




Association of Train Operating Companies

**ATOC/EC/GN/002**

**Guidance Note –  
The ATOC Guide to Vehicle Change**

**Issue: 3.3  
September 2014**

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## **Guidance Note - The ATOC Guide to Vehicle Change**

### **Synopsis**

This Guidance Note (GN) sets out the vehicle change-related requirements of the Railways (Interoperability) Regulations (2011) and the Railways and Other Guided Transport Systems (Safety) Regulations (2011) as they apply to mainline Railway Undertakings. It also takes account of the EC Guidance for Member States on interpretation of the Directives that lay behind these regulations.

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### Part A

#### Issue record

This Guidance Note will be updated when necessary by distribution of a complete replacement.

Issue	Date	Comments
Three	August 2014	Fully updated to incorporate changes made with the coming into force of the Railways (Interoperability) Regulations 2011, the Railways and Other Guided Transport Systems (Safety) Regulations (2011) and amendments in 2012 and 2013. It also takes into account the impact of the Common Safety Methods and of the EC Guidance for Member States on interpretation of the Directives that lay behind these regulations as outlined in the recently finalised content of DV29bis.

This guidance note complements ATOC/EC/01006: Approved Code of Practice – Inter-Company Rail Vehicle Engineering Change Process

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#### Responsibilities

Copies of this Guidance Note should be distributed by ATOC members to relevant persons within their respective organisations.

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#### Explanatory note

This technical publication has been produced in consultation with rail professionals, and is to be disseminated within the railway industry.

It applies to the UK mainline Railway defined by Network Rail managed infrastructure, the UK half of the Channel Tunnel, High Speed One (HS1) and Northern Ireland

However, ATOC is not a regulatory body and this publication is not a mandatory standard. This publication is advisory only and must be evaluated and implemented as appropriate at the sole discretion and responsibility of the user.

Every user is responsible for its own operation and carries full responsibility of ensuring safety of its own systems of work and inspection.

Whilst ATOC Guidance Notes are intended to disseminate best practice, users must evaluate this technical publication against their own requirements in a structured and systematic way. Some parts may be determined not to be appropriate at the user's discretion.

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It is recommended that the evaluation and decision to adopt (or not to adopt) this technical publication is documented and reviewed from time to time.

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### **Guidance Note status**

This document is not intended to create legally binding obligations between train or freight operating companies, their suppliers, the DfT or the ORR.

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### **Supply**

Controlled and uncontrolled copies of this Approved Code of Practice may be obtained from the ATOC Director of Operations & Engineering or the RSSB website ([www.rssb.co.uk](http://www.rssb.co.uk))

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### Part B

#### 1 Introduction

The UK legal requirements governing vehicle change altered significantly in 2006 with introduction of “The Railways (Interoperability) Regulations 2006” and “The Railways and Other Guided Transport Systems (Safety) Regulations 2006” and the associated repeal of previous regulations<sup>1</sup>.

The requirements evolved further in 2011 with “The Railways and Other Guided Transport Systems (Safety) (Amendment) Regulations 2011” (ROGS) and “The Railways (Interoperability) Regulations 2011” (RIR), which came into force on 26<sup>th</sup> August 2011 and 16<sup>th</sup> January 2012 respectively, superseding the 2006 ROGS and Interoperability Regulations. A number of further minor amendments have been applied to the ROGS Regulations, implementing incremental changes, culminating in the coming into force of the ROGS Regulations (Miscellaneous Amendments 2013) [http://www.legislation.gov.uk/ukxi/2013/950/pdfs/ukxi\\_20130950\\_en.pdf](http://www.legislation.gov.uk/ukxi/2013/950/pdfs/ukxi_20130950_en.pdf)

In common with the earlier 2006 regulations these latest changes to UK law stem from a number of European Directives, Regulations and Recommendations on railway interoperability and safety – in this case the “Interoperability Directive” [2008/57/EC as amended](#), Commission Recommendation [2011/217/EC](#) (commonly known as ‘DV29’), Commission Regulation [352/2009/EC](#) concerning the Common Safety Method on Risk Evaluation and Assessment (CSM REA) and Commission Regulation [445/2011](#) Systems of Certification of Entities in Charge of Maintenance – in addition to the original Railway Safety Directive 2004/49/EC.

Furthermore DV29, which gave guidance to Member States on how to interpret the Interoperability and Safety Directives will be withdrawn and replaced by new Guidance (currently known as DV29**bis**) in the last quarter of 2014, following agreement in June 2014 amongst the Member States. DV29**bis** is intended to further close out some anomalies that remained in the interpretation given in the earlier Guidance, and ensures that it will be compatible with the 4<sup>th</sup> Railway Package currently going through the European Parliament. There may be some further changes in the RIR and ROGs as a result of DV29**bis** and if so then this ATOC Guidance Note will be amended accordingly. However this Guidance Note does take account of DV29**bis** in respect of diagrams, flow charts etc. where it is evident that no change in UK law is involved.

As a result, there have been further adjustments to the entities, procedures and processes involved in managing changes made to railway vehicles.

This Guide has been written for the benefit of Train Operating Companies (TOCs) and Freight Operating Companies (FOCs) – together known in RIR as Railway Undertakings or RUs (note that in ROGS they are referred to as ‘Transport Undertakings’). Guidance is provided on the procedures and processes relevant to fleet and engineering staff within RUs to plan and manage changes to vehicles within the new legal framework.

This guidance is complementary to ATOC/EC/01006: *Approved Code of Practice – Inter-Company Rail Vehicle Engineering Change Process* and includes some worked examples in Appendix C to provide context for some of the choices that will arise in the course of navigating the process. It is also complementary to the guidance also available from the ORR on [ROGS](#) and the application of the [CSM on Risk Evaluation and Assessment](#), and from the DfT on RIR in the form of “[Help Notes](#)”.

Hyperlinked references and email addresses have been provided throughout, which were correct at the time of publication, but which may change periodically.

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<sup>1</sup> The Railways (Safety Case) Regulations 2000 (RSCR), the Railways (Safety Case) (Amendment) Regulations 2003 (RSCAR), the Railways (Safety Critical Work) Regulations 1994 (RSCWR), the Railways and Other Transport Systems (Approval of Works, Plant and Equipment) Regulations 1994 (ROTS) and the Railways (Interoperability) (High-Speed) Regulations 2002

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### **2 Abbreviations**

This list of abbreviations does not address common rail industry terms, just those specific to the subject matter of this guidance note.

CSM-AsBo	Common Safety Method – Assessment Body
CSM - REA	Common Safety Method – Risk Evaluation and Assessment
DeBo	Designated Body
ECM	Entity in Charge of Maintenance
EMU	Electric Multiple Unit
ERATV	European Register of Authorised Types of Vehicle
EC	European Commission
IM	Infrastructure Manager
ISV	Intermediate Statement of Verification
MS	Member State
NLF	National Legal Framework (part of cross acceptance requirements)
NNTR	Notified National Technical Rule
NoBo	Notified Body
NSA	National Safety Authority
NVR	National Vehicle Register
PRM	Person with Reduced Mobility
RDD	Reference Document Database
RIR	Railways (Interoperability) Regulations
RGS	Railway Group Standard
ROGS	Railways and Other Guided Transport Systems (Safety) Regulations
RSL	Rolling Stock Library
RSSB	Railway Safety and Standards Board
RU	Railway Undertaking
SMS	Safety Management System
TSI	Technical Specification for Interoperability

### **3 Definitions**

#### **Engineering Change**

A proposed alteration to existing railway vehicle or sub-component designs, maintenance or manufacturing processes or procedures, suppliers or supply arrangements, which has the potential to impact on the safe operation or asset life. . In essence Engineering Change is anything that changes processes, plant (tooling), people (competence requirements) or parts (materials).

#### **Vehicle Change**

The process of introduction of railway vehicles to a network (either new build or cascade) or any Engineering Change to a railway vehicle.

Definitions for other terms (other than common English words) can be found in the respective GB Regulations, EU Regulations, Commission Recommendation, TSI or Directive. They are too numerous to be listed in this guidance document.

### **4 Implications for Railway Undertakings**

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### 4.1 Overview

The two sets of regulations ROGS and RIR govern different aspects of vehicle change. In very simplistic terms:

- ROGS can be thought of as governing the total operation – including both changes to existing vehicles and the introduction of new vehicles (after authorisation) and their subsequent ongoing operation: whilst
- RIR can be thought of as governing a subset of particular cases of placing in service of new or modified vehicles – where there is an opportunity and a requirement to procure greater interoperability within the total railway system.

This analysis of RIR being a subset of ROGS is valid from a Train/Freight Operating Company's perspective. A new train builder or a component/sub-assembly interoperability constituent manufacturer need only be concerned with RIR, since any use of the CSM-REA by a supplier putting a product on the market is under the auspices of the Interoperability Regulations. The scope of such an authorisation covers the extent of the manufacturers' safety-related obligations only in relation to the design and manufacture of the product. The RU choosing to use the newly authorised vehicle must still apply the CSM-REA decision criteria in managing the introduction of the change. However, it is entirely possible that such a change would be not "significant", as defined by the CSM Regulations, *e.g.* when a new EMU is being built and authorised, but being operated by an existing EMU operator using the same operating and maintenance processes. However it will be noted that in practice most contracts between a RU and a supplier require the latter to also demonstrate compatibility between the train and the route(s) over which it will operate. This is not a part of the authorisation process, but a function of the RU's change process within its Safety Management System.

The total vehicle change regime is depicted in Figure 1 below.

Section [7.1](#) of this document describes the roles of the different entities. All the processes shown on the left hand side of the red dashed line shown in Figure 1 are covered in the RIR and are checked by the relevant assessment bodies. They only apply when a new vehicle type, or existing vehicles which have been subject to "major" upgrading or renewal (refer to [6.1](#)) are being introduced.

The EC Guidance DV29*bis* clarifies that the authorisation for placing in service of a subsystem, (such as a rail vehicle or an on board signalling system on the vehicle) is the recognition by the MS that the manufacturer or contracting entity has given the assurance, by means of a declaration of verification, that it meets in its design operating state, all the essential requirements specified in the Interoperability Directive, when integrated into the rail system. Design operating state is defined as meaning the normal operating mode and foreseeable degraded conditions (including wear) within the range and conditions specified in the technical and maintenance files. It covers all the conditions under which the vehicle is expected to operate and its technical boundaries over the network.

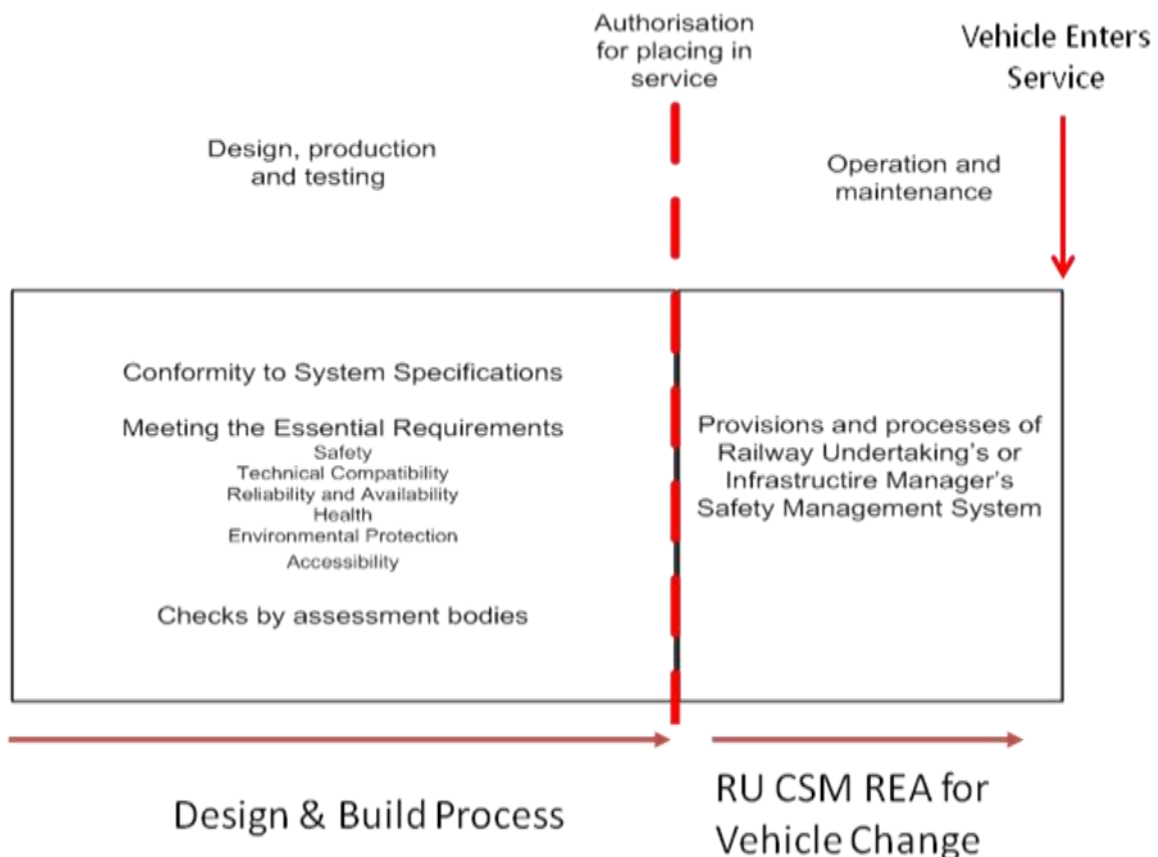
In the UK the following are networks within the scope of application of the RIR: GB mainline railway; HS1; Northern Ireland Railways; UK half of the Channel Tunnel. Authorisation demonstrates technical compliance of the vehicle's design operating state to the network specifications as detailed in the TSIs, or the relevant NNTRs where a network is not fully compliant to TSIs (as is currently the case with the UK networks). DV29*bis* makes clear that to avoid authorisation of a vehicle to specific routes within a network, and to avoid the need to re-authorise a vehicle if the characteristics of any route changes, any limitations and conditions of use attached to a vehicle authorisation for placing in service should be specified in the technical file in terms of the parameters of the technical design characteristics of the infrastructure and not in terms of geography.

Once authorised, before the vehicle can be used for public service, the RU will also have to undertake the CSM-REA process using its Safety Management System for vehicle change. This is the right hand side of the dotted line in Figure 1 and will cover items such as demonstration that the vehicle is compatible with the particular routes over which it is required to operate and that there are satisfactory arrangements in place for the operation and maintenance of the vehicle. For the GB mainline railway compatibility is checked using the GE/RT8270 process.



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It should be noted that 'authorisation for placing in service' includes making available for operation existing vehicles that have been altered, as well as vehicles that are new to the operation. The definition of 'placed in service' was amended by the 2013 ROGS to be clear that either before first Authorisation, or as part of an upgrade/renewal, an authorisation is not required for testing. However it can be expected under the duty of co-operation the IM and RU concerned will need to be satisfied that the conditions under which such trials/tests are carried out control the associated safety risks to as low as reasonably practicable (ALARP).



**Figure 1: (European Commission, 2014), the regime in which vehicle change operates**

For the sake of simplicity and continuity, this Guidance Note follows Figure 1 from left to right in explaining the steps that are needed to be undertaken when considering a proposal for vehicle change.

