

Mr Paul Carter  
Head of Authorisation  
Bombardier  
Bombardier Transportation UK Ltd  
Litchurch Lane  
Derby  
DE24 8AD

Your Ref

Our Ref

Case Ref PRM-IOP-0277  
EIN UK/51/2019/0003

11<sup>th</sup> April 2019

**Contact: Paul Fray**

HM Inspector of Railways, Senior Engineer  
One Kemble Street  
London  
WC2B 4AN

Dear Mr Carter,

**THE RAILWAYS (INTEROPERABILITY) REGULATIONS 2011, AS AMENDED  
AUTHORISATION OF BOMBARDIER CLASS 710/2 ELECTRIC MULTIPLE  
UNITS, SINGLE UNIT OPERATION ONLY, FITTED WITH AWS AND TPWS  
(STAND ALONE MODE ONLY), GSM-R VOICE ONLY, MAXIMUM SPEED OF  
75MPH, 4-CAR DUAL VOLTAGE UNITS 710256 TO 710273 AC PASSENGER  
OPERATION ONLY.**

#### **UNIT AND VEHICLE NUMBERS AS PER APPENDIX 1**

I refer to your application for authorisation, received on the 4<sup>th</sup> March 2019. I also refer to your CSM-REA Article 16 Declaration of Control of Risk, dated 4<sup>th</sup> March 2019, and Safety Assessment Report, reference AES/1016/R03 Issue 01 dated 30<sup>th</sup> January 2019.

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 Bombardier Class 710/2 dual voltage vehicles (Complete number range as per Appendix 1).

I also refer to the EC Declaration of Verification, reference 3EER400028-2717, dated 4<sup>th</sup> March 2019 where I note the references to the Notified Body TSI Certificates and Designated Body NNTR Certificates

The conditions and constraints of use on the structural subsystem are those contained on the EC Declaration of Verification reference 3EER400028-2717, dated 4<sup>th</sup> March 2019 and contained in your technical file, reference 3EER400027-4839\_, dated 28<sup>th</sup> February 2019.

Constraints /Restrictions:

1. Units to be operated as a 4-car single units only.
2. Test operation limited to routes identified in the CL710/2 Network Rail Summary of Compatibility (NRSC/0710/006/i), or subsequent issue and in accordance with the Train Operator's Statement of Compatibility.
3. Speed limited to 45mph on all DC routes (for non-passenger use only).
4. Speed limited to 60mph in the suspension deflated condition.
5. Electro-dynamic braking shall not be isolated during train preparation.
6. Correct Side Door Enable (CSDE) and Automatic Selective Door Operation (ASDO) is prohibited.
7. Sleet brushes should not be deployed and will be isolated during train preparation.
8. De-icing should not be used and shall be isolated during train preparation (applies to units 710266 to 710268 only).
9. If required during rescue, only mechanical coupling with other (non-LOTrain or LOTrain) units are allowed; electrical coupling is prohibited.
10. Pantograph power supply 25kV, 50Hz; AC-only operation for passenger service.
11. Units are only to be operated with 1600mm pantograph heads.
12. Pantograph current limits are 300A dynamic, 50A static.
13. Energy Metering System not fitted.

The conditions which must be met by the time specified below are:

1. Bombardier shall ensure that all conditions on the Declaration of Verification reference 3EER400028-2717 and referenced in your Technical File Z231A/TF/42445 including those that appertain to Single Unit, 4 Car, Dual Voltage to operate on AC only infrastructure, shall be identified and managed via a hazard management plan. That hazard management plan shall be agreed with the operator before the commencement of passenger service and demonstrate suitable and sufficient controls and any additional requirements to authorise (including upgrading to multiple unit and dual voltage in passenger operation) and place into service the full functionality of the Class 710/2.
2. The operator, Arriva Rail Limited shall ensure that logging into the non-active cab during passenger service operations (CSM SAR control measure 12) is inhibited before putting into use and the commencement of passenger services. All other open Safety Related Application Conditions are agreed and managed via the operator's safety management system under ROGS, before putting into use and the commencement of passenger service.
3. The operator, Arriva Rail Limited shall not operate the Class 710/2 in passenger operation until an S-stage Summary of Compatibility (SOC) is in place.

4. Bombardier shall, within a year of the granting of this authorisation, make engineering modifications in isolation or combination to the Arriva Rail Limited fleet of Class 710/2 electric multiple units to reduce the risks of climbing and surfing in the inter-car area to a level which is as low as reasonably practicable (ALARP). The surfing and climbing risks are for both attended, in service trains, and unattended, not in service or stabled trains. Bombardier shall, prior to service operation, provide to ORR a written commitment in the form of a time-bound plan detailing the modifications to be applied, accepted by ORR in writing.
5. The operator Arriva Rail Limited, shall for trains put into use before modifications are implemented to address inter-car surfing and climbing risks, reach agreement with the manufacturer 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 condition applies to both trains in service and those not in service or stabled.

The rolling stock subsystem(s) authorised by this letter must be operated and maintained in accordance with Regulation 20.

You should be aware that any future modifications to the authorised subsystem 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 file, 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 subsystem(s).

This decision letter will be published on ORR website.

Yours sincerely



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

Cc

Steve Fletcher	Deputy Director, Railway Planning and Performance
Ian Jones	Head of Interoperability, DfT
David Galloway	Head of Vehicle Compatibility, Network Rail
National Vehicle Register	<a href="mailto:nvr@networkrail.co.uk">nvr@networkrail.co.uk</a>
Keith Atkinson	HM Assistant Chief Inspector of Railways, ORR
Paul Hooper	Interoperability Manager ORR
Phil Clarke	Director of Rolling Stock, TFL

## Appendix 1 Unit and carriage numbers

UNITS	DMS 1	PMS	DMS2	MS1	
710256	432156	432356	432556	432256	Base Configuration (4 Car)
710257	432157	432357	432557	432257	Base Configuration (4 Car)
710258	432158	432358	432558	432258	Base Configuration (4 Car)
710259	432159	432359	432559	432259	Base Configuration (4 Car)
710260	432160	432360	432560	432260	Base Configuration (4 Car)
710261	432161	432361	432561	432261	Base Configuration (4 Car)
710262	432162	432362	432562	432262	Base Configuration (4 Car)
710263	432163	432363	432563	432263	Base Configuration (4 Car)
710264	432164	432364	432564	432264	Base Configuration (4 Car)
710265	432165	432365	432565	432265	Base Configuration (4 Car)
710266	432166	432366	432566	432266	De-icing Unit & Passenger Counting ( 4 Car )
710267	432167	432367	432567	432267	De-icing Unit & Passenger Counting ( 4 Car )
710268	432168	432368	432568	432268	De-icing Unit & Passenger Counting ( 4 Car )
710269	432169	432369	432569	432269	Base Configuration (4 Car)
710270	432170	432370	432570	432270	Base Configuration (4 Car)
710271	432171	432371	432571	432271	Base Configuration (4 Car)
710272	432172	432372	432572	432272	Base Configuration (4 Car)
710273	432173	432373	432573	432273	Base Configuration (4 Car)