RAILWAY SAFETY:

STRATEGY FOR

RAILWAY GROUP STANDARDS

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1 Introduction

The purpose of this document is to set down Railway Safety’s strategy for the mandating of risk control measures in Railway Group Standards. It is aimed principally at providing Railway Group members with a transparent and forward-looking perspective of how Railway Group Standards are to be developed, maintained and published in the future. It is also intended to be of use to other parties with a stake in Railway Group Standards, including Her Majesty’s Railway Inspectorate (HMRI) and the Office of the Rail Regulator (ORR).

Railway Group Standards are technical standards to which railway assets must conform, and operating and management procedures with which the operators of railway assets must comply. The obligation to comply with them is incorporated in the Railway Safety Cases of all duty holders. It is in combination with commitments made in Railway Safety Cases that Railway Group Standards provide the industry framework for safe operation and interworking.

The review and statement of strategy coincides with the setting up of Railway Safety, against a background of intense interest in the organisation of the rail industry, particularly in relation to its general management of safety and most evident in a public intolerance of catastrophic train accidents. It also coincides with the progression, from draft to final status, of Reducing Risk Protecting People (R2P2) the Health and Safety Executive (HSE) document which provides guidance on the assessment, interpretation and control of risk in a much broader context than has previously been considered.

Stakeholders will be consulted on the emerging strategy and their views will be taken into account in its further development and implementation.

The structure of the document, as summarised below, follows the process by which the strategy for Railway Group Standards has been developed.

- Section 2 provides the reference for the development of the strategy in terms of a
broad statement of Railway Safety's aim for Railway Group Standards and a set of supporting objectives.

- Section 3 reviews current performance against these objectives and identifies areas where there is potential for improvement.
- Section 4 defines how the improvement will be delivered within the context of the goal and supporting objectives.
- Section 5 summarises Railway Safety's specific commitments to implementing the strategy.
- Section 6 provides conclusions on the review process and the way forward.

2 Aim and objectives

Railway Safety's aim for Railway Group Standards is expressed below and is supported by a set of specific objectives around which current performance has been assessed and future direction determined.

To establish, maintain and assist the implementation of a portfolio of risk control measures that - in combination with the commitments by duty holders in Railway Safety Cases - ensure that the risks arising from interworking on the railway infrastructure are as low as reasonably practicable (ALARP).

The aim will be achieved by mandating risk control measures that are:

1. Targeted at reducing the current levels of risk from railway activities and at controlling risk arising from changes in technology, operations and services.

2. Clearly aligned with the relevant objectives of the Railway Group Safety Plan.

3. Justified to those responsible for implementation in terms of the safety benefits that will be gained in relation to the cost of implementation and compliance.

4. Defined in such a way that the effectiveness of their implementation can be
monitored and audited.

5. Established by procedures which are timely, efficient and fair, and which adopt the principles and comply with the requirements of the Railway Group Standards Code.

6. Clearly written, with their application supported where necessary by codes of practice and guidance.

7. Consistent in prescription, detail and style across different disciplines.

8. Structured in documents in a way that facilitates their adoption by Railway Group members and supports the development of safety management systems.

3 Review of current performance (April 2001)

3.1 General

Railway Safety has a robust set of processes and procedures accredited to ISO9001, through which Railway Group Standards are developed, consulted upon, approved and issued. Railway Safety’s obligations under these procedures are set out in the Railway Group Standards Code.

An external review of the role of Railway Group Standards was undertaken by HSE (Ref. 1) following the Ladbroke Grove accident. The review concluded that ‘the emerging strategy of rationalising standards to better match railway risks is sound’, but noted that there ‘is not, as yet, a documented strategic policy’. This document addresses the latter.

Based on HSE’s comments and internal review, it is concluded that the emphasis should be on continuous improvement rather than a radical overhaul. At a more detailed level, an assessment of current performance against the objectives defined in Section 2 reveals specific areas where there is clear potential for improvement. These are discussed below in terms of the content of Railway Group Standards - the
substance of the risk control measures, and the way in which they are specified in documents - the ease with which they can be interpreted and implemented. The current way in which Railway Group Standards are justified is also considered.

