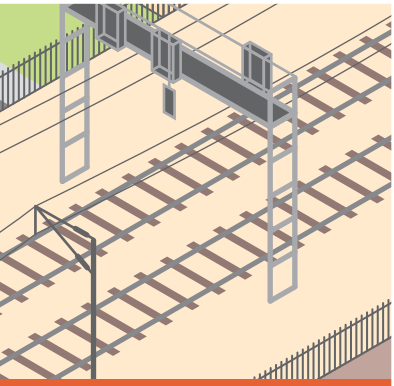
Rail Delivery Group

National Rail

BRITAIN RUNS ON RAIL



Leading Health and Safety on Britain's Railway

A strategy for working together
Issue 2
May 2017

Foreword

Britain's railway system is one of the safest and most intensively used rail networks in the world.

Our good safety performance has been achieved by highly competent people, by close co-operation between teams and companies, the adoption of advanced health and safety management systems, and the effective application of technology.

This performance is commendable. We have accomplished at the same time as record numbers of passengers and freight customers are using the rail system, and an increasing number of major investment programmes are being implemented.

As leaders of the rail industry and its suppliers, we are committed to further improve health and safety performance beyond today's level. We acknowledge that the rate of safety improvement has slowed over the past few years. We know there are increasing challenges ahead. Growth in passenger numbers and freight volumes are expected to continue, and there are increasing expectations to demonstrate value for money. At the same time, our awareness of the importance of the health and wellbeing of all rail colleagues is growing.

We recognise that, as industry leaders, we are responsible for the safe operation of our individual company undertakings, and for those affected by our undertakings. We have developed this strategy to identify specific areas in which targeted initiatives can deliver further benefits.

Some of those areas and initiatives involve risks which are generated by the railway and so fall legally to one or more of us as rail industry parties to manage. Others extend into more complex areas where the risks are not in fact generated by the railway – but still impact the railway and our colleagues, passengers and society. Some are a mixture of the two. Not all the areas we describe are within our ability to control directly.

Where initiatives extend beyond our legal duty individually or collectively but we wish to act together to try to achieve wider benefits for the greater good we have used the (non-legal) term ***collaboration*** to describe our proposed approach.

Effective leadership will be critical to deliver the opportunities outlined in this strategy, and to develop the necessary management capabilities. We need to empower all employees, at all levels, to work together and deliver results more efficiently and effectively than would be possible in isolation. This applies through the whole life cycles of the system, both during the design stage and during management of change, to support safe, reliable operation.

Gordon Wakefield,
Industry Chair
Rail Supply Group

Chris Burchell,
Chairman
Rail Delivery Group

Each leader has endorsed their support for this strategy and committed to:

- Understand, endorse and champion the strategy, and communicate it within their own organisations, and among their suppliers.
- Recognise and support in-company health and safety policy statements and management systems.
- Encourage support for those parts of the strategy that aspire to societal change going beyond legal duty or railway-generated risks.
- Support operational colleagues in any relevant review and adjustment of company health and safety plans where appropriate and where risk is generated by his/her specific organisation.
- Help establish recognised cross-industry arrangements to facilitate delivery.
- Empower their teams to engage with and support agreed cross-industry arrangements.
- Lead specific work streams or activities.
- Set up and participate in arrangements to review the strategy.

Leaders have agreed that this strategy will not be:

- An all-encompassing risk reduction strategy or plan.
- Written to replace individual safety management system holders' responsibilities for their own risk management or change their scope of undertaking – legal or otherwise.
- Written to cover all on-going health and safety activity in the rail industry.
- A set of targets.

We have included signposts to supporting information in each section. The strategy provides guidance on how we see the different aspirations will be achieved and outlines how we will assess the impact and keep the strategy alive.

CITY GYM

TICKET OFFICE

Depot & siding

Leaders from across the industry are committed to improving health and safety on Britain's railway. This strategy not only gives us a clear vision to improve health and safety but a clear framework from which we can begin to make the collaborative effort to effect real change.

The Rail Delivery Group and the Rail Supply Group have helped develop this strategy and will now work with industry leaders, both individually and through the various industry groups and organisations, to make the vision a reality.

Ian Prosser, HM Chief Inspector of Railways is personally, and on behalf of the ORR, delighted to endorse this first rail industry health and safety strategy.

'This strategy signifies a substantial component of the rail industry's vision to improve health and safety, which will, in turn, contribute to improved efficiency and performance of Britain's railways. The efforts of rail industry leaders and experts are highly commendable, and demonstrate the importance they place in this strategy. It now needs continued leadership and commitment to use this strategy to guide and shape industry groups, and organisations' delivery plans. I, and the ORR, look forward to seeing the progress and improvements it brings.'

Contents

Introduction

Leadership is at the heart of this strategy. It has been developed by leaders of the rail industry to identify some specific areas where initiatives may help reduce harm: from risks either generated by the railway or generated elsewhere but affecting our colleagues, passengers, or others.

This strategy focuses on risk initiatives that can be improved by companies working together, within and beyond legislative requirements, to achieve greater gains in the reduction of overall harm.

This strategy has two clear purposes, agreed by industry leaders[1].

Purpose

1: Identify some specific areas where initiatives may help reduce harm: from risks either generated by the railway or generated elsewhere but affecting our colleagues, passengers, or others.

Impact

- A visible, renewed and common leadership focus on both legal health and safety duties and wider aspirational initiatives.
- A common view of priorities for improving our capability and areas of risk priorities.
- Clarity on the next generation of health and safety performance improvement (processes, products, and people).
- Review and potential upgrade of industry governance arrangements for risk priority areas.

You can find more on this in the Foreword and throughout the strategy.

Purpose

2: To be a reference point for how the industry collaborates in relation to health and safety management on the railway.

Impact

- Improved and common understanding at all levels of leadership about how health and safety collaboration is realised in the rail industry.
- Identification, through improved understanding, of opportunities for working better together.

You can find more on this in Section 1.

How this document is organised

The document starts with a Foreword and Introduction, which set the scene for leadership focus. Section 1 describes how health and safety is managed on the railway. Section 2 describes 12 risk priority areas selected from the much wider ambit of risks managed in detail within the industry. Section 3 sets out nine capabilities for improvement. Section 4, Assessing the impacts, describes the governance, monitoring and review arrangements. Section 5 contains more detail on the 12 risk priority areas, and proposals on them.

[1] Leaders and senior managers include: Managing Directors of train and freight operating companies; Chief Executives of NR and RSSB; Chief Inspector ORR; managing directors of suppliers to the rail industry; regional directors, professional heads and general managers.

[2] Duty holder is a term defined in law, in the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS). Duty holders are organisations that manage the railway infrastructure (infrastructure managers (IM)) and companies that manage passenger train and freight operations (railway undertakings (RU)). Network Rail is the IM for Great Britain's mainline railway, and other IMs include London Underground Ltd, HS1, and Tyne & Wear Metro.

Who should read this

This strategy is primarily aimed at leaders and senior managers of railway duty holders[2]. It does not replace, but should help inform individual and joint company health and safety improvement plans, and sector-level collaborative plans.

It is also intended to support the rail industry at a time of increasing pressure and scrutiny, by providing a framework to improve performance in all areas: operational, health and safety, project delivery, and value for money. These challenges are inextricably linked, so establishing how industry can work together to meet them will not only improve health and safety but also enhance our reputation as a trusted, respected, and highly valued service provider to the nation.

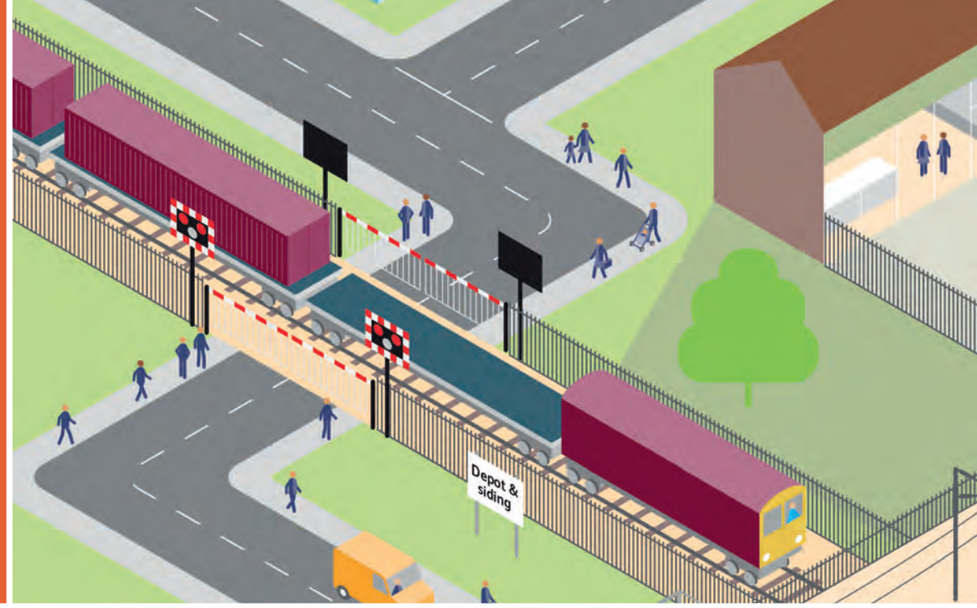
Collaboration

This strategy was developed through engagement and consultation with railway duty holders and other organisations who work with, on, or for the railway. This includes RSSB, British Transport Police (BTP), trade unions, rolling stock providers, the Office of Rail and Road (ORR), and infrastructure suppliers.

The GB rail network may undergo organisational and legislative change over the next decade, such as regional devolution and new franchising arrangements. The requirement remains for the constituent parts of the rail industry to manage, maintain and reduce health and safety risk across interfaces, regardless of industry structures. The content of this strategy was developed to set out a clear direction for health and safety management over the next 10 years.

Collaboration between industry leaders will be essential at all levels, using existing, amended, or new arrangements, to deliver the anticipated benefits. Figure 1 shows how the strategy elements come together with leadership and collaboration to improve health and safety performance.

Figure 1 Leading health and safety on Britain's railway



1 How health and safety is managed on the railway

The railway system has many stakeholders: those who operate the system, those directly affected by it, those who can influence it, and those who have an interest in how it is run.

The health and safety performance of our railway is delivered through the combined actions of all duty holders. By law, they are responsible for managing their own health and safety risk effectively, for working together to exchange information, and to co-operate where risk is shared.

Only by working together can the safety of the railway system be managed effectively to reduce risk to our staff, our passengers, and the public.

1.1 Overview

Britain's railway delivers transport services to customers by several duty holders working effectively individually and together. No company has overall responsibility for all the health and safety aspects of the railway. Here we introduce: the legislative framework, how safe decisions are taken, our framework for working together, and the approach to reporting and sharing. These are described in Sections 1.2 to 1.5.

Health and safety responsibilities exist both within individual companies, and across boundaries with other duty holders. The safety of the railway system relies on all duty holders conducting their own activities safely, sharing information, and co-operating to deliver services safely and cost effectively. These duties are summarised in Managing and measuring the safety of the railway[3].

The safety of the railway system is monitored, at a European level, by the European Union Agency for Railways (EUAR). The ORR is the National Safety Authority for Great Britain.

At the core of the railway are the duty holders: infrastructure managers (such as Network Rail and London Underground) and railway undertakings (passenger train and freight operating companies). These duty holders have clearly defined responsibilities, governed by a comprehensive set of health and safety legislation that is both railway specific (such as ROGS and CSMs)[4], and non-railway specific such as the Health and Safety Work Act (HSWA). Duty holders are legally required to cooperate and many organisations already work together (beyond legal requirements) to improve health and safety performance. Figure 2 contains further information on the GB rail approach to individual duties, the duty of co-operation and what we have termed ***collaboration*** (initiatives going beyond legal obligation).

The safety of the railway system[5] is measured by the numbers of events that occur that have resulted in, or could lead to fatality or physical injury to passengers, the public, and our workforce. Levels of risk arising from these events are also estimated.

