Consultation comments received on 20/009 Revision to Vehicle Gauging Standards
GMRT2173 Issue 4 – Size of Vehicles and Position of Equipment

Closing date: 06 October2021

1. Stephen Clarke, Angel Trains
2. Chris Shepperd, Independent
3. Richard Stainton, Network Rail
4. Mick James, Plasser UK
5. Mark Molyneux, RDG
6. Alexander Hastie, Alstom
7. Ian Hills, SNC-Lavalin
8. Sean Symonds, D/Gauge

Summary of comments submitted	Number	Comment categorisation key
Consulted		
Critical errors	0	CE
Editorial	0	ED
Typographical errors	9	TY
Observations	0	OB
Total returns		
Classification codes (CC)		
Document change	49	DC
No change	24	NC
Date responses published:		

No	Page	Section	Comment	Proposed revised text	By	Section	Page	Way forward	Way forward	[RSSB draft responses]
1			My organisation (Network Rail) does not support the standards committee approval of the publication of this document as a matter of principle for the reasons stated.		3			NC		RSSB has held discussions with representatives from Network Rail who have provided feedback against the documents in this project and an understanding has been reached in addressing the issues raised.
2			The UK Specific case is 7.4.2.9.3. Maximum lateral deviation (4.2.9.2) and pantograph gauge (4.2.10) P case For new, upgrade or renewal of the energy subsystem on existing infrastructure it is allowed to calculate the adjustment to the maximum lateral deviation, the verification heights, and pantograph gauge in accordance with the national technical rules. UK Specific case for the United Kingdom of Great Britain and Northern Ireland, applying only to the mainline network in Great Britain. And 7.3.2.2. Gauging (4.2.3.1) UK Specific case (Great Britain) ('P') For technical compatibility with the existing network it is permissible for the profile of the upper and the lower part of the unit together with the pantograph gauge to alternatively be established in accordance with the national technical rules. This specific case does not prevent the access of NTSN compliant rolling stock to the national network.	It is not clear what is intended to be the national rule for pantograph gauges. It appears to be split across. GLRT1210 - AC Energy Subsystem and Interfaces to Rolling Stock Subsystem GMRT2111- Rolling Stock Subsystem and Interfaces to AC Energy Subsystem GMRT2173 - Size of Vehicles and Position of Equipment RIS-2773-RST - Format and Methods for Defining Vehicle Gauging Data RIS-8273-RST - Assessment of Compatibility of Rolling Stock and Infrastructure - Gauging and Stepping Distances GIRT7073 - Requirements for the Position of Infrastructure and for Defining and Maintaining Clearances **Please can we have one document?**	3			NC		The current national technical rules related to pantograph sway are set out in the RGS GMRT2173 while other requirements related to pantograph gauging are set out in RIS-8273-RST. The purpose of this current project is to update the documents to the modern format - separating requirements, rationale, and guidance into respective sections to enhance clarity. The transfer of contents into one document can be considered in the future but national technical rules will have to remain in an RGS, while other requirements can remain in a RIS.
3	All		Reference to BS EN 50367:2012+A1:2016	Replace with BS EN 50367:2020	3			NC		This proposal has not been accepted. References to BS EN 50367:2012:A1:2016 are valid as it was referenced during the development of RSSB project T1196.
4	8	1.2.1.1 a	Should this be determining the proximity of vehicles to structures and other vehicles. It's both, not one or the other .	Change text	2				DC	Proposal accepted. The clause has been modified to read: The overall gauging compatibility process includes the following aspects: a) The safe operation of a rail vehicle on the infrastructure. This is dependent upon maintaining adequate clearance between the vehicle and adjacent structures, and on maintaining passing clearance between the vehicle to other vehicles operating on adjacent tracks. The adequacy of the clearances is established by the proximity of structures or other vehicles on the route.
5	8	1.2.1.1.a	Wording, should be adequate passing clearances Comment previously accepted by RSSB but not updated in draft	The safe operation of a rail vehicle on the infrastructure. This is dependent upon maintaining adequate clearance between the vehicle and adjacent structures, on maintaining adequate passing clearance between the vehicle and other vehicles operating on adjacent tracks. The adequacy of the clearances is established by the proximity of structures or other vehicles on the route.	6				DC	Proposal accepted. Clause modifid to include "adequate".

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6	8	1.2.1.1b	I'm not sure that a route can be robustly defined for gauging by a vehicle which runs on it . I believe that the route is not declared by the infrastructure manager other than via the NGD or a recognised gauge . Compatibility can clearly be declared using vehicles running on the route but only with the agreement of Network Rail. How would a supplier demonstrate clearance if the route was declared with respect to another vehicle whose KE was not published !	Delete this portion	2				DC	The proposal to delete this portion has been accepted.
