

19-010 – Seat Comfort Assessment Guidance Note

Version:	4		
Purpose:	Approval to proceed to consultation		
Authors:	Barry Tan – Principal Vehicle Dynamics and Rolling Stock Systems Engineer Sapphire Chaisson – Project Manager		
Sponsor:	Mark Oakley – Professional Head of Rolling Stock		
Lead industry committee:	Rolling Stock Standards Committee (RST SC)	Date:	04 November 2022

Decision

Rolling Stock Standards Committee (RST SC) is asked to:

APPROVE the document to proceed to consultation.

IDENTIFY any specific organisations or individuals to be involved in the consultation process.

19-010 – Seat Comfort Assessment Guidance Note

This business case for change has been developed to support standards committees in taking decisions related to changes to standards, it includes an assessment of the predicted impacts arising from the change.

Proposed documents

Number	Title	Issue
GMGN2696	Assessment of Passenger Seat Comfort	1

Summary

Background and change

Passenger comfort during rail travel is an important aspect of the customer experience and one key aspect of it is the comfort of the seating area which contributes to 5% of the overall impact on customer satisfaction. In a recent survey only 66%¹ of passengers reported a 'satisfied or good' level of comfort of the seating area. One contributing factor to this score could be the lack of quantifiable parameters to sufficiently assess and demonstrate passenger seat comfort for new and refurbished trains.

In response to this and at the request of the Vehicle/Vehicle System Interface Committee (V/V SIC), RSSB established research project T1140 – "Defining the requirements of a seat comfort selection process" to test the hypothesis that seat comfort can be defined, tested and validated in a specification that details a range of comfort scores based of seat performance parameters. The research included a literature review of comfort and performance parameters, defining a seat comfort specification, research design of laboratory testing to quantify seat comfort, and seat testing benchmarking and validation exercises/case studies.

The Key Train Requirements (KTR) document requires that passenger seats are procured and assessed, using either the seat comfort score-based system in RSSB report *T1140 Defining requirements for seat comfort* or the criteria-based *EuroSpec Seat comfort system*. As the T1140 reports are extensive and the definition of the scoring method is often embedded within the derivation of the means, they are not focused on the needs of those who are specifying, designing or validating seat installations. There is a need for a standard to replace the T1140 reference in a future revision of the KTR to provide a more focused and easily verifiable definition of the seat comfort measurement process and scoring.

This project has created a guidance note that sets out the methodology and process for assessing seats in relation to passenger comfort as established in T1140. A target passenger seat comfort score suitable for the intended use of the train has been included in the specification of new or refurbished trains. Seats can then be assessed against the target comfort score using this process. The guidance note also discussed other factors that affect the installation of seats such as interior passive safety, and passengers' perception of comfort. This will assist with the trade-off between high-density, short-distance urban travel and long-distance inter-city travel that have an influence on the seat layout and target level of comfort.

Passenger comfort has also been referenced in the Williams-Shapps Review for Great British Railways (2021) which states that "trains will be made more pleasant to travel on and easier to work aboard" and commits to "introduce new design and ride standards that will make sure all new trains are more comfortable than their predecessors".

¹ National Rail Passenger Survey Main Report Spring 2020

Industry impact due to changes

Impact areas	Scale of impact	Estimated value £ 000's
A. Legal compliance and assurance	Neutral	£0
B. Health, safety and security	Neutral	£0
C. Reliability and operational performance	Neutral	£0
D. Design and maintenance	Low	Unquantifiable
E. People, process and systems	Neutral	£0
F. Environment and sustainability	N/A	£0
G. Customer experience and industry reputation	High	Unquantifiable
Total value of industry opportunity =		Unquantifiable
The standards change contribution to the total value of industry opportunity		
<input type="checkbox"/> None or low	<input checked="" type="checkbox"/> Minor but useful	<input type="checkbox"/> Moderate
		<input type="checkbox"/> Important / essential
		<input type="checkbox"/> Urgent / critical

Detail

1. What were the objectives associated with this change?

Objective 1 – To set out verifiable means of defining and assessing seat comfort according to intended use that can be referenced in train specifications or contracts.

- 1.1 The guidance note will be a starting point for vehicle manufacturers, operators, and rolling stock companies (ROSCOs) to specify seats that are of an appropriate level of comfort for the rolling stock's intended operation.
- 1.2 The information from the guidance note included outputs from T1140 – such as the methodology to assess passenger seat comfort based on individual features present for any given seat design. The outputs from T1140 can allow railway undertakings (RUs) to undertake the assessments for seat comfort using a consistent system.
- 1.3 The content in the guidance note includes information related to seating layouts, and accessories associated with the improvement of comfort to passengers.
- 1.4 The Key Train Requirements, EuroSpec (Seat Comfort), and TecRec - a document containing Technical Recommendations (TecRec) developed jointly by UNIFE and UIC - contain information related to passenger seats such as dimensions, terms, and definitions.
- 1.5 This guidance note signposts information set out in the abovementioned documents to ensure that the information are presented in a consistent manner for the user.
- 1.6 The guidance note sets out information related to the ISO on passenger seats that is currently in development by ISO/TC 269/SC 2/WG 6.

2. How has the content in the standard changed to achieve the objectives?

Objective 1 – To set out verifiable means of defining and assessing seat comfort according to intended use that can be referenced in train specifications or contracts.

