Consultation comments and responses

Document Title: ***Rail Industry Standard for Signal Sighting Assessment Requirements***

Document number: RIS-0737-CCS 62

Consultation closing date: 22 September 2022

1. Responders to consultation

No	Name	Company
1	Darren Keates	Siemens
2	Alasdair Forsyth	GWR
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5	Ian Cuthbertson	LNER
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2. Summary of comments

Code	Description	Total
-	Consulted	248
CE	Critical errors	
ED	Editorial errors	
TY	Typographical errors	
OB	Observations	
-	Total comments returned	

Classification codes for a way forward:

- DC – Document change
- NC – No change

3. Collated consultation comments and responses

No	Page	Clause	Comment	Suggestion	By	Way forward		Page	Clause	Response
1	N/a	N/a	With PoSA routes comes different considerations that are not discussed elsewhere. For example, some PoSA signals with combined berth and overlap tracks, there is a requirement to undertake an assessment as part of the signal sighting to ensure the overlap can be seen from the signal.		1		NC			This appears to be an ex Western Region practice. Combined berth and overlap tracks are normally associated with signals that have no requirement for route locking and so would not have an associated PoSA (except in the Thameslink core, which is mostly in tunnel).
2	30	3.2.1b) Table 1	Please consider adding requirements for ETCS Location Markers	Visible from normal starting location (when provided for that purpose).	3	ED	DC	31	Table 1	Add a Scenario 12 to Table 1 of MRD criteria: 12 | ETCS Location Markers | Readable from the normal driving position when the train has stopped at a station or from the braking distance applicable to the release speed.
3	30	3.2.1b) Table 1		Visible for the braking distance applicable to the release speed.	3	ED	DC	31	Table 1	Add to Scenario 12 to Table 1 of MRD criteria as above.
4					3					
5	5	1.1.2	The RIS applies to the entirety of the lineside signalled system which includes lineside signals as well as static items such as boards and signs. The phrase “lineside signalling system assets” can be read in different ways depending on where the emphasis is placed – is it related to “lineside signalling” or to “signalling assets” at the lineside.	Change to “signalling system assets, placed at the lineside”	3	ED	DC	5	1.1.2	This document sets out the signal sighting assessment process that is used to confirm compatibility of signalling system assets placed at the lineside with train operations (signal sighting).
6	6	2.1.1	This paragraph should not be limited to "change"	Merge with 2.1.5	3	ED	NC			A change is needed to need a SSC!
7	7	G2.2.1.4	Another useful example to make it explicit is addition of flashing aspects as this scenario doesn’t fit perfectly into the four categories. The assessment of a flashing aspect is important to undertake.		1	ED	DC	8	2.2.14e)	Additional Guidance in 2.2.1.4: e) Fitting a flashing aspect sequence to existing signals.
8	7	G2.2.1.4	There is a scenario which is often missed where the *Approach* to the asset has been changed and this isn’t explicit in the section. Eg the addition of a CAB Termination sign on approach to an otherwise-unchanged asset. This type of change can involve additional cognitive load to the driver which needs to be reassessed on the exit signal. Another example is receipt of the transition balise confirmation in-cab which could distract the driver approaching a signal.		1	OB	NC			Noted. This should be part of the SC's process anyway!
9	7	2.2.1	Again, the phrase “lineside signalling asset” could be read to only those associated with a signalling system utilising lineside signals.	Expand the definition of “lineside signalling asset” to specifically include signage to support the driver operating with cab signalling such as ETCS	3	ED	DC	7	2.2.1	Include in 2.2.1b): Before a modified lineside signalling asset is put into use, including ETCS, if the change could affect signal sighting.
10	7	2.2.1	Sub clauses d) and e) appear to restrict the need to review the sighting of signalling assets to where a lineside signalling system is in use. For ETCS then a Stop Marker has, in degraded scenarios, an important function and its visibility should be reassessed particularly where it is placed on the right or above the track.	Remove the phrase “fitted with a lineside signalling system” from sub-clauses d) and e)	3	ED	DC	7	2.2.1	d) Before operating a different type of rolling stock on a route ~~equipped with a lineside signalling system,~~ if the change could affect signal sighting.