7	8	1.2.2.1e	If this part of the standard is proposed to be mandatory it means the RIS format for gauging would become mandatory by default . Hopefully this is not the intention.	Clarify	2				DC	The clause has been changed from "e) Definition of the format of the data for gauging compatibility assessment." to "e) Definition of a suitable format of the data for gauging compatibility assessment."
8	10	1.2.5.1.e	Either need to add GMRT2113 or delete e) GLRT1212. Both contain requirements that are relevant to this scope (ie section 2.3) Additional standard reference required. addition g)	g) GMRT2113 Rolling Stock Subsystem and Interfaces to DC Conductor Rail Energy Subsystem - this document sets out requirements for all rolling stock operating over the 750V DC conductor rail energy system.	6				DC	Proposal accepted. Clause modifed to include the new listed item.
9	11	2.1	Where is the list of benchmarked suspension vehicles referenced in this standard	Add ref	2				DC	The information for benchmark suspension set out in the final report of T1109 (Appendices B, C, D, E, and F) have been inserted into GMRT2173 as Appendix C.
10	11	2.1.3	This is a crucial deliverable as it enables the various gauging clearance assessment programs to be used and also defines the state of the vehicle with respect to properties which affect the swept envelope such as loading ,weight, construction tolerances and particularly which track file of those available was use in any dynamic calculation . Since the relevant infrastructure manger actually has to control the gauging risk long after vehicles have been delivered I assume this portfolio should be delivered to them. Should we not say so ?	Add text	2				DC	Accepted. The clause has been modified to include "...and is to be included in the technical file at the end." The clause now reads, "The swept envelope data, or confirmation of the compliance of the vehicle with the standard vehicle gauge or comparator vehicle, shall be made available in the form of a gauging portfolio as set out in Part 4 and is to be included in the technical file."
11	11	G 2.1.6	Probabilistic gauging isn't a specific gauging method . Dynamic gauging uses an element of probability in determining a realistic movement . This is going to confuse people	Delete clause . the use of probability methods is well covered elsewhere in the standard	2				DC	Clause has been modified to read as below: "Alternative methods can be used to determine a vehicle's swept envelope as part of absolute gauging such as from probabilistic calculations."
12	11	G 2.1.9	“The established benchmark suspensions are set out in RSSB Research Project T1109 - Freight Bogie Suspension Gauging - Benchmarking.” How easy is this information to find as it is in a research project? The list of established and benchmarked suspensions used to be contained within the standards.	Suggest the established and benchmarked suspensions should live within the suite of standards.	7				DC	The information for benchmark suspension set out in the final report of T1109 (Appendices B, C, D, E, and F) have been inserted into GMRT2173 as Appendix C.
13	12	2.2.4	4.6 a), c) and d) do not exist.	I believe that this should be 4.6.2.	5				DC	Proposal accepted. The reference has been corrected.
14	12	2.2.5.b	Remove the requirement until a suitable method/process for vehicle and infrastructure is defined What happens with the side wind swept envelopes. No equivalent clearances or method exist. This isn’t applicable in tunnels. The coefficients do not closely correlate to modern passenger vehicles, this pushes vehicle manufacturers to carry out wind tunnel tests. Additional cost for no benefit as the wind swept envelops are not used by Network Rail. This clause was not notified under TSI. We would be happy to provide side wind swept envelopes to support RSSB research or Network Rail risk management, but use needs to be defined. Discussed with Barry Tan	Delete (b) Remove the requirement until a suitable method/process for vehicle and infrastructure is defined	6			NC		Proposal not accepted. The requirement can remain as the overrarching clause informs the reader to take (b) into account. The can provide evidence to support the claim that swept envelopes under 22 m/s wind speed conditions do not need to be produced as part of a gauging study. This information for the swept envelope can be used by Network Rail in specific circumstances. However, this proposal can be considered as part of the future revision of this standard.
15	12	2.2.7	“Dynamic vertical deflections of the vehicle body or frame under all conditions of load, taking account of the factors set out in 2.2.7 i)“ We have never known anyone to actually include this in a KE.	perhaps this should be removed	7			NC		This proposal has not been accepted. No change from previous version.

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16	13	2.2.7.o	Remove the requirement until a suitable method/process for vehicle and infrastructure is defined What happens with the side wind swept envelopes. No equivalent clearances or method exist. This isn't applicable in tunnels. The coefficients do not closely correlate to modern passenger vehicles, this pushes vehicle manufacturers to carry out wind tunnel tests. Additional cost for no benefit as the wind swept envelops are not used by Network Rail. This clause was not notified under TSI. We would be happy to provide side wind swept envelopes to support RSSB research or Network Rail risk management, but use needs to be defined. **Discussed with Barry Tan**	Delete (o) Remove the requirement until a suitable method/process for vehicle and infrastructure is defined	6			NC		This proposal has not been accepted. No change from previous issue. This information is used by Network Rail in specific circumstances. This can be considered as part of the future revision of this standard. Research will be required to justify changes to the requirement.
