Guidance Note
GOGN3615
Issue: Two
Date: September 2017

Rail Industry Guidance Note for the Operation and Traffic Management Technical Specification for Interoperability

Synopsis
This document provides guidance on interpretation of points within the Operation and Traffic Management Technical Specification for Interoperability (OPE TSI) where, owing to incomplete or relatively obscure wording, the intent and meaning may be difficult to understand; it provides guidance and reference on application of the requirements in the context of the mainline railway in Great Britain and in the context of cross border operations.

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Issue Record

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This document will be updated when necessary by distribution of a complete replacement.
Revisions have not been marked by a vertical black line in this issue because the document has been revised throughout.

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Part 1 Introduction

1.1 Purpose

1.1.1 This document gives guidance on the requirements of the Operation and Traffic Management Technical Specification for Interoperability (OPE TSI). This document does not set out the requirements.

1.1.2 The purpose of this document is to provide:

a) Guidance on the interpretation of points and application of requirements within the OPE TSI.

b) Guidance about the application of the requirements in the context of the mainline railway in Great Britain (GB) and in the context of cross border operations.

c) Guidance to assist in the preparation of company processes and procedures to enable compliance with the operational requirements of the OPE TSI.

1.1.3 The OPE TSI defines the operational processes that allow rail vehicles to carry passengers or goods in service. These processes include:

a) Development of a competence management system.

b) Organisation of suitable equipment (purchased or leased).

c) Developing relevant requirements and procedures for each level of train operations. This includes the interfaces with sub-contractors.

1.2 Structure of this document

1.2.1 This document includes extracts from the OPE TSI that are reproduced in shaded boxes.

1.2.2 The numbering in the grey boxes relates to the OPE TSI requirement number.

1.2.3 The guidance is provided as a series of sequentially numbered clauses below the requirement boxes.

1.2.4 Where there is no guidance associated with a given OPE TSI requirement this is stated immediately below the appropriate box.

1.3 Approval and Authorisation

1.3.1 The content of this document was approved by Traffic Operation and Management Standards Committee on 11 July 2017.

1.3.2 This document was authorised by RSSB on 25 July 2017.
Part 2 Guidance on the Operation and Traffic Management TSI

2.1 Characteristics of the subsystem

4.1 Introduction

Taking into account all the relevant essential requirements, the ‘operation and traffic management’ subsystem, as described in point 2.2, covers only the elements specified in this Chapter.

In accordance with Directive 2012/34/EU, it is the overall responsibility of the infrastructure manager to provide all the appropriate requirements which must be met by trains permitted to run on its network, taking into account the geographic particularities of individual lines and the functional or technical specifications set out in this Chapter.

2.1.1 Network Rail meets this responsibility through the provision of the Route Utilisation Strategies (RUS).

2.2 Functional and technical specifications of the subsystem

4.2 Functional and technical specifications of the subsystem

The functional and technical specifications of the ‘operation and traffic management’ subsystem comprise of the following:

a) Specifications relating to staff
b) Specifications relating to trains
c) Specifications relating to train operations

2.2.1 There is no guidance associated with this requirement.

2.3 Specifications relating to staff – general requirements

4.2.1 Specifications relating to staff
4.2.1.1 General requirements

This point deals with staff who contribute to the operation of the subsystem by performing safety-critical tasks involving a direct interface between a railway undertaking and an infrastructure manager.

Railway undertaking staff

a) undertaking the task of driving trains (‘driver’) and forming part of the ‘train crew
b) undertaking tasks on-board (other than driving) and forming part of the ‘train crew
c) undertaking preparation of trains

Infrastructure manager’s staff undertaking the task of authorising the movement of trains. The areas covered are:
4.2.1 Specifications relating to staff

4.2.1.1 General requirements

- Documentation
- Communication

In addition, for the staff as defined in point 2.2.1., this TSI sets out requirements on:
- Qualifications (see point 4.6 Appendix G)
- Health and Safety conditions (see 4.7)

2.3.1 The OPE TSI defines train crew undertaking tasks other than driving as ‘Members of the on-board staff of a train, who are certified as competent and appointed by a railway undertaking (RU) to carry out specific, designated safety-related tasks on the train, for example...the guard.’

2.3.2 The professional qualifications and health and safety conditions for guards is contained in sections 2.54 Professional competences on page 41 and 2.60 Health and safety conditions on page 45 of this guidance note.

2.3.3 The OPE TSI medical requirements for train crew are discussed in sections 2.60 Health and safety conditions on page 45 and 2.68 Hearing requirements on page 51 of this guidance note.

2.3.4 The professional qualifications for the safety-critical tasks associated with preparing trains is contained in 3.7 Appendix G - Minimum elements relevant to professional qualification for the task of preparing trains on page 67 of this document.

2.3.5 Where the OPE TSI mentions staff undertaking the safety-critical tasks associated with preparing trains, it refers to the last preparation of a train before it is scheduled to cross a border(s) and work beyond any location(s) designated as the ‘frontier’ in the network statement of an infrastructure manager (IM) and is included in its safety authorisation.

2.4 Documentation for drivers

4.2.1.2 Documentation for drivers

The railway undertaking operating the train must supply the driver with all the necessary information and documentation required to carry out his duties. This information must take into account the necessary elements for operation in normal, degraded and emergency situations for the routes to be worked over and the rolling stock used on those routes.

2.4.1 Railway Undertakings (RUs) have processes in place for providing drivers with all required publications, which may include, but are not limited to:

a) GERT8000 Rule Book modules.
b) National Operating Publications (NOPs) - Pink Pages / White Pages.
c) Sectional Appendices.
d) Information Handbook.
e) Weekly Operating Notices (WONs) and Periodical Operating Notices (PONs).
f) Train running information (WTT/Schedule Cards/Train Data).
g) Freight train load books.
h) Forms (RT3185/Driver report forms/Defect books etc).
i) Company procedures.
2.5 Driver’s Rule Book

4.2.1.2.1 Driver’s Rule Book

All the necessary procedures for the driver must be included in a document or a computer medium called the Driver’s Rule Book.

The Driver’s Rule Book must state the requirements for all the routes worked and the rolling stock used on those routes according to the situations of normal operation, degraded operation and in emergency situations which the driver may encounter.

The Driver’s Rule Book must cover two distinct aspects, one of which describes the set of common rules and procedures (taking into account the contents of appendices A, B and C), the other which sets out any necessary rules and procedures specific to each infrastructure manager.

It must include procedures covering, as a minimum, the following aspects:

a) Staff safety and security
b) Signalling and control command
c) Train operation including degraded mode
d) Traction and rolling stock
e) Incidents and accidents

The railway undertaking is responsible for compiling the Driver’s Rule Book.

The railway undertaking must present the Driver’s Rule Book in a clear format for the entire infrastructure over which their drivers will work.

The railway undertaking must compile the Driver’s Rule Book in such a way that the driver’s application of all operational rules is enabled.

It must have two appendices:

a) Appendix 1: Manual of communication procedures
b) Appendix 2: Book of Forms

Predefined messages and forms must remain in the operating language of infrastructure manager(s).

The process for preparing and updating the Driver’s Rule Book must include the following steps:

a) The infrastructure manager (or the organisation responsible for the preparation of the operating rules) must provide the railway undertaking with the appropriate information in the infrastructure manager’s operating language,
b) the railway undertaking must draw up the initial or updated document,
c) if the language chosen by the railway undertaking for the Driver’s Rule Book is not the language in which the appropriate information was originally supplied, it is the responsibility of the railway undertaking to arrange for any necessary translation and/or provide explanatory notes in another language.

The infrastructure manager must ensure that the content of the documentation provided to the railway undertaking(s) is complete and accurate.

The railway undertaking must ensure that the content of the Driver’s Rule Book is complete and accurate.
2.5.1 The requirement that the rules are presented in a clear format is mandated so that drivers are presented with the different rules for the various networks in a consistent manner. This is particularly important so that the driver is able to easily find the rules relating to similar situations they may encounter on the different networks on which they are operating.

2.5.2 As a general principle, key operational information (including the driver’s Rule Book) is required to be:
   a) Complete.
   b) Appropriately updated.
   c) Controlled.
   d) Consistent and easy to understand (including the language used).
   e) Easily accessible to staff and, where required, copies are formally given to them.

2.5.3 The GB mainline operating rules are developed collaboratively by the IM and RUs and published in GERT8000. GERT8000 defines the operating rules that are required to mitigate system risks at the operational interface between the IM and RUs. The content of GERT8000 is by a transport operator’s (TO) competence management arrangements, which may include complementary operating instructions that are specific to the nature of a TO’s operation.

2.5.4 The guide for the application of the OPE TSI states that ‘the infrastructure manager should decide whether the use of forms is appropriate.’ For the GB mainline railway, except for those parts where the European Railway Traffic Management System (ERTMS) is in operation, safety-critical messages are communicated by the most appropriate means using the communications protocol contained within GERT8000 Rule Book modules.

2.5.5 Currently, the OPE TSI Working Group in Europe has agreed that we will move away from the name of written orders to an operational instruction, so that there is a clear definition that these are not just written. A harmonised operational instruction includes information provided electronically, verbally or written down.

2.5.6 Additional (non-harmonised) operational instructions, defined by the individual IMs, will follow the same procedure defined in the OPE TSI of that for a harmonised operational instruction. The instructions on what to include in the message and under what circumstances these will apply, will be published in the OPE TSI in due course.

2.5.7 All publications and forms used on the GB mainline railway are produced in English and are available at [http://www.rssb.co.uk](http://www.rssb.co.uk).

2.6 Description of the line and the relevant lineside equipment associated with the lines worked over

<table>
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<th>4.2.1.2 Description of the line and the relevant line-side equipment associated with the lines worked over</th>
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<tr>
<td>Drivers must be provided with a description of the lines and the associated line-side equipment for the lines over which they will operate and relevant to the driving task. Such information must be set out in a single document called the ‘Route Book’ (which can either be a traditional document or computer based). The following is a list of information which must, as a minimum, be provided:</td>
</tr>
<tr>
<td>a) The general operating characteristics</td>
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<tr>
<td>b) Indication of rising and falling gradients</td>
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<tr>
<td>c) Detailed line diagram</td>
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2.6.1 The OPE TSI requires that the characteristics of a route are set out in a route book. Information on the route characteristics enables drivers to apply the rules correctly.

2.6.2 The IM produces the Sectional Appendix. This provides route information to RUs, including details of the signalling and control arrangements, local operating instructions, and details of weight restrictions.

2.6.3 This information is contained in the National Electronic Sectional Appendix (NESA).

2.6.4 Network Rail produces the Weekly Operating Notice (WON), which provides RUs with information on current engineering work. RUs are advised to put processes in place that enable them to issue and update drivers with all the necessary information for the safe operation of trains over the routes they operate trains over.

2.6.5 The GB mainline railway intends to ensure future alignment with the OPE TSI by building on the route book to include gradient information and IM requirements. The European Union Agency for Railways (EUAR) has announced that it wishes to look again at Appendix D of the OPE TSI and align this with the European Register of Infrastructure (RINF). In future this may, for example, remove the need for gradient information and other fixed information from the OPE TSI.

2.7 Preparation of the Route Book

<table>
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<th>4.2.1.2.2.1 Preparation of the Route Book</th>
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| The format of the Route Book must be prepared in the same manner for all the infrastructures worked over by the trains of an individual railway undertaking. The railway undertaking is responsible for the complete and correct compilation of the Route Book, using the information supplied by the infrastructure manager(s). The infrastructure manager must provide the railway undertaking with at least the information for the Route Book as defined in Appendix D. The following information must be included (this list is not exhaustive):
| a) the general operating characteristics: |
| b) type of signalling system and corresponding operational regime (double track, reversible working, left- or right-hand running, etc.) |
| c) type of power supply |
| d) type of track to train radio equipment |
| e) indication of rising and falling gradients with their gradient values and location |
| f) detailed line diagram: |
| • names of stations on the line and key locations and their location |
| • tunnels, including location, name, length, specific information such as the existence of walkways and points of safe egress as well as the location of safe areas where evacuation of passengers can take place |
| • essential locations such as neutral sections |
| • permissible speed limits for each track, including, if necessary, differential speeds relating to certain types of train |
| • the responsible infrastructure manager |
| • means of communication with traffic management/control centre in normal and degraded mode. |
| The infrastructure manager must ensure that the content of the documentation provided to the railway undertaking(s) is complete and accurate. |
| The railway undertaking must ensure that the content of the Route Book is complete and accurate. |
2.7.1 RIS-3215-TOM sets out requirements for the production of information to be included in the WON, PON and NESA.

2.7.2 The content of the NESA satisfies requirement 4.2.1.2.2.1 of the OPE TSI. However, hard copies of the Sectional Appendices do not contain information relating to gradients. As a consequence there is a need for this information to be made available to users as supplementary information (where required).

2.7.3 If an RU decides to develop their own Route Book, then the RU is responsible for ensuring the information is complete, presented clearly and maintained.

2.7.4 Information on networks other than the GB mainline railway should be made available by the IM responsible for the network. Details of those responsible for networks can be obtained from the Member States National Safety Authority (NSA).

2.7.5 There is no requirement for other Member States to provide related information in English. Therefore, RUs operating cross-border services may need to translate source material and have processes in place to ensure this has been done correctly.

2.7.6 If it is decided not to translate any publications, consideration needs to be given to the linguistic competence levels of RU staff who will be required to read, interpret and understand the publications.

2.8 Modifications to information contained within the Route Book

### 4.2.1.2.2.2 Modifications to information contained within the Route Book

| The infrastructure manager must advise the railway undertaking of any permanent or temporary modifications to information supplied in accordance with point 4.2.1.2.2.1. |
| These changes must be grouped by the railway undertaking into a dedicated document or computer medium whose format must be the same for all the infrastructures worked over by the trains of an individual railway undertaking. |
| The infrastructure manager must ensure that the content of the documentation provided to the railway undertaking(s) is complete and accurate. The railway undertaking must ensure that the content of the document grouping the modifications to information contained within the Route Book is complete and accurate. |

2.8.1 Amendments to Sectional Appendices are managed by the GB mainline IM (Network Rail). The amendments process includes publishing changes in the WON and/or PON.

2.8.2 It is the RUs responsibility for having arrangements in place to facilitate the dissemination of amendments to the Route Book.

2.8.3 Amendments to other than the GB mainline Route Book are beyond the scope of RIS-3215-TOM; therefore RUs may need to consider different amendment processes within their management arrangements relating to the onward dissemination of such information.
2.9 Informing the driver in real time

4.2.1.2.3 Informing the driver in real time

The infrastructure manager must inform drivers of any changes to the line or relevant line-side equipment that have not been advised as modifications to information for the Route Book as set out in point 4.2.1.2.2.

2.9.1 The processes for informing drivers of short-notice changes to route characteristics are defined in the GERT8000 Rule Book modules. These apply to short-notice changes such as technical failures or works that cannot be notified through modifications to operating publications.

2.9.2 The IM is advised to inform RUs of any modifications as soon as practicable.

2.10 Timetables

4.2.1.2.3 Timetables

The provision of train schedule information facilitates the punctual running of trains and assists in service performance. The railway undertaking must provide drivers with the information necessary for the normal running of the train and as a minimum include:

a) the train identification,
b) the train running days (if necessary),
c) the stopping points and the activities associated with them,
d) other timing points,
e) the arrival/departure/passing times at each of those points.

Such train running information, which must be based on information supplied by the infrastructure manager, may be provided either electronically or in a paper format.

Presentation to the driver must be consistent across all the lines over which the railway undertaking operates.

2.10.1 The timetable planning and production process is managed by the IM under track access conditions.

2.10.2 RUs are responsible for disseminating timetable information within their organisation. This may be achieved by issuing the Working Timetable (WTT), bespoke timetables, schedule cards and train crew diagrams.

2.11 Rolling stock

4.2.1.2.4 Rolling Stock

The railway undertaking must provide the driver with all information relevant to the working of the rolling stock during degraded situations (such as trains requiring assistance). Such documentation must also focus on the specific interface with the infrastructure manager’s staff in these cases.
2.11.1 RIS-3437-TOM sets out requirements relating to the production of contingency plans, which have to be applied when on-train equipment becomes defective.

2.11.2 GERT8000-TW5 defines the operational rules associated with the preparation and movement of trains with defective or isolated vehicles and on-train equipment. This Rule Book module complements the requirements and guidance published in RIS-3437-TOM.

2.11.3 RUs are responsible for developing a contingency plan that considers the failure modes that could affect the rolling stock that operate.

2.11.4 The content of contingency plans provides a consistent operational approach that complements the requirements set out in RIS-3427-TOM and GERT8000-TW5.

2.11.5 RUs may also provide supplementary information to staff to facilitate fault diagnoses and rectification, for example, fault and failure guides that are specific to a class of vehicles.

2.12 Documentation for railway undertaking staff other than drivers

4.2.1.3 Documentation for railway undertaking staff other than drivers

The railway undertaking must provide all members of his staff (whether on train or otherwise) who undertake safety-critical tasks involving a direct interface with the staff, equipment or systems of the infrastructure manager with the rules, procedures, rolling stock and route specific information it deems appropriate to such tasks. Such information shall be applicable in both normal and degraded operation.

For staff on board trains, the structure, format, content and process for preparation and updating of such information must be based on the specification set out in Subsection 4.2.1.2.

2.12.1 There is no guidance associated with this requirement.

2.13 Documentation for infrastructure manager’s staff authorising train movements

4.2.1.4 Documentation for infrastructure manager’s staff authorising train movements

All the information necessary to ensure safety-related communication between staff authorising the movement of trains and train crews must be set out in:

a) documents describing the Communications Principles (Appendix C);

b) the Book of Forms.