3.2 Content of Railway Group Standards

3.2.1 Risk based approach to mandating control measures

The sole purpose of Railway Group Standards is to contribute to the control of risk to people - passengers, workers and members of the public - from railway activities. The scope of Railway Group Standards encompasses the majority, but not the totality, of risks from railway activities\(^1\). It follows that the scope of Railway Group Standards should cover all aspects of interworking on the railway infrastructure and, within that scope, should mandate all identifiable measures which, when implemented together with commitments in duty holders’ safety cases, control risks to ALARP.

A risk based approach is therefore central to the mandating of control measures. In the current process, all proposals for change to Railway Group Standards are scored according to (a) the potential that a deficiency in the standard could lead to an accident and (b) the consequences should such an accident occur. Proposals are also appraised by a representative combination of Railway Safety staff.

A risk based progression of proposals is therefore currently undertaken, although it could be made more disciplined and consistent. There is more of a question, however, as to whether the current process is sufficiently proactive in seeking to identify where additional controls may be necessary. Proposals for change to Railway Group Standards derive from a wide range of sources eg operating experience, accident inquiries etc. However it has not to date been possible to demonstrate that all areas of interworking are adequately addressed. This would be enabled by an explicit linking of risks and controls, which could provide the basis for determining

\(^1\) The RGS Code defines the scope of Railway Group Standards. It excludes risks arising from the activities of a Railway Group member which do not have the potential to affect the safety of any other Railway Group member’s passengers or staff, or the general public.
where additional controls are necessary and identify the fundamental controls, the effectiveness of which need to be maintained in the event of changes to technology or operations.

3.2.2 Human factor issues

Safe operation and interworking depend critically on the competency of the workforce. Technical and engineering safety developments have removed some of the burden from the workforce, yet the majority of significant railway risks have human error as a contributing factor. There is an appreciation within the industry that much needs to be done to better understand and respond to the contribution of human factors to railway risks. To this end Railway Safety has established a team of human factors specialists, who will ensure that the development of risk control measures and the drafting of Railway Group Standards contribute to eliminating unsafe acts.

3.2.3 The Railway Group Safety Plan

The Railway Group Safety Plan (RGSP), in agreeing the key safety issues for the industry, provides an additional mechanism for the proactive identification of risk controls suitable for mandating in Railway Group Standards. The alignment between the RGSP and Railway Group Standards development could be improved by (a) providing a risk based prioritisation and breakdown of the RGSP’s objectives and (b) developing a better understanding of the extent to which Railway Group Standards have the potential to contribute to the RGSP’s objectives.

3.2.4 Railway Safety Case objective criteria

System safety, including safe interworking, is delivered through compliance with both Railway Group Standards and the commitments made in Railway Safety Cases. It follows that the development of Railway Group Standards should take place within a framework which interfaces effectively with safety case development. In particular it is believed that a more explicit recognition of the Railway Safety Case objective criteria is required in the standards development process.
3.2.5 European legislation

Over the next decade, the impact of European legislation - ranging from the strategic levels of the draft EU Directive on railway safety to technical standards for interoperability on high speed and conventional lines - will increase enormously. Railway Safety has a dedicated resource responsible for integrating EU legislation with Railway Group Standards to ensure that the British railway industry does not have to cope with overlapping and conflicting standards.

3.2.6 Audit process

The audit process is critical for ensuring that Railway Group Standards are being implemented effectively and for providing feedback on their adequacy. Audit teams therefore need standards to be drafted such that compliance is measurable. They also need to be provided with information that reveals the significance of any non-compliance. It is recognised that there could be improvement in both these areas. It is also necessary to determine through the audit process that standards are capable of delivering what was intended of them and that the justification of new and revised controls is robust.

3.3 Structure

3.3.1 Potential for improvement

The approval process for changes to Railway Group Standards involves a strong element of consultation, the feedback from which assists in the issue of documents which are considered generally fit for purpose. However there are issues relating to the structure of documents that indicate there is the potential for improvement.

3.3.2 Level of prescription

The first issue relates to the level of prescription specified in standards. Over the past few years, the framework for specifying risk controls has moved significantly from a
regime of defining explicit requirements to one of specifying the core safety requirements. The advantage of this approach is that it provides comprehensive risk coverage whilst allowing reasonable flexibility for those responsible for implementation to find the optimum means of compliance.

