/11 at catenary mast YA2/39	AD954 – AD788 AD956 – AD788	AD783 – AD665 AD947 – AD781	Network Rail section Dual – voltage trains may operate through this isolation on DC traction power
716J	Down East chord	Switch 716/12 at catenary mast YA2/55 Switch 716/13 at catenary mast Y91/12	AD956 – AD672 AD956 – AD674 AD956 – AD786 AD956 – AD788 AF328 – AF464	AD665 – AF313 AD667 – AF313 AD669 – AF313 AD671 – AF313	CTRL section (switches operated by Paddock Wood ECR)

Appendix – Electrical sections – Signalling Protection arrangements

Electrical sections	LINE	LIMITS	ROUTES PROHIBITED		REMARKS
			Up direction	Down direction	
716K	Down East chord	Switch 716/14 at catenary mast Y91/13 Switch 716/15 at catenary mast Y92/19	AF328 – AF464	AD665 – AF313 AD667 – AF313 AD669 – AF313 AD671 – AF313	CTRL section (switches operated by Paddock Wood ECR)
716L	Down East chord	Switch 716/16 at catenary mast Y92/24 Switch 714G/716L at catenary mast Y92/26	AF328 – AF464	AD665 – AF313 AD667 – AF313 AD669 – AF313 AD671 – AF313	CTRL section
716 complete	Down West chord Platforms 4,5 & 6 Ashford station Down East chord	Switch 714E/716A at catenary mast Y88/15 Switch 714G/716L at catenary mast Y92/26	AD672 – AF318 AD954 – AD674 AD954 – AD786 AD954 – AD788 AF328 – AF464	AD671 – AF313 AD949 – AD669 AD949 – AD783 AF301 – AF451	Dual – voltage trains may operate through this isolation on DC traction power
715 + 716 complete	Up and Down West chords Platforms 3,4,5 & 6 Ashford station Up and Down East chords	Switch 713C/715J at catenary mast Y88/15 Switch 714E/716A at catenary mast Y88/15 Switch 713A/715A at catenary mast Y92/26 Switch 714G/716L at catenary mast Y92/26	AF326 – AF462 AF328 – AF464	AF301 – AF451 AF303 – AF453	Dual – voltage trains may operate through this isolation on DC traction power

Appendix – Electrical sections – Signalling Protection arrangements

Electrical sections	LINE	LIMITS	ROUTES PROHIBITED		REMARKS
			Up direction	Down direction	
Dollands Moor Freight Chord					
600B	Sidings 3 to 6 at west end of Dollands Moor Yard	Neutral section at kilometrage 106.955	AD808 – AD756 AD808 – AD758 AD808 – AF342 AD808 to 'R' Neck AD808 to West Siding AD814 – AD756 AD814 – AD758 AD814 – AF342 AD814 to 'R' Neck AD814 to West Siding AD816 – AD756 AD816 – AD758 AD816 – AF342 AD816 to 'R' Neck AD816 to West Siding AD818 – AD756 AD818 – AD758 AD818 – AF342 AD818 to 'R' Neck AD818 to West Siding	AD759 – AD795 AD759 – AD797 AD759 – AD799 AD759 – AD803 AD759 – 2163 AD759 – 2165 2153 – AD797 2153 – AD799 2153 – AD803 2153 – 2163 2153 – 2165 2157 – AD797 2157 – AD799 2157 – AD803 2157 – 2163 2157 – 2165	Network Rail section Dual – voltage trains may operate through this isolation on DC traction power
718E	Freight chord	Switch 718/6 Switch 718/9	AD808 – AF342 AD814 – AF342 AD816 – AF342 AD818 – AF342 AF342 – AF334 AF342 – AF336	AF335 – AF471 AF337 – AF471 AF593 – AF471	CTRL section
718F	Freight chord	Switch 718/11 Neutral section at kilometrage 106.955	AD808 – AF342 AD814 – AF342 AD816 – AF342 AD818 – AF342	AF335 – AF471 AF337 – AF471 AF593 – AF471	CTRL section (switches operated by Paddock Wood ECR)

SECTION E TRAIN WORKING

E1 NORMAL OPERATION

E1.1 Provision of cab signalling equipment

E1.1.1 All traction units proceeding beyond signals AF185, AF312, AF313, AF318, AF319 or marker AF342 must be fitted with cab signalling equipment in the driving cab in which the Driver is situated, unless specially authorised in a published notice or specially authorised by the AFC.

E1.2 Headlights and Tail Lamps

E1.2.1 When entering CTRL controlled infrastructure three white lights (one of which must be a headlight) must normally be displayed at the front of the train.

E1.2.2 When entering CTRL controlled infrastructure two tail lamps must normally be displayed on the rear of the train.

E1.3 Regulation of Trains

E1.3.1 The VASC/IECC Signaller must inform the AFC Signaller as soon as it is known that there is a delay to a train coming from London, if the delay is in excess of 3 minutes.

E1.4 Shunting on the Dollands Moor Freight chord

E1.4.1 Shunt movements from Dollands Moor Yard towards marker AF342 must stop with the whole movement on the CTRL side of signal AD759 before the route is set and authorisation given for its return to Dollands Moor Yard.

E2 DEGRADED OPERATION

E2.1 Failed trains

E2.1.1 If a train fails within the interface between Network Rail and CTRL signalling control, or is in any way unable to continue, the Driver will contact either the VASC/IECC or AFC depending on where the train has stopped. The Signaller who is initially advised by the Driver becomes the 'lead' Signaller and will be responsible for initiating the course of action required to assist the failed train.

E2.2 Wrong direction movements on the Waterloo connection

E2.2.1 From CTRL to Network Rail on the Down Line

E2.2.1.1 If it is necessary to make a movement in the wrong direction from the Down CTRL Line to the Chatham Down Main Line due to obstruction of the line or train failure etc. the following procedure must be applied:-

- The VASC Signaller and AFC Signaller must come to a clear understanding as to what is to take place and how far the movement is to proceed.
- Both Signallers must ensure that no conflicting route is set or is about to be set and that the route is clear and set throughout to the destination of the intended movement
- The AFC signaller will advise the Driver to stop opposite Up CTRL Line signal VS 296 and to contact the VASC Signaller for instructions.
- When the Driver has stopped opposite signal VS 296 and made contact with the VASC Signaller, the Signaller to dictate Form 009 from the *Livret Formulaires* Procedures authorising the remainder of the movement.

