PAM WARREN

A Project for Office of Rail & Road

# Is Safety Really Part of the Rail Industry's DNA?

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PRESENTED TO:

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## The Background

In October 2019 the Rail Safety and Standards Board (RSSB) held a parliamentary reception. At this reception a myriad of delegates from all interested sectors of the UK rail industry got together in respect of the 20th anniversary since the Ladbroke Grove train disaster in October 1999.

During the event it was noted that the entire rail industry had progressed and transformed since 1999. "Safety is now very much part of our DNA", was the phrase used often.

*The Question: Yet how true is this phrase for the entire network?*

Over the years numerous reviews, analysis and reports have been conducted with some focussing on the recommendations made by Lord Cullen in his Inquiries after Ladbroke Grove (generally accepted as a watershed in rail safety related matters).

However, many of these reviews have been conducted by specific individual sectors within the rail industry with a slant towards recommendations that were relevant to them.

Apart from the last HSC/E report in 2005 (the last found instance of a review of Cullen Part 1, Cullen Part 2 and Cullen/Uff Joint Report) an all-inclusive level of consideration as to which recommendations were completed, remain incomplete or were deferred (and for what reason) has not been undertaken in recent times.

It is the purpose of this review to conduct initial investigations, from an all-encompassing stance, and to report back on the preceding paragraph's aspects. To bring together an up to date picture of recommendation compliance or non-compliance in The Ladbroke Grove Rail Inquiry Part 1 Report, The Ladbroke Grove Rail Inquiry Part 2 Report and The Joint Inquiry into Train Protection Systems.

## Remit for the Cullen/Uff Investigation Project

1. Revisit the main safety recommendations made in the Cullen report and attribute each to the party denoted as responsible for required actions.
2. Contact, investigate and collect proof with each party concerned upon their completion, or otherwise, of each recommendation task.
3. Highlight any shortfall or concerns in compliance with pertinent recommendations.
4. Draft and produce a report for the ORR on the findings above.

## Methodology Adopted

I, Pam Warren, am conducting this Cullen/Uff Investigation Project. Though a survivor of the Ladbroke Grove train crash it is not through this lens I have considered the recommendations made in the 3 Inquiry reports. I have adopted, as far as is practicable, an independent, non-accusatory, pragmatic approach.

As I am not part of the UK's rail structure nor privy to the complexities of its organisation or constraints, there may appear to be some naivety in my findings. However, on the opposite side my findings will provide an impartial, unbiased and original viewpoint.

I have extensively researched where possible and read the Inquiry reports concerned. I have armed myself with an impossibly enormous list of industry acronyms.

I have taken each and every recommendation and considered precisely what their words were asking to be actioned/addressed. Inference or implication have been ignored.

I have liaised with and, where possible, met with all parties considered to have been/be responsible for each recommendation to gain their input. Due to this report being drawn up during the Covid-19 Pandemic some points have been addressed as far as restrictions allowed.

I have been reliant on accepting the information supplied by various parties to be fact and would not profess it to be otherwise.

Where it has been possible I have had sight of any evidence that pertained to the recommendations.

I have tried to make any comments or suggestions upon my findings as constructive and impartial as possible. These can be found in the conclusion section at the end of this report.

As I personally dislike equivocation and hyperbole I have tried to make this report concise and succinct.

Though there is no such thing as perfection it is perfection we should continually strive towards.

One of the reasons I have never referred to Ladbroke Grove as an 'accident' (happens unexpectedly) is that it could have been avoided which makes it an incident (liable to happen because of). It is incidents we can work on eradicating.

In the tables below anything of note have been highlighted as per key below:

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| | Recommendation complete |
| | Recommendation I believe is incomplete. These points are elaborated upon in the separate Comments and Suggestions section |
| | Needs review. Comments and Suggestions section clarify. |

| Part 1 | | |
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| Category | Recommendation | Status |
| Support of the bereaved and injured | 1. The system for the reception of information about missing persons, casualties and survivors should be computerised. It should be possible for information which has been received to be entered directly into the computer and for information from it to be provided, to the extent appropriate, to callers. There should be a set procedure for the returning of a call (para 4.119). Page 226. Part 1. | Completed.<br><br>Casualty Bureau HOLMES system is now used by all Casualty Bureau's.<br>The Major Incident Public Portal(MIPP) is also available online for both police and public. |
| | 2. Computerisation should be extended to all police forces, so that the information collated by each is readily available to all others (para 4.120). Page 226. Part 1. | Completed.<br><br>Casualty Bureau HOLMES system satisfies this recc<br>Major Incident Public Portal(MIPP) inputs directly into HOLMES too.. |
| | 3. The police service, in co-operation with the emergency services, should use their best endeavours to ensure that common telephone numbers are issued for the use of members of the public who are seeking to give or obtain information about persons who have, or may have, been involved in a major incident (para 4.121). Page 226. Part 1. | Completed.<br><br>The National Mutual Aid Telephony (NMAT) satisfies this recc. |
| | 4. The Railway Group should review emergency planning, including liaison with the emergency services, arrangements for the aftercare of survivors and the provision of support and facilities for the bereaved and injured (para 4.122). Page 226. Part 1. | Completed.<br><br>A memorandum of understanding ORR/RAIB/BTP has now been drawn up and signed 24th Jan 2020. |

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| Track and signalling changes | 5. Where a material change to track or signalling or both is proposed, there should be an express consideration of all relevant safety issues by an analysis of the material factors, if necessary by means of a risk assessment. This should be done on a holistic basis at the design concept stage and repeated at defined stages up to and including full implementation (para 7.17). Page 226. Part 1. | Completed.<br>The Railways and Other Guided Transport Systems Regulations requires that for 'significant change' the Common Safety Method for Risk Evaluation is applied. ORR provides guidance and more detailed guidance is published by RSSB.<br>Evidence has been seen in the Railway Safety Legislation 1st Jan 2021 that confirms this is robust enough post Brexit. |
| Implementation of Formal Inquiry recommendations | 6. Railtrack procedures, and the actions of management to enforce them, should be directed to ensuring that:<br>(i) a recommendation which is accepted is implemented according to a defined timescale;<br>(ii) the person to whom a recommendation is allocated for implementation is required to report periodically the action which has been taken, the state of progress and the reasons for any delay;<br>(iii) the monitoring of the implementation of a recommendation is assigned to an identified individual whose duties are clearly defined, whether by job description, formal instruction, or training or a combination of these methods;<br>(iv) the person to whom monitoring is assigned is required to ensure that the recommendation is implemented according to a defined timescale;<br>(v) a recommendation should not be abandoned unless, exceptionally, this is shown to be fully justified to the person to whom monitoring is assigned;<br>(vi) any management system to which the recommendation relates is altered to align it with the recommendation;<br>(vii) the effectiveness of a recommendation is audited after its implementation;<br>(viii) full records are kept of all recommendations and their state of progress; and<br>(ix) there is a system for the central | Completed.<br>RAIB investigate incidents (fatalities/near misses) on a no blame basis. They are independent from industry being directly funded by GOV. Recommendations are made from their investigations.<br>ORR can use its regulatory powers where failure to implement and complete by the duty holders concerned results in breaches of health and safety law (not all recommendations are legally enforceable by ORR)<br>ORR have a dedicated team for this purpose. Its legal powers include prosecution where appropriate. |

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| | tracking of recommendations which are directed to Railtrack Line and those which, either immediately or thereafter, are directed to one or more of the Zones (para .106). Page 226 & 227. Part 1. | |
| | 7. Consideration should be given to extending sub-para (ix) of Recommendation 6 to recommendations which are directed to one or more of the TOCs and others (para 7.106). Page 227. Part 1. | Completed.<br><br>Already delivered as per answer to recc 6 above. |
| Signalling in the Paddington area | 8. Railtrack should ensure that the risk assessments and any consequent actions required under Group Standard GK/RT 0078 in respect of the signals in the Paddington area are carried out as soon as possible (para 7.125). Page 227. Part 1. | Completed.<br><br>Due to the time elapsed actual records will be in storage. |
| | 9. Railtrack should conduct a safety examination of the layout over 0-2 miles from Paddington Station so as to satisfy the HMRI, if necessary by a risk assessment and additional measures, that it is safe for operation at current speeds and to current traffic arrangements. Such a safety examination should be repeated before the implementation of any change which is or may constitute, in the opinion of the HMRI, a material change of circumstances (para 7.126). Page 228.Part 1. | Completed.<br><br>HMRI was the safety regulator at the time, and the infrastructure manager, who was responsible for reopening the station approaches and operating them safely, would have provided evidence to HMRI that these issues had been addressed. We remember that Paddington was reopened in order to reduce the risks arising from people using other transport modes, and that not all measures had been put in place at the time of reopening. Restrictions were in place, such as the taking out of use of the approach to SN109. We don't have immediate access to records of this period. |

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| | 10. No change should be made in the direction of running on line 3 or in the current speed limits on any of the lines out to two miles six chains from Paddington Station unless and until the following have been done to the satisfaction of the HMRI, namely:<br>(i) a risk assessment has demonstrated that the change can be implemented in safety, and, if this can be achieved only if certain measures are taken, what these measures are; and<br>(ii) such measures have been implemented and shown to be effective.<br>The risk assessment should take account of the following possible measures, inter alia:<br>(i) the conversion of four-aspect to three-aspect signals;<br>(ii) the addition of flank protection at SN109 and elsewhere if appropriate;<br>(iii) the installation of standard, simple, non-distracting and consistent means of line identification;<br>(iv) the alteration of the height, configuration and mounting of signals; and<br>(v) he installation of an additional gantry to the east of Portobello Bridge for carrying Down signals previously carried on gantry 8.<br>The risk assessment should be carried out by persons independent of Railtrack and in accordance with usual standards and the best available methods. It should take account of human factors which may affect the actions of drivers and signallers, and any risks which the carrying out of any of these measures might create (paras 7.127 and 7.128). Page 228. Part 1. | Completed.<br><br>HMRI was the safety regulator at the time, and the infrastructure manager, who was responsible for reopening the station approaches and operating them safely, would have provided evidence to HMRI that these issues had been addressed. We remember that Paddington was reopened in order to reduce the risks arising from people using other transport modes, and that not all measures had been put in place at the time of reopening.<br>Restrictions were in place, such as the taking out of use of the approach to SN109.<br>We don't have immediate access to records of this period. |

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| Driver management and training | 11. Signallers and drivers should jointly attend away days and other training processes to develop their mutual understanding (para 9.28). Page 229. Part 1. | Incomplete<br><br>Network Rail advises that this has still not been accomplished. They want to address this however nothing has been done as at 3rd March 2021. If not away days then a structure to develop understanding of each other's role required. This will need following up to ensure it is completed. |
| | 12. Thames Trains should increase the frequency of the briefing of drivers with a view to ensuring that each driver has a face to face meeting with his or her driver standards manager at least monthly, if not more often, and safety should be the first item on the agenda of these meetings (para 9.29). Page 229. Part 1. | Completed.<br><br>Enacted. |
| | 13. The adoption by TOCs of the teaching and practice of defensive driving is endorsed (para 9.39). Page 229. Part 1. | Completed.<br><br>The industry has rolled out defensive driving and is a core part of professional driving policies. This has been successful and is a core part of arrangements, with a view from some in the industry that drivers are braking too early which is affecting capacity. |

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| | 14. TOCs should review the effectiveness of the systems in place to deliver the required level of driver competence at least once every three years, and should retest the driver against the revised systems at the same frequency (para 9.49). Page 229. Part 1. | Completed.<br><br>Train drivers competence management systems (CMS) have developed since Ladbroke Grove. TOCs have adopted cyclical competence assessment regimes with assessments provided regularly during the cycle. This is done via a mixture of observation, simulation and questioning. There is much higher use of simulators during the period to gather competency evidence. In the case of changes to rules and instructions they will be briefed/trained dependent on risk and will then be part of the CMS. CMSs are normally on an IT system so that evidence can be collected and progress monitored. |
| Driver management and training | 15. The ATOC study on the central licensing of drivers should be progressed expeditiously (para 9.50). Page 229. Part 1. | Completed.<br><br>Train drivers do now have to be licensed to operate. |

