

A new standard for fire safety and evacuation

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May 2022

Agenda

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- Background
- The legislative perspective
- Emergency evacuation practice
- UK position on fire protection standards
- European standards setting and compliance



Background

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- RSSB established in 2003 (as Railway Safety)
 - In response to the formal Inquiry into Ladbroke Grove collision (1999)



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 - In response to the formal Inquiry into Ladbroke Grove collision (1999)
- Manages risk to rail employees, passengers and the public
- Manages standards as part of this work
 - Includes representing the UK (BSI) on various CEN/CENELEC and ISO/IEC committees
- Standards are written collaboratively with industry representatives



The legislative perspective

Legislative perspective




- What is a standard?

- An agreed way of doing things...

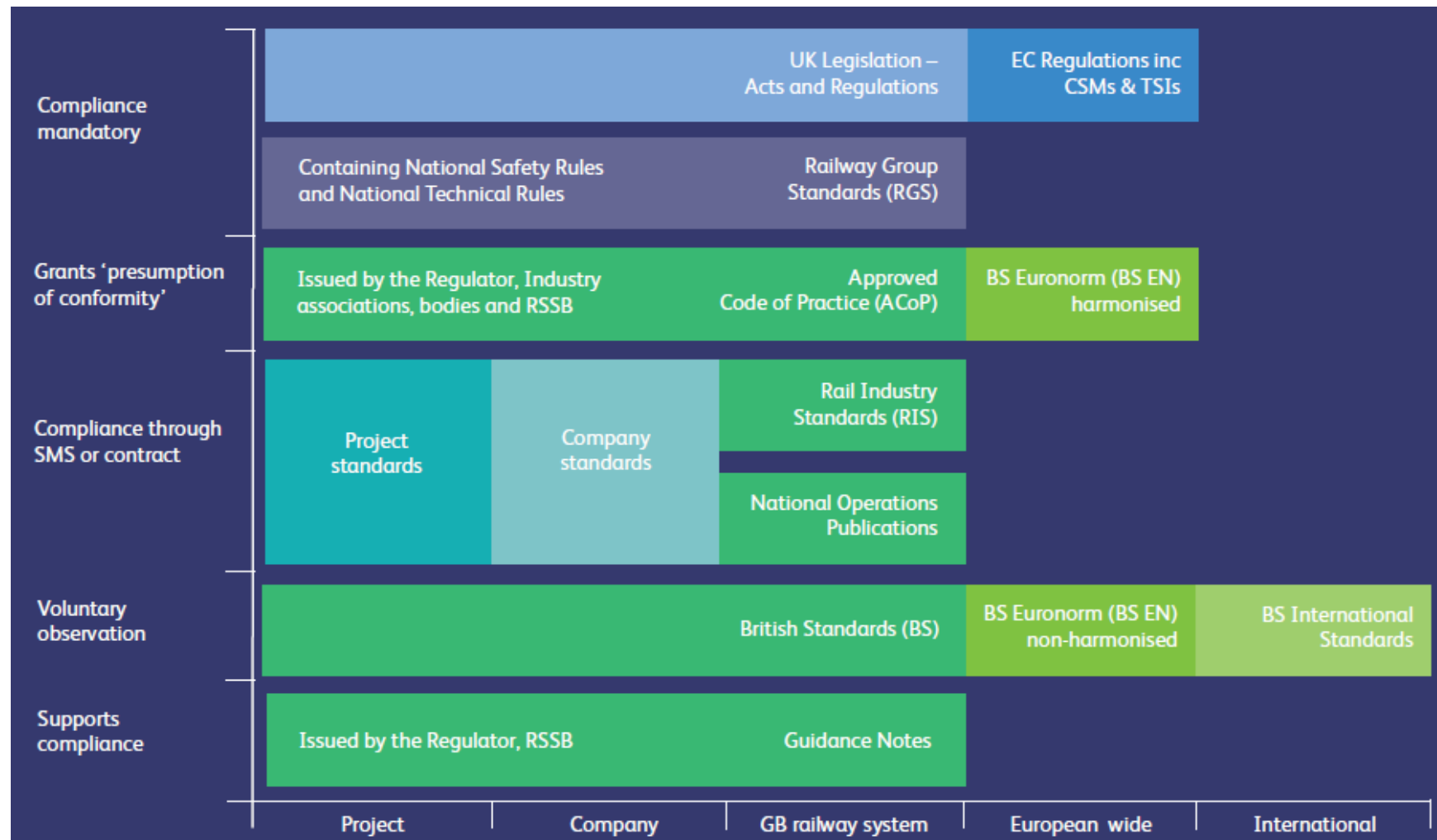
According to EN 45020:2006 (ISO/IEC Guide 2:2004), a standard is a document, established by **consensus** and approved by a recognized **body**, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.