The infrastructure manager must draw up these documents in its operating language.

2.13.1 Guidance on this subject can be found in 3.3 Appendix C - Safety related communications methodology on page 61.
2.14 Safety-related communications between train crew, other railway undertaking staff and staff authorising train movements

4.2.1.5 Safety-related communications between train crew, other railway undertaking staff and staff authorising train movements

The language used for safety-related communication between train crew, other railway undertaking staff (as defined in Appendix G) and the staff authorising train movements is the operating language (as defined in Appendix J) used by the infrastructure manager on the route concerned.

The principles for safety-related communication between train crew and staff responsible for authorising the movement of trains are to be found in Appendix C.

In accordance with Directive 2012/34/EU, the infrastructure manager is responsible for publishing the “operating” language used by his personnel in daily operational use.

Where, however, local practice requires that a second language is also provided for, it is the responsibility of the infrastructure manager to determine the geographic boundaries for its use.

2.14.1 Information on the use of language and its requirements is set out in RIS-8046-TOM.

2.15 Specifications relating to trains - train visibility

4.2.2 Specifications relating to trains - Train visibility

4.2.2.1 General requirement

The railway undertaking must ensure that trains are fitted with means of indicating the front and rear of the train.

2.15.1 Sections 2.16 Front end lights on page 15 and 2.17 Rear end lights on page 16 describe how to meet specific requirements relating to front end and rear end lights.

2.16 Front end lights

4.2.2.1.2 Front end lights

The railway undertaking must ensure that an approaching train is clearly visible and recognisable as such, by the presence and layout of its lit white front-end lights. The forward facing front-end of the leading vehicle of a train must be fitted with three lights in an isosceles triangle, as shown below. These lights must always be lit when the train is being driven from that end.

The front-end lights must optimise train detectability (marker lights), provide sufficient visibility for the train driver (head lights) by night and during low light conditions and must not dazzle the drivers of oncoming trains.

The spacing, the height above rails, the diameter, the intensity of the lights, the dimensions and shape of the emitted beam in both day and night time operation are defined in Commission Regulation (EU) No 1302/2014 (the “rolling stock - locomotives and passenger rolling stock” TSI (LOC&PAS TSI))
4.2.2.1.2 Front end lights

2.16.1 ‘Front-end lights’ are referred to on the GB mainline railway as ‘head-lamps’.

2.16.2 The findings from RSSB research project T530 to investigate the potential excessive glare from train headlamps, were used to develop a specification which can now be used by industry members to determine optimum headlamp characteristics and, as such, the relevant operational requirements are contained in this section of the OPE TSI.

2.16.3 GMRT2131 provides guidance on assessment for retro-fitment of head lamps as well as guidance on when a non-yellow front end colour for vehicles is selected.

2.16.4 Head, marker and tail lamps, are also referenced in the Rolling Stock Locomotives and Passenger Technical Specification for Interoperability (LOC & PAS TSI).

2.17 Rear end lights

4.2.2.1.3 Rear end lights

The railway undertaking must provide the required means of indicating the rear of a train. The rear-end signal must only be exhibited on the rear of the last vehicle of the train. It must be displayed as shown...
4.2.2.1.3 Rear end lights

2.17.1 ‘Rear-end signals’ are referred to on the GB mainline railway as ‘tail lamps’.

2.17.2 Tail lamp technical requirements are set out in the LOC & PAS TSI.

2.17.3 GMRT2131 sets out the visibility requirements for trains.

2.17.4 GERT8000 Rule Book module TW1 contains regulations specifying where and when tail lamps must be provided on trains on the GB mainline railway.

2.18 Passenger trains

4.2.2.1.3.1 Passenger trains

The rear end indication of a passenger train must consist of 2 steady red lights at the same height above buffer on the transversal axis.

2.18.1 GMRT2131 sets out requirements for visibility of trains and provides supporting guidance.

2.18.2 GMRT2131 states: ‘The rear end of a train needs to be visible for a distance of 400 m behind that train, this condition is considered adequately fulfilled by a tail lamp meeting the requirements of the LOC & PAS TSI, or a portable tail lamp meeting the requirements set out in Appendix B.’

2.18.3 The LOC & PAS TSI requires that ‘two red tail lamps shall be provided at the rear end of units intended to be operated at the rear end of the train in order to make the train visible.’

2.18.4 Steam and heritage vehicles are excluded from the scope of the Railway (Interoperability) Regulations 2011 (as amended), and are not covered by the LOC & PAS TSI.

2.18.5 GMRT2131 defines the relevant National Safety Rules (NSRs) applicable to steam and heritage vehicles.
2.19 Freight trains in international traffic

<table>
<thead>
<tr>
<th>4.2.2.1.3.2 Freight trains in international traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Member State must notify which of the following requirements will apply on the network of its Member State for trains that cross a border between Member States:</td>
</tr>
<tr>
<td>• Two steady red lights, or</td>
</tr>
<tr>
<td>• Two reflective plates of the following shape with white side triangles and red top and bottom triangle</td>
</tr>
<tr>
<td>The lamps or plates must be on the same height above buffer on the transversal axis.</td>
</tr>
<tr>
<td>Member States that require 2 reflective plates must also accept 2 steady red lights as train rear end indication.</td>
</tr>
<tr>
<td>Member States that require 2 steady red lights must also accept 2 reflective plates as train rear end indication if the following 2 conditions are fulfilled in the whole network:</td>
</tr>
<tr>
<td>• The operational rule for entering a possible occupied block section states that the train drivers shall be able to stop in front of any obstacle.</td>
</tr>
<tr>
<td>• There is no requirement that signallers must visually check the presence of a train rear-end device to verify that the train is complete.</td>
</tr>
</tbody>
</table>

2.19.1 GMRT2131 sets out the NSRs for visibility of trains and provides supporting guidance.

2.19.2 Reflective plates are not acceptable on the GB mainline railway because modes of signalling, including absolute block, electric token block and tokenless block require signallers to check the rear-end indication in order to confirm that a train is complete.

2.19.3 GB international freight traffic may wish to implement local procedures for the two red tail lights to be sited before transitioning out of the GB mainline railway network.

2.20 Freight trains not crossing a border between Member States

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<tr>
<th>4.2.2.1.3.3 S Freight trains not crossing a border between Member States</th>
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<tbody>
<tr>
<td>The Member State must notify which requirements will apply on its network for trains not crossing a border.</td>
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<tr>
<td>In addition, the notified requirements for freight trains in international traffic described in 4.2.2.1.3.2 shall also be accepted for trains not crossing a border.</td>
</tr>
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</table>

2.20.1 For freight trains not crossing a border between Member States, the Department for Transport (DFT) must notify the Commission which rules will apply for those trains. This requirement is satisfied through the DFT submission of the GB implementation plan.

2.20.2 Freight trains can operate on the GB mainline network with a single illuminated flashing tail lamp. However, if a freight train is to exit the GB mainline network, then it will need to comply with the requirements set out in clause 4.2.2.1.3.2 of the OPE TSI.

2.20.3 The current situation described in GMRT2131 is justified by way of the impracticality of ground staff attempting to attach tail lamps to the off-side of a train as with loco-hauled stock.
2.21 Train audibility – General requirements

4.2.2.1 Train audibility – General requirements

The railway undertaking must ensure that trains are fitted with an audible warning device to indicate the approach of a train.

2.21.1 The LOC & PAS TSI set out the technical requirements relating to the fitment of an audible warning device.

2.21.2 GMRT2131 sets out the NTRs and NSRs relating to the audible warning device and, except where otherwise stated within the Railway Group Standard (RGS), reminds RUs of their legal obligations under the Railways (Interoperability) Regulations 2011 (RIR). Therefore, compliance with GMRT2131 satisfies the requirement above.

2.22 Train audibility – control

4.2.2.2 Train audibility – Control

The activation of the audible warning device must be possible from all driving positions.

2.22.1 GMRT2131 sets out that ‘All driving positions shall be fitted with warning horn controls to operate warning horns facing the direction of travel’. It is aligned to the LOC & PAS TSI, which requires that ‘It shall be possible for the driver to sound the audible warning device from all driving positions’.

2.23 Vehicle identification

4.2.2.3 Vehicle identification

Each vehicle must have a number to uniquely identify it from any other rail vehicle. This number must be prominently displayed at least on each longitudinal side of the vehicle.

It must also be possible to identify operational restrictions applicable to the vehicle.

Further requirements are specified in Appendix H.

2.23.1 The process and data for registering rail vehicles, the numbering system to be used to identify rail vehicles, and the data to be displayed is set out in GMRT2453.

2.23.2 GMRT2453 is being revised to reflect recent changes to legislation, including the National Vehicle Register (NVR) now covering the European Vehicle Numbering (EVN) rules.

2.23.3 The GB mainline railway currently uses the Total Operations Processing System (TOPS) to manage the movement of vehicles on the network.

2.23.4 TOPS is a legacy system, dating originally from the 1960s, and software limitations preclude it processing vehicle numbers of more than 10 digits. The GB mainline railway will not be able to use 12-digit vehicle numbers until TOPS is replaced or upgraded.
2.23.5 Current practice on the GB mainline railway is to assemble a vehicle’s EVN by the addition of leading digits to the TOPS number, in accordance with GMRT2453, that define the interoperability capability of the vehicles in the county in which they are registered.

2.23.6 GMRT2453 currently only requires that a TOPS number be displayed on GB rail vehicles that are not intended to be used in international traffic, except new wagons and on-track machines (OTMs) that have to display EVN and, in the case of OTMs, a different TOPS number. For OTMs, the addition of a TOPS number is because NR implementation of Global System for Mobile Communications - Railway (GSM-R) is not compatible with EVNs.

2.23.7 When the operational systems are compatible, the industry needs to decide if 12-digit numbers are adopted for new vehicles and phased in for existing vehicles. There is a working project within the GB rail industry to review these requirements for future alignment. Further detail on this subject can be found in the guidance in 3.8 Appendix H - European Vehicle Number and Linked Alphabetical Marking on the Bodywork on page 68.

2.24 Safety of the load

4.2.2.4.1 Safety of load

The railway undertaking must ensure make sure that freight vehicles are safely and securely loaded and remain so throughout the journey.

2.24.1 The Railway and Other Guided Transport Systems (Safety) Regulations 2006 (as amended) (ROGS), guidance on risk assessments states that: ‘you should make sure you consider other types of activity, such as how you load freight wagons or manage stations.’

2.24.2 The following documents contain instructions and guidance on loading methods and train safety checks:

a) GERT8000 Rule Book module TW1.

b) The Worldwide Railway Organisation (UIC) publishes the International Wagon Regulations (RIV) loading guidance; these are typically used as industry best practice for specific loading methods.

c) GOGN3653 Guidance for Safe Freight Train Operation.

2.24.3 GORT3056 is for the use of all staff concerned with the acceptance, planning, handling, conveyance, marshalling and movement of freight traffic. This also includes exceptional loads.

2.24.4 GORT3053 is for the use of all staff concerned with the classification, acceptance, identification, marshalling, movement and loading of dangerous goods.

2.25 Safety of passengers

4.2.2.4.2 Safety of passengers

The railway undertaking must ensure that passenger transport is undertaken safely at the departure and during the journey.

2.25.1 ROGS requires IMs and RUs to develop a safety management system that is capable of controlling all the risks arising from the transport system they are operating.
2.25.2 The safety management system is the basis for making sure a transport system runs safely and in line with ROGS.

2.25.3 IMs and RUs keep written records of their arrangements for managing safety risks. When applying for a safety certificate they must provide evidence that their safety management system ensures the risks are managed to be as low as reasonably practicable (ALARP).

2.25.4 GERT8000 Rule Book modules TW1 and TW5 set out instructions regarding the preparation and movement of passenger trains.

2.25.5 There are currently various platform train interface related research projects being carried out by RSSB, these include:

a) T1059 Evaluating the use of on-train driver only operation (passenger) monitors during station departures.

b) T1116 Looking at the positioning and standardisation of stop car markers on platforms.

c) TT1098 Identifying mitigations for the risk of unplanned movement of wheelchairs and pushchairs on station platforms.

d) T1057 Managing the risks posed by luggage to passengers and staff on trains and in stations: A good practice guide.

2.25.6 There are also five Rail Research UK Association (RRUKA) sponsored research projects that are looking at:

a) The faster, better and safer boarding of trains.

b) Intelligent Computer Vision agents Optimising PTI Safety and Train Dwell Times.

c) RateSetter: Improving passenger boarding rate and reducing risk at the PTI.

d) Using real-time data on train consist and loading to influence passenger positioning and boarding behaviour at the PTI.

e) The feasibility of kneeling trains.

2.25.7 The outcome of these research projects will be made available when known.

2.26 Train composition

4.2.2.5 Train composition

The railway undertaking must define the rules and procedures to be followed by his staff so as to ensure that the train is in compliance with the allocated path. Train composition requirements must take into account the following elements:

a) all vehicles in the train must be in compliance with all the requirements applicable on the routes over which the train will run;

b) all vehicles on the train must be fit to run at the maximum speed at which the train is scheduled to run;

c) all vehicles on the train must be currently within their specified maintenance interval and will remain so for the duration (in terms of both time and distance) of the journey being undertaken;

d) the combination of vehicles forming a train must comply with the technical constraints of the route concerned and be within the maximum length permissible for forwarding and receiving terminals;

e) the railway undertaking is responsible for ensuring that the train is technically fit for the journey to be undertaken and remains so throughout the journey;

f) the weight and axle load;
4.2.2.5 Train composition

g) the weight of the train must be within the maximum permissible for the section of route, the strength of the couplings, the traction power and other relevant characteristics of the train. Axle load limitations must be respected;

h) the maximum speed of the train

i) the maximum speed at which the train can run must take into account any restrictions on the route(s) concerned, braking performance, axle load and vehicle type;

ii) the kinematic envelope;

iii) the kinematic gauge of each vehicle (inclusive of any load) in the train must be within the maximum permissible for the section of route.

Additional constraints may be required or imposed due to the type of braking regime or traction type on a particular train.

The infrastructure manager must inform the railway undertaking of the changes on characteristics of the allocated path change, as soon as these changes occur. The elements that must be checked in order to ensure the train’s compliance with the allocated path are set out in Appendix D.


2.26.2 RUs are responsible for managing the risks of their operation. They therefore are advised to cooperate with subcontractors or those undertaking tasks which could affect the safety of the train so that everyone is aware of their individual responsibilities and discharge them effectively.

2.26.3 On the GB mainline railway a Route Availability (RA) number defines the maximum axle weight that can travel over a particular route. Details of RA across the network are published in Table D of the Sectional Appendices, except in Scotland where they are contained in a separate publication called the Route Availability Table – Scotland.

2.26.4 GERT8270 sets out requirements and responsibilities for the assessment of compatibility of rolling stock and infrastructure.

2.26.5 Data for freight train loads and lengths are contained in a series of Loads Books which show the maximum lengths of trains which can operate between different points on the network. The figures in the current Freight Train Loads Books are largely based on an exercise carried out in the early 2000s. Over the years, some entries have been increased following empirical trials.

2.26.6 The maximum permissible speed of a particular train may be limited by various factors, which are detailed in the various technical instructions which govern the safe operation of trains. Detailed information about these speeds is published in the Sectional Appendix.

2.26.7 GERT8006 sets out specific requirements for the assessment of compatibility between the static load characteristics of rail vehicles and the capacity of underline bridges to carry the vertical static and dynamic loads imposed by the rail vehicles.

2.26.8 GORT3056 sets out requirements relating to the duties of train preparers with regards to:

a) TOPS produced train lists.

b) Checking the information on train lists.

c) Checking vehicle weight, brake force, route availability, length and speed.

d) Special conditions of travel.

2.26.9 Section K of GORT3056 sets out the rules for managing vehicles that require special conditions of travel.
2.26.10 Section E of GORT3056 sets out:

a) The rules for managing loads that require special movement conditions to be applied.
b) Tables containing the maximum loads permitted with specific brake forces.

2.27 Train braking - Minimum requirements of the braking system

4.2.2.6.1 Train braking - Minimum requirements of the braking system

All vehicles in a train must be connected to the continuous automatic braking system as defined in the RST TSI.
The first and last vehicles (including any traction units) in any train must have the automatic brake operative.
In the case of a train becoming accidentally divided into two parts, both sets of detached vehicles must come automatically to a stand as a result of a maximum application of the brake.

2.27.1 The Railway Safety (Miscellaneous Provisions) Regulations 1997 requires that ‘the operator of a vehicle shall ensure that a suitable and sufficient braking system is provided and maintained for that vehicle and, where the vehicle is part of a train of vehicles, for that train of vehicles.’

2.27.2 The Regulations of Railways Act 1889 requires that continuous brakes are provided for use on all passenger trains, which must be self-applying in the event of any failure in the continuity of its action.

2.27.3 GMRT2045 sets out the compatibility and performance requirements for the braking systems of rail vehicles for operation in trains on the mainline railway.

2.27.4 GERT8000 Rule Book module TW1 sets out the requirements for testing the automatic brake on trains, the action to take if there are vehicles with isolated brakes and the required brake tests.

