

Huw Parry-Jones  
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Hitachi Rail Europe  
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Your Ref

SE04-C07-2240

Our Ref

Case Ref PRM-IOP-0304

EIN UK/51/2019/0006

27 March 2019

**Contact: Paul Hooper**  
**HM Principal Inspector of Railways**

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Dear Huw,

**THE RAILWAYS (INTEROPERABILITY) REGULATIONS 2011, AS AMENDED  
AUTHORISATION OF HITACHI SUPER EXPRESS TRAIN (SET) CLASS 801  
ELECTRIC MULTIPLE UNITS SUB-CLASSES 801/1 AND 801/2 (5, 9 AND 10 CAR  
FORMATIONS)**

I refer to your application for authorisation reference SE04-C07-2240, received on the 25 February 2019 covering both the rolling stock and control command and signalling structural subsystems.

I also refer to your Article 16 Declaration of Control of Risk, reference SE04-N00-0016, and Safety Assessment Report, reference 5110165\_rep\_006, revision 4, dated 4 September 2018.

Following review of your application, I can confirm that ORR grants a first authorisation under regulation 4(1) (a) of the Railways (Interoperability) Regulations 2011, as amended. This authorisation is for the placing in service of the following:

Hitachi Super Express Train (SET) Class 801 electric multiple units, sub-classes 801/1 and 801/2 (5, 9 and 10 car formations), unit numbers:

Class 801/1 5 car units: 801101 to 801112

Class 801/2 9 car units: 801201 to 801230

I also refer to the EC Declaration of Verification, reference SE04-N00-0017, received on the 25 February 2019 and the references it contains to the Notified Body TSI Certificates and Designated Body NNTR Certificates. Certificate numbers:

Notified Body Module SB Type Examination:

1133/1/SB/2018/RST/ENEN/0575, Issue 1

1133/1/SB/2018/CCO/ENEN/0576, Issue 1

Module	SD	Quality	Management	System	Approval:
1133/4/SD/2018/RST/ENEN/0577,					
Issue 1					
1133/4/SD/2018/CCO/ENEN/0578,					
Issue 1					

Certificate of Verification:

1133/6/SD/2018/RST/ENEN/0579, Issue 1

1133/6/SD/2018/CCO/ENEN/0580, Issue 1

Designated Body Module SB Type Examination:

0021/1/SB/2018/RST/ENEN/0581, Issue 1

0021/1/SB/2018/CCO/ENEN/0582, Issue 1

Module	SD	Quality	Management	System	Approval:
0021/4/SD/2018/RST/ENEN/0583,					
Issue 1					
0021/4/SD/2018/CCO/ENEN/0584,					
Issue 1					

Certificate of Verification:

0021/6/SD/2018/RST/ENEN/0585, Issue 1

0021/6/SD/2018/CCO/ENEN/0586, Issue 1

The restrictions or limitations of use on the rolling stock structural subsystem are those referenced on the EC Declaration of Verification of subsystems, document SE04-N00-0017, received on 25 February 2019 and contained in your technical file, ILTR-T30052-010 Issue 4, dated 26 November 2018.

#### Limitations:

1. Automatic Selective Door Opening (ASDO) functionality must be proven over the East Coast Main Line (ECML) operational routes the trains will be used on before passenger service including abnormal scenarios before use. ASDO must not be used until the infrastructure is available and operational rules developed,
2. ETCS equipment is fitted to SET but will not be functional at the point of seeking vehicle Authorisation, and so therefore is not assessed as an Interoperability Constituent. The equipment has been considered in the assessment as 'black boxes' (e.g. their structural attachment, material properties etc. have been assessed but ETCS functionality has not). The equipment has some limited functionality, such as providing speed signals to the door system and this functionality has been assessed,
3. The SET has been assessed for operation at a maximum speed of 125 mph (200 kph). The design speed of the SET is 140 mph (225 kph),
4. SET has been assessed for normal passenger operation either in single unit configuration as defined in Table 1, or for operation in multiple up to a maximum of 10 vehicles and a total unit length of 259.9m,
5. When operating in multiple with more than one pantograph raised, the following speed limits shall be observed:
  - a. 125mph with pantograph spacings of 216m or above,
  - b. 100mph with pantograph spacings of between 216m and 129m,
  - c. 80 mph with pantograph spacings of between 129m and 42m.
6. In the event of the SET being coupled to a different vehicle type which has a compatible mechanical coupler, the electrical coupling head must be retracted,