1.2 Legislative framework

The law places responsibilities on every organisation involved in running the railway and is structured so the safety of the railway system is delivered through their individual and (where relevant) their combined actions. Duty holders have clearly defined responsibilities for managing the health and safety of their own operations. They must be able to demonstrate compliance with railway-specific and general law, and show they are managing their parts of the railway system individually and in co-operation to ensure safe railway operations.

[3] RSSB (2015) Managing and measuring the safety of the railway (http://www.rssb.co.uk/library/improving-industry-performance/2015-08-guidance-managing-and-measuring-safety-of-the-railway.pdf).

[4] ROGS – Railways and Other Guided Transport (Safety) Regulations 2006, CSM – Common Safety Method, HSWA – Health and Safety at Work Act 1974. See RSSB – Legislative Framework (www.rssb.co.uk/improving-industry-performance/the-legislative-framework).

[5] Railway system - definition: includes structural components (including track, signals, stations, and trains; plus yards depots and sidings), functional areas (operations, maintenance and traffic managment); the organisations that manage, run and maintain (such as IMs, RUs, designers, contractors, agencies).

They must manage their health and safety risk to an acceptable level. The law also says that duty holders must co-operate across interfaces, so that each can ensure the safety of its own part of the railway.

The key railway-specific legislative requirements for duty holders are those described in ROGS, which transpose the Railway Safety Directive into UK law. The key requirements under ROGS are for duty holders to develop and maintain a safety management system, have a valid safety certificate or safety authorisation, and work together to make sure that the railway system is safe.

Specific Common Safety Method (CSM) regulations place complementary requirements on duty holders. For example, the CSM for risk evaluation and assessment obliges the 'proposer' of a change to assess and understand the risk associated with a change, and to ensure that others who need to act to control that risk can do so, which they must then do. The regulation also requires the risk associated with a significant change to be assessed, and that safety levels are managed to an acceptable level.

The Common Safety Indicators and Targets require of EU member states that the safety of the railway system is measured. To enable the UK to meet this requirement upon it, all

GB mainline rail companies enter all relevant data into the national Safety Management Intelligence System (SMIS) that RSSB manages. [Note: CSTs are a state obligation not a direct duty holder obligation.] SMIS captures more data than is required by law, and enables a wider risk analysis. A major investment has been made in next generation reporting systems through the SMIS programme.

All railway companies are also subject to the requirements of general UK law, including the HSWA, and numerous regulations that apply to UK companies. [Note: not all regulations apply to all companies.]

Figure 2
Definitions

Single duty holder	• Activity can be executed by one party • Duties defined by law
Co-operation	• Duty of co-operation specified in ROGS • Two (or more) duty holders work together, under the direction of one leading party • Often applies between client and supply chain
Collaboration	• Applicable to issues that are system wide, or common interfaces where risks are shared, imported or exported • Can also be applied where shared knowledge creates better solutions

Many other organisations, who are not licensed railway duty holders, have significant roles in both enabling and delivering activies to support the railway system. These impact the safety of the railway and its workforce. Those organisations include the Department for Transport (DfT), Transport Scotland, the ORR, manufacturers, BTP, trade unions, rolling stock owning companies (RoSCos), contractors, and suppliers of assets, plant and workforce.

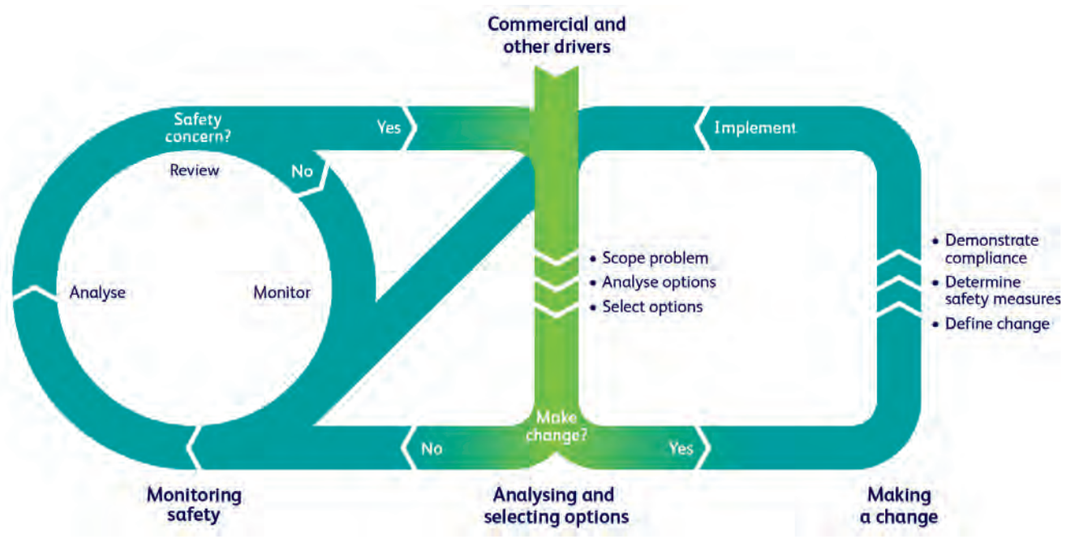
RSSB will produce a range of new communications materials in 2017. For reference the websites of the main organisations are listed in Table 1.

1.3
Taking Safe Decisions

The *Taking Safe Decisions* risk management framework, shown in Figure 3, represents industry good practice. It describes the principles that companies can apply to protect people's safety, satisfy the law, respect the interests of stakeholders, and meet commercial objectives.

More effective adoption of this framework will benefit individual companies, and facilitate co-operation between companies through the arrangements outlined in Section 1.4. RSSB will work with its members and stakeholders to support this in 2016-17 and beyond.

Figure 3
Taking Safe Decisions risk management framework



1.4 Our arrangements for working together

The industry has established national, sector and regional arrangements. These help facilitate dialogue between duty holders and other stakeholders for the purpose of understanding and improving safety risk.

RSSB plays a key role in facilitating national, system level discussion through a framework of cross-industry, risk-focused health and safety groups. It also publishes good practice guides, and is the industry expert in the provision and analysis of safety performance[6] and risk data[7]. RSSB is also responsible for developing cross-industry rules and standards, and undertakes research and development.

RSSB is working with the national groups to adopt the Taking Safe Decisions framework, sponsor research, promulgate good practice, and develop tools.

Another important part of the architecture is the sector groups. These provide the opportunity for the main constituent duty holders to understand their health and safety risk, and sponsor improvement activity.

The sector groups are usually facilitated by RSSB or RDG.

At regional level, the arrangements comprise several long-standing groups such as Community Safety Partnership Groups, and Road Rail Partnership Groups. In addition, there are bilateral reviews between the infrastrucuture managers (IM) and individual operators. These arrangements are in the process of being replaced by simpler, new arrangements. As these are implemented they will be published on the RSSB website, and a social media network created to support their efficient operation.

Trade unions, whilst not duty holders, play a key role in many of these arrangements. They provide a critical link between the industry workforce and these arrangements, to ensure that connections are considered at all organisational levels. The trade unions are represented in all national groups.

Table 1 summarises these arrangements, along with where to find further information.

[6] RSSB produces the ***Annual Safety Performance Report*** (ASPR), which gives full details of the railway's safety performance.

[7] RSSB manages the Safety Management Intelligence System (SMIS), a tool to collect incident data relating to the railway, that enables analysis of railway safety risk. See also Section 1.2.

How health and safety is managed on the railway

Table 1
National, sector and regional cooperation

	Framework component	Group	Website address (if available)
National level	**Rail System**	RSSB board Industry Health and Safety Meeting Health Policy Group System Safety Risk Group and its subgroups (TORG, PTSRG, DRSG, LXSG, NSPG) Trade Unions (ASLEF, RMT, TSSA, Unite)	http://www.rssb.co.uk/groups-and-committees https://www.tuc.org.uk/
Sector level	**Passenger train operators**	RDG Operations Council RDG Engineering Council	http://www.raildeliverygroup.com
	Freight operators	National Freight Safety Group Freight Technical Committee Dangerous Goods Working Group Railfreight Operators Group	http://www.rssb.co.uk/groups-and-committees
	Charter train operators	Charter Trains Safety Group	http://www.rssb.co.uk/groups-and-committees
	Infrastructure contractors	National Rail Contractors Group Infrastructure Safety Leadership Group M&EE Networking Group	www.islg.org
	Suppliers	Railway Industry Association	http://www.riagb.org.uk/
	RoSCOs	Tripartite forums	
Regional	**Routes**	New arrangements currently in process of implementation	

1.5
A culture of reporting and sharing

Britain's railway has worked closely over many years to establish robust reporting of safety incidents and accidents. Many of the mechanisms for reporting are mandatory, including the use of the rail industry's SMIS system, the non-rail-specific RIDDOR[8], and National Incident Reporting for rolling stock. A strong reporting culture has evolved, which underpins rail companies' capability to make sound risk-based decisions, and to identify where we can improve more.

This information allows Britain's railway to benchmark its performance against other railways, transport modes and industries. This shows that rail continues to be one of the safest forms of land transport in Britain, and that Britain's railway is amongst the safest in Europe[9] (Figure 4 and Figure 5).

The rail industry wants to further improve reporting and monitoring of certain aspects of risk (some industry generated, some externally generated). For example, road risk, fatigue, and health and wellbeing. This is to be addressed through the 12 risk priorities in this strategy.

Major rail accidents are rare events[10] and so the rail industry monitors trends in precursors to them. The industry is then able to pro-actively respond to any upward trends in precursors, to reduce the risk of a future major accident. Further developments in reporting and analysis will focus on precursors. See Section 3.2 for more detail.

Britain's railway companies also carry out accident investigation, as a key instrument for learning, with the aim of preventing recurrence. Railway duty holders investigate accidents (and are required to do so under ROGS). RAIB (as the independent rail accident investigator) carries out root cause investigations into the most serious accidents and incidents, the results of which are shared across the industry.

Sharing information and learning is important for the railways. Several communication channels facilitate this, such as Right Track magazine, the OPSWEB pages and the RED series of DVDs[11]. The national, sector, and regional groups described in Section 1.4 also play an important role in sharing information and learning.

[8] RIDDOR: Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013

[9] A detailed report on accidents and their precursors is produced by RSSB in its Annual Safety Performance Report.

[10] At the time of writing, Britain's railway had not experienced staff or passenger fatalities from a train accident since 2007.