17	13	2.2.10	Add clause 2.2.2.2 form GMRT2173 Iss3 This clause needs a requirement stating 2.12sd should be used. (2.12sd is required for use in conjunction with clearance categories defined in GIRT7073). Currently this is open and ambiguous so will create issues with clause by clause compliance reports and approvals. There may be different interpretations of "statistically significant" between vehicle manufacturer, NoBo and Network Rail. Compatibility is a separate process agreed between vehicle manufacturer and Network Rail, if NR expect 2.12sd for their clearance categories then this should be stated as a requirement here. Other methods are available see Comment #2 which should also be included in GMRT2173 **Issue discussed with Barry Tan**	Movements that have a statistically significant probability of occurrence shall be included in the swept envelopes. When the swept envelopes are determined by vehicle dynamic calculations the maximum movements shall be taken as the mean + 2.12 standard deviations of lateral, vertical and roll. It is permitted to use an alternative methodology to the mean + 2.12 standard deviation method described in GMRT2173, provided that it can be demonstrated to offer an equivalent or improved level of accuracy.	6				DC	The proposal has been accepted. The clause has been modified to read as below: "Movements that have a statistically significant probability of occurrence shall be included in the swept envelopes. " "When the swept envelopes are determined by vehicle dynamic calculations the maximum movements shall be taken as: - the mean + 2.12 standard deviations of lateral, vertical and roll. or - It is permitted to use an alternative methodology to the mean + 2.12 standard deviation method described in GMRT2173, provided that it can be demonstrated to offer an equivalent or improved level of accuracy."
18	13	2.2.10	Requirement 2.6.2.7 from draft RIS-2773-RST needs to be included in this standard instead of the RIS as it relates to methods **Issue discussed with Barry Tan**	It is permitted to use an alternative methodology to the mean + 2.12 standard deviation method described in GMRT2173, provided that it can be demonstrated to offer an equivalent or improved level of accuracy.	6				DC	20211101 - G 2.6.2.7 is rationale in RIS-2773-RST. Refrence to statistical methods in RIS-2773-RST is not found. Clause 2.2.10 has been changed as per comment 16.
19	13	2.2.11	Inconsistent with RIS-2773-RST. This should refer to validation standard. Copy text from RIS-2773-RST 2.6.2.4 and guidance G2.6.2.13-15.	The MBS model shall be validated against test results (showing sway, roll and drop as a function of installed cant). Add guidance RIS-2773-RST G2.6.2.13-15 here	6				DC	Noted. The requirement set out in 2.2.11 is intentionally more open than the requirement set out in 2.6.2.4 in RIS-2773-RST. 2.2.11 of GMRT2173 mentions validation to a level that is appropriate fot the level of gauging risk whereas 2.6.2.4 specifies test results as a function of installed cant. Guidance from RIS-2773-RST can be referenced in GMRT2173. Reference to GMGN2641 added.
20	13	G 2.2.19	"The industry-agreed process for generating the data and the associated level of detail required is set out in RIS-2773-RST." The first "The" should change to "An", otherwise it implies RIS-2773-RST is the only process.	The first "The" should change to "An", otherwise it implies RIS-2773-RST is the only process.	7				TY	Changed.
21	13	G 2.2.21	Superfluous 'apply' at the end of the second sentence.	Amend to read: 'However, where swept envelopes are used to demonstrate compliance with standard vehicle gauges, the requirements apply as for absolute gauging.'	5				DC	Corrected.
22	13	G 2.2.21	"Swept envelopes are not mandatory when demonstrating compatibility with a standard vehicle gauge. However, where swept envelopes are used to demonstrate compliance with standard vehicle gauges, the requirements apply as for absolute gauging apply." Poor English at the end of the paragraph, does not read well.	Perhaps should say "…, the requirements are the same as for absolute gauging."	7				TY	Corrected.
23	14	G 2.2.25	"GMRT2173 Issue Three and earlier issues of the document have set out the use of mean + 2.12 standard deviations to calculate the maximum movements to determine the vehicle's swept envelope." Typo?	Suggest replacing "the document" with "this document".	7				TY	Accepted.