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										e) Before changing the train operations on an existing route Before operating a different type of rolling stock on a route ~~fitted with a lineside signalling system,~~, if the change could affect signal sighting.
11	7	2.1.7	This statement promotes making recommendations without assessing if the measure is reasonable, this could lead to recommendations that are grossly disproportionate to the risk.	suggest link to RA process of optimising risk reduction measures.	3	ED	DC	7	21.7	If a signal sighting assessment confirms that making changes to the asset or its operational context would reduce the likelihood of a further accident or incident occurring, the signal sighting committee (SSC) should recommend **a risk assessment to inform** ~~what~~ retrospective action is appropriate, taking account of the guidance set out in RSSB publication Taking Safe Decisions.
12	7	2.1.8	This statement has been mis-interpreted and does not control risks where a change impacts an existing asset.	Suggest a review against legacy and current with reasonable opportunity assessment.	3	OB	NC			Up to now, CCSSC appears to have accepted 'grandfather rights'. I recall several cases where CCSSC has rejected my suggestions for upgrading when commenting on proposed deviations!
13	7	2.2.1	The definition of "lineside signalling asset" and "lineside signalling system" restrict the applicability.	define the assets to be assessed as those assets provided at the lineside, which are required to be seen/read to safely operate trains.	3	ED	DC	7	2.2.1	Clause a) reworded: Before a new lineside signalling asset which is required to be seen or read to safely operate trains is put into use
14	7	2.1.8 2.2.1 b) 2.2.1 c)		The wording in these sections suggests a new obscuration could be introduced into a historically sighted signal, which if the signal was re-assessed to the latest standards would demand a larger sighting distance, placing the new obscuration in the sighting distance required. e.g. * Historical installation standards on signal X require 200 yards. * Currently available distance of 400 yards on signal X. * Drivers have historically become accustomed to the sighting distance of 400 yards. * A new piece of infrastructure is being installed at 300 yards on the approach which will impact the sighting. * If the signal was re-assessed, the sighting of signal X would then be non-compliant to the RIS-0737 Issue 1, but compliant to the historical installation standards.	4	OB	NC			This comes back to a combination of grandfather rights and common sense!
15	15	G 2.3.1.2	This implies it only applies to a lineside signalling system.	Remove the word “lineside” since cab signalling systems have some lineside assets for which sighting has to be assessed.	3	ED	DC	8	G 2.3.1.2	The IM (network) is responsible for operating ~~the~~ lineside signalling **assets** ~~system~~ and maintaining signal sighting.
16	15	2.3	Assessment Process	This indicates that the responsibility is with the IM Network. It should also include Railway Undertakings where there is a change to the type of train operating on a route.	3	OB	NC			Where there is only a change in rolling stock, the RU will inform the IM who will start the SSC process.
17	8	G 2.2.1.4 b		The example given in b refers to beam angle spread, this does not necessarily capture the installation of	5	OB	DC			This is only an example. These and similar details are what the SSC is for!

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				an LED signal head in a predominantly filament bulb area where the strength of the LED aspect could import a read through risk from a previous signal if in view at the same time						
18	9	G2.3.2.3	Item ii) should this say the Assessment Plan, which will obviously include remit, but it is not clear if there are two separate documents and who is responsible for each. Using 'plan' would appear consistent with the rest of the document.		1	OB	NC			It is suggested that the remit comes before the plan.
19	9	G 2.3.1.3	This implies it only applies to a lineside signalling system.	Remove the word "lineside" since cab signalling systems have some lineside assets for which sighting has to be assessed.	3	ED	DC	9	G 2.3.1.3	IM (network) SSC members should have experience of the ~~lineside~~ signalling systems used on the Great Britain (GB) mainline railway and the operational context relevant to the assessment. Subject to authorisation by the IM (network), the same person can be appointed to multiple SSC roles; for example: a) SSC Chair and SSC network operator. b) SSC Chair and SSC signal engineer.
20	11	2.3.3	This implies it only applies to a lineside signalling system.	Remove the word "lineside" since cab signalling systems have some lineside assets for which sighting has to be assessed.	3	ED	DC	11	2.3.3	The SSC shall include the IM (network) signal engineer if the assessment is for a change to the ~~lineside~~ signalling system that affects signal sighting.
21	11	G 2.3.3.1	This implies it only applies to a lineside signalling system.	Remove the word "lineside" since cab signalling systems have some lineside assets for which sighting has to be assessed.	3	ED	DC	11	G 2.3.3.1	The signal engineer provides the technical competence and information about the ~~lineside~~ signalling system necessary to reach an informed assessment decision
22	13	G 2.4.1.3	Knowledge of the signalling system, where primarily cab based, should be included where relevant	"i) Lineside signs provided in support of cab-signalling systems."	3	ED	NC			The signal engineer provides the technical competence and information about the ~~lineside~~ signalling system necessary to reach an informed assessment decision.
23	15	2.6.1	Section G2.3.2.3 says the Chair prepares the assessment remit (or should that be *plan* as per Comment 3) but 2.6.1 says the IM(network) shall consult on the plan. What does consult mean; create, share, discuss?		1	ED	NC			Detail is included in the rationale and guidance under 2.6.1
24	15	2.6.1	The quality of the assessment plan is subject to the engagement of the actors. Completion of a reasonable plan is not controlled sufficiently by the process.	Suggest the IM(network) authorise the signal sighting assessment following review of the prepared plan.	3	OB	NC		Noted	This depends on the discipline of the SSC and is not within the scope of this document
25	16	G2.6.2.5		Typo, single should be signal	5	ED	NC			Correct as said – not a typo
26	17	G 2.6.2.15	In sub-clause b), desired train stopping locations could be added to the list of train operating parameters.		3	ED	DC	17	G 2.6.2.15 b)	Train operating parameters (for example: maximum and attainable train speed, acceleration and deceleration performance), timetables and traffic patterns, rail vehicle types and their restrictions, cab sight lines, train lengths and desired train stopping locations, the applicability of propelling moves and the contribution of route knowledge. This may take account of existing and future train operations that are relevant to the scope of the change project that the assessment is supporting. Sharing this information provides an opportunity for the IM to capture information about foreseeable longer term aspirations held by other IMs and RUs and incorporate these into the assessment if there is a cost benefit in doing so
27	20	2.7.3	Whilst it is understood that the outcome of the process is to specify an RRD it seems a bit backwards to not start with the	Insert before 2.7.3 a requirement for "The SSC shall identify the appropriate MRT(s) and associated	3	ED	NC			Calculation of the MRD forms part of a sub-process that is mandated elsewhere.