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| | 16. ATOC should consider the application of NVQs to the driver licensing scheme presently under their consideration (para 9.52). Page 229. Part 1. | Completed.<br><br>The Train Driving Licences and Certificates Regulations 2010 (TDLCR) are now in place but does not include NVQ as was driven by European legislation but some operators did implement NVQs. However the core generic training is required by TDLCR now covered by the Train Driver Academy in a training package or via individual packages. The industry has worked with government with the agreement for a level 3 apprenticeship standard which provided a qualification for train drivers. This has taken over from NVQs as the recognised national qualification. Industry has started to roll out the level 3 apprenticeship with a number TOCs using the train driver academy to facilitate this. It should be noted that in Wales and Scotland the funding will affect roll out.<br><br>Though not NVQs, sufficient work done to consider completed. |
| | 17. The development of a culture within the industry in which information is communicated without fear of recrimination, and blame is attached only where this is justified, is commended (para 9.60). Page 229. Part 1. | Completed.<br><br>CIRAS has been set up. |

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| | 18. Thames Trains and other TOCs should ensure that their driver training and testing programmes adequately reflect the need for specific, relevant and validated criteria. Drivers should be tested against these criteria, and a definite pass standard should be established. Consideration should be given as to how often drivers should repeat key steps in their training before submitting themselves for testing (para 9.64). Page 229. Part 1. | Completed.<br><br>Train driver training has developed with the driver tasks broken down into key learning points (KLP) which are the basis of the training and are validated. The KLP will include the rule book, company instructions, traction and routes. The training covers the KLP and is then assessed during the training when the various models are covered. In addition the exams are based on the key learning points in the training. There are pass marks for the exams which are defined by each company. TOCs have criteria on how many times a trainee can undertake an exam/assessment before they fail the whole training. There are limits to the time that a trainee can undertake a module which is based on making sure that the industry is inclusive against the costs on retraining. All TOCs provide a build-up of experience for a trainee with a driver instructor so they can test their skills before a final exam. |
| | 19. Further research should be carried out to develop the understanding of human factors as they relate to train driving (para 9.66). Page 229. Part 1. | Completed.<br><br>This was conducted and is continually considered as it is across industry. |

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| Safety Auditing | 20. The safety audit process should be strengthened, and the quality of communication during the process should be improved (para 9.44). Page 229. Part 1. | Completed.<br><br>ORR uses the Risk Management Maturity Model (RM3) as part of its regulatory toolkit. ORR gathers evidence from dutyholders to assess the effectiveness of their management arrangements; this may include inspection and audit as well as taking account of the audit and monitoring that the dutyholder itself has carried out. |
| | 21. An organisation the activities of which are being audited should disclose all material and relevant information to the auditor in regard to the area of the activity which is being audited (para 9.46). Page 230. Part 1. | Completed.<br><br>The dutyholder itself is responsible for undertaking audits of its own arrangements, both internally and with external auditors. ORR does not have a role in respect of individual audit reports - it is for the dutyholder to manage as part of its safety management system. ORR would look at a dutyholder's arrangements for auditing as part of our assessment of the safety management system. Their guidance on RM3 talks about this in detail. |
| Signal sighting | 22. The standard on signal sighting should require that explicit consideration is to be given to the readability of a signal. It should be made clear that the fact that a signal complies with a minimum requirement is not of itself to be taken as meaning that it is adequate (para 11.13). Page. 230. Part 1. | Completed.<br><br>Dealt with in GK/RT0037 issue 4 : signal positioning and visibility.<br><br>Readability is now part of the driveability assessment. |
| | 23. The standard on signal sighting should deal explicitly with the additional time required for the reading of certain signals, including (but not necessarily limited to) those mounted on gantries (para 11.13). Page 230. Part 1. | Completed.<br><br>Standard has been re-written. GE/RT8037 issue 1. |

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| | 24. Human factors experts should be involved in the revision of the standard on signal sighting (para 11.13). Page 230. Part 1. | Completed.<br><br>Standard has been re-written. GE/RT8037 issue 1. |
| | 25. The reference to "very short duration" in the standard on signal sighting should be clarified (para 11.14). Page 230. Part 1. | Completed.<br><br>Standard has been re-written. GE/RT8037 issue 1. |
| | 26. Areas where ambiguity in the meaning of "very short duration" may have caused, or may still cause, problems should be identified. There should be a retrospective review of all locations where this may be the case, so that appropriate action may be taken (para 11.14). Page 230. Part 1. | Completed.<br><br>RIS-0737-CCS Issue one Rail Industry Standard for Signal Sighting Assessment Requirements. |
| | 27. The expression "overhead line equipment" in the Group Standard on signal sighting should be clarified by the statement that it refers only to wires and droppers (para 11.16). Page 230. Part 1. | Completed.<br><br>RIS-0737-CCS Issue one Rail Industry Standard for Signal Sighting Assessment Requirements. |
| | 28. The standard on signal sighting should define acceptable limits to the temporary obscuration of a signal, subject to the overriding right of a signal sighting committee to determine whether the nature and extent of the interruption in the individual case is such that the sighting is unacceptable (para 11.16). Page 230. Part 1. | Completed.<br><br>Standard has been re-written. GE/RT8037 issue 1. |

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| | 29. The standard on signal sighting should explicitly define the cab sight lines within which signals must be positioned by reference to the envelop governing the position of the driver's eye which is specified for each particular rolling stock (para 11.17). Page 230. Part 1. | Completed.<br><br>Standard has been re-written. GE/RT8037 issue 1. |
| Signal sighting | 30. The report by W S Atkins "Initial Study of Signal Sighting Practice on Railtrack Infrastructure", Issue 1, 6 March 2000, is commended (para 11.19). Page 231. Part 1. | Completed.<br><br>A commendation rather than a recommendation. |
| | 31. Railtrack, in consultation with the TOCs, should examine the availability of signal sighters to meet the expected workload and take all necessary steps to ensure that there is an adequate supply of trained signal sighters and an adequate range of skills (para 11.20). Page 231. Part 1. | Completed.<br><br>Network Rail constantly monitor and this is a component of all signal matters. Signal Sighting Competence is recorded in Sentinel. |
| | 32. It should form part of Railtrack's safety management system that it is the responsibility of senior Zone operating and signal engineering management to decide whether the recommendations of a signal sighting committee under the Group Standard on SPADs are to be implemented and, if not, what alternative measures are to be taken, and, in either event, that the relevant measures are implemented (para 11.22). Page 231. Part 1. | Completed.<br><br>Zones are obsolete. However this part of the SMS is covered in the company standards. SMS points to the relevant standard applicable which then points to the company standard which then covers implementation. |
| SPAD investigation | 33. The Group Standard on SPADs and its associated documentation should be reviewed to ensure that there is no presumption that driver error is the sole or principal cause, or that any part played by the infrastructure is only a contributory factor (para 11.27). Page 231. Part 1. | Completed.<br><br>This is done via root cause & analysis.<br>GORT/3119. |

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| | 34. The use of the word "disregard" in the Group Standard on SPADs and its associated documentation should be reconsidered (para 11.29). Page 231. Part 1. | Completed.<br><br>This was done via route cause & analysis. GORT/3119. |
| | 35. Persons who investigate, and make recommendations as a consequence of, SPADs should be trained in the identification of human factors and in root cause analysis. Their competence in these areas should be formally recorded, and renewed by refresher courses. The analysis of SPAD data should be specifically directed to eliciting the part played by human factors and assessing the significance of the hazards against which the signals which have been passed at Danger were intended to afford protection (para 11.31). Page 231. Part 1. | Completed.<br><br>There are now specific persons appointed to any investigation and 10 incident factors (IFCS) are applied. RIS 3119. |
| Signallers' instructions | 36. The instructions for signallers as to their response to a SPAD should be:<br>(a) clarified; and<br>(b) set out in a single set of instructions, while if there are matters which are specific to a particular area they should be covered by separate local instructions (para 12.9). Page 231 & 232. Part 1. | Completed.<br><br>Rule Book Modules vary by type of signalling, but most representative is GERT8000 module TS2 issue five Track circuit block regulations. Section 5.1 is the most relevant part. |
| | 37. The instructions for signallers should state explicitly that the signaller is expected, in the event of a SPAD, to make an assessment and to take action immediately (para 12.10). Page. 232. Part 1. | Completed.<br><br>Rule Book Modules vary by type of signalling, but most representative is GERT8000 module TS2 issue five Track circuit block regulations. Section 5.1 is the most relevant part. |
| | 38. The instructions for signallers should provide a set of options, including the use of the CSR (where it is available) either to send an emergency stop message to a particular train or a general stop message. This range of options should be supported by full and regularly repeated briefing as to the type of circumstances in which each option is or may be appropriate (para 12.11). Page 232. Part 1. | Completed.<br><br>Rule Book Modules vary by type of signalling, but most representative is GERT8000 module TS2 issue five Track circuit block regulations. Section 5.1 is the most relevant part. |

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| Signallers' training and briefing | 39. Railtrack should institute a system whereby all signallers in the signal box (or centre) are briefed by their line manager following a SPAD in their area, and there is appropriate dissemination of information which may be of assistance to signallers elsewhere (para 12.13). Page 232. Part 1. | Completed.<br><br>This is done. Operation Alerts are shared locally and to the community in general. |
| | 40. Railtrack should ensure that the reports which are made to the Zone about a SPAD should include a report by the signaller as to the actions taken by him or her and the reasons for such actions (para 12.13). Page 232. Part 1. | Completed.<br><br>Zones are now Routes. Signaller action reports are made with their reasons. |
| | 41. The use of simulators in providing fully effective training of signallers in dealing with emergencies is endorsed (para 12.15). Page 232. Part 1. | Completed.<br><br>Simulators are used especially with complex signals. |
| | 42. Railtrack and the TOCs should take steps to ensure that signallers and drivers obtain a full appreciation of the nature and demands of each other's work (para 12.16). Page 232. Part 1. | Incomplete<br><br>Network Rail advises that this has still not been done as at 3rd March 2021.TOCs use driver info themselves and Operational Risk Management meetings but nothing in place for frontline staff.<br>This will need following up to ensure it is completed. |
| Signallers' working conditions | 43. Railtrack should review the work done by signallers to identify all non-essential tasks and eliminate them from the work which is performed by them while they are in charge of a workstation (para 12.17). Page 232. Part 1. | Completed.<br><br>This was and is still done. A modern example: signals & level crossings. Signaller workload assessment tool currently being updated. They are refreshing the workload tool 1st version expected Autumn 2020.<br>(delayed due to covid-19) |

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| | 44. A supervisor should be employed on a continual basis to ensure that the workstations are operated in the most effective way (para 12.17). Page 232. Part 1. | Completed.<br><br>Where this is feasible this is done. However on isolated, single manned stations this is not feasible.<br><br>Though not strictly to the full extent, adopting a pragmatic approach that the spirit has been complied with. |
| | 45. Signallers should take the opportunity from time to time to practise the controlling of train movements (para 12.18). Page 233. Part 1. | Incomplete<br>Network Rail advises that this has not been done as at 3rd March 2021. They are looking into to see how this could be addressed.<br>Linked to Recc 11 and Recc 42 above therefore all 3 are action items. |
| | 46. Railtrack management should set out the criteria for allowing signallers, in exceptional circumstances, to exceed the maximum of 72 hours of work per week, and ensure that these criteria are, and continue to be, correctly applied (para 12.19). Page 233. Part 1. | Completed.<br>Standard have been re-written and this is now absolutely managed. E.g. fatigue improvement plan with enhanced control effect = 2022 commencement date. |
| IECC equipment | 47. There should be a unique alarm for SPADs, which should sound until it is turned off (para 12.21). Page 233. Part 1. | Completed.<br><br>There is a SPAD alarm for both driver and signal centre. |
| | 48. The speed with which signallers can take action to move points in an emergency should be improved (para 12.22). Page 233. Part 1. | Review.<br>Network Rail advise (3/3/21) that computerised management systems has overtaken the majority of this recc. However, they concede that there are still some lever operated systems on the network.These should have the recc applied to them. |