2.27.5 GORT3056 sets out braking requirements for freight vehicles.

2.28 Braking performance

4.2.2.6.2 Braking performance and maximum speed allowed

1. The infrastructure manager shall provide the railway undertaking with all relevant line characteristics for each route:
   • signalling distances (warning, stopping) containing their inherent safety margins,
   • gradients,
   • maximum permitted speeds, and
   • conditions of use of braking systems possibly affecting the infrastructure such as magnetic, regenerative and eddy-current brake

2. Additionally, the infrastructure manager may provide the following information:
   (i) for trains able to run at a maximum speed higher than 200 km/h, deceleration profile and equivalent response time on level track;
   (ii) for trainsets or for fixed train compositions, unable to run at a maximum speed higher than 200 km/h, deceleration (as above in (i)) or brake weight percentage;
4.2.6.2 Braking performance and maximum speed allowed

(iii) for other trains (variable compositions of trains unable to run at maximum speed higher than 200km/h): brake weight percentage.

If the infrastructure manager provides the abovementioned information, it shall be made available to all RUs who intend to operate trains on its network. The braking tables already in use and accepted for the existing lines at the date of entry into force of the present regulation shall also be made available.

3. The railway undertaking shall, in the planning stage, determine the braking capability of the train and corresponding maximum speed taking into account:

• the relevant line characteristics as expressed in point (1) above or, if available, the information provided by the infrastructure manager in accordance to point (2) above. If the infrastructure manager has provided the information of point (2), the railway undertaking has to express the braking capability by using the same information, and
• the rolling-stock-related margins derived from reliability and availability of the braking system.

Furthermore, the railway undertaking shall ensure that during operation each train achieves at least the necessary braking performance. The railway undertaking shall set up and implement corresponding rules and shall manage them within its safety management system.

In particular the railway undertaking has to set up rules to be used if a train does not reach the necessary braking performance during operation. In this case, the railway undertaking must immediately inform the infrastructure manager. The infrastructure manager may take appropriate measures to reduce the impact on the overall traffic on its network.


2.28.2 GKRT0075 sets out the minimum distances that must be provided between the first cautionary aspect and the stop signal to which it applies. In addition, it addresses the signing for permissible speeds and speed restrictions.

2.28.3 GMRT2045 sets out the principles of operation and performance requirements for the braking systems of rail vehicles for operation on the GB mainline network in order to ensure safety of operation and safe interworking.

2.28.4 GERT8000 Rule Book module TW1 contains the rules specific to train preparation, brake availability requirements and managing brake failures.

2.28.5 GORT3056 is for the use of all staff concerned with the acceptance, planning, handling, conveyance, marshalling and movement of freight traffic.

2.28.6 RUs may provide specific company instructions in drivers’ manuals or traction bulletins detailing the actual procedures for checking and operating brake equipment on trains.

2.29 Ensuring that the train is in running order - general requirement

4.2.2.7.1 Ensuring that the train is in running order - general requirement

The railway undertaking must define the process to ensure that all safety-related on-train equipment is in a fully functional state and that the train is safe to run.
4.2.2.7.1 Ensuring that the train is in running order - general requirement

The railway undertaking must inform the infrastructure manager of any modification to the characteristics of the train affecting its performance or any modification that might affect the ability to accommodate the train in its allocated path.

The infrastructure manager and the railway undertaking must define and keep up to date conditions and procedures for train running in degraded mode.

2.29.1 Instructions for the preparation and checking of freight trains prior to entering service are specified in GORT3056.

2.29.2 GERT8000 Rule Book module TW1 contains general instructions concerning the preparation of trains. Specific instructions for train preparation and checks of safety systems for each type of traction are contained within traction manuals, bulletins and other operating instructions.

2.29.3 Drivers are required to report the failure of any in-cab equipment to the signaller in accordance with GERT8000 Rule Book module TW5. This process allows both IM and RU control staff to be advised of the failure so that a decision can be made about whether any further movement of the train concerned is permissible, and if so what restrictions may apply.

2.29.4 RIS-3437-TOM includes requirements and guidance for the development of a defective on-train equipment contingency plan to be agreed between the IM and the RU.

2.29.5 RIS-3437-TOM states that RUs review their DOTE contingency plan if there are changes to:

a) The routes they operate over.

b) Service levels.

c) Rolling stock.

d) On-train equipment.

2.30 Data required

4.2.2.7.2 Data required

The data required for safe and efficient operation and the process by which this data must be forwarded must comprise

a) the train identification,

b) the identity of the railway undertaking responsible for the train,

c) the actual length of the train,

d) if a train carries passengers or animals when it is not scheduled to do so,

e) any operational restrictions with an indication of the vehicle(s) concerned (gauge, speed restrictions, etc.),

f) information the infrastructure manager requires for the transport of dangerous goods

The railway undertaking must ensure that this data is made available to the infrastructure manager(s) prior to the departure of the train.

The railway undertaking must advise the infrastructure manager(s) if a train will not occupy its allocated path or is cancelled.
2.30.1 TOPS has been developed for the management and control of vehicles and locomotives, providing real-time information about, for example, the location, loading, consignee and condition of vehicles. The GB mainline railway uses TOPS for the management and control of vehicles and locomotives.

2.30.2 Appendix A of RIS-3436-TOM lists the information that must be passed to Network Rail by the RU. This includes the information required by the OPE TSI.

Note: Animals, with the exception of domestic pets travelling with their owners on passenger trains, are not conveyed by the GB mainline railway.

2.30.3 GOGN3676 defines the process for managing the information required by GORT3053. Compliance with these requirements is generally achieved by the RU entering the necessary information into the TOPS database, to which both Network Rail and the RUs have access.

2.31 Requirements for signal and lineside marker sighting

4.2.2.8 Requirements for lineside signal and marker sighting

The driver must be able to observe signals and lineside markers, and they must be observable by the driver whenever applicable. The same applies for other types of lineside signs if they are safety-related. Therefore, signals, lineside markers, signs and information boards must be designed and positioned in such a consistent way to facilitate this. Issues that must be taken into account include:

- that they are suitably sited so that train headlights allow the driver to read the information,
- suitability and intensity of lighting, where required to illuminate the information,
- where retro-reflectivity is employed, the reflective properties of the material used are in compliance with appropriate specifications and the signs are fabricated so that train headlights easily allow the driver to read the information.

Driving cabs must be designed in such a consistent way that the driver is able to easily see the relevant information displayed to him.

2.31.1 GMRT2161 sets out the requirements for external visibility, control layouts and other interior arrangements in driving cabs. This is to ensure a working environment in which drivers of trains and on-track machines can carry out their duties safely and effectively.

2.31.2 GIRT7033 sets out the arrangements for the management and specification of lineside operational safety signs in order to provide consistency of form and presentation throughout the network. This also includes the signs associated with ERTMS. This includes the requirements for achieving a degree of retro-reflectivity that is appropriate for, and compatible with, train head lamps.

2.31.3 RIS-8034-CCS sets out the requirements necessary to ensure that the visibility and alignment of signals, and operational signs that perform the function of signals, are not adversely affected during the life of the equipment.

2.31.4 RIS-0737-CCS provides additional rationale and guidance to address the requirement to consider train headlights when positioning lineside signs.
2.32 Driver vigilance

4.2.2.9 Driver vigilance

A means of onboard monitoring of driver vigilance is necessary. This shall intervene to bring the train to a stand if the driver does not react within a certain time; the time range is specified in the rolling stock TSIs.

2.32.1 Clause 4.2.9.3.1 of the LOC & PAS TSI titled ‘Driver’s activity control function’ requires the provision of a system to monitor a train driver’s alertness and to intervene if a prolonged period of inactivity is detected.

2.32.2 GMRT2185 requires the provision of a safety system to monitor the driver’s activity levels, provide an audible warning after an appropriate time interval if no activity is detected, and make an emergency brake application if there is no response to the audible warning.

2.32.3 RUs provide instructions to drivers on the actions to be taken in the event of a Driver’s Vigilance Device (DVD) and Driver’s Safety Device (DSD) activation.

2.33 Train planning

4.2.3.1 Train planning

In accordance with Directive 2012/34/EU the infrastructure manager must advise what data is required when a train path is requested.

2.33.1 Guidelines produced by the Office of Rail and Road (ORR) state that the purpose of a Rail Utilisation Strategy (RUS) is to promote the route utilisation objective. This is defined in condition 1 of the network licence. This allows established RUS, Network Rail, train operators, suppliers, funders and other stakeholders to plan their businesses with greater clarity and certainty.

2.33.2 The RUS addresses:

a) Network capacity and railway service performance.
b) Train and station capacity including crowding issues.
c) The trade-offs between different uses of the network (for example, between different types of passenger and freight services).
d) Rolling stock issues including deployment, train capacity and capability, depot and stabling facilities.
e) How maintenance and renewals work can be carried out while minimising disruption to the network.
f) Opportunities from using new technology.
g) Opportunities to improve safety.

2.34 Identification of trains

4.2.3.2 Identification of trains

Each train must be identified by a train running number. The train running number is given by the infrastructure manager when allocating a train path and must be known by the railway undertaking and
4.2.3.2 Identification of trains

All infrastructure managers operating the train. The train running number must be unique per network. Changes of train running number during a train journey should be avoided.

2.34.1 The GB mainline railway uses alphanumeric train running numbers for historical reasons. This is permitted by a temporary specific case in clause 7.3.2.2 of the OPE TSI.

2.34.2 The OPE TSI requires that each train has a unique identification, which is usually achieved by each train being allocated a unique running number.

2.34.3 On the GB mainline railway a train running number may not be unique across the network, but IMs and RUs are advised to co-operate to ensure that two trains with the same running number do not operate in the same geographical area at the same time.

2.34.4 The long-term outcome for this specific case is dependent on Network Rail’s study on train running numbers.

2.34.5 The train running number is allocated by the IM, in co-operation with other IMs, to ensure that a number is not re-used unnecessarily. The IM is advised to then inform all affected parties about the allocated train running number and possible changes.

2.34.6 It is advisable to ensure changes of the train running number are avoided as much as possible. If a change is necessary, the IM will need to inform all affected parties about the change to remove any confusion.

2.34.7 For the GB mainline railway, the provision of train running numbers (headcodes) is part of the IM’s Timetable Planning Rules.

2.35 Format of train running number

4.2.3.2.1 Format of train running number

The train running number format is defined in the control-command and signalling TSI (hereinafter referred to as ‘CCS TSI’ Decision 2012/88/EU as amended).

2.35.1 For the GB mainline railway and Ireland, a temporary specific case contained within clause 7.3.2.2 of the OPE TSI, which is valid for the UK, states that ‘for the implementation of 4.2.3.2.1 of the TSI, Ireland and the United Kingdom are using alphanumeric numbers in the existing systems. The Department for Transport will determine the requirements and time schedule for the transition from alphanumeric train running numbers to numeric train running numbers on the GB mainline network.’

2.35.2 It is requested that the TSI retains the UK specific case that permits use of alphanumeric train running numbers during the migration phase.

2.35.3 The existing UK specific case:

a) Does not mandate alphanumeric train running numbers.

b) Allows the duty holder to use an alphanumeric keyboard for entry of the train running number, if support for alphanumeric train running numbers is required, in accordance with the notified NTR for this purpose.

2.35.4 The long-term requirement for this specific case is dependent on the outcome of Network Rail’s study on train running numbers.

2.35.5 UK technical and operational systems are compatible with the use of alphanumeric train running numbers, in contrast to European practice which is to use running numbers that are solely numeric.
2.36 Train departure

4.2.3.3 Train departure
4.2.3.3.1 Checks and tests before departure

The railway undertaking must define the checks and tests to ensure that any departure is undertaken safely (e.g. doors, load, brakes).

2.36.1 ROGS requires IMs and RUs to develop a safety management system that is capable of controlling all the risks arising from the transport system they are operating.

2.36.2 ROGS guidance on risk assessments states that: ‘you should make sure you consider other types of activity (such as how you load freight wagons or manage stations)’.

2.36.3 GERT8000 Rule Book module SS1 contains instructions regarding the dispatch of passenger trains from stations.

2.36.4 GOGN3653 provides guidance to IMs and RUs on the information to be exchanged regarding the loading, preparation and operation of freight vehicles and trains. It also provides guidance on the information that staff need to ensure they clearly understand matters relating to design, loading, preparation and operation of freight vehicles.

2.36.5 RIS-3703-TOM is for application by TOs responsible for train dispatch and platform safety.

2.36.6 As part of the checking process, RSSB has produced a Platform Train Interface (PTI) strategy with the aim of improving the efficiency and safety of passengers with regards to the departure of trains in the future. This can be found on the RSSB website.

2.36.7 The requirements for safety checks prior to train departure can be found in GERT8000 module SS1.

2.37 Informing the infrastructure manager of the train’s operational status

4.2.3.3.2 Informing the infrastructure manager of the train’s operational status

The railway undertaking shall inform the infrastructure manager when a train is ready for access to the network. The railway undertaking must inform the infrastructure manager of any anomaly affecting the train or its operation having possible repercussions on the train’s running prior to departure and during the journey.

2.37.1 During the planning process, RUs request a path from the IM who may accept this request, reject it, or offer an alternative. RUs are advised to inform the IM if they no longer need all or part of a path that has been allocated to them.

2.37.2 The RU is advised to inform the IM of alterations to a train that may affect its ability to keep to its allocated path in two situations:

a) If the vehicle is modified there is a process for acceptance of new or modified vehicles on the network.

b) If a train would not be able to maintain its allocated path because a less-powerful locomotive is substituted, or where the assigned locomotive is running at a reduced power output.

2.37.3 The RU makes this data available to the IM(s) prior to the departure of the train.
2.37.4 The Telematic Application for Passenger/Telematic Application for Freight (TAP/TAF) TSIs require the RU to send details to the IM of the train composition and that the train is ready. Currently on the GB mainline railway the majority of this requirement is met by inputting the train data into TOPS prior to departure.

2.37.5 Load restrictions are dealt with via the RT3973, which gives advice on using information on route restrictions found in the Sectional Appendices and the Statement of Compatibility (SoC) when issued.

2.37.6 Advice on a train’s readiness to access the network can be given verbally or by equipment such as a Train Ready-To-Start (TRTS) facility at stations. The RU and IM may also agree beforehand that a train will be ready to access the network at a specified departure time in the absence of any information to the contrary being provided by the RU.

2.37.7 GERT8000 Rule Book modules state that drivers are required to advise signallers of certain defects on their train.

2.37.8 RIS-3437-TOM sets out the requirements for the production of contingency plans which have to be applied when on-train equipment becomes defective. This standard applies to all trains being brought into service, and to those already in service, on Network Rail-managed infrastructure.

2.38 Traffic management

4.2.3.4 Traffic management general requirements

Traffic management must ensure the safe, efficient and punctual operation of the railway, including effective recovery from service disruption. The infrastructure manager must determine procedures and means for:

a) the real time management of trains,
b) operational measures to maintain the highest possible performance of the infrastructure in case of delays or incidents, whether actual or anticipated, and
c) the provision of information to the railway undertaking(s) in such cases.

Any additional processes required by the railway undertaking and which affect the interface with the infrastructure manager(s) can be introduced after being agreed with the infrastructure manager.

2.38.1 Network Rail company standard NR/L2/OCS/009 Network Capability Management Procedure sets out the requirements for the management of network capability in order to meet its regulatory and commercial obligations to its stakeholders.

2.38.2 Network Rail’s National Control Instructions (company standard NR/L3/OCS/043) is designed to provide an overview of the Route Operations Control and provides the framework for managing the network during normal working and disruption.

2.38.3 National Control Instructions requires Network Rail controllers to:

a) Direct and manage the movements of trains on the Network, thereby sustaining the operation of the Network; and
b) Determine the capacity of the network and direct and manage the movements of trains on the network in the event of degraded operations, subject to the availability and provision of TOs’ operational resources.
2.39  Train reporting

4.2.3.4.2 Train reporting, data required for train position reporting

The infrastructure manager must:

a) provide a means of real time recording of the times at which trains depart from, arrive at or pass appropriate pre-defined reporting points on their networks and the delta-time value;

b) provide the specific data required in relation to train position reporting. Such information must include:

   i) Train identification
   ii) Identity of reporting point,
   iii) Line on which the train is running,
   iv) Scheduled time at reporting point,
   v) Actual time at reporting point (and whether depart, arrive or pass; separate arrival and departure times must be provided in respect of intermediate reporting points at which the train calls),
   vi) Number of minutes early or late at the reporting point,

c) Initial explanation of any single delay exceeding 10 minutes or as otherwise required by the performance monitoring regime:

   i) Indication that a report for a train is overdue and the number of minutes by which it is overdue,
   ii) Former train identification(s), if any,
   iii) Train cancelled for a whole or a part of its journey.

2.39.1 Train reporting facilitates efficient and effective train operation by providing information in real-time on the location of trains, handover times and delays.

2.39.2 The majority of train reporting on the GB mainline railway is automatic, although in some locations the process is carried out manually by signallers.

2.39.3 The number of reporting points and the means of reporting are tailored to the traffic density on the line concerned. A line working close to the limits of its capacity may require more detailed train reporting information than a line on which trains operate infrequently.

2.39.4 The OPE TSI does not specify telematic train reporting. However, in the future it should be possible to meet the OPE TSI train reporting requirements through the use of trainborne telematics systems, as specified in the TAP and TAF TSIs, rather than the current processes which rely on trackborne equipment or manual data entry.