### 4.2 Safety Management

Under ROGS regulation 6(1)(c), an RU's Safety Management System (SMS) must describe the arrangements through which the RU controls all of its activities that fall within the scope of ROGS. This includes control of engineering change and maintenance or operational change. Specifically the arrangements must ensure control of all categories of risk, including:

- (a) supply of maintenance and material;
- (b) use of contractors;
- (c) placing into service of new or altered vehicles constituting the possibility of new or increased existing safety risk;

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It should be stressed that if the vehicle change is dealt with under RIR, authorisation satisfies the requirements of ROGS in (c) above; there is no need for CSM-REA assessment as well, other than the two circumstances outlined in section [6.3](#).

Vehicle change falls within the scope of (c) above, and, in addition to change management in accordance with the SMS, will require a formal process to be followed except in the case of relatively minor changes (defined in the CSM Regulations as not “significant”). Either by:

- Authorisation under RIR; or,
- A process conformant with the Common Safety Method for Risk Evaluation and Assessment (Regulation 352/2009).

For guidance on which process applies see Section [6](#).

The CSM-REA came into force in 2010, applying to changes to technical subsystems initially, and in 2012 to organisational change. According to the CSM-REA, an RU considering vehicle change must consider whether or not there are “significant” changes being made and this decision must be documented. If the change is not significant, the formal CSM process is not required, and the change can be managed under the RU’s SMS change management processes; otherwise the formal CSM-REA process must be followed.

In respect of vehicle maintenance, under ROGS Regulation 18A (new in 2011), each vehicle placed in service or used on the UK railway must have an appointed Entity in Charge of Maintenance (ECM), that is responsible for ensuring that there is an appropriate maintenance plan in place for the vehicle and that the vehicle is in a safe state for running. These requirements must continue to be satisfied in respect of changes to the maintenance plan that arise either from any vehicle change, or for any other reasons<sup>2</sup>.

### 4.3 Change Management – Before ANY changes are made

The general arrangements for involving the vehicle owner in the engineering change management of vehicles are outlined in ACOP/EC/01006: *Approved Code of Practice – Inter-Company Train Engineering Change Approval Process*.

RUs contemplating a vehicle change of any sort should start to systematically document the process at this point. Documentation should record the processes used and the outcomes, the decisions taken and the basis for the decisions, whether affirmative or negative. Such documentation should continue until the project concludes. For further guidance, see section 11.

The aim of the change management process is to control new or altered risks properly. The following issues should be addressed at this stage in the project:

- Identification of all stakeholders, including the vehicle owner and maintenance provider, and ensuring that there is commercial support for the project;
- Identification of any new risks or increased existing risk resulting from the project and identification of any appropriate measures to control these risks;
- Identifying the legal requirements for verification of initial integrity;
- Putting in place an appropriate management process for the project.

The first step in any vehicle change project is to establish a dialogue with the vehicle owner. Any arrangements contained in the relevant train lease agreement should take precedence over the process described in ACOP/EC/01006.

The identification of any relevant TSIs and standards is also important, but this will follow from proper assessment of the proposed change and from determining whether RIR applies or not. Once a vehicle change is assessed as interoperable the proposer should make reference to the National Legal Framework (NLF) published in the

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<sup>2</sup> Such as changes for economic or operational reasons where no vehicle change is undertaken.

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[Reference Document Database \(RDD\)](#) on the ERA website for the networks in the Member State<sup>3</sup>. The UK NLF in the RDD is a diagrammatic representation of the legal process used in the UK for authorisation to place subsystems and vehicles in service.

The Railway Group Standard GE/RT8270: *Assessment of Compatibility of Rolling Stock and Infrastructure* applies to the assessment/demonstration of compatibility of the changed vehicle with the routes within a network. Issue 2 of GE/RT8270 makes it explicit that the assessment of compatibility applies to both infrastructure and trains.

RUs are required by their Track Access Contract with Network Rail (NR) to determine whether proposed vehicle changes will: trigger any need to recalculate their Track Access Charges; impact on route availability; potentially overload route electrification or loading capability under certain timetable/train formation circumstances. If they determine that it might, they need to inform and consult with NR via the Vehicle Change process listed under the Network Code (see [Network Code: vehicle change](#)).

### 5 What Does RIR Authorisation Cover?

In section [4.1](#), the scope of the vehicle authorisation process was described in terms of the application of the Interoperability Directive and the Guidance given by the EC on its interpretation by MS. However it is important to understand that Authorisation covers all the applicable Essential Requirements, and is broader than the scope of the Technical Specifications for Interoperability (TSIs) and relevant NNTRs, in that it covers all aspects of the vehicle, including those aspects addressed by other directives, *e.g.* the Pressure Vessels Directive, the Physical Agents (Whole Body Vibration), the Physical Agents (Noise) Directive<sup>4</sup>. TSIs describe that which is necessary to meet the objectives of the Interoperability Directive, not the entire specification, nor that which is already covered by other European or UK law, general or railway-specific.

Authorisation does not confirm that the customer-specific elements of the specification have been met, only that the Essential Requirements have been addressed in so doing. To illustrate, the exact shade of the colour of paint on the vehicle body is not authorised, the requirements of the PRM TSI for door-related contrast are assessed and authorised, and that the paint meets the paint-related essential requirements *i.e.* accessibility, environmental protection, health.

### 6 Determining the verification requirements

In all cases the Change Management Procedures within the SMS must deliver the requirements of ROGS and must be applied to any vehicle change, whether significant or not.

The person responsible for implementing the change (the proposer) should initially consider the potential impact of the change in question on the safety of the whole railway system. If the proposed change has a potential impact on safety, the proposer should assess, by expert judgement, the significance of the change based on a set of criteria set out in the CSM-REA Regulation. This assessment should lead to one of three conclusions<sup>5</sup>:

1. “The change is not considered to be significant and the proposer should implement the change by applying its<sup>6</sup> own safety method.
2. The change is considered to be significant, but not interoperable, and the proposer should implement the change by applying this Regulation [*the CSM*], without the need for a specific intervention of the safety authority.

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<sup>3</sup> At the time of writing this document the RDD has yet to be populated with the NLFs. ERA have stated that this will happen during Autumn 2014.

<sup>4</sup> This is made explicit in the EU’s proposed changes to Annex VI of the Interoperability Directive. See 7.2.6 of this document.

<sup>5</sup> Commission Regulation 352/2009 CSM RAE, Recital 9

<sup>6</sup> Proposer is defined as a person above, not an entity

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3. If the change is considered to be significant, but not interoperable, but there are Community provisions which require a specific intervention of the relevant safety authority, such as a new authorisation for placing in service of a vehicle, or a revision/update of the safety certificate of a railway undertaking, or a revision/update of the safety authorisation of an infrastructure manager.”

Community in this context means the European Community. The selection of the appropriate verification process is shown in Figure , and is explained in sections [6.1](#) (Interoperability) and [6.3](#) (CSM-REA).

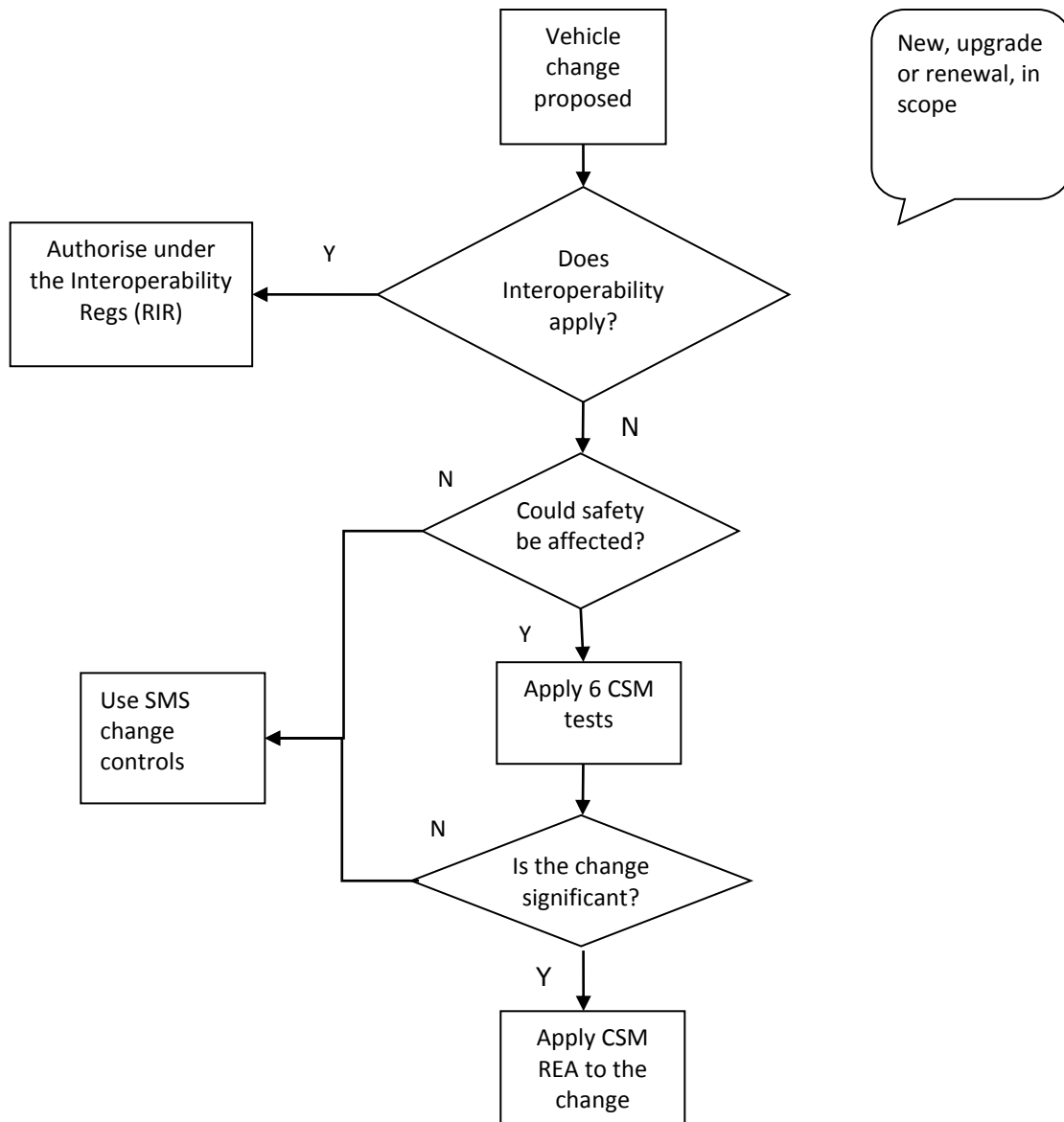


Figure 2: Selection of Verification Process

### 6.1 Is Authorisation under RIR required?

There is a series of questions that can be addressed by the RU, as Project Entity<sup>7</sup> (see section [7.1.1](#)), to determine whether RIR applies to the project and whether Authorisation is required. The decision process is illustrated in Figure 3.

<sup>7</sup> For a who's who under both RIR and ROGS, both industry and regulators, see section 7.1 of this document.

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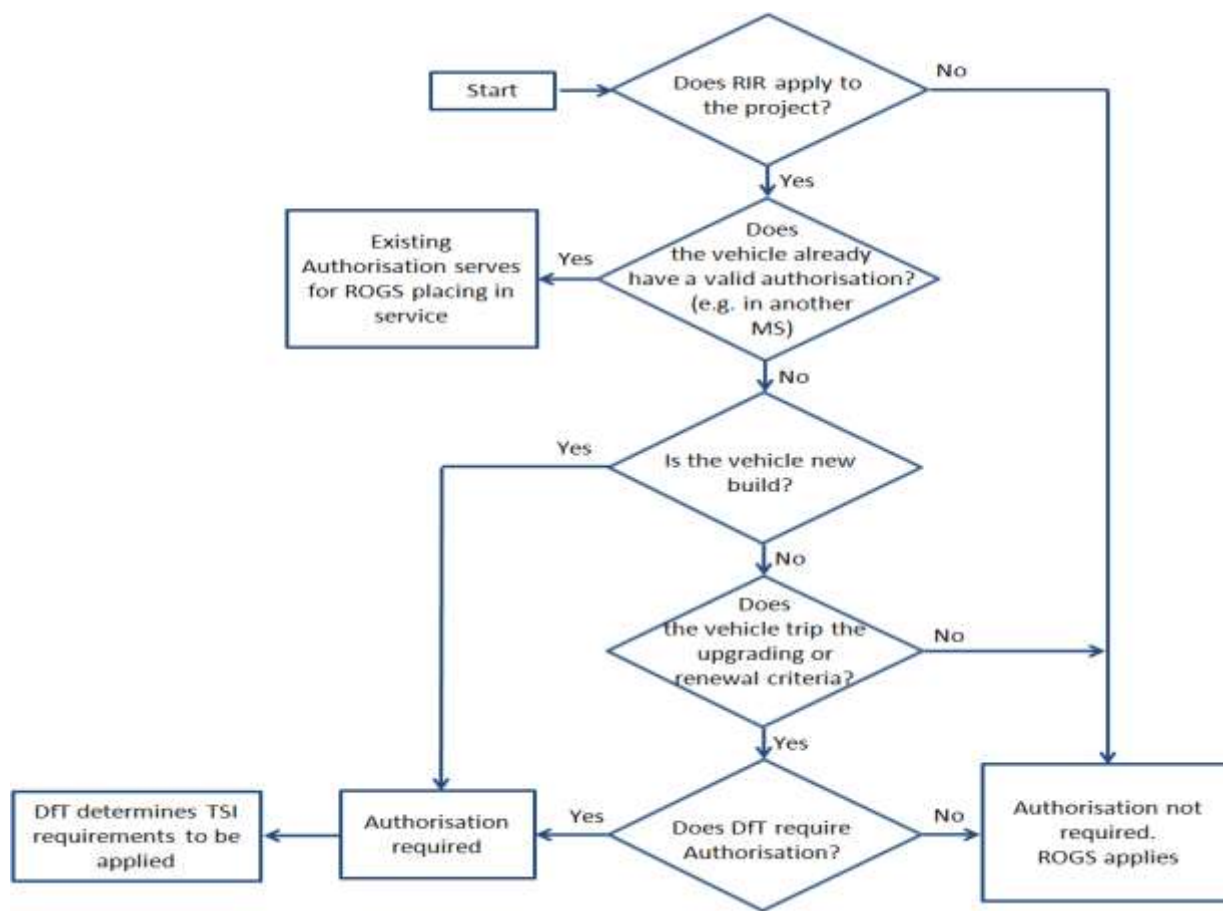


Figure 3: Is Authorisation required?

### 6.1.1 Is the Vehicle and its operation within the scope of RIR?

In the context of vehicle change, under RIR Regulation 3(1), all changes to be made to vehicles located, operated or intended to be operated in the United Kingdom *i.e.* Network Rail Managed Infrastructure, the UK half of the Channel Tunnel, High Speed One (HS1) and Northern Ireland are within scope. This has clarified the situation compared with the 2006 regulations, where it was implicit that all such changes were in scope. Exceptions exist where the Department for Transport (DfT) determines the operation of the vehicles to be wholly confined to a metro (*e.g.* LUL), tram (*e.g.* Nottingham) or light rail (*e.g.* Tyne & Wear) system, or to a specific route or network that is confined to local, historic or tourist use (*e.g.* the Island Line or “Community Railways” such as Middlesbrough – Whitby, or the Stourbridge Junction – Stourbridge line)<sup>8</sup>. Otherwise, except Class 08 and 09 shunters, which have been excluded, in the UK, all rail vehicles fall within the application of RIR.