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| Automatic controls | 49. There should be a study of the possibility of the automatic replacement of a signal to Danger where a SPAD has occurred and the layout is such that there is a significant danger of collision (para 12.27). Page 233. Part 1. | Completed.<br><br>It is and is covered under the Signalling Standards. |
| | 50. Subject to satisfactory risk assessment, an arrangement should be made whereby, when a train which is fitted with the CSR passes a signal at Danger, an audible warning automatically sounds in the cab (para 12.28). Page. 233. Part 1. | Completed.<br><br>TPWS applies this at higher risk signals. However TPWS does not stop rear end collisions. CSR is now GSMR. GSMR rec call stops all trains in the area. Felt this covers low risk signals. |
| Radio communications | 51. There should be a national system of direct radio communication between trains and signallers (para 12.29). Page 233. Part 1. | Completed.<br><br>European directive brought in GSMR which is in use nationally across the UK. |
| Preservation of data | 52. Signallers, managers and maintenance staff working at IECCs should be instructed as to the need to preserve CSR data disks in the event of a SPAD taking place (para 12.30). Page 233. Part 1. | Completed.<br><br>Now GSM-R which captures 2 x voice recordings on HDD. They are preserved. |
| Crashworthiness | 53. The enhancement of the cabs on HSTs to improve driver protection along with energy absorption and compatibility with other vehicles, and the enhancement of measures for the retention of bogies on the coaches of HSTs, should be considered, subject to an assessment of feasibility, costs and benefits, with a view to possible retro-fitting (para 13.4). Page 234. Part 1. | Completed.<br><br>In 2002 the RoSCos commissioned Transys to carry out a feasibility study in respect of the recommendation to improve crashworthiness of HST power cars. A subsequent fleet refurbishment addressed the areas where improvements were considered to be reasonably practicable. |

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| | 54. The current standard for crashworthiness in respect of new vehicles should be reviewed in the light of the crash at Ladbroke Grove with respect to the objectives referred to in Recommendation 53 (para 13.4). Page 234. Part 1. | Completed.<br><br>Pan European Technical Specification for Interoperability (TSI) covers the structural crashworthiness of vehicles. All new rolling stock has to meet the TSI at the very least. New rolling stock for the UK network also has to comply with the provisions of GM/RT2100 which include interior passive safety. |
| | 55. In the case of Turbos, the enhancement of end pillar weld connections, the possible enhancement of crashworthiness by weakening the ends and strengthening the saloon of the cars, and the fitting of shear-out couplers and anti-overriding devices should be considered, subject to an assessment of feasibility, costs and benefits, with a view to possible retro-fitting (para 13.5). Page 234. Part 1. | Completed.<br><br>Consideration was given to the modifications described in the recommendation, with engineering consultancy Atkins reviewing the design of the vehicles. It was concluded that such changes were not reasonably practicable, and that the low speed collision protection had already been demonstrated to be satisfactory. The improvement to signalling protection reduced the likelihood of high speed collisions. |
| | 56. The current standard for crashworthiness should be reviewed, in the light of the crash at Ladbroke Grove, in order to ensure that there are adequate measures for safeguarding survival space (para 13.5). Page 234. Part 1. | Completed.<br><br>GMRT 2100 is now the standard for interior passenger safety. |
| | 57. In the case of new vehicles constructed of aluminium, consideration should be given to:<br>(i) the use of alternatives to fusion welding;<br>(ii) the use of improved grades of aluminium which are less susceptible to fusion weld weakening; and<br>(iii) the further development of analytical techniques (para 13.9). Page 234. Part 1. | Completed.<br><br>The technology applicable to the construction of rail vehicle bodies has evolved; it is not believed that the type of welding that exhibited the catastrophic failure at Ladbroke Grove is still in use. |

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| | 58. The revision of the Group Standard for crashworthiness should be pursued with particular reference to:<br>(i) the design requirements for more realistic scenarios;<br>(ii) high speed accidents; and<br>(iii) dynamic verification testing (para 13.17). Page 234. Part 1. | Completed.<br><br>GMRT 2100 is now the standard for interior passenger safety. See also BS EN 15227. |
| | 59. The enhancement of the security of seating in Turbos and of tables in HSTs should be considered, subject to an assessment of feasibility, costs and benefits, with a view to possible retro-fitting (para 13.19). Page 234. Part 1. | Completed.<br><br>ATOC published standard AV/ST9001 Vehicle Interior Crashworthiness in February 2002, which introduced test procedures for chairs and tables in rail vehicles. It included the use of anthropomorphic test devices ("crash test dummies") as part of the assessment of components. It was applicable to all rail vehicles, including Turbos and HSTs, when a reasonable practicable opportunity arose to bring the vehicle into conformity. Its requirements were subsequently incorporated into GMRT2100 Requirements for Rail Vehicle Structures issue 4 December 2010. |
| | 60. Comprehensive market research in regard to safety related measures should be carried out in order to take account of the views of informed passengers (para 13.20). Page 235. Part 1. | Completed.<br>Passenger groups are consulted as normal practice. ORR actively encourage this. |
| Fire mitigation | 61. The following measures should be considered with a view to enhancing protection against fire:<br>(i) a review of Group Standards in respect of improved crash resistance of fuel tanks;<br>(ii) consideration of the feasibility of reducing fuel inventories and of utilising smaller fuel tanks;<br>(iii) in respect of frontal impacts, consideration of the repositioning of fuel tanks away from the leading ends of trains from behind bogies wherever this is practicable; | Completed.<br>GM/RT2130 was brought in to cover vehicle, fire and evacuation measures in 2013.<br>This directly addresses these recommendations. |

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| | (iv) avoidance of placing fuel tanks in exposed and vulnerable locations;<br>(v) examination of the use of additives to reduce the propensity of a fuel to atomise;<br>(vi) the employment within fuel tanks of internal flexible linings or a honeycomb construction;<br>(vii) consideration of the most appropriate material for fuel tanks; and<br>(viii) recognition of the need for supporting theoretical and experimental work in respect of the foregoing (para 13.27). Page 235. Part 1. | |
| Passenger protection, evacuation and escape | 62. The scope of Schedule 1 to the Railway (Safety Case) Regulations 2000 should be extended so as to include explicitly the arrangements which the duty holder has established in regard to facilities, instructions and signs for the escape of persons in an emergency (para 14.3). Page 235. Part 1. | Review<br>The Railway Safety Case has now been superseded by ROGS under the ORR regulations. ROGS requires the dutyholder to document its safety management system, including the provision for managing emergency situations. ORR assesses the SMS and gives a 5-year certificate if it is deemed satisfactory. The operator requires the certificate in order to be able to operate.<br>**The industry considers this recc to be completed however I disagree. See comments below.** |
| | 63. The provisions in the schedule as to evacuation and escape should be supported by adequate guidance from the HSE (para 14.3). Page 235. Part 1. | Completed.<br><br>GRMT/2130 (2013) covers. |

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| | 64. The code of practice on public information on train safety and emergencies should be kept up to date (para 14.6). Page 236. Part 1. | Completed<br><br>RDGACOP011 Iss 16 was published in 1999. Further guidance notices have been seen and all are under active management. The oldest of these was last revised under three years ago, the rest are more recent. This demonstrates that they are actively managed and reviewed. |
| | 65. So far as is feasible, the safety information issued to passengers and the means by which they can be evacuated or escape from a train should be standardised (para 14.8). Page 236. Part 1. | Review<br><br>RSSB advise that they undertook research projects into this (last 2006).<br><br>A database of signs was created from this research and managed by ATOC.<br><br>A new standard RIS-2730-RST *Vehicle Fire Safety and Evacuation* should achieve even more standardisation.<br><br>However, RSSB admit they will look at their past research now (in light of this report) to see if it remains valid and effective. Results of this review should be sought and followed up. |
| | 66. A system should be established for the collection of human factors information pertinent to issues of passenger safety following rail accidents (para 14.8). Page 236. Part 1. | Completed.<br><br>This is done under the RAIB investigation structure and methodology. |

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| | 67. Passengers should be given general safety advice both before and after they have boarded their train (para 14.14). Page 236. Part 1. | Incomplete<br><br>This requirement for passenger safety information is imposed by GM/RT2130. The operators' licence requirements and safety management systems (required by ROGS) should ensure that this requirement is met.<br><br>I do not believe this recc is fully satisfied |
| | 68. Expert assistance should be obtained on the advice which should be given to passengers as to what to do in the event of there being a known threat of serious danger to them in remaining on board (para 14.14). Page 236. Part 1. | Incomplete<br><br>Expert advice was sought by RSSB. It was this advice that led to the 'stay on board' seen on posters.<br><br>However this recc denotes expert advice for a situation where it is **not safe** to stay on board. No evidence as to this being done. |
| | 69. The provision on board of explanatory information about the emergency facilities of individual trains is endorsed (para 14.14). Page 236. Part 1. | Completed.<br><br>Emergency facilities are now clearly marked with simple instructions on how to use. |
| | 70. The use of on-board announcements to draw attention to safety information is endorsed (para 14.16). Page 236. Part 1. | Incomplete<br><br>This is required by GM/RT2130.<br>However, I believe this recc is not been satisfied uniformly across the industry. |
| | 71. The requirement for emergency signs to be luminous should be made retrospective (para 14.18). Page 236. Part 1. | Completed.<br><br>This is required by GM/RT2130. |

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| | 72. So far as is feasible, emergency signs on all trains should be capable of being understood by passengers without the necessity to read text (para 14.19). Page 236. Part 1. | Incomplete<br><br>Emergency facilities are now clearly marked with simple instructions on how to use.<br><br>However, I believe this recc is not been satisfied uniformly across the industry. |
| | 73. There should be research with the aim of arriving at a system of signage which is common to all trains in Great Britain (para 14.20). Page 236. Part 1. | Review<br><br>GM/RT2130 Vehicle Fire, Safety and Evacuation issue 4 December 2013 mandates compliance with a recognised railway set of signs that takes account of the Health and Safety (Safety Signs and Signals) Regulations 1996.<br><br>**I would concur that the research is complete. However I wonder at the quality of what was then produced. Refer back to my notes made on reccs 62, 65, 67, 68, 70 & 72.** |
| | 74. Research should be carried out into the means of safeguarding emergency lighting systems from disablement by the forces involved in sudden deceleration (para 14.21). Page 236. Part 1. | Completed.<br><br>GM/RT2130 (2013) covers. |
| | 75. The provision of "snap wands" should be considered as a supplementary means of providing lighting in an emergency (para 14.22). Page 236. Part 1. | Completed.<br><br>This has now been superseded by emergency lighting much like aircraft on all rolling stock. |