There has been general, but not universal, support among Railway Group members for the move to higher level functional standards. A number have indicated a preference for greater prescription, citing a lack of a sufficiently experienced resource to add the necessary prescriptive detail. Other instances where measures require identified 'risks to be controlled to ALARP', without further clarification, and occasional findings from the investigation of incidents and accidents, add to the evidence that Railway Group Standards do not always provide adequate support to implementation. Improvements are therefore possible in providing additional Railway Safety Approved Codes of Practice and supporting guidance notes to core safety requirements specified in standards.

3.3.3 Consistency across technical and operational disciplines

Another area where improvements are believed possible relates to ensuring an appropriate level of consistency across the technical and operational disciplines that fall within the scope of Railway Group Standards. An example where consistency is required is where control measures in standards from different technical disciplines address a common area of risk. The measures need to be compatible and should adopt a common decision framework in determining that the principle of reasonable practicability is consistently applied. Significant improvements have been made in this area as a result of the 'C.Change' re-structuring of S&SD in 1997. Additionally, there may be valid reasons why different approaches may be appropriate, depending, for example, on the nature of the end-user of the documents. Nevertheless ground rules are necessary to ensure that deviations from consistency are adopted only in exceptional circumstances.

3.3.4 Support to safety management systems across Railway Group
In its review of the role of Railway Group Standards (Ref. 1), the HSE concluded that it is not ‘clear how Standards will enhance the development of effective safety management systems (SMS) within the Railway Group’. Railway Group Standards are relevant to the majority of the components of a SMS, as defined for example in the HSE publication HSG(65). Greater clarity could be provided in the way that Railway Group Standards contribute to and strengthen Railway Group members’ SMSs. This would involve a review and categorisation of Railway Group Standards according to the SMS component that they support.

3.4 Justification

3.4.1 RGS Code obligations

The RGS Code requires that justification of the costs associated with risk control measures is provided to those responsible for implementing Railway Group Standards. To this end, each issue of a railway group standard is supported by a documented safety justification that includes a statement on the relative costs and benefits.

The safety justification has improved the transparency to Railway Group members in the decision to mandate risk control measures. However there is no formal document providing evidence that all reasonably practicable measures have been identified *ie* the reason why further risk controls have not been adopted, and the assumptions made in the drafting of the standard. Such a document would be helpful, for example, to support accident inquiries. There is the potential therefore for real improvement in this area.

3.4.2 Compliance issues

The monitoring of trends in the applications for non-compliance with Railway Group Standards has not indicated significant problems with compliance requirements. However, compliance issues have arisen, for example, following the issue of certain vehicles standards. Compliance problems have been encountered by vehicle
manufacturers who have contractual obligations to supply vehicles in separate
phases. Changes to Railway Group Standards for new vehicles in subsequent
phases may affect the design and consequently the cost of manufacture. Such
problems could be avoided by taking better account of, and providing justification for,
the impact of compliance clauses on the contractual obligations of Railway Group
members. It is important however that this should not introduce delays in mandating
reasonably practicable risk control measures.

4 The way forward

The strategy for Railway Group Standards is predominantly one of continuous
improvement, reinforced by specific initiatives in selected areas. The way forward is
set down below with reference to each of the objectives defined in Section 2. The
emphasis is placed on the changes that have been identified, though equal attention
will be given in practice to the processes and procedures that are already considered
to be effective.

Objective 1: Risk control measures to be targeted at reducing the current levels
of risk from railway activities and at controlling risk arising from changes in
technology, operations and services

A need has been identified to ensure that all areas of interworking are adequately
covered by risk control measures in Railway Group Standards. A primary input to the
identification of new control measures is the cross-referencing of risk against the
existing controls regime. The linking of control measures to the causes and
consequences of hazardous events provides a framework for determining why
residual risk persists in the presence of existing controls. This, in turn, provides the
basis for identifying appropriate new measures and prioritising their inclusion in
Railway Group Standards.