Standards may include requirements and/or recommendations in relation to products, systems, processes or services. Standards can also be used to describe a measurement or test method or to establish a common terminology within a specific sector.

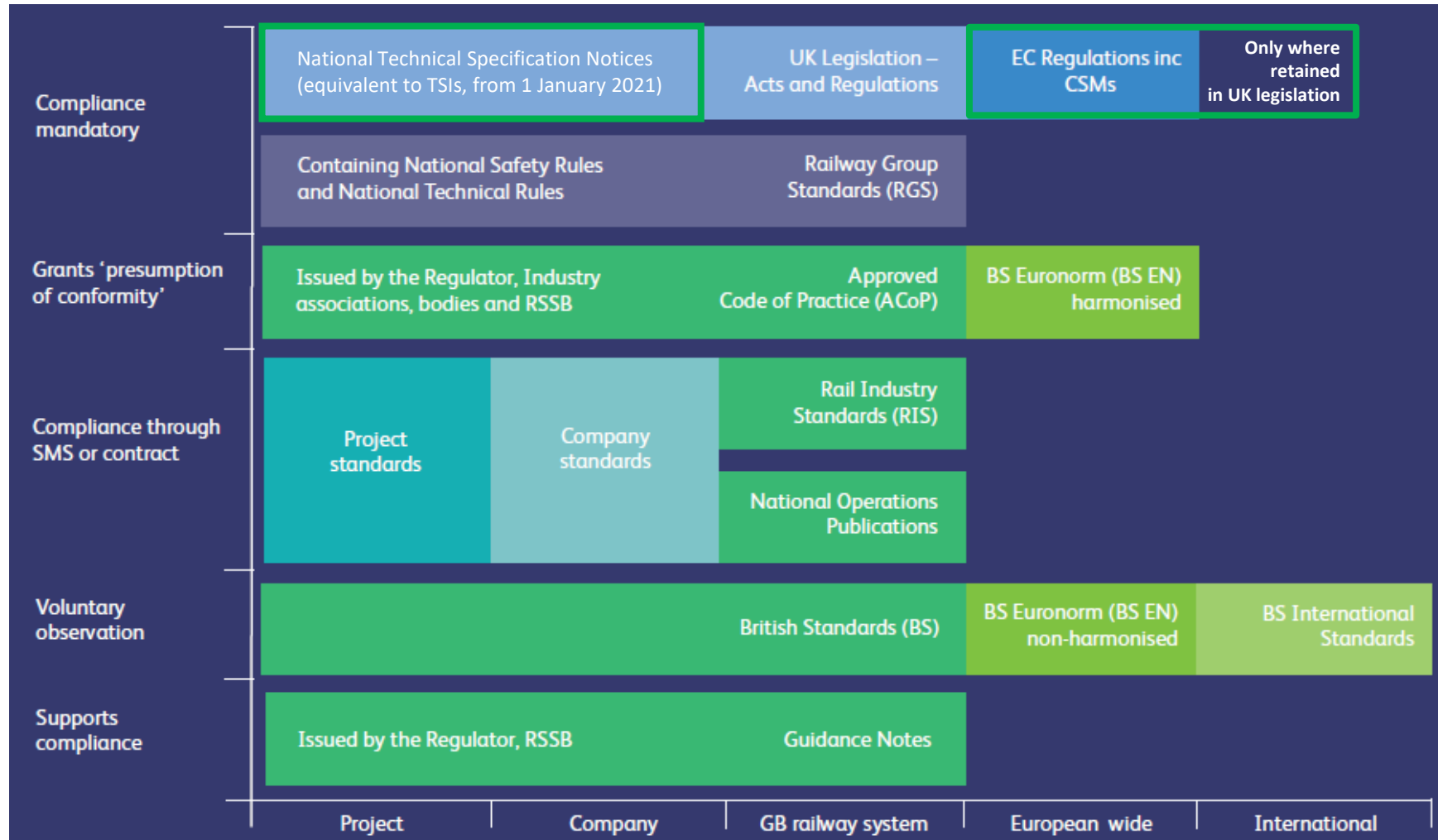
Legislative perspective

 <p>They are agreed good practice</p>	 <p>Promote innovation</p>	 <p>Create a common technical understanding</p>
 <p>Build trust</p>	 <p>Improve productivity</p>	 <p>Open markets</p>
 <p>Increase efficiency</p>	 <p>Ensure interoperability</p>	 <p>Reduce costs</p>
 <p>They embed sustainability</p>	 <p>Fine tune performance</p>	 <p>Manage risk and compliance</p>

Legislative perspective



Legislative perspective



Legislative perspective

- UK legislation - MANDATORY
- NTSNs (were TSIs) - MANDATORY
- ENs – BS ENs - MANDATORY
(NTSN specified clauses)
- Railway Group Standards (RGSs) and Rail Industry Standards (RISs)
 - RGSs contain National Technical Rules, address open points - MANDATORY
 - RISs contain UK established method of addressing risks - MANDATORY
... unless alternative means of addressing the associated risk are provided
 - Guidance Notes / Codes of Practice

Legislative perspective

- LOC & PAS NTSN (same as LOC & PAS TSI, 2014) permits:
 - BS 6853 and
 - GMRT2130 issue THREE (subsequent issues)
 - for transitional period to 1st January 2018

- GMRT2130 issue four, December 2013
 - Aligned with LOC & PAS TSI and hence EN 45545-2:2013
 - Amended in July 2016 (ref to SRT TSI clause 7.2.4)

Legislative perspective

- GMRT2130 issue four supported by:
 - GMGN2630 Issue 1, Dec 2013 – Guidance on Rail Vehicle Fire Safety
 - GMRC2531 Issue 1, June 2008 – Recommendations for Rail Vehicle Emergency Lighting
 - GMRC2532 Issue 1, June 2008 – Recommendations for Rail Vehicle Emergency and Safety Equipment