[11] Links to RightTrack magazine and RED are available through the Opsweb pages www.opsweb.co.uk

Figure 4
Rail benchmarked with other land transport modes (ASPR 2015-16)

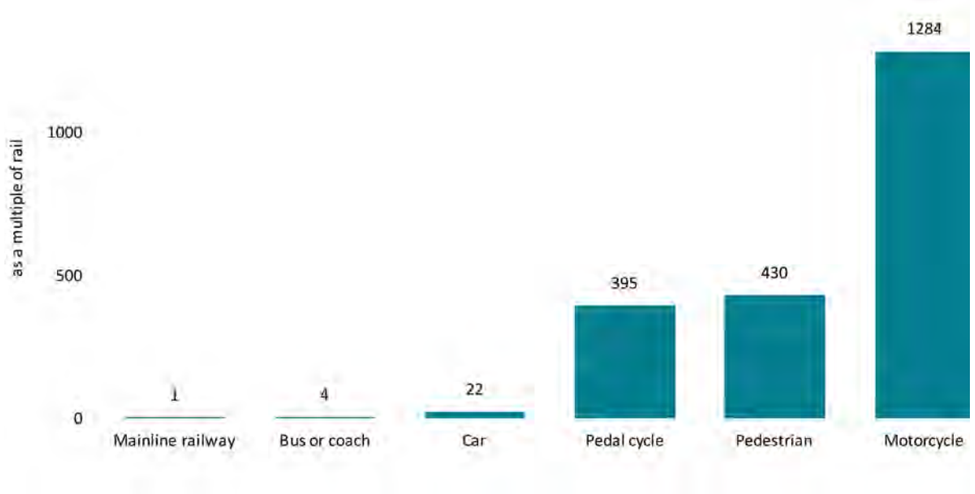
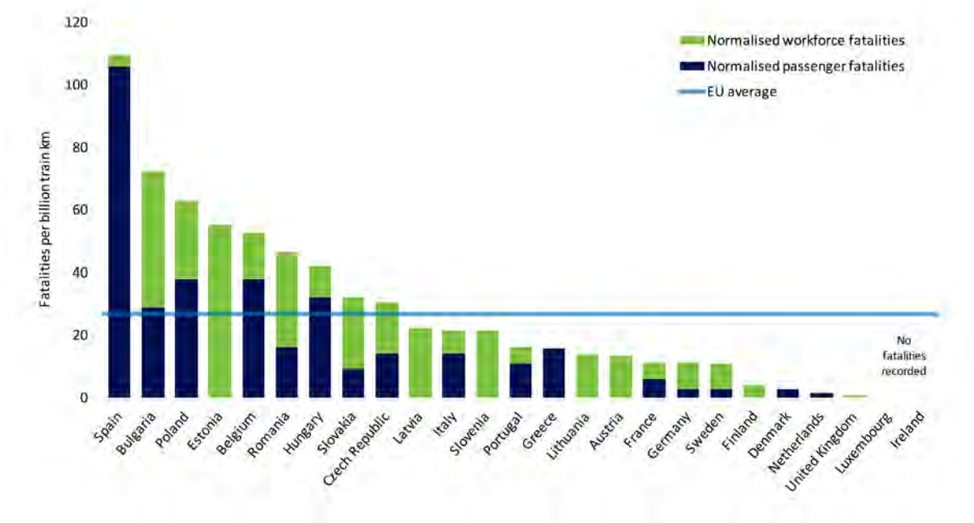
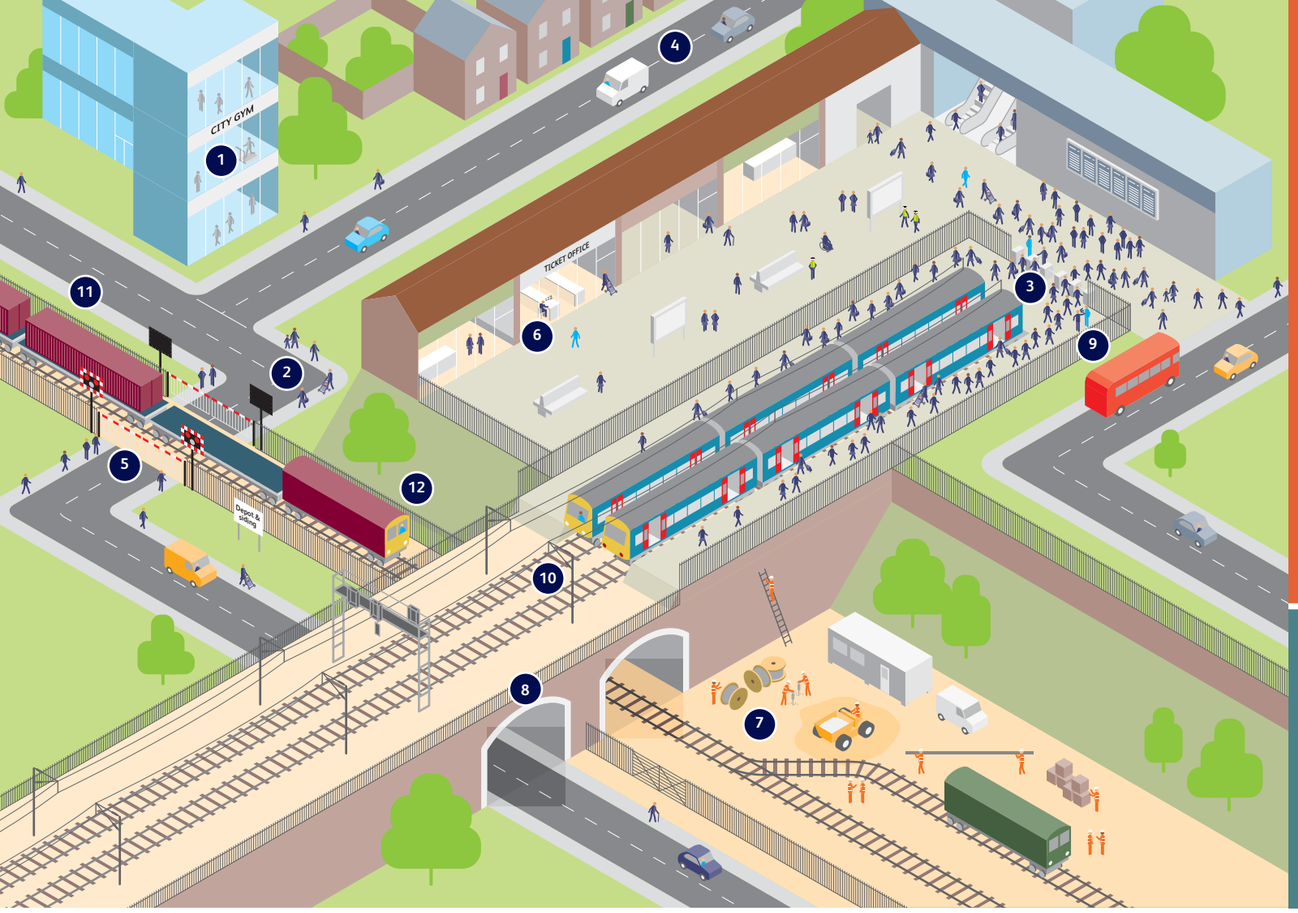
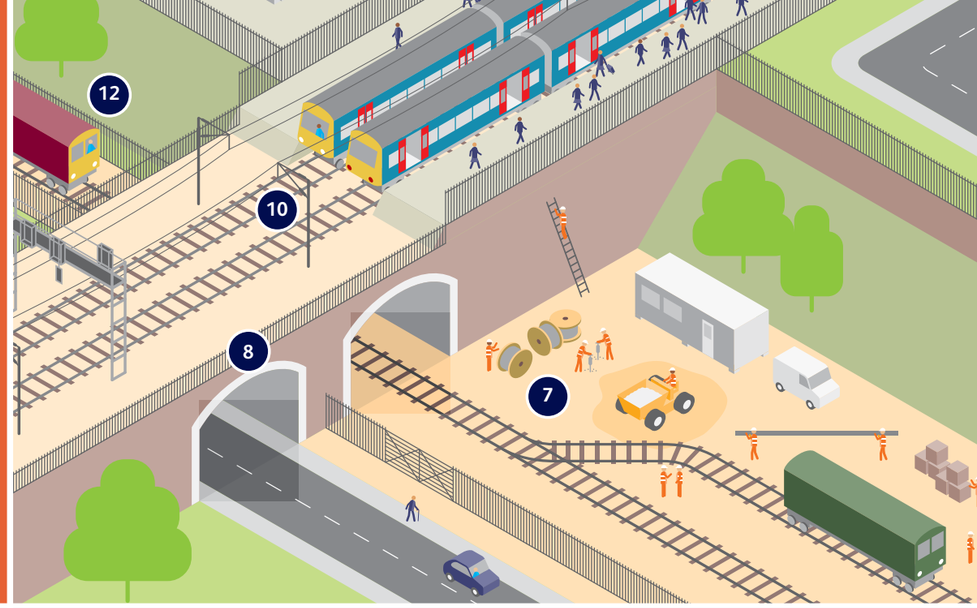


Figure 5
Comparison with other European railways (ASPR 2015-16)







2 Priority areas

1. Workforce health and wellbeing
2. Public behaviour
3. Station operations
4. Road risk
5. Level crossings
6. Fatigue
7. Workforce safety
8. Infrastructure asset integrity
9. Workforce assaults and trauma
10. Train operations
11. Freight
12. Rolling stock asset integrity

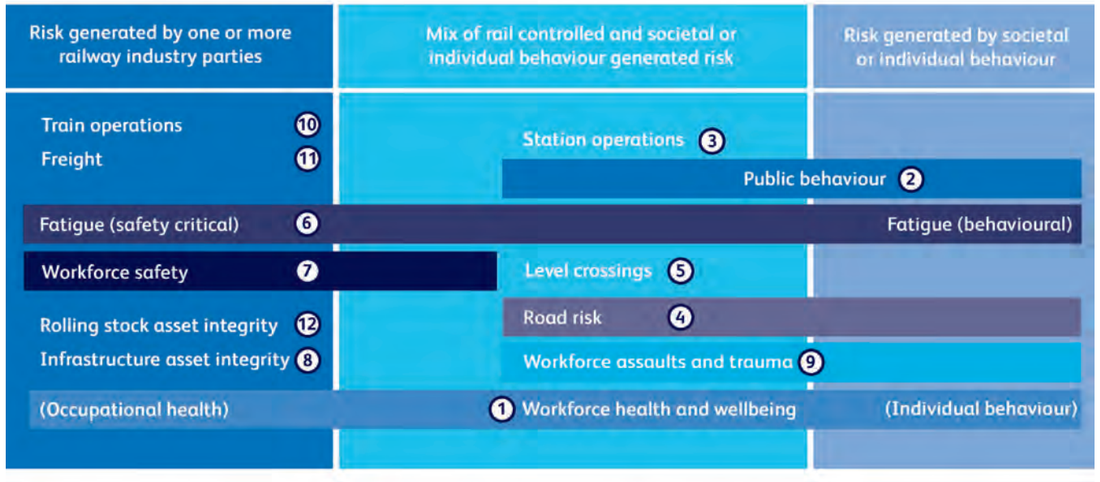
Twelve risk areas provide a focus for specific priority initiatives. These areas have been selected by adopting a maturity and risk-based approach, from extensive data and professional judgement.

This section outlines each risk area, and provides an overview of our understanding of the current level of risk. It considers how we can further reduce harm by growing the maturity of multi-party collaboration, building on work already underway by single duty holders, and existing co-operative activities.

2.1
The 12 priority areas

The industry has selected 12 priority areas, based on risk. These are illustrated in the image on page 22 and described in detail in Section 5. The vision and opportunities for collaboration were developed by considering the risk profile to passengers, the workforce and the public through our safety risk model information and professional judgement.

Figure 6
Areas of influence over the safety risk profile



We recognise that some of these priority areas cover risk that is wholly generated by rail activity, which includes train operations, and is the responsibility of the relevant rail duty holder(s) to control. Other priority areas cover risk that is primarily within the control of duty holders, but is subject to societal or individual behaviours, for example at level crossings. There are priorities that are not, legally, the responsibility of the rail industry; the externally generated risk, to which the railway is exposed. While we cannot control this risk, we can seek to influence it without being legally obliged to do so; for example the trespass and suicide elements of public behaviour. Figure 6 seeks to represent this.

The law distinguishes between risks which can and must be controlled (and to what extent) and those risks that are not generated by a railway undertaking.

Together, seven of the 12 areas cover more than 90% of the current railway safety risk profile. These are outlined in Figure 7. Three of the areas, road driving, health and wellbeing, and fatigue, are shown separately in Figure 8 because we don't have accurate risk data. Judgement has been used to develop a visual estimate of likely risk. The other two areas, infrastructure asset integrity and freight risk, are not identified separately as the information for this risk is woven throughout the seven risk areas in Figure 7. Some priority areas, for example fatigue, can be a contributory factor to other risk areas.