E2.2.2 From Network Rail to CTRL on the Up Line

E2.2.2.1 If it is necessary to make a movement in the wrong direction from Swanley to the Up CTRL Line to allow an assisting train to proceed in order to assist a failed train from the front, the following procedure must be applied:

- The VASC Signaller and AFC Signaller must come to a clear understanding as to what is to take place and how far the movement is to proceed. The VASC Signaller must ascertain whether the assisting train is fitted with a working cab signalling system and advise the AFC Signaller.
- Both Signallers must ensure that no conflicting route is set or is about to be set and that the route is clear and set throughout to the destination of the intended movement.
- The VASC Signaller must ensure that individual point switches have been operated to the required position and reminder appliances used before allowing the movement to commence.
- The VASC Signaller must instruct the Driver, using Form 009 from the *Livret Formulaires* Procedures, to stop opposite signal AF185, and to contact the AFC signaller for instructions.
- When the driver has stopped opposite signal AF 185 and made contact with the AFC signaller, the AFC Signaller will authorise the remainder of the movement.

SECTION F MAINTENANCE WORKS

F1 PROTECTION OF ENGINEERING WORKS

F1.1 Scope of these procedures

These procedures apply to the taking of Protected Areas by CTRL personnel and possessions by Network Rail personnel to carry out maintenance work at the following interfaces between CTRL and Network Rail:

- Waterloo connection (CTRL side of 911 and 912 points at Fawkham Jn.)
- Ashford West and East chords (CTRL side of 1247 and 1249 points at Ashford West Jn. and 1298 and 1299 points at Ashford East Jn.)*
- Dollands Moor Freight chord (CTRL side of 1350 points at Dollands Moor Yard)

* Also includes the procedure required when the CTRL maintenance contractors have to undertake maintenance work which requires the Network Rail controlled lines on the Ashford station side of these locations to be under possession (see point 6).

F1.2 Principles

F1.2.1 General

F1.2.1.1 CTRL or Network Rail personnel (including maintenance contractors) to apply the rules and procedures of the organisation that they are working for.

F1.2.1.2 CTRL or Network Rail personnel to request Protected Areas/possessions from the control centre defined in the rules and procedures of the organisation that they are working for.

F1.2.1.3 CTRL Protected Areas and Network Rail possessions must not overlap.

F1.2.2 Safety Critical Messages

F1.2.2.1 Safety Critical Messages must be used for communications between Signallers when arranging the signal protection arrangements for Protected Areas/possessions.

F1.2.2.2 A Safety Critical Message must be read back by the recipient to the sender to ensure it is correct and both sender and recipient must record the details of message in their respective log books. The originator of the Safety Critical Message must issue a message number in accordance with local instructions when he/she is sure that the recipient has understood the message to validate it.

F1.2.2.3 Safety Critical Messages to be in the format shown in the following examples:

AFC Signaller to VASC Signaller

"Block the Down Waterloo connection at VS269 signal because of a CTRL possession.

My message no. 123456"

VASC Signaller to AFC Signaller

"Reference your message no. 123456, Down Waterloo connection blocked at VS269 signal for a CTRL possession.

My message no. 987654"

AFC Signaller to VASC Signaller

"Reference your message no. 987654, the block of the Down Waterloo connection at VS269 signal for a CTRL possession may be removed.

My message no.123457"

F1.2.3 Principles applicable to CTRL Protected Areas

F1.2.3.1 The CTRL EZPs that are next to the VASC/IECC signal controlled area and their protecting markers and signals are:

Line	EZP	Protecting signal at Network Rail end	Protecting marker at CTRL end
Down Waterloo connection	YD09	VASC signal VS269	
Up Waterloo connection	YU04		AFC marker AF206
Down Ashford West chord	FD13	IECC signals AD672/AD674/AD676/AD678	AFC marker AF301
Up Ashford West chord	FU14	IECC signals AD672/AD674/AD676/AD678	AFC marker AF303
Down Ashford East chord	FD19	IECC signals AD665/AD667/AD669/AD671	AFC marker AF328
Up Ashford East chord	FU18	IECC signals AD665/AD667/AD669/AD671	AFC marker AF326
Dollands Moor Freight chord	WU30	IECC signals AD808/AD814/AD816/AD818	AFC markers AF335/AF337

F1.2.3.2 The protection of these EZPs holds VASC/IECC controlled signals at danger. The AFC Signaller must request permission of the VASC/IECC Signaller prior to operating the controls for these EZPs. When in a position to agree to the protection of these EZPs, the VASC/IECC Signaller must ensure that no trains are signalled from the signals concerned towards the AFC signal control area, apply reminder appliances and give permission to the AFC Signaller.

F1.2.3.3 CTRL personal must not work on the Network Rail side of these EZPs without the EZP concerned first being operated.

F1.2.3.4 CTRL personal must put down detonator protection on the Network Rail side of the worksite.

F1.2.3.5 Before detonator protection is put down, the AFC Signaller to arrange signalling protection with the VASC/IECC signaller.

The following principles applies when there are works trains/OTM/OTP operating in the worksite

F1.2.3.6 If the worksite extends beyond the Network Rail side of the following locations, a Portable Stop Board must be placed at that location:

Down Waterloo connection	VS292
Up Waterloo connection	opposite VS292
Down Ashford West chord	AD947
Up Ashford West chord	AD949
Down Ashford East chord	AD954
Up Ashford East chord	AD956
Dollands Moor Freight chord	AD759

F1.2.3.7 If a works train/OTM/OTP requires to move to the Network Rail side of the Portable Stop Board, the VASC/IECC Signaller must first put in place additional signalling protection arrangements on the Network Rail side of the detonator protection to ensure that a sufficient distance (overlap) is kept clear of train movements. This additional signalling protection can be removed once it is confirmed that the works train/OTM/OTP has stopped and no further movement towards the detonator protection will take place.

F1.2.4 Principles applicable to Network Rail possessions

F1.2.4.1 When Network Rail personnel require to work in the interface areas, the Railway Safety Rule Book (Railway Group Standard GE/RT8000) to apply with the additional requirements shown in these procedures.

F1.2.4.2 The detonator protection for a CTRL Protected Area and the detonator protection for a Network Rail possession must not overlap. If a CTRL Protected Area is adjacent to a Network Rail possession, each must have its own detonator protection put “back-to-back”.