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			need to establish the MRT(s), associated MRD(s) and then confirm the RRD at the end of the assessment.	MRD(s) of each signalling asset being assessed, taking account of: a) The display(s) and display combination(s) that can be presented, b) The operational context of the asset, c) Whether the asset provides primary instructions to the driver, provides information or confirms existing knowledge, d) Any supplementary factors requiring addition of an SRT.”						
28	20	2.7.3	The requirement to specify "the" RRD implies only one, yet d) implies an RRD for each approach and G2.7.3.7 shows complex signal with one approach.	Suggest amend to "RRD for each approach or asset type"	3	ED	DC	20	2.7.3	The SSC shall specify the RRD of each lineside signalling asset type and approach being assessed, taking account of:
29	21	G.2.7.3.10	Does not include 'Banner Junction Indicator'	add after Banner Repeater Indicators	3	CE	DC	21	G.2.7.3.10	Junction signals, splitting banner repeater indicators and banner junction indicators are configured so that the driver can read the route indication at the same time as the associated signal aspect, except where the junction approach signal aspect or a preliminary junction indicator (PJI) has presented advance routing information that enables the driver to interpret which route is set before the train reaches the point at which the junction signal is readable.
30	22	2.7.5	This could be extended to include signalling assets in support of cab signalling systems and also distractions from cab information	Suggest adding: h) associated information displayed within the cab for which the asset is applicable.	3	ED	DC	22	2.7.5h)	Associated information displayed within the cab for which the asset is applicable.
31	24	Fig G2	The figure implies a normal arrangement for Independent Position Light signals that is not optimum.	Revise figure	3	ED	NC			The position of PLS associated with a main aspect depends on a number of factors and is determined by the SSC.
32	25	G 2.7.5.??	Suggest adding guidance relating to lineside assets and cab signalling	“Where cab signalling is in use the lineside assets may supplement in cab information, replace the in cab information (e.g. to provide a stopping target when a release speed is used, or be the sole information in degraded scenarios. Good design takes account of the operational context and the frequency which the driver of a cab signalled train will need to refer to the signalling asset at the lineside.”	3	ED	DC	25	New clause G2.7.5.8 (Existing G2.7.5.8 renumbered)	Where cab signalling is in use the lineside assets may supplement in cab information, replace the in-cab information (for example, to provide a stopping target when a release speed is used, or be the sole information in degraded scenarios. Good design takes account of the operational context and the frequency which the driver of a cab signalled train will need to refer to the signalling asset at the lineside.
33	25	G2.7.5.7 b)	This guidance is incorrect	Signal alignment is to be optimised for the reading distance and to minimse impact of extraenous light.	3	CE	DC	25	G2.7.5.7 b)	Alignment of ground mounted signals should be ~~aligned towards a train standing at the normal stopping position.~~ optimised for the reading distance and to minimise impact of extraneous light
34	29	2.9.1	Given the need in 2.2.1 to reassess sighting when rolling stock changes take place, e.g. cab design, should the list include, under d), the assessed cab designs/viewing masks?		3	ED	DC	29	New entry: 2.9.1.d) v)	The assessed cab designs/viewing masks
35	30	3.2.1 b)	There is inconsistency, we use fixed distances (scenario 2, 4, 7) and braking distance (scenario 3). This issue ties in with a later comment on ETCS Marker boards. Stop boards having a fixed 100m is sometimes not possible for instance where there is another signal on approach within the 100m.		1	OB	NC			Noted