 - GMRC2533 Issue 1, June 2008 – Recommendations for Communication of Emergency and Safety Information
 - GMRC2534 Issue 1, June 2008 – Recommendations for Rail Vehicle **Emergency Evacuation**

Emergency evacuation practice

Emergency evacuation

- NTSN LOC & PAS clause 4.2.10.5.1 (12):

The number of the doors and their dimensions shall allow the complete evacuation within three minutes by passengers without their baggage. It is permitted to consider that passengers with reduced mobility are to be assisted by other passengers or staff, and that wheelchair users are evacuated without their wheelchair.

Verification of this requirement shall be made by a physical test under normal operating conditions.

- GB procedure developed in response to Cullen Inquiry (Ladbroke Grove)
- Published as ATOC document AV/ST9002 Issue 1 December 2002
- Moved into GMRC2534
- Requires 90 seconds!

Emergency evacuation practice – key points

- Fully risk-assessed, monitored by safety-trained professionals; first aiders in attendance
- In the dark, backup power (emergency lighting) only
 - Vehicle to platform (side access) (platform is lit)
 - Vehicle to vehicle (end access)
 - Vehicle to track (but detrainment device not deployed)
- Volunteers aged 16-65 (with infant manikins); mix of business/leisure
- No family or colleague groups more than 6 persons, approx. 40% solo travellers
- Each trial done twice, with financial incentives to improve time by 20%

Emergency evacuation practice – problems and questions

- Difficult to find sufficient volunteers
 - Could use an agency but would charge, increasing costs
- One instance used factory staff
 - But this goes against the maximum of 6 colleagues!
- Is the use of financial incentives ethical
 - Yes, by reference to the airline industry
- Is the documented practice actually practicable?
- Could we use simulation in future?
- What about persons with reduced mobility (PRMs)?