F1.2.4.3 Work being carried out under the protection arrangements shown in the Network Rail Rule Book, Section T2 must be wholly contained within the VASC/IECC signalled control area, with the following additional requirement:

Waterloo connection - If work is to take place within 200 metres in advance of VS296 signal, the VASC Signaller must request the AFC Signaller to apply protection. The AFC Signaller will advise the VASC Signaller when protection has been applied.

Ashford chords - If work is to take place within 200 metres in advance of AD947, AD949, AD954 or AD956 signals, the IECC Signaller must request the AFC Signaller to apply protection. The AFC Signaller will advise the IECC Signaller when protection has been applied.

Dollands Moor Freight chord- If work is to take place within 200 metres in advance of AD759 signal, the IECC Signaller must request the AFC Signaller to apply protection. The AFC Signaller will advise the IECC Signaller when protection has been applied.

F1.3 Planning and publication

F1.3.1 CTRL and Network Rail must advise each other of Protected Areas/possessions that are planned for the interface areas. If a CTRL Protected Area and Network Rail possession are adjacent, the location where each organisation's detonator protection is to be put down is to be identified.

F1.3.2 There is no requirement for the details of CTRL Protected Areas to be published in the Weekly Operating Notice.

F1.4 Method of working for taking Protected Areas/possessions

F1.4.1 CTRL Protected Area

F1.4.1.1 AFC Signaller requests VASC/IECC Signaller to block the line for a CTRL possession.

Safety Critical Message)

F1.4.1.2 VASC/IECC Signaller

➤ places/maintains the protecting signal(s) at danger and applies reminder appliances.

➤ confirms to AFC Signaller that the line is blocked for a CTRL possession

(Safety Critical Message)

F1.4.2 Works trains/OTM/OTP working within a CTRL Protected Area

F1.4.2.1 AFC Signaller requests permission from VASC/IECC Signaller for works train/OTM/OTP to move to the Network Rail side of the Portable Stop Board.

F1.4.2.2 VASC/IECC Signaller

- puts in place additional signalling protection arrangements on the Network Rail side of the detonator protection to ensure that a sufficient distance (overlap) is kept clear of train movements.
- tells AFC Signaller that the works train/OTM/OTP can move to the Network Rail side of the Portable Stop Board.

F1.4.2.3 AFC Signaller tells VASC/IECC Signaller when the works train/OTM/OTP has stopped and will make no further movement towards the detonator protection.

F1.4.2.4 VASC/IECC Signaller removes additional signalling protection arrangements.

F1.4.3 Movements of works trains/OTM from/to the Network Rail signalled controlled area

F1.4.3.1 Movements into the Protected Area

F1.4.3.1.1 When the works train/OTM arrives at the VASC/IECC protecting signal, VASC/IECC Signaller requests permission of AFC Signaller for the train to proceed.

F1.4.3.1.2 AFC Signaller tells VASC/IECC Signaller that permission is given.

F1.4.3.1.3 VASC/IECC Signaller

- sets the route
- authorises driver of works train/OTM to pass the protecting signal at danger
- tells him/her to proceed cautiously to the detonator protection.

F1.4.3.1.4 AFC Signaller tells VASC/IECC Signaller that the works train/OTM has passed clear of the detonator protection

F1.4.3.2 Movements from the Protected Area

F1.4.3.2.1 AFC Signaller requests permission from VASC/IECC Signaller for the works train/OTM to leave the possession.

F1.4.3.2.2 When VASC/IECC Signaller gives permission, AFC Signaller tells RPOS to authorise the works train/OTM to proceed cautiously to the first VASC/IECC controlled lineside signal.

F1.4.4 Network Rail possession

F1.4.4.1 PICOP confirms with VASC/IECC signaller which signals will be used to protect the Network Rail possession.

F1.4.4.2 VASC/IECC Signaller

- applies signal protection.
- asks AFC Signaller to provide protection for a Network Rail possession

(Safety Critical Message)

F1.4.4.3 AFC Signaller

- applies the appropriate EZP(s) as shown in point F1.2.3.1
- tells VASC/IECC Signaller that protection is provided.

(Safety Critical Message)

F1.4.4.4 VASC/IECC signaller tells PICOP that the Network Rail possession is protected by signals.

F1.4.4.5 PICOP

- arranges for detonator protection to be put down at the limits of the Network Rail possession
- tells VASC/IECC signaller that detonator protection has been put down.

F1.4.4.6 VASC/IECC signaller grants the Network Rail possession to the PICOP.

F1.5 Method of working for giving up Protected Areas/possessions

F1.5.1 CTRL Protected Area

F1.5.1.1 AFC Signaller tells VASC/IECC Signaller that the block for the CTRL possession can be removed.

(Safety Critical Message)

F1.5.1.2 VASC/IECC Signaller removes the signal protection.

F1.5.2 Network Rail possession

F1.5.2.1 PICOP gives up the possession to VASC/IECC Signaller

F1.5.2.2 VASC/IECC Signaller tells AFC Signaller that the protection for a Network Rail possession can be removed.

(Safety Critical Message)

F1.5.2.3 AFC Signaller removes the EZP(s) protection.

F1.5.2.4 VASC/IECC Signaller removes the signal protection.

F1.6 Specific procedure for taking a joint CTRL Protected Area /Network Rail possession of an Ashford chord and the station area

Note: This point applies when CTRL personnel have to undertake maintenance work to the Network Rail OHLE on the Ashford station side of 1298 and 1299 points at Ashford East Jn. and 1247 and 1249 points at Ashford West Jn. using OTP (road/rail vehicles) that are on-tracked on CTRL infrastructure

F1.6.1 Principles

F1.6.1.1 Separate CTRL Protected Area/Network Rail possession and worksites to be planned, with the following common limits where they meet:

West chord	
Down line	Signal AD947
Up line	Signal AD949
East chord	
Down line	Signal AD954
Up line	Signal AD956

F1.6.1.2 The possession must be published in the Weekly Operation Notice specifying that it forms part of a joint CTRL/Network Rail Protected Area/possession and identifying the location where they meet as one of the limits for the possession.

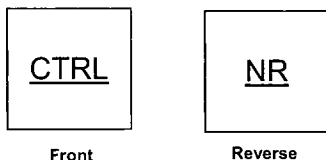
F1.6.1.3 The Network Rail possession and worksite to be arranged in accordance with Module T3 of the Railway Safety Rule Book (Railway Group Standard GE/RT8000) with the additional requirements shown in these procedure.