### 6.1.2 Does the vehicle already have a valid Authorisation in another Member State?

An Authorisation granted for the vehicle in accordance with the Directive (2008/57/EC) in another Member State is valid for the UK.

Compatibility still has to be assured before use (RIR 6(3)(b)(iv) or 6(3)(c)(iv)), and, depending upon the nature of the route that a vehicle is intended to run on, it may also be necessary to apply certain specific cases<sup>9</sup>. If the

<sup>8</sup> DfT has undertaken to provide determination on applications for exclusion and to maintain and publish a list of the exclusions so determined. See [DfT Scope Exclusions List](#).

<sup>9</sup> It is not mandatory to use specific cases in each of the TSIs on infrastructure. Where an infrastructure specific case has not been used on a route, it is not a requirement to apply the equivalent rolling stock specific case.

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proposed route is fully TSI compliant (including specific cases), no further assessment is required, the implicit assumption is that the TSIs assure compatibility.

### 6.1.3 Is the Vehicle New Build?

New build vehicles which have not been authorised as described in section [6.1.2](#), or which don't conform to an authorised type (see section [8.1.9](#)), will always require Authorisation for their first use on the UK network. Any time a vehicle is authorised, the relevant NSA is required also to establish and register a type. The requirements to provide data to the National Vehicle Register Registration Entity are detailed in Annex 1 of GM/RT2453: *Registration, Identification and Data to be Displayed on Rail Vehicles*. The data is presented to the NSA who registers a Type Authorisation and, once validated by the ERA, issues this to the Project Entity. The list of authorised types can be found on the ERA's register of types, known as [ERATV](#).

### 6.1.4 Does the change trigger the Upgrading or Renewal thresholds?

Authorisation is required for a vehicle change that qualifies as 'upgrading' or 'renewal', where:

- **Upgrading** means any major modification work on any part of a train which improves its overall performance;
- **Renewal** means any major substitution work on any part of a train which does not change its overall performance.

In the context of RIR, the DfT has advised that 'performance' relates to improvement in top speed, acceleration, and other benefits in functionality or capacity for the railway as a system, not to reliability or passenger facilities *etc.* – except in the case of PRM TSI compliance. Unless the vehicle change falls beneath both the upgrading and the renewal thresholds then Authorisation will be required. Thus an upgrade or renewal which is not also "major" does not require authorisation.

Both these criteria use the word "major" for which no definition is provided. The DfT Interoperability merely advises use of "*an appropriate common English interpretation*" and no new guidance has been offered with the 2011 Regulations in this respect. Therefore it falls to the RU to make a reasoned assessment and judgement, for which competence it has already been granted a Safety Certificate.

**Note:** It would be inappropriate to state that "major" is the same threshold as "significant". The tests are different. However, it seems unlikely that something that is "significant" is not also "major" for passenger vehicles.

The guiding purpose of the Directive 2008/57/EC (and which RIR 2011 transposes for UK) is to reduce barriers to interoperability within the European rail system and to increase competitiveness within the sector and its supply chain. Hence a borderline upgrading/renewal judgement that then introduces significant impediments to the Directive's purposes through not applying the requirements of Authorisation is potentially more likely to be challenged by the DfT or the ORR as the National Safety Authority. The potential consequences of such a challenge are that the ORR would not authorise the vehicle to be placed in service, preventing the upgrade/renewal from being used legally; alternatively, if the challenge happens after the upgrade/renewal has been used, the ORR could use its normal regulatory tools such as Enforcement Notices to gain compliance. Ultimately, criminal proceedings under the Health and Safety at Work *etc* Act could result, since that is the mechanism by which RIR is given force.

Early engagement with DfT and ORR is always recommended especially in cases in which the requirement for Authorisation may not be clear-cut and the DfT Interoperability Team (e-mail to [interoperability@dft.gsi.gov.uk](mailto:interoperability@dft.gsi.gov.uk)) offers the facility to discuss specific projects, with a view to providing advice on this issue. It also suggests that the following generic issues should be considered prior to approaching them:

- The scale of the project in terms of geographic size, cost and change to the vehicles in the project. (*DfT does not seek to require operators or infrastructure managers to create small pockets of TSI conformity*)

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*which are unlikely to join up for some time, or to require third party verification for things of relatively low value.);*

- The significance of the work – could the work aid or hinder the development of a TSI conformant network and, given the nature of the work, what would be the likely impact? *(Key locations on the network have an effect on a disproportionate number of vehicles; TSI conformity at these locations should be a priority);*
- How does the project relate to any published national implementation plans, such as for GSM-R or ERTMS? *(Introducing a bespoke alternative to such plans is likely to end up with a negative cost-benefit somewhere in the system, perhaps for Network Rail (NR) or another RU, and prolong the duration of ongoing bespoke systems in UK);*
- Does the work allow for an economically efficient opportunity to apply a standardised design? In particular, would it reduce the level and cost of future re-engineering if the vehicles are to be migrated to a TSI-conformant design at a future date? *(Can the project be used as part of a managed migration away from bespoke systems/components?).*

Figure 4 shows the process by which the Upgrading or Renewal thresholds should be considered.

If the RU thinks that there is a possibility that the vehicle change might trigger the upgrading and/or renewal threshold(s) then the RU can apply to the DfT for voluntary authorisation / determination (see section [6.1.5](#)) – the DfT can determine in the case of upgrading or renewal projects that Authorisation need not be attained.

If the RU decides that the vehicle does not trigger the upgrading and/or renewal threshold(s) then Authorisation is not required and the RU continues to manage the change according to the CSM-REA and the processes in its SMS under ROGS (see Figure and section [6.3](#)). This decision and its basis should be recorded in the RU's project files.

### 6.1.5 DfT determination on Authorisation of upgrading / renewal projects

In the case of upgrading or renewal projects, the RU can apply to the DfT for a determination that Authorisation need not be attained.

An application should be accompanied by:

- (a) a file setting out details of the project;
- (b) the Project Entity's assessment of whether there are any new or changed safety risks resulting from the works envisaged and how any such risks will be managed;
- (c) identification of any TSI, or part of a TSI, for which derogations may be or will be sought; and
- (d) an indication of any TSI, or part of a TSI, which it is proposed should not apply if the DfT determines that the subsystem requires Authorisation.

In deciding whether Authorisation is required the factors to be taken into account by the DfT will include:

- (e) the implementation strategy provided in relation to any applicable TSI; and
- (f) the extent of the proposed works.

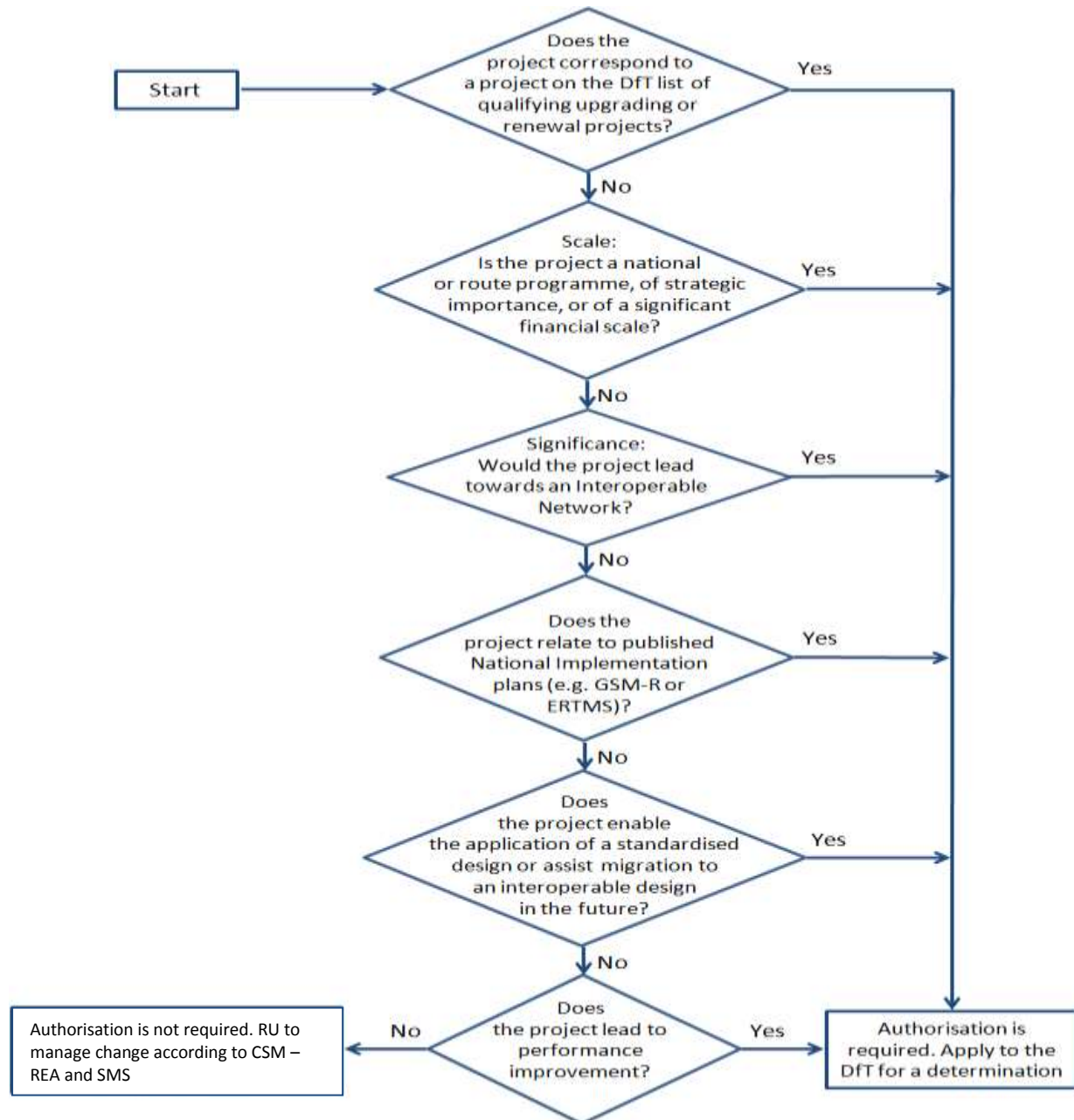
Where the DfT determines that the subsystem requires Authorisation it must decide to what extent TSIs must apply to the project.

### 6.1.6 Which Standards Apply?

If Authorisation is a requirement, the TSIs must be applied – subject to any derogations granted by the DfT, supplemented by any relevant National Technical Rules. The list of UK National Technical Rules, notified by the DfT to the ERA can be found in the ERA's [Reference Document Database \(RDD\)](#), or the [DfT website](#).



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**Figure 4: Does the vehicle trigger the Upgrading or Renewal thresholds?**

### 6.1.7 Exemptions (Derogations) from TSIs

For all cases in which Authorisation is required, the DfT may determine, in a range of circumstances and for a variety of reasons, both practical and economic, that the whole or part of a relevant TSI is not to apply in relation to a project and grant derogation. RIR Regulation 14 provides details of the limited range of circumstances under which full application of the TSI may be avoided. Examples are the proposed scopes of work agreed between DfT and RoSCos for older vehicle retrospective targeted PRM TSI compliance – see worked example [C.4](#).

However the derogation route should not be assumed to be straightforward and in most cases the derogation has no effect until the EC has approved it. Experience to date is that the DfT and the EC are very cautious in granting a derogation and will normally require a plan to be created to become TSI compliant for the sub system concerned.



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### 6.1.8 Exemptions (Derogations) from NNTRs and RGS

Where an exemption is sought from an NNTR, in the first instance the relevant RSSB Standards Committee will consider any application to deviate. Provided approval is gained to deviate from an NNTR the ORR will then subsequently have to approve the exemption (in their role as NSA)

Where an exemption to an RGS is being sought the relevant RSSB Standards Committee has full autonomy to grant exemptions.

### 6.1.9 Upgrade/Renewal Projects – Split Verification

Where a project is to upgrade part or all of a sub-system, only the upgrade/renewal is required to comply with TSIs, to be verified by a NoBo (and DeBo for NNTRs) and to be authorised by the National Safety Authority. Any enabling works are undertaken in the same manner as a project for which there is no requirement for Authorisation *i.e.* compliance either with Railway Group Standards (RGS) or with TSIs and NNTRs and controlled under the Engineering Change process in the Project Entity's SMS<sup>10</sup>. It is the Project Entity's choice as to which suite of standards to comply. This was the case with the GSM-R cab mobile upgrade, where the upgrade (the radio) was conformant with the Control Command and Signalling TSI and thus subject to NoBo verification, but the enabling works modification was conformant with NNTRs (RGS), and thus subject to DeBo verification<sup>11</sup>.

### 6.2 Is Safety Verification under ROGS required?

Safety Verification remains in ROGS, but no longer applies to Mainline Railways, the requirement was withdrawn by the 2013 amendments to ROGS. This decision was taken on the basis that the CSM-REA covers the same scope, and applies to Mainline Railways directly. SV now only applies to non-Mainline Transport Operators.

The requirements of Safety Verification for such non-Mainline Transport Operators are covered in [Appendix D: Withdrawn Requirements - Safety Verification](#).

### 6.3 Is the CSM-REA required to apply?

If a vehicle change is to be authorised by the NSA, the CSM-REA applies only under the following two circumstances to that part of the change which is to be authorised:

- when required by the relevant TSI<sup>12</sup>; and
- to ensure Safe Integration<sup>13</sup> (see section [8.1.5](#))

It is the intention that each TSI will eventually call up the CSM-REA on a clause-by-clause basis but the current situation does not reflect this aspiration since the number of requirements in the current suite of TSIs which call for the CSM-REA to apply is very small. According to the draft version of the LOC&PAS TSI that is due to come into force in January 2015, the only direct requirement to apply the CSM-REA is for demonstrating the appropriateness of the time interval used for driver vigilance monitoring. However, clause 6.2.3.5 of this TSI also gives a presumption of the use of CSM-REA for the assessment of the safety requirements set out in section 4.2 of the TSI, *i.e.* the main technical requirements clauses. It makes particular reference to the safety requirements for running dynamic behaviour, braking systems, passenger alarm devices, doors and door emergency opening.

It is therefore safe to say that it will apply only to new build, or to a small proportion of upgrade/renewal projects, but there are other possibilities that CSM-REA could be applied, such as for an Open Point (requirement or assessment method), or in support of a specific case or a derogation where a national rule is not available.

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<sup>10</sup> Enabling works are extremely unlikely to trigger a requirement for a formal CSM assessment, they are just not significant enough on the whole. If they are significant, follow the CSM REA.

<sup>11</sup> Some RGS assessments were carried out by companies which are appointed as NoBos, but they were not acting as NoBos in so doing, but as a competent 3<sup>rd</sup> party, supporting the project entity.

<sup>12</sup> In which case, don't additionally run the significance test.

<sup>13</sup> In which case, don't additionally run the significance test.

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Although unlikely to be ‘significant’ in the context of vehicle change the CSM-REA also applies to the enabling works of an upgrade/renewal and to other any changes which may need to be made to accommodate the new/upgraded/renewed vehicle.

If a vehicle change does not require authorisation, it is still likely to be a change to a technical subsystem, to which the CSM-REA does apply. The CSM incorporates a test of its own to indicate whether a formal risk assessment and change control process is required, because the change creates a ‘significant’ risk, or merely control of the changes through the SMS of the RU, because the change is not ‘significant’.