Figure 8
Current safety risk profile - fatalities and weighted injuries

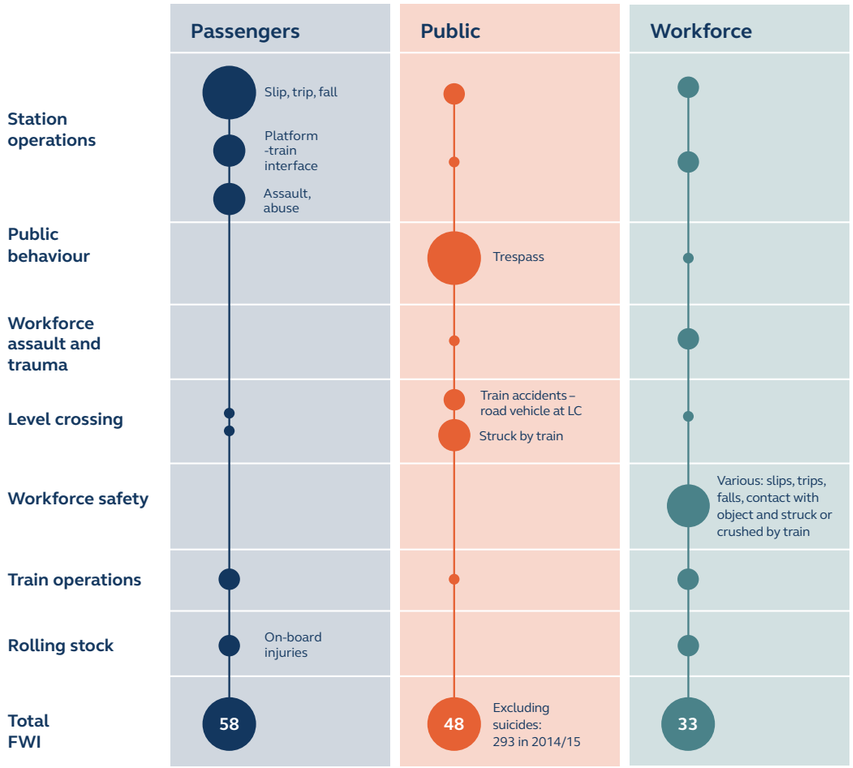
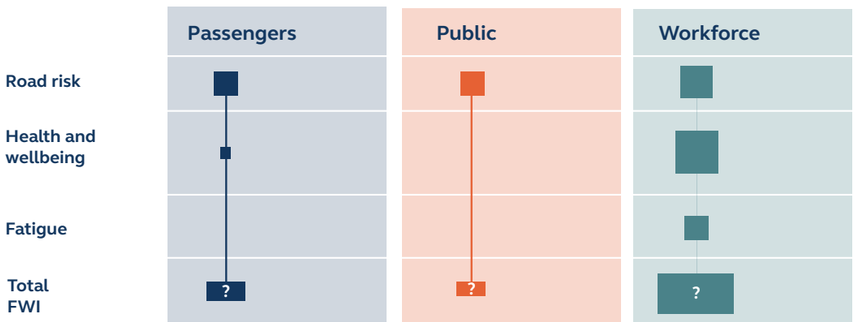


Figure 9
Health and safety risk gaps



2.2 Maturity of collaboration and risk

The level of collaboration currently varies across the 12 priority risk areas, as shown in Figure 9[12]. This assessment takes a system-wide view of maturity and, as such, does not consider significant local variations in the extent of collaborative working. The risk areas in Section 5 are ordered according to the potential industry gains.

In the less mature areas, the first essential step for increased industry gains is to establish an improved understanding of the risk (such as road driving, or health and wellbeing).

Figure 9
Maturity of collaboration and potential industry gains

[12] The positioning of these 12 areas is the subjective view of rail industry experts and not based on an assessment against ORR's Railway Management Maturity Model (RM^3), or any quantitative measurement.

National level collaboration in many of the 12 areas is already undertaken by a number of recognised groups reporting to the System Safety Risk Group, facilitated by RSSB (see Section 1 which explains how health and safety is managed in today's railway).

Figure 10 also sets out the potential level of industry gain that industry leaders consider possible through greater collaboration within the rail industry. This is a qualitative assessement based on the opinion of professional experts.

Work to improve these 12 areas is consistent with the legal requirements: to maintain levels of health and safety and improve where it is reasonably practicable to do so, together with specific duties for co-operation.

Equally, any additional efforts to extend collaborative working must not come at the expense of any loss in maintaining health and safety by individual companies.

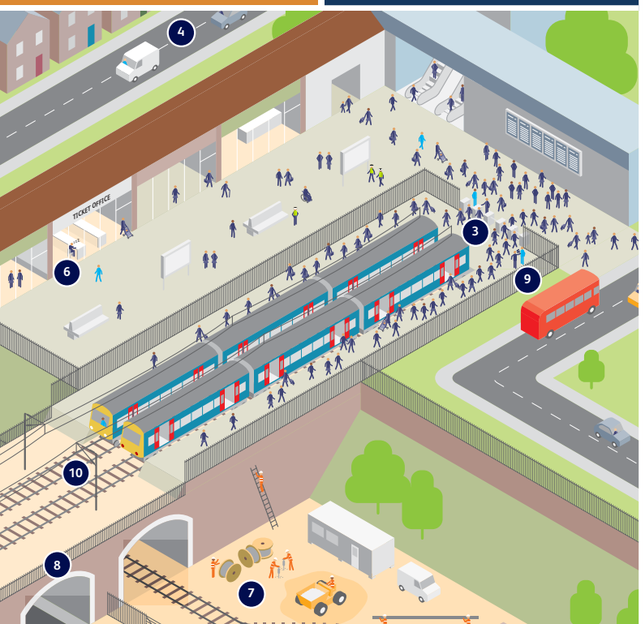
This strategy does not provide business cases for the suggested priority areas. However, in most cases, the activities are not expected to create additional cost, but rather increase the effectiveness of management action for a broadly similar cost. One exception is where investment is needed to improve understanding and reporting systems as a precursor to further risk reduction.

Levels of maturity of collaboration

This table explains the four levels of maturity identified in Figure 10.

Embryonic	Understanding	Maturing	Embedded
Potential risk benefits not understood. Cost seen as a barrier. Safety seen as single duty holder issue. Cooperation limited to meeting legal requirements.	Potential risk benefits understood by experts. Collaborative approaches being developed. Some parties collaborating.	Potential risk benefits understood. Collaboration seen as cost saving. Most parties involved. Collaboration delivering some safety benefits.	Industry culture of collaboration. Collaborative working at all levels is delivering benefits. Safety decisions made as industry rather than single party.

3 Improving our capability



The collective capabilities in managing rail health and safety draw on a combination of extensive processes, systems, equipment, plant and assets, and the people that plan, design, build, maintain, operate, monitor and review rail activities.

Leaders identified nine areas in which those capabilities can be further supported.

3.1 What do we mean by ‘capability’?

Over the past few years, the rail industry has acquired extensive knowledge and experience in the development and application of formalised safety management systems. This has generated insight into areas where there are opportunities to increase capability.

The nine areas shown in Figure 10 have been identified as the capabilities that will enable cross-industry improvements. By working together on these nine capabilities, we will improve the underlying effectiveness of our management of health and safety across Britain’s rail companies.

Given the widespread application of the ORR-sponsored Railway Management Maturity Model (RM3) in today’s railway, the management capability improvement priorities are cross-referenced to the appropriate segment of the RM[3]. [14] The national group(s) for each priority area is identified in each part of Section 5.

[13] http://orr.gov.uk/what-and-how-we-regulate/health-and-safety/monitoring-and-reporting/occupational-health-and-the-railway-management-maturity-model

Figure 10
Capability improvement areas

3.2
How we can improve our capabilities

Next generation reporting systems and risk models

Who SSRG

Objectives

- SMIS+: an agreed set of risk management tools used consistently by all duty holders.
- Comprehensive data for all safety events, risks and precursors.
- Capability to capture, analyse and understand health events, risk, and precursors.
- Next generation of safety risk model and first generation of health risk model.
- New benchmarking capability between duty holders and other sectors.

RM³ Criteria: PI1: Risk assessment and management

MRA1: Proactive monitoring arrangements

Design for health and safety and change management

Who RSSB, all duty holders

Objectives

- Robust mechanisms to ensure maximum health and safety benefits, and that risk is controlled for those affected by a change.
- Good practice guidance and material for use within and between rail companies to maximise health and safety performance during design, delivery, and when managing change.
- Case studies to demonstrate excellent change management and design performance.
- Approaches for managing safety during design and managing change include health.
- A 'taking healthy decisions' framework.

RM³ Criteria: RCS3: Change management

Exploit new technology

Who Rail Technical Strategy team,duty holders

Objectives

- Alignment of the Rail Technical Strategy (RTS) to contribute to the delivery of management capabilities and priority risk areas.
- Identify opportunities for new technology to replace manual intervention and improve health and safety performance; reflecting the RTS.
- Technology being used to understand and improve health performance.

RM³ Criteria: Various components

Develop our people

Who Duty holders, suppliers, RSSB

Objectives

- Everybody working on the railway to engage with and understand their contribution to this strategy, so that they are clear on the value of their role in both its delivery and in preventing people getting hurt.
- A range of digital media to tell the rail health and safety story.
- Health and safety co-operation framework is embedded and used.
- Competency framework and models support the relevant risk priorities and capabilities. These are embeded in duty holders' SMSs.
- Relevant links and reference to this strategy included in all inductions.

RM³ Criteria: OP2: Competence management system

OP1: Worker involvement and internal co-operation

OC2: Management and supervisory accountability

Smart supplier capability assessment and information

Who RSSB, Rail Industry Supplier Approval Scheme and Rail Industry Supplier Qualification Scheme, duty holders, suppliers

Objectives

- A consistent approach for the assessment of risk posed by suppliers (internal and external) and their products.
- A framework for supplier capability assessments that drives a smart, risk-based approach to assurance levels, includes cultural and behavioural expectations, and efficiently connects buyers with suppliers.
- Systems, tools and training in support of the above available to industry.

RM³ Criteria: RCS4: Control of contractors

Improved approach to health and safety cooperation

Who System Safety Risk Group, RSSB, duty holders

Objectives

- An efficient, effective and continually improving framework for health and safety cooperation at national, sector, and regional levels.
- Collaborative health and safety improvement plans which incorporate the relevant elements of this strategy are in place.
- Resources and tools to enable and support the health and safety co-operation framework and risk management approach.

RM³ Criteria: OC5: System safety and interface arrangements

Next generation rules and controls

Who RSSB, Industry Standards Co-ordination Committee, standards Committees, duty holders

Objectives

- Improved duty holder control framework linked directly to risk management.
- Alignment between domestic, European and international standards.
- Deliver rules that avoid duplicating EU legislation, and that are useful or additional in the GB context.
- Digital control documents for rail company use.
- Capability to tailor some controls locally in proportion to risk.
- Identification of future data requirements and strategy to improve risk management.
- Clear link between risk controls and training and competency frameworks.
- Alignment with, and awareness of, the Business Critical Rules framework being implemented to deliver the above within Network Rail.

RM³ Criteria: OC5: System safety and interface arrangements

Improve learning, sharing and horizon scanning

Who RSSB, System Safety Risk Group, duty holders

Objectives

- A framework for how we learn from operational and delivery incidents.
- A framework for horizon scanning.
- A framework for good practice sharing.
- These frameworks embedded in duty holder management arrangements, and used by collaborative groups.