F1.6.1.4 The PICOP must have received confirmation from the RPOS that the CTRL Protected Area is place before arranging the Network Rail possession.

- F1.6.1.5** The PICOP must arrange for the D.C. conductor rail in the Network Rail worksite to be isolated in accordance with the instructions contained in the D.C. Electrified Lines Instructions (GO/RT3091).
- F1.6.1.6** If an isolation of the OHLE is required, this must cover the limits of both the Network Rail and CTRL worksites. A CTRL NPOS to be appointed to arrange the isolation in accordance with the instructions shown in Section D.
- F1.6.1.7** Detonator protection not to be provided at the meeting point of the CTRL Protected Area/Network Rail possession.
- F1.6.1.8** Worksite marker boards not to be provided at the meeting point of the worksites, but must be provided at the other extremities of the worksites.
- F1.6.1.9** A Demarcation Board (see next page) to be positioned at the meeting point of the CTRL Protected Area/Network Rail possession and worksites.
- F1.6.1.10** Both the CTRL Protected Area/worksite and the Network Rail possession/worksite must be in place before the OTP is on-tracked within the CTRL worksite.
- F1.6.1.11** The Engineering Supervisor (ES) is responsible for OTP movements into and within the worksite in the Network Rail possession.
- F1.6.1.12** The TS is responsible for OTP movements into and within the worksite in the CTRL possession.
- F1.6.1.13** The OTP operator must not pass the Demarcation Board without the authority of the Supervisor responsible for the worksite that the OTP is about to enter.
- F1.6.1.14** CTRL personnel must not pass the Demarcation Board without the authority of the ES responsible for the worksite in the Network Rail possession. Similarly Network Rail personnel must not pass the Demarcation Board without the authority of the TS responsible for the worksite in the CTRL Protected Area. This equally applies to personnel who pass between worksites indirectly via road and to personnel who pass directly along the track.
- F1.6.1.15** The RPOS must have received confirmation from the PICOP that the Network Rail possession has been given up before giving up the CTRL Protected Area.

F1.6.2 Demarcation Board

- F1.6.2.1** A white board, with black letters CTRL on one side and black letters NR on the reverse.



- F1.6.2.2** This board is to be positioned at the meeting point of the CTRL Protected Area/Network Rail possession and worksites, with 'CTRL' facing the Network Rail possession and 'NR' facing the CTRL Protected Area. Any personnel or OTP authorised by the ES/TS to pass this board must apply the rules and regulations of the organisation whose worksite they are entering and indicated by the Demarcation Board.

F1.6.3 Publishing the joint CTRL Protected Area/Network Rail possession

F1.6.3.1 The Network Rail Planning organisation publishes:

- the Network Rail possession and associated DC isolation in the Weekly Operating Notice with the limits on the chord lines being signals AD947/AD949/AD954/AD956, as appropriate. To include a note that it is in conjunction with a CTRL Protected Area.
- details of any associated AC isolation by individual electrical section numbers. Note: If the whole the OHLE through Ashford stations and the chord lines (sections 715 + 716) is to be isolated, a statement to be included to this effect.

F1.6.4 Method of working

F1.6.4.1 Arranging the joint CTRL Protected Area/Network Rail possession and worksites

F1.6.4.1.1 CTRL end

RPOS

- makes contact with PICOP
- confirms the arrangements for the joint CTRL Protected Area/Network Rail possession and that everything is in place for it to go ahead.
- tells AFC Signaller that a joint CTRL Protected Area/Network Rail possession is required of the line(s) concerned on the Ashford west and/or east chords

AFC Signaller

- tells IECC Signaller that a joint CTRL /Network Rail possession is required of the line(s) concerned on the Ashford west and/or east chords
- requests IECC Signaller to block the line for the CTRL possession

(Safety Critical Message)

IECC Signaller

- places/maintains the protecting signal(s) at danger and applies reminder appliances
- confirms to AFC Signaller that the line is blocked for a CTRL possession

(Safety Critical Message)

AFC signaller grants the Protected Area request to RPOS.

RPOS

- tells PICOP that the CTRL Protected Area is in place
- receives confirmation from PICOP that the Network Rail possession is in place
- gives authority for TS to create the worksite and instructs him/her to place a Demarcation Board at the limit of the worksite at the Network Rail end.

TS

- creates worksite
- places a Demarcation Board at the meeting point with the Network Rail possession. (Worksite marker board not required this end.)
- tells ES that the Demarcation Board is in place
- receive confirmation from ES that the Network Rail worksite is in place
- confirms the arrangements for passing the OTP between worksites
- authorises the on-tracking of the OTP within the CTRL worksite.

F1.6.4.1.2 Network Rail end

PICOP

- makes contact with RPOS
- confirms the arrangements for the joint CTRL Protected Area/Network Rail possession and that everything is in place for it to go ahead
- receives confirmation from PICOP that the CTRL Protected Area is in place
- tells IECC Signaller that a joint CTRL Protected Area/Network Rail possession is required of the line(s) concerned and that the CTRL Protected Area is in place
- confirms with the VASC/IECC signaller which signals will be used to protect the Network Rail possession and in which position points are required to be set for the movement of the OTP.

IECC Signaller

- applies signal protection
- tells PICOP that the Network Rail possession is protected by signals.

PICOP

- arranges for detonator protection to be put down at the limits of the Network Rail possession, but not at the meeting point with the CTRL possession.
- tells IECC signaller that detonator protection has been put down.

IECC signaller grants the Network Rail possession to the PICOP.

PICOP

- tells RPOS that the Network Rail possession is in place
- tells ES to erect worksite marker boards
- arranges for the isolation of the D.C. conductor rail.

ES

- erects worksite marker boards (not at the meeting point with the CTRL Protected Area).
- receives confirmation from TS that the Demarcation Board is in place
- tells TS that the Network Rail worksite is in place
- confirms the arrangements for passing the OTP between worksites.

F1.6.4.2 Movement of the OTP between worksites

F1.6.4.2.1 When the OTP is required to move from the CTRL worksite to the Network Rail worksite or vice-versa, the TS and ES must meet at the Demarcation Board at the meeting point of the CTRL and Network Rail worksites.

F1.6.4.2.2 Supervisor (responsible for the worksite that the OTP is leaving)

- gives details of the OTP
- gives details of its required movements
- requests permission of Supervisor (responsible for the worksite that the OTP requires to enter) for the OTP to enter.