24	14	2.3	In several clauses of 2.3 the phrase 'established or benchmark suspension' is used. An established benchmark suspension is defined in G 2.1.9 as being in T1109. But what is an 'established suspension'? and how does a suspension become 'established'?	Add new clauses: G 2.3.10 A benchmark suspension is the same as an established benchmark suspension and is defined in G 2.1.9 G 2.3.11 An established suspension is one which has been successfully used on previous vehicles.	4				DC	GERT8073 Appendix C. Discusses movement tables. Clause G C.2.3. New suspension can be added to the "benchmark" list; but not the "established" list. Proposal accepted. Added reference to Clause G C.2.3 in GERT8073.
25		2.3 2.4	it is a requirement of the upper sector that parts that could go above 1100 should be considered as part of the upper sector assessment , however there is no clause that specifies that parts that could go below 1100 should be considered as part of the lower sector assessment.	These should be made consistent	7				DC	Proposal accepted. Clause added to "The Lower Sector". "Further information on the interface between the upper and lower sectors is set out in GERT8073."

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26	14	2.3.1	Clause 2.1.1 refers to “established benchmark” suspensions, where-as section 2.3.1 refers to “established or benchmark suspensions”. This second term is broader and more in line with what has been traditionally used for standard gauges. Benchmark suspensions is a narrower term that refers to a more limited set of suspensions. See also G2.1.9 refers to RSSB Research Project T1109 - Freight Bogie Suspension Gauging – Benchmarking.	Section 2.1.1 should be changed to align with 2.3.1 to match the broader definition.	7				DC	Proposal accepted. This is a typo. This should have read "established or benchmark"
27	14	2.3.2	This surely only applies to non- passenger vehicles	"For a repeat build of a non- passenger vehicle using established or benchmarked suspension and registered the swept envelope etc	2			NC		Following a discussion with Mr. Shepperd, he was happy for this comment to be withdrawn for this revision of the Standard.
28	14	2.3.5	What is the difference between "newly designed equipment " in 2.3.4 and "New equipment in this clause ?	Delete clause 2.3.4	2				DC	Proposal accepted. Clause 2.3.4 deleted.
29	14	2.3.5	The text could be simplified to improve clarity.	Amend to read: ‘or the vehicle’s stated lower gauge, such as W6a’	5				DC	Changed from "current" to "stated".
30	14	2.3.6	GIRT7073 does not detail permissible exceedence of the LSVG. It details an allowable reduction in clearance to structures and vehicles. This clause needs to refer to LSIG and compatibility process to work.	In a failure mode, such as suspension failure, it is permissible to exceed the LSVG. Normal clearance to the Lower Sector Infrastructure gauge shall be provided in accordance with the clearance rules for failure cases defined in GIRT7073	6				DC	Proposal accepted. The clause has been changed to read as below: "In a failure mode, such as suspension failure, it is permissible to exceed the LSVG and clearance requirements are set out in GIRT7073."
31	14	2.3.7	This sentence is considered confusing since it would appear to refer to exceedances in the upper sector but does not specifically reference this in the text.	Amend to read ‘Parts of the swept envelope which exceed the LSVG shall also be shown to be compatible with the associated upper gauge (where applicable), comparison with other vehicles or by absolute gauging.’	5				DC	Proposal accepted with modification. The clause reads: "Parts of the swept envelope which exceed the LSVG shall also be shown to be compatible by comparison with appropriate upper gauges (where applicable), comparison with other vehicles or by absolute gauging."
32	14	2.3.7	Since compliance with LSVG is being mandated then this clause is not appropriate. It implies that LSVG can be exceeded.	Delete clause	2				DC	The clause has been moved to guidance. It is now G 2.3.7 and it reads, "Parts of the swept envelope which exceed the LSVG may also be shown to be compatible by comparison with appropriate upper gauges (where applicable), comparison with other vehicles or by absolute gauging as set out in RIS-8273-RST."
33	15	2.5	This I believe is the wrong place for discussions on comparative vehicles. The ability to use comparative gauging is entirely in the gift of the infrastructure manager . We should not get confused between the production of a defined swept envelope conforming to the rules on LSVG etc and a route clearance using comparative gauging . The new vehicle must first produce a swept envelope according to the rules above , then use comparative gauging if permitted as set out in the RIS. The comparative gauging approach is not a given. It has to be accepted by the infrastructure manager .	Delete section	2			NC		Following a discussion with Mr. Shepperd, he was happy for this comment to be withdrawn for this revision of the Standard. It was agreed that a review of the transfer of the section on Comparative Gauging can be undertaken at the 12-month review of this Standard.
34	16	G2.6.3	Typo in table (middle column, bottom row)	“Payload” not “payloard”	1				TY	Corrected.