The linkage between risks and control measures has been made possible by - and
indeed was a primary factor in the justification for - the development of the Safety
Risk Model and the Controls Database. The way forward is therefore to establish the
linkage for all of the key hazards on the railway infrastructure and to use the
information as a means of delivering a risk based development of Railway Group Standards. The existing procedures for eliciting and progressing proposals for changes to Railway Group Standards will be maintained. The combination should therefore provide greater confidence in the risk coverage of Railway Group Standards and a clearer demonstration of the contribution to achieving ALARP.

There is also a requirement to improve the understanding of the interface between the scope of Railway Group Standards and the commitments made in safety cases. This will be achieved through a comparison of the hierarchy of Railway Group Standards with the safety case objective criteria, which will provide a better understanding of where there is overlap and, more importantly where, if at all, any gaps exist.

Objective 2: Risk control measures to be clearly aligned with the relevant objectives of the Railway Group Safety Plan

The RGSP represents the industry’s objectives for risk reduction over periods of one to ten years. The identification of new measures appropriate for inclusion in Railway Group Standards have an important role to play in the achievement of these objectives.

The approach will therefore be to examine each of the objectives in the RGSP and assess the potential for contribution via a change to Railway Group Standards. This assessment will be facilitated by, and performed in conjunction with, the establishment of the risk control linkage discussed above.

Objective 3: Risk control measures to be justified in terms of the safety benefits that will be gained in relation to the cost of implementation and compliance

The current process for providing the cost justification for risk control measures to Railway Group members is effective and will be retained. However the public reaction to recent multiple fatality accidents indicates that a review should be undertaken of the current safety decision framework, as defined in Railtrack’s Railway Safety Case.
Additionally, HSE’s R2P2 document is shortly to be issued which, even in the absence of these accidents, has implications for the existing framework.

Nevertheless the short-term decisions on mandatory risk control measures will have long-term cost and risk control implications for the industry. With reference to Railway Group Standards therefore, a safety decision framework will be established. This will provide clarity in the decision making, at least up to the point at which the debate around the implications of R2P2 and ongoing inquiries, including Cullen Part 2, has been resolved.

A need has also been identified to broaden the justification for Railway Group Standards. This will be achieved by providing a formal document for key standards, which identifies key assumptions made in the drafting of standards, includes evidence of the contribution that measures are making to the achievement of ALARP, and identifies any risk control options considered but not implemented.

A greater emphasis will also be placed on improving the specification and justification of compliance clauses in standards, which should result in an improved acceptance by stakeholders, particularly the vehicle manufacturers.

**Objective 4: Risk control measures to be specified in such a way that the effectiveness of their implementation can be monitored and audited**

The reduction in prescription in standards means that compliance can only be established by examining supporting processes developed to meet the RGS requirements. Each risk control measure needs therefore to be assessed in terms of both the extent to which it can be monitored and the risk impact of a non-compliance.

The current process of measures review - in which each measure is reviewed by a suitably experienced panel - is the most appropriate mechanism for the formal assessment of the auditability of risk control measures. It is also possible that the measures review could be developed to give a risk scoring to a non-compliance against each measure. However, this would need to take account of the changes that are typically introduced during the drafting stage. The development of the audit
scoring system will be supported by the risk control linkage described above.

**Objective 5: Risk control measures to be established by procedures which are timely, efficient and fair, and which adopt the principles and comply with the specific requirements of the Railway Group Standards Code**

The Railway Group Standards Code defines the procedures for changes to standards and the obligations that they impose on Railway Safety and other stakeholders. In parallel with the development of this strategy statement, the Code itself has been revised in response to the establishment of Railway Safety. It has been possible therefore to align the strategy with obligations set out in the Code, which should make compliance more straightforward. The Code has certain explicit requirements, but is more an embodiment of principles. The strategy therefore includes a commitment to comply with the specific requirements, and, more importantly, embrace the intent underpinning the principles.

**Objective 6: Risk control measures to be clearly specified, with their application supported where necessary by codes of practice and guidance**

The decision to maintain the philosophy of developing higher level functional standards places additional emphasis on providing codes of practice and guidance to support the interpretation of the core safety requirements. Railway Safety will therefore undertake to increase the proportion of standards accompanied by a Railway Safety Approved Code of Practice and/or guidance note. This will be done when, for example, a number of Railway Group members need to implement the requirements, in which case Railway Safety may be in a better position than the individual companies to provide guidance.