#### Conditions:

1. Condition is met by the Hitachi letter of commitment, reference SE04-C07-2249\_Cover Letter – ORR\_APIS Letter 25 Feb 2019 and ORR response reference, PRM-IOP-0289 2019 02 27 Condition 1 - Hitachi SET Class 800 5-car and 9-car bi-mode trains for LNER, dated 27 February 2019.

2. For LNER bi-mode or electric SET Class 800/X / 801X trains placed into service before modifications are implemented to address inter-car surfing and climbing risks, the manufacturer must reach agreement with the operator, LNER, on a time-bound plan which provides details of how these risks will be effectively managed and mitigated in the interim whilst modifications are implemented. This conditions applies to both trains in service and those not in service or stabled,
3. Hitachi shall obtain an S-stage Summary of Rolling Stock / Infrastructure Compatibility (SOC) before service operation on ECML routes to clear Route Specific Compatibility Hazards,
4. The train operator shall satisfy itself that the before service operation on the ECML, manually-operated visual and audible messages available to the driver within the passenger communication system are appropriate to emergency scenarios (in particular train fire and evacuations), and are logically and quickly accessible by the driver,
5. Hitachi shall record harmonic footprints for each train prior to entry into service on the ECML,
6. Before service on the intended ECML operational routes, the train operator shall have completed a suitable and sufficient risk assessment of the risks related to platform stepping distances in all locations (with reference to guidance in GMRT2173), identified and implemented control measures to reduce the risks to as low as reasonably practicable (ALARP).

You should be aware that any future modifications to the authorised subsystems may constitute a 'renewal' or an 'upgrade' as defined in Regulation 2. If a project entity, in relation to the project, considers that the modification meets either of these definitions they may apply, in accordance with the provisions of Regulation 13, to the Department for Transport (DfT) for a decision on whether a new authorisation will be required. Should DfT decide that an authorisation is not required they must consult with ORR whether authorisation is required on safety grounds.

As the project entity you are responsible for retaining the technical files, keeping it up to date and making it available to the ORR in accordance with Regulations 18 and 19.

If you are not the owner of the authorised subsystem you shall within 60 days, in accordance with Regulation 19(3), transfer the technical file, certificate of verification and verification declaration to the owner of the subsystem and the owner shall then be regarded as the project entity. If the owner, in accordance with Regulation 19(4), disposes of his interest in the authorised subsystem, he shall within 60 days of the disposal transfer the technical file, certificate of verification and verification

declaration to the person acquiring that interest and that person shall be regarded as the project entity.

Please note that under Regulation 36, the person who applied for the authorisation shall send particulars to the Registration Entity to enable the registration entity to enter the information on the National Vehicle Register. This will include such further information as the registration entity may reasonably require set out in the relevant standard.

The person who applied for the authorisation to place in service will be issued with a determination of type in accordance with Commission Implementing Decision 2011/665/EC. The person who applied for the authorisation to place in service will receive the type authorisation after providing the data to the Registration Entity in accordance with Annex II of Commission Implementing Decision 2011/665/EC.

If you are the operator, may I remind you of the need to have adequate arrangements within your Safety Management System to control the risks associated with this rolling stock subsystems.

Yours sincerely



**Ian Prosser CBE**  
**HM Chief Inspector of Railways**

**Cc**

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