35	16	G 2.6.3	It is not clear why are we referring to Issue 3, when GMRT2173 has now been upissued to issue 4? – i.e. this document!	Please clarify.	5				TY	Corrected references. Reference changed from"Issue Three" to "this document".
36	16	G 2.6.6	This clause would appear to contradict G 2.6.4.	Please review.	5			NC		This is not contradictory as an empty wagon will experience a larger displacement when subject to a lateral wind load. Clause G 2.6.4 is true as it does not inclde the effects of a lateral wind load.
37	17	3.1	We need to point out this is a static assessment with no dynamic movements	Add text	2				DC	Added "static" in clause 3.1. The clause now reads: The static step position relative to the nominal platform shall not exceed the parameters defined in Figure 1 for platforms on curves with radii down to 160 m.
38	17	3.1.1	Inconsistent wording (target or nominal). you need to change 3.1.1 if Target is the preferred term	The step position relative to the target platform shall not exceed the parameters defined in Figure 1 for platforms on curves with radii down to 160 m.	6				DC	Instances of "target" have been changed to "nominal".
39	17	3.1.1	Remove the 50mm vertical clearance from the diagram. It doesn't make sense to include vertical clearance but not radial or horizontal clearance. Clearance is managed separately (e.g. absolute gauging). Deployable steps can safely use this zone. This could result in larger than necessary stepping distances on small radius curves as a retractable footstep would need to stop at a position that does not oversail. Sensors for platform detection are often in both ends of the footstep not the middle where the stepping distance would be calculated. This clearance does not consider stepboard thickness for conventional footsteps.	Update stepping diagram to remove clearance requirement.	6			NC		The proposal has not been accepted. GMRT2173 sets out the footstep position; not clearance requirements.

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40	17	3.1.1	Oversail requirement should be reviewed. It doesn't make sense to be allowed a carbody/protrusion on the carbody as long as it has Normal clearances but when you call it a footstep then this is not permitted. This should be managed as a separate requirement for passenger safety. The moving train (not the static stepboard) provides the risk to passengers on platforms. Suggest research is require to identify what the risk is - static footstep (unlikely) or moving train. This should probably be a dynamic assessment. Would it be safer to have a slightly increased oversail to further reduce gaps on opposite curve platforms? This is a historic requirement carried over as long as I can remember but risk could be better defined and managed based on current methods. Also refer to Class 345 deviation 16-019-DEV. The step-board is not considered to present any greater risk to people stood on platforms than any other parts of the vehicle. If the step-board were not to be used as a passenger step, no deviation would be required.	Remove oversail requirement. Further research suggested	6			NC		This proposal has not been accepted. GMRT2173 sets out the footstep position; not clearance requirements. Further research on the oversail of footsteps may be beneficial for a future revision of this document.
41	18	3.2	Tables 2 and 3 – The wind speed values are unsuitable for infrastructure as are unsuitable for infrastructure and need to align with reference height adjusted wind speeds in NA to BS EN 1991-1-4:2005+A1:2010	Add two wind speed columns Fundamental Height wind speed corrected (m/s) wind speed (m/s) 0 0.0 12.6 10.0 18.9 15.0 21.5 17.0 22 17.4 22.5 17.8 23 18.2 23.5 18.6 24 19.0 24.5 19.4 25 19.8 25.5 20.2 26 20.6 26.5 21.0 27 21.4	3				DC	A new table (Table 4) of fundamental and height (10 m) corrected wind speeds has been added.
42	18	3.2	No details on how other contact wire heights are assessed	Additional clause Sway values can be linearly interpolated and extrapolated with height or add heights starting at 4m,	3				DC	A new clause (G 3.2.8) has been added to confirm that linearly interpolating sway values for intermediate heights is permitted.
43	18	G 3.2.5	The wind speeds set out in Table 2 and Table 3 are 10-minute mean wind speeds, where these are defined as the speed of the instantaneous wind averaged over 10 minutes, as defined in BS EN 1991-1-4 2005, Eurocode 1, Wind Actions. No mention of the reference height factor.	The pantograph sway displacement relative to the centreline of the track at a specific site shall be calculated using the wind speed, as defined in the UK National Annex to BS EN 1991-1-4:2005+A1:2010, at the site of the location, with a reference height correction factor of 0.793 applied. Pantograph sway limit values from GMRT2173 at 4.3 m or 5.3 m above the plane of the rails shall be determined using only the corrected wind speed and the average cant deficiency at the site Or apply the reference height correction factor	3				DC	Proposal accepted with modifications as guidance as below: The pantograph sway displacements relative to the centreline of the track set out in Table 2 and Table 3 are calculated using the wind speed, as defined in the UK National Annex to BS EN 1991-1-4:2005+A1:2010, at the location of the site, corrected by a reference height factor of 0.793. Pantograph sway limit values are determined using only the corrected wind speed and the average cant deficiency at the site.