UK position on fire protection standards

UK vehicle fire protection standards

- GMRT2130 issue five and RIS-2730-RST issue one published June 2020
- BS 6853 withdrawn → EN 45545-2:2013
 - BUT GB considered passenger seat tests inadequate
- Passenger seat fire test method EN 16989 (Aug 2018)
 - BUT not compatible with EN 45545-2:2013 acceptance criteria!
- Toxicity EN 17084 (Dec 2018)
- EN 45545-2 was published in August 2020, *with transitional period to August 2023*
- Current work programme for EN 45545 parts 3-7 and 1
 - proposed migration of part 1 to ISO being discussed

UK vehicle fire protection standards

- GMRT2130 issue five and RIS-2730-RST issue one
 - Published in June 2020
- Legislation
 - Keep NTRs
 - Address open points and TSI silence
- Requirement, Rationale, Guidance

Requirement, rationale and guidance – example

2.9.2 Internal doors

2.9.2.1 If internal sliding doors are fitted, they shall either:

- a) slide open in opposing directions at each end of the passenger saloon; or
- b) be bi-parting.

Requirement, rationale and guidance – example

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- a) slide open in opposing directions at each end of the passenger saloon; or
- b) be bi-parting.

Rationale

G 2.9.2.2 This requirement supports clause 4.2.10.5.1 of the LOC & PAS TSI and clause 4.3.2.1 of BS EN 45545-4:2013, controlling the hazards associated with emergency egress, particularly when vehicles are partially or wholly overturned. The EN refers to hinged doors only; this requirement reflects GB historical practice.

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Guidance

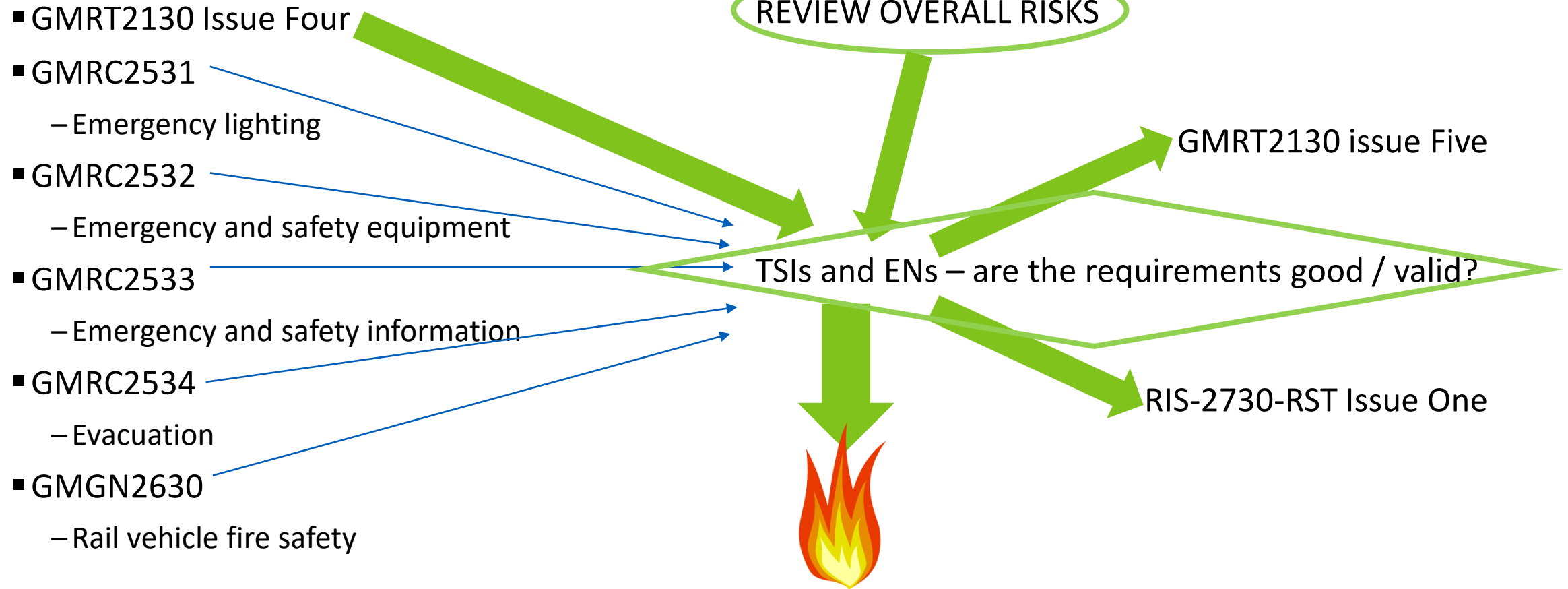
G 2.9.2.3 Alternatively, a means of escape through the doors may be provided within the door opening which allows through egress in the event of the door becoming jammed.