### 6.3.1 Does the project create significant risk?

For those projects which do not require authorisation, but which could have an effect upon safety, and hence to which the CSM-REA could apply, the CSM has six separate criteria, listed below, against which to test the ‘significance’ (or not) of a change, where no national rule exists to otherwise provide a test of significance, as is the case in the UK, coupled with a question over scope. Any criterion can trigger the decision that a change is ‘significant’, and therefore needs to be formally evaluated and assessed using the CSM’s methodology.

The ORR’s guidance document [ORR Guidance: the Common Safety Method on Risk Evaluation and Assessment](#) places these criteria into a flowchart in its Annex 1, based on a logical order of application. The ORR also supports a matrix-based approach to decision-making, combining consequence and uncertainty, whether the change is clearly significant, or whether further criteria should be applied before a decision can be made.

The list below is in the order in which the criteria appear in the CSM itself, and the figure in [brackets] is the order in which ORR have placed them:

1. Additionality (scope of assessment): assessment of the significance of the change taking into account all recent safety-related modifications to the system under assessment and which individually were not judged as significant. ORR states in its guidance document that “recent” will be interpreted by them as meaning either not yet implemented or in the process of being implemented; [1]
2. Failure consequence: credible worst-case scenario in the event of failure of the system under assessment, taking into account the existence of safety barriers outside the system; [3]
3. Novelty used in implementing the change: this concerns both what is innovative in the railway sector, and what is new just for the organisation implementing the change; [2]
4. Complexity of the change; [2]
5. Monitoring: the inability to monitor the implemented change throughout the system life-cycle and take appropriate interventions; [4]
6. Reversibility: the inability to revert to the configuration of the system before the change was implemented; [4]

Any change which is not significant according to these criteria does not require a formal risk evaluation and assessment to be applied i.e. there is no need for the involvement of a 3<sup>rd</sup> party, such as a CSM-AsBo. Such changes can therefore be managed with 2<sup>nd</sup> party involvement, as described in the RU’s SMS. An acceptable example of 2<sup>nd</sup> party assessment when the CSM-REA applies would be an assessment by an independent competent member of staff from within the RU that is not (and has not been) involved in the development of the proposed change. Requirements associated with 2<sup>nd</sup> and 3<sup>rd</sup> party verification are described in Appendix A: Degrees of Independence in Verification.

RSSB have recently drafted a suite of guidance notes that are designed to help the industry to meet the requirements of the CSM-REA in an efficient and effective way. These documents are in the process of formal publication and until this happens (expected autumn 2014) the draft documents can be found at <http://www.rssb.co.uk/improving-industry-performance/management-of-change>.

It is evident that minor modifications, enabling works and incremental improvements are all highly unlikely to trigger the formal assessment by being “significant” in the context of vehicle changes.

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On projects which don't require the formal CSM-REA process, any RU may choose, for its own purposes, to apply more independence in the verification activities than the law requires. In practice very few RU vehicle change projects will constitute significant changes if they have failed to trigger a requirement for Authorisation.

### 6.3.2 Trains New to a Route

Trains that are simply new to a route require compatibility assessment (see section 10), but not examination of initial integrity *i.e.* whether it is essentially a safe vehicle – “Grandfather's Rights” apply).

## 7 Roles and Responsibilities

### 7.1 Who's Who?

#### 7.1.1 Project Entity / Applicant

The RIR identify a body (corporate or individual, according to the circumstances which apply), called a Project Entity. Essentially this is the body having the responsibility for the project / vehicle as it goes through the stages from inception of the vehicle change to placing in service. The identity of the Project Entity can change during the project's lifecycle but in many vehicle change projects it will be the RU. The RIR uses the term Applicant as well as Project Entity but not entirely consistently.

The Interoperability Directive refers to the Applicant in Article 18 and other articles as the body that requires the NoBo to assess the design and production of the subsystem and in Annex VI draws up the Declaration of Verification of the Subsystem for submission to the NSA.

DV29*bis* further clarifies this by stating that the 'Applicant' means the signatory of the declaration of verification of the subsystem in accordance with the Interoperability Directive Art 18 and asking for an authorisation for placing in service of a sub system. The Applicant has the sole responsibility for ensuring that the essential requirements of all applicable European Union legislation (not just interoperability) are fully met by the sub systems in their design operating state. Where necessary the corresponding conformity assessment by assessment bodies must be involved when specified by that legislation.

In the case of an application for authorisation of a vehicle the Project Entity and the Applicant may be the same body.

In the case of a vehicle consisting of two subsystems (rolling stock and on-board control command and signalling) there may be two different Applicants (one for each subsystem) each establishing an EC declaration of verification for his part including interfaces. A manufacturer or Project Entity may combine these two declarations in an application for vehicle authorisation.

#### 7.1.2 Competent Authority

In RIR, the Competent Authority is the Secretary of State – in the form of the Department for Transport (DfT) – which manages the interface with the European Commission (EC) and represents the UK as the Member State. The DfT agrees, with appropriate referral to the EC, the scope of TSI-compliance of projects; that is, whether the project requires Authorisation under RIR and whether, according to circumstance, TSIs should be applied or derogations from the TSI requirements should be granted. It also has the opportunity to exclude certain railway vehicles and operations from the scope of RIR. The list of exclusions can be found on the DfT's Interoperability web-pages and also section [6.1.1](#).

The DfT also notifies the list of National Technical Rules for the UK to the EC and once accepted by the EC, each rule becomes a Notified National Technical Rule.

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### 7.1.3 Notified Body (NoBo)

The NoBo is an independent (3<sup>rd</sup> Party) verification body for the purposes of RIR. Broadly the NoBo verifies that the vehicles are designed, built and tested in accordance with the Essential Requirements contained in the TSIs. If compliant, the NoBo compiles the Technical File and issues a Certificate of Verification, which is used by the Applicant to make a Verification Declaration in applying for Authorisation. There are a number of NoBos appointed by the DfT to work in this country although the Project Entity is not obliged to use a DfT-appointed GB NoBo.

The choice of NoBo made by a Project Entity has to be consistent with the TSIs for which the DfT has appointed the NoBo *i.e.* a NoBo appointed for the CCS TSI only cannot act for a Project Entity on the LOC&PAS TSI: not all NoBos are competent in everything, the EU list of NoBo appointments can be found on the EU site called [NANDO](#).

The Project Entity may also require the NoBo to issue Intermediate Statements of Verification (see [8.1.7](#)).

### 7.1.4 Designated Body (DeBo)

The DeBo is an independent (3<sup>rd</sup> Party) verification body for the purposes of RIR. Broadly the DeBo verifies that the vehicles are designed, built and tested in accordance with the requirements contained in the Notified National Technical Rules (NNTRs) that are relevant for the project (not the entire set), and, if compliant, compiles a separate Technical File and issues a Certificate of Verification, which is used by the Applicant to make a Verification Declaration in applying for Authorisation.

The Certificate of Verification has to be split into two parts. One part is to certify compliance to the NNTRs used to fill open points in the TSI and / or used as alternative measures with specific cases. The other part is to certify compliance to the NNTRs used for Technical Compatibility. This requirement is detailed in Annex VI of RIR 2011.

The Project Entity does not have to use a DfT appointed DeBo for GB NNTR scrutiny. The same competence requirement applies for DeBos as for NoBos. NB DfT lists all the UK-appointed NoBos as competent for the NNTRs for the same TSIs. See the [DfT's NoBo list](#).

### 7.1.5 CSM Assessment Body

The CSM Assessment Body (CSM-AsBo) is a person or body that is independent from the design, manufacture, construction, marketing, operation or maintenance of the system under assessment and has the professional integrity and competence, experience and resources to check that the Common Safety Method (CSM) on risk assessment has been followed and also check that the results of the assessment are consistent with process followed<sup>14</sup>. The Safety Authority may<sup>15</sup> act as the CSM assessment body in the context of granting Authorisation for placing in service, but the ORR has advised that it will not do so.

At the present the CSM-AsBo does not have to be assessed as competent by a MS, but this may change in the future.

### 7.1.6 The Entity in Charge of Maintenance (ECM)

Each vehicle placed in service or used on the EU railway system must have an appointed Entity in Charge of Maintenance registered in the NVR, which is responsible for ensuring that there is an appropriate maintenance plan in place for the vehicle and that the vehicle is in a safe state of running by means of a system of maintenance. In some cases the RU will be the Entity in Charge of Maintenance, although the vehicle owner, the manufacturer, or another third party could assume the role.

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<sup>14</sup> CSM AsBo checks that the CSM has been followed and that the result is consistent with process followed – they are not supposed to offer opinion on the end result if process has been applied and has delivered a result consistent with that process

<sup>15</sup> But ORR advises that it will not do so

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In the case of freight wagons, that ECM is also required to be certificated by a 3<sup>rd</sup> party (currently by ORR) as an ECM, and have appropriate control processes in place<sup>16</sup>. The requirement for a certificated ECM remains purely voluntary for other types of railway vehicle at present although it is expected that this will change in next few years.

### **7.1.7 National Safety Authority**

The Office of Rail Regulation (ORR) is the National Safety Authority for RIR in the UK. The National Safety Authority gives the final Authorisation, monitors and enforces both the ROGS and RIR.

The ORR has a policy of pre-engaging with Project Entities navigating through interoperability. Early engagement is recommended to obtain guidance and de-risk projects.

### **7.1.8 Registration Entity**

The NVR is a database for registering and recording details of all authorised rail vehicles operated in a Member States' territory. The Registration Entity is responsible for its keeping and updating. (Network Rail Infrastructure Limited has been designated as the Registration Entity in Great Britain).

## **8 The Authorisation process**

The Project Entity / Applicant has a number of duties placed upon it under RIR, set out in Regulation 16, but also implicit in other parts of the regulations. These duties start very early in the project lifecycle.

### **8.1.1 Appointing a NoBo**

At the earliest possible opportunity, it will be necessary for the Project Entity to appoint a Notified Body (NoBo) to undertake the verification assessment procedure and identify derogations which may be required. The NLF diagrams illustrate these requirements. The initial appointment must be made before completion of the design stage or commencement of the manufacture stage of the project – whichever is the earlier. A NoBo (not necessarily the same one originally appointed) must continue to be appointed until Authorisation to place into service has been given (or refused).

Formally, there is no requirement to appoint a NoBo before the requirement for Authorisation is determined; however project timescales may drive the Project Entity to do so. Managing the sequence of events according to the circumstances that apply is another aspect of successful project management and completing the Authorisation process smoothly.

### **8.1.2 Appointing a DeBo**

The Project Entity must appoint a DeBo to carry out the Verification Assessment Procedure in relation to any NNTRs that apply, although there is no particular requirement under RIR to make the appointment other than as befits timing of the verification activity. It is possible to appoint the same organisation as both NoBo and DeBo although contractual arrangements and communications between parties should be structured such that it is clear when and in which role the single organisation is acting.

### **8.1.3 Appointing a CSM Assessment Body (CSM-AsBo)**

The Project Entity, as the 'proposer' of the change, must appoint a CSM Assessment Body where the CSM is to be applied. A CSM-AsBo could be the same organisation as the NoBo and/or DeBo, although the same general proviso

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<sup>16</sup> ROGS Regulation 18A(1)(b)

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regarding contractual arrangements and clarity of role under all circumstances still applies. The role of the CSM-AsBo is described in section [7.1.5](#).

### 8.1.4 Summary

The assessment requirements and assessment bodies for the two sets of regulations applicable to vehicle change projects are summarised below in Table 1.

Project Covered by RIR		Outside Scope of RIR
CSM Significant Project	Certification by NoBo (for TSI conformity), and, if required, DeBo (for NTRs and technical compatibility)  Independent review of Risk Evaluation by CSM-AsBo	Independent review of Risk Evaluation by CSM-AsBo
CSM Non-significant Project	Certification by NoBo (for TSI conformity), and, if required, DeBo (for NTRs and technical compatibility)	Demonstrate compliance against applicable requirements according to RU's SMS, under ROGS

**Table 1: Verification Regimes and Assessments**

### 8.1.5 Technical Compatibility and Safe Integration

Technical Compatibility is part of the Essential Requirements and should normally be covered by the TSIs or NNTRs and included in the Verification Declarations. Technical Compatibility and Safe Integration must be demonstrated not only between the vehicle's relevant subsystems but also between the vehicle and all safety-related aspects of the network concerned, prior to authorisation.

TSIs ensure compatibility with other TSI-conformant subsystems. Technical Compatibility with legacy systems should normally be assured by means of the use of Notified National Technical Rules, describing for each parameter, either the values which must be met by a new/upgraded/renewed vehicle, or a process by which compatibility can be assessed if there are no values available (depending upon the state of knowledge of the legacy assets).

Some requirements may not be verifiable in accordance with the first principle of the CSM on risk evaluation and assessment – by using a rule-based approach<sup>17</sup>. In such cases, the risks are managed by the Project Entity by making comparison with a reference system (the second CSM REA principle), or performing an explicit risk analysis according to the CSM on Risk Evaluation and Assessment regulation (the third CSM REA principle, see section [9](#)).

Authorisation to place into service covers TSIs and NNTRs to the level of European and national network compatibility – ROGS covers route-specific compatibility<sup>18</sup>, not RIR. Therefore further work is needed beyond Authorisation to Place into Service before an operator can actually operate a train on a specific route – specifically, in a GB mainline context, local rules (e.g. Sectional Appendices and local route compatibility issues). See section [10](#).

Note: Questions of network capability, e.g. does the energy supply have enough Joules available, are not related to technical compatibility or safe integration. Such matters should be addressed through the commercial processes such as track access. Ultimately, if such a problem exists and can't be resolved, the IM should declare that the infrastructure is congested under the Infrastructure (Access and Management) Regulations 2005, and come up with a plan to address the problem.

### 8.1.6 Verification Declaration

<sup>17</sup> Including EU harmonised rules such as TSIs or ENs, or, where such rules do not yet exist, on the basis of notified national rules.

<sup>18</sup> Ensuring that a train (not an individual vehicle) is not too big, not too fast, not too long, not too heavy, or that the controls in place manage that compatibility e.g. by speed restriction.

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At the end of the verification process, the Project Entity / Applicant will draw up an EC Declaration of Verification (Verification Declaration) provided that:

1. the Applicant is satisfied that the Essential Requirements, including the interfaces with the target and legacy rail system, are met. This includes the internal interfaces within the train *e.g.* the EMC interfaces between the train's radio and its brake control system; conformity with the applicable TSIs (and NNTRs if required) is sufficient to meet the essential requirements for the scope of the Interoperability Directive.
2. the Applicant is satisfied that the appropriate Verification Assessment Procedure has been carried out by a NoBo in respect of TSI requirements and a DeBo in respect of any applicable NNTRs, including provision of:
  - a Certificate of Verification drawn up by a NoBo;
  - a Certificate of Verification drawn up by a DeBo where applicable in respect of any NNTRs;
  - a Technical File in accordance with Annex VI to the Interoperability Directive in respect of any NNTRs;
  - a Technical File in accordance with RIR Regulation 17(2) for the rest of the project; and
  - an assessment of compatibility for the interface between the project subsystem and the target and legacy rail system
  - an assessment of Safe Integration – a CSM Assessment Statement;
3. certificates of verification issued in accordance with other EU legislation<sup>19</sup>

The EC Declaration of Verification is valid EU-wide, except for the provisions related to technical compatibility or safe integration (see section [8.1.5](#)) between the vehicle and specific network(s), and any relevant specific cases.

### 8.1.7 Intermediate Statement of Verification (ISV)

The manufacturer or Project Entity may include in the contract with the NoBo a request that the subsystem be divided into parts or checked at certain stages of the verification procedure. This can be useful when for example the customer requires a certificate that a certain stage has been reached before making a stage payment; or when a vehicle requires to be tested on the railway and it is necessary to have assurance that the design /as built of the vehicle has reached a stage where the test may be carried out safely.