44	19	3.3.1	The bullet e) is too prescriptive with regard to maximum dimension for overhang. Now that it is understood that it is unlikely in the short term to allow the TSI figure of 4.2m then there should be a mechanism to demonstrate compatibility.	Delete bullet point e) Add new clauses: 3.3.4 The vehicle nose overhang (distance from front of vehicle to centre of leading axle or rear of vehicle to centre of trailing axle) shall either: a) be no greater than 3.226m; or b) be no greater than 4.2 m and demonstrate compatibility with existing track circuits Rationale G.3.3.5 The distance from the fouling point of converging tracks includes the maximum nose overhang plus a safety margin Guidance G.3.3.6 Guidance for the demonstration of compatibility as required by 3.3.4 b) is given in RIS-0728-CCS Issue 1.1 clause 2.1	4				DC	Clause 3.3.1 updated with modifciations. b) be no greater than 4.2 m and demonstrate compatibility, including a suitable safety margin with existing track circuits.

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45	20	4.1.2	The track files used to create the dynamic movements should be referenced	Add text	2				DC	Accepted. Item "h) Reference to the specific track files used." has been added to the list.
46	20	4.1.2	We would like to make a case for adding the vehicle masses used to define the tare, laden and crush conditions used in the portfolio as this is something that is rarely known when it comes to updates to a swept envelope. This would limit the chance of multiple changes being made to the vehicle that are classed as minor changes in mass that have “insignificant” effect on the swept envelope but taken over time actually add up to a large value. Listing the masses in the portfolio would put a peg in the sand.	See comment.	7			NC		This information has been included in RIS-2773-RST.
47	20	4.1.2.b	Clarify drawing requirements	A vehicle profile summary drawing showing the body plan view or side view and identifying the location of cross section profiles.	6			NC		This proposal has not been accepted. A vehicle diagram provides an overview while the drawings provide additional detail.
48	20	4.12 g	The portfolio just describes the actual vehicle so including deviations is not appropriate	Delete clause	2			NC		A discussion with Mr. Shepperd was had and he is satisfied for the comment to be withdrawn at this time for this project.
49	21		First the swept envelope needs to be determined then if the infrastructure manager agrees for compatibility, the comparison is made with to the comparator vehicle. Hence it doesn't need to be referenced. After all if the vehicle moved to a different route we might use a different comparator for route clearance .	Delete clause	2			NC		A discussion with Mr. Shepperd was had and he is satisfied for the comment to be withdrawn at this time for this project.
50		4.3 4.4 4.5	It could be argued that all of this information is equally well stored within a RIS-2273-RST format spreadsheet. If that is so is there a requirement to have separate drawings which duplicates this information?		7			NC		RIS-2773-RST contains information for computer analysis. The diagrams provide an overview of the vehicle geometry data.
51	23	4.4.1	Why are both a vehicle summary drawing and a plan view drawing required as well as a vehicle diagram? Do we need vehicle diagram?	Clarify drawing requirements. Only one drawing required if it contains relevant information	6			NC		This proposal has not been accepted. A vehicle diagram provides an overview while the drawings provide additional detail.
52	23	4.4.3	Delete requirement. The profiles are longitudinal cross sections therefore don’t have a vertical location. The location of the cross section profiles are shown on the summary drawing (4.3.1.b)	delete	6			NC		This proposal has not been accepted. The longitudinal cross sections vary with the height of the vehicle.
53	24	4.6.3	“The data provided for swept envelope calculation shall describe the mean and standard deviation of all dynamic movements, static deflections and overthrows that may reasonably be expected to occur under the vehicle's respective combination of track and environmental conditions.” The requirement for means and standard deviations has been deliberately removed from the standard and replaced with statistically significant movements. E.g. it states in G 2.2.17 “The vehicle swept envelopes capture statistically significant movements generated by the vehicle over representative track. The requirements to generate swept envelopes no longer mandate the use of mean + 2.12 standard deviations to allow the use of other calculation methods to generate the swept envelopes.” However, 4.6.3 still refers to means and standard deviations. Some of the alternative methods of producing swept envelopes do not use means and standard deviations. This should be altered in line with 2.2.10 and G 2.2.17.	This should be altered in line with 2.2.10 and G 2.2.17.	7				DC	Requirement and guidance added as follows: “The data provided for swept envelope calculation shall describe the statistical properties of all dynamic movements, static deflections and overthrows that may reasonably be expected to occur under the vehicle's respective combination of track and environmental conditions.” Guidance: Mean and standard deviation are examples of statistical properties that describe the vehicle swept envelope.