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			Scenario 2 is further discussed in G3.2.1.11 in relation to time, implying 4s readability is acceptable. G3.2.1.13 does not adequately describe how the 100m has been derived							
36	39	3.4.2.3		There is a conflict between standards over the provision of a banner repeater on a signal that can display flashing aspects. NR/L2/SIG/19609 section 16.3 suggests flashing aspects can be provided where a signal has a banner repeater. NR/L2/SIG/30009/F210 – page 6 states that the "provision of a banner for a signal capable of displaying flashing aspects should be avoided."	4	OB	NC			NR/L2/SIG/19609 will be withdrawn when RIS-0703-CCS is published.
37	40	3.4.5	Item f) Unlike all the others in the list, a driver would be expected to stop at a Marker Board when the ETCS system is in a degraded mode of working. It holds the authority of a signal in that it can be SPAD and I don't believe 4 seconds is appropriate in order for a driver to bring their train to a stop in certain situations. Note this implicitly excludes AB04.		1	OB	NC			Noted
38	40	3.4.5	Item a) is used where sighting distance for item b cannot be achieved so to have 4s BRT on *each* makes no sense. It is comparable to the 4s/5s banner signal requirement.		1	OB	NC			Noted
39	40	3.4.5	This list contains mostly warning signs (noting the exception above) and some of which can never achieve the required Readability distance and would have to rely on Visibility (based on RIS-0733). Is BRT and MRT the appropriate terminology?		1	OB	NC			Noted
40	40	3.4.5	This section includes Platform Stop Marker and Mid Platform Marker in the list of lineside signs that require a Baseline Response Time of 4 seconds. These two signs differ in principal to all the other signs in the list. The other signs in the list are signs that a driver needs to observe while in motion, mostly at speeds up to and including the line speed and then make a decision or take an action dependant on the information on the sign. The Platform Stop Marker (PSM) and Mid Platform Berth Marker (MPBM) differ in that the driver has already taken the action, they are bringing the train to a stop, and they have already decided where they are stopping. The PSM and the MPBM are then provided to allow the driver to position the train correctly. Including these signs on this list has led to situations where people believe that the PSM needs to be signal sighted so that a driver can view the sign for the required time at line speed, which is simply not appropriate, the PSM does not tell the driver whether to stop, it simply allows them to position the train.		2 3	OB	NC			PSM and MPM both require action on the part of the driver. There is also likely to be other signs that add to the clutter on platforms.
41	40	3.4.5 f)	What is the rationale for 4s for an ETCS Stop Marker – the driver does not receive a distant or other advance warning, it is	Braking distance at degraded approach speed.	3	OB	NC			Visibility of reflectorised sign limited (unless the train is moving very slowly!).

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			often only used in degraded scenarios and the driver has no cab display to support him.							
42	40	3.4.5	Item g) has not been used and can be deleted.	Visible for at least 50m.	3	OB	DC	40	3.4.5g) deleted. Remaining entries renumbered.	~~ETCS block marker passable plate (AB09).~~
43	40	3.4.5 h)	On a railway where route knowledge is expected the driver is aware of the speed profile and the signs remind them of the locations. For a cab signalled railway the need for route knowledge is reduced and the signs only become relevant in degraded situations. A greater BRT should be considered.	Visible from braking point at degraded approach speed.	3	OB	NC			A train travelling at reduced speed in degraded mode should have no difficulty.
44	40	G3.4.3.3	The guidance for a PJI highlights the inconsistency of BRT for a PJI and a splitting banner signal.	Suggest the BRT is reviewed for PJI and Splitting Banner	3	OB	DC		G2.7.3.10, 3.4.3, G3.4.3.3 (twice) and G3.4.3.4.	References to PLJ will, be changed to PRI
45	43	4.2.1	This requirement is inconsistently represented in other standards, where for IPL signals, the route indication is depicted above the PL indication.	Suggest revision to this standard and to RIS-0758-CCS to encourage consistent application.	3	OB	NC			Position of a RI in relation to an IPL depends on sighting considerations.
46	43	4.2.1 b)	This requirement is too restrictive	Revise this requirement to allow position above 5.1m where the risks have been assessed.	3	ED	DC	43	4.2.1 b)	It shall be positioned so that the centre of the signal aspect is no more than 5.1 m above rail level, unless a risk assessment indicates a greater height.
47	43	4.2.1 b)		It shall be positioned so that the centre of the signal aspect is no more than 5.1 m above rail level.	4	OB	NC			No change, as wording already complies with comment!
48	46	4.2.5	The clause only implies the dimension b) is positive.	Previous requirements defined that a PL aspect be no higher than the red, as this introduces a mis-interpretation risk. Suggest that is clarified in this clause.	3	OB	NC			Position of a PLS in relation to the red aspect depends on sighting considerations.
49	46	Figure 2		When providing a position light signal and/or a route indicator, in an electrified area it is not always possible to adhere to the layout and wording supporting figure 2. Commonly the PLS is mounted below the red aspect, with the MARI to the side of the signal head, but above the red aspect to achieve PAN clearance. In instances with no MARI, the PLS is commonly situated to the side of the signal head, but not adjacent to the red aspect due to PAN gauge restrictions.	4	OB	NC			Position of a PLS and associated MARI in relation to the red aspect depends on sighting considerations
50	49	Figures 4 & 5		The figures imply that it is not normal practice to position a route indicator beneath the aspect. This is not consistent with current approved totem pole configurations which place the route indicator beneath the red aspect.	4	OB	NC			Position of a PLS and associated MARI in relation to the red aspect depends on sighting considerations

