



Transport for the East Midlands

Briefing Note

Issued December 2019

TfEM's specification for EMR's long term rolling stock

1. Introduction

East Midland Railways (EMR) are consulting stakeholders and the public on timetable changes being planned for December 2020. Further Timetable changes will take place in December 2021 for which a separate consultation is expected late 2020.

2. Purpose

EMR through their franchise have a number of new trains expected. This note focuses on the longer term rolling stock (rather than interim trains). EMR's interim train plans include class 180s and LNER HSTs on the Intercity services and 153/6/8s on the Regional services.

Transport for the East Midlands (TfEM) has looked at the priorities for improvement across the three EMR service groups, namely "EMR Intercity" using Bi Mode trains, "EMR Electrics" using Class 360 trains and "EMR Regional" using Class 170 trains.

In January 2020, EMR are expected to undertake a limited engagement with stakeholders on the interior refurbishment plans linked to the fleet of Class 170 trains being brought in for the EMR Regional services. EMR have recruited a project manager to lead this work, they will be in post shortly. The 170's are known to have a number of well documented original issues, these include a lack of passenger comfort, lack of facilities for business travellers, noise and wind ingress through the doors causing heating issues. Subsequent refurbishments have tackled these issues in a number of ways and in the most recent national passenger survey Class 170s perform at 87% satisfaction on Chiltern, 82% satisfaction on ScotRail and 78% on XC. Compared with the existing 76% satisfaction scores on EMR for Regional / Local fleets, this indicates that Class 170 trains with a quality refurbishment are liked.

This note looks at all 3 classes of rolling stock, rather than narrowly looking at the Class 170's in isolation. In summary these are:

- Bi Mode – fully brand new fleet. EMR are currently in the process of specifying.
- EMR Electrics – Class 360 trains for the Corby to London services. These are planned to have a complete interior strip and start again refurb.
- EMR Regional – These come from a number of TOC's and as a consequence have different interior layouts of differing ages. These trains will have a significant refurb, but to a lesser extent than the 360's.

3. General principles

The specification of a train will vary with a number of factors, such as journey length, journey purpose and whether or not you are travelling with luggage or not etc. In terms of the Class 170's it is not known if EMR plan to have one standard, or different standards of refurbishment based on differing roles (e.g. short hope commuter/shopper trains; long distance trains and routes serving coastal resorts/airports etc. where luggage space may be more of a factor). In common with many other TOC's it is likely however that a single style of refurbishment will be adopted as this avoids train scheduling issues.

This note focuses on the internal layout arrangements, this does not suggest the external appearance and cleanliness, boarding arrangements and traction performance are not examples of important issues. However in these and other areas TfEMs's view is that they are dictated by the traction procured, the principle adopted by TfEM in these areas is that the quality and performance should be better than that currently provided and as an absolute no worse than now.

This note summarises these requirements, via workshops EMC/TfEM undertook original research to gain an informed understanding of the on train priorities of customers. This was based on trips unto and above 45 minutes, and separately passengers with disabilities. This note also has regard to TfEM/EMC's Strategic Statement, ITT consultation response to the DfT and information made available to the three franchise bidders, and of course responds to EMR's proposed rolling stock plans:

4. Table of TfEM's requirements

	Intercity – Bi-mode	Electrics - 360	Regional - 170
Role	Long distance all trip types	Largely commuter and airport customer (London Luton)	Mixed use, refurbishment may be best splitting services into: <ul style="list-style-type: none"> • Short local trips/commuter • Long distance inter regional • Holiday/East Midlands Airport Appreciating that this will require scheduling.
Capacity	Seating for all	Standing unto 20 mins in reasonable space	Standing unto 20 mins in reasonable space
Accessible	Fully accessible with ample space for wheel chair users and priority seating and space for wheelchairs, ideally catering for the widest range of motorised wheelchairs. Staff assistance provided in all parts of the train.	Fully accessible with ample space for wheel chair users and priority seating and space for wheelchairs, ideally catering for the widest range of motorised wheelchairs. Staff assistance provided in all parts of the train.	Fully accessible with ample space for wheel chair users and priority seating and space for wheelchairs, ideally catering for the widest range of motorised wheelchairs. Staff assistance provided in all parts of the train.
Information	GPS (or track informed) PIDs and PA providing accurate and timely information on the journey and disruption, staff actively keeping customers up to date with their journey and risk/disruption	GPS (or track informed) PIDs and PA providing accurate and timely information on the journey and disruption, staff actively keeping customers up to date with their journey and risk/disruption	GPS (or track informed) PIDs and PA providing accurate and timely information on the journey and disruption, staff actively keeping customers up to date with their journey and risk/disruption