RM³ Criteria: MRA3: Incident investigation

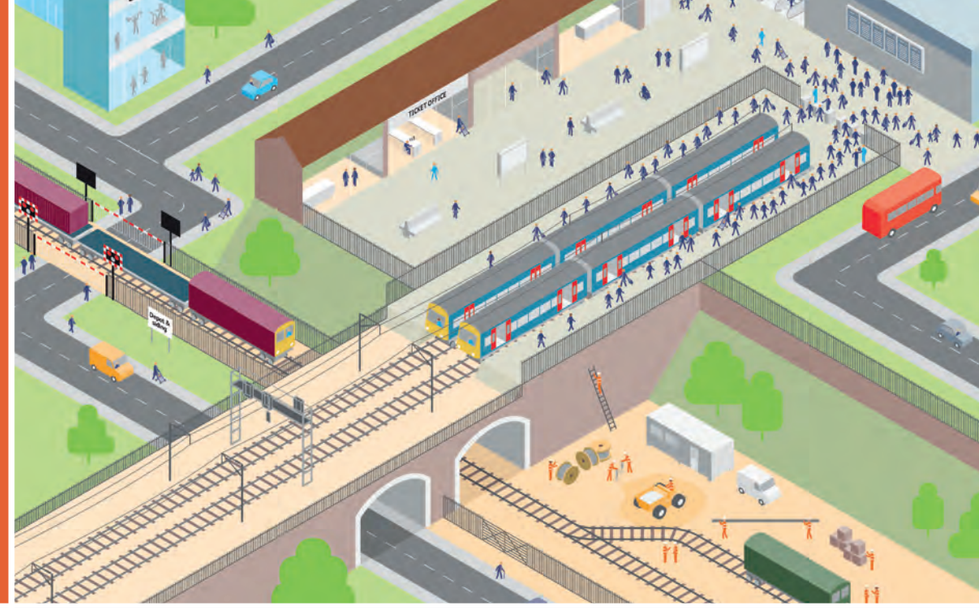
More effective assurance

Who Duty holders, RSSB, System Safety Risk Group

Objectives

- An assurance model - including structure, governance, and methodologies at national, sector, regional and duty holder levels.
- Risk management tools improve understanding of interface health and safety risks and assurance requirements.
- The health and safety collaboration framework facilitates health and safety assurance activities.
- Guidance and training for leaders on: the rail industry assurance model; duty holder assurance programmes; assurance processes, tools, and techniques.

RM³ Criteria: MRA2: Audit



4 Assessing the impact

This section describes the governance, monitoring, and review arrangements. These will enable industry leaders to understand and determine the impact of this strategy.

4.1
Delivery

The duty holders, RDG, and the national, sector, and regional groups will work together to help deliver this strategy (see Sections 1.2 and 1.4). RDG owns the strategy on behalf of the industry and will oversee its implementation. The Industry Health and Safety Meeting is the cross-industry leadership forum to support RDG in doing this.

Each rail company leader has confirmed their commitment to play an active part in supporting risk priority and capability improvement areas.

4.2
Monitoring and Review

RSSB will enable and support the monitoring and review of this strategy and oversee its update from time to time on behalf of the industry. The System Safety Risk Group will support RSSB in this function.
Monitoring the impact of the strategy is critical to its ultimate success. The breadth and scale of the strategy is significant:

- Two stated purposes, with a description of the anticipated impacts
- Leadership commitments
- 12 risk priority areas
- 9 capability improvement areas

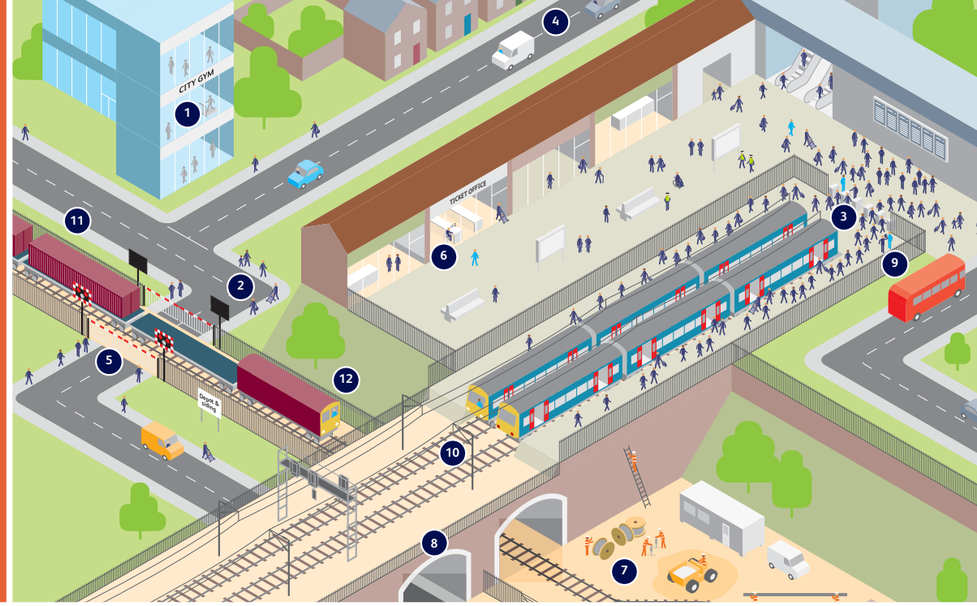
Monitoring arrangements, although not yet fully established, need to include some degree of duty holder self-reporting and feedback from national, sector and regional collaborative groups. Rail industry leaders need to receive information and feedback on progress.

4.3
Alignment with other industry strategies

This strategy recognises that delivery of some of its components will be through other cross-industry strategies, such as the Rail Technical Strategy. This strategy is also recognised by the new Rail Supply Group strategy.

New Entrants

We recognise that new duty holders will become involved in delivery of Britain's railway during the life of this strategy. RDG and RSSB will work with DfT and Transport Scotland to ensure that new entrants to the industry understand and are committed to the strategy.



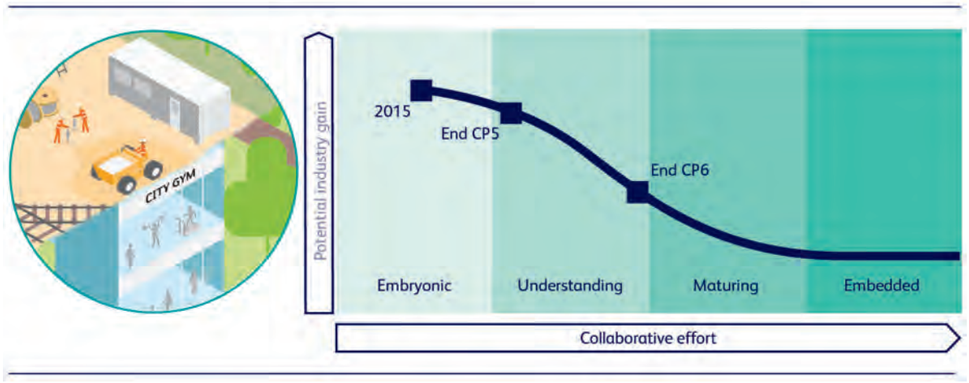
5 Our risk priorities: working together

The order of the priority areas reflects our view of the potential industry gains that could be realised with effective collaborative activity. We have identified lead groups for each priority area at the start of each section.

Groups that have been identified are industry leads for collaborative thinking on improvements in specific risk or capability areas. Their role is to co-ordinate work for industry risk reduction in that area and recommend the best industry mechanism to achieve this.

Health and Wellbeing Policy Group

5.1
Workforce health and wellbeing



Vision

On Britain's railway, everyone takes responsibility for health and wellbeing and benefits from doing so. Everyone, at all levels, will recognise their role in supporting better physical, mental and social health outcomes for people.

Some of the influences on health and wellbeing are generated by the workplace. Many others however are not but reflect individual or societal circumstances choices: diet; sleep, economics, exercise, family and a host of others.

Leaders will promote that rail is a good place to work and invest, and our people believe that Britain's railway is a place where they can thrive. All those involved with Britain's railway become better informed users of health provision. Britain's railway can demonstrate that it has control over health and wellbeing, is proactive in its approaches, and that our people are encouraged and progressively supported in the aim of healthier working lives. Creating and operating the railway of the future should have a fit, healthy and engaged workforce.

The case for collaboration

Managing both safety risks and occupational health risks generated by the business are legal requirements for all British companies. No such legal requirements apply for employee wellbeing. There is, however, a significant body of evidence linking levels of employee engagement and wellbeing with high levels of productivity. Proactive management of workforce health and wellbeing is emerging as an important business issue, with costs of absenteeism due to impaired health on the railway estimated at £320m per year.

In recent years, individual companies have started to engage better in health and wellbeing, although progress by the mainline railway lags behind other industries. Aviation, nuclear, and Transport for London are all more advanced in relation to executive commitment, clinical leadership, training and education. The construction industry, which has similar characteristics to rail (but on a larger scale) has a framework to manage standards, risk, and data collection that is widely regarded as good practice.

Diversity in both geography and tasks performed on the railway means that exposure to health hazards is diverse and complex, and employers therefore face significant challenges. The ORR has highlighted that across these risk areas there are issues of non-compliance with legal requirements. These result from gaps in health risk management, control, and identification of health hazards. By working collaboratively, the railway can support organisations in reducing the cost of complying with legislation.

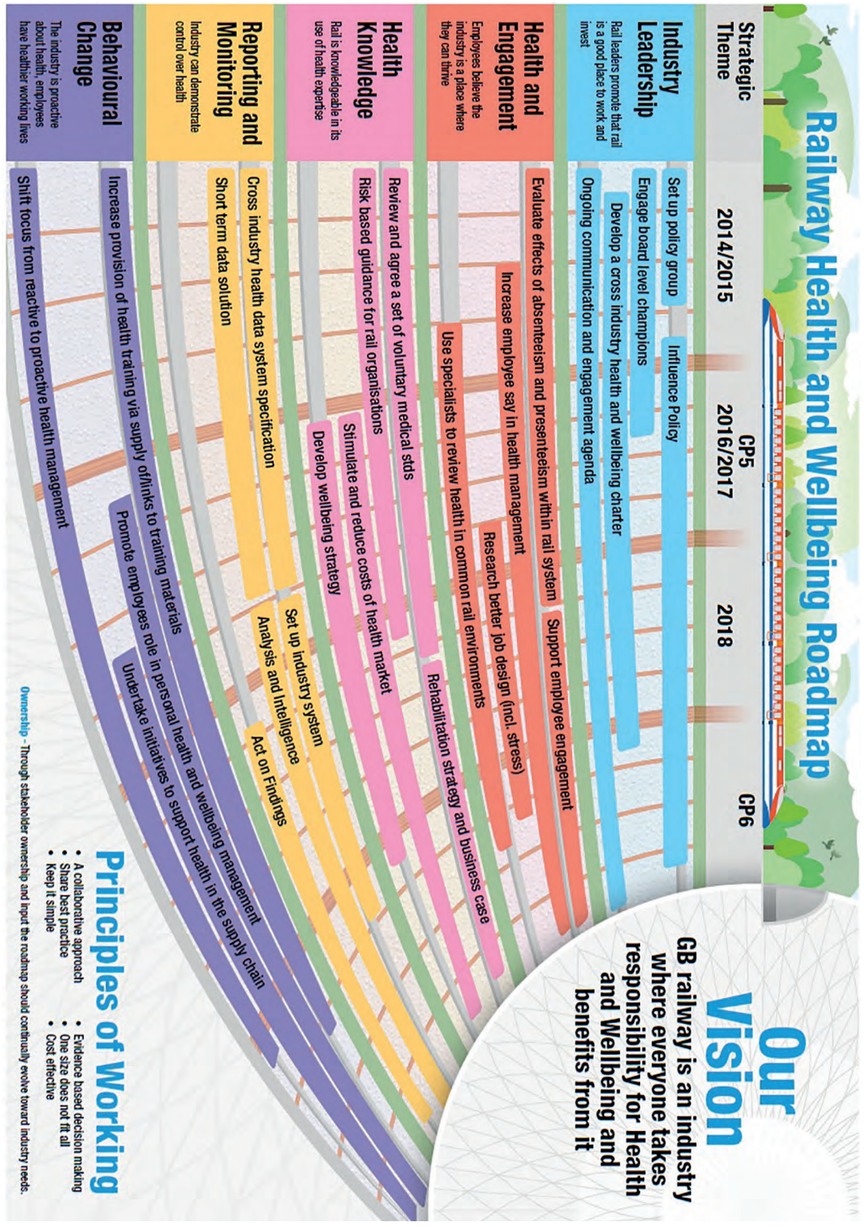
Trends in increasing obesity, an ageing workforce, and employees working longer, will all need enhanced approaches to preserve or improve business performance. The industry, together with broader government and public representation, can collaborate to address these issues through guidance and promotion of wellbeing.

What do we do at the moment?