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| | 76. In the case of every coach (on any train) which has internal doors which slide in the same direction one of the following should be carried out by 31 December 2003:<br>(i) the coach should be fitted instead with opposite handed internal doors;<br>(ii) the coach should be fitted instead with double leaf internal doors; or<br>(iii) a panel in the door should be rendered removable so as to enable passengers to pass through.<br>The above is subject to the proviso that if the HMRI are satisfied, on application by the TOC concerned, that it is not practicable for that change to be achieved within this period, they may grant a deferment for an appropriate period in which the work is to be done (para 14.28). page 236 & 237. Part 1. | Completed.<br><br>This requirement for internal passenger door performance in emergency situations is imposed by RIS-2730-RST & GM/RT2130. The operators' licence requirements and safety management systems (required by ROGS) should ensure that this requirement is met. |
| | 77. The staff-only doors on all trains should have an override device to enable them to be used by passengers in an emergency (para 14.29). Page 237. Part 1. | Completed.<br><br>This is in all tech specs and is an industry standard GMRT 2130 and RSI-2730-RST. |
| | 78. Signage primarily in the form of pictograms similar to those used on aircraft, and depicting the correct operation of emergency door mechanisms, should be developed. The signage should conform to current human factors standards on signage and be displayed prominently adjacent to each door and beside the door release mechanisms, as well as within the carriage. The mechanisms should be provided with artificial illumination to highlight their location at all times, with a back-up power supply in case of an emergency (para 14.34). Page 237. Part 1. | Completed.<br><br>Part of tech specs & standards - GMRT 2130 and RIS 2730 RST.<br><br>ORR have confirmed there is backup power. |

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| | 79. The daily routine check of every train should include confirming that all ladders can readily be used. A mechanism to enable ladders to be released quickly should be devised and fitted (para 14.35). Page 237. Part 1. | Completed.<br><br>TOCs manage the risks through their operating procedures, which are developed through the safety management system as required by ROGS. In practice maintenance staff check the equipment and apply a seal, which then provides evidence that the equipment has not been tampered with until the next maintenance check. |
| | 80. There should be a thorough review of the adequacy of the number of, and signage relating to, emergency hammers. This should include the provision of means of illuminating the location of hammers in an emergency, with a back-up power supply in case of emergency (para 14.46). Page 237. Part 1. | Completed.<br><br>Most hammers are now gone especially with the introduction of crash glass windows. Those that remain, this recommendation are standard. |
| | 81. There should be research into the feasibility of, and risks associated with, removable windows, the adequacy of windows as a means of emergency egress, the number of dedicated windows which are necessary and the provision as to the maximum distance between each passenger and a bodyside door or emergency exit (para 14.46). Page 237. Part 1. | Completed.<br><br>This is now done as a matter or course on new rolling stock under what this report refers to as crash glass windows. |
| | 82. Tests should be carried out into the practicability of building emergency hammers into the passenger alarm system so that they could be released only after an alarm has been activated (para 14.50). Page 237. Part 1. | Completed.<br><br>Standards do not require hammers to be interlocked with the passenger alarm system. Hammers are much less prevalent with the development of alternative evacuation measures.<br><br>RIS-2730-RST; clause G2.10.1.3 & GM/RT2130 clause 7.1.2 cover this recc. |

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| | 83. The incorporation of escape hatches in existing carriages should be the subject of feasibility and risk assessment and the provision of escape hatches in new carriages should likewise be considered (para 14.54). Page 238. Part 1. | Completed.<br><br>Hatches are not usually incorporated into new carriages as alternative evacuation measures exist. ORR think they are required in sleeping cars. |
| | 84. All members of the on-board train staff (including persons working under contract) should be persons who have been trained in train evacuation and protection (para 14.62). Page 238. Part 1. | Completed.<br><br>Staff training is provided for on board staff and will vary dependent the level of risk. The key responsibility will be the driver and guard when provided with the on board staff providing support. This will normally include core base training as a practical exercise. Non safety critical staff will not be normally trained on protection because the use of the GSM-R radio system with red button to stop all trains is far more effective. The training on board staff is set out in GN003 The Training of On-Train Staff in On-Train Emergency Procedures. |
| | 85. The possibility of installing on driver-only trains a telephone by which passengers can communicate with the signaller in the event of the driver being killed or incapacitated should be studied (para 14.65). Page 238. Part 1. | Complete<br>ORR advised that this was looked into but was not practicable.<br><br>The signaller can speak to passengers however passengers cannot communicate with signaller. |
| | 86. The feasibility of a "roaming" communication system for train staff should be examined (para 14.68). Page 238. Part 1. | Completed.<br><br>This has been satisfied by staff iPads and phones. |

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| | 87. The possibility of remote broadcasting from outside the train, where it is not already available, should be investigated (para 14.68). Page 238. Part 1. | Completed.<br><br>As per recc 85 above. |
| | 88. The availability on trains carrying passengers of the items of emergency equipment mentioned in the standard on emergency and safety equipment should be unrestricted (para 14.74). Page 238. Part 1. | Completed.<br><br>It is unrestricted to train staff however it is restricted to passengers due to safety/inappropriate use concerns. It is also accessible to any emergency services that attend. |
| The implementation of recommendations | 89. A review of compliance with the above recommendations should be conducted on behalf of the HSC within six months of publication of this report, and further reviews should be put in hand as necessary thereafter. The HSC should publish the outcome of such reviews (para 15.7). Page 238. Part 1. | Completed.<br><br>This was conducted and concluded in 2005. |
| Part 2 | | |
| Category | Recommendation | Status |
| Interfaces and the number of franchises | 1. Railtrack and ATOC should work jointly with the RITC to set up a task force for ensuring that the need for a skilled and properly trained workforce at all levels of the industry is met (para 4.35). Page 170. Part 2. | Completed.<br><br>Safety management system has competence management arrangements in place. NSAR demand forecasting on what is required. This is upon every duty holder in industry. |

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| Large scale projects and the case for system authorities | 2. The arrangements for the establishment of system authorities should ensure that they are properly empowered, provide clear leadership and command the commitment of all parties to their work and decisions. System authorities require the means of enforcing their decisions. They should have adequate finances, through proper and equitable contributions from participating bodies (para 4.48). Page 170. Part 2. | Completed.<br><br>HMRI, RAIB, DfT, ORR, RSSB, RDG (used to be ATOC). |
| Research and development | 3. Subject to Recommendation 55, research and development should, as matters stand, be led by Railway Safety but with the support of the SRA and the Rail Regulator. Further funding should be based on a levy on the participating bodies in proportion to their railway-based income(para 4.54).Page170.Part2 | Completed.<br><br>This is how RSSB is funded. |
| The use of contractors | 4. Steps should be put in place to ensure that contractors and sub-contractors are selected by a process which gives due regard to their state of training. They should be given appropriate time further to develop their training and planning as necessary before embarking on work (para 4.72). Page 170. Part 2. | Review<br><br>Applied: RISQS at base level. Licensing at principal level and a 3rd layer for certain tasks.<br><br>Potential problem ahead! Competitions appeal tribunal recently disallowed RISQS as a monopoly.<br><br>Need to watch carefully that quality of contractor/sub-contractor is not diluted because of. |
| | 5. Steps should be taken to ensure that the quality of work carried out by contractors and sub-contractors entirely meets the required standards, and that any deficiencies are addressed in a timely manner (para 4.75). Page 170. Part 2. | Completed.<br><br>There is a specific obligation which someone is supposed to check and test. |

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| | 6. The Sentinel system should be reinforced with specific reference to the need to record the total hours that any individual works on the railways, and to ensure that the Sentinel card is clearly "tied" to an individual (para 4.80). Page 170. Part 2. | Review<br><br>Sentinel system was refreshed in 2012 and is now data based. Swipe in & out cards access this database.<br><br>MacRail monitors the fatigue element and interfaces with Sentinel.<br><br>However not every operator uses both systems - a consequence of devolution. |
| | 7. The steps taken to reduce the number of sub-contractors are endorsed (para 4.82). Page 171. Part 2. | Completed.<br><br>This recc endorsed the steps that were being taken at the time. As an endorsement no further action required. |
| | 8. The taking by Railtrack of a direct and active role in the close day to day management of safety-critical work is endorsed (para 4.83). Page 171. Part 2. | Completed.<br><br>Again this was an endorsement. In 2004 NR absorbed the outside infrastructure maintenance internally. |
| | 9. Employers of contractors and sub-contractors should ensure that they work to exactly the same safety standards as those who are directly employed (para 4.87). Page 171. Part 2. | Completed.<br><br>This is part of the Sentinel scheme.<br><br>A principle is the primary sponsor of a worker and is thus held accountable for that worker. |
| | 10. The proposal of a training school for contractor staff is endorsed (para 4.87). Page 171. Part 2. | Completed.<br><br>NASR - National Skill Training Academy for Rail. |

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| The role of the trade unions | 11. Management should ensure that the elected representatives of the employees, whether they be union members or not, have a significant role in the management of safety (para 4.99). Page 171. Part 2. | Completed.<br><br>ORR does not partner with unions as such, but they engage with them as stakeholders and ROGS requires procedures to be in place for communicating safety information with staff and their representatives. |
| Safety leadership within individual companies | 12. The Chairmen and Chief Executives of companies should make continually clear to all their employees and passengers a lasting commitment to improve safety performance (para 5.21). Page. 171. Part 2. | Completed.<br><br>Industry has adopted LHSBR - Leading Health and Safety on Britain's Railway. |
| | 13. Companies in the rail industry should be expected to demonstrate that they have, and implement, a system to ensure that senior management spend an adequate amount of time, devoted to safety issues, with front line staff (para 5.23). Page 171. Part 2. | Review<br>RSSB advise that it is done as good practice but is not explicit.<br><br>Without explicitness no proof can be gathered.<br><br>It cannot be stated that this recc is complete.. |
| | 14. Where it is not already in place, a safety management strategic leadership team should be established in each company in the rail industry. Such a team should be led by the Chief Executive and include his or her direct reports, with support from the safety professionals. It should consider the strategic management process for safety by holding regular meetings devoted to health and safety issues. It should be the key group in the organisation for setting goals, monitoring performance and assessing and resourcing the needs of the organisation to ensure that the long-term objectives are met (para 5.24). Page 171. Part 2. | Review<br><br>RSSB advise that it is done as good practice but is not explicit.<br><br>Without explicitness no proof can be gathered.<br><br>Review needed to ensure every company has a robust and reportable SMSL sufficiency to satisfy this recommendation.<br><br>It cannot be stated that this recc is complete.. |

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| Communications | 15. Safety meetings should be used as a means of two-way communication between management and the workplace, and should be linked directly to safety management leadership teams referred to in the previous recommendation (para 5.34). Page 172. Part 2. | Completed.<br><br>RIS-3704-TOM issue one Managing Train Accident Risk Arising from Infrastructure Assets and Train Operations. |
| Risk assessment | 16. The greater use of risk assessment in the rail industry is commended (para 5.42). Page 172. Part 2. | Completed.<br><br>A commendation rather than an actionable recommendation. |
| Railway Group Standards | 17. There should be a systematic review of the standard setting process to assess whether it is effective in achieving its overall aim of safe interworking (para 6.18). Page 172. Part 2. | Completed.<br><br>One of the functions that RSSB cover. |
| Safety cases | 18. The application of the safety case to Great Britain's railways is endorsed (para 7.9). Page 172. Part 2. | Completed.<br>An endorsement rather than an actionable recommendation. |
| | 19. The definition of responsibilities for the control of risk at specific sites which are shared by different railway operators and at the interfaces between them across the network should be refined and set out in the safety case. However, the details of the arrangements and agreements for these purposes should not be required to be set out in the safety case; it should be sufficient that the safety case provides information as to the means of access to them (para 7.15). Page 172. Part 2. | Completed.<br><br>This has been addressed and replaced by the Safety Management System duty of cooperation, imposed by ROGS. |
| | 20. A duty holder should be required to show by means of its safety case that it has reduced the risks associated with its operation as low as reasonably practicable, but it should be sufficient if the safety case points to the methods which have been used and to where the details can be found (para 7.20). Page 172. Part 2. | Completed.<br><br>This has been addressed and replaced by the Safety Management System. |
| | 21. Duty holders should be under a statutory duty to comply with Railway Group Standards in so far as they relate to matters of health and safety (para 7.22). Page 172. Part 2. | Completed.<br><br>This is a condition of their license to operate. |