2.39.5 The GB mainline railway manages performance data using Train Running System on TOPS (TRUST), as follows:

   a) Collects real-time data on all train movements and compares actual times to those planned in the working timetable.

   b) Detects delays and requests explanations for every delay incident of three or more minutes.

   c) Drives the information for the Train Performance Incentive Regimes.

   d) Presents information about the movement of train services in an easy-to-understand format. The information is also used to drive the Schedule 8 contracts in operation between Network Rail and train or freight operating companies, and between Network Rail and its infrastructure contractors.

   e) Works by taking a copy of each train’s schedule (the train’s planned journey details) and creating a parallel record against which the actual departure, arrival and passing times at locations on the schedule are recorded. The actual train movement events are generated by various means, both automatic and manual.
2.40  Predicted handover time

4.2.3.4.2.2 Predicted hand over time

The infrastructure manager must have a process, which enables an indication of the estimated number of minutes of deviation from the scheduled time a train is scheduled to be handed over from one infrastructure manager to another. This must include information on service disruption (description and location of problem).

2.40.1 Network Rail’s National Control Instructions (company standard NR/L3/OSC/043) states: ‘the Train Running Controller has the responsibility for making sure that an appropriate handover of trains that are running late is made by the time they pass onto the next route or control area. The handover shall include details of:

a) Any known limitation in the train’s ability to maintain normal sectional running times.
b) Any known deviation from the normal schedule or diagramming for the train that is expected to arise.
c) Any details of the intervention plan that has not already been communicated.
d) Additionally, for freight trains lengths and load details where these exceed the normal plan, and details of route restrictions where these deviate from the normal plan.
e) Any other relevant information.

2.41 Dangerous goods

4.2.3.4.3 Dangerous goods

The railway undertaking must define the procedures to supervise the transport of dangerous goods. These procedures must include:

- advice to the driver of the presence and position of dangerous goods on the train
- information the infrastructure manager requires for transport of dangerous goods
- determination, in conjunction with the infrastructure manager, of lines of communication and planning of specific measures in case of emergency situations involving the goods.

2.41.1 The following are provided as references to standards and to regulatory documents for RUs to meet the requirements when carrying out the movement of dangerous goods:

a) Regulation Concerning the International Carriage of Dangerous Goods by Rail (RID) (as amended).
c) European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).
d) Regulations for the Safe Transport of Radioactive Material 2012.
e) For traffic operating through the Channel Tunnel, the Eurotunnel Conditions of Carriage have to be considered.
h) GOGN3676 Guidance on the Carriage of Dangerous Goods by Rail.
j) GORT3053-PPBL Pink Pages Briefing Leaflet - Contains details of changes made to GORT3053.
2.41.2 The Enhanced Railfreight Intermodal Control (ERIC) system supplies container weight and details about dangerous goods in containers to TOPS. It is the only system which does safety checks on container heights. ERIC is therefore relevant to the operation of the railway, and provides a single source of information to Network Rail and RUs operating freight trains.

2.42 Operational quality

4.2.3.4.4 Operational quality

The infrastructure manager and the railway undertaking must have processes in place to monitor the efficient operation of all the services concerned.

Monitoring processes must be designed to analyse data and detect underlying trends, both in terms of human error and system error. The results of this analysis must be used to generate improvement actions, designed to eliminate or mitigate against events which could compromise the efficient operation of the network.

Where such improvement actions would have network-wide benefits, involving other infrastructure managers and railway undertakings, they must, subject to commercial confidentiality, be communicated accordingly.

Where such improvement actions would have network-wide benefits, involving other infrastructure managers and railway undertakings, they must, subject to commercial confidentiality, be communicated accordingly.

Events that have significantly disrupted operations must be analysed as soon as possible by the infrastructure manager. Where appropriate, and in particular where one of their staff is concerned, the infrastructure manager must invite those railway undertaking(s) involved in the event concerned to participate in the analysis. Where the result of such analysis leads to network improvement recommendations designed to eliminate or mitigate against causes of accidents/incidents, these must be communicated to all relevant infrastructure managers and railway undertakings concerned.

These processes shall be documented and subject to internal audit.

2.42.1 Network Rail Route Operations Controls and RU controls monitor the efficient operation of all services on the GB mainline railway.

2.42.2 The IM usually manages accidents and incidents by the following process:

a) Control receives a report of an accident / incident.

b) An initial investigation is carried out. The findings from the initial investigation may be deemed sufficient to close the incident. If this is not the case, then a more detailed investigation may be conducted.

c) Data is managed in the Safety Management Intelligence System (SMIS) and categorised according to key performance indicators such as points failures, SPADs, track circuit failures.

d) A Route Recommendations Review Panel is formed to carry out a review within the route as a result of safety incidents.

e) A National Recommendations Review Panel reviews all route recommendations and RAIB recommendations.

2.42.3 RIS-8047-TOM sets out requirements for reporting safety related information by means of the SMIS, so that reliable safety data is collected, analysed and made available for use by RUs and IMs in the management of risk. It also requires IMs and RUs to input to SMIS a summary report of an investigation, including any recommendations, and then track the implementation of these recommendations.
2.42.4 RIS-8250-RST sets out requirements for recording, analysing and reporting safety-related defects on rail vehicles, their components, systems, subsystems and related documentation. It also defines requirements for taking action following receipt of a National Incident Report (NIR).

2.42.5 RIS-3350-TOM sets out requirements for reporting and disseminating urgent operating safety information arising from operating incidents, equipment defects and misunderstanding of operating rules, regulations or instructions.

2.42.6 RIS-3118-TOM and its associated guidance identify interface requirements for enabling a consistent, comprehensive and structured process for rail incident response planning and management.

2.42.7 RIS-3119-TOM sets out requirements for the investigation of accidents and incidents involving more than one duty holder so that system improvements necessary to prevent or reduce the likelihood of recurrence, or mitigate the consequences, are identified and implemented.

2.42.8 Network Rail’s National Control Instructions (NR/L3/OCS/043) requires that: ‘Controllers shall monitor the network, intervening and consulting with Train Operator Controllers, Signalling Centres, Integrated Electronic Control Centres and Signallers as appropriate to manage the train service.’

2.42.9 Network Rail’s National Emergency Plan (NR/L2/OCS/250) describes the arrangements in place to provide an effective response to accidents, incidents and other emergencies on or affecting Network Rail controlled infrastructure across GB. It describes the responsibilities of Network Rail, passenger and freight operating companies, and other interfacing organisations in relation to this plan. It is intended to implement the requirements of the RGSs, Network Rail company standards, and other applicable codes and legislation.

2.43 Data recording

<table>
<thead>
<tr>
<th>4.2.3.5 Data recording</th>
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<tbody>
<tr>
<td>Data pertaining to the running of a train must be recorded and retained for the purposes of:</td>
</tr>
<tr>
<td>a) Supporting systematic safety monitoring as a means of preventing incidents and accidents,</td>
</tr>
<tr>
<td>b) Recording information relating to the performance of both the locomotive/traction unit and the person driving.</td>
</tr>
<tr>
<td>c) Identification of driver, train and infrastructure performance in the period leading up to and (if appropriate) immediately after an incident or accident, to enable the identification of causes related to train driving or train equipment, and supporting the case for new or changed measures to prevent recurrence.</td>
</tr>
<tr>
<td>It must be possible to match recorded data to:</td>
</tr>
<tr>
<td>a) the date and time of the recording,</td>
</tr>
<tr>
<td>b) the precise geographic recording of the event being recorded (distance in kilometres from a recognisable location,</td>
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<tr>
<td>c) the train identification,</td>
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<tr>
<td>d) the identity of the driver</td>
</tr>
<tr>
<td>Data to be recorded for ETCS/GSM-R are those defined in the TSI CCS and that are relevant considering the requirements in point 4.2.3.5 of this TSI.</td>
</tr>
<tr>
<td>The data must be securely sealed and stored and accessible to authorised bodies including National Investigation Bodies in carrying out their role pursuant to Article 19 of Directive 2004/49/EC.</td>
</tr>
<tr>
<td>Recording of supervision data outside the train</td>
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</table>
### 4.2.3.5 Data recording

As a minimum, the infrastructure manager must record the following data:

- the failure of line-side equipment associated with the movement of trains (signalling, points etc.),
- the detection of an overheating axle bearing, if fitted,
- safety-related communication between the train driver and signaller.

**Recording of supervision data on board the train**

As a minimum, the railway undertaking must record the following data:

- the detection of passing of signals at danger or “end of movement authority”,
- application of the emergency brake,
- speed at which the train is running,
- any isolation or overriding of the on-board train control (signalling) systems,
- operation of the audible warning device,
- operation of door controls (release, closure), if fitted,
- detection by on-board alarm systems related to the safe operation of the train, if fitted,
- identity of the cab for which data is being recorded to be checked.

Further technical specifications concerning the recording device are set out in the TSI Loc & Pas.

### 2.43.1 Requirements for recording data from a train movement

The following are provided as references to standards and to regulatory documents for RUs to meet the requirements when recording data from a train movement:

a) RIS-0707-CCS Management of Safety Related Control, Command and Signalling System.
b) GERT8014 Axlebox Condition Monitoring.
c) RIS-8046-TOM Spoken Safety Communications.
e) NR/L3/OCS/043/3.9 National Control Instructions.
f) RIS-2706-RST Rail Industry Standard for Recording of Rolling Stock Data.
g) GMRT2472 Requirements for Data Recorders on Trains.
h) ATOCGN001 Guidance Note Use of Data Recorders.

### 2.44 Recording of supervision data outside the train

2.44.1 RIS-0707-CCS sets out requirements to ensure that information regarding safety-related failures of the control, command and signalling (CCS) system is shared and made available to IMs and RUs.

2.44.2 GERT8014 sets out requirements for rolling stock and infrastructure subsystems to be applied in the design of new or altered rolling stock for the detection of hot axleboxes. This includes detection by trackside hot axlebox detectors (HABDs) and on-board axle bearing monitoring systems.
2.44.3  Network Rail’s National Control Instructions (NR/L3/OCS/043) sets out the expected actions in the event of a HABD or Wheel Load Detection Monitoring System (Wheelchex) Impact Load Detector (WILD) activating.

2.44.4  RIS-8046-TOM sets out requirements for spoken safety communications between people employed by the IM and RUs, with specific reference to communications concerning the safe movement of trains.

2.44.5  GEGN8516 provides guidance to assist IMs and RUs in understanding and meeting their responsibilities in relation to the recording and monitoring of spoken safety communications. The two principal duties of IMs and RUs in this regard are:

a) To monitor and review safety-related communications to ensure that the correct standards are achieved and protocols observed.

b) To collect and preserve voice recording evidence following an incident or accident.

2.45  Recording of supervision data on-board the train

2.45.1  GMRT2472 sets out requirements for the provision and functionality of data recorders on trains.

2.45.2  Data recorders currently fitted to trains on the GB mainline railway can only record signals from trackborne train protection systems such as the Train Protection and Warning Systems (TPWS) and Automatic Train Protection (ATP), which will indicate whether a train has passed over a Train Stop Loop (where fitted) at a signal.

2.45.3  Trains fitted with ERTMS will be able to record if a train passes an ‘end of movement authority’ without authority. There are currently no plans for equipment to be fitted retrospectively to existing rolling stock in order to comply with requirement 4.2.3.5.2 of the OPE TSI.

2.46  Degraded operation

2.46.1  Advice to other users

The infrastructure manager in conjunction with the railway undertaking(s) must define a process to immediately inform each other of any situation that impedes the safety, performance and/or the availability of the rail network or rolling stock.
2.46.1 GERT8000 Rule Book module M1 - Dealing with a train accident or Train Evacuation, and module M3 - Managing Incidents Floods and Snow, contain instructions to staff on what to do in the event of an accident of incident or when they consider that the safety of trains may be affected.

2.46.2 Network Rail’s National Control Instructions (NR/L3/OCS/043) requires Network Rail and RU controllers to notify each other as soon as they become aware of the occurrence, or likely occurrence, of any disruptive event. Any such notification needs to include information regarding the nature, extent, timing and duration of the event.

2.46.3 RIS-8047-TOM sets out requirements for reporting safety-related information by means of the SMIS, so that reliable safety data is collected, analysed and made available for use by rail industry parties in the management of risk. It applies to IMs and RUs.

2.46.4 RIS-8250-RST sets out requirements for recording, analysing and reporting safety-related defects on rail vehicles, their components, systems, subsystems and related documentation. It also sets out requirements for taking action following receipt of a NIR.

2.46.5 RIS-3350-TOM sets out requirements for reporting and disseminating urgent operating safety information arising from operating incidents, equipment defects and misunderstanding of operating rules, regulations or instructions.

2.47 Advice to train drivers

4.2.3.6 2 Advice to train drivers

In any case of degraded operation associated with the infrastructure manager’s area of responsibility, the infrastructure manager must give formal instructions to drivers on what measures to take in order to safely overcome the degradation.

2.47.1 Where unplanned degraded operation is in place, it is the signaller’s responsibility to pass the formal instructions to drivers that are required for them to operate trains. The train signalling modules of the GERT8000 Rule Book contain regulations for signallers that detail the instructions that they are required to communicate.

2.47.2 Advice for ongoing degraded working may be given by the IM by:

a) WON and PON.
b) Late notice cases.

2.48 Contingency arrangements

4.2.3.6.3 Contingency arrangements

The infrastructure manager in conjunction with all the railway undertakings operating over his infrastructure, and neighbouring infrastructure managers as appropriate, must define, publish and make available appropriate contingency measures and assign responsibilities based on the requirement to reduce any negative impact as a result of degraded operation.

The planning requirements and the response to such events must be proportional to the nature and potential severity of the degradation.

- These measures, which must as a minimum include plans for recovering the network to ‘normal’ status, may also address:
4.2.3.6.3 Contingency arrangements

- rolling stock failures (for example, those which could result in substantial traffic disruption, the procedures for rescuing failed trains);
- infrastructure failures (for example, when there has been a failure of the electric power or the conditions under which trains may be diverted from the booked route);
- extreme weather conditions.

The infrastructure manager must establish and keep updated contact information for key infrastructure manager and railway undertaking staff who may be contacted in the event of service disruption leading to degraded operation.

This information must include contact details both during and outside office hours. The railway undertaking must submit this information to the infrastructure manager and advise the infrastructure manager of any changes to these contact details.

The infrastructure manager must advise all the railway undertaking(s) of any changes to his details.

2.48.1 Network Rail’s contingency plans to cater for foreseeable circumstances are contained in the following sections of the National Control Instructions (NR/L3/OCS/043):

a) Section 1.7 defines the duties of Operations Control to monitor the state of the infrastructure, train service provision and incident management. This includes pre-emptive planning and contingency.

b) Section 1.9 provides guidance on contingency planning.

2.48.2 The following documents are also used by IMs and RUs to comply with the OPE TSI requirement:

a) GERT8000 Rule Book modules contain instructions on the management of trains during degraded operations.

b) RIS-3118-TOM Incident Response Planning & Management.

c) RIS-3437-TOM Defective On-Train Equipment and its associated guidance.

2.49 Managing an emergency situation

4.2.3.7 Managing an emergency situation

The infrastructure manager must, in consultation with:

- all railway undertakings operating over his infrastructure, or, where appropriate, representative bodies of railway undertakings operating over his infrastructure,
- neighbouring infrastructure managers, as appropriate,
- local authorities, representative bodies of the emergency services (including fire fighting and rescue) at either local or national level, as appropriate.

define, publish and make available appropriate measures to manage emergency situations and restore the line to normal operation.

Such measures shall typically cover:

- collisions,
- fires on train,
- evacuation of trains,
- accidents in tunnels,
4.2.3.7 Managing an emergency situation

- incidents involving dangerous goods,
- derailments.

The railway undertaking must provide the infrastructure manager with any specific information in respect to these circumstances, especially in respect to the recovery or re-railing of their trains.

Additionally, the railway undertaking must have processes to inform passengers about onboard emergency and safety procedures.

2.49.1 RIS-3118-TOM sets out interface requirements for enabling a consistent, comprehensive and structured process for rail incident response planning and management. Guidance on interpreting and applying the requirements of RIS-3118-TOM is given in GOGN3518.

2.49.2 Network Rail’s National Emergency Plan (NR/L2/OCS/250) describes the arrangements in place to provide an effective response to accidents, incidents and other emergencies on or affecting Network Rail controlled infrastructure across GB. This document defines the responsibilities of Network Rail, passenger operating companies, freight operating companies and other organisations that interface with the railway when dealing with an emergency. It is intended to implement the requirements of the RGSs, Network Rail company standards, and other applicable codes or legislation.

2.49.3 GERT8000 Rule Book modules and GORT3053 contain instructions on the reporting and management of trains during emergency situations.

2.49.4 GMRT2130 sets out requirements for the provision of rail vehicle fire safety and evacuation arrangements. In particular, it addresses matters of rail vehicle design associated with fire safety, diesel propulsion, emergency lighting, emergency and safety equipment, emergency and safety information and emergency evacuation.

2.50 Aid to train crew in the event of an incident or of a major rolling stock malfunction

4.2.3.8 Aid to train crew in the event of an incident or of a major rolling stock malfunction

The railway undertaking must define appropriate procedures to assist the train crew in degraded situations in order to avoid or decrease delays caused by technical or other failures of the rolling stock (for example, lines of communication, measures to be taken in case of evacuation of a train).

2.50.1 GERT8000 Rule Book modules contain instructions on the management of trains during degraded situations, including the processes for evacuating trains and reporting failures of technical equipment.

2.50.2 RIS-3437-TOM sets out requirements for the production of contingency plans to be applied when on-train equipment becomes defective. It applies to all trains being brought into service, and to those already in service, on the GB mainline railway.

2.50.3 RIS-2273-RST sets out the requirements for examining vehicles after an accident or incident, with particular emphasis on the testing of brakes, speed indication systems, exterior doors and horns.