F1.6.4.2.3 When safe to do so, Supervisor (responsible for the worksite that the OTP requires to enter)

- removes the Demarcation Board
- authorises OTP operator to enter the worksite, giving any necessary instructions.

F1.6.4.2.4 OTP operator proceeds cautiously into the other worksite.

F1.6.4.2.5 When the OTP has entered the worksite Supervisor (responsible for the worksite that the OTP requires to enter) replaces the Demarcation Board.

F1.6.4.3 Removing the worksites and giving up the joint CTRL Protected Area/Network Rail possession

F1.6.4.3.1 CTRL end

After all works has finished and OTP removed, etc:

TS

- removes worksite marker boards and Demarcation Board
- tells RPOS that the worksite has been given up

RPOS

- tells PICOP that the Network Rail possession can be given up.
- receive confirmation from PICOP that the Network Rail possession has been given up
- tell AFC Signaller that the Protected Area has been given up.

AFC Signaller

- receive confirmation from IECC Signaller that the Network Rail possession has been given up
- tells IECC Signaller that the block for the CTRL possession can be removed.

(Safety Critical Message)

F1.6.4.3.2 Network Rail end

After all works has finished and the OTP have returned to the CTRL worksite, etc:

ES tells PICOP that all work has finished and request permission to remove worksite marker boards.

PICOP

- receive confirmation from RPOS that the Network Rail possession can be given up
- tells ES to remove worksite marker boards.

ES

- removes worksite marker boards
- tells PICOP that the worksite marker boards have been removed and that the line is clear and safe for trains to pass.

PICOP

- gives up the possession to IECC Signaller
- confirm to RPOS that the Network Rail possession has been given up.

IECC signaller

- tells AFC Signaller that the Network Rail possession has been given up
- receives advice from AFC Signaller that the block for the CTRL possession can be removed
(Safety Critical Message)
- removes the signal protection.

F1.7 Specific procedure for on/off-tracking OTP (road/rail vehicles) at Dollands Moor Freight chord level crossing

Note: This point applies when CTRL personnel require to on/off-track OTP (road/rail vehicles) at Dollands Moor Freight chord level crossing, which is located between AD759 signal and 1350 points at Dollands Moor Yard.

F1.7.1 Principles

F1.7.1.1 The AHB Level Crossing to be put on local control during the time that the CTRL Protected Area is in place. The operator may only be in attendance during the times the OTP is being on/off tracked or any movement is required to be made over it.

F1.7.1.2 All the time that the OTP is Dollands Moor Yard side of signal AD759, the IECC Signaller must first put in place additional signalling protection arrangements on the Network Rail side of the detonator protection to ensure that a sufficient distance (overlap) is kept clear of train movements. This includes when it is being on/off tracked.

F1.7.2 Procedure to on-track OTP

F1.7.2.1 AFC Signaller requests IECC Signaller to block the line for a CTRL possession and that additional signalling protection arrangements are put in place to allow OTP to be on-tracked at the level crossing.

(Safety Critical Message)

F1.7.2.2 IECC Signaller

- places/maintains the protecting signal(s) at danger and applies reminder appliances.
- puts in place additional signalling protection arrangements on the Network Rail side of the detonator protection to ensure that a sufficient distance (overlap) is kept clear of train movements.
- confirms to AFC Signaller that the line is blocked for a CTRL possession

(Safety Critical Message)

F1.7.2.3 AFC Signaller tells RPOS that it is safe to place detonator protection.

F1.7.2.4 RPOS puts down detonator protection at the defined location.

F1.7.2.5 RPOS gives authority for TS to create the worksite

F1.7.2.6 TS

- creates worksite, placing the worksite marker board at the Dollands Moor Yard end between the level crossing and the detonator protection
- authorises the on-tracking of the OTP within the worksite.

F1.7.2.7 OTP moves to the CTRL side of signal AD759.

F1.7.2.8 TS

- arranges for a Portable Stop Board to be placed at signal AD759
- tells AFC Signaller that the OTP is the CTRL side of signal AD759.

F1.7.2.9 AFC tells IECC Signaller that the OTP is the CTRL side of signal AD759.

F1.7.2.10 IECC Signaller removes additional signalling protection arrangements.

F1.7.3 Procedure to off-track OTP

F1.7.3.1 AFC Signaller requests permission from IECC Signaller for the OTP to move to the Network Rail side of the Portable Stop Board.

F1.7.3.2 IECC Signaller

- puts in place additional signalling protection arrangements on the Network Rail side of the detonator protection to ensure that a sufficient distance (overlap) is kept clear of train movements.
- tells AFC Signaller that the OTP can move to the Network Rail side of the Portable Stop Board.

F1.7.3.3 AFC Signaller tells TS that the OTP can move to the Network Rail side of the Portable Stop Board.

F1.7.3.4 TS

- removes Portable Stop Board
- tells OTP operator to proceed.
- authorises off-tracking of OTP
- tells AFC Signaller when the OTP is off-tracked.

F1.7.3.5 AFC Signaller tells IECC Signaller is off-tracked and will make no further movement towards the detonator protection.

F1.7.3.6 IECC Signaller removes additional signalling protection arrangements.

F1.7.3.7 TS removes worksite

F1.7.3.8 RPOS removes detonator protection

F1.7.3.9 AFC Signaller tells IECC Signaller that the block for the CTRL possession can be removed.
(Safety Critical Message)

F1.7.3.10 IECC Signaller removes the signal protection.

F2 TEMPORARY SPEED RESTRICTIONS

F2.1 Principles

To cover the transition between the lineside and cab signalling systems, the principles shown below must be complied with:

- All temporary lineside warning boards and indicators erected in the VASC/IECC signalled areas to show the speeds in both mph and km/h.
The upper indicator to show the speed in mph with black letters on a yellow background
The lower indicator to show the speed in km/h with yellow letters on a black background
- Differential temporary speed restrictions are not permitted.
- Any lineside warning board erected in the VASC/IECC signalled areas to have an AWS magnet as shown in Section U(i) of the Network Rail Rule Book except where agreed with the Train Operating Companies.
- Any lineside warning board erected in the AFC signalled area to have a spot data device as shown in Module SR2 of the CTRL Rule Book
- When a temporary speed restriction has to be imposed in the interface between the VASC/IECC and AFC control areas, the person responsible for planning the restriction must consult with the maintenance contractor of the adjacent infrastructure controller regarding the provision of lineside warning boards and indicators and/or the operation of the switches within the lineside signalling room.
- Arrangements must be made for all temporary speed restrictions to be planned and published in accordance with the Network Rail and CTRL Rule Books. The necessary calculations required in Railway Group Standard GK/RT0038 must be carried out by a competent, licensed person approved by the infrastructure controllers and employed by either the maintenance contractor or project works contractor. Use should be made, where possible, of the facilities provided by the cab signalling system to avoid use of lineside warning boards and indicators within the cab signalled area.