Over the last two years, cross-industry leadership and collaboration at industry level on health and wellbeing, involving more than 100 industry professionals, has led to the development of an industry roadmap (see Figure 11). This work showed the ORR that progress is being made, and the roadmap has been accepted by RSSB Board, RDG, freight companies, the RSG, ORR and the Trade Unions. The roadmap consists of five strategic themes (see Figure 11) that group the projects and tasks, and which come together to support specific outcomes according to an overall vision.

The roadmap encourages annual conferences for sharing ideas, supporting and maintaining momentum, and committing to continued action. Initial progress on roadmap tasks includes development of a cost-benefit tool tailored to health issues to support decision making, expertise to improve understanding of key health hazards, identifying industry training needs, and promotion of a health risk assessment tool.

Figure 11
Railway health and wellbeing roadmap



What more can be done?

The health and wellbeing roadmap identifies specific priorities for collaborative improvement over the next few years.

Health management should follow the Plan-Do-Check-Act approach that is often used for managing safety. Job procedures or design should be reviewed and take improvements into account for future work. Engagement between senior managers, unions and employees is also important for supporting the wellbeing of staff and improving their health.

Employee health monitoring and reporting, should be established by developing leading indicators for potential health problems and moving towards routine publishing of employee health metrics. A key enabler is therefore a health and wellbeing data management system (similar to the Safety Management Intelligence System currently used for safety incidents) to enable systematic and consistent tracking and quantification of health indicators, that can be used when people move between companies. Development of this system will require industry-wide support, across infrastructure managers, train and freight operators, suppliers and contractors. This will ultimately be used to help develop business case decision-making, in which health and wellbeing impacts are systematically considered. In the short-term, the specification for this new data management system needs to be developed.

Health and wellbeing training for railway managers, is needed to inform the development of improved working cultures.

Relationships with third party health providers need to be improved to extract greater value from their capability to support rail companies in making informed decisions. This will result in duty holders being more informed clients.

Develop a health and wellbeing maturity model to support companies' understanding of their current strengths and weaknesses compared to established good practice.

What can we do better?

- Enhance the management of mental health within rail through knowledgeable and available expertise
- Enhance industry management & capabilities of post traumatic stress post rail incidents (e.g. suicide)
- Create a cross-industry health and wellbeing database and undertake analysis and reporting
- Provide expert insight into the tactical management of long standing health risk issues
- Create rail industry standards to drive good health & wellbeing practice within rail companies
- Integrate health and wellbeing into supply chain assurance activities
- Develop and support the health and wellbeing training of line management

Where can I find out more?

The Railway Health and Wellbeing Roadmap was developed by RSSB in collaboration with railway professionals and health and wellbeing experts. It identifies key issues to support better health management capability.

Network Rail's strategy for ***Transforming Health & Wellbeing*** details its vision for health and wellbeing management in the future.

ORR has also launched its second occupational health programme, the ORR ***Occupational Health Programme 2014-19: making it happen***, which is structured around four themes:

- Excellence in health risk management
- Greater engagement with employees and others
- Better efficiency and reduced costs from people suffering work-related ill-health
- Enabling improvements in competency, information, co-ordination and control

ORR's ***Better health is happening: ORR assessment of progress on occupational health up to 2014 and priorities to 2019*** provides an update on progress made in health management in the railway since 2010.
http://orr.gov.uk/what-and-how-we-regulate/health-and-safety/occupational-health/better-health-is-happening

The National Examination Board in Occupational Safety and Health (NEBOSH) in collaboration with the Construction Industry Training Board (CITB) and ORR has developed a syllabus and a pilot training course on the management of health and wellbeing within the rail industry. It is aimed at general managers, supervisors, health and safety and HR personnel who have responsibility for, or involvement in, the health and well-being of employees as part of their day-to-day duties.

http://www.citb.co.uk/training-courses/health-and-safety-courses/nebosh-national-certificate-in-management-of-health-and-well-being-at-work/

The National Institute for Health and Care Excellence (NICE) has recently published good practice guidelines on workplace policy and management practices to improve the health and wellbeing of employees.

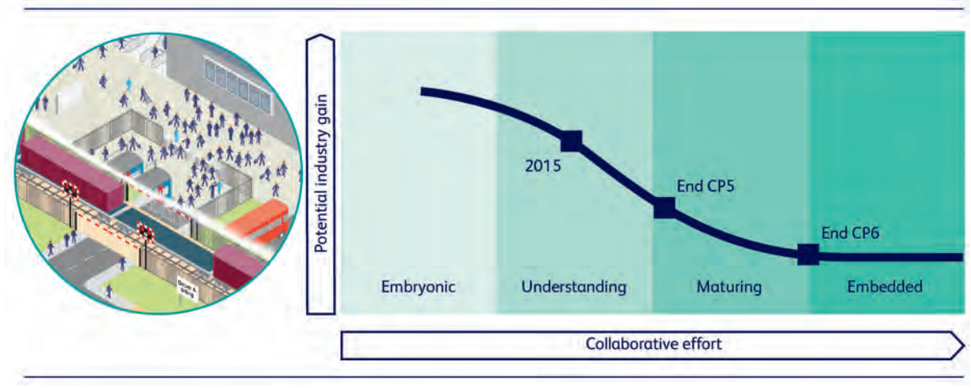
http://www.nice.org.uk/guidance/ng13

ORR's occupational health website also contains guidance and background information on the management of health.

http://orr.gov.uk/what-and-how-we-regulate/health-and-safety/occupational-health

Suicide Prevention Duty Holders Group
Trespass Risk Group

5.2
Public behaviour



Vision

Suicide is a complex, difficult and traumatic issue for all involved. It is a risk that is not generated by the activities of the railway but is a risk that directly (and sadly frequently) impacts colleagues and members of the travelling public as well as the individuals involved, their families and others close to them.

The vision is that the impact of suicide and trespass incidents on Britain's railway will be less than today's level. Achieved both by decreasing their number and by deploying consistent good practice approaches to reduce their traumatic impact in the event that they do occur.

Prevention initiatives will be led by the railway, with train operators and infrastructure managers working proactively with the broader community (local authorities, health services, schools and other community bodies). Helping to prevent suicide on the railway will be seen by all as a broader societal goal rather than being a railway-only concern.

Active monitoring of hotspots for both suicide and trespass will be enhanced by effective use of technology, and will become focal points for community intervention.

The case for collaboration

The number of fatalities attributable to public behaviour - suicide and trespass - is persistently over 300 per year. In 2014/15 there were 293 suicides or suspected suicides and 21 fatalities due to trespass on the GB railway. In contrast to many other areas of risk, there is no evidence of a downward trend in fatalities, despite ongoing effort.

The impact of these fatal and serious injury incidents is significant and extends beyond those who lose their lives or are injured. Train drivers, station staff and those involved in the aftermath of incidents can experience significant psychological trauma.

What do we do at the moment?

Trespass is co-ordinated by BTP, the infrastructure managers, and train and freight operators. The industry also collaborates on suicide prevention and enlists external support to maximise the impact of the measures that are taken. Samaritans, BTP and government departments are all part of a long-running suicide prevention programme.

The structure of the British railway means that the relevant infrastructure manager is most immediately and primarily involved in the management of suicides and their impact, particularly at stations and level crossings. Industry recognises, however, that suicide prevention initiatives best involve activity across a wider group, since most train operators are also responsible for stations, and freight operators have responsibility for management of yards and sidings. Significantly, the train driver often suffers trauma following both suicide and trespass events.

Community education is one of the most effective methods currently deployed to manage the extent of trespass on the railway. Many passenger train and freight operators, and infrastructure managers engage with these programmes.

Interventions by rail staff are one of the most effective means of helping to prevent both suicide and trespass on the railway. However, approaches are not currently integrated and there are opportunities to extend collaboration.

The rail industry has recently taken several steps to reduce trespass, including establishing the collaborative Trespass Risk Group and the introduction of a National Programme of Community Engagement. It has also employed specialists to help manage these issues.

What can we do better?

Suicide

Further collaboration both across the rail industry and with interfacing agencies is a priority for reducing suicide on the railway.

Developing effective ways of engaging with health authorities to support community care approaches that help people away from committing suicide on the railway.

Station managers are key to collaborating between the infrastructure manager, Samaritans, BTP, and the train operator, and can have a significant impact on suicide prevention. Around 40% of railway suicides currently occur at station platforms.

Communications programmes must be targeted at railway employees who work on stations if railway suicides are to be reduced.

Educating the wider railway community of around 100,000 people to intervene in potential suicide situations at other locations will bring further benefits.

Existing relationships between infrastructure managers, train operators, BTP and the Samaritans should continue to build on the achievements to date, and to enhance the existing suicide prevention programmes.

Trespass

The Trespass Risk Group will build a coordinated strategy based on cross-industry consultation. This strategy will enhance current and planned projects to reduce the number of trespass incidents and improve public safety. It is a subgroup of SSRG and has three focus areas: education and engagement, engineering controls, and enforcement action.

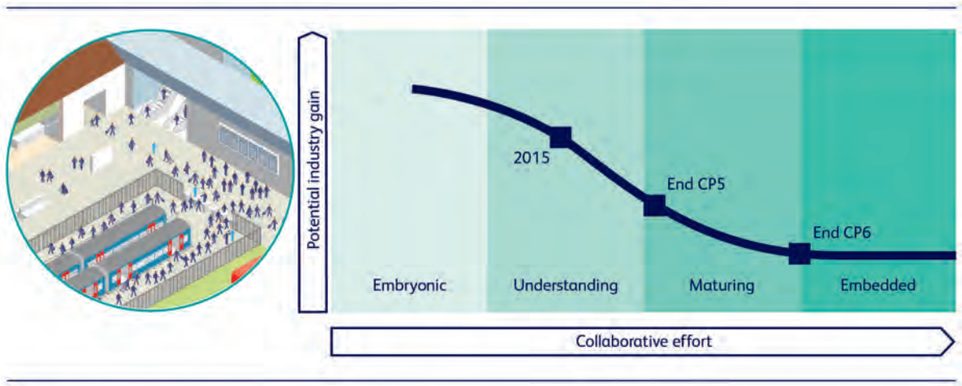
Collaboration between duty holders at route level is key and should provide clear working arrangements between specific train operating companies. Collaborative working, which is already underway at a route level through Community Safety Partnership Groups, should continue.

Where can I find out more?

- Suicides: the rail industry in partnership with other agencies has developed a suite of approaches to address suicides on the network. To find out more please contact SuicidePreventionProgramme@networkrail.co.uk
- Trespass: BTP plays an important role working with the rail industry on trespass, vandalism and other crimes . See www.btp.police.uk and search for trespass. Network Rail's website www.networkrail.co.uk/lineside-neighbours/ provides information on how they are tackling trespass, vandalism and graffiti.

People on Trains and at Stations Risk Group

5.3 Station operations



Vision

Operational and safety improvements at stations will be delivered by professionalism of station management and by adopting more consistent and joined-up approaches across all parties.

Individual members of the public will be encouraged to take responsibility and care to reduce the risk created by their own choices and behaviours.

These improvements will deliver a lower number of slips, trips, and falls, and incidents at the platform-train-interface. Improved collaboration will drive greater consistency in core station operations such as at ticket gate lines and train dispatch. Rail companies will work together to deliver station operations that optimise overall passenger management and station design.

Station redevelopment will involve all affected parties at all stages of design - integrating the principles of safety by design and working together to reduce disruption from construction works. This will ensure the final designs can deal with the increased passenger numbers expected over the next 10 years (and beyond).

The case for collaboration

Stations are the public-facing front of the railway at which several parties have responsibilities for health and safety of passengers. These parties have to work together across both physical and organisational interfaces to deliver an integrated and safe experience for the passenger. Managing station operations will be increasingly challenging due to higher passenger numbers and further station redevelopment projects which challenge normal operations. The impact of new rail connections, such as the Crossrail project, will need to be carefully managed so that disruption to existing adjacent and affected routes is minimised.