The NoBo checks and certifies certain parts of the subsystem concerned at the overall design stage, production and final testing. The Applicant may apply for an ISV for the design stage (including type tests) and production.

### 8.1.8 Application for Authorisation to Place into Service

The Applicant is responsible for making an application to the Safety Authority for Authorisation to place the vehicles in service. This application must be in writing stating the essential requirements are met and be accompanied by:

- The Technical File, compliant with the requirements of RIR Regulation 17, and which will include the Certificate of Verification by the NoBo (and DeBo if required); and
- The Verification Declaration(s) by the Applicant.

The informal advice from the ORR is to submit a draft of the Technical File ahead of the last pieces of evidence and the certificate and declaration, to allow them to assess the file prior to the final submission. This ensures that the ORR has the chance to raise any issues with the applicant prior to their formal assessment, for correction. If this were to happen at the final stage, the ORR only has the option to reject the entire Technical File.

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<sup>19</sup> The EC has agreed with the Member States changes to Annex VI of the Interoperability Directive which contains this requirement. They are expected to come into force in late 2014.

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### 8.1.9 Type Authorisation

The Regulations allow for the re-use of existing authorisations of very similar types of vehicles, as well as for individual designs of vehicle. Vehicles of different classes may fall within the same type. If the Safety Authority issues an Authorisation for the placing in service of a vehicle, it must issue a determination of type in relation to the vehicle, providing the Project Entity has submitted the ERATV data to the Registration Entity when registering the vehicle(s) on the NVR and RSL. Once the Safety Authority has entered the data on the ERATV, and ERA validates the application and issues a type number, the Safety Authority can issue a Type Authorisation to the Project Entity.

If a type is authorised, then any vehicle authorisations can and should be based on a declaration of conformity to type without further checks. RIR Regulations 8 to 10 provide details. If the TSIs or NNTRs have materially changed since a type was determined, the ORR must advise the applicant of the changes and the applicant would have to supply some new information, in the form of a Technical File and Verification Declaration for the elements affected by the change.

This facility may be of particular value in terms of a series of vehicle builds, *e.g.* 37x, rather than an individual class *e.g.* 377/5, or major programmes such as for future Authorisation of in-cab signalling systems, *e.g.* ERTMS upgrade for 377 or Class 66, rather than 377/5 or 66/0.

Separating the Authorisation for placing in service from the operation and maintenance of subsystems and vehicles enables vehicles belonging to a given vehicle type to be placed in service by different manufacturers or Project Entities, to be operated by different RUs, and to be maintained by different ECMs according to different maintenance regimes depending on the operational context.

Upgrades and renewals may require the use of Intermediate Statements of Verification<sup>20</sup>, rather than full Type Authorisations, since the use of Type is as yet immature in an EU rail context. Project Entities are advised to engage with ORR and their NoBos to explore the possibilities at an early stage in the development of their project strategy.

### 8.1.10 Test Running

Any test runs scheduled on the mainline railway do not require an Authorisation or a Verification Declaration, as clarified by the new definition of 'placed in service' in ROGS 2013. The test runs are carried out under the control of the test operator's SMS. For example, a test to evaluate new brake blocks may be carried out on a service train, on the basis that the remaining brake blocks which are already part of the train's existing authorisation have sufficient capacity to brake the train should the brake blocks under test fail to work at all.

**Note:** The test operator can be either the intended RU or another TOC/FOC with an SMS which covers more specialised testing, *e.g.* ride tests or independent brake tests.

The test operator may require the production of a statement of compatibility prior to testing – this is dependent upon what the test operator's controls are for the tests and what is being tested. If there are no compatibility questions over what is to be tested, there is no need to produce a new statement of compatibility, just to re-use the existing one.

## 9 Common Safety Method - Risk Estimation and Assessment

### 9.1 CSM REA Process

The CSM describes a framework process based on the evaluation, analysis, and addressing of hazards using one or more risk control mechanisms. The process is formed of a number of stages, each of which should be thoroughly documented and systematically performed:

1. Preliminary system definition, to the extent necessary to determine whether the change is significant.

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<sup>20</sup> See Annex VI of the 2008/57/EC Interoperability Directive and section 7.2.7 of this document.



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2. (If the change is significant), system definition, covering normal, degraded and emergency modes.
3. Hazard identification.
4. Risk control.

The permissible risk control mechanisms are stated in order of preference by the CSM:

1. Rule-based approach: application of codes of practice<sup>21</sup>. Typically, for UK: TSIs, NNTRs, National Safety Rules (NSRs), other harmonised Euronorms.
2. Comparison with similar systems (reference systems). Typically an existing system can be used as a reference system if:
  - it has been proven in use and has an acceptable safety level<sup>22</sup>;
  - it is accepted in the UK<sup>23</sup> (it does not apply to superseded technology, for example); and
  - the system being assessed is used under similar functional, operational and environmental conditions and has similar interfaces as the reference system;
3. Explicit risk estimation: basically an estimation of the risks as a function of frequency and consequence; it can be qualitative, semi-quantitative or quantitative. Typically used where, for the system in question:
  - codes of practice or reference systems cannot be used;
  - there is a novel design;
  - there is a deviation from codes of practice.

An independent, documented assessment that the process has been correctly applied and the results are appropriate is required.

## 10 Route Compatibility and GE/RT8270 (Issue 2)

It is an ongoing requirement to ensure that vehicles remain compatible with the rest of the railway system. This includes all changes from the most minor to the introduction of new vehicles. Key to this compatibility assessment is the identification of the interfaces, both within the vehicle and between the vehicle and the rest of the railway system operating at that point in time, whether the RU's SMS, CSM REA formal methods or RIR applies. [GE/RT8270: Assessment of Compatibility of Rolling Stock and Infrastructure](#) is the relevant Railway Group Standard (RGS) for the assessment of compatibility of vehicles and infrastructure.

An Infrastructure Manager (including Network Rail) has no facility or rights to decide whether an RU has demonstrated compatibility or not: that is the decision and responsibility of the RU<sup>24</sup>, although there is a requirement to consult with it, where appropriate. Also, an Infrastructure Manager (including Network Rail) has no right to direct an RU in respect of what should, or should not be done by way of process or advisors.

For its own reasons, Infrastructure Managers like Network Rail may wish to use its own Review Panels to formulate its responses to an RU vehicle change consultation under GE/RT8270. However, it cannot impose a review panel process on an RU. Network Rail may also wish to use an Independent Safety Assessor (ISA) to advise its own staff. Network Rail cannot impose the use of an ISA by an RU – any attempt to do so is illegal and ORR should be advised of any such behaviour. The RU retains the responsibility under ROGS for its assets and any change made to them.

<sup>21</sup> Publicly available standards, widely accepted in the railway sector or otherwise justified to the Assessment Body

<sup>22</sup> The ORR's rider to this criterion could make it very difficult to use it as an option i.e. in-service history alone is unlikely to be sufficient evidence for a high integrity system; evidence of the application of safety engineering principles is required.

<sup>23</sup> There is no explanation of the term "accepted". Common sense would suggest that if it is in current use on a mainline railway, it is accepted.

<sup>24</sup> In principle this right disappeared with the removal of the Safety Case cascade, and in practice it definitively disappeared with ROGS in April 2006.

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GE/RT8270 describes how to run a compatibility forum (should that be necessary); ATOC can advise on the approach to take, including the appointment of a chair. If an affected duty holder is not content with the assessment of compatibility, or with the consultation process undertaken, the industry has a process published by RSSB called the “Duty of Co-operation” describing how to escalate and resolve disagreements and this can be found at [RSSB: Duty of Cooperation](#).

The process of assessment of compatibility is needed only when proposing to change either assets or operational interfaces. An assessment of compatibility is needed at two stages:

- (1) when placing in service – technical compatibility;
- (2) when operating that service – operational compatibility;

Should a fully TSI-compliant asset be placed in service with other fully TSI compliant assets, the assessment under GE/RT8270 is limited to operational aspects (e.g. axle load, loading gauge) for which the UK RUs have a process of co-operation in place, such as the RA (Route Availability) system. For some time it is likely that subsystems will be upgraded to become increasingly compliant. In this case, the assessment need only examine those elements of the subsystem which are not TSI-compliant. For non-TSI compliant assets, a full assessment of compatibility is required. For further details see GE/RT8270.

Most interfaces have RGSs either defining a process by which compatibility can be assessed, or requirements for physical metrics (e.g. flange height and thickness) that ensure compatibility. In a limited number of cases there are no RGS requirements in place, but only Network Rail Line Standards. In this case, RUs can choose either to create their own process of assessment, or use the Network Rail process, and should use them on the basis of project-specific national rules. Access to the Network Rail standards content can be gained via the nominated contact at Network Rail.

It is the Project Entity’s responsibility to undertake compatibility assessment. If a project is being handled under RIR, the statement of compatibility shall be provided to the NoBo for the completion of the Technical File, and subsequent drafting of the separate Declaration of Verification to demonstrate technical compatibility according to Annex VI of RIR 2011.

It is a requirement in RIR that route information will be made available in the Register of Infrastructure (RINF), and, in the meantime (as RINF will only become fully populated over time) from the Infrastructure Manager. Information about the nature of the infrastructure subsystems, for example, that the route is signalled with ETCS with no overlay<sup>25</sup>, should be stated in the [Network Statement](#) and RINF<sup>26</sup> as well as the use of any infrastructure-based specific cases and any restrictions or rules of a strictly local nature, although, as noted, currently both these data sources may be incomplete.

## 11 Record Keeping

Before the end of the project, the technical records will need to be updated (see ACOP/EC/01006), regardless of whether RIR or CSM REA has been applied.

### 11.1 Documentation to support certification

#### 11.1.1 Compilation of Verification record

The assessment and certification documentation for an engineering change should be compiled to provide a clear record of verification work undertaken.

The verification requirements within the Interoperability Regulations require the compilation of a Technical File to record the technical documentation and the corresponding verification information for each new, upgraded or renewed sub-system project. (Annex VI of 2008/57/EC, clause 4 sub-para 2 entitled ‘Technical file’).

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<sup>25</sup> In which case, vehicles will also need to be fitted with a compatible ETCS on-board system

<sup>26</sup> Contact NR directly for this information. NR is the national RINF entity, meaning it also provides the RINF for the other GB infrastructure managers

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The concept of a technical file to create an equivalent record for projects not authorised, but carried out within the ROGS regime is recommended. A recognised format for a technical file is outlined in the EU NB-Rail guidance document [RFU-STR-011](#). Clause 4.2.12 of the LOC & PAS TSI provides a list of the documentation required.

The content of the verification record should enable the current build/modification status of the vehicle to be identified.

A copy of the updated Technical File will need to be made available to the vehicle owner.

### 11.2 Management of Vehicle History records

#### 11.2.1 Compilation and Management of Verification records<sup>27</sup>

Records should be retained as evidence for future reference for the following purposes:

- (1) Maintain the on-going configuration control for existing vehicles.
- (2) In support of the data recorded on the National Vehicle Register (ref GM/RT2453).
- (3) Audit or incident investigation.

So far as vehicle certification history is concerned, three categories of vehicles may be defined:

- (1) Vehicle entered service pre-1994 - no original build certification (other than manufacturer's documentation). Any modifications relating to RGS compliance undertaken since 1994 will have been recorded on certificates of Engineering Acceptance, either issued by VABs (1994 – 2006), or issued by the RU itself or by VABs (2006 – 2011), or if an upgrade or renewal that was subject to Authorisation has taken place, in the Technical File.
- (2) Vehicle entered service 1994-2006 - original build certification undertaken under the process set out in GM/RT2000. Any subsequent modifications were recorded on a certificate of engineering acceptance, or if an upgrade or renewal that was subject to Authorisation has taken place, in the Technical File.
- (3) Vehicle entered service post 2006 - NoBo certification and technical file produced under RIR. Any subsequent modifications not subject to Authorisation are recorded on a certificate of Engineering Acceptance.

A vehicle history file is recommended, to be managed by the vehicle owner or their appointed agent.

It is recognised that vehicles pre-dating the introduction of the Interoperability Regulations will not have a vehicle history file relating to when they were first built. However, creation of a technical file with the first engineering change undertaken for which it can be applied and subsequent additions thereafter will gradually establish a vehicle history file.

The updating (addition) of the vehicle history file each time an engineering change is undertaken and verified will provide a record of the current configuration status of the vehicle(s). The Technical File for each engineering change can therefore be a sub-file of the main history file.

It is recommended that a register/index of all certificates issued recording engineering change to a vehicle or fleet of vehicles is maintained as the primary record within the vehicle history file. This enables the configuration history of the vehicle(s) to be interrogated for traceability and investigation purposes.

A recommended layout for such a register/index is as follows:

- Certificate number;
- Date of issue;

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<sup>27</sup> The retention of any certificates relating to other law, such as RVAR or RVAIR is also required. A Technical File is the logical repository for such.

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- Details of vehicles covered by the certificate (vehicle type, numbers);
- Details of the engineering change covered by the certification;
- Technical file reference;
- The organisation for whom it has been issued;
- The operator of the vehicle;
- Limitations / restrictions in place (if any);
- Expiry date (if any);
- Name of signatory;

Identification of the issue/revision number of the vehicle history file is good practice. It should be made available to interested parties as required, notably the vehicle operator (Railway Undertaking). Availability of the history file 'to view only' by electronic means (for example on-line) is considered good practice.

One central set of vehicle configuration records should be maintained.

For many rail vehicles, there are at least two separate interested parties for vehicle records, namely the vehicle owner (e.g. a RoSCo) and the current operator of the vehicle. Vehicle manufacturers and maintainers may also be involved with generation and maintenance of records.

It is logical that the vehicle owner be the *prima facie* source of records relating to the history of the vehicle, including the record of engineering changes undertaken.

Good liaison between the current operator of the vehicle (and maintainers, manufacturers, *etc.* where relevant) and the vehicle owner regarding any engineering changes undertaken will ensure that the records of vehicle configuration are up-to-date.

Where a vehicle is regularly operated by several train operators, sufficient information should be supplied for each train operator to support their operation of the vehicle(s), for example a current valid Certificate of Engineering Acceptance (or equivalent).

### **11.2.2 Retention and Disposal of records**

Records and documents pertaining to verification of engineering change undertaken should be maintained for a period of three years after the end of the operational life of the vehicle on the mainline railway. Other records and documentation, including those on the Rolling Stock Library (as per GM/RT2453), should be retained for a period of three years after the certification it supports becomes invalid. Records should be appropriately stored and made available for retrieval.

Other documentation should be kept as originals, or as electronic copies, according to the relevant requirements in the RU's SMS.

Storage methods should consider the requirements for 'future proofing' electronic media as well as prevention of deterioration of paper records. Security and protection of the records should also be considered.

Third party assessment bodies should retain records for an adequate period to provide subsequent demonstration of the assessment work that they undertook (*e.g.* in the event of incident or investigation).

## **12 Concluding the Project**

RIR places a requirement on the Project Entity (if not the vehicle owner) to pass the Technical File, the verification declaration, any declaration of conformance with type and any documentation pertaining to alterations to the vehicle and any maintenance manuals to the vehicle owner within 60 days of the Authorisation. From that point on, the vehicle owner becomes the Project Entity.