F2.2 Application of temporary speed restrictions at specific locations

F2.2.1 Waterloo connection

F2.2.1.1 Down line

In the down direction, drivers are advised of temporary speed restrictions by means of lineside warning boards and indicators in accordance with Section U(i) of the Network Rail Rule Book upto and including signal AF185 and thence by the cab signalling system and, if necessary, lineside indicators in accordance with Modules SR1 and SR2 of the CTRL Rule Book.

Temporary speed restrictions that are required to cross the transition of the lineside to cab signalling systems, i.e. applies both sides of signal AF185, to comply with the table shown below:

Speed limit applied on the CTRL controlled infrastructure in km/h	Speed limit applied and displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure	
	mph	km/h
40 (by lineside indicators)	25	40
80 (by cab signalling display)	50	80
100 (by lineside indicators)	60	100

Temporary speed restrictions that commence Southfleet Jn side of signal AF185 to be advised in accordance with the table shown below:

Speed limit applied and displayed on the CTRL controlled infrastructure in km/h	Speed limit displayed by lineside warning boards on the Network Rail controlled infrastructure	
	mph	km/h
40 (by lineside indicators)	25	40
100 (by lineside indicators)	60	100

Special case of temporary speed restriction of less than 40 km/h that applies both sides of signal AF185

If a temporary speed restriction of less than 40 km/h is imposed that extends beyond signal AF185 the lineside warning boards and indicators on the Network Rail controlled infrastructure are to display the following equivalent speeds in mph:

Temporary speed restriction in km/h	Speed limit displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure	
	mph	km/h
10	5	10
20	10	20
30	20	30

In addition, the AFC Signaller will:

- stop trains at signal AF185,
- advise the driver (using the International Forms procedure), indicating:
 - the location and length of the restriction,
 - the speed limit in force.

F2.2.1.2 Up line

In the up direction, drivers are advised of temporary speed restrictions by means of the cab signalling system and, if necessary, lineside warning boards and indicators in accordance with Modules SR1 and SR2 of the CTRL Rule Book as far as the **CAB** board and thence by temporary lineside warning boards and indicators in accordance with Section U(i) of the Network Rail Rule Book.

Temporary speed restrictions that are required to cross the transition of the lineside to cab signalling systems, i.e. applies both sides of the **CAB** board, to comply with the table shown below:

Speed limit applied and displayed on the CTRL controlled infrastructure in km/h	Speed limit applied and displayed on the Network Rail controlled infrastructure	
	mph	km/h
40 (by lineside warning boards & indicators)	25	40
80 (by cab signalling display)	50	80
100 (by lineside warning boards & indicators)	60	100

A lineside indicator to show the speed to be applied on the Network Rail controlled infrastructure to be placed at the **CAB** board in order that the driver has a visual reminder of the speed once the cab signalling system has disarmed.

Temporary speed restrictions that commence on the Fawkham Jn. side of the **CAB** board, to comply and be advised in accordance with the table below:

Speed required and displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure		Speed limit displayed on the CTRL controlled infrastructure in km/h
mph	km/h	
25	40	40 (by lineside warning boards)
50*	80*	80 (by cab signalling display)
60	100	100 (by lineside warning boards)

* A temporary lineside warning board or indicator (as appropriate) to be placed at the **CAB** board in order that the driver has a visual reminder of the speed to be applied once the cab signalling system has disarmed.

Special case of temporary speed restrictions of less than 25 mph (40 km/h)

If a speed restriction of less than 25 mph (40 km/h) is imposed that would require a lineside warning board to be positioned before the **CAB** board, the lineside warning boards and indicators on the Network Rail controlled infrastructure are to display the following equivalent speeds in mph and km/h:

Temporary speed restriction in km/h	Speed limit displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure	
	mph	km/h
10	5	10
20	10	20
30	20	30

A lineside warning board or indicator (as appropriate) to be placed at the **CAB** board
In addition the AFC Signaller must:

- stop trains at marker AF410,
- advise the driver (using the International Forms procedure), indicating:
 - the location and length of the restriction,
 - the speed limit in force.

F2.2.2 Ashford West chord

F2.2.2.1 Down direction

In the down direction, drivers are advised of temporary speed restrictions by means of the cab signalling system and, if necessary, lineside warning boards and indicators in accordance with Modules SR1 and SR2 of the CTRL Rule Book as far as the **CAB** board and thence by lineside warning boards and indicators in accordance with Section U(i) of the Network Rail Rule Book. Temporary speed restrictions that are required to cross the transition of the cab to lineside signalling systems, i.e. applies both sides of the **CAB** board, to comply with the table shown below:

Speed limit applied on the CTRL controlled infrastructure in km/h	Speed limit applied on the Network Rail controlled infrastructure	
	mph	km/h
40 (by lineside warning boards & indicators)	25	40
80 (by cab signalling display)	50	80

A lineside indicator to show the speed to be applied on the Network Rail controlled infrastructure to be placed at the **CAB** board in order that the driver has a visual reminder of the speed once the cab signalling system has disarmed.

Temporary speed restrictions that commence London side of the **CAB** board, to comply and be advised in accordance with the table below:

Speed required and displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure		Speed limit displayed on the CTRL controlled infrastructure in km/h
mph	km/h	
25	40	40 (by lineside warning boards)
50*	80*	80 (by cab signalling display)

* A lineside warning board or indicator (as appropriate) to be placed at the **CAB** board in order that the driver has a visual reminder of the speed to be applied once the cab signalling system has disarmed.