Accidents at stations make up the majority of passenger injuries and fatalities on the railway. Serious accidents tend to occur at the platform-train interface and on stairs and escalators, but there are larger numbers of less severe injuries (typically slips, trips and falls). Assaults also contribute to the harm to both passengers and staff in stations.

Although rare, there is the potential for a major incident at a station, and as such arrangements must be in place for scenarios such as unexpected overcrowding or fire. Robust emergency plans, involving all parties operating at a station, need to be prepared and implemented.

Station management processes are not currently unified at a national level. Rail companies need to work together to improve the way that station management is perceived across the industry and, in particular, enhance the competency regime for station management.

Station enhancement projects require a collaborative approach from the design stage. This will allow platforms, stations, rolling stock and operational procedures to function in a way that reduces potential for accidents, and to effectively manage risk during construction which is carried out near the operating railway. How passengers are informed of services, and how wayfinding is designed can also enhance the safety of passengers.

What do we do at the moment?

Working arrangements across organisational and physical interfaces at stations have evolved according to what works on a local level, according to factors such as station and platform layout and rolling stock types. Some railway companies already work together effectively at particular stations, but there is potential for more widespread improvements.

Ticket gate line operation, safety signage, and management of the platform-train interface all vary between stations, and sometimes within the same railway operator. These variations in practice can limit the value of safety initiatives to the local level, and be a barrier to more sustained improvement.

What can we do better?

There are three areas of station operations that may present particular opportunities for improvement.

Platform-train interface risk is affected by rolling stock design, platform design, and train dispatch and passenger management procedures. The PTI is informed by a comprehensive industry strategy document facilitated by RSSB. It outlines how industry works together to reduce risk and optimise operational performance, and capacity and availability of access. It also looks at how aspects of station design affect PTI risk.

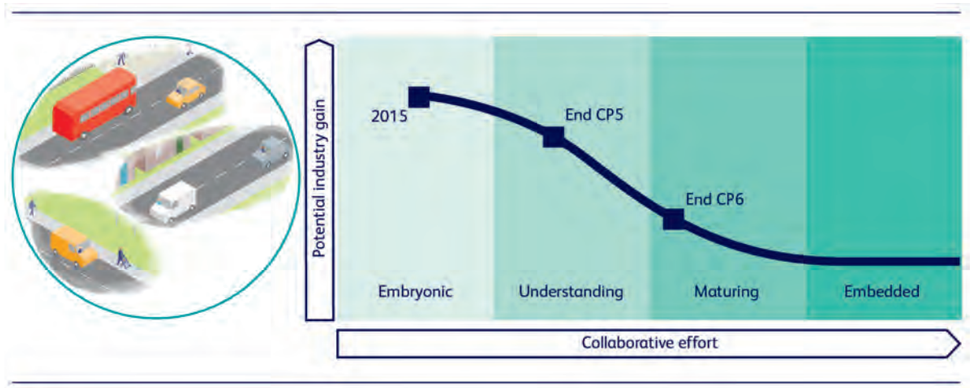
Station development (and re-development) will become more important as passenger numbers increase. Safety should be considered during the design stage of any refurbishment or building works by all relevant duty holders working together. Close working between train operators and the station manager is essential when considering the wide range of requirements during the design stage, so safety is built into the design, and health and safety risk during construction is managed effectively. Dependencies in station design are and will remain of key importance. For example, installing ticket barriers limits passenger throughput, but also increases control of passengers. Technology is already being used to model passenger flows through stations. Better use of this data will allow operators and station managers to optimise station layout, operations and communications to reduce safety risks, for example by relocating concession stands away from the busiest or most congested platforms.

Station management capability should be developed to manage the increased demands on stations effectively. Station managers will need high levels of competence, including non-technical skills, to be able to manage effectively across increasingly complex operational interfaces. A move toward the increased professionalisation of station management is a key enabler, to overcome any current perception that station management is a less attractive career for highly motivated employees (compared, for example, to train driving). A cultural change is required at industry level, to recognise the importance of a professional approach to station management to unlock gains in customer safety, workforce safety, and overall customer experience.

Where can I find out more?

- An industry strategy on platform-train interface was published in 2015, covering not just the interface itself, but all passenger movements through stations. Included in this strategy were activities to be undertaken, such as development of a PTI risk tool and a broad range of public education campaigns.
  http://www.rssb.co.uk/improving-industry-performance/platform-train-interface
- The People on Trains and Stations Risk Group, facilitated by RSSB, looks for new ways to reduce the risk associated with station operation. Its terms of reference are published on the RSSB website Groups and committees page.
  http://www.rssb.co.uk/groups-and-committees/rssb-board/safety/system-safety-risk-group/people-on-trains-and-stations-risk-group

5.4 Road risk



Vision

The industry will develop an understanding of its exposure to relevant aspects of road risk where the risk is generated by a railway company's undertaking through improved reporting and analysis. This will include both the direct safety performance associated with accidents, and the impact of road driving on fatigue at work.

Establishing this baseline will provide the railway with the capability to develop robust arrangements for targeting reductions in relevant road risk. Decision-making processes around work planning will be developed, to reduce unnecessary exposure to driving, and industry-wide codes of practice will be embedded in work planning, to build consistent approaches that work across the supply chain.

The case for collaboration

Road risk in the rail industry covers four main areas.

- Contractors driving to and from home or their usual place of work to the railway environment.
- Railway employees, including ORR inspectors, BTP officers and those conducting investigations, driving to and from their usual place of work to the railway environment.
- The aspects of bus replacement and other transport services for passengers and employees contracted by railway companies to the extent that the risks generated by contractors fall to railway companies to control.

- Taxis to transport employees around the network when needed – for example drivers at the start of their shift.

Current railway safety data and information is limited to the railway environment, and does not extend as far as general health and safety legislation[15]. The application of the HSWA regime and regulatory involvement of the HSE in road transport does not cover all aspects of road transport. Work is underway to develop the industry's Safety Management Intelligence System (SMIS) and the Safety Risk Model to drive this alignment and move towards a wider and more consistent reporting and understanding of road risk [ideally where the road risks are logically connected with railway operations].

Importantly, the impact of road driving extends beyond the direct safety and business risks associated with road traffic accidents. The industry is becoming increasingly aware that road driving is the one of the most significant contributors to fatigue (along with shift length, working hours, rest periods and sleep patterns). The likelihood of accidents at work is adversely impacted by long hours spent behind the wheel.

What do we do at the moment?

Road driving is typically managed at individual company level, to varying degrees of rigour. Typically, policies define aspects such as mobile phone usage, vehicle specifications, and preferences for avoiding road journeys altogether. However, long drives to worksites remain common, particularly in the contractor and supplier community. Contractor selection does not always evaluate the distance to be travelled to get to the worksite. Evidence suggests a link between a significant level of risk to people working for the railway and time spent driving (see Chapter 6 of the 2014/2015 Annual Safety Performance Report).

Although the risk associated with road driving is becoming better understood and individual companies are setting driving policies, at an industry level, cross-industry work on directly related railway road risk is in its infancy. Consequently, there is incomplete knowledge of the risks associated with railway related road driving, and basic information such as time spent behind the wheel is absent. There is poor information on the number and severities of road traffic accidents and the costs to rail businesses. Individual businesses have different reporting policies, so knowledge is not well shared across the industry. Indeed, there are perceived commercial barriers to doing so.

Recognising the issues, the Road Risk Working Group has been set up to raise awareness, provide resources for sharing good practice, and to develop improved reporting and analysis.

What can we do better?

Road driving provides one of the most significant opportunities for securing improvements in levels of harm. Some of those harms will relate to railway activity generated risk. Others derive from societal or individual risks. Opportunities cover five key areas.

[15] The Health and Safety at Work etc. Act (HSAWA) covers all driving activities (other than the commute to the normal place of work).

Improve knowledge of driving patterns, hours, distances, and accidents to raise awareness and develop industry-wide priorities for improving railway-related road driving safety. This should include delivering better information for those working shifts and should account for hours of work, type of work, breaks, and rest cycles. This area is linked to fatigue (see Section 5.6).

Learning from other industries through benchmarking approaches to improving railway-related road driving risk, including road haulage and petrochemicals (for example, the use of eye blink measurement in road haulage). Driver education could also be facilitated through sharing of material or training for employees who regularly drive for work.

Agreed good practice protocols and codes of practice in all key areas relating to road driving. This includes improved planning of work to reduce the need for journeys, agreeing maximum allowable travel times or other criteria when selecting suppliers, and selecting common technologies for telematics.

Sharing good practice between train operators on policies on rail replacement bus services and company-purchased taxis.

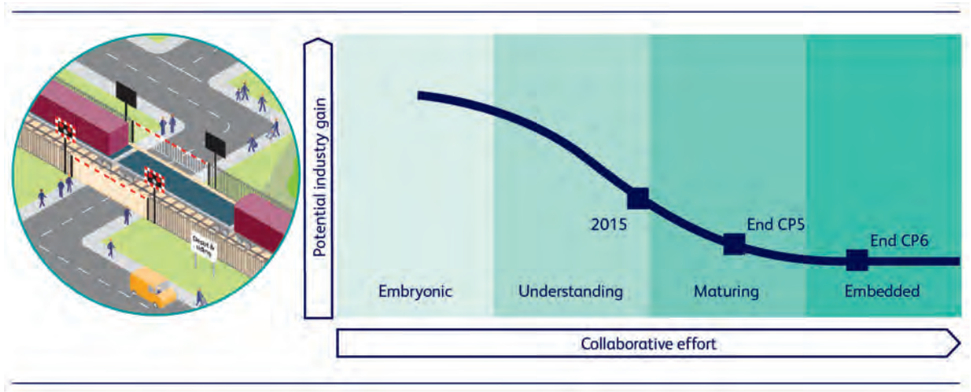
More comprehensive reporting of close calls relating to rail-related road driving across all rail companies and suppliers. This information can then be used to build intelligence and inform decisions around further improvement.

Where can I find out more?

- *Driving at Work: Managing Road Related Safety* is a good practice leaflet to aid managers in understanding and controlling road risk.
  http://www.hse.gov.uk/pubns/indg382.pdf
- RSSB research project T997, *Managing occupational road risk*, provides advice to employers on reducing fatigue risks associated with work related driving.
  http://www.rssb.co.uk/Library/improving-industry-performance/2013-guide-t997-driving-for-work-a5.pdf
- RSSB's *Road Driving Risk page* has a selection of good practice examples (from industry case studies, tools and guidelines to assist in managing road risk.
  http://www.rssb.co.uk/improving-industry-performance/workforce-passenger-and-the-public/road-driving-risk

Level Crossing Risk Group

5.5
Level crossings



Vision

Infrastructure managers and train operators collectively will have a shared vision at a national level for level crossings, enabling more progress on the programme of closure and on greater risk intelligence through higher levels of reporting of near misses and misuse. Higher risk level crossings which cannot be closed will be upgraded by using more cost-effective technologies. Programmes to upgrade or close level crossings will be based on broader assessment of risk including safety, reduced service disruption, and reduced road traffic congestion.

[The vision will make clear within it the respective roles and responsibilities of the different duty holders in its achievement].

A material part of level crossing risk is generated by user behaviour. The wider community, schools, railway neighbours, delivery and road haulage companies, driver training agencies and cycling groups, will be engaged in level crossing safety, and rail industry duty holders will work together to strengthen messages delivered through education.

The case for collaboration

Level crossings are a constant focus for risk management and safety-related investment on Britain's railway. Accidents at level crossings represent the highest contributor to fatalities to members of the public, excluding trespass and suicide, and attract significant public interest.

Network Rail has set targets for further risk reduction at level crossings. Achieving these targets will be challenging, due to risk being dispersed over approximately 6000 crossings, very high costs of closure and upgrading protection, and because safe performance is substantially reliant on careful use by the public.

Although risk management at level crossings is primarily an infrastructure manager duty, train drivers, train passengers and the public are most commonly affected by accidents. Informing and educating this broader community of affected parties is therefore key to achieving further safety improvement. Stronger cross-industry alignment with a common view on level crossing closures, incident reporting, and engagement with the wider community to improve public awareness is key. Lower cost solutions to providing higher levels of protection will be essential to maximise improvements within available budgets, which will require close working between infrastructure managers, suppliers and the ORR to approve novel use of technology.