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### 13 References

#### The Directives

[The Interoperability Directive](#)

[The Safety Directive](#)

#### EU Regulations

[The Common Safety Method on Risk Evaluation and Assessment](#)

[ERATV 2011-665-EC](#)

[Cross Acceptance 2011-105-EU](#)

[NVR 2011-107-EU](#)

DV29bis<sup>28</sup>

#### UK Regulations

[The Railways \(Interoperability\) Regulations 2011, Statutory Instrument no 3066](#)

[The Railways and Other Guided Transport Systems \(Safety\) Regulations 2006](#), as amended by [2011, SI 1860](#), [2013 SI 950](#)

#### Guidance

[DfT Interoperability Help Notes:](#)

[ORR Guidance: the 2013 ROGS Regulations](#)

[ORR Guidance: the Common Safety Method on Risk Evaluation and Assessment](#)

[Draft RSSB Guidance Documents on the application of the CSM-REA:](#)

[ERA Collection of examples of risk assessments and of some possible tools supporting the CSM Regulation](#)

#### Relevant National Rules

[GE/RT8270 Assessment of Compatibility of Rolling Stock and Infrastructure, Issue 2](#)

#### Technical Specifications for Interoperability

[LOC & PAS TSI<sup>29</sup>](#)

[CCS TSI](#)

[ENE TSI](#)

[INF TSI](#)

[PRM TSI](#)

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<sup>28</sup> DV29bis is expected to be formally published during autumn 2014.

<sup>29</sup> Latest versions of LOC & PAS, CCS, ENE, INF, and PRM TSI's are expected to be published during autumn 2014.

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**Other ATOC Documents**

[ATOC/EC/01006: Approved Code of Practice – Inter-Company Rail Vehicle Engineering Change Process](#)

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### Appendix A Degrees of Independence in Verification

Independence can be categorised as to first, second or third party as follows:

- Third party - undertaken by a different company (separate legal entity), therefore offering full independence. Suitable for larger medium scale changes and recommended for large scale changes. If the large-scale change is significant, a third-party assessor is required by the CSM - REA; the independence of the CSM-AsBo is specified in the CSM - REA.
- Second party - a separate department or person independent of the project management team of the same organisation, therefore offering limited independence. Suitable for minor changes and possibly for smaller medium scale changes
- First party - effective self-declaration and therefore no degree of independence involved. Only suitable for engineering changes of a trivial nature

It follows therefore that more complex or invasive the work, the higher the risk and therefore the higher the independence and scope of verification required.

Hereafter in this document the organisation or department undertaking the necessary verification work is referred to as the Assessment Party.

#### A.1 Third party assessments

Full verification by a third party includes issuing the statement of conformity ('certificate') upon completion of the assessment work. An approach whereby an independent body undertakes all the assessment work, but an IM or RU then issues a certificate under their own SMS, is regarded as a variant of the second party approach under the terms of this standard.

The third party independent body should have a recognised accreditation (e.g. EN45011) to undertake such work, including the issue of a certificate. The organisation appointing the independent body should satisfy himself that the body has the required capability to meet the scope of verification for the engineering project and that its scope of accreditation covers this work.

In particular, a Designated Body (DeBo), accredited by UKAS under the Railways Interoperability Regulations, is deemed to be a suitable organisation to undertake third party verification work (subject to its scope of accreditation covering the sub-systems(s) concerned) as they have a recognised accreditation as competent to assess conformance with NTRs.

The organisation appointing the independent body should additionally seek to satisfy themselves of the independence of the body, particularly in cases where the independent body may be related by a common parent body or other organisational relationship. In certain circumstances, personal relationships or past working relationships may compromise the required independence.

#### A.2 Second party assessments

If a second party approach to verification is to be undertaken then the proposer of the engineering change should manage the verification work such that the required degree of independence is maintained.

A 'second party' approach to verification could include using internal resources that are otherwise independent of the work being carried out and/or contracting out elements of the assessment work to an independent 'competent person' (provided that the ultimate verification remains in the name of the proposer of the Engineering Change).

In order to undertake a 'second party' verification, the SMS should include the following considerations:

- Does the RU have access to personnel of the appropriate competence to carry out assessment and verification?

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- Are the nominated personnel independent of the work that has been carried out? (Personnel designated to assess and/or verify an engineering project should not respond or report directly to a manager or head of department who is responsible for the generation of evidence in support of verification, and shall not have participated in the generation of that evidence)
- Does the organisational structure clearly demonstrate such independence? (Personnel designated to assess and/or verify an engineering project should have no direct commercial interest within the company or any parent organisation related to the sub-systems being considered for verification)
- Do the timescale and resource implications for the project allow such internal resources to be deployed?
- Is there a documented process within the RU's SMS to cover the assessment and verification activities required (e.g. audit, inspection, etc.)?
- Are there procurement arrangements to cover the use of an independent 'Competent Person' to undertake some/all of assessment work in support of verification?
- Are there any other interested parties (e.g. a RoSCo) who should be consulted on the approach to verification?

This does not preclude designated assessors and/or verifiers from undertaking other activities for the company or parent organisation, provided that these activities do not compromise the objectivity and impartiality of the assessment and verification activity.

It follows that medium scale or minor engineering changes would be more suited to this approach as it is more likely there will be independent resources 'in house' to undertake verification work if less verification is required.

Third party certification bodies such as NoBos, DeBos, or CSM-AsBos<sup>30</sup> are accredited against a defined scope of work. This may be taken as suitable evidence of independence and competence to undertake other verification work. In this context however, it is important to emphasise that such bodies are not acting as a NoBo, DeBo or CSM-AsBo, but as competent to support the project entity.

### **A.3 First party assessments**

If a first party approach to verification is to be undertaken then the proposer of the engineering change approves the work without the need for independent verification.

Many examples of Engineering Change can be trivial in nature and therefore the degree of verification required should be proportionate.

Where a trivial repair/modification can be classified as not coming under the jurisdiction of any applicable requirements outlined in NTRs, independent verification activity is not required.

In such cases, a simple first party assessment is sufficient, e.g. the Engineering Director (or a nominated deputy) or the organisation undertaking the engineering change may 'sign off' the change as not requiring any independent assessment.

It is important that this decision is recorded.

### **A.4 Competence Requirements**

Personnel designated to undertake assessment and verification work of engineering change projects shall have the requisite competence to undertake such work.

The competence of the designated personnel to undertake assessment and verification work of engineering change projects shall be demonstrable.

The creation and maintenance of competence records forms suitable evidence that an RU was 'duly diligent' in selecting a person to undertake verification work.

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<sup>30</sup> At present CSM-AsBos are not required under EC or UK legislation to be accredited by the relevant MS. However this is under review by the ERA at the request of the EC.



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Records to demonstrate that personnel performing verification tasks have the relevant qualifications, training and experience should typically include:

- Regular briefing and/or training on all reviews, revisions and updates to NNTRs and other applicable requirements
- maintenance of a Continuing Professional Development log (or equivalent)
- evidence of periodic internal auditing of designated verification personnel
- evidence of continuing knowledge, skills and experience in the specific technical areas concerned (to keep abreast of latest regulatory or technological developments)
- The distinction should be made between the different roles within verification (eg assessor, technical expert, signatory, etc.)
- The ability to be able to manage the competence requirements of a 'second party' approach to verification should be included in the SMS (and hence subject to audit by ORR)
- The ability of a certification body to be able to manage their competence requirements under a 'third party' approach to verification can be assumed if the body has a recognised accreditation under the EN45xxx/ISO17xxx series of European/International standards.
- Further guidance on competence is given in Appendix B: Competence Guidelines, including suitable content for a CPD log and for an internal audit programme to support maintenance of competence.

Personnel designated to undertake assessment and verification work for engineering projects shall be able to demonstrate an understanding of the principles of risk assessment and to apply risk assessment techniques.

When contracting with an independent 'competent person' to undertake aspects of the assessment work, a Railway Undertaking should, as part of their procurement arrangements:

- (1) Evaluate and select such a Sub-Contractor on their ability to meet the specified requirements;  
and
- (2) Confirm that the sub-contractor has the requisite competence to undertake the work and knowledge, skills and experience in the specific technical areas concerned.

The type and extent of control exercised shall be dependent on the requirements of the service including consideration of the level of risk involved. A defined scope of work should be provided.

Contract documents shall contain all relevant data specifying the work required. Records of the competent person's activities should be retained to provide a complete evidence trail of the verification work undertaken.

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### Appendix B Competence Guidelines

**Note:** This section has been based on guidance contained in legacy industry document: PS305/04: *Specification for Vehicle Acceptance and Conformance Certification Bodies Operating Railtrack's Process for Engineering Acceptance of Rail Vehicles* that was published in 2001. It has been tailored to reflect the typical requirements of TOCs and FOCs when processing proposals for vehicle change.

#### Core Competencies

It is recommended that before being approved to act as 1<sup>st</sup> or 2<sup>nd</sup> party reviewers of proposals for vehicle change, relevant personnel shall be able to demonstrate, their knowledge and understanding of:

- a) The process for engineering change management, the limits of applicability under RIR and ROGS.
- b) The overall roles of the NoBos and DeBos within the process for engineering change management.
- c) Knowledge of the CSM-REA and the use of risk assessment and its application in the demonstration of compliance with mandatory requirements.
- d) The overall framework of railway safety legislation and the position of the process for engineering approval within this framework.
- e) The principles affecting vehicle / infrastructure interface including areas such as braking, derailment, gauging and current collection.
- f) The identification and application of the relevant mandatory requirements.
- g) The use of relevant techniques e.g. HAZOP, FMECA, FTA etc.
- h) Their technical knowledge and experience of the vehicle type (or functional sub-system) affected by the proposal for change.
- i) An understanding of the principles of risk analysis including the ALARP (as low as reasonably practicable) principle and VPF (the value of preventing a fatality) which is used by the railway group.
- j) Familiarity with Technical Specifications for Interoperability and Railway Group Standards relevant to the categories of certification and types of vehicle for which accreditation is being sought.
- k) 1<sup>st</sup> and 2<sup>nd</sup> party reviewers should normally be chartered engineers.

#### CPD Log

All reviewers should to produce and maintain a continued professional development (CPD) log. The CPD log shall include the following sections as a minimum:

- a) Professional review paper (an extended Curriculum Vitae updated annually or on change of responsibility, accountability, or position within the Company).
- b) An Index of vehicle change proposals reviewed.
- c) The reviewers impact / understanding of Railway Group Standards including work completed on drafting committees, reviews and comments on new/revised RGS including their assessment of new/re-issued on the certification process.
- d) Industry intelligence on railway vehicles and development of such (seminars attended).
- e) Training completed, appropriate to the process of risk assessment. Reviewers who are to review risk assessments as part of the review process should possess an appropriate formal qualification or be able

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to provide evidence of attendance at a risk assessment course together with evidence of practical application of such techniques

### **Auditing Requirements**

The process for monitoring the competence of reviewers should begin with the RU's own internal audits and requires audits to be scheduled so that all reviewers are audited at least once in any twelve month period.

The actual means by which an audit of an authorised signatory is conducted is a matter for each RU to decide but the method should be documented in procedures and there should be records of such audits together with details of any actions, such as additional training, which are taken as the result of the audit findings.

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### Appendix C    Worked Examples

#### Situations:

Vehicles can be subject to a number of different changes in a lifecycle, such as overhauls, new systems or refurbishments. However, for the purposes of RIR and ROGS, these changes can be resolved into three categories:

- a) New build vehicles, existing vehicles having “major” upgrade or renewal, or design changes with significant safety risks;
- b) Upgrade or renewal which is not “major”;
- c) Maintenance changes;

Aside from the case of new build vehicles, to which RIR always applies, the following worked examples illustrate different sorts of changes to existing vehicles already in service and illustrate how they should be treated under RIR and ROGS.

Worked example	Worked example title	Situation
C1	Fleet fitment of GSM-R radios	(a)
C2	First of class fitment for ERTMS	(a)
C3	Existing Train on new route (non class specific, no change to train fit-out or characteristics)	(b)
C4	Mandatory PRM TSI compliance by 2020	(a)
C5	Maintenance change	(c)

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### C.1 Worked Example – The fleet retro-fitment of GSM-R radios to existing vehicles

	Issue/Question	Decision Y/N	Comments
<i>Dialogue with the vehicle owner should be established at the beginning of the project in accordance with ACOP/EC/01006, “Approved Code of Practice – Inter-Company Train Engineering Change Approval Process”. (Refer to Section 4.3)</i>			
1	Is Authorisation required under RIR?		Help Notes can be found at: <a href="http://www.dft.gov.uk/publications/rail-interoperability-standards-catalogue-tsis">http://www.dft.gov.uk/publications/rail-interoperability-standards-catalogue-tsis</a>
1.1	Is the vehicle and its operation within the application of RIR?	Y	In the context of vehicle change, under RIR Regulation 3(1), all vehicles located, operated or intended to be operated in the UK are within scope.
1.2	Does the vehicle already have a valid Authorisation in another Member State?	N	The assumption is that this is an existing UK Class and therefore does not have a valid Authorisation in another MS.
1.3	Is the project for new build?	N	This not a complete new construction of the subsystem.
1.4	Is the project for upgrading or renewal?		Authorisation is required for a vehicle change that qualifies as ‘upgrading’ or ‘renewal’.
1.4.1	Does the project correspond to one similar in DfT’s published list?	N	No list has yet been published by DfT other than in respect of PRM-TSI and so such a comparison is not available.
1.4.2	Upgrading?	Y	The project delivers benefits in functionality and capacity for the railway which must be considered to be upgrading. However, this upgrading is to the rolling stock based CCS <sup>31</sup> subsystem, not to the rolling stock subsystem.
1.4.3	Renewal?	N	Although the project replaces an existing system, the ‘upgrading’ trigger has already been tripped.
1.5	Is it major work?		It is concluded from the following questions that this project is “major work”.

<sup>31</sup> CCS is Control Command and Signalling

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	Issue/Question	Decision Y/N	Comments
1.5.1	<b>The scale of the project</b> in terms of geographic size and change to the subsystem. National programmes, Route programmes, Projects of strategic importance are likely to be major, as are projects of a significant financial scale.	Y	GSM-R is a national programme of strategic importance.
1.5.2	<b>The significance of the work.</b> Could the work aid or hinder the development of an interoperable network and given the location or nature of the work, what would be the likely impact?	Y	The project will aid the development of an interoperable network. Should a non-TSI compliant radio system be fitted, it does not promote the objectives of interoperability and encourages “bespoking”.
1.5.3	How does the project relate to any published <b>National Implementation Plans</b> such as GSM-R or ERTMS?	Y	It does – it is.
1.5.4	Does the work allow for an economically efficient opportunity to apply a <b>standardised design</b> ? Would it reduce the level and cost of future re-engineering if the subsystem is to be migrated to an interoperable design at a future date?	Y	Yes, GSM-R is a standardised design.
1.6	<b>Application for DfT determination on Authorisation of upgrading / renewal projects and the application of the TSIs</b>	Y	Submit application to DfT with accompanying file of information. DfT will determine whether the subsystem requires Authorisation and to what extent TSIs must apply to the project.
1.7	<b>Does an existing subsystem type Authorisation exist?</b>	N	There is not yet agreement at EU-level that Type can be applied to an upgrade/renewal, consequently only vehicle designs can have a “type”. However, the opportunity exists to use ISV certificates for the design, and utilise that in a subsequent class or even the same class of vehicle but a different owner/operator, provided that the extent of change for the new vehicle is minimal.
2	<b>Is a CSM REA assessment required for the upgrade under ROGS?</b>	N	N/a – As RIR applies to the upgrade, there is no need to apply any further ROGS requirements, as the RIR requirements satisfy ROGS. If the applicable parts of the TSI call for this CSM to be applied, e.g. because the TSI doesn’t define all the requirements, the CSM only applies to that part of the subsystem change, not to the entire subsystem or the vehicle. ROGS SMS change control processes apply to the enabling works.