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| | 22. The process of safety case acceptance should include the check that a system as described in the safety case is actually in place; whereas the audit would concentrate on how that system was working in practice and how it was ensuring and improving safety (para 7.30). Page 173. Part 2. | Completed.<br><br>This has been addressed and replaced by the Safety Management System. |
| | 23. It is essential that companies operate a robust internal audit system, which should be both "top down" and "bottom up" (para 7.37). Page 173. Part 2. | Completed.<br><br>This is part of the Safety Management System so is therefore done. |
| The accreditation of suppliers and producers of services | 24. Suppliers of products or services of a safety-critical kind for use on, or in regard to, the railways in Great Britain should be required to hold an accreditation as a condition of being able to engage in that activity. But the features of such a system require further study (para 7.73). Page 173. Part 2. | Completed.<br><br>There are 2 schemes that relate to safety-critical equipment and these are continually audited = RISQS & RISAS. |
| Licensing | 25. There should be a system for the licensing and central recording of those who are qualified for the driving of trains in respect of their knowledge of the rules and regulations and the traction for which they have been assessed as competent. Training providers or train operators should be accredited and common standards laid down for the purpose. Drivers' licences should require to be revalidated every three years (para 7.74). Page 173. Part 2. | Completed.<br><br>This is addressed by the Train Driving Licences and Certificates Regulations 2010 (TDLCR), enforced by ORR. |
| | 26. There should be a similar system for licensing the central recording of qualified signalmen, based on an assessment of their knowledge of the rules and regulations. Revalidation every three years should be required (para 7.75). Page 173. Part 2. | Completed.<br><br>This was not completed. However, competency tests (ongoing) and 3 yearly operational development days are felt to go beyond a simple license. |

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| Railtrack and Railway Safety | 27. The transfer from Railtrack to the safety regulator of the function of acceptance of the safety cases of train operators and station operators (and their material revisions), and the removal from the S&SD of their function in regard to safety cases and Group Standards, are endorsed (para 8.28). Page 173. Part 2. | Completed.<br><br>This is part of ORR working structure. |
| | 28. The safety regulator should cease to be dependent on Railtrack for a recommendation as to whether or not the safety case of a train operator or a station operator (or its material revisions) should be accepted. Instead the safety regulator should give Railtrack the opportunity to make any representation as to whether or not the safety case or revision should be accepted, and the grounds on which such a representation is based. The safety regulator should likewise give the opportunity to any other train operator or station operator who may be affected by matters referred to in the safety case to make a similar representation, and for this purpose select whichever operators it considers to be appropriate in the circumstances (para 8.33). Page. 174. Part 2. | Completed.<br><br>This is part of ORR working structure. |
| | 29. If the safety regulator refuses to accept a safety case or its revision it should give the reasons for that decision (para 8.33). Page 174. Part 2. | Completed.<br><br>ORR do and keep records. |

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| | 30. In regard to the safety case for Railtrack or any material revision, the safety regulator should give any train operator, selecting whichever it considers to be appropriate in the circumstances, the opportunity to make representations as to whether or not the safety case or revision should be accepted, and the grounds on which the representation is based (para 8.34). Page 174. Part 2. | Completed.<br><br>This has been superseded in as much as it is how the entire industry conducts itself and is what happens in practice. |
| | 31. Railway Safety should cease to discharge the function of assessment for the purposes of the Safety Case Regulations. It should be for the safety regulator to decide to what extent, if at all, it should commission assessment from an independent body (para 8.36). Page 174. Part 2. | Completed.<br><br>The management of risk is now achieved through the safety management system required by ROGS and regulated by ORR. |
| | 32. A provision should be made in the Safety Case Regulations imposing a duty on Railtrack to carry out, or procure the carrying out by a suitably qualified body of, audits for the purposes presently set out in Regulation 9 of the 2000 Regulations (para 8.37). Page 174. Part 2. | Completed.<br><br>This has been superseded by the Safety Management System. |
| | 33. The safety regulator should review the adequacy of Railtrack's auditing, carrying out its own audits to the extent that it considers appropriate, and dealing with instances of non-compliance whenever they arise (para 8.37). Page 174. Part 2. | Completed.<br><br>The management of risk is now achieved through the safety management system required by ROGS and regulated by ORR |
| | 34. Regulations 12 and 13 of the 2000 Regulations should remain in effect (para 8.37). Page 174. Part 2. | Completed.<br><br>These regulations have been since been superseded. |
| The safety regulator | 35. The HSE, through the HMRI, should continue to fulfil the function of safety regulator for the railways. However, it is imperative that the HSE are provided with adequate resources in order to fulfil their role (para 9.66). Page 175. Part 2. | Completed.<br><br>This is the role ORR and is what they now do. They are funded to fulfil their role. |

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| | 36. The HMRI should be placed under the direction of a new post, to be filled by a person of outstanding managerial ability, not necessarily with a railway background. This post should be regarded as commanding a special salary level for the purpose (para 9.66). Page 175. Part 2. | Completed.<br><br>This is RSD which is within ORR led, currently, by Ian Prosser. |
| | 37. The Government should use all reasonable endeavours to ensure that standards such as Railway Group Standards are not required by the European Directive on Railway Safety in its final form to be set by the safety regulator, and that the draft Directive is modified to such extent as is necessary for that purpose (para 9.74). Page 175. Part 2. | Completed.<br><br>The ORR are not required to do so under any European directive. |
| | 38. The extent of passenger representation on the RIAC should be re-considered (para 9.80). Page 175. Part 2. | Completed.<br><br>RIAC is now RIHSAC which includes passenger focus, London Travelwatch & an independent passenger representative |
| | 39. The RIAC should be concerned with questions of safety strategy at a high level (para 9.80). Page 175. Part 2. | Completed.<br><br>The RIAC is now the RIHSAC (Railway Industry Health & Safety Advisory Committee) and are. |
| A rail industry safety body | 40. The function of the setting of Railway Group Standards should be assumed by a new rail industry body which is independent of both Railtrack Group plc and their subsidiaries and of the safety regulator (paras 8.38, 9.46 and 10.1). Page 175. Part 2. | Completed.<br><br>This defines and is why RSSB exists. |

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| | 41. The body should be responsible for setting not only Railway Group Standards but also standards of the type which have ceased to be Group Standards in respect that they are concerned only with the interiors of rail vehicles (para 10.7). Page 175. Part 2. | Completed.<br><br>RSSB do and also produce Rail Industry Standards – the potential scope of these is very broad. |
| | 42. It should be considered whether in due course:<br>(i) the separate existence of the SAB is unnecessary; and<br>(ii) the RISSC should become a strategy committee of the body (para 10.8). Page 175. Part 2. | Completed.<br><br>The ORR consulted on the role of RSSB in 2003 and published 'Establishment of a Rail Industry Safety Body: Notice of proposed licence modifications and Regulator's conclusions'. This supported an arrangement similar to RSSB's current role and since then the industry has matured significantly with defined assessment roles for Notified Bodies (NoBos), Designated Bodies (DeBos) and Assessment bodies (AsBos). Whilst RSSB provides a commercial service to the UK Accreditation Service (UKAS) in assessing these bodies, it doesn't fulfil the functions of these bodies. |
| | 43. The body should also be responsible for the preparation of any proposed changes to the Railway Group Standards Code (para 10.8). Page 176. Part 2. | Completed.<br><br>RSSB is and does. |
| | 44. The body should have explicit duties to set and review standards. In the performance of its duties it should be subject to the supervision of the HSE through auditing and other actions (para 10.9). Page 176. Part 2. | Completed.<br><br>This defines and is why RSSB exists. |
| | 45. The standards should be binding not only on members of the Railway Group but also on any company to which the requirement to comply currently applies, whether by virtue of a licence condition or a contractual term (para 10.10).Page 176. Part 2. | Completed.<br><br>It is by virtue of RSSB and their relationship with the entire industry. |

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| | 46. The body should have the benefit of feedback from the auditing carried out by Railtrack and the HSE (para 10.14). Page 176. Part 2. | Completed.<br><br>RSSB conduct pro-active reviews on the use of our standards at intervals not exceeding 12 months from publication and then 60 months thereafter (as required by the RGS Code).The context and level of auditing and assurance is now hardwired into legislative requirements (RIR 2011 and ROGS 2006) and with specific organisations identified to carry this out (NoBos, DeBos, etc.). |
| | 47. The body should also be responsible for the accrediting of the suppliers of products and services and the licensing of individuals, subject to the supervisory activity of the safety regulator (para 10.15). Page 176. Part 2. | Completed.<br><br>There would be no legal basis for RSSB to carry out such a function (RSSB on creation was defined not to be a quasi-regulator), and if it does so as a commercial service then it has to compete with other commercial organisations and is prohibited by competition law in having a monopoly.<br><br>This function therefore remains under the auspices of ORR alone. |
| | 48. The body should take an active role in steps to streamline the processes for the approval of new rail vehicles (para 10.17). Page 176. Part 2. | Completed.<br><br>ORR and RSSB work jointly on this.<br>New rail vehicles are introduced following the Interoperability processes. These require compliance with Technical Specifications for Interoperability and specified national standards. This supersedes the framework that was in place in 1999. |

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| | 49. The body should be set up as a new legal entity, independent of any company in the rail industry and of any part of that industry. It should have the power and the duty to take binding decisions (para 10.21). Page. 176. Part 2. | Completed.<br><br>RSSB is funded by the industry however is an independent legal entity. It does have the duty and power to make decisions and, with the ORR assistance, decide on how binding they should be. |
| | 50. The arrangement of the governance of the body should include provision for the representation of railway operators and of any other company to which the requirement to comply with Railway Group Standards or the additional standards referred to in Recommendation 41 applies, whether by virtue of a licence condition or a contractual term. There should also be representation of the manufacturers and suppliers of infrastructure equipment and rolling stock, and the three main rail trade unions (para 10.22). Page 176. Part 2. | Completed.<br><br>This forms the structure of RSSB. |
| | 51. The body should have an independent chairman and a number of independent members with suitable practical experience (para 10.23). Page 176. Part 2. | Completed.<br><br>RSSB does. |
| | 52. There should be a clear and easily accessible means of resolving any matter which is in dispute (para 10.23). Page 176. Part 2. | Completed.<br><br>There is and RSSB handles. |
| | 53. Consideration should be given to the constitution of the body by modification of Railtrack's network licence and the licences of the other railway operators (para 10.26). Page 177. Part 2. | Completed.<br><br>This has been achieved – all GB mainline train operators and infrastructure managers have similar licence conditions requiring membership of RSSB which then calls upon an agreed framework for apportioning costs. |

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| | 54. The body should be funded by means of a levy on the companies covered by the requirements referred to in Recommendation 50 (para 10.27). Page 177. Part 2. | Completed.<br><br>This has been achieved. The member levy funds RSSB activity in safety, standards, health & wellbeing, and some of the industry IT systems we operate.<br>RSSB also receives funding from affiliates, the DfT (for research and development) and through commercial operations, including supplier assurance. More details are in their Constitution. |
| | 55. The body should also exercise a number of functions to assist the members of the rail industry to collaborate in the promotion of safety, including:<br>(i) establishing and managing system authorities;<br>(ii) funding and sponsoring research and development;<br>(iii) monitoring and reporting on the industry's safety performance;<br>(iv) developing the annual Railway Group Safety Plan;<br>(v) disseminating good practice; and<br>(vi) providing safety leadership (para 10.29). Page 177. Part 2. | Completed.<br><br>They have done all of these functions at some stage, but in some cases the world has moved on. Not all have been funded by the member levy (principally R&D). (i) System authorities have developed into System Interface Committees – RSSB operate these. (ii) R&D is undertaken, on behalf of the DfT against defined criteria which requires wide industry benefit, so research that mainly benefits one company is out-of-scope (others do research, for example NR's research budget dwarfs ours). (iii) RSSB do this through a variety of means, a key document is the Annual Health & Safety Report. (iv) The industry decided some while ago that a safety plan was no longer appropriate. It has effectively been replaced by Leading Health & Safety on Britain's Railways. (v) Disseminating good practice is central to what RSSB do through standards and other publications, groups and committees and broader industry events. (vi) Safety |