	Intercity – Bi-mode	Electrics - 360	Regional - 170
Safety and security	Customers to feel safe and secure, including visible CCTV with direct links to assistance. This includes their possessions is stored away from seats. Staff visible Ample, convenient and accessible hand holds for standing or moving passengers	Customers to feel safe and secure, including visible CCTV with direct links to assistance. This includes their possessions is stored away from seats. Staff visible Ample, convenient and accessible hand holds for standing or moving passengers. At doors the layout shall be such that all standing passengers are able to reach a hand hold, this is especially an issue if storage or seating etc. is provided adjacent to the door space.	Customers to feel safe and secure, including visible CCTV with direct links to assistance. This includes their possessions is stored away from seats. Staff visible Ample, convenient and accessible hand holds for standing or moving passengers. At doors the layout shall be such that all standing passengers are able to reach a hand hold, this is especially an issue if storage or seating etc. is provided adjacent to the door space.
Climate	Air conditioning with on-train staff control Ability for passengers to screen the sunshine in all parts of the train.	Air conditioning with on-train staff control. Consistent comfortable temperature throughout saloon, without discomfort wind and ingress when doors open.	Air conditioning with on-train staff control. Consistent comfortable temperature throughout saloon, without discomfort wind and ingress when doors open.
WiFi	Free and reliable	Free and reliable	Free and reliable
Mobile phone signal	Good	Good	Good
Charging (franchise commitment)	USB and plug	USB and plug	USB and plug
Luggage	Secure and adequate capacity, with generous over-head racks capable of holding reasonable sized back packs and small cases	Secure and adequate capacity, with generous over-head racks capable of holding reasonable sized back packs and small cases	Secure and adequate capacity appropriate to routes Greater provision on holiday destinations /airports routes etc. All service types to have generous over-head racks capable of safely holding reasonable sized back packs and small cases
Toilets	Clean, attractive, accessible option including baby change option.	Clean, attractive, accessible option including baby change	Clean, attractive, accessible option including baby change
Appearance Note: the Service Quality Regime means EMR will be	High standard of cleanliness at the start of service and at all times of the day.	High standard of cleanliness at the start of service and at all times of the day.	High standard of cleanliness at the start of service and at all times of the day.

	Intercity – Bi-mode	Electrics - 360	Regional - 170
penalised for unclean fleet appearance	Bright and attractive, with flooring forgiving of wet and dirty conditions, so darker materials that give the appearance of being clean as well as being easy to keep clean. Bright but defused lighting	Bright and attractive, with flooring forgiving of wet and dirty conditions, so darker materials that give the appearance of being clean as well as being easy to keep clean. Bright but defused lighting	Bright and attractive, with flooring forgiving of wet and dirty conditions, so darker materials that give the appearance of being clean as well as being easy to keep clean. Bright but defused lighting
Seating (also see Annex below)	Comfortable seat position, with padding soft enough to offer comfort over longer journey, knee length, generous. See RSSB T1140 advice 2019 Seating should ideally align to windows, but leg space takes priority. (see below)	Comfortable seat position, with padding soft enough to offer comfort over journey length, knee length, generous. See RSSB T1140 advice 2019 Seating should ideally align to windows, but leg space takes priority. (see below)	Comfortable seat position, with padding soft enough to offer comfort over longer journey, knee length, generous. See RSSB T1140 advice 2019 Seating should ideally align to windows, but leg space takes priority. (see below)
Tables	All seats to have tables of reasonable size for laptop, food/drink or papers	Some tables	Majority of seats to have tables of reasonable size for laptop, food/drink or papers
Catering	A wide choice of food and drink, offered offering value for money and quality offered on board, offering to include a range of dietary needs	Passenger led	Value and quality offered on board, offering range of dietary needs, subject to route length. Research by Transport Focus (2007) places the trigger level at journeys above 1 hour.
Cycles	At least 2 spaces per 4 carriages	At least 2 spaces per 4 carriages	At least 2 spaces per 2/3 carriages
First Class	Option available	To be agreed.	Not required to be offered
Noise	Soundproofing to be provided against external noise and internally to maintain internal noise at a comfortable level.	Soundproofing to be provided against external noise and internally to maintain internal noise at a comfortable level.	Soundproofing to be provided against external noise and internally to maintain internal noise at a comfortable level.