Special case of temporary speed restrictions of less than 25 mph (40 km/h)

If a temporary speed restriction of less than 25 mph (40 km/h) is imposed that would require a lineside warning board to be positioned before the **CAB** board, the lineside warning boards and indicators on the Network Rail controlled infrastructure are to display the following equivalent speeds in mph and km/h:

Temporary speed restriction in km/h	Speed limit displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure	
	mph	km/h
10	5	10
20	10	20
30	20	30

A lineside warning board or indicator (as appropriate) to be placed at the **CAB** board
In addition the AFC Signaller must:

- stop trains at markers AF453/AF455,
- advise the driver (using the International Forms procedure), indicating:
 - the location and length of the restriction,
 - the speed limit in force.

F2.2.2.2 Up direction

In the up direction, drivers are advised of temporary speed restrictions by means of lineside warning boards and indicators in accordance with Module SP of the Network Rail Rule Book upto and including signals AF312/AF318 and thence by the cab signalling system and, if necessary, lineside indicators in accordance with Modules SR1 and SR2 of the CTRL Rule Book.

Temporary speed restrictions that are required to cross the transition of the lineside to cab signalling systems, i.e. applies both sides of signals AF312/AF318, to comply with the table shown below:

Speed limit applied on the CTRL controlled infrastructure in km/h	Speed limit applied and displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure	
	mph	km/h
40 (by lineside indicators)	25	40
80 (by cab signalling display)	50	80

Temporary speed restrictions that commence London side of signals AF312/AF318 to be advised in accordance with the table shown below:

Speed limit applied on the CTRL controlled infrastructure in km/h	Speed limit displayed by lineside warning boards on the Network Rail controlled infrastructure	
	mph	km/h
40 (by lineside indicators)	25	40

Special case of temporary speed restriction of less than 40 km/h that applies both sides of signals AF312/AF318

If a temporary speed restriction of less than 40 km/h is imposed that extends beyond signals AF312/AF318 the lineside warning boards and indicators on the Network Rail controlled infrastructure are to display the following equivalent speeds in mph:

Temporary speed restriction in km/h	Speed limit displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure	
	mph	km/h
10	5	10
20	10	20
30	20	30

In addition, the AFC Signaller must:

- stop trains at signals AF312/AF318,
- advise the driver (using the International Forms procedure), indicating:
 - the location and length of the restriction,
 - the speed limit in force.

F2.2.3 Ashford East chord

F2.2.3.1 Down direction

In the down direction, drivers are advised of temporary speed restrictions by means of lineside warning boards and indicators in accordance with Module SP of the Network Rail Rule Book upto and including signals AF313/AF319 and thence by the cab signalling system and, if necessary, lineside indicators in accordance with Modules SR1 and SR2 of the CTRL Rule Book.

Temporary speed restrictions that are required to cross the transition of the lineside to cab signalling systems, i.e. applies both sides of signals AF313/AF319, to comply with the table shown below:

Speed limit applied on the CTRL controlled infrastructure in km/h	Speed limit applied and displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure	
	mph	km/h
40 (by lineside indicators)	25	40
80 (by cab signalling display)	50	80
100 (by lineside indicators)	60	100

Temporary speed restrictions that commence Channel Tunnel of signals AF313/AF319 to be advised in accordance with the table shown below:

Speed limit applied on the CTRL controlled infrastructure in km/h	Speed limit displayed by lineside warning boards on the Network Rail controlled infrastructure	
	mph	km/h
40 (by lineside indicators)	25	40
100 (by lineside indicators)	60	100

Special case of temporary speed restriction of less than 40 km/h that applies both sides of signals AF313/AF319

If a temporary speed restriction of less than 40 km/h is imposed that extends beyond signals AF313/AF319 the lineside warning boards and indicators on the Network Rail controlled infrastructure are to display the following equivalent speeds in mph:

Temporary speed restriction in km/h	Speed limit displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure	
	mph	km/h
10	5	10
20	10	20
30	20	30

In addition, the AFC Signaller must:

- stop trains at signals AF313/AF319,
- advise the driver (using the International Forms procedure), indicating:
 - the location and length of the restriction,
 - the speed limit in force.

F2.2.3.2 Up direction

In the up direction, drivers are advised of speed restrictions by means of the cab signalling system and, if necessary, temporary lineside warning boards and indicators in accordance with Modules SR1 and SR2 of the CTRL Rule Book as far as the **CAB** board and thence by lineside warning boards and indicators in accordance with Module SP of the Network Rail Rule Book.

Temporary speed restrictions that are required to cross the transition of the cab to lineside signalling systems, i.e. applies both sides of the **CAB** board, to comply with the table shown below:

Speed limit applied on the CTRL controlled infrastructure in km/h	Speed limit applied on the Network Rail controlled infrastructure	
	mph	km/h
40 (by lineside warning boards & indicators)	25	40
80 (by cab signalling display)	50	80
100 (by lineside warning boards & indicators)	60	100

A lineside indicator to show the speed to be applied on the Network Rail controlled infrastructure to be placed at the **CAB** board in order that the driver has a visual reminder of the speed once the cab signalling system has disarmed

Temporary speed restrictions that commence Ashford side of the **CAB** board, to comply and be advised in accordance with the table below:

Speed required and displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure		Speed limit displayed on the CTRL controlled infrastructure in km/h
mph	km/h	
25	40	40 (by lineside warning boards)
50*	80*	80 (by cab signalling display)
60	100	100 (by lineside warning boards)

* A lineside warning board or indicator (as appropriate) to be placed at the **CAB** board in order that the driver has a visual reminder of the speed to be applied once the cab signalling system has disarmed.

Special case of temporary speed restrictions of less than 25 mph (40 km/h)

If a temporary speed restriction of less than 25 mph (40 km/h) is imposed that would require a warning board to be positioned before the **CAB** board, the warning boards and indicators on the Network Rail controlled infrastructure are to display the following equivalent speeds in mph and km/h:

Temporary speed restriction in km/h	Speed limit displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure	
	mph	km/h
10	5	10
20	10	20
30	20	30

A lineside warning board or indicator (as appropriate) to be placed at the **CAB** board

In addition, the AFC Signaller must:

- stop trains at markers AF462/AF464,
- advise the driver (using the International Forms procedure), indicating:
 - the location and length of the restriction,
 - the speed limit in force.

F2.2.4 Dollands Moor Freight chord

F2.2.4.1 Down direction

In the down direction, drivers are advised of temporary speed restrictions by means of lineside warning boards and indicators in accordance with Module SR2 of the CTRL Rule Book as far as the **CAB** board and thence by lineside warning boards and indicators in accordance with Module SP of the Network Rail Rule Book.