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| | | leadership is shared across the industry, RSSB plays a pivotal role. |
| | 56. Even if the European Directive on Railway Safety in its final form requires that responsibility for setting standards such as Railway Group Standards are to be taken over by the safety regulator, a rail industry safety body should be set up and assume the functions referred to in Recommendations 47, 48, 55 and 70 (para 10.30). Page 177. Part 2. | Completed.<br><br>This again is part of what defines RSSB and why it exists. |
| Accident investigation | 57. The responsibility of the HSE for the investigation of rail accidents should be transferred to an independent body, here referred to for convenience as the RAIB (para 9.29). Page 177. Part 2. | Completed.<br><br>RAIB exists and investigates on a no blame basis to seek the truth. This underpinned by the ORR having the ability to take legal action if required. |
| | 58. The investigation of rail accidents and incidents of whatever nature should be brought under the overall control of the RAIB (para 11.8). Page 177. Part 2. | Completed.<br><br>It has been. |
| | 59. The more serious cases should be the subject of inquiry by the RAIB. The categories of case which would fall to the RAIB to inquire into should be the subject of further study (paras 11.8 and 11.10). Page 177. Part 2. | Completed.<br><br>They are. Basically any incident/accident across the network is referred to the RAIB. |
| | 60. The less serious cases should be delegated to the industry to be dealt with by formal inquiry or formal investigation. However, the RAIB should have the ability to call in any case for inquiry by itself where that appears to be appropriate (para 11.8). Page 178. Part 2. | Completed.<br><br>RAIB do. They are the lead investigating body. There are internal investigations too and RAIB review them. They inform the industry regularly and continuously. |

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| | 61. Consideration should be given, in the longer term, to reducing the investigation of accidents or incidents at industry level to a single method (para 11.9). Page 178. Part 2. | Completed.<br><br>There are clear guidelines given but duty holders do have their own procedures. However RAIB review all investigations and can flag if inadequate or something needs to be changed. |
| | 62. The sole objective of the investigation of accidents or incidents should be the prevention of accidents and incidents. It should not be the purpose of such investigations to apportion blame or liability (para 11.11). Page 178. Part 2. | Completed.<br><br>This is the very structure of RAIB. |
| | 63. The appointment of an independent chairman and, where appropriate, independent members for the panel of a formal inquiry, is endorsed (para 11.13). Page 178. Part 2. | Completed.<br><br>This would be the case should it ever be required. |
| | 64. Save and to the extent that there is good reason to the contrary, representatives of persons who have been affected by an accident should be allowed to attend, as observers, formal inquiries into more serious accidents. There should be a criterion for the purpose of determining for which inquiries this would be suitable (para 11.14). Page 178. Part 2. | Review.<br><br>Formal inquiries have been superseded by RAIB investigations.<br>Reps of affected parties are not party to the investigation itself.<br><br>However, RAIB does meet and consults all bereaved and keeps survivors informed via the BTP.<br><br>Completed - however: I feel current arrangements could do with strengthening. |

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| | 65. Representatives of those who have been affected by an accident should be allowed to attend as observers at an RAIB inquiry into that accident (para 11.14). Page 178. Part 2. | Completed.<br><br>This cannot be.<br>Reason: this would bring the RAIB investigation into direct conflict of its primary tenant of investigating on a no blame basis. |
| | 66. Procedures, such as those followed by the AAIB, for keeping those who have been bereaved or injured fully informed of what is happening during the investigation process, are commended (para 11.15). Page 178. Part 2. | Completed.<br><br>These are now set out in the RAIB leaflet 06 May 2018.<br><br>A commendation rather than recommendation however completed. |
| | 67. The RAIB should exercise a supervisory function in regard to the working of formal inquiries and formal investigations (para 11.16). Page 178. Part 2. | Completed.<br><br>Formal inquiries no longer exist. RAIB investigations have now superseded them and are at least equivalent if not more in depth. |
| | 68. The proposal of an appeal against a finding of a formal inquiry should be the subject of further study (para 11.16). Page 178. Part 2. | Completed.<br><br>As above formal inquiries ceased in 2006 and RAIB took over. RAIB will make reccs - ORR will take and place upon duty holder - duty holder has to report back to ORR. Duty holder does have the right to 'appeal' against a recc direct with ORR but must come up with a strong case against. |
| | 69. The reports of RAIB inquiries and formal inquiries should be published, subject to the protection of the identity of persons involved (para 11.17). Page 178. Part 2. | Completed.<br><br>RAIB publish their reports. They protect witness identity & statement and present the facts. |

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| | 70. The rail industry safety body should maintain a current record of: (a) the recommendations of RAIB inquiries and formal inquiries; (b) the responses of all the organisations to which the respective recommendations are directed; and (c) the state of progress towards implementation in relation to stated timescales (paras 11.1911.21). Page 179. Part 2. | Completed.<br><br>This is done by Network Rail via their internal investigation processes.<br><br>They have the authority to appoint independents if and when required. |
| | 71. The RAIB should regularly examine the reports of formal investigations in order to determine whether there are matters of importance which should be brought to the attention of the industry (para 11.22). Page 179. Part 2. | Completed.<br><br>RAIB do. They are the lead investigating body. There are internal investigations too and RAIB review them. They inform the industry regularly and continuously. |
| | 72. There is a need for a protocol dealing with the release of technical information and access to technical experts in investigations involving the police (para 11.29). Page 179. Part 2. | Completed.<br><br>There is a tri-party MoU between ORR, RAIB and the Police. |
| | 73. The statements made by witnesses in connection with RAIB inquiries and industry inquiries and investigations should not be disclosed to the police, save by order of a judge (para 11.32). Page 179. Part 2. | Completed.<br><br>This is enshrined in regulation 10 of the RAIR regs 2005. |
| The implementation of recommendations | 74. As in the case of the report on Part 1 of the Inquiry, a review of compliance with the above recommendations should be conducted on behalf of the HSC within six months of publication of this report, and further reviews should be put in hand as necessary thereafter. The HSC should publish the outcome of such reviews. Page 179. Part 2. | Completed.<br><br>This was conducted and concluded in 2005. |

| Joint | | |
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| Category | Recommendation | Status |
| 12.4 Extension of BR-ATP | These recommendations apply to the ATP system currently in use on Railtrack Great Western and Midland Zone lines used by First Great Western and Chiltern Trains.<br>1. Gaps which were left on original fitment of BR-ATP track equipment should be infilled to provide full continuous coverage between Paddington and Bristol Temple Meads and Marylebone and Aynho Junction (para 11.6).<br>2. No recommendation is made for fitment of BR-ATP to other lines on Great Western or Midland Zones or to relief lines (para 11.7).<br>3. No recommendation is made for fitment of BR-ATP to trains run by any other operating company (para 11.8). Page 118. Joint. | Completed.<br><br>Superseded by TPWS however this was considered a temporary fix. ATP is still monitoring but is now coming to end of life. |
| 12.5 Train protection and warning system (TPWS) | 4. The current mandated fitment of TPWS-A to trains and track should not be reversed (para 11.15). p118. Joint | Completed.<br>It was not. |
| | 5. Track fitment should include all multi-SPAD signals unless they present no risk (para 11.16). Page 118. Joint. | Completed.<br><br>It has been and RSSB & ORR look into all SPADs that occur. |
| | 6. Risk assessments should be carried out on plain line signals, initially on those considered by TOCs to pose significant risk (para 11.16). Page 118. Joint. | Completed.<br><br>It was. |
| | 7. Track fitment should include plain line signals where the risk from SPADs is established to be significant (para 11.16). Page. 119. Joint. | Completed.<br><br>It was and is constantly reviewed by TOCs via NR. |
| | 8. Risk assessments should be carried out to identify junction signals where the risk from SPADs is insignificant. Consideration should be given to obtaining exemptions for such signals from track fitment (para 11.16). Page 119. Joint. | Completed.<br><br>SORAT (Signal Assessment Mark Tool) was brought in. |
| 12.6 TPWS+ | 9. Trials should be carried out on TPWS+ using single and multiple additional Over Speed Sensors (OSS) with the aim of drawing up a design standard and measuring the effect of | Completed.<br><br>Trials were completed. |

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| | additional OSS on different types of train and on driving techniques (para 11.20). Page 119. Joint | |
| | 10. If proved to be feasible, a full appraisal of the effect of one or more additional OSS on all traffic passing a signal should be carried out before fitment of additional OSS (para 11.20). Page 119. Joint. | Completed.<br><br>Appraisal was completed. |
| | 11. Fitment of TPWS+ should be concentrated on lines carrying High Speed Trains and on lines carrying other passenger trains which cannot be stopped within the normal overlap by TPWS-A (para 11.20). Page 119. Joint. | Completed.<br><br>This was done and is now deployed. It is always assessed by potential risk factors. |
| 12.7 TPWS-E | 12. No recommendation is made for continued testing or fitment of TPWS-E (para 11.19). Page 119. Joint. | Completed.<br><br>This made not an actionable recommendation so is moot. |
| | 13. Fitment of TPWS-A should continue in accordance with the currently accelerated programme (para 11.17). Page 120. Joint. | Completed.<br><br>This was done as required and mandated. |
| | 14. All parties should co-operate in the production and updating of a resource allocation programme directed towards the matching of track and rolling stock fitment, in order to maximise the early attainment of TPWS protection (para 11.17). Page 120. Joint. | Completed.<br><br>This has been overtaken in time as all stock and conflict signals are now fitted. |
| | 15. The accelerated programme should be reviewed and updated to ensure that it is compatible with the early attainment of TPWS protection and that any adverse consequences do not outweigh the benefit of accelerated fitment (para 11.17). Page 120. Joint. | Completed.<br><br>This has been overtaken in time as all stock and conflict signals are now fitted. |
| | 16. Steps should be taken to ensure that TPWS fitment is completed in such time and manner as not to delay fitment of ETCS (see Recommendation 27 below) (para 11.11). Page 120. Joint. | Completed.<br><br>TPWS didn't.<br>HOWEVER it did erode the ETCS safety benefit case. |

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| | 17. For the fitment of train-borne TPWS, AWS components should be replaced to the maximum extent practicable. For this purpose the ATOC TPWS Executive should draw up a standard for the replacement of AWS in train-borne TPWS equipment (para 6.18). Page 120. Joint. | Complete<br><br>A standard was never required as TPWS fitment was done before it was required. |
| 12.9 European Train Control System (ETCS) | 18. Fitment of ETCS to lines covered by Directive 96/48/EC (TEN lines) and the draft Directive on Conventional lines should be supported by Regulations (para 11.24). Page 120. Joint. | Completed.<br><br>The legal framework now uses *The Railways (Interoperability) Regulations 2011* as amended which requires new and upgraded railway subsystems (eg. a signalling system, a train) to be authorised, and they may only be authorised when in compliance with the applicable Technical Specifications for Interoperability. The CCS TSI imposes fitment of ETCS. The 2011 regulations superseded the 2006 Interoperability Regulations. |
| | 19. Regulations should be in absolute terms and not dependent on reasonable practicability (para 11.24). Page 121. Joint. | Completed.<br><br>It is an absolute requirement to comply except in defined circumstances. |
| | 20. HSE should establish a programme for consultation and drawing up of Regulations for the fitment of ETCS with the objective of Regulations being in force within three years (para 11.24). Page 121. Joint. | Completed.<br><br>Interoperability Regulations did appear by 2006 though the 3 years was missed. |