54	22	Figure 2	The term 'Gross' is used in the figure – which does not correspond with the terms used previously in Table 1.	Please correct for consistency with Table 1.	5				DC	Corrected image.
55	25	5.1.1	New vehicles of course . it should apply to existing vehicles only where a change affects the swept envelope.	Amend text	2			NC		The proposal has not been accepted. The current wording describes this sufficiently.
56	33	A 2.14	Surely the route here is a deviation with Network Rail supporting the use of the comparator vehicle . After all it's in their gift .If they don't support a deviation they won't support the use of a comparator. Therefore this clause should be guidance	Amend text	2			NC		The proposal has not been accepted. Compatibility is the responsibility of the organisation introducing the change; not necessarily the IM.
57	34	A.2.15	The pantograph head profile complies with the LOC & PAS NTSN - 4.2.8.2.9.2.1 which specifies: EN 50367 - 5.3.2.2, UK specific case 'P' Annex B.2, Fig B.6 This states Dimensions are indicative only; for full manufacturing details see relevant National Standards	Please provide dimensions that are not “indicative”	3				DC	This section states what needs to be taken in to account when assessing the vehicle where additional movements or novel features may be present. This also has to be taken into account as a result, no defnitive dimensions can be set out in this document. Note 3 Figure B.6 in BS EN 50367:2020 can be ignored. A note has been added to this clause.
58	34	A.2.15	The title of “Benchmark vehicle characteristics” does not make sense with regard to the statements held in this section. Most of the section is referring to the candidate vehicle not a benchmark vehicle. Perhaps an alternative title is required.	See comment.	7				DC	Proposal accepted. Title changed to "Candidate vehicle charactersitics".
59	35	A.2.15.4	“To confirm that the assumptions made in developing the benchmark are valid for the calculations undertaken.” This sentence does not make sense by itself; it seems to be missing some words.	Needs review.	7				DC	Proposal accepted. Clause and section deleted.

No	Page	Section	Comment	Proposed revised text	By	Section	Page	Way forward	Way forward	[RSSB draft responses]
60	35	A.2.15.5	"The tolerances for the suspension stiffness parameters (about the nominal stiffness) are not excessive and are typical of passenger vehicle bogies and so can be ignored." I am not sure how this guidance relates to this section of the document.	Needs review.	7				DC	Clause A.2.15.5 deleted.
61	37	G B.1.7	Reference is made to an 'interactive spreadsheet'	Please clarify how this interactive spreadsheet can be accessed?	5			NC		Can be obtained by getting in touch with RSSB.
62	39	Definition	Definition of exposed location should be changed to match that in RIS-2773-RST	An exposed location is an existing railway location for which the value of the fundamental basic wind velocity (vb) before the altitude correction is applied, is ≥ 22 m/s. The 'vb,map' is given in Figure NA.1 in the National Annex (NA) to BS EN 1991-1-4:2005.	6				DC	Corrected.
63	8	1.1	No mention of Gauging Portfolio (format for recoding of data) in Purpose section.	Include purpose for recording vehicle data.	8				DC	Proposal accepted. "...and the recording of vehicle data" added to 1.1.1
64	8	1.1.2	What is a Limiting Swept Envelope?	Definition requires adding to Definitions	8				TY	Proposal accepted. "limiting" in 1.1.2 deleted.
65	8	1.2.1.1 c)	'Significant' What is significant?	Define what Significant Part is or reword 'for all parts of vehicle'	8				DC	Proposal accepted. "of all significant parts" in 1.2.1.1 c deleted.
66	8	1.2.2.1 f)	Define conformance	No Other reference within document. Definition needs to be added to the document and a description on how 'Conformance' is demonstrated	8				DC	Proposal accepted. "Conformance" changed to "Compliance" in 1.2.2.1 f.
67	10	1.2.6.1 b)	"standard format for defining the swept envelope of a vehicle" RIS 2773 RST doesn't define the swept envelope it is the means for recording vehicle data that may be used to calculate the swept envelope	Reword	8				DC	Proposal accepted. Text changed to: "this document provides a standard format for recording the vehicle data to generate a swept envelope for the purposes of compatibility assessment when undertaking absolute or comparative gauging. The data in this format can also be used for the purposes of assessment against standard dynamic vehicle gauges."
68	11	2.1.3	"The swept envelope data" This infers that the data required to define the swept envelope should be included within the Gauging Portfolio.	Ideally this should be provided as a RIS 2773 RST Workbook though not necessarily specified as a Gauging Portfolio requirement.	8			NC		No change proposed. This information is required within the gauging portfolio to undertake gauging.