2.50.4 RIS-3118-TOM sets out interface requirements for enabling a consistent, comprehensive and structured process for rail incident response planning and management. RIS-3118-TOM is supported by GOGN3518, which gives guidance on interpreting and applying its requirements.
2.51 Functional and technical specifications of the interfaces

In the light of the essential requirements set out in Chapter 3, the functional and technical specifications of the interfaces are as follows.

2.51.1 Section 4.3 of the OPE TSI provides tables of cross-references between it and other TSI documents. To keep this guidance note as concise as possible, this information is not reproduced here. IMs and RUs should refer to section 4.3 of the OPE TSI to check for requirements within other TSIs that may be applicable to their operations.

2.52 Operating rules

The rules and procedures enabling coherent operation of new and different structural subsystems intended to be used in the European rail system, and in particular those that are linked directly to the operation of a new control command and signalling system, must be identical where identical situations exist.

The operating principles and rules specific to the European Rail Traffic Management System (ERTMS/ETCS) and for ERTMS/GSM-R radio system are specified in Appendix A.

Operational principles and rules, which are common across the European rail system, are specified in Appendix B.

2.52.1 Guidance on common operating rules is provided in 3.2 Appendix B - Common operational principles and rules on page 54 of this guidance note.

2.53 Maintenance rules

Not applicable

2.53.1 There is no requirement regarding maintenance rules in the OPE TSI, and therefore no guidance provided in this document.
2.54 Professional competences

Staff of the railway undertaking and the infrastructure manager must have attained appropriate professional competency to undertake all necessary safety-related duties in normal, degraded and emergency situations. Such competency comprises professional knowledge and the ability to put this knowledge into practice.

Minimum elements relevant to professional qualification for individual tasks can be found in Appendices F and G.

2.54.1 ROGS gives employers specific duties to make sure employees who perform safety-critical tasks are competent, fit enough to do so, and are not affected by fatigue. IMs and RUs can manage the competence and fitness for duty of their staff by developing a competence management system (CMS).

2.54.2 IMs and RUs may use the basic principles contained within Railway Safety Publication 1 ‘Developing and maintaining staff competence’ produced by the ORR, to help develop their competence management systems. Further guidance on the management of staff competence, fitness and the development of a CMS is provided in chapter 7 of ‘A Guide to ROGS’, published by the ORR.

2.54.3 Reference in the OPE TSI to staff undertaking tasks on-board and forming part of the train crew applies to guards.

2.54.4 As the scope of the OPE TSI now includes guards who operate trains on the European network, as required by the Interoperability Directive, RUs will need to review and update their CMS where necessary. The minimum elements relevant for the professional qualification for the tasks associated with ‘accompanying trains’ are specified in Appendix F of the OPE TSI.

2.54.5 Appendix F of the OPE TSI also requires staff training to cover ‘behavioural skills’. The GB mainline railway refers to behavioural skills as ‘non-technical skills’ (NTSs).

2.54.6 The requirements for train driver licensing and certification are set out in the Train Driving Licences and Certificates Regulations 2010 (as amended). Guidance on complying with these regulations is available in ‘Guide to the Train Driving Licences and Certificates Regulations 2010’ produced by the ORR.

2.54.7 The following documents available on the RSSB website provide further guidance and information to IMs and RUs on preparing a CMS which incorporates NTS training and assessment:

a) The RSSB Risk Based Training Needs Analysis (RBTNA), which is a tool for mapping NTS.
b) A Good Practice Guide to Integrating Non-Technical Skills into Rail Safety Critical Roles, which provides guidance on how to identify suitable NTSs and integrate them into the CMS.
c) RS100 and RSP1, which provide guidance on integrating NTSs into the CMS.
d) T1064 Mapping non-technical skills to non-driver roles and developing alternative case studies, which is published on SPARK and provides example mapping of the RSSB set of NTSs to the role of the guard, platform dispatcher, shunter, engineer/fitter and train running controller.
e) RSSB Research Project Report T869 ‘Non-technical skills required in train driver role: Developing an integrated approach to NTS training and investment’.

Guidance Note
GOGN3615
Issue: Two
Date: September 2017

Rail Industry Guidance Note for the Operation and Traffic Management Technical Specification for Interoperability
2.55 Language competence

4.6.2 Language competence

The infrastructure manager and the railway undertaking are required to ensure that their relevant personnel are competent in the use of the communication protocols and principles set out in Appendix C.

Where the operating language used by the infrastructure manager differs from that habitually used by the railway undertaking’s staff, such linguistic and communications training must form a critical part of the railway undertaking’s overall competence management system.

Railway undertaking staff, whose duties require them to communicate with staff of the infrastructure manager in connection with safety-critical matters, whether in normal, degraded or emergency situations, must have a sufficient level of knowledge in the operating language of the infrastructure manager.

2.55.1 RUs are advised to:

a) Determine the level of linguistic competence required for each member of staff whose duties requires them to communicate with staff of the IM in connection with safety-critical matters that will equip them to deal with routine, degraded or emergency situations.

b) Incorporate within their CMS the requirements for training, development and assessment of staff in the identified level of linguistic competence.

c) Incorporate the oral qualification requirements contained within Schedule 4 paragraph 8 of the Train Driving Licences and Certificates Regulations 2010 for train drivers.

d) Incorporate the oral qualification requirements contained within appendix E of the OPE TSI for other safety-critical staff.

2.55.2 RIS-3751-TOM sets out a multi-modal interview to assess verbal communication (at a basic level relating to, for instance, comprehension, clarity, active listening pace); and there is some specific guidance relating to foreign language contained within Appendix A, which reflects the requirements of the OPE TSI.

2.55.3 RUs operating across European borders must ensure that train drivers are able to communicate in the language of the IM in control of the route, in accordance with Annex VI, part 8.3 of Directive 2007/59/EC. This requirement is risk-assessed and the appropriate measures put in place through the RU’s own CMS.

2.55.4 For systems already in place a derogation can be sought through the EUAR. The derogation falls into two categories:

a) Applications regarding measures applied since 30 June 2016 or earlier. This case of application concerns RUs requesting a derogation for their train drivers with regard to measures they have applied since 30 June 2016 or earlier.

b) Applications regarding measures applied from 01 July 2016. This case of application concerns RUs requesting a derogation for their train drivers with regard to measures they have applied from 01 July 2016.

2.55.5 Assessment guidance is available from the EUAR website.

2.55.6 The application of a second operating language on border sections does not require a derogation in accordance with Annex VI part 8.3 of Directive 2007/59/EC. No derogation is required for either existing or future arrangements.

2.55.7 Therefore the application guide and the described application cases do not concern the introduction (or the continuation of use) of a second operating language in accordance with the OPE TSI.
2.56 Level of knowledge

4.6.2.2 Level of knowledge

The level of knowledge in the infrastructure manager’s language must be sufficient for safety purposes. As a minimum this must comprise of the driver being able to: – send and understand all the messages specified in Appendix C to this TSI; – effectively communicate in routine, degraded and emergency situations; – complete the forms associated with the use of the Book of Forms;

Other members of the train crew whose duties require them to communicate with the infrastructure manager on safety-critical matters, must as a minimum, be able to send and understand information describing the train and its operational status.

The level of knowledge for staff accompanying trains other than train drivers must be at least level 2 as described in Appendix E.


a) Drivers who have to communicate with the IM on critical safety issues must have language skills in the language indicated by the IM concerned. Their language skills must be such that they can communicate actively and effectively in routine, adverse and emergency situations.

b) They must be able to use the messages and communication method specified in the ‘Operations and traffic management’ TSI. Drivers must be able to understand (both listening and reading) and to communicate (both speaking and writing) according to level B1 of the Common European Framework of Reference for Languages (CEFR) established by the Council of Europe.

2.56.2 RUs may decide that staff accompanying trains need linguistic skills at a higher level than that required by the OPE TSI so that they can effectively communicate with passengers.

2.56.3 Whatever the level chosen for each staff member, competence management systems are designed to provide staff with the skills and confidence to communicate in another language for all the activities they are likely to encounter.

2.57 Initial and ongoing assessment of staff

4.6.3 Initial and ongoing assessment of staff

4.6.3.1 Basic elements

Railway undertakings and infrastructure managers are required to define the assessment process for their staff in order to meet the requirements specified in Commission Regulations (EU) 1158/2010 and (EU) 1169/2010.

2.57.1 The guide for the application of the OPE TSI gives further guidance to RUs and IMs on defining the assessment process for staff.

2.57.2 Although this list is not exhaustive, the following documents contain guidance and information that may assist IMs and RUs in defining their assessment processes:

a) RIS-3751-TOM provides a standard on the psychometric assessment process for train drivers who will drive on Network Rail-managed infrastructure.
b) RUs and IMs may use the basic principles contained within the Railway Safety Publication 1 ‘Developing and maintaining staff competence’ produced by the ORR, including the elements contained within Appendices F and G of the OPE TSI, to develop their competence management systems.

c) RSSB Good Practice Guide RS100 ‘Good Practice Guide on Competence Development’ has been developed to provide information and practical guidance to anyone who needs to understand, manage or contribute constructively to the analysis, design, delivery, review or assessment of training and other competence management activities, and is available on the RSSB website.

d) T717 ’Good Practice Guide: Competence Retention’ provides guidance for IMs and RUs in managing competence-retention by staff, and is available on the RSSB website.

2.58 Analysis and update of training needs

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<tr>
<th>Analysis and update of training needs</th>
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<tr>
<td>Railway undertakings and infrastructure managers must undertake an analysis of training needs for their relevant staff and define a process for reviewing and updating their individual training needs in order to meet the requirements specified in Regulations (EU) 1158/2010 and (EU) 1169/2010.</td>
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<tr>
<td>This analysis must set out both scope and complexity and take into account the risks associated with the operation of trains, traction and rolling stock. The railway undertaking must define the process by which knowledge of on board staff of the routes worked over is acquired and maintained.</td>
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<tr>
<td>This process must be: – based upon the route information provided by the infrastructure manager; and in accordance with the process described in point 4.2.1. For the tasks associated with ‘accompanying trains’ and ‘preparing trains’, the elements that shall be considered can be found in respectively the appendices F and G. As appropriate, elements of the training for staff must be put in places which take these into account.</td>
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<tr>
<td>It is possible that due to the type of operation envisaged by a railway undertaking or the nature of the network being run by an infrastructure manager, some of the elements in the appendices F and G will not be appropriate. The analysis of training needs must document those not deemed appropriate and the reasons why.</td>
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2.58.1 Individual RUs and IMs have their own CMS arrangements in place based upon their training needs analyses. In developing these systems they may use guidance provided in ‘Developing and maintaining staff competence’ (Railway Safety Publication 1, produced by the ORR) and other documents.

2.58.2 RSSB Good Practice Guide RS100 Good Practice Guide on Competence Development has been produced to provide information and practical guidance to anyone who needs to understand, manage or contribute constructively to the analysis, design, delivery, review or assessment of training and other competence management activities.

2.58.3 RIS-3702-TOM sets out a standard for the training, development, monitoring and assessment of staff on route knowledge and route risks, for the rail industry to use if they so choose. This document also contains additional guidance to be considered by the RU during the development and management of its route learning and assessment processes.

2.58.4 RSSB has developed a Risk-Based Training Needs Analysis (RBTNA) methodology. It is a process and template that allows companies to minimise risks associated with tasks through learning, assessment and competence-management activities, which are aligned to both learner and business needs.
2.59 Auxiliary staff

4.6.4 Auxiliary staff

The railway undertaking must make sure that the auxiliary staff (for example, catering and cleaning) not forming part of the ‘train crew’ is, in addition to their basic instruction, trained to respond to the instructions of the fully trained members of the ‘train crew’.

2.59.1 RUs use the guidance contained within sections 2.54 to 2.64 of this Guidance Note, as far as they apply to on-board auxiliary staff working on cross-border services.

2.59.2 RUs will need to include specific provisions for the training and development of on-board staff to respond to instructions from train crew within their CMS.

2.60 Health and safety conditions

4.7 Health and safety conditions

4.7.1 Introduction

Staff specified in point 4.2.1 as staff performing safety-critical tasks in accordance with point 2.2 must have appropriate fitness to ensure that overall operational and safety standards are met.

Railway undertakings and infrastructure managers must set up and document the process they put in place to meet the medical, psychological and health requirements for their staff within their safety management system.

Medical examinations as specified in point 4.7.2 and any associated decisions on the individual fitness of staff must be conducted by a medical doctor.

Staff must not perform safety-critical tasks whilst vigilance is impaired by substances such as alcohol, drugs or psychotropic medication. Therefore, the railway undertaking and the infrastructure manager must have in place procedures to control the risk that staff attend for work under the influence of such substances, or consume such substances at work.

National rules of the Member State where a train service is operated apply with regard to defined limits of the above mentioned substances.

2.60.1 The Health and Safety at Work etc. Act 1974 (HASAW) requires that ‘It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees.’ Relevant sections from UK legislation and railway standards are reproduced in the following sections.

2.60.2 The Management of Health and Safety at Work Regulations 1999 (MHSWR) requires that ‘Every employer shall make a suitable and sufficient assessment of:

a) The risks to the health and safety of his employees to which they are exposed whilst they are at work; and

b) The risks to the health and safety of persons not in his employment arising out of or in connection with the conduct by him of his undertaking, for the purpose of identifying the measures he needs to take to comply with the requirements and prohibitions imposed upon him by or under the relevant statutory provisions.’
2.60.3 The Train Driving Licences and Certificates Regulations 2010 requires that:

a) ‘A licence cannot be issued to a train driver unless they have passed the medical and occupational psychological fitness examinations.

b) Medical assessments to be carried out by, or under the supervision of, recognised doctors who appear on a register of doctors maintained by the Office of Rail Regulation (ORR).’

2.60.4 ROGS requires that ‘Every controller of safety critical work shall, so far as is reasonably practicable, ensure that a person under his management, supervision or control, with the exception of where that person is receiving practical training in a safety-critical task, only carries out safety critical work where that person has been assessed as being competent and fit to carry out that work following an assessment by an assessor.’

2.60.5 IMs and RUs, when devising medical fitness standards, should align them with elements mandated by any of the following:

a) Act of Parliament or Statutory Instrument, for example Train Driving Licences and Certificates Regulations 2010.

b) Railway Group Standards.

c) Other regulatory or accrediting bodies.

2.60.6 RIS-3451-TOM requires RUs to arrange for medical examinations of train drivers to be carried out by, or under the supervision of, a registered medical practitioner.

2.60.7 RIS-3452-TOM requires IMs and RUs to arrange for medical examinations to be carried out by, or under the supervision of, a registered medical practitioner.

2.60.8 GOGN3655 provides the following guidance:

a) IMs and RUs should arrange for medical examinations to be carried out by, or under the supervision of, a registered medical practitioner with:

i) Expertise of occupational medicine.

ii) Knowledge of the hazards of the work concerned and of the railway environment.

iii) An understanding of how measures intended to eliminate or reduce risks from those hazards could be affected by lack of medical fitness.

iv) Other accreditation, certification or registration if required by regulatory authorities in the circumstances.

b) Where it is not reasonably practicable for IMs and RUs to arrange for a physician meeting the requirements specified above to conduct or supervise medical assessments, they should ensure they have access to such a physician for advice on the interpretation of medical fitness standards, and to monitor consistency of their application.

2.60.9 Expertise of occupational medicine.

2.60.10 Where it is not reasonably practicable for IMs and RUs to arrange for a physician meeting the requirements specified above to conduct or supervise medical assessments, they should ensure they have access to such a physician for advice on the interpretation of medical fitness standards, and to monitor consistency of their application.

2.60.11 RIS-8070-TOM sets out common requirements for drug and alcohol testing of staff carrying out safety-critical work to be applied by IMs and RUs. GEGN8570 gives guidance on interpreting and applying the requirements of RIS-8070-TOM.

2.60.12 RIS-3751-TOM provides a standard on the selection process for train drivers who will drive on the GB mainline network, for the rail industry to use if they so choose. Its purpose is to outline ‘an agreed industry method for the psychometric assessment process for candidates for employment as train drivers who will drive on the GB mainline network’. RUs conduct psychometric assessments as part of the selection of train drivers according to this standard.
2.61 Minimum content of the pre-appointment medical examination

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<th>4.7.2 Medical examinations and psychological assessments</th>
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<td>4.7.2.1 Before appointment:</td>
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<td>4.7.2.1.1 Minimum content of the medical examination</td>
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Medical examinations must cover:

a) General medical examination
b) Examinations of sensory functions (vision, hearing, colour perception)
c) Urine or blood analysis for the detection of diabetes mellitus and other conditions as indicated by the clinical examination
d) Screening for abuse of drugs.

2.61.1 RIS-3451-TOM states: ‘Railway undertakings include an examination of sensory functions within medical examinations.’ Sensory functions consist of visual acuity, colour perception and hearing. The guidance included within the standard states: ‘Medical examinations include, in addition to general health and sensory functions:

a) Blood or urine tests to detect diabetes mellitus and other conditions as indicated by the medical examination.
b) Screening for drugs of abuse where clinically indicated.’

2.61.2 RIS-3452-TOM states: ‘IMs and RUs shall include an examination of sensory functions within medical examinations.’ Sensory functions consist of visual acuity, colour perception and hearing. The guidance included within the standard states: ‘Medical examinations include, in addition to general health and sensory functions:

a) Blood or urine tests to detect diabetes mellitus and other conditions as indicated by the medical examination.
b) Screening for drugs of abuse where clinically indicated.’