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| | 21. The requirements and objectives to be achieved by Regulations in relation to major lines should be those set out in an Annex 10 of this report (para 11.24). Page 121. Joint. | Incomplete<br><br>Annex 10 (attached to this report as an addendum).<br><br>Taken overall the requirements and objectives of the annex have not been fully completed.<br><br>Reality for full ETCS on the entire network is another 20+ years (2040+). |
| | 22. Pilot schemes using ETCS or ETCS elements should be carried out. These should include the following three Recommendations to the extent they are feasible (para 11.27). Page 121. Joint. | Completed.<br><br>Cambrian was the pilot scheme run. |
| | 23. Fitment of ETCS Levels 1 or 2 should be considered between Aynho Junction and Birmingham Snow Hill (para 11.27). Page 121. Joint. | Incomplete<br><br>This was never taken forward though it does have TPWS.<br><br>Incomplete as per Reccs 16 & 17 above. |
| | 24. Fitment of ETCS train-borne equipment should be considered on Thames Trains using Great Western Lines, together with an STM to allow use to be made of BR ATP track equipment (para 11.8, 11.27). Page 121. Joint. | Obsolete<br><br>This was never taken forward. Thames Trains ceased in 2004. |
| | 25. The selective fitment of GSM-R radio in advance of ETCS fitment to trains should be considered. For this purpose lines should be identified for the early fitment of ground and track equipment, to be followed by train-borne equipment (para 11.27). Page 122. Joint. | Completed.<br><br>GSM-R is now nationwide. |
| 12.10 ETCS fitment | 26. A System Authority should be established to oversee and direct the timely fitment of ETCS, including the current programme for the Old Dalby test track (see Annex 10(m)), (para 11.22). Page 122. Joint. | Incomplete<br><br>A system authority is set up however they do not have the powers envisaged by the report. |

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| | 27. For the purpose of avoiding delays, fitment of ETCS should be independently monitored with reports being submitted at intervals of not more than 6 months, stating whether fitment of ETCS has been delayed or impeded by work on TPWS fitment (para 11.11). Page 122. Joint. | Incomplete<br><br>As ETCS has not been taken forward the delays have occurred.<br><br>Forms part of remarks below. |
| | 28. All new rolling stock should be compatible with ETCS and GSM-R fitment (Davies Recommendation 11). Page 122. Joint. | Completed.<br>They all are. |
| 12.11 SPAD reduction and mitigation | 29. All SPADRAM measures should be continued unless and until HMRI are satisfied that they are unnecessary (para 11.32). The following measures should be pursued in particular. Page 122. Joint. | Completed.<br><br>SPADRAMS are now OPRAMS and are overseen by the Train Accident Risk Group who watch SPADS, Comms and Cuttings. |
| | 30. Research into multi-SPAD signals and into the cause of multiple SPADs should be continued (para 11.32). Page 123. Joint. | Completed.<br><br>RSSB do this task continually. |
| | 31. Procedures for the dissemination of information and for the design and implementation of mitigation measures following multiple-SPADs should be kept under review (para 11.32). Page 123. Joint. | Completed.<br><br>There is a multi-SPAD list which is updated every week and shared with NR. |
| | 32. Analytical methods (including that of Dr Ian Murphy) aimed at identifying signals which pose the greatest risks should be pursued with urgency (para 11.32). Page 123. Joint. | Completed.<br><br>There is a signal overrun standard now in place SORAT which addressed this recc. |
| | 33. Research into human factors should continue with particular emphasis on its application to driver selection, training and management and signal sighting issues (para 11.32). Page 123. Joint. | Completed.<br><br>There is now a Human Factors Dept in Driver selection & assessment and Signal sighting standards. This is mirrored at Network Rail too. |
| | 34. HMRI should implement the proposal for research into the possibility of conflict between defensive driving and punctuality. (para 10.13). Page 123. Joint. | Completed.<br><br>One of the considerations that RSSB own. |

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| | 35. Use of the Drivers' Reminder Appliance should be standardised and work on the automatic version pursued (para 11.32). Page 123. Joint. | Completed.<br><br>RSSB advise GMRT2491 issue two Design Requirements for a Driver's Reminder Appliance (DRA) was standardised. Work on automatic version was done but because of problems with potential for increased operational risk, an impact on reliability and inadequate benefit for the cost it was dropped. |
| 12.12 Stopping trains | 36. The programme for the development and retro-fitting of Enhanced Emergency Braking (EEB) should be continued with urgency, including the identification of any further classes which it is not appropriate to exempt (para 11.34). Page 124. Joint. | Completed.<br><br>It is on all rolling stock. |
| | 37. Improvement of braking on HSTs and other rolling stock running at speeds in excess of 100mph should be regarded as a priority (para 11.34). Page 124. Joint. | Completed.<br><br>It is on all rolling stock. |
| | 38. The use of sanders to maintain and enhance adhesion should be pursued and a programme of trial fitment drawn up (para 11.34). Page 124. Joint. | Completed.<br><br>This work was done and sanders are now part of standards. This has proved to be a huge success. |
| | 39. No change in regulation policy to avoid presenting red signals to trains not capable of being stopped by TPWS should be considered without a full assessment and analysis of the consequences (para 11.33). Page 124. Joint. | Completed.<br><br>No changes to regulations policy in this regard would be considered without a full assessment and analysis of consequences. It has not occurred to date. |

## My Comments and Suggestions

### Part 1 Recc 11:

Network Rail advises that this has still not been accomplished. They want to address this however nothing had been done as at 3rd March 2021.

My Recommendation: If not away days then a structure to develop a full understanding of each other's role is required. Perhaps via the new simulators or via cab rides/visit to signal centre.

### Part 1 Recc 42:

Network Rail advises that this has still not been done as at 3rd March 2021.
Some TOCs use driver info themselves and Operational Risk Management meetings but nothing formal is in place for frontline staff.

My Recommendation: Arrange to monitor progress on these arrangements and ensure it is completed to at least the standard required in this recommendation.

This may well tie in with the arrangements above in Recc 11.

### Part 1 Recc 45:

Network Rail advises that this has not been done as at 3rd March 2021. They are looking into to see how this could be addressed.

My Recommendation: Arrange to monitor progress on these arrangements and ensure it is completed to at least the standard required in this recommendation.

### Part 1 Recc 48:

Network Rail advise (3/3/21) that computerised management systems have overtaken the majority of this recc. However, they concede that there are still some lever operated systems on the network where no action has yet been taken. Therefore this recommendation cannot be considered complete.

My Recommendation: In relation to the lever operated systems; action to ensure that this recommendation is completed to at least the standard that was envisaged in this report. It should not be left to the view that eventually lever operated systems will cease to exist. They are still with us 21 years after the report.

Therefore only upon cessation of all lever operated systems **or** this recommendation being met in full upon them can this recommendation be stated as complete..

### Part 1 Recc 62:

Based on evidence I have witnessed myself it would appear that some duty holders do NOT have EXPLICIT arrangements that address this recommendation at the design stage nor is it picked up later. I assume it is for this reason that there is a wide variety of 'solutions' creating an indiscriminate result.

Though ROGS do place emphasis on and are prescriptive there is nothing that mentions or addresses the needs of the passenger.

My Recommendation: This grey area needs further work to ensure that explicitness is introduced. Duty-holders need to apply this recommendation uniformly and consistently across the network.

### Part 1 Recc 65:

The ORR's view is that the appropriate body has defined a standard for the industry to follow. However, I would query if the word 'standardised' has been taken on board by dutyholders. The signs I have seen on at least 5 different TOCs services have all been different with some being difficult to translate quickly.

At the time of compiling this report the RSSB did state that they were going to review the standards for signage.

My Recommendation: Review whether the RIS-2730-RST standard is fit for purpose in relation to this recommendation and that it is unambiguous and not open to interpretation.

If still relying on the research done in 2006 follow up on the stated RSSB investigations and review as to whether it can be relied upon today or whether it needs further improvement. If the latter, follow up action will be required.

I would also suggest that a check on what Dutyholders are actually applying to meet this standard is instigated to produce uniformity across industry.

### Part 1 Recc 67:

Though the reply given states this recommendation is part of the requirement for passenger safety information (imposed by GM/RT2130), as well as the operators' licence requirements and SMS I am unconvinced by the response 'this should ensure this requirement is met'.

There appears to be no formal, set out procedure for advising passengers of general safety advice before they board the train. Not all duty holders advise passengers after they board the train.

At no point before boarding a train have I ever received safety advice. After boarding the displayed signage is, at best, sporadic and, at worst, requires searching to find and can be confusing rather than helpful. On the 5 TOC services used prior to the Covid pandemic there were no verbal announcements drawing attention to safety signage or where to find it.

Additionally, with the increased reliance on internet information the safety information is currently an option for passengers rather than mandatory. A discussion I have personally had with GWR in the past 3 years, relying on communication online is inadequate. Wi-Fi on trains is patchy with many passengers choosing to use their own mobile connection. Those that do use the on-board Wi-Fi, once logged in, their device's automatically remember that Wi-Fi connection and will not always show the sign in page again. On the sign in page the safety option is often, again, shown as an option to view rather than mandatory.

For a reason that mystifies me First class carriages do not have prominent signage. I did find evidence of discreet A4 notices near the entry/exit doors but would suggest that this is not an area of the train the majority of passengers would stop and read a notice, impeding others from embarking/disembarking.

My Recommendation: This recommendation needs to be revisited afresh. The statement that safety advice should be given before and after boarding should be built on a mandatory (to the passenger) and clear basis.

Suggestions:

Suggestion 1: safety advice on back/with tickets.

Suggestion 2: verbal announcements on trains at each stop drawing attention to any safety advice on rolling stock.

Suggestion 3: With the move towards non-paper ticketing thought needs to be given how safety advice is given online before they board the train.

Suggestion 4: Addendum 2 shows some great examples from Flytoget, Norway. Please note that even with video messaging they still also adopt the safety leaflet at seat approach.

I appreciate retro-fitting video is not an option however pay attention to the clarity and simplicity of the messaging.

Suggestion 5: Most train seats have blank backs. Safety stickers on these might be an option.

### Part 1 Recc 68:

The reply to this recommendation was that research has shown it is safer for passengers to stay on board. However, this recommendation expressly states the advice which should be given to passengers in the event of there being a known threat of serious **danger to them remaining** on board.

However, unlikely the situation might be, set out information for passengers in this regard should be readily available and in situ.

My Recommendation: This recommendation needs tangible action to address before it can be considered complete.

### Part 1 Recc 70:

As per my comment on Recc 67 above on the 5 TOCs services used recently there were no verbal announcements drawing attention to safety signage or where to find it. If done it is obviously not being applied uniformly by all TOC operators as a matter of course.

My Recommendation: If already required by GM/RT2130 then compliance that the TOCs are doing so needs to be checked.

### Part 1 Recc 72:

I can agree that in terms of the emergency facilities eg. how to open door, stop buttons etc this recommendation has been completed. However, I would disagree in terms of the passenger safety information notices which are still deemed as emergency notices. As I have mentioned above in previous comments there is far too much text on signage.

My Recommendation: Re-visit the standardisation of signage. Pictograms are far more effective than text. Passengers need things that will tell them at a glance what to do rather than having to stop, read and then interpret.

Suggestion: Consider how airlines provide safety information. It does not matter which airline you are travelling with the safety signage and instructions are pretty uniform across the entire industry. There is less reliance on text and, in the event of emergency, the signs are easily decipherable.

### Part 1 Recc 73

Though I can agree that research was conducted I have to disagree that the outcome was a system of signage that is common to all trains in Great Britain. There appears to be a great deal of individual interpretation as to what is considered satisfactory which makes me wonder at the quality of the research if such disparate signs were the final outcome.

The aim of this recommendation was to arrive at a signage system common to all trains ie. prevalent and effective. This cannot be stated as having been achieved currently.