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	Issue/Question	Decision Y/N	Comments
<b>3</b>	<b>Is a CSM REA assessment required for the enabling works under ROGS?</b>		The enabling works for the upgrade are not authorised but may be subject to a CSM REA assessment if they are judged of themselves to be significant.
<b>3.1</b>	<b>Is the “additionality” of the enabling works significant?</b>	<b>N</b>	Unless something else is also being implemented at the same time, this couldn’t apply.
<b>3.2</b>	<b>Is the complexity of the change and novelty used in implementing the change significant?</b>	<b>N</b>	A radio exists currently; the cabling and power supplies exist currently. The changes to enable the upgrade are relatively uncomplicated and not novel.
<b>3.3</b>	<b>Is the failure consequence of the enabling works significant?</b>	<b>N</b>	The failure consequence of the enabling works is no worse than the present situation.
<b>3.4</b>	<b>Is the inability to monitor the implemented change or to revert to the configuration of the system significant?</b>	<b>N</b>	The implemented change can be both monitored and reverted.
<b>4</b>	<b>Use change management processes within the SMS</b>	<b>Y</b>	The RIR requirements satisfy ROGS for the upgrade, SMS change processes control the enabling works.
<b>4</b>	<b>Compatibility assessment (where required)</b>	<b>Y</b>	The applicable standard is GE/RT8270 Issue 2, “Assessment of Compatibility of Rolling Stock and Infrastructure”.

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	Issue/Question	Decision Y/N	Comments
5	<p><b><u>Commentary and process to be followed:</u></b></p> <p>Types cannot yet be applied to Upgrades or Renewals.</p> <p>Having decided that this project falls within the scope of RIR, it is necessary to appoint:</p> <ul style="list-style-type: none"> <li>• a NoBo (Notified Body), to carry out a “verification assessment procedure”, to assess the project against the relevant TSIs<sup>32</sup>; and</li> <li>• a DeBo (Designated Body), to carry out a “verification assessment procedure”, to assess the project against the relevant NNTRs<sup>33</sup>;</li> </ul> <p>NB these duties could be performed by one organisation.</p> <p>Because of the timing of the Network Rail-lead national project, it was considered that the project was at an advanced stage of development by the time that the CSM REA came into force, DfT agreed that it was not appropriate to require the CSM REA to assure safe integration of GSM-R as part of the authorisation process; the existing process controls are considered adequate. Consequently, the Project Entity is at liberty to decide whether appointment of a CSM Assessment Body is appropriate, for its own purposes.</p> <p>In this case, the relevant TSI is the CCS TSI, not the RST TSI; the radio is the CCS upgrade, not the enabling works.</p> <p>The NoBo and DeBo are required to compile a “technical file” for the project for their own parts. Once the NoBo is satisfied that the project does comply with the relevant TSIs, and has received the statement of compatibility from the duty holder, a “certificate of verification” will be issued. Similarly for the NNTRs a “certificate of verification” will be issued by the DeBo.</p> <p>Once the “certificate of verification” has been received from the NoBo and the DeBo, a “verification declaration” is to be prepared by the Project Entity. This declaration verifies that:</p> <ul style="list-style-type: none"> <li>• The “essential requirements” have been met by the entire upgrade, including any aspects not in scope of the TSIs, including those for the interfaces with the network;</li> <li>• The “verification assessment procedure” has been carried out;</li> <li>• The “certificates of verification” have been received;</li> <li>• The “technical file” has been completed;</li> </ul> <p>A written application for “Authorisation for placing in service” can now be made by the Project Entity to the Safety Authority (the Office of Rail Regulation – ORR). This is to be accompanied by the complete “technical file”, including the “certificates of verification” by the NoBo and DeBo, and the “verification declaration” by the Project Entity.</p> <p>Provided that the Safety Authority is satisfied that the project complies with the regulations and is compatible with the rail system, an “Authorisation for placing in service” will be issued.</p>		

<sup>32</sup> TSIs are the Technical Specifications for Interoperability issued to support the EU Directives on Interoperability



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### C.2 Worked Example – First of class retro-fitment of ERTMS to an existing vehicle

	Issue/Question	Decision Y/N	Comments
<i>Dialogue with the vehicle owner should be established at the beginning of the project in accordance with ACOP/EC/01006, “Approved Code of Practice – Inter-Company Train Engineering Change Approval Process”. (Refer to Section 4.3)</i>			
1	Is Authorisation required under RIR?		Help Notes can be found at: <a href="https://www.gov.uk/government/publications/help-notes-for-the-railways-interoperability-regulations-2011">https://www.gov.uk/government/publications/help-notes-for-the-railways-interoperability-regulations-2011</a>
1.1	Is the Vehicle and its operation within the application of RIR?	Y	In the context of vehicle change, under RIR Regulation 3(1), all vehicles located, operated or intended to be operated in the UK are within scope.
1.2	Does the vehicle already have a valid Authorisation in another Member State?	N	The assumption is that this is an existing UK Class without an equivalent in another EU state <sup>34</sup> and therefore does not have a valid Authorisation in another MS.
1.3	Is the project for new build?	N	This not a complete new construction of the subsystem.
1.4	Is the project for upgrading or renewal?		Authorisation is required for a vehicle change that qualifies as ‘upgrading’ or ‘renewal’.
1.4.1	Does the project correspond to one similar in DfT’s published list?	N	No list has yet been published by DfT other than in respect of PRM-TSI and so such comparison is not available.
1.4.2	Upgrading?	Y	The project delivers benefits in functionality and capacity for the railway which must be considered to be upgrading.  However, this upgrading is to the rolling stock-based CCS <sup>35</sup> subsystem, not to the rolling stock subsystem.

<sup>33</sup> NNTRs are Notified National Technical Rules

<sup>34</sup> For those vehicles which do have an equivalent already authorised in another EU state, the design or elements of the design and assessment may be transferable. Early engagement with ORR is encouraged in this case. Particular attention would have to be paid to any specific cases used or not used in the other EU state and in GB, and to any changes to the operational rules, which would require at least a new software verification. The hardware installation or some aspects of it may be transferrable, without additional authorisation, assuming the same equipment is used. No worked example has been included here, because the circumstance is likely to occur in very few cases or for some time. Please advise ATOC if some further guidance is required.

<sup>35</sup> CCS is Control Command and Signalling

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	Issue/Question	Decision Y/N	Comments
1.4.3	Renewal?	N	This cannot be a renewal since the function is not present currently.
1.5	Is it major work?		It is concluded from the following questions that this project is “major work”.
1.5.1	<b>The scale of the project</b> in terms of geographic size and change to the subsystem. National programmes, Route programmes, Projects of strategic importance are likely to be major, as are projects of a significant financial scale.	Y	ERTMS is a national programme of strategic importance.
1.5.2	<b>The significance of the work.</b> Could the work aid or hinder the development of an interoperable network and given the location or nature of the work, what would be the likely impact?	Y	The project will aid the development of an interoperable network. Should a non-TSI compliant ATP system be fitted, it does not promote the objectives of interoperability and encourages “bespoking”.
1.5.3	How does the project relate to any published <b>National Implementation Plans</b> such as GSM-R or ERTMS?	Y	It does – it is.
1.5.4	Does the work allow for an economically efficient opportunity to apply a <b>standardised design</b> ? Would it reduce the level and cost of future re-engineering if the subsystem is to be migrated to an interoperable design at a future date?	Y	Yes, ERTMS is a standardised design.
1.6	Application for DfT determination on Authorisation of upgrading / renewal projects and the application of the TSIs.	Y	Submit application to DfT with accompanying file of information. DfT will determine whether the subsystem requires Authorisation and to what extent TSIs must apply to the project.
1.7	Does an existing subsystem type Authorisation exist?	N	Assume no applicable type Authorisation exists <sup>36</sup>
2	Is a CSM REA assessment required for the enabling works under ROGS?		The enabling works for the upgrade are not authorised but may be subject to a CSM REA assessment if they are judged of themselves to be significant.
2.1	Is the “additionality” of the enabling works significant?		Potentially, yes. This will have to be examined on a case-by-case basis, taking into account the changes being implemented at or around the same time.

<sup>36</sup> This does not prevent the re-use of a generic “first of class” approach, such as was successfully used for GSM-R. Upgrades are presently not acceptable at EU level to be registered as Types.

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	Issue/Question	Decision Y/N	Comments
2.2	Is the complexity of the change and novelty used in implementing the change significant?	N	The changes for the enabling works are not of themselves either complex or novel.
2.3	Is the failure consequence of the enabling works significant?	N	The enabling works could cause minor gremlins with the train (as the Cambrian 158 pilot demonstrated) but not of themselves of significant risk. It is unlikely to challenge the load case assumptions of the train, for example.
2.4	Is the inability to monitor the implemented change or to revert to the configuration of the system significant?	N	The changes can be both monitored and reverted.
3	Use change management processes within the SMS	Y	The RIR requirements satisfy ROGS for the upgrade, SMS change processes control the enabling works.
4	Compatibility assessment (where required)	Y	The applicable standard is GE/RT8270 Issue 2, "Assessment of Compatibility of Rolling Stock and Infrastructure".

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	Issue/Question	Decision Y/N	Comments
5	<p><b><u>Commentary and process to be followed:</u></b></p> <p>Having decided that this project falls within the scope of RIR, it is necessary to appoint:</p> <ul style="list-style-type: none"><li>• a NoBo (Notified Body), to carry out a “verification assessment procedure”, to assess the project against the relevant TSIs<sup>37</sup>; and</li><li>• a DeBo (Designated Body), to carry out a “verification assessment procedure”, to assess the project against the relevant NNTRs<sup>38</sup>;</li></ul> <p>Note the duties of these bodies could be performed by one organisation.</p> <p>The Project Entity must apply the CSM REA, including an assessment report: when required by the relevant TSI; for ensuring Technical Compatibility and Safe Integration. The Project Entity must also decide, through a CSM significance assessment, whether the enabling works are significant and therefore the CSM has to be applied.</p> <p>In this case, the relevant TSI is the CCS TSI, not the RST TSI.</p> <p>The NoBo and DeBo are each required to compile a “technical file” for the project for their respective elements. Once the NoBo is satisfied that the project does comply with the relevant TSIs, and has received the statement of compatibility from the duty holder, a “certificate of verification” will be issued. Similarly for the NNTRs a “certificate of verification” will be issued by the DeBo.</p> <p>Once the “certificate of verification” has been received from the NoBo and DeBo, a “verification declaration” is to be prepared by the Project Entity. This declaration verifies that:</p> <ul style="list-style-type: none"><li>• The “essential requirements” have been met by the entire upgrade, including any aspects not in scope of the TSIs, including those for the interfaces with the network;</li><li>• The “verification assessment procedure” has been carried out;</li><li>• The “certificate of verification” has been received;</li><li>• The “technical file” has been completed;</li></ul> <p>A written application for “Authorisation for placing in service” can now be made by the Project Entity to the Safety Authority (the Office of Rail Regulation – ORR). This is to be accompanied by the complete “technical file”, including the “certificate of verification” by the NoBo and DeBo, and the “verification declaration” by the Project Entity.</p> <p>Provided that the Safety Authority is satisfied that the project complies with the regulations and is compatible with the network, an “Authorisation for placing in service” will be issued.</p>		

<sup>37</sup> TSIs are the Technical Specifications for Interoperability issued to support the EU Directives on Interoperability

<sup>38</sup> NNTRs are Notified National Technical Rules

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### C.3 Worked Example – Cascade of existing vehicle onto a new route (non-class specific, no change to train fit-out or characteristics)

	Issue/Question	Decision Y/N	Comments
1	Is Authorisation required under RIR?		Help Notes can be found at: <a href="https://www.gov.uk/government/publications/help-notes-for-the-railways-interopability-regulations-2011">https://www.gov.uk/government/publications/help-notes-for-the-railways-interopability-regulations-2011</a>
1.1	Is the Vehicle and its operation within the application of RIR?	Y	In the context of vehicle change, under RIR Regulation 3(1), all vehicles located, operated or intended to be operated in the UK are within scope.
1.2	Does the vehicle already have a valid Authorisation in another Member State?	N	The assumption is that this is an existing UK Class and therefore does not have a valid Authorisation in another MS.
1.3	Is the project for new build?	N	This not a complete new construction of the subsystem.
1.4	Is the project for upgrading or renewal?		Authorisation is required for a vehicle change that qualifies as ‘upgrading’ or ‘renewal’.
1.4.1	Does the project correspond to one similar in DfT’s published list?	N	DfT’s list is not yet published and so such comparison is not available.
1.4.2	Upgrading?	N	There is no upgrading since the vehicle is not being altered.
1.4.3	Renewal?	N	There is no renewal since the vehicle is not being altered.
1.5	Is it major work?		This test is not relevant since it is already determined that there is no upgrading or renewal taking place.
1.5.1	<u>The scale of the project</u> in terms of geographic size and change to the subsystem. National programmes, Route programmes, Projects of strategic importance are likely to be major, as are projects of a significant financial scale.	N	N/A (see 1.5 above)
1.5.2	<u>The significance of the work.</u> Could the work aid or hinder the development of an interoperable network and given the location or nature of the work, what would be the likely impact?	N	N/A (see 1.5 above)

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	Issue/Question	Decision Y/N	Comments
1.5.3	How does the project relate to any published <b>National Implementation Plans</b> such as GSM-R or ERTMS?	N	N/A (see 1.5 above)
1.5.4	Does the work allow for an economically efficient opportunity to apply a <b>standardised design</b> ? Would it reduce the level and cost of future re-engineering if the subsystem is to be migrated to an interoperable design at a future date?	N	N/A (see 1.5 above)
1.6	Application for DfT determination on Authorisation of upgrading / renewal projects and the application of the TSIs.	N	N/A there is no work taking place to change the vehicle, just the place that it is used, therefore RIR does not apply.
1.7	Does an existing subsystem type Authorisation exist?	N	N/A
2	Is a CSM REA assessment required ROGS?		
2.1	Is the “additionality” of the enabling works significant?	N	There is no change to the technical subsystem; therefore the CSM is not applicable.
2.2	Is the complexity of the change and novelty used in implementing the change significant?	N	
2.3	Is the failure consequence of the enabling works significant?	N	
2.4	Is the inability to monitor the implemented change or to revert to the configuration of the system significant?	N	
3	Use change management processes within the SMS	Y	The necessary risk evaluation and control measures will be handled fully within the RU's SMS.
4	Compatibility assessment (where required)	Y	The applicable standard is GE/RT8270 Issue 2, “Assessment of Compatibility of Rolling Stock and Infrastructure”. However, if other identical or similar vehicles operate on that route, only the differences need to be proven compatible.

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	Issue/Question	Decision Y/N	Comments
5	<b><u>Commentary and process to be followed:</u></b> Under ROGS, an RU's Safety Management System (SMS) describes the arrangements through which the RU controls all of its activities that fall within scope of ROGS. This includes control of engineering change and maintenance or operational change.		