2.61.3 GOGN3655 provides the following guidance: ‘IMs and RUs should develop medical fitness criteria that comprise of, as a minimum, the following elements:

a) Vision requirements – which may include distance, near and intermediate visual acuity as well as colour vision, depending on the requirements of the job.
b) Hearing requirements – pre-determined standards against which to assess a person’s hearing.
c) General health requirements – which include general medical standards determined by a task analysis carried out by transport operators together with medical advisors. These are aimed at detecting conditions that may impair important functions necessary for safe performance of duties including sight, hearing, awareness, mobility, balance and coordination.’

2.61.4 IMs and RUs are advised, as part of the task analysis, to identify the visual acuity requirements for each occupation. This will enable suitable visual acuity standards to be defined.

2.61.5 IMs and RUs may include simple urine tests to detect diabetes as part of a general medical examination.

2.61.6 RIS-8070-TOM sets out common requirements for drug and alcohol testing of staff carrying out safety-critical work to be applied by the IM and RUs. GEGN8570 gives guidance on interpreting and applying the requirements of RIS-8070-TOM.
2.62 Psychological assessment

4.7.4.1.2 Psychological assessment

The aim of the psychological assessment is to support the railway undertaking in the appointment and management of staff who have the cognitive, psychomotor, behavioral and personality capabilities to perform their roles safely. In determining the content of the psychological assessment, as a minimum, the following criteria relevant to the requirements of each safety function must be taken into account:

- Cognitive:
  - Attention and concentration
  - Memory
  - Perceptive capability
  - Reasoning
  - Communication

- Psychomotor:
  - Speed of reaction
  - Gestured co-ordination

- Behavioral and personality:
  - Emotional self-control
  - Behavioral reliability
  - Autonomy
  - Conscientiousness

If any of those elements is omitted, the respective decision must be justified and documented by a psychologist. Applicants shall demonstrate their psychological fitness by passing an examination conducted by, or under the supervision of – to be decided by the Member State – a psychologist or a medical doctor.

2.62.1 RUs work with their psychologist to determine which psychological assessments are required based on the requirements of clause 4.7.4.1.2 of the OPE TSI. Justification of the decisions to use or omit the criteria in the TSI forms part of the RU’s SMS.

2.62.2 RIS-3751-TOM sets out requirements and guidance on the psychometric assessment process for train drivers who will drive on the GB mainline network. RUs may conduct psychometric assessments as part of the selection of train drivers according to this standard.

2.63 After appointment - Periodicity of periodic medical examinations

4.7.4.2 After appointment

4.7.4.2.1 Periodicity of periodic medical examinations

At least one systematic medical examination must be performed:

- Every 5 years for staff aged up to 40
- Every 3 years for staff aged between 41 and 62
- Every year for staff aged over 62.
4.7.4.2 After appointment

4.7.4.2.1 Periodicity of periodic medical examinations

Increased frequency of examination must be set by the medical doctor if the state of health of the member of the staff requires so.

2.63.1 Current age limits and frequency of examination differ slightly from those shown in the OPE TSI.

2.63.2 This is currently justified by the GB mainline railway official response to the OPE TSI Implementation Plan as follows: ‘UK/GB practice will be aligned with the OPE TSI once the specific implications and benefits of greater frequency of tests and the process of transition necessary, becomes clearer. This will then require consultation and consensus across the industry as part of the governance associated with implementing any changes to the relevant standard. This will be progressed over the course of 2017’.

2.63.3 Further work is being carried out in Europe regarding medicals. Pending the outcome of this work, RUs and IMs on the GB mainline railway will continue to apply the requirements set out in RIS-3451-TOM and RIS-3452-TOM.

2.64 Minimum content of the periodic medical examination

4.7.4.2.2 Minimum content of the periodic medical examination

If the worker complies with the criteria required at the examination, which is carried out before practicing an occupation, the periodic specialised examinations must include as a minimum:

- Examination of sensory functions (vision, hearing, colour perception)
- Urine or blood analysis for the detection of diabetes mellitus and other conditions as indicated by the clinical examination
- Screening for abuse of drugs where clinically indicated

2.64.1 Train Driving Licences and Certificates Regulations 2010, Schedule 1 Medical Requirements contains the medical requirements for train drivers.

2.64.2 GOGN3655 gives guidance on medical fitness for railway safety-critical workers.

2.64.3 RIS-8070-TOM sets out common requirements for drug and alcohol testing of staff carrying out safety-critical work to be applied by the IM and RUs.

2.65 Additional medical examinations and/or psychological assessments

4.7.4.2.3 Additional medical examinations and/or psychological assessments

Besides the periodic medical examination, an additional specific medical examination and/or psychological assessment must be performed where there is reasonable ground for doubting the medical or psychological fitness of a member of staff or reasonable suspicion of use of drugs of abuse or inappropriate use of alcohol over the limits allowed. This would be the case especially after an incident or accident caused by human error on the part of the individual.
4.7.4.2.3 Additional medical examinations and/or psychological assessments

The railway undertaking and the infrastructure manager must put systems in place to ensure that such additional examinations and assessments are undertaken as appropriate.

2.65.1 IMs and RUs implement their own policies and processes to comply with the regulations in Schedule 1 Medical Requirements of the Train Driving Licences and Certificates Regulations 2010.

2.65.2 This schedule states: 'The purpose of the occupational psychological examination is to assist in the appointment and management of staff. In determining the content of the psychological evaluation, the examination must assess that the applicant driver has no established occupational psychological deficiencies, particularly in operational aptitudes or any relevant personality factor, which are likely to interfere with the safe exercise of their duties'.

2.65.3 Supporting information for IMs and RUs on the requirements for drug and alcohol testing of staff carrying out safety-critical work may be found in RIS-8070-TOM and its associated guidance.

2.66 Medical requirements - General requirements

4.7.3 Medical requirements
4.7.3.1 General requirements

Staff must not suffer from medical conditions or take medical treatment likely to cause:

- Sudden loss of consciousness
- Impairment of awareness or concentration
- Sudden incapacity
- Impairment of balance or co-ordination
- Significant limitation of mobility.

2.66.1 Train Driving Licences and Certificates Regulations 2010, Schedule 1 Medical Requirements contains the medical requirements for train drivers, including 'Railway undertakings shall not permit train drivers to continue driving duties where there is reason to believe they may be suffering from any medical condition or be taking any medication, drugs or substances that lead to the causes shown in the above requirement'.

2.66.2 GOGN3655 provides guidance to support RUs and IMs in understanding their responsibilities and how they may set their own medical fitness criteria.

2.67 Vision requirements

4.7.3.2 Vision requirements

- Aided or unaided distance visual acuity: 0.8 (right eye + left eye – measured separately); minimum of 0.3 for the worse eye
- Intermediate and near vision: sufficient whether aided or unaided
- Maximum corrective lenses: hypermetropia +5 / myopia – 8. The medical doctor may allow values outside this range in exceptional cases and after having sought the opinion of an eye specialist.
### 4.7.3.2 Vision requirements

- Contact lenses are allowed. – Normal colour vision: using a recognised test, such as the Ishihara, completed by another recognised test if required
- Vision field: normal (absence of any abnormality affecting the task to be performed)
- Vision for both eyes: present
- Binocular vision: present
- Contrast sensitivity: good
- Absence of progressive eye disease
- Lens implants, keratotomies and keratectomies are allowed only on condition that they are checked on a yearly basis or according to a frequency set by the occupational doctor.

2.67.1 The vision requirements for new train drivers are contained within Schedule 1 Medical Requirements of the Train Driving Licences and Certificates Regulations 2010.

2.67.2 The vision requirements for existing drivers are set out in RIS-3451-TOM.

2.67.3 The vision requirements for guards are set out in RIS-3452-TOM.

### 4.7.3.3 Hearing requirements

Sufficient hearing confirmed with tone audiogram, that is:

- Hearing good enough to hold a phone conversation going and be able to hear alert tones and radio messages
- The use of hearing aids is allowed.

2.68.1 The hearing requirements for new train drivers are set out in Schedule 1 Medical Requirements of the Train Driving Licences and Certificates Regulations 2010.

2.68.2 The hearing requirements for existing drivers are set out in RIS-3451-TOM.

2.68.3 The hearing requirements for guards are set out in RIS-3452-TOM.

### 2.69 Registers of infrastructure and vehicles

Due to the characteristics of the registers of infrastructure and vehicles, as defined in Articles 33, 34 and 35 of Directive 2008/57/EC, these registers are not suitable for the particular requirements of the operation and traffic management subsystem. Therefore this TSI specifies nothing in respect of these registers. However, there is an operational requirement for certain infrastructure related data items to be made available to a railway undertaking and conversely for certain rolling stock related items to be made available to an infrastructure manager, as specified in point 4.8.1 and point 4.8.2. In both cases the data concerned must be complete and accurate.
2.69.1 The information is available to meet this requirement, but is currently not captured in one place and it is therefore difficult to present a cohesive case of alignment. This is described in the OPE TSI Implementation Plan submitted by the DFT.

2.69.2 Future work on the GB mainline railway is looking at the collation and alignment of the relevant documentation.

2.70 Infrastructure

4.8.1 Infrastructure

The requirements for the rail infrastructure related data items with regard to the operation and traffic management subsystem, and which must be made available to railway undertakings, are specified in Appendix D. The infrastructure manager is responsible for the correctness of the data.

2.70.1 Information is available in Network Rail’s Network Statement regarding train compatibility in NESA.

2.70.2 The requirements and responsibilities for the assessment of route compatibility of vehicles and infrastructure are set out in GERT8270.

2.70.3 The Route Book Compatibility document meets the majority of these requirements, although it will require updating to ensure complete alignment with OPE TSI.

2.71 Rolling stock

4.8.2 Rolling stock

The following rolling stock related data items must be available to infrastructure managers. The keeper is responsible for the correctness of the data:

a) whether the vehicle is constructed from materials which can be hazardous in case of accidents or fire (for example, asbestos)

b) total length of the vehicle including buffers if existing.

2.71.1 GERT8270 sets out requirements and responsibilities for the assessment of route compatibility of vehicles and infrastructure.

2.71.2 GMRT2453 sets out requirements for the identification of rail vehicles, the requirements for the registration of rail vehicles in the rolling stock library and the data to be displayed on rail vehicles. This includes both the length over buffers and any vehicles that contain hazardous materials.

2.72 Temporary specific case (T2)

7.3.2.2 Temporary specific case (T2) Ireland and United Kingdom

For the implementation of point 4.2.3.2.1, Ireland and United Kingdom are using alphanumeric numbers in the existing systems. The Member States set out the requirements and time schedule for the transition from alphanumeric train running numbers to numeric train running numbers in the target system.
2.72.1 Referring to 4.2.3.2.1 of the OPE TSI - Format of train running number: The train running number format is defined in Commission Decision 2012/88/EU (1), as amended (the control-command and signalling TSI hereinafter referred to as 'CCS TSI').

2.72.2 It is permissible to use an alphanumeric keyboard to enter the train running number if support for alphanumeric train running numbers is required by the NTR notified for this purpose.

2.72.3 The long-term outcome for this specific case is dependent on Network Rail’s study on train running numbers (see further guidance in 4.2.3.2 of the OPE TSI - identification of trains contained in this document).

2.72.4 With regard to the ERTMS/ETCS Driver Machine Interface (DMI), this specific case is needed as soon as the open point related to the DMI specification is closed.
Part 3  Guidance on the Appendices of the OPE TSI

3.1 Appendix A - ERTMS/ETCS operating rules

A. ERTMS/ETCS operating rules


3.2 Appendix B - Common operational principles and rules

B. Common operational principles and rules

In case of degraded operation, the contingency arrangements set out in 4.2.3.6.3 shall also be considered.

3.2.1 Appendix B sets out the Common Operational Rules (CORs) to be used following the scope of the TSI OPE and in the prescribed situations. They are valid for both ETCS and Class B systems, that is, these CORs are applicable regardless of the CCS system used. They have been developed using a risk assessment process in which a hazard was identified and the potential risk analysed. The situation protocol for each of the events is included in this application guide. The situation protocols were then used to decide the most appropriate high-level controls to be applied to control the risk. These are called CORs and are applied in the event of a situation occurring.

3.2.2 In Member States where a rule is in place relating to the identified situation which deviates from the principles in the COR, the RU / IM needs to analyse the results of the change using the CSM on risk assessment. If a result of the analysis determines that the COR cannot be applied, the RU / IM needs to demonstrate this analysis and the alternative approach using the CSM on risk assessment. If the CSM on risk assessment is applied, this decision to use a different rule is verified by an independent safety assessment and consideration given as to whether there is a need to review or add new CORs to the TSI.

3.2.3 Appendix B will be developed further over time and include more situations where it is possible to agree a European COR.

3.2.1 Sanding

1. Sanding

If the train is equipped with manually activated sanding device, the driver shall always be allowed to apply sand but shall avoid it wherever possible:

- In the area of points and crossings
- During braking at speeds less than 20 km/h,
- When at standstill.

The exceptions to this are:

- If there is a risk of SPAD (Signal Passed At Danger) or other serious incident in the application of sand would assist adhesion
1. Sanding

- When starting away
- When required to test the sanding equipment on the traction unit.

3.2.1.1 The OPE TSI only refers to trains equipped with manually-activated sanding equipment, not those where sanding is automatic. Automatic sanding equipment in use on the GB mainline railway is isolated when defective, and does not default to a manual sanding mode.

3.2.1.2 GMRT2461 applies to new or upgraded sanding devices from 03 September 2016. Compliance of existing sanders is not required.

3.2.1.3 RIR 2011 (as amended) defines what constitutes a new, renewed or upgraded vehicle.

3.2.1.4 Further information can be found in the following RSSB research documents and on the RSSB website:
   a) T796 ‘Understanding the current use of sanders on multiple units’.
   b) T797 ‘Performance and installation criteria for sanding systems’.

3.2.2 Departure of the train

2. Departure of the train

At the initial station or after a scheduled stop the driver is allowed to depart when the following conditions are fulfilled:
   a) After train service conditions are fulfilled;
   b) When it is time to depart, except when allowed to start before the scheduled time.
   c) After the driver has received an authorisation for train movement

3.2.2.1 The following documents contain further requirements and guidance dealing with train departure:
   a) GORT3056 Working Manual for Rail Staff - Freight Train Operations.
   b) GOGN3653 Guidance on Safe Freight Train Operation.
   c) RIS-3703-TOM Rail Industry Standard for Passenger Train Dispatch and Platform Safety Measures.
   d) GERT8000 module SS1 Station duties and train dispatch.

3.2.3 No authorisation for train movement at the expected time

3. No authorisation for train movement at the expected time

If the driver has not received an authorisation for train movement at the expected time, and has no information as to the reason, the driver shall inform the signaller.

3.2.3.1 This requirement is specified in GERT8000 Rule Book module S4, and it is advisable to include it in staff training.

3.2.4 Complete failure of front end lights

4. Complete failure of front end lights

If the driver is not able to display any front end light:
4. Complete failure of front end lights

4.1 During good visibility

The driver shall inform the signaller about the failure. The train shall proceed at the maximum permitted speed to the nearest location where the front end light can be repaired/replaced or the affected vehicle replaced. When proceeding, the driver shall use the train audible warning device as necessary or as instructed by the signaller.

4.2 During darkness or poor visibility

The driver shall inform the signaller about the failure. As long as a portable front end light displaying a white light is fitted on the front of the train, the train shall proceed at the maximum allowable speed for that failure to the nearest location where the front end light can be repaired/replaced or the affected vehicle replaced. If a portable front end light is not available, the train shall not proceed, unless formal instructions are given by the signaller to continue to the nearest suitable location to where the line can be cleared. When proceeding, the driver shall use the train audible warning device as necessary or as instructed by the signaller.

3.2.4.1 ‘Front end lights’ are referred to on the GB mainline railway as ‘head lamps’.

3.2.4.2 GERT8000 Rule Book module TW5 specifies under what circumstances trains may enter service with defective head lamps, and the actions to take when a head lamp fails while a train is in service.

3.2.4.3 RUs are responsible for producing a defective on-train equipment (DOTE) contingency plan as specified in RIS-3437-TOM and its associated guidance note GOGN3637. Head lamps fall within the scope of the DOTE contingency plan.

3.2.4.4 A limited number of heritage vehicles in use on the GB mainline railway are not equipped with integral head lamps, and therefore carry a portable head lamp. In some circumstances portable head lamps may also be used on vehicles where the integral head lamp is defective, as specified in GERT8000 Rule Book module TW5. The requirements for portable head lamps are set out in GMRT2131.

3.2.5 Complete failure of a rear end signal

5. Complete failure of a rear end signal

If the signaller becomes aware of the complete failure of the train rear end signal, the signaller shall make arrangements to stop the train in an appropriate location and inform the driver.

The driver shall then check the completeness of the train and if necessary repair/replace the train rear end signal.

The driver shall report to the signaller that the train is ready to proceed. Otherwise, if the repair is not possible, the train may not proceed, unless special arrangements are made between signaller and driver.

3.2.5.1 ‘Rear end signals’ are referred to on the GB mainline railway as ‘tail lamps’.

3.2.5.2 GERT8000 Rule Book module TW5 specifies the circumstances in which trains are permitted to enter service with a defective tail lamp, and also the actions to take when a tail lamp fails in service.

3.2.5.3 RUs are responsible for producing a DOTE contingency plan, as set out in RIS-3437-TOM and its associated guidance note GOGN3637. Tail lamps fall within the scope of the DOTE contingency plan.