G 2.9.2.4 There is a risk that, under accident conditions, bi-parting doors may become jammed and hinder escape, due to their narrow width. It is therefore good practice to ensure that, where bi-parting doors are used, the door mechanism allows for distortion of the floor without jamming.

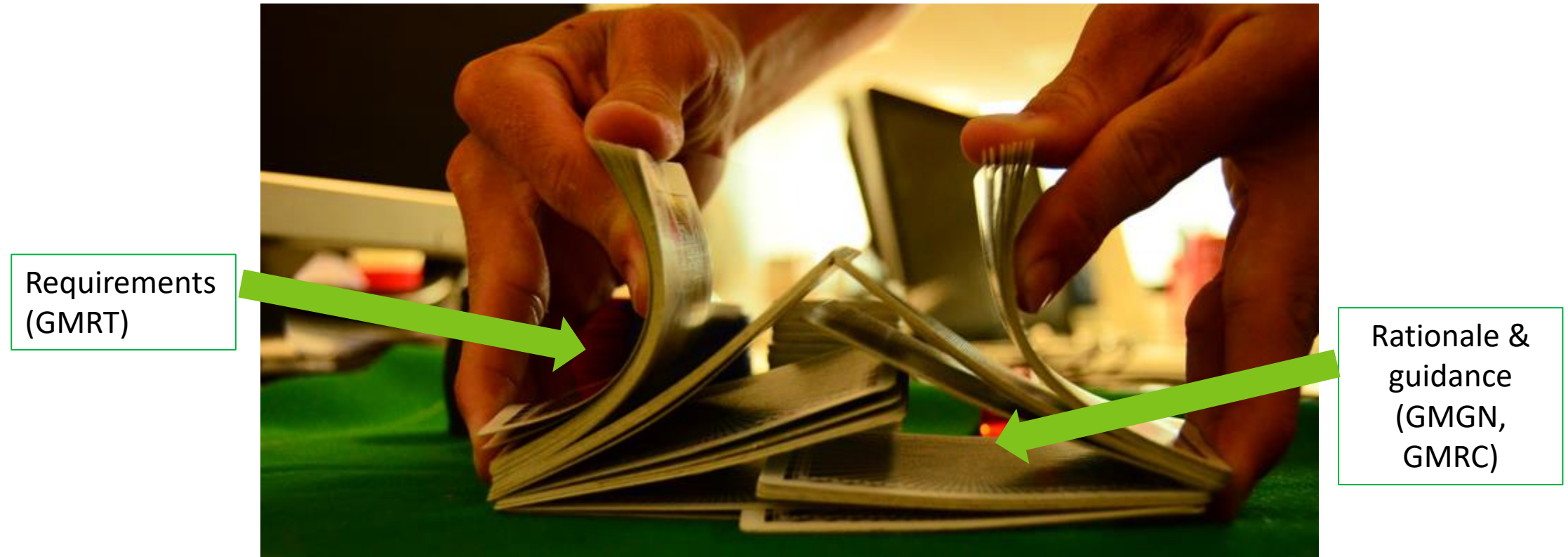
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Requirements, rationale and guidance