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### C.4 Worked Example – Mandatory PRM TSI compliance by 2020

	Issue/Question	Decision Y/N	Comments
<i>Dialogue with the vehicle owner should be established at the beginning of the project in accordance with ACOP/EC/01006, “Approved Code of Practice – Inter-Company Train Engineering Change Approval Process”. (Refer to Section 4.3)</i>			
1	Is Authorisation required under RIR?		Help Notes can be found at: <a href="https://www.gov.uk/government/publications/help-notes-for-the-railways-interoperability-regulations-2011">https://www.gov.uk/government/publications/help-notes-for-the-railways-interoperability-regulations-2011</a>
1.1	Is the Vehicle and its operation within the application of RIR?	Y	In the context of vehicle change, under RIR Regulation 3(1), all vehicles located, operated or intended to be operated in the UK are within scope.
1.2	Does the vehicle already have a valid Authorisation in another Member State?	N	The assumption is that this is an existing UK Class and therefore does not have a valid Authorisation in another MS.
1.3	Is the project for new build?	N	This not a complete new construction of the subsystem.
1.4	Is the project for upgrading or renewal?		Authorisation is required for a vehicle change that qualifies as ‘upgrading’ or ‘renewal’.
1.4.1	Does the project correspond to one similar in DfT’s published list?	Y	DfT’s website on PRM constitutes such a list: <a href="http://www.dft.gov.uk/topics/access/rail/rail-vehicles/">http://www.dft.gov.uk/topics/access/rail/rail-vehicles/</a> and <a href="#">DfT Targeted Compliance List</a> It is assumed that there are no gaps on the list. It is a requirement of the RVAIR regulations that (in summary) mainline passenger trains can’t continue in service beyond 2020 unless accessible.
1.4.2	Upgrading?	Y	Works implemented for PRM TSI compliance constitute upgrading.
1.4.3	Renewal?	N	



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	Issue/Question	Decision Y/N	Comments
1.5	Is it major work?		It is concluded from the following questions that this project is “major work”.
1.5.1	<b>The scale of the project</b> in terms of geographic size and change to the subsystem. National programmes, Route programmes, Projects of strategic importance are likely to be major, as are projects of a significant financial scale.	N	This test would probably not be triggered
1.5.2	<b>The significance of the work.</b> Could the work aid or hinder the development of an interoperable network and given the location or nature of the work, what would be the likely impact?	N	This test would probably not be triggered
1.5.3	How does the project relate to any published <b>National Implementation Plans</b> such as GSM-R or ERTMS?	Y	This test probably would be triggered. See above.
1.5.4	Does the work allow for an economically efficient opportunity to apply a <b>standardised design</b> ? Would it reduce the level and cost of future re-engineering if the subsystem is to be migrated to an interoperable design at a future date?	Y	This test would probably be triggered
1.6	Application for DfT determination on Authorisation of upgrading / renewal projects and the application of the TSIs.	N	Applicant is able to determine using available guidance
1.7	Does an existing subsystem type Authorisation exist?	N	Type doesn’t apply to upgrades as yet.
2	Is a CSM REA assessment required for the enabling works under ROGS?		The enabling works for the upgrade are not authorised but may be subject to a CSM REA assessment if they are judged of themselves to be significant.
2.1	Is the “additionality” of the enabling works significant?	-	Potentially, yes. This will have to be examined on a case-by-case basis, taking into

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	Issue/Question	Decision Y/N	Comments
			account the changes being implemented at or around the same time
2.2	Is the complexity of the change and novelty used in implementing the change significant?	N	This seems highly unlikely to be the case
2.3	Is the failure consequence of the enabling works significant?	N	This seems highly unlikely to be the case
2.4	Is the inability to monitor the implemented change or to revert to the configuration of the system significant?	N	This seems highly unlikely to be the case
3	Use change management processes within the SMS	Y	
4	Compatibility assessment (where required)	Y	The applicable standard is GE/RT8270 Issue 2, "Assessment of Compatibility of Rolling Stock and Infrastructure".

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	Issue/Question	Decision Y/N	Comments
5	<p><b><u>Commentary and process to be followed:</u></b></p> <p>Having decided that this project falls within the scope of RIR, it is necessary to appoint:</p> <ul style="list-style-type: none"><li>• a NoBo (Notified Body), to carry out a “verification assessment procedure”, to assess the project against the relevant TSIs<sup>39</sup>; and</li><li>• a DeBo (Designated Body), to carry out a “verification assessment procedure”, to assess the project against the relevant NNTRs<sup>40</sup>;</li></ul> <p>Note the duties of these bodies could be performed by one organisation.</p> <p>The Project Entity must apply the CSM REA, including an assessment report: when required by the relevant TSI; for ensuring Technical Compatibility and Safe Integration. The Project Entity must also decide, through a CSM significance assessment, whether the enabling works are significant and therefore the CSM has to be applied.</p> <p>In this case, the relevant TSI is the PRM TSI.</p> <p>The Project Entity is likely to wish to apply for a TSI derogation in line with the published list for targeted compliance.</p> <p>The NoBo and DeBo are each required to compile a “technical file” for the project for their respective elements. Once the NoBo is satisfied that the project does comply with the relevant TSIs, and has received the statement of compatibility from the duty holder, a “certificate of verification” will be issued. Similarly for the NNTRs a “certificate of verification” will be issued by the DeBo.</p> <p>Once the “certificate of verification” has been received from the NoBo and DeBo, a “verification declaration” is to be prepared by the Project Entity. This declaration verifies that:</p> <ul style="list-style-type: none"><li>• The “essential requirements” have been met, including those for the interfaces with the network;</li><li>• The “verification assessment procedure” has been carried out;</li><li>• The “certificate of verification” has been received;</li><li>• The “technical file” has been completed;</li></ul> <p>A written application for “Authorisation for placing in service” can now be made by the Project Entity to the Safety Authority (the Office of Rail Regulation – ORR). This is to be accompanied by the complete “technical file”, including the “certificate of verification” by the NoBo, and the “verification declaration” by the Project Entity.</p> <p>Provided that the Safety Authority is satisfied that the project complies with the regulations and is compatible with the network, an “Authorisation for placing in service” will be issued.</p>		

<sup>39</sup> TSIs are the Technical Specifications for Interoperability issued to support the EU Directives on Interoperability

<sup>40</sup> NNTRs are Notified National Technical Rules

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### C.5 Worked Example – Maintenance change – maintenance interval doubled

	Issue/Question	Decision Y/N	Comments
	<i>Dialogue with the vehicle owner should be established at the beginning of the project in accordance with ACOP/EC/01006, “Approved Code of Practice – Inter-Company Train Engineering Change Approval Process”. (Refer to Section 4.3)</i>		
1	Is Authorisation required under RIR?		Help Notes can be found at: <a href="https://www.gov.uk/government/publications/help-notes-for-the-railways-interoperability-regulations-2011">https://www.gov.uk/government/publications/help-notes-for-the-railways-interoperability-regulations-2011</a>
1.1	Is the Vehicle and its operation within the application of RIR?	Y	In the context of vehicle change, under RIR Regulation 3(1), all vehicles located, operated or intended to be operated in the UK are within scope.
1.2	Does the vehicle already have a valid Authorisation in another Member State?	N	The assumption is that this is an existing UK Class and therefore does not have a valid Authorisation in another MS.
1.3	Is the project for new build?	N	This not a complete new construction of the subsystem.
1.4	Is the project for upgrading or renewal?		Authorisation is required for a vehicle change that qualifies as ‘upgrading’ or ‘renewal’.
1.4.1	Does the project correspond to one similar in DfT’s published list?	N	DfT’s list is not yet published and so such comparison is not available.
1.4.2	Upgrading?	N	There is no upgrading since the vehicle is not being altered.
1.4.3	Renewal?	N	There is no renewal since the vehicle is not being altered.
1.5	Is it major work?		This test is not relevant since it is already determined that there is no upgrading or renewal taking place.
1.5.1	<u>The scale of the project</u> in terms of geographic size and change to the subsystem. National programmes, Route programmes, Projects of strategic importance are likely to	N	N/a (see 1.5 above)

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	Issue/Question	Decision Y/N	Comments
	be major, as are projects of a significant financial scale.		
1.5.2	<b>The significance of the work.</b> Could the work aid or hinder the development of an interoperable network and given the location or nature of the work, what would be the likely impact?	N	N/a (see 1.5 above)
1.5.3	<b>How does the project relate to any published <u>National Implementation Plans</u> such as GSM-R or ERTMS?</b>	N	N/a (see 1.5 above)
1.5.4	<b>Does the work allow for an economically efficient opportunity to apply a <u>standardised design</u>? Would it reduce the level and cost of future re-engineering if the subsystem is to be migrated to an interoperable design at a future date?</b>	N	N/a (see 1.5 above)
1.6	<b>Application for DfT determination on Authorisation of upgrading / renewal projects and the application of the TSIs.</b>	N	Applicant is able to determine using available guidance
1.7	<b>Does an existing subsystem type Authorisation exist?</b>	N	Not applicable in this case
2	<b>Is a CSM REA assessment required for the enabling works under ROGS?</b>		Maintenance changes are covered under ROGS
2.1	<b>Is the “additionality” of the change significant?</b>	-	It seems unlikely, but potentially, yes. This will have to be examined on a case-by-case basis, taking into account the changes being implemented at or around the same time
2.2	<b>Is the complexity of the change and novelty used in implementing the change significant?</b>	-	This could be the case, if for example, the doubling of the interval involves some complexity or novelty in the new method of maintenance.
2.3	<b>Is the failure consequence of the enabling works significant?</b>	N	Unlikely of itself.
2.4	<b>Is the inability to monitor the implemented change or to revert to the configuration of the system significant?</b>	N	Clearly not –such a consideration should form part of the evaluation under the SMS.
3	<b>Use change management processes within the SMS</b>	Y	RUs are assessed by the ORR before their Safety Certificate is issued. If that certificate

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	Issue/Question	Decision Y/N	Comments
			is granted on the basis that the RU is competent to assess maintenance schedule changes, then the processes in the SMS enable this to happen.
4	Compatibility assessment (where required)	N	No aspects of Compatibility of Rolling Stock affected
5	<b><u>Commentary and process to be followed:</u></b> Under ROGS, an RU's Safety Management System (SMS) describes the arrangements through which the RU controls all of its activities that fall within the scope of ROGS, including the option of engaging the independence of independent competent decision support. This includes control of engineering change and maintenance or operational change.		

## Appendix D Withdrawn Requirements - Safety Verification

### Important Note:

This section has been deleted from the main body of this document because it no longer applies to mainline railways. It still applies to non-mainline railways, and to some vehicle types which run on the mainline network, but which have themselves been excluded from the Interoperability Regulations.

**NB: It will not be maintained should ROGS be further amended beyond the 2013 amendments.**

## 1 Safety Verification under ROGS

### 1.1 Who's Who?

#### 1.1.1 Independent Competent Person

Under ROGS, the Independent Competent Person, where deemed necessary, must be appointed early enough in the project for them to be involved in:

- considering the design of the project;
- identifying or setting standards and conditions for the verification process; and
- setting out the inspection and assessment plan;

There are three important things to consider when appointing an Independent Competent Person:

- They must have the skills, knowledge, experience and resources to carry out the Safety Verification;
- They must not have been responsible for any of the things they will have to assess in a way that might cause them to be biased in their assessment;
- They must not be part of the management chain that is responsible for introducing the project;

An Independent Competent Person should not be regarded as the person doing the assessment, but the person who verifies that due process has taken place and delivered an acceptable result.

### 1.2 Skills and Knowledge Needed

Evidence should be gathered and kept to demonstrate that the Independent Competent Person has the skills and knowledge needed. This evidence typically includes:

- Auditable qualification certificates;
- Experience in the industry or the type of work and workplace;
- Direct knowledge of the specific process they are overseeing, such as making sure vehicles are acceptable;
- Experience of the regulatory process in terms of setting standards and gathering evidence appropriately;
- Being aware of current best practice;
- Being aware of the limits of their skills and experience;

### 1.3 Independence from the Project

The Independent Competent Person may be an employee of the RU, but must not have been responsible for any of the things they have to assess in a way that might cause them to be biased in their assessment.

For example, they should not benefit personally from the successful and timely completion of the project, nor should they profit from the project being implemented e.g. if they owned shares in a company supplying parts to be used in the project.

#### **1.4 Independence from the Management Chain**

If the Independent Competent Person is an RU employee, they must report to senior management via a chain of command that is not responsible for delivering the project. They must be granted the authority to ask for information, carry out examinations and make recommendations.

While larger RUs undertaking significant volumes of Safety Verification work may have suitable people within their organisation, smaller RUs may wish to consider appointing an expert from outside their organisation or their company.

#### **1.5 Availability of Independent Competent Persons**

RUs should ensure that they establish the extent of an Independent Competent Person's competence. Previous industry schemes such as VABs (Vehicle Acceptance Bodies) have enabled such assessment.

#### **1.6 Safety Authority**

The Office of Rail Regulation (ORR) is the National Safety Authority for ROGS. However, as far as Safety Verification is concerned the Safety Authority has no role other than granting and monitoring the Safety Certificate under which the RU's SMS, and ultimately its arrangements for Safety Verification, will operate.

### **2 The Safety Verification process**

#### **2.1 Management Arrangements**

Part of the RUs SMS will describe how the introduction of new or altered vehicles will be managed. A summary of the Safety Verification arrangements would also be included in any application for a new or amended Safety Certificate.

#### **2.2 Making decisions**

A process should be documented and in place for deciding whether or not a project should go through a Safety Verification process. In particular, arrangements to ensure a consistent approach to applying and recording the 'risk' and 'difference' tests should be defined.

#### **2.3 Appointing the Independent Competent Person**

A process should be documented and in place for selecting and appointing an appropriate Independent Competent Person at an early stage in the project (see Paragraph 5.1.1).

#### **2.4 Preparing a written Safety Verification scheme**

The Independent Competent Person should be involved in preparing the written Safety Verification scheme for the project. This involves developing an agreed plan that will allow the Independent Competent Person to assess and monitor:

- the methods the project uses;
- whether the project is being designed and put in place safely; and



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- whether tests are being carried out safely, and in line with agreed standards and conditions.

The Common Safety Method qualifies as a written Safety Verification scheme under ROGS.

### 2.5 Providing information for the Independent Competent Person

The Independent Competent Person needs to have access to all relevant information and documents to be able to carry out a satisfactory assessment. This would usually include:

- documents used in designing and setting out a specification for the project;
- certificates of conformity for materials used;
- any other risk assessment and safety analysis reports;
- evidence that the project meets the relevant standards, and an explanation of how risk will be managed where the project does not meet the standards; and
- evidence that the RU has worked with other relevant duty holders (Network Rail, other RUs) to make sure the projects work together.

### 2.6 The Independent Competent Person's assessment

The Independent Competent Person should make sure that:

- the design of the project meets relevant standards;
- any safety-critical parts are suitably designed and built;
- the project has been built, installed and tested properly; and
- arrangements are in place for the project to be run and maintained.

The verification assessment would usually involve physically inspecting or reviewing documents relating to things such as designs, specifications, certificates, compliance of products with relevant safety law (CE marking), and how contractors were used in the project.

### 2.7 The Independent Competent Person's recommendations

Arrangements must be in place for making sure that the findings of the assessment – including any action the Independent Competent Person has recommended that the RU takes – are communicated to the appropriate managers. The RU must also keep a record of any action it carries out as a result.

### 2.8 Monitoring, reviewing and revising the scheme

The RU can apply the general management arrangements and decision-making processes across a range of projects, and it should set these out in the safety management system. The RU should also review them regularly to make sure they are still effective. All of the specific information, assessments, recommendations and action taken for each project that goes through the Safety Verification process should be recorded.