Although more higher level functional standards will be produced, a greater level of prescription will be provided where necessary. This will generally be the case where the level of risk being controlled is potentially high, or where there is clearly a unique appropriate solution for meeting the safety requirements.
**Objective 7: Risk control measures to be consistent in prescription, detail and style across different disciplines**

There is a need to ensure that there is an appropriate level of consistency across technical and operational disciplines. The response will be to build on two areas of improvement that have already been initiated. The first is a project management structure for standards development that facilitates the exchange of consistent good practice across disciplines. The second is a commitment to developing more interdisciplinary standards, focussing on key areas of risk eg accidents at level crossings, which requires input from the operations, track, signalling and telecommunications disciplines.

**Objective 8: Risk control measures to be structured in documents in a way that facilitates their adoption by Railway Group members and supports the development of safety management systems**

To support the development of documents which are structured to facilitate the adoption of the mandated risk control measures by Railway Group Members, the intention is to build on the controls framework already established. The evolving framework will continue to be constructed using a systematic identification of the topic areas to which risk control measures relate. This is followed by an analysis of how the risk control measures should be aggregated into logical and linked groups for packaging as standards.

It is also intended to review the extent to which Railway Group Standards are aligned with and support the development of Railway Group members’ safety management systems (SMS). This may involve the development of additional SMS standards should any gaps be revealed in the current coverage.
5 Commitments by Railway Safety

The strategy for Railway Group Standards involves the introduction of a number of initiatives in specific areas, to complement the continuous improvement of established processes and procedures. A number of relatively short-term commitments have been identified in the review that will help deliver against the longer term objectives. An outline of these commitments is provided below. The details of the actions, together with an identification of who is responsible and the timescales for milestones and completion will be documented separately.

1. Railway Safety will develop a linkage between the risk control measures in the Controls Database and the causes and consequences of the key hazardous events represented in the Safety Risk Model.

2. A review process will be introduced to assess the extent to which changes to Railway Group Standards may contribute to achievement of the objectives of the RGSP.

3. A review will be undertaken of the interface between the Railway Group Standards controls framework and the Railway Safety Case objective criteria to determine the extent of overlap and identify any gaps in coverage.

4. The measures review process will be extended to assess how the effectiveness of risk control measures can be monitored and to understand the risk exposure of potential non-compliance.

5. A set of safety decision principles and rules for changes to Railway Group Standards, which add detail to the decision framework specified in the RGS Code, will be produced.

6. A safety rationale will be produced for each significant change to a Railway Group Standard. The safety rationale will be broader than the existing safety justification, including a consideration of options not implemented and identifying the assumptions behind the mandated risk control measures.
7. The safety justification will include reference to the compliance clauses where the requirements may impact on contractual obligations.

8. A review will be undertaken to determine the extent to which Railway Group Standards are aligned with and support the development of Railway Group members’ safety management systems.

6 Conclusions

This document sets down Railway Safety’s strategy for Railway Group Standards. Starting with the definition of the overall aim and supporting objectives, the current level of performance has been reviewed to provide the basis for defining the way forward. The review concluded that the strategy should be predominantly one of continuous improvement, complemented by initiatives in specific areas.

The initiatives commit Railway Safety to a significant undertaking, designed to lead to longer term improvements in the development of standards and the effectiveness of their implementation. The improvements will be evident in standards which are demonstrably risk based, are well structured and which support the audit process. This should result in enhanced risk coverage and improved compliance, both of which are essential components of safe operation and interworking.

In addition to outlining the areas in which improvements are planned, this document is also provided as a means of communicating the standards management philosophy to Railway Group members and other stakeholders. At a time when unprecedented demands are being made for railway safety, clarity about the purpose of Railway Group Standards and the way they will be developed in the future is believed to be an essential requirement for the duty holders of Railway Safety cases.

The strategy itself will be kept under review to ensure that Railway Group Standards are robust against the foreseeable changes in the industry. Issues that are emerging and that will be addressed in the first review of the strategy document include the implementation of the TSIs and the setting up of System Authorities.
References

1. The management of safety in Railtrack
   A review by the Health and Safety Executive
   HSE Books, February 2000