Temporary speed restrictions that are required to cross the transition of the cab to lineside signalling systems, i.e. applies both sides of the **CAB** board, to comply with the table shown below:

Speed limit applied on the CTRL controlled infrastructure in km/h	Speed limit applied on the Network Rail controlled infrastructure	
	mph	km/h
40 (by lineside warning boards & indicators)	25	40

Special case of temporary speed restrictions of less than 20 mph (30 km/h)

If a temporary speed restriction of less than 25 mph (40 km/h) is imposed that would require a lineside warning board to be positioned before the **CAB** board, the lineside warning boards and indicators on the Network Rail controlled infrastructure are to display the following equivalent speeds in mph and km/h:

Temporary speed restriction in km/h	Speed limit displayed by lineside warning boards & indicators on the Network Rail controlled Infrastructure	
	mph	km/h
10	5	10
20	10	20

A lineside warning board or indicator (as appropriate) to be placed at the **CAB** board

In addition the AFC Signaller must:

- stop trains at marker AF471,
- advise the driver (using the International Forms procedure), indicating:
 - the location and length of the restriction,
 - the speed limit in force.

F2.2.4.2 Up direction

In the up direction, drivers are advised of temporary speed restrictions by means of lineside warning boards and indicators in accordance with Module SP of the Network Rail Rule Book upto marker AF342 and thence by the cab signalling system and, if necessary, lineside indicators in accordance with Modules SR1 and SR2 of the CTRL Rule Book.

Temporary speed restrictions that are required to cross the transition of the lineside to cab signalling systems, i.e. applies both sides of marker AF342, to comply with the table shown below:

Speed limit applied on the CTRL controlled infrastructure in km/h	Speed limit applied and displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure	
	mph	km/h
40 (by lineside indicators)	25	40
80 (by cab signalling display)	50	80

Temporary speed restrictions that commence Ashford side of marker AF342 to be advised in accordance with the table shown below:

Speed limit applied and displayed on the CTRL controlled infrastructure in km/h	Speed limit displayed by lineside warning boards & indicators on the Network Rail controlled infrastructure	
	mph	km/h
40 (by lineside indicators)	25	40

Special case of temporary speed restriction of less than 40 km/h that applies both sides of marker AF342

If a temporary speed restriction of less than 40 km/h is imposed that extends beyond marker AF342 the lineside warning boards and indicators on the Network Rail controlled infrastructure are to display the following equivalent speeds in mph:

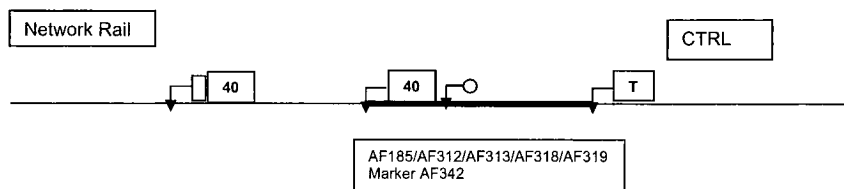
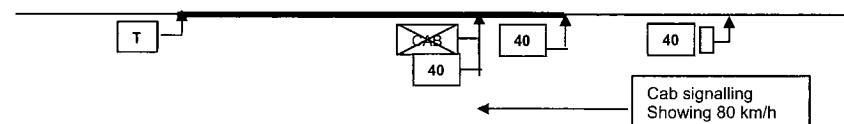
Temporary speed restriction in km/h	Speed limit displayed by temporary lineside warning boards & indicators	
	mph	km/h
10	5	10
20	10	20
30	20	30

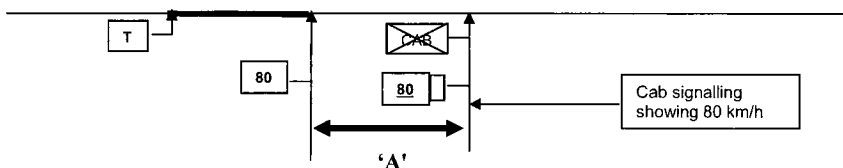
In addition, the AFC Signaller must:

- stop trains at marker AF342,
- advise the driver (using the International Forms procedure), indicating:
 - the location and length of the restriction,
 - the speed limit in force.

F2.3 Examples of the application of temporary speed restrictions

The speeds indicated are in km/h.

Speed restriction is both sides of an AFC controlled signal/marker**Speed restriction is both sides of the CAB board**

Speed restriction is completely on the Network Rail side of the CAB board

Note: If the above example, as the distance "A", is less than the required braking distance, the lineside warning board will be placed at the **CAB** board and the cab signalling system to show 80 km/h. If the speed restriction commences at or just on the Network Rail side of the **CAB** board, a lineside warning board will not be provided but the lineside indicator will be placed at the **CAB** board and the advice will be given by the cab signalling system showing 80 km/h.

F3. EMERGENCY SPEED RESTRICTIONS

F3.1 Principles

Lineside indicators are to be erected in accordance with point F2. However, because a lineside emergency indicator cannot be placed before the **CAB** board in the up direction, there may not be a space to erect one before its associated warning board. In these cases the function of the lineside emergency indicator is to be carried out by the cab signalling system.

F3.2 Imposition

If an emergency speed restriction becomes necessary, the person responsible for imposing the restriction to advise the VASC/IECC Signaller, the speed limit to be applied, stating the kilometre points at its extremities and the estimated duration of the restriction. Arrangements must also be made to erect temporary lineside indicators.

The VASC/IECC Signaller to advise the AFC Signaller details of the temporary speed, who must enter it into the cab signalling system, if applicable. Where the speed does not accord with that available to the AFC Signaller, the next lowest cab signalled speed to be used.

F3.2.1 Network Rail to CTRL direction

Until such time that the lineside indicators are erected, if any part of the emergency speed restriction is in rear of the first AFC controlled signal/marker, then the VASC/IECC Signaller must stop trains at the signal in rear of the restriction and advise drivers its location and speed in accordance with the International Forms procedure.

F3.2.2 CTRL to Network Rail direction

Until such time that the lineside indicators are erected, if any part of the emergency speed restriction is between the **CAB** board and the first VASC/IECC signal, then the AFC Signaller must stop trains at the last marker and advise drivers its location and speed in accordance with the International Forms procedure.

(

(

(

(