69	11	G 2.1.6	"Probabilistic Gauging" What it is?	Include description within definition section.	8				DC	Text changed to "Alternative methods can be used to determine a vehicle's swept envelope as part of absolute gauging such as from probabilistic calculations."
70	11	G 2.1.7	Vehicle profile is defined by an Upper & Lower Sector	Reword - Vehicle profiles are defined FOR the Upper & Lower Sector	8				TY	Proposal accepted. Change made to the clause.
71	13	G.2.2.19	Not just generating but also documenting.	Revise wording – to generate and document/record vehicle data	8				TY	Proposal accepted. Changed "generating" to "recording".
72	13	G 2.2.21	"the requirements apply as for absolute gauging apply" Reword	Reword to – the requirements for absolute gauging apply	8				DC	Proposal accepted. Comment closed out as per comment 21.
73	14	2.3.2	"LSVG or W6a lower gauge" Is this dependent upon vehicle type.	Maybe reword to - LSVG for all or W6a for Freight Specific vehicles	8			NC		This proposal has not been accepted. Specifying the use of a vehicle is outside the scope of this document.
74	15	2.4	Confusing on definition of height for Upper Sector and Lower Sector i.e. mix between 1100mm and 1000mm	Should height be common definition?	8				DC	Clause G 2.3.9 has been modified to include a reference to GERT8073 for further information on the interface between the upper and lower sectors.
75	16	G 2.6.4	"Generally, a laden vehicle will result in a larger swept envelope compared to a vehicle in tare" Is this Subjective – Not necessarily true and may add ambiguity	Suggest remove clause	8				DC	Proposal accepted. Clause changed to "Generally, a laden vehicle with a higher centre of gravity will result in a larger swept envelope compared to a vehicle in tare."
76	17	G 3.1.6	"Retractable footsteps that exceed the 50mm limit" Does not confirm that this relates to oversail.	Reword to "that exceed a maximum 50mm oversail"	8				DC	Proposal accepted. This guidance applies to the footstep if it exceeds the 50 mm limit horizontally or vertically, as set out in Figure 1.
77	20	4.1.1	"The documentation containing the swept envelope data" The documentation doesn't contain the swept envelope data, but describes the recording of data to create a swept envelope.	reword	8				DC	Proposal accepted. Clause changed to read, "The documentation containing the vehicle data to generate the swept envelope , or confirmation of the compliance of the vehicle with the standard vehicle gauge or comparator vehicle, shall be made available in the form of a gauging portfolio."
78	20	4.1.2	No Mention of tolerance While tolerances are included within the RIS 2772 RST Workbook, there is no reference to tolerances required within the Gauging Portfolio. If a Gauging Portfolio were provided without an accompanying RIS Dataset, Tolerances used for the calculation of vehicle swept envelope need to be specified/defined.	Include additional line about vehicle tolerances.	8			NC		Tolerances are covered in 4.1.2 e. "data for the calculation for swept envelopes".
79	23	4.4.2	"Details that define the limits of the swept envelope, such as" Paragraph included reference to roof equipment, but not other vehicle protrusions e.g. door indicators, bodyside cameras etc. Details should be provided for the vehicle and all items of equipment that might influence the vehicle swept envelope.	Suggest rewording to – for all locations along the vehicle and item of vehicle equipment that is likely to influence the swept envelope of the vehicle.	8				TY	Proposal accepted. The requirement has been changed to read: "Details that define the limits of the swept envelope shall be included." "A non-exhaustive list of examples of elements that can affect the swept envelope include: 1. Body end tapers 2. Roof equipment 3. End profiles, including noses 4. Door indicators 5. Bodyside cameras."
80	23	4.5	Re Vehicle Cross Section Profile. This section only describes the cross section drawings that maybe included with the portfolio. It is also preferable to have each cross section defined as a set of coordinates within the RIS 2773 RST Workbook. This will ensure that all assessments are based upon the same coordinate set and not an interpretation.	Revise to include reference to RIS 2773 Workbook.	8				DC	Proposal acceptd. The following guidance has been added: "It is good practice for the vehicle drawings and cross-sectional profiles to contain the same level of detail defined in the RIS-2773-RST VGD workbook".

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81	25	5.1.1	“when the size of the vehicle is being determined.” It isn’t just size, it is any change that might influence the swept envelope of the vehicle. i.e. the exterior size might remain unchanged, however changes of internal equipment/fitment, might result in changes in vehicle masses that would influence the vehicles dynamic movements.	Suggest rewording - Any changes made to a vehicle that might influence the swept envelope of a vehicle should be updated in the gauging portfolio.	8				DC	Proposal accepted. Changed "size" to "swept envelope".
82	25	5.1.2	As Above	As Above	8				DC	Proposal accepted. Changed "size" to "swept envelope".