- 2.1 This is a new document so all content is new, as opposed to a change or update of an existing document.
- 2.2 The content of the guidance note contains outputs from RSSB Research Project T1140 - including the scoring criteria so that the score for passenger seats can be quantified.
- 2.3 An example list of criteria and scoring has been included as guidance for the proposer to assess the score of an example seat.
- 2.4 The document has also set out parameters such as seat height, seat depth, seat width, backrest width, and armrest height so that RUs can quantitatively assess the comfort for seats applicable to the rolling stock's intended operation.

3. How urgently did the change need to happen to achieve the objectives?

- 3.1 The KTR is currently undergoing review and is expected to be published by April 2023.
- 3.2 The guidance note can be referenced in the KTR.
- 3.3 It is expected that this document will be a key enabler for the Williams-Shapps Plan commitment 41. As the implementation of this plan is unclear at the time of this proposal, it is expected that delivery of the document by early 2023 will support the plan.

4. What are the positive and negative impacts of implementing the change?

Justification of impact, scale and quantification for the seven impact areas

A. Legal compliance and assurance

- 4.1 There is no current, significant, or direct impact.
- 4.2 Seat comfort is aligned to customer satisfaction and there are no legal or assurance obligations.

B. Health, safety and security

- 4.3 There is no direct impact on health. Secondary, unquantifiable benefits may be to reduce the risk of deep-vein thrombosis (DVT), back or posture pain issues.

C. Reliability and operation performance

- 4.4 There is no significant benefit to rolling stock reliability or operation.

D. Design and maintenance

- 4.5 The new guidance note will define a seat comfort assessment system that allows seats to be scored according to their level of comfort. The overall seat comfort score will provide stakeholders such as TOCs, rolling stock providers, and train seat manufacturers with a reference figure or percentage for how comfortable the seat is.
- 4.6 This document can assist in understanding the trade-off between seat comfort, and passenger capacity.

E. People, process and systems

- 4.7 This document will simplify the process of vehicle specification and introduction by providing a common measure of seat comfort that can be applied through the supply chain.

F. Environment and sustainability

- 4.8 There is no direct impact on the environment or sustainability.

G. Customer experience and industry reputation

- 4.9 The output from this project will provide industry-agreed means of defining and evaluating seat comfort that should show a measurable improvement as new or refurbished trains are introduced.

- 4.10 Passenger seat comfort issues have been reported widely by the media with adverse effects on public perception. This guidance note will provide the means to quantify the characteristics of seats suitable for the intended service of the rolling stock to improve comfort and therefore, public perception.
- 4.11 Passenger comfort is a priority in The Williams-Shapps Plan for Rail – including an intention to bring forward normal seat replacement cycles on existing trains – and this provides an opportunity to capitalise on RSSB research and to expand its use.

5. What is the contribution of this standards change in realising the value to industry opportunity?

- 5.1 The implementation of more comfortable seats is expected to be received positively by the rail industry and railway passengers.
- 5.2 The rail industry will be seen to be working actively in engaging with stakeholders and passengers to ensure that their requests for more comfortable seats are addressed.
- 5.3 This will result in a more positive journey experience for passengers, especially on long-distance trips.
- 5.4 The Williams-Shapps Plan for Rail states that Great British Railways will bring forward replacement cycles for on existing trains with less comfortable seats to improve passenger seat comfort so it is important for this document to be ready before changes or renewals are made to passenger seats.

6. What was the effort required by RSSB to make the change?

- 6.1 RSSB reviewed the outputs of T1140, including the technical report and seat measurement methodology.
- 6.2 RSSB engaged with the following stakeholders and existing users of T1140 content to ensure that the guidance note meets the needs of industry:
- The suppliers for T1140: Arup and the Furniture Industry Research Association (FIRA)
 - The Department for Transport
 - RDG
 - ROSCOs
 - Rail vehicle manufacturers
 - Seat manufacturers.

7. Did RSSB deliver against industry's expected timescales?

- 7.1 The content of the standard has been drafted, reviewed, consulted, and published within the RSSB Standards Development Cycle in sufficient time to meet the industry needs.
- 7.2 The publication of the guidance note is anticipated to be March 2023 subject to approval from Rolling Stock Standards Committee.
- 7.3 The publication of this guidance note is anticipated to be ahead of any implementation of the Williams-Shapps Plan for Rail so this document will be well-placed for any changes that may come as a result of the review.

8. How will the industry implement the change?

- 8.1 It is expected that the new guidance note will replace the reference to T1140 in the Key Train Requirements document and that seats will be specified and assessed in accordance with it.
- 8.2 The industry can use the guidance note as part of the specification for seats as part of their procurement or modification process.
- 8.3 RUs can specify a target seat comfort level based on the guidance note so that seat suppliers have quantifiable criteria to meet the RU's expectations.

9. How will RSSB assess whether the change is achieving the objectives?

- 9.1 RSSB will:
 - a) Support early users of the guidance note, where mutually beneficial
 - b) seek feedback from users implementing new seat designs after publication to gauge the effectiveness of the measures and results
 - c) request feedback from interested system interface committees (SICs) and their subgroups including V/V SIC
 - d) monitor the number enquires received against the new guidance note
 - e) undertake twelve- and sixty-month reviews of the guidance note to identify whether it needs to be updated.