Matters such as cleanliness, tidiness and no need for passengers to block areas with luggage, pushchairs, cycles and the like, are taken as a given

5. Concluding comments

TfEM look forward to engaging with EMR in the development of the designs for the above rolling stock and refining the design standards and specification, especially where compromises between differing passenger requirements need to be worked through.

Annex - Seat dimensions

Whilst we know from Transport Focus research that getting a seat is a key driver of overall passenger satisfaction, experience also shows that providing higher numbers at the expense of seating comfort and space is not welcomed by passengers, more seats are better achieved by longer trains.

RSSB Research Project T1140¹ “Defining the requirements of a seat comfort selection process” report was published in May 2019. This was based on research undertaken by RSSB/Arup, the following is EMC’s view of the scores for the above service types, based on this research.

Legroom. Airline seat arrangement - Minimum Dimension				695mm	
Score	0	1.25	2.5	3.75	5
Dimension	< 695mm	695-730	731-765mm	766-800mm	> 800mm

Fig 1 – Seat properties affecting comfort.

¹ <https://www.rssb.co.uk/en/Insights-and-News/Latest-Updates/Research-provides-new-approach-to-seat-comfort>

Seat Pad - Minimum Thickness			50mm		
Score	0	1.75	3.5	5.25	7
Dimension	< 50mm	50-55mm	56-60mm	61-66mm	66-70mm
Back Pad - Minimum Thickness			25mm		
Score	0	1.75	3.5	5.25	7
Dimension	< 25mm	25-30mm	31-35mm	36-40mm	>40mm
Seat pad hardness – 500N force					
Minimum % compression			40%		
Score	0	3	6	9	12
% compression	< 40%	40-43%	44-47%	48-51%	52-55%
Seat pad hardness – 1100N force					
Maximum % compression			70%		
Score	0	3	6	9	12
% compression	> 70%	67-64%	63-60%	59-57%	55-51%
Long term seat durability					
Minimum requirement		5% or less deformation after 50,000 cycles			
Score	0	1	3	5	7
Dimension	5% or less deformation after 20,000 cycles	5% or less deformation after 50,000 cycles	5% or less deformation after 100,000 cycles	5% or less deformation after 150,000 cycles	5% or less deformation after 200,000 cycles

Fig 2 – Seat pad requirements.

Comfort Feature	Min comfort requirements not achieved	Metro	Regional	Intercity	1st Class and very hi speed
Seat Height	FAIL				
Seat Depth	FAIL				
Seat width - Distance between armrests	FAIL	1.75	3.5	5.25	7
Backrest width with spacer	0	1.25	2.5	3.75	5
Seat width for longitudinal seating	0	1.25	2.5	3.75	5
Armrest height	0	1	2	3	4
Underside of headrest to seat	0	1	2	3	4
Headrest point of contact - Nape of neck	0	1	1	1	4
Legroom - Airline seat arrangement	0	1.25	2.5	3.75	5
Legroom - Bay seat arrangement	0	1.25	2.5	3.75	5
Angle of Seat	FAIL	1.75	3.5	5.25	7
Angle between seat and back	0	1.75	3.5	5.25	7
Total Dimensional Features		13.25	25.5	37.75	53

Fig 3 – Scores for four journey types.