Requirements, rationale and guidance



Outline of content – GMRT2130 issue five

- Design of rail vehicles
 - Topley & Severn tunnels >5km long (NTR)
 - Compatibility Matrix (NTR)
 - Wide open gangways (open point)
 - Engine Exhausts (NTR)

Outline of content – RIS-2730-RST issue one (1)

- Design of rail vehicles
 - Calls up full suite of current EN 45545 standards (including EN 45545-2:2020)
 - Sources of ignition (EN 45545-4 Annex A)
 - Liquids and gases (EN 45545-7) – e.g. alternative fuels and refrigerants
 - Emergency lighting (EN 13272-1:2019 Annex C)
 - Emergency and safety equipment (GB practice additional to TSI requirements)
 - Signs and labels (various standards)
 - Evacuation (including sliding internal doors)

Outline of content – RIS-2730-RST issue one (2)

- Other considerations – guidance only

- Emergency stop and isolation devices (EN 45545-6:2013)
- Maintenance and servicing (4.2.11 of LOC & PAS NTSN and EN 45545-4 Annex A)
- Fire extinguishers (EN 45545-6)
- Cleaning

- Appendixes:

- Fixed fire protection systems
- Emergency equipment (GB specifications)
- Evacuation



European standards and continued compliance

Continued compliance – TSIs and NTSNs

- Currently intend to maintain NTSNs in parallel with TSIs
- RSSB supporting DfT

European standards

■ Outline work programme

- EN 45545-3: early to mid 2022
- EN 45545-4: mid to late 2022
- EN 45545-5: late 2023 to mid 2024
- EN 45545-6: mid 2021 to mid 2022
- EN 45545-7: mid 2022 to late 2023
- EN 45545-2: mid 2022 to mid 2025
- EN 45545-1: publish by Dec 2025

Dates may be
affected by proposed
migration to ISO

Continued compliance – UK standards

- GMRT2130 issue five generally requires EN 45545 series for new and upgraded vehicles
- Existing vehicles permitted to remain compliant with BS 6853 and GMRT2130 issue four
- Seat testing to BS EN 16989:2018, but with pass/fail criteria from EN 45545-2:2020
- Toxicity testing to BS EN 17084:2018 as called up in EN 45545-2:2020
- EN 13272 for lighting, including illumination of signs
- Signs and labels:
 - EN 14752 (door signs),
 - EN 61310-1 (fire extinguisher signs)
 - EN ISO 7010 (flammable liquid signs)
 - EN 16584-2:2017 (PRM signs)
 - ISO 3864-1 and ISO 3864-3 (symbols: validation to ISO 9186-1)



Review

Review of GMRT2130 and RIS-2730-RST

- All standards are reviewed 12m after publication
- Changes made
 - Refer to NTSNs instead of TSIs; HOWEVER
 - SRT NTSN does not contain clause 7.2.4(b) relating to new trains in existing tunnels;
 - New clause in GMRT2130 issue 5.1 replicates this
 - Refer to EN 45545-2:2020 (instead of prEN 45545-2:2018); HOWEVER
 - Testing to EN 17084 for toxicity is optional – can still use EN 45545-2:2013+A1:2015
 - Clarification of NTSN regarding FCCS
- GMRT2130 issue 5.1 and RIS-2730-RST issue 1.1 published in September 2021



Recap

Recap

- Background
 - RSSB, Ladbroke Grove
- The legislative perspective
 - UK (*was EU*) Law, NTSNs (*were TSIs*), ENs, RGSs and RISs
- Emergency evacuation practice
 - May need development
- UK position on fire protection standards
 - GMRT2130 issue 5.1 and RIS-2730-RST issue 1.1
- European standards setting and compliance
 - Working on EN 45545

The image features a central horizontal band of bright blue color. Above this band are three vertical rectangular blocks: a light green block on the left, a dark teal block in the middle, and a vibrant green block on the right. Below the blue band are three more vertical rectangular blocks: a medium blue block on the left, a dark navy blue block in the middle, and a dark forest green block on the right. The text "Thank you" is centered within the blue band.

Thank you