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51	59	4.5.5	Due to the size of the aspects, 4r is troublesome with modern LED technology and 'bleeding' of light. Especially when one is displaying green and one white.		1	OB	NC			There is an option for the SSC to recommend a miniature banner if appropriate.
52	61	4.7	It does not implicitly state if Buffer stop lights are required for any given scenario, it just explains how to apply them if they are provided.		1	OB	NC			SSC will decide whether lights or a reflective crossbeam is required on a case-by-case basis.
53	61	G4.7.1.7	This guidance is clearly aimed at drivers approaching running signals on adjacent roads however it would not apply in a siding with multiple siding roads for instance.		1	OB	NC			This depends on how far the approaching train is from the adjacent buffer stop.
54	61	4.7	The focus to the provision of buffer stop lights is disproportionate.	The assessment of signal sighting of buffer stops has been neglected. The requirement to assess the buffer stop as presented to the driver should be fully described, with the inclusion of buffer stop lights and their purpose fully described. Suggest the importance of the reflectorised board at the buffer stop, which forms the LMA has been overlooked. This is a contributory factor for some buffer stop collision incidents. Proposals have been made for provision of reflectorised signs in lieu of buffer stop lights, which has highlighted that the buffer stop lights purpose as described in standards is for close up viewing when drivers are required to stop close to the BS. Suggest the position of the reflectorised sign is re-considered to cover both requirements.	3	OB	NC			Noted
55	62	4.8	This 20' arc has not been applied to many (any?) of the existing signs in the catalogue. If it had, a train approaching a Speed Indicator at 125mi/h would be presented with a sign 2.5m diameter and a CAB Termination board would be 4.7m square.		1	OB	NC			For fixed signs, the size of the display element assumes an element of route knowledge.
56	62	4.8	The guidance for lineside signs is misleading.	The guidance for selection of signage to adequately inform the driver, despatcher and operator could be improved. The reference to reading requirements of 20 seconds of the arc is not applicable to all signage described in the signs catalogue, and the application guidance for "readable" and "visible" could be improved. The use of AK209 should be restricted to approved uses, as this has been the subject of mis-application.	3	OB	NC			Noted
57	62	G 4.8.1.3		The proposed character heights are not consistent with approved signage. (e.g. a 60 PSI sign (900mm) has character height of 480mm, and is deemed readable for 4 seconds at 125mh = 224m. Section 4.8.1.3 states that 4s at 60mph requires lettering to be 624mm tall.)	4	OB	NC			For fixed signs, the size of the display element assumes an element of route knowledge.
58	63	A.2	This section could discuss militating of excessive visibility by using signal alignment (eg dipping).		1	OB	NC			Noted

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59	63	Appendix A, B & C	As this is the appendix dealing with visual compatibility factors it would have been helpful to shows photographs on each of the sections. A picture is worth a thousand words	Provide photos on each section to demonstrate the intent	3	ED	DC			Good idea! This will be considered when this RIS is next updated.
60	63	GA.2.1.1	Refers to MRD when clause 2.7.6 refers to RRD	Change MRD to RRD	3	ED	DC	63	GA.2.1.1	Insufficient product performance would mean that the displays are not capable of being reliably read from the ~~MRD~~. RRD. Excessive performance could be a cause of other compatibility factors such as A5, C13 and C15.
61	64	GA3.1.3	Refers to MRD when clause 2.7.6 refers to RRD	Change MRD to RRD	3			64	GA3.1.3	The SSC should aim to achieve a design where no multiple vertical obscuration is present within the ~~MRD~~ RRD of a lineside signalling asset that is capable of displaying a flashing display.
62	64	A4	The clause infers that driving in a tunnel environment is similar to driving at night; they are very different. Human factors will tell you the scene you observe is made up of only 17% that is seen by the eye. The rest is already in the brain. Therefore for a night time view, 83%of the scene the driver already has a spacial awareness of. For a tunnel, a driver has no memory of the detail within that environment as its never been seen (unless we take the top off the tunnel.)	Separate out the two issues. A signal in a tunnel is very different to a signal at night. You appear to suggest that count down markers may be used for signals for hours of darkness.	3	OB	NC			Noted; in GA.4.1.4, a tunnel environment is quoted purely as an example. No relationship to driving in darkness is inferred
63	65	GA.5.1.5	Insert the value of Disability glare	500 cd/m squared	3	ED	DC	65	GA.5.1.5a)	Disability glare, (above a value of 500cd/m^2) caused by scattering of light in the eye, can make it difficult to read a lit display.
64	66	A6	This is one section that calls out for photographs showing the application of a signal with/without backboards. Showing signals in tunnels and linked to A4 with signals reflecting light onto rail heads.	Start with photographs	3	OB	NC			Noted
65	67	A7	The clause needs to say that when calculating reading distances for signal assets, the calculation will be assessed on what can be seen through the cab windscreen by the driver and not at the point where the asset is positioned. Therefore there will be variations when undertaking the calculation depending on the train types (corridor connections, long nose or reduced left view due to cab design)	Additional clause to cover the issue left.	3	CE	DC	67	A7.1.1	The driver should be able to read lineside signalling displays using direct observation through the cab windscreen without having to leave the normal driving position. This observation should be made from the driving position for all types of rolling stock authorised to run on the line.
66	68	GA9.1.5 b	Fail to see how additional SRT will assist a driver to see a signal whilst at a stand.	Remove	3	ED	DC	68	GA9.1.5 b)	Supplementary response time - depending on relative position of cab and curvature relative to target signal, there may be transient obscuration from passing trains on adjacent lines.
67	68	A9	Add to one of the mitigations is to ensure there a drivability assessment on displays being presented at stations on the route. Issues to be examined, platform starting signals and DOO equipment on the same side throughout the route. The arrangement of DOO displays to be consistent	GA.9.1.5 d Ensure drivability assessment picks up the presentation of platform starting signals and DOO equipment to ensure uniformity of presentation along the route.	3	ED	DC	68	GA9.1.5 d) (new clause)	Ensuring that a drivability assessment includes presentation of platform starting signals and DOO equipment to ensure uniformity of presentation along the route.
68	68	A10	Does not take account of the environmental conditions that may reduce the reflectivity of the signal asset. This may require the SSC to request addition maintenance activity on the sign.	GA.19.10.1.7 Additional maintenance activity may be required where the signal asset is subject to contaminates that will reduce the reflectivity of the signal asset.	3	OB	NC			This is a normal maintenance activity hat does not directly involve SSCs.
69	70	GB.3.1.13b	Staggering the height of signals is insufficient. There are some really awful examples out there that has made the identification of signal worse. There is a need to create a	Create a simple and recognisable pattern in presenting multiple parallel signals. This will also	3	ED	DC	70	GB.3.1.13b	Where practicable, staggering the height of adjacent displays in a consistent manner throughout the route. This is particularly relevant to multi-track sections.