3.2.5.4 The majority of freight vehicles, and some older passenger vehicles, in use on the GB mainline railway are not equipped with integral tail lamps and therefore may carry a portable tail lamp. The requirements for portable tail lamps are set out in GMRT2131.
3.2.6 Failure of the audible warning device of a train

If the audible warning device fails, the driver shall inform the signaller about the failure. The train shall not exceed the permitted speed for the failure of an audible warning device to the nearest location where the audible warning device can be repaired or the affected vehicle replaced. The driver shall be able to stop before passing over any level crossing where the audible warning device must be sounded and then proceed over the level crossing only when it is safe to do so. If a multi-tone audible warning device is defective but at least one tone is functioning, the train may proceed normally.

3.2.6.1 The ‘audible warning device’ is referred to on the GB mainline railway as the ‘warning horn’. GERT8000 Rule Book module TW5 specifies the circumstances under which a train may enter service with a defective warning horn, and the actions to take if a failure of the horn occurs while in service.

3.2.7 Failure of level crossing

7. Failure of level crossing

7.1 Stopping trains passing over a defective level crossing

When a technical failure affecting safety of running trains over a level crossing has been detected and as long as the safe operation has not been restored, the normal passing of trains over the level crossing must be prevented.

7.2. Passing trains over the defective level crossing (if authorised)

- Where the nature of the failure permits train movements to continue, the driver of each train shall be authorised to continue and to pass over the level crossing.
- After being instructed to pass over the level crossing with a failure, the driver shall pass the level crossing as instructed. If the level crossing becomes obstructed the driver shall take all possible measures necessary to stop.
- When approaching the level crossing, the driver shall use the audible warning device when necessary or when formal instructions have been given by the signaller. If the level crossing is clear, the driver shall proceed and accelerate the train as soon as the front of the train has passed clear the level crossing.

3.2.7.1 There are multiple different types of level crossing in use on the GB mainline railway, which differ in their operation.

3.2.7.2 The different types of level crossing are set out in the GERT8000 Rule Book modules.

3.2.7.3 GERT8000 Rule Book modules TS9 and TW8 describe the actions that signallers and drivers respectively must take in the event of a failure.

3.2.8 Failure of voice radio communication

8. Failure of voice radio communication

8.1. Failure of train radio detected during train preparation

In case of on board radio failure a train shall not be permitted to start a service on lines where a radio is required.

8.2. Failure of train radio when the train has entered service
### 8. Failure of voice radio communication

When the driver becomes aware that the voice radio is failed, the driver shall inform the signaller as soon as practicable. The driver shall then carry out the formal instructions given by the signaller concerning the further movement of the train. A train with a failed train radio may continue the service:

- a) As long as another means of emergency communication is provided between the driver and the signaller; or,
- b) To the nearest location where the radio can be repaired or the affected vehicle replaced as long as another means of communication is provided between the driver and the signaller.

### 9. Running on sight

- Proceed with caution, controlling the speed, taking into account the line visible in advance, such that it is possible to stop short of any vehicle, stop aspect or obstacle; and
- Not exceed the maximum speed for running on sight.

### 10. Assistance to a failed train

If a train is stopped by failure, the driver must immediately inform the signaller about the failure and the circumstances of the failure.

When an assisting train is needed, the driver and signaller must agree at least all of the following:

- the type of assisting train needed
- if a specific direction is required (front or rear)
- the location of the failed train. After the driver has asked for assistance, the train must not be moved even if the defect is rectified until:
10. Assistance to a failed train

- the assisting train has arrived, or
- the driver and signaller have agreed alternative arrangements.

The signaller must not allow the assisting train to enter the section occupied by the failed train unless confirmation has been received that the failed train will not be moved. When the assisting train is ready to enter the section occupied by the failed train, the signaller shall inform the driver of the assisting train at least the following:

- The location of the failed train
- The location where the failed train is to be taken to

The driver of the combined train must make sure that:

- The assisting train is coupled to the failed train, and
- the brake performance of the train is checked, the automatic brake, if compatible, is connected and a brake test has been carried out.

When the combined train is ready to continue, the driver in control must contact the signaller and inform the signaller of any restrictions and move the train in accordance with any instructions given by the signaller.

3.2.10.1 The GB mainline railway meets this requirement through the instructions set out in GERT8000 Rule Book module M2.

3.2.11 Authorisation to pass a signal showing a stop aspect/indication

11. Authorisation to pass a signal showing a stop aspect/indication

The driver of the train concerned must have authorisation to pass a signal showing stop aspect/indication. When giving authorisation, the signaller must give the driver any instructions concerning the movement. The driver must apply the instructions and must not exceed any speed restriction, where one is imposed, until reaching the location where the normal operation can be resumed.

3.2.11.1 The instructions for passing a signal showing a stop aspect on the GB mainline railway are set out in GERT8000 Rule Book module S5.

Note: Under the rules contained in GERT8000 Rule Book Module S5, the second sentence of the requirement would not apply with an intermediate block home signal with a telephone failure, as the driver would be unable to contact the signaller and can proceed on their own authority.

3.2.12 Anomalies in lineside signalling

12. Anomalies in lineside signalling

If any of the following anomalies are observed:

- No signal aspect is shown where there should be one
- An irregular aspect is shown at the signal
- An irregular signal aspect sequence is received on the approach to the signal
- The aspect of the signal is not clearly visible.
12. Anomalies in lineside signalling

The driver shall act according to the most restrictive indication that could be presented by the signal. In all cases the driver must report to the signaller the abnormal signalling indication when observed.

3.2.12.1 The GB mainline railway meets this requirement through the instructions set out in GERT8000 Rule Book Module S7.

3.2.13 Emergency call

When receiving an emergency call the driver shall assume that there is a dangerous situation and perform all actions necessary in order to avoid or reduce the effect of this situation. In addition, the driver shall:

a) Immediately reduce the speed of the train to the appropriate speed for running on sight; and
b) Run on sight unless otherwise instructed by the signaller; and
c) Obey the instructions given by the signaller

Drivers that have been ordered to stop shall not restart without authorisation from the signaller. Other drivers shall continue running on sight until the signaller informs them that running on sight is no longer necessary.

3.2.13.1 The GB mainline railway meets this requirement through GERT8000 Rule Book Module TW1, which sets out instructions both for making and receiving emergency train radio calls. Current rules on the GB mainline railway are more stringent than required by the OPE TSI as they require all trains to come to a stand upon receiving an emergency call. GERT8000 Rule Book module TW1 also sets out instructions to signallers and drivers for re-starting trains following an emergency radio call.

3.2.13.2 The RS523 GSM-R Handbook gives further guidance on emergency calls.

3.2.14 Immediate actions to prevent danger to trains

Any RU/JIM staff who become aware of a danger to trains must take immediate action to stop any trains which may be affected and take any other action as necessary to avoid harm or loss.

Any driver made aware of a danger to their train must stop and alert the signaller immediately to the danger.

3.2.14.1 The GB mainline railway meets this requirement through GERT8000 Rule Book Module G1 - General Safety Responsibilities and Personal Track Safety for Non-Track Workers.

3.2.14.2 These principles and rules are also supplemented by M1 - Dealing with a Train Accident or Train Evacuation. This is an integral part of any staff’s commitment to running a safe railway.
3.3 Appendix C - Safety related communications methodology

This Appendix sets out the rules for safety-related communications, between train crew, mainly the train driver, and signaller, in particular to define its structure and methodology. Safety-related communication has priority over all other communication.

3.3.1 Sections C1 - C5 are the communication principles around structure, methodology and rules. On the GB mainline railway the rules for safety-critical communication are set out in GERT8000 Rule Book module G1.

3.3.2 The communications protocols required by GERT8000 module G1 should be reflected throughout the training provided to staff by RUs and IMs, as well as in their CMS.

3.3.3 RSSB is currently facilitating project T1078, which aims to deliver a generic communications training package for the GB mainline railway. This is intended to lead to greater consistency in the standard of safety-critical communications across the industry; the outputs from this project are anticipated to be available in early 2018.

3.3.4 Sections C6 and C7 refer to written orders. All written orders can be found on the RSSB website in the standards catalogue.

3.3.5 Section C8 refers to a book of forms. Currently the GB mainline railway does not technically use a book of forms as described in the OPE TSI. However, the information required to be contained within the book of forms to meet the requirement can be found on the RSSB website in the standards catalogue.

3.3.6 All forms used on the GB mainline railway are identified by a unique reference number. The GERT8000 Rule Book uses this reference number whenever it requires IM or RU staff to complete a form as part of their duties.

3.3.7 Section C9 requires RUs to provide their staff with a glossary of railway terminology for the networks over which their trains operate. On the GB mainline railway this requirement is satisfied by GERT8000-Gloss, which provides a glossary of railway terminology, and GKGN0802 which provides a glossary of signalling terms.

3.4 Appendix D - Elements the infrastructure manager has to provide

Elements the infrastructure manager has to provide to the railway undertaking for the Route Book and for the train compatibility over the route intended for operation.

3.4.1 A complete list of elements is provided in Appendix D of the OPE TSI. On the GB mainline railway the Route Book is, in effect, the NES, although at present gradient information is not included.

3.4.2 RIS-3215-TOM aids IMs in complying with the OPE TSI by specifying requirements for Weekly Operating Notices, Periodical Operating Notices and the Sectional Appendices.

3.4.3 The GB mainline railway intends to ensure alignment with the OPE TSI in the future by building on the Route Book to incorporate all of the IM requirements shown in Appendix D. However, EURA has announced that it plans to review the requirements in Appendix D of the OPE TSI. Work on a GB mainline railway route book is therefore deferred at the time of writing, pending the outcome of this review.
3.4.4 Current route information can be found in the following table:

<table>
<thead>
<tr>
<th>OPE TSI Requirement</th>
<th>Available</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Generic information regarding the IM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 IM’s Name</td>
<td>Y</td>
<td>NESA</td>
</tr>
<tr>
<td>1.2 Member State</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>2. Maps and diagrams</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line sections</td>
<td>Y</td>
<td>NESA Table A</td>
</tr>
<tr>
<td>Principal locations (stations, yards, junctions, freight terminals)</td>
<td>Y</td>
<td>NESA Table A</td>
</tr>
<tr>
<td>2.2 Line diagram</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indication of running lines, loops catch/trap points and access to sidings</td>
<td>Y</td>
<td>Most of the information is in the NESA Table A; it does not cover trap points.</td>
</tr>
<tr>
<td>Principal locations (stations, yards, junctions, freight terminals) and their position relative to the line</td>
<td>Y</td>
<td>NESA Table A</td>
</tr>
<tr>
<td>Location, type and name of all fixed signals relevant for trains</td>
<td>N</td>
<td>5 Mile Line Diagrams cover this but are not supplied externally</td>
</tr>
<tr>
<td>2.3 Station/yard/depot diagrams</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of location</td>
<td>Y</td>
<td>NESA Table A</td>
</tr>
<tr>
<td>Type of location passenger terminal, freight terminal, yard, depot</td>
<td>Y</td>
<td>NESA Table A, although the naming conventions are not consistent</td>
</tr>
<tr>
<td>Location, type and identification of fixed signals that protect danger points</td>
<td>N</td>
<td>5 Mile Line Diagrams cover this but are not supplied externally</td>
</tr>
<tr>
<td>Identification and plan of tracks, including switches</td>
<td>Y</td>
<td>NESA, although it does not include the switch numbers</td>
</tr>
<tr>
<td>Identification of platforms</td>
<td>Y</td>
<td>NESA Table A</td>
</tr>
<tr>
<td>Length of platforms</td>
<td>Y</td>
<td>NESA Table A with a note in the general instructions about length</td>
</tr>
<tr>
<td>Height of platforms</td>
<td>N</td>
<td>Currently not able to determine where this information is contained</td>
</tr>
<tr>
<td>Identification of loops</td>
<td>Y</td>
<td>NESA Table A</td>
</tr>
<tr>
<td>Length of loops</td>
<td>N</td>
<td>Not required</td>
</tr>
</tbody>
</table>

### 3. Specific line segment information
### 3.1 General characteristics

<table>
<thead>
<tr>
<th>OPE TSI Requirement</th>
<th>Available</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line segment extremity 1</td>
<td>N</td>
<td>This item has not been defined by the EIM</td>
</tr>
<tr>
<td>Line segment extremity 2</td>
<td>N</td>
<td>This item has not been defined by the EIM</td>
</tr>
<tr>
<td>Lineside indications of distance (frequency, appearance and positioning)</td>
<td>Y</td>
<td>NESA Table A has mileage at certain infrastructure. Appearance of distance markers held in the catalogue of signs</td>
</tr>
<tr>
<td>Maximum permissible speed(s)/Speeds according to allocated path timetable</td>
<td>Y</td>
<td>NESA Table A</td>
</tr>
<tr>
<td>Any other information the driver shall be aware of</td>
<td>Y</td>
<td>NESA General Instructions, Table A. Also, information in RT3973 (Advice to Train Crews, such as containers, exceptional loads, heavy axle weight &amp; radio active flask) for route restrictions</td>
</tr>
<tr>
<td>Specific geographical information required on the local infrastructure</td>
<td>Y</td>
<td>NESA General Instructions, Table A. Also information in RT3973 (Advice to Train Crews, such as containers, exceptional loads, heavy axle weight and radioactive flask) for route restrictions</td>
</tr>
<tr>
<td>Special restrictions for dangerous goods</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Special loading restrictions</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Means of communication with the traffic management/control centre in normal, degraded and emergency situation</td>
<td>Y</td>
<td>NESA Table A covers this and the Rule Book covers degraded methods. Updates are contained in the Operating Notices (for example, WON)</td>
</tr>
</tbody>
</table>

### 3.2 Specific technical characteristics

<table>
<thead>
<tr>
<th>OPE TSI Requirement</th>
<th>Available</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track gauge</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Structure gauge</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Maximum axle load</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Maximum load per linear metre</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Maximum cant deficiency</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Maximum radius of curvature</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>OPE TSI Requirement</td>
<td>Available</td>
<td>Location</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Gradient percentage</td>
<td>N</td>
<td>Information is held in the 5 Mile Line Diagrams but not currently provided as a percentage. These diagrams are not supplied externally</td>
</tr>
<tr>
<td>Gradient location</td>
<td>N</td>
<td>5 Mile Line Diagrams. These diagrams are not supplied externally</td>
</tr>
<tr>
<td>Braking performance related information</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>For brake system that does not use wheel-rail adhesion, accepted braking effort</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Tunnels: fire safety categorisation and tunnel-related data</td>
<td>Y</td>
<td>NESA Table A and 5 Mile Line Diagrams and Tunnel Emergency Plans. 5 Mile Line Diagrams are not supplied externally</td>
</tr>
<tr>
<td>Non-stopping areas: identification, location, type</td>
<td>N/A</td>
<td>At present non-stopping areas are not defined on the GB rail network. Rule Book GERT8000 cover some non-stopping requirements</td>
</tr>
<tr>
<td>Industrial risks — locations where it is dangerous for the driver to step out</td>
<td>Y</td>
<td>Locations of ‘limited clearance’ or ‘no refuge’ are contained in the hazard directory</td>
</tr>
<tr>
<td>Locations of areas designated for testing the sanding device (if existing)</td>
<td>N/A</td>
<td>There are no known testing locations on the main line, although there may be in depots or yards</td>
</tr>
</tbody>
</table>

3.3 Energy subsystem

<p>| Energy supply system (voltage and frequency)                            | Y         | Network Statement, NESA Table A.                                                                                                          |
| Maximum train current                                                  | Y         | This is covered as part of the national technical rule in GMRT2111 and the relevant EN/ENE TSI                                           |
| Restriction related to power consumption of specific electric traction unit(s) | Y         | This is covered as part of the NTR in GMRT2111 and the relevant EN/ENE TSI                                                             |
| Restriction related to the position of multiple traction unit(s) to comply with contact line separation (position of pantograph) | Y         | This is covered as part of the NTR in GMRT2111 and GLRT1210                                                                           |</p>
<table>
<thead>
<tr>
<th>OPE TSI Requirement</th>
<th>Available</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of neutral sections</td>
<td>Y</td>
<td>NESA Table A</td>
</tr>
<tr>
<td>Location of areas that must be passed with lowered pantographs.</td>
<td>N</td>
<td>Not known where this is applicable or published in the UK</td>
</tr>
<tr>
<td>Conditions applying with regard to regenerative braking</td>
<td>Y</td>
<td>Covered in GMRT2111, GEGN8600 as an NTR</td>
</tr>
<tr>
<td>Maximum current at standstill per pantograph</td>
<td>Y</td>
<td>Covered in GEGN8600 as an NTR</td>
</tr>
<tr>
<td>Requirements for number of raised pantographs and spacing between them</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Contact wire height</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Characteristics of pantograph accepted</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Mean contact force permitted</td>
<td>N</td>
<td>Not required</td>
</tr>
</tbody>
</table>

### 3.4 Control-command and signalling subsystem

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Available</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for more than one system active simultaneously</td>
<td>Not known</td>
<td>More information and a definition from the EIM is required to answer this point</td>
</tr>
</tbody>
</table>

### ERTMS/ETCS

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Available</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of application</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Optional functions required on board: infill</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Software version number</td>
<td>N</td>
<td>Not required</td>
</tr>
</tbody>
</table>

### ERTMS/GSM-R radio

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Available</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version number</td>
<td>N</td>
<td>Not required</td>
</tr>
</tbody>
</table>

### Class B signalling systems

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Available</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>System name</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Software version number</td>
<td>N</td>
<td>Not required</td>
</tr>
</tbody>
</table>

### Class B radio systems

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Available</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>System name</td>
<td>N</td>
<td>Not required</td>
</tr>
<tr>
<td>Software version number</td>
<td>N</td>
<td>Not required</td>
</tr>
</tbody>
</table>

### Speed restrictions related to braking performance

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Available</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class B train protection, control and warning systems</td>
<td>N</td>
<td>Not required</td>
</tr>
</tbody>
</table>

### Switch overs
OPE TSI Requirement | Available | Location
--- | --- | ---
Special conditions to switch over between different class B train protection, control and warning systems | Y | Network Statement, NESA Table A and General Instructions
Special technical conditions required to switch over between ERTMS/ETCS and Class B systems | Y | Network Statement, NESA Table A and General Instructions
Special instructions (location) to switch over between different radio systems | Y | Network Statement, NESA Table A and General Instructions
**EMC Susceptibility of infrastructure-side control-command and signalling**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| Permissibility to use eddy-current brake | N | This is an open point in the Energy TSI but the UK has a special case and currently does not allow this type of brake
| Permissibility to use magnetic brake | N | This is an open point in the Energy TSI but the ability to use magnetic brakes is locally authorised

**Operation and traffic management subsystem**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| Operating language | N | This is not specifically mentioned in the Network Statement, NESA or Rule Book, but is more likely to be contained in technical specifications and user requirements
| Special climatic conditions and associated arrangements, if any | N | Not required

### 3.5 Appendix E - Language and communication level

#### E. Language and communication level

The oral qualification in a language can be subdivided into five levels:

3.5.1 The five language and communication levels are defined in more detail in the OPE TSI. They are normally assessed at the recruitment stage, when a candidate’s comprehension (based on listening and reading) and communication (spoken and written) are tested.