My Recommendation: Revisit the research as a first step to address the points I have already raised to recommendations 62, 65, 67, 68, 70 & 72.

### Part 2 Recc 4

I became aware during conducting this report that the Competitions Appeal Tribunal had disallowed RISQS as the only qualitative standard stating that it implied a monopoly. Whilst understanding the position this is a worrying development as I can see potential for contractor/sub-contractor quality dilution to occur.

My Recommendation: Plan and set up safeguard reviews to ensure that any outside standards that are put forward meet the same, if not higher, requirements as RISQS do.

### Part 2 Recc 6

The Sentinel System itself seems to be very robust and has evolved with the times into a databased system. Though Sentinel does not take into account fatigue monitoring this is covered by MacRail which interfaces with Sentinel.

However, for in house staff this has been left to be done manually by duty holders. A symptom of recent industry devolution is that this is not applied universally and not every operator uses both Sentinel and MacRail.

My Recommendation: A review as to the possibility of loopholes is needed. It should be possible to effectively log all and any individual's hours and fatigue status no matter where they work within the industry and have those records available for scrutiny at any given time.

### Part 2 Recc 13

This recommendation called for companies in the rail industry to demonstrate their systems of senior management spending an adequate amount of time, devoted to safety issues, with front line staff. Though it may be done as good practice this, in my opinion, is not explicit enough.

In order to 'demonstrate' there must be some method of proof gathered.

My Recommendation: Companies in the rail industry must set up a system which clearly demonstrates that the action in this recommendation is done.

## Part 2 Recc 14

This recommendation called for companies in the rail industry to set up safety management strategic leadership teams with explicit terms as to how it should be set up and what its role should be. Though it may be done as good practice this, in my opinion, is not explicit enough.

In order to 'demonstrate' there must be some method of robust and reportable information gathered.

My Recommendation: Companies in the rail industry must set up a system which clearly demonstrates that the action in this recommendation is done.

Suggestion 1: all duty holders should have to prove explicitly that the terms of this recommendation are being met by at least including the safety professional within their company on any team they have in place. Obviously also proving they have such a team.

## Part 2 Recc 64

In the main I concur this is complete however I feel that it could do with strengthening.

If there were a major incident RAIB might be hard pressed to meet all bereaved. I also feel survivors should be given more of an input, should they want to, as only being informed by BTP does not allow them to input in anyway.

After Ladbroke Grove, as a survivor, I had to push hard publicly via the media in order to obtain meaningful information and to be heard. It would appear that this is still the only recourse for any future survivor of a major incident.

I understand that there might be a new government statute in consultation at the moment via the Ministry of Justice - Independent Public Advocate. The role would be to represent any and all affected by an incident.

My Recommendation: Follow up on this point to ensure the new statute is put in place and that it will cover the issue I am raising here.

However, if an IPA is not progressed or does not cover both the bereaved and survivor issues, then more thinking on making current arrangements more robust would be a positive stance.

### Joint Recc 21
Refer to addendum 1 which is Annex 10 in its entirety. I will make further comment on this below.

### Joint Recc 23
Never taken forward. Aynho and Birmingham Snow Hill have TPWS.

### Joint Recc 26
A system authority was set up however it does not have the powers that the joint inquiry envisaged.

### Joint Recc 27
Slightly moot point as full ETCS has never materialised.

### My Overall Comments on Joint Inquiry Recommendations:

Unlike Parts 1 and 2 there seems little point in me addressing the recommendations above individually.

When you bring the incomplete recommendations in part 3 together, with Annex 10, it all coalesces into the undeniable fact that ETCS has not been treated and dealt with as the joint inquiry intended. Even today, long after any stipulated deadline in the joint inquiry has passed, full ETCS has still not been widely introduced on to the UK's rail network.

TPWS (in its various guises) was always been seen and accepted as a temporary somewhat imperfect solution. ETCS should have supplanted TPWS by this time. Such reliance on a temporary solution for over 20 years is, in my opinion, foolhardy. However, now is the time it could be addressed.

Whilst I understand that the industry has to take a commercial approach to any improvements actioned I am dismayed that actions upon full ETCS have been so woefully delayed.

Cost benefit analysis may hone in on the cost of implementation compared to the perceived benefits of lives saved however, it is subjective and appears to fail to take into account the cost to the industry should the public become aware that a major safety system that was recommended over 20 years ago has still not been put in place.

Lord Cullen and Professor Uff made their recommendations after investigating a horrendous incident on the network. It is easy to forget the general backlash the rail industry suffered after Ladbroke Grove as well as the political fallout, both of which took years for the public to forgive.

With increasing passenger numbers and the need for more journeys to be managed, a network that is not already moving towards implementing full ETCS with vigour seems untenable.

To directly address the unspoken, yes, full ETCS is a very expensive system. However, I believe, that technology has advanced sufficiently for the work required by the recommendations in part 3 to now be actioned and addressed.

## Information Gathered in pursuit of this Report:

What has, or rather has not, been done in the past cannot be undone. There seems little point in raking over the whys-and-wherefores.

What is important is what will be done from hereon-in.

During the course of this report I have been given access to the details of a Long Term Development Plan for ETCS which the DfT appear to be supportive of.

In development is an intermediate system called Radio Based Limited Supervision (RBLS), RBLS Flex and Hybrid Level 3 (HL3: full supervision where trains can run in ETCS 2 or 3 dependant on train configuration).

RBLS is designed to use either the ETCS EVC display or the new RBLS Onboard Processor (OBP) and the current TPWS/AWS display.

There is potentially a performance benefit with adopting the suggested actions in that trains could move faster as there could be quicker clearance ie. less red signals.

I have become aware that Cambrian is being looked at as a potential for operational trial running for ETCS system upgrades which should be done in May 2021. RBLS technical trials at the Railway Innovations Department Centre are planned for 2023 in preparation for operational trials.

Potential installation time for making the intermediate RBLS active is projected to be 5-10 years with first implementation to commence in 2024 (subject to business case approval).

It is intended that RBLS would be in addition to the LTDP ETCS renewal programme.

## My Comment on the Above:

The above information does appear to be encouraging. The LTDP finally lays out a roadmap which, together with RBLS, I would hope, the entire rail industry will be keen to adopt, support and help to expedite.

I am taking at face value the assertion that RBLS is an addition to the ETCS programme and will be treated as a safety enhancement in the intermediate phase without negating or delaying the ETCS LTDP.

## My Recommendations:

- Assuming that the DfT are in support of the LTDP then a budget is set and applied for.
- Budgets for RBLS (and Flex) research and implementation are agreed and applied especially for the higher risk lines that do not have an ETCS renewal need shown in the LTDP for 10+ years.
- That industry wide commitment to the LTDP, and RBLS where RBLS is the interim solution, is sought.
- That full industry progress reviews are conducted at each control period to ensure that plans and fitment stay on course and schedule.

A Final Recommendation not within the reports:

Should the entirety of this review prove beneficial moving forward I suggest that such an independent review is commissioned at least every 5 years.

Future reviews should build forward from this one until every recommendation can be marked as completed. Subtracting, but detailing for future reference, how those recommendations became completed.

It should also add new innovations and ideas that the industry deem as beneficial as a form of 'new recommendation'. In this context I am suggesting the LTDP and RBLS projects are considered as new parts (eg. part 4, part 5 etc) with any agreed points of research and action each listed as the 'new recommendation'.

Subsequent reviews can then monitor the implementation of the 'new recommendation' to, in turn, assess if completed, incomplete or needing further review.

A type of evergreen review that continually evolves and changes with progress but is always independent of the industry.

## Conclusion

So how can we view the rail industry statement; "Safety is now part of our DNA".

Based upon my investigation and review I would say that yes, to a large extent this statement is true. However, there are gaps in your genetic coding.

I have been suitably impressed by the systems, standards and strategies that are now in place. The embracing of new technology, as it has become available, is admirable and long may that continue. The commitment and professionalism of all working within and around the industry are evident and for that I commend and thank you.

My concerns detailed in this report are in areas where I feel the intention of the recommendations I have flagged either became blurred or I was unable to verify that what had been put in place actually addressed what was asked for.

Though I have taken each recommendation on a prescriptive basis I have been lenient from an outsider's point of view on deciding if they were completed or required flagging based upon the answers I received. I have, wherever possible, at least viewed documents and evidence to support the replies.

The replies to the recommendations I have highlighted in this report have only been considered questionable after I probed further and sought some reasonable rationale for their non-implementation.

A startlingly strong impression I have gathered during my investigations is there is a facet missing that I think might enhance the rail industry even further;

A great deal of the thinking appears to be from a very 'top down' approach being adopted. I can see benefits in partnering this current way of thinking with a safety 'down up' approach and marrying the two together.

As you will note from the information contained in this report the vast majority of flagged recommendations could be grouped into your public interface.

Safety solution rationale seems mainly driven by the needs and concerns of the companies affected, though I am not saying this is the case entirely.

Extending the 'safety by design' concept further out into the passenger orbit, viewing improvements from how they would perceive and use it, may be something to consider. Though I appreciate that there is passenger representation, advisory groups and focus groups I am thinking along the lines of something more tangible in a consultative methodology to a much larger section of your end user. Ever improving technology appears to make this a potentially viable goal to aim for.

After all it is for the passenger, their care and welfare you run this industry and imagine if you could have them on your side as your staunchest advocates.

To re-quote my phrase from my methodology: Though there is no such thing as perfection it is perfection we should continually strive towards.

# Addendum 1 – Annex 10



**Annex 10**

**Requirements and Objectives of Regulations for Fitment of ETCS to Major Rail Lines**

(a) A requirement that trackside ETCS on the WCML is completed according to the current timetable;

(b) A requirement that trackside ETCS on the ECML is completed by 2005 or 2006;

(c) A requirement that full ATP protection is provided on the GWML by 2006 with the possibility of requiring a reverse STM for the FGW fleet;

(d) A requirement that all lines that carry trains above 100mph are fitted with ETCS by a date not later than 2008;

(e) A requirement that routes with a line speed between 75mph and 100mph are risk assessed within a specified time to establish the order in which ETCS should be fitted to them.

(f) A power vested in the HSE or Secretary of State to require that lines falling within (e) are fitted with ETCS;

(g) A requirement that routes with a line speed of between 60mph and 75mph are risk assessed to enable a decision to be made as to whether ETCS is justified on safety grounds;

(h) A power vested in the HSE or Secretary of State to require that lines falling within (g) are fitted with ETCS;

(i) A requirement that all new trains are fitted with ETCS to whatever extent is possible at the time they are built;

(j) A requirement that the current fleet is retrofitted with ETCS according to a realistic timetable, taking account of the speed of the trains, and where they operate;

(k) A prohibition against running a non-ETCS fitted train over an ETCS fitted line after 2010, unless TPWS provides equivalent protection;



**Annex 10 cont.**

(l) A prohibition against running any train over 100mph after 2010, unless it is protected by ETCS or other full protection.

(m) A requirement to establish a System Authority with powers to manage the installation of track and train equipment.

(n) A power to grant exemptions and amendments

## Addendum 2 – Flytoget Videos

1. https://www.dropbox.com/s/ahhbjesiss1367c/Flytoget_doors_LR%20%281%29.mov?dl=0
2. https://www.dropbox.com/s/87aa6mav7btf4jr/Flytoget_Have_a_safe_trip.mov_transcoded.wmv?dl=0
3. https://www.dropbox.com/s/63yl9zfhf3v10to/Flytoget_safety_01_emergency_H264.mp4?dl=0
4. https://www.dropbox.com/s/j8kdwptebnizbp1/Flytoget_safety_02_MindTheGap_H264.mp4?dl=0
5. https://www.dropbox.com/s/wfzrgz07v4c6ci8/Flytoget_safety_03_Fire_H264.mp4?dl=0

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