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			distinguishable pattern to the signals. One of the most common is that on a 4 line approach with Bi-directional working (4 signals) the signals on the two outer lines at 3.3m above rail level; the two centre lines at 5.1m above rail level. signals on the right, can also be placed to the right of the line they pertain too. The next important thing is to REPEAT the pattern at successive signals. Most of this needs to be taken as a global over-view in a derivability study	apply to Line identifiers where it is not possible to apply to the signals.						
70	71	C3	If a junction signal is preceded by a splitting Banner Repeater, Preliminary Route Indicator or Banner Junction indicator, the route information is displayed prior to the junction signal comes into view. Therefore no SRT is required for number of routes when assessing the junction signal.	Junction preceded by a Splitting Banner Repeater, Preliminary Route Indicator or Banner Junction indicator will require only 0.50 seconds under C2 for complex signal.	3	OB	NC			Noted
71	71	GC.3.1.3	The distance quoted is 'significant distance' This needs to be the Required Reading Distance as 'significant' is subjective. this is the criterion set out in 2.7.6	Change significant distance to Required Reading Distance	3	ED	DC	71	GC.3.1.3	C3 is relevant where a driver needs to search for a lineside signalling asset from ~~a significant~~ the RRD.
72	71	GC3.1.1	The clause covers the shape of the asset, but no reference is made to the visibility of the display area of the asset. The two come together. You identify a signal by its shape and visual characteristics	Insert visibility of the display area.	3	ED	DC	71	GC3.1.1	C3 is relevant where a driver needs to search for a lineside signalling asset display area from a significant distance.
73	72	GC4	Further emphasis when positioning a signal on the right for bi-direction signalling, the first signal you allow 1 second, the second signal 0.5 seconds and subsequent RH side signals, no SRT.	GC4.1.4 Positioning a signal on the right for bi-direction signalling, the first signal you allow 1 second, the second signal 0.5 seconds and subsequent RH side signals, 0s SRT. GC.4.1.4 renumbered GC4.1.5	3	OB	DC	72	GC.4.1.2	C4 is present if the asset being assessed is installed outside of the preferred area for position, for example on the right-hand side of the line, or in an inconsistent position compared to previous assets.
74	76	GC11.16	It would be useful to give guidance to SSC's when there is a need to look at track obscuration's. Curved approaches where there is more than one parallel signals would require a clear view of the line(s)	Add at the end: A curved approach where there is more than one parallel signal would require a clear view of the line to ensure line association	3	ED	DC	76	GC11.1.6	Obscuration of track is relevant because certain elements of the signal reading task are reliant on both visibility of the signal and track. For instance, ~~line association requires an unobstructed view of both.~~ a curved approach where there is more than one parallel signal would require a clear view of the line to ensure line association.
75	77	Figure G6		The end of zone 2 is defined as AWS magnet or 180m minimum. The reference to the AWS is erroneous as the magnet may be much closer than 180m. There is a risk that an obscuration between a short AWS and 180m may be incorrectly assessed.	4	EC	NC	77	Figure G6	The note associated with the AWS reads: 'AWS magnet **or** 180 m minimum'. Please refer to C16.
76	81	GC15.1.3	It will also apply where we have signals grouped together in a small area, example being platform starting signals.	Add on to the clause can apply where we have signals grouped together, ie platform starting signals, yard signals etc	3	ED	DC	80	GC.13.1.4f)	Additional clause: Where signals are grouped together, for example, platform starting signals, yard signals etc
77	82	GC16.1.4	Where AWS magnets will be at a non standard distance, consideration be given to make the non standard distance consistent in that vicinity	Add at the end of GC16.1.4, where inconsistent distance of aws equipment occurs, consideration be given to make the non standard distance consistent in that vicinity	3	ED	DC	82	GC16.1.4	An unusual or inconsistent AWS track equipment position is usually required for a good reason to accommodate other constraints. Where inconsistent distance of AWS equipment occurs, consideration should be given to make this non-standard distance consistent in that vicinity.
78	86	Fig G8	With 550mm minimum for dimension Y4, there could be a large aperture created for sunlight to pass and confuse the drivers' approach. Is this a good place to specify blanking plates added to gaps?		1	OB	NC			This is a matter for signal head design. Sighting usually happens before equipment is deployed to site. For incident investigation, Appendix C3 applies.
79	86	Fig G8	Shows minima for Y4 but not maxima	Include 1230mm maxima	3	ED	DC	86	Fig G8	Y 4 = 550 (minimum); 1230 maximum. Noted: there is no maxima shown for Y4 on G9 or G10.