3.5.2 This is shown in guidance in the Train Driver Licence and Certificates Regulations 2010 as attaining level B1 of the Common European Framework of Reference for Languages (CEFR) established by the Council of Europe.
3.5.3 The Common European Framework only shows three levels but the competencies within it can be matched against the table shown in Appendix E of the OPE TSI.

3.5.4 This assessment applies to applicants regardless of their nationality and country of residence.

3.6 Appendix F - Minimum elements relevant to professional qualification for the tasks associated with 'accompanying trains'

| F. Minimum elements relevant to professional qualification for the tasks associated with "accompanying trains"
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GENERAL REQUIREMENTS</strong></td>
</tr>
<tr>
<td>a)</td>
</tr>
<tr>
<td>b)</td>
</tr>
<tr>
<td>c)</td>
</tr>
</tbody>
</table>

3.6.1 The requirements shown in this section are enshrined in law through the ROGS and overseen by the ORR. These are subsequently applied through the competency arrangements in the SMS of the IMs and RUs.

3.6.2 Documents produced in support of the requirements are:

a) Train Driving Licences and Certificates Regulations 2010 (as amended), and associated guidance document.

b) GORT8000 Rule Book Module G1 - General Safety Responsibilities and Personal Track Safety for Non-Track Workers.

c) GERT8000 Handbook 1.

3.7 Appendix G - Minimum elements relevant to professional qualification for the task of preparing trains

<table>
<thead>
<tr>
<th>G. Minimum elements relevant to professional qualification for the task of preparing trains</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GENERAL REQUIREMENTS</strong></td>
</tr>
<tr>
<td>a)</td>
</tr>
<tr>
<td>b)</td>
</tr>
<tr>
<td>c)</td>
</tr>
</tbody>
</table>
3.7.1 The requirements shown in this section are enshrined in law through the ROGS and overseen by the ORR. These are subsequently applied through the competency arrangements in the SMS of the IMs and RUs.

3.7.2 Documents produced in support of the application are:

a) Train Driving Licences and Certificates Regulations 2010 (as amended).
b) GORT8000 Rule Book Module TW1.

### Appendix H - European Vehicle Number and Linked Alphabetical Marking on the Bodywork

#### H. European Vehicle Number and Linked alphabetical marking on the bodywork

<table>
<thead>
<tr>
<th>GENERAL PROVISIONS ON THE EUROPEAN VEHICLE NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>The European Vehicle Number is assigned according to the codes defined in Commission Decision 2007/756/EC (1), Appendix 6.</td>
</tr>
</tbody>
</table>

The European Vehicle Number shall be changed when it does not reflect the interoperability capability or technical characteristics according to this Appendix due to technical modifications of the vehicle. Such technical modifications may require a new placing in service according to Articles 20 to 25 of Directive 2008/57/EC.

3.8.1 Each vehicle must have an EVN. The details and the format of the EVN are set out in the OPE TSI.

3.8.2 Appendix H of the OPE TSI specifies the requirements for displaying the EVN and associated markings on rail vehicles.

3.8.3 GMRT2453 sets out the GB mainline railway’s current requirements for registering rail vehicles, the numbering identification systems, and the data to be displayed on rail vehicles.

3.8.4 GMRT2453 is currently being reviewed and updated to align with the requirements shown in Appendix H of the OPE TSI. Before publication of the revised GMRT2453, Amendment 2453 iss 2 AM002 can be read in conjunction with this standard.
Definitions

**Accident**
As defined in Article 3 of Directive 2004/49/EC.

**Authorising train movements**
The operation of equipment in signalling centres, electric traction current supply control rooms and traffic control centres that permits train movement. This does not include those staff employed by a railway undertaking who are responsible for management of resources such as train crew or rolling stock.

**Competence**
The qualification and experience necessary to safely and reliably undertake the task being performed. Experience can be gained as part of the training process.

**Dangerous goods**
As covered by Directive 2008/68/EC on the inland transport of dangerous goods.

**Degraded operation**
Operation resulting from an unplanned event that prevents the normal delivery of train services.

**Driver**
As defined in Article 3 of Directive 2007/59/EC.

**Emergency call**
Call set up in some dangerous situations to warn all trains/shunting movements in a defined area.

**Health and safety conditions**
In the context of the TSI, refers only to the medical and psychological qualifications required to operate the relevant elements of the subsystem.

**Mobile telephonic equipment**
The term includes portable electronic equipment such as mobile phones, pagers and personal digital assistants (PDAs) capable of receiving and initiating speech calls, text messages or emails, or able to access the internet. The term does not include Global System for Mobile communications – Railways (GSM-R) portable handsets.

**Operating language**
The language or languages used in daily operation an infrastructure manager and published in his Network Statement, for the communication of operational or safety-related messages between the staff of the infrastructure manager and the railway undertaking.

**Passenger**
Person (other than an employee with specific duties on the train) travelling by train or on railway property before or after a train journey.

**Qualification**
The physical and psychological suitability for the task together with the required knowledge.

**Real time**
The ability to exchange or process information on specified events (such as arrival at a station, passing a station or departure from a station) on the train’s journey as they occur.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Route</td>
<td>The particular section or sections of line.</td>
</tr>
<tr>
<td>Safety-critical task</td>
<td>Task performed by staff when they control or affect the movement of a train, which could affect the health, and safety of persons.</td>
</tr>
<tr>
<td>Scheduled stop</td>
<td>Planned stop for commercial or operational reasons.</td>
</tr>
<tr>
<td>Siding</td>
<td>Any track(s) within an operational point which is used only for movement other than train movement.</td>
</tr>
<tr>
<td>Signaller</td>
<td>Performer in charge of the route setting of trains / shunting movements and of issuing instructions to drivers.</td>
</tr>
<tr>
<td>Staff</td>
<td>Employees working for a railway undertaking or an infrastructure manager, or their contractors, undertaking tasks as specified in this TSI.</td>
</tr>
<tr>
<td>Stop aspect</td>
<td>Any signal aspect that does not allow the driver to pass the signal.</td>
</tr>
<tr>
<td>Stopping point</td>
<td>A location identified in the schedule of a train where the train is planned to stop, usually to carry out a specific activity such as allowing passengers to join and leave the train.</td>
</tr>
<tr>
<td>Traction unit</td>
<td>A powered vehicle able to move itself and other vehicles to which it may be coupled.</td>
</tr>
<tr>
<td>Train</td>
<td>A train is defined as (a) traction unit(s) with or without coupled railway vehicles with train data available operating between two or more defined points.</td>
</tr>
<tr>
<td>Train crew</td>
<td>Members of the on-board staff of a train, who are certified as competent and appointed by a railway undertaking to carry out specific, designated safety related tasks on the train, for example the driver or the guard.</td>
</tr>
<tr>
<td>Train dispatch</td>
<td>The indication to the person driving the train that all station or depot activities are completed and that, as far as the staff responsible are concerned, movement authority has been granted for the train.</td>
</tr>
<tr>
<td>Train preparation</td>
<td>Train preparation ensuring that a train is in a fit condition to enter service, that the train equipment is correctly deployed and that the formation of the train matches the train’s designated pathway. Train preparation also includes technical inspections carried out prior to the train entering service. EN 30.6.2015 Official Journal of the European Union L 165/67 Abbreviation Explanation.</td>
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## Acronyms and abbreviations

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<th>Description</th>
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<td>AC</td>
<td>Alternating current</td>
</tr>
<tr>
<td>ATP</td>
<td>Automatic Train Protection</td>
</tr>
<tr>
<td>CCS</td>
<td>Control-command and signalling</td>
</tr>
<tr>
<td>CEFR</td>
<td>Common European Framework of Reference for Languages</td>
</tr>
<tr>
<td>CEN</td>
<td>European Committee for Standardisation (Comité Européen de Normalisation)</td>
</tr>
<tr>
<td>CMS</td>
<td>Competence Management System</td>
</tr>
<tr>
<td>DFT</td>
<td>Department for Transport</td>
</tr>
<tr>
<td>DMI</td>
<td>Driver machine interface</td>
</tr>
<tr>
<td>EC</td>
<td>European Community</td>
</tr>
<tr>
<td>EN</td>
<td>Euro-norm</td>
</tr>
<tr>
<td>ENE</td>
<td>Energy</td>
</tr>
<tr>
<td>ERA</td>
<td>European Union Agency for Railways</td>
</tr>
<tr>
<td>ERIC</td>
<td>Enhanced Railfreight Intermodal Control</td>
</tr>
<tr>
<td>ERTMS</td>
<td>European Rail Traffic Management System</td>
</tr>
<tr>
<td>ETCS</td>
<td>European Train Control System</td>
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<tr>
<td>EU</td>
<td>European Union</td>
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<tr>
<td>EUAR</td>
<td>European Union Agency for Railways</td>
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<tr>
<td>EVN</td>
<td>European Vehicle Number</td>
</tr>
<tr>
<td>GB</td>
<td>Great Britain</td>
</tr>
<tr>
<td>GSM-R</td>
<td>Global System for Mobile Communications — Rail</td>
</tr>
<tr>
<td>IM</td>
<td>Infrastructure manager</td>
</tr>
<tr>
<td>NESA</td>
<td>National Electronic Sectional Appendix</td>
</tr>
<tr>
<td>NIR</td>
<td>National Incident Report</td>
</tr>
<tr>
<td>NSR</td>
<td>National Safety Rule</td>
</tr>
<tr>
<td>NTR</td>
<td>National Technical Rule</td>
</tr>
<tr>
<td>OPE</td>
<td>Operation and traffic management</td>
</tr>
<tr>
<td>OTM</td>
<td>On-track machines</td>
</tr>
<tr>
<td>PON</td>
<td>Periodical Operating Notice</td>
</tr>
<tr>
<td>RAIB</td>
<td>Rail Accident Investigation Branch</td>
</tr>
<tr>
<td>RBTNA</td>
<td>Risk-Based Training Needs Analysis</td>
</tr>
<tr>
<td>RGS</td>
<td>Railway Group Standards</td>
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<tr>
<td>RIV</td>
<td>International Wagon Regulations</td>
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<th>Abbreviation</th>
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<tr>
<td>RU</td>
<td>Railway undertaking</td>
</tr>
<tr>
<td>RUS</td>
<td>Route Utilisation Strategies</td>
</tr>
<tr>
<td>SMIS</td>
<td>Safety Management Intelligence System</td>
</tr>
<tr>
<td>SMS</td>
<td>Safety management system EN L 165/68 Official Journal of the European Union 30.6.2015</td>
</tr>
<tr>
<td>SoC</td>
<td>Statement of Compatibility</td>
</tr>
<tr>
<td>SPAD</td>
<td>Signal passed at danger</td>
</tr>
<tr>
<td>TDLCR</td>
<td>Train driver licenses and Certificates Regulations 2010 (Amended)</td>
</tr>
<tr>
<td>TOPS</td>
<td>Total Operations Processing System</td>
</tr>
<tr>
<td>TPWS</td>
<td>Train Protection and Warning Systems</td>
</tr>
<tr>
<td>TRTS</td>
<td>Train Ready-To-Start</td>
</tr>
<tr>
<td>TRUST</td>
<td>Train Running System TOPS</td>
</tr>
<tr>
<td>TSI</td>
<td>Technical Specification for Interoperability</td>
</tr>
<tr>
<td>UIC</td>
<td>Worldwide Railway Organisation</td>
</tr>
<tr>
<td>WON</td>
<td>Weekly Operating Notice</td>
</tr>
<tr>
<td>WTT</td>
<td>Working Timetable</td>
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References

The Catalogue of Railway Group Standards gives the current issue number and status of documents published by RSSB. This information is also available from http://www.rssb.co.uk/railway-group-standards.co.uk.

RGSC 01 Railway Group Standards Code
RGSC 02 Standards Manual

Documents referenced in the text

Railway Group Standards

GERT8000 Rule Book
GERT8000-S5 Passing a signal at danger or an end of authority (EoA) without a movement authority (MA)
GERT8000-S7 Observing and obeying fixed signals: Train warning systems: Reporting signalling failures and irregularities
GERT8000-SS1 Station duties and train dispatch
GERT8000-TW1 Preparation and movement of trains
GERT8000-TW5 Preparation and movement of trains: Defective or isolated vehicles and on-train equipment
GERT8006 Assessment of Compatibility of Rail Vehicle Weights and Underline Bridges
GERT8014 Axlebox Condition Monitoring - Hot Axlebox Detection
GERT8270 Assessment of Route Compatibility of Vehicles and Infrastructure
GI07033 Lineside Signs
GKRT0075 Lineside Signal Spacing and Speed Signage
GMRT2045 Compatibility Requirements for Braking Systems of Rail Vehicles
GMRT2131 Audibility and Visibility of Trains
GMRT2161 Requirements for Driving Cabs of Railway Vehicles
GMRT2185 Train Safety Systems
GMRT2453 Registration, Identification and Data to be Displayed on Rail Vehicles
GMRT2461 Sanding Equipment
GMRT2472 Requirements for Data Recorders on Trains
GORT3053 Working Manual for Rail Staff Handling and Carriage of Dangerous Goods

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Technical Specification for Interoperability

GORT3053-PPBL Pink Pages Briefing Leaflet
GORT3056 Working Manual for Rail Staff - Freight Train Operations

RSSB Documents

GOGN3518 Guidance on Incident Response Planning & Management
GOGN3637 Guidance on Defective on-Train Equipment
GOGN3653 Guidance for Safe Freight Train Operation
GOGN3655 Guidance on Medical Fitness for Railway Safety Critical Workers
GOGN3676 Guidance on the Carriage of Dangerous Goods by Rail
GOGN8570 Guidance on the Management of Drugs and Alcohol
RIS-0707-CCS Management of Safety Related Control, Command and Signalling System
RIS-0737-CCS Rail Industry Standard for Signal Sighting Assessment Requirements
RIS-0794-CCS GSM-R Train Voice Radio Systems
RIS-2706-RST Rail Industry Standard for Recording of Rolling Stock Data
RIS-3118-TOM Incident Response Planning & Management
RIS-3119-TOM Accident and Incident Investigation
RIS-3215-TOM Weekly Operating Notice, Periodical Operating Notice and the Sectional Appendix
RIS-3350-TOM Communication of Urgent Operating Advice
RIS-3436-TOM Information for Safe Train Operation
RIS-3437-TOM Defective On-Train Equipment
RIS-3451-TOM Train Drivers - Suitability and Medical Fitness Requirements
RIS-3452-TOM Train Movement - Medical Fitness Requirements
RIS-3702-TOM Rail Industry Standard for Management of Route Knowledge for Drivers, Train Managers, Guards and Driver Managers
RIS-3703-TOM Rail Industry Standard for Passenger Train Dispatch and Platform Safety Measures
RIS-3751-TOM Rail Industry Standard for Train Driver Selection
RIS-8034-TOM Maintenance of Signal and Operational Sign Visibility
RIS-8046-TOM Spoken Safety Communications
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<td>T1064</td>
<td>Developing tools to extend non-technical skills to non-driver roles</td>
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<td>Understanding the current use of sanders on multiple units</td>
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### Other References

- Regulations for the Safe Transport of Radioactive Material 2009
- A Guide to ROGS
- ADR
- CCS TSI
- CDG
- DECISION 2012/88/EU
- DIRECTIVE 2007/59/EC
- Other References

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<td>MHSWR</td>
<td>The Management of Health and Safety at Work Regulations 1999</td>
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<td>NR/L2/OCS/009</td>
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<td>Train Regulation Policy</td>
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<td>The Operations and Traffic Management TSI (EU) 2015/995</td>
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<td>RIR 2011</td>
<td>Railways (Interoperability) Regulations 2011</td>
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<td><a href="https://www.networkrail.co.uk/industry-commercial-partners/information-operating-companies/national-electronic-sectional-appendix">https://www.networkrail.co.uk/industry-commercial-partners/information-operating-companies/national-electronic-sectional-appendix</a></td>
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