No	Page	Clause	Comment	Suggestion	By	Way forward		Page	Clause	Response
80	89	Fig G12	See comment above		1	OB	NC			This is a matter for signal head design. Sighting usually happens before equipment is deployed to site. For incident investigation, Appendix C3 applies.
81	91	Figure G14		Centre of aspect above rail level is stated at "<5100mm"	4	OB	NC			This suggestion is not understood.
82	94	Figure G17		Lineside sign (example showing a stop board)	4	OB	NC			This suggestion is not understood.
83	101	Table G5	Whilst partly useful, the stopping positions are more commonly restricted by the cab layout. Would it not be more beneficial to describe the longer-range effects of the 8-degree cone?		1	OB	NC			Noted
84	114	Defs /Abrvs	Maximum train speed v(max) and V(max) entries		1	OB	NC			No 'V(max)' entries found
85			Should Visibility be defined in here given there are references to signage		1	OB	DC	117	Def'ns	**Visibility (as applied to this document)** The distance that a driver can see ahead from the seated driving position.
86	5	1.1.2	The RIS applies to the entirety of the lineside signalled system which includes lineside signals as well as static items such as boards and signs. The phrase "lineside signalling system assets" can be read in different ways depending on where the emphasis is placed – is it related to "lineside signalling" or to "signalling assets" at the lineside.	Change to "signalling system assets, placed at the lineside, with …"	6		DC	5	1.1.2	This document sets out the signal sighting assessment process that is used to confirm compatibility of ~~lineside signalling system assets~~ placed at the lineside with train operations (signal sighting).
87	7	2.2.1	Again, the phrase "lineside signalling asset" could be read to only those associated with a signalling system utilising lineside signals.	Expand the definition of "lineside signalling asset" to specifically include signage to support the driver operating with cab signalling such as ETCS	6		DC	113	Def'ns	Lineside signalling asset: Any of the following: a) A lineside signal, indicator or lineside operational sign (excluding signs associated with a temporary speed restriction). b) A mirror or monitor that forms part of a train dispatch system. c) Switches, plungers, signs and indicators that form part of a train dispatch system and which are used by platform staff. d) Signage to support drivers operating with cab signalling systems, such as ETCS.
88	7		Sub clauses d) and e) appear to restrict the need to review the sighting of signalling assets to where a lineside signalling system is in use. For ETCS then a Stop Marker has, in degraded scenarios, an important function and its visibility should be reassessed particularly where it is placed on the right or above the track.	Remove the phrase "fitted with a lineside signalling system" from sub-clauses d) and e)	6		DC	7	2.2.1	The signal sighting assessment process shall be applied d) Before operating a different type of rolling stock on a route ~~fitted with a lineside signalling system~~, if the change could affect signal sighting. e) Before changing the train operations on an existing route ~~fitted with a lineside signalling system,~~ if the change could affect signal sighting.
89	8	G 2.3.1.2	This implies it only applies to a lineside signalling system.	Remove the word "lineside" since cab signalling systems have some lineside assets for which sighting has to be assessed.	6		DC	8	G2.3.1.2	The IM (network) is responsible for operating the ~~lineside~~ signalling system and maintaining signal sighting
90	9	G 2.3.1.3	This implies it only applies to a lineside signalling system.	Remove the word "lineside" since cab signalling systems have some lineside assets for which sighting has to be assessed.	6		DC	9	G 2.3.1.3	IM (network) SSC members should have experience of the ~~lineside~~ signalling systems used on the Great Britain (GB) mainline railway and the operational context relevant to the assessment. Subject to authorisation by the IM (network), the same person can be appointed to multiple SSC roles; for example:

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91	11	2.3.3	This implies it only applies to a lineside signalling system.	Remove the word “lineside” since cab signalling systems have some lineside assets for which sighting has to be assessed.	6		DC	11	2.3.3	The SSC shall include the IM (network) signal engineer if the assessment is for a change to the ~~lineside~~ signalling system that affects signal sighting.
92	11	G 2.3.3.1	This implies it only applies to a lineside signalling system.	Remove the word “lineside” since cab signalling systems have some lineside assets for which sighting has to be assessed.	6		DC	11	G 2.3.3.1	The signal engineer provides the technical competence and information about the ~~lineside~~ signalling system necessary to reach an informed assessment decision
93	13	G 2.4.1.3	Knowledge of the signalling system, where primarily cab based, should be included where relevant	“i) Lineside signs provided in support of cab-signalling systems.”	6		DC	13	G 2.4.1.3	Add additional sub-clause: i) Knowledge of lineside signs provided in support of cab-signalling systems.
94	17	G 2.6.2.15	In sub-clause b), desired train stopping locations could be added to the list of train operating parameters.		6		DC	17	G2.6.2.15	b) Train operating parameters (for example: maximum and attainable train speed, acceleration and deceleration performance), timetables and traffic patterns, rail vehicle types and their restrictions, cab sight lines, train lengths and signed stopping patterns, the applicability of propelling moves and the contribution of route knowledge. This may take account of existing and future train operations that are relevant to the scope of the change project that the assessment is supporting. Sharing this information provides an opportunity for the IM to capture information about foreseeable longer term aspirations held by other IMs and RUs and incorporate these into the assessment if there is a cost benefit in doing so.
95	20	2.7.3	Whilst it is understood that the outcome of the process is to specify an RRD it seems a bit backwards to not start with the need to establish the MRT(s), associated MRD(s) and then confirm the RRD at the end of the assessment.	Insert before 2.7.3 a requirement for “The SSC shall identify the appropriate MRT(s) and associated MRD(s) of each signalling asset being assessed, taking account of: a) The display(s) and display combination(s) that can be presented, b) The operational context of the asset, c) Whether the asset provides primary instructions to the driver, provides information or confirms existing knowledge, Any supplementary factors requiring addition of an SRT.”	6		DC	20	New clause 2.7.3	The SSC shall identify the appropriate MRT(s) and associated MRD(s) of each signalling asset being assessed, taking account of: a) The display(s) and display combination(s) that can be presented, b) The operational context of the asset, c) Whether the asset provides primary instructions to the driver, provides information or confirms existing knowledge. d) Any supplementary factors requiring the addition of an SRT. Renumber existing clauses 2.7.3 – 2.7.10 and associated guidance to suit.
96	22	2.7.5	This could be extended to include signalling assets in support of cab signalling systems and also distractions from cab information	Suggest adding: h) associated information displayed within the cab for which the asset is applicable.	6		DC	22	2.7.6 (as renumbered)	Additional clause: h) associated information displayed within the cab for which the asset is applicable.
97	25	G 2.7.5.??	Suggest adding guidance relating to lineside assets and cab signalling	“Where cab signalling is in use the lineside assets may supplement in-cab information, replace the in-cab information (e.g. to provide a stopping target when a release speed is used, or be the sole information in degraded scenarios. Good design takes account of the operational context and the frequency which the driver of a cab signalled train will need to refer to the signalling asset at the lineside.”	6		DC	25	2.8.5.7 (as renumbered)	Where cab signalling is in use the lineside assets may: i. supplement in-cab information or ii. replace the in-cab information (e.g. to provide a stopping target when a release speed is used) or iii. be the sole information in degraded scenarios. Good design takes account of the operational context and the frequency which the driver of a cab signalled train will need to refer to the signalling asset at the lineside. Renumber existing clauses 2.8.5.7 – 2.8.5.12 to suit.

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98	29	2.9.1	Given the need in 2.2.1 to reassess sighting when rolling stock changes take place, e.g. cab design, should the list include, under d), the assessed cab designs/viewing masks?		6		DC	29	2.9.1	d) The SSC decisions supporting the assessment result, including: i) The MRT(s). ii) The MRD(s). iii) The RRD(s). iv) The asset configuration. v) the assessed cab designs/viewing masks
99	40	3.4.5 f)	What is the rationale for 4s for an ETCS Stop Marker – the driver does not receive a distant or other advance warning, it is often only used in degraded scenarios and the driver has no cab display to support him.	Braking distance at degraded approach speed.	6		DC	40	3.4.7 G3.4.7.1	Additional clause: ETCS markers shall have BRTs depending on associated factors: a) ETCS Stop Marker: Braking distance at degraded approach speed. Delete clause 3.4.5 f) Associate rationale for ETCS stop marker: For ETCS stop markers, the driver does not receive a distant or other advance warning; it is often only used in degraded scenarios and the driver has no cab display to support him.
100	40	3.4.5	Item g) has not been used and can be deleted. Please consider adding requirements for ETCS Location Markers	Visible for at least 50m. Visible from normal starting location (when provided for that purpose). Visible for the braking distance applicable to the release speed.	6		DC	40	3.4.7	b) ETCS Location Marker: i. Visible for at least 50m. ii. Visible from normal starting location (when provided for that purpose). iii. Visible for the braking distance applicable to the release speed Delete existing clause3.4.5 g)
101	40	3.4.5 h)	On a railway where route knowledge is expected the driver is aware of the speed profile and the signs remind them of the locations..	Visible from braking point at degraded approach speed.	6		DC	40 40	3.4.8 G3.4.8.1	Add new clause: For ETCS lines, permissible speed and enhanced permissible speed signs (AD and AE series) shall be visible from braking point at degraded approach speed. Delete existing clause 3.4.5h) Associate rationale: For a cab signalled railway the need for route knowledge is reduced and the signs only become relevant in degraded situations. A greater BRT should be considered