Figure 12
GB Railway fatality risk (excluding trespass and suicide)

What do we do at the moment?

Network Rail has a vision for 'no accidents' at level crossings, and has approaches in place to discharge duties for management of the risk, such as level crossing upgrades or closures. This goal is ambitious, demanding sustained investment for many years, prioritising the highest areas of risk. The Level Crossing Risk Group has been established as the national collaborative forum to review total railway risk and sponsor collaborative action.

At an operational level, train and freight operators have local and company-specific arrangements in place for reporting close calls at level crossings.

The overarching aim is to secure level crossing closures wherever possible, and many hundreds of closures have been successfully achieved. There are, however, barriers to achieving closures, due to a lack of a joined-up approach, with examples of resistance to closure of station crossings even when lifts and footbridges are installed.

Programmes of level crossing upgrades are underway, although the costs for single crossing upgrades often extend significantly beyond £1m and are a barrier to more widespread upgrades.

What can we do better?

Working towards the vision for zero level crossing accidents requires the rail industry and other community partners to endorse and support Network Rail in its vision. The key opportunities for improved collaboration fall into four areas.

Improving understanding of risk at level crossings by more consistent reporting of close calls and observed misuse, and using this data to build better risk assessments. Currently, local practices in train operators affect the quality and consistency of reporting. Ideas for improvement include use of technology to automate close call reporting, simplifying mechanisms for reporting, and improving consistency of location reports. Infrastructure managers need to ensure good use is made of close call reports to build a more complete understanding of risk.

Strategy: All parties, most notably train and freight operators and local authorities, need to agree strategy for closure of level crossings wherever this reduces overall safety risk. Preferences to retain historical rights of way over infrastructure, such as between platforms at stations, need to be addressed.

Lower cost solutions to level crossing protection need to be sought. This will require effective supplier relationships and collaboration with the regulator (ORR) to gain acceptance for deploying novel solutions. For example, obstacle detectors have already been used at full barrier crossings and can pave the way for new designs, and less costly forms of detecting trains can enable active warning systems at passive crossings where current technology costs are prohibitive.

Wider community involvement: Collaboration effort extends beyond railway industry parties, to local residents, schools, other railway neighbours, and groups such as road hauliers, delivery companies, and crossing users, to target greater awareness. This has been an area of recent activity for Network Rail, and a more joined up approach across train and freight operators and the ORR can strengthen the delivery of messages.

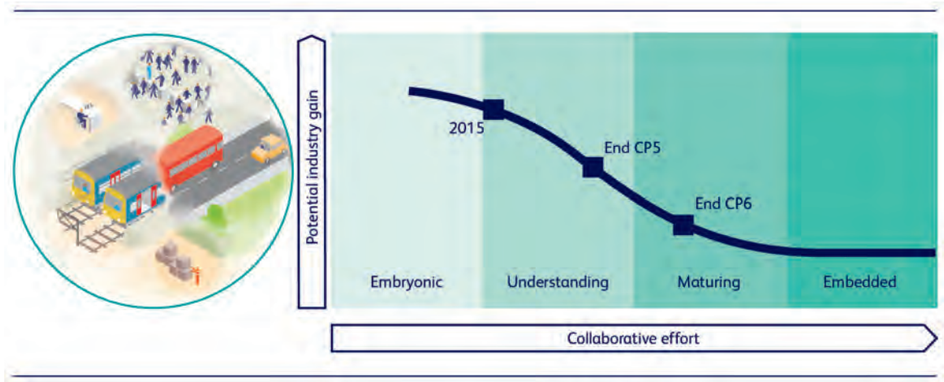
Where can I find out more?

Network Rail and the ORR have published policies for managing the risk associated with level crossings:

- Network Rail's approach to managing level crossings, Our Approach to Managing Level Crossing Safety, https://www.networkrail.co.uk/documents4424Level20Crossing20Policy.pdf.pdf provides details on:
  - Its policy on level crossings and background information
  - The risk associated with level crossings and relevant mitigations
  - Its strategy for managing level crossings
  - Key initiatives
- Chapter 4 of the ORR's Strategy for Health & Safety Risks covers level crossings, looking at current levels of risk and what the rail industry is doing to reduce these risks. http://orr.gov.uk/what-and-how-we-regulate/health-and-safety/health-and-safety-strategy/our-strategic-risk-chapters

Health and Wellbeing Policy Group

5.6 Fatigue



Vision

Leaders across Britain's railway will work together to educate those working for the railway on health and safety risks associated with fatigue. This will help to drive a cultural change in which working practices that reduce fatigue are embedded, across the entire workforce and supply chain. The potential for fatigue will be considered in all aspects of planning work, contractor relationships, and in the impact of travelling to and from work. Managers will lead by example, and be responsive and supportive to concerns about fatigue. These improvements in the leadership and management of fatigue will deliver a demonstrable improvement in health and safety.

The case for collaboration

Fatigue is a well-known contributing factor in many accidents, such as Clapham Junction railway accident in 1988 where 35 people lost their lives. Fatigue persists as a contributor to accidents, with Rail Accident Investigation Branch (RAIB) citing fatigue in 12 recently published investigation reports. An RSSB special topic report found that fatigue was a contributing factor in 21% of incidents. This report highlights a systematic under-reporting of fatigue in the industry's safety incident data, in which only 1% of incidents have fatigue as a factor[16].

High levels of fatigue have an adverse impact on various areas of health and safety. A strong link is evident between fatigue and road driving risk. A DfT study[17] found that being awake for 17 hours produces impairment on a range of tasks that is equivalent to a blood alcohol concentration above the drink driving limit for most of Europe.

Long distances driven by railway employees and infrastructure contractors, along with long working hours, irregular shifts, poorly designed work schedules and night time driving create
a strong link between fatigue and road driving risk. Not all the driving will relate to railway operations.

Fatigue also impacts adversely on workforce health and wellbeing. Fatigue is strongly linked to stress and there is evidence that shift workers are more prone to gastro-intestinal disorders than the general population.

There is growing recognition that managers responsible for employees are often those who suffer high levels of fatigue themselves, which is a key barrier to making progress.

What do we do at the moment?

Regulation 25 of ROGS requires controllers of safety-critical work to ensure workers do not work when they are, or are likely to become, fatigued. This is a risk-based approach, which has moved beyond prescriptive hours of work and is consistent with many other areas of UK Health and Safety regulation.

Guidance on managing fatigue (from the ORR) includes details about setting up a fatigue risk management system based around a well-known Plan-Do-Check-Act approach. Figure 14 shows how fatigue risk management systems sit within the scope of a railway duty holder's safety management system.

Fatigue is often considered to be a single duty holder issue, but it is clear that stronger co-ordination between companies could bring significant benefits. For example, London Underground has recently adopted the Sentinel system used by Network Rail to ensure that contractors are not double-shifting or working excessive hours across the two largest rail infrastructures.

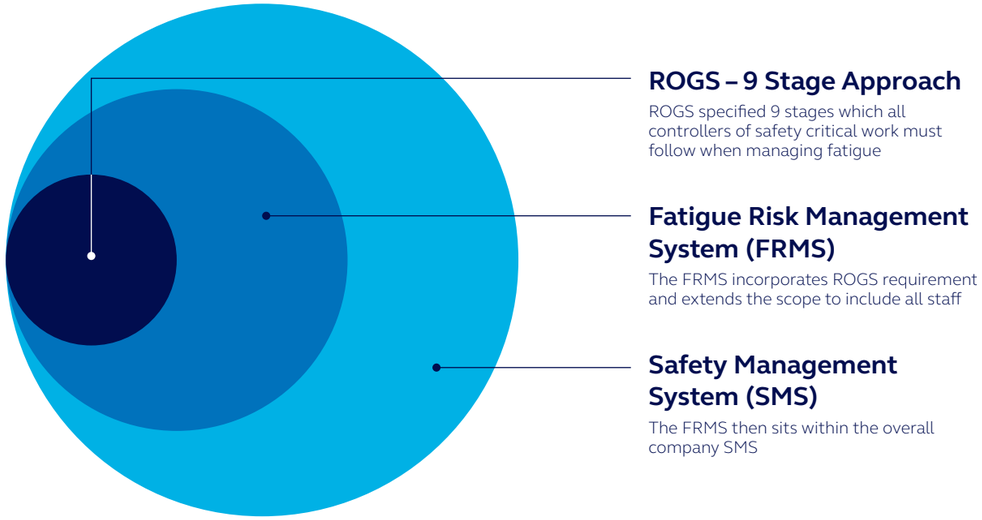
Three specific activities are underway (under RSSB guidance) to collaborate in fatigue modelling.

- Preparing guidance on bio-mathematical fatigue models.
- Preparing guidance on company fatigue control options for first night shifts.
- Developing fitness for duty checks and predicting the risk of experiencing fatigue.

[16] Fatigue was indicated as a contributing factor in only 1% of safety incidents report in the industry Safety Management Intelligence System (SMIS).

[17] Road Safety Research Report 110 (Department for Transport, 2010)

Figure 13
Positioning of FRMS in relation to ROGS requirements and the SMS



What can we do better?

Fatigue risk is linked to broader culture and socio-economics, and changes will take time to embed. However, the rail industry recognises specific priorities for improvement.

Changing the culture of rewarding long hours and presenteeism. Further research is needed to provide a good knowledge base of the impact of long hours and presenteeism. This is an essential first step as it presents a barrier to good fatigue management, including the development of an open, honest culture where there is two-way dialogue and feedback on reported fatigue concerns.

Short-term collaboration between management, trade unions and employees to address the behavioural challenges to better fatigue management.

Strengthened job security may dissuade employees from taking second jobs. Work specifications and local terms and conditions should align with fatigue risk management good practice principles. Training of railway company employees in fatigue risk management will help them to recognise the signs of fatigue, improve the design of working patterns and enhance the organisational culture to support effective implementation of mature fatigue risk management systems.

Longer-term, strengthened collaboration between railway duty holders on fatigue management, to improve alignment and develop more consistent approaches:

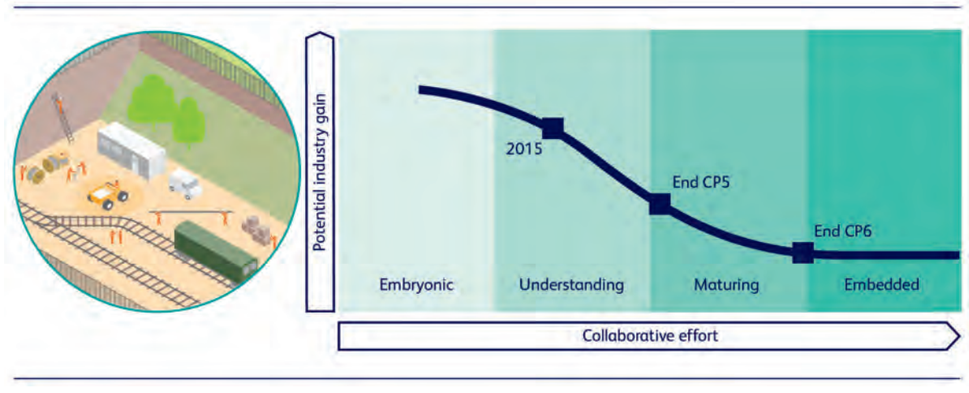
- Common industry standards for fatigue risk management. Use these to develop appropriate fatigue management arrangements for different functions within railway companies.
- Prevent contractors from double-shifting, and reduce excessive weekly work hours.
- Trade unions, management and contractors work together to make base rosters less fatiguing and more biologically friendly for individuals.
- Improve the control of working hours and organisational arrangements that increase fatigue risk and likelihood of error.
- Ensure that fatigue controls are considered as part of the contracting process, including fatigue risks from work-related driving.
- More effective analysis of the role played by fatigue during incident investigations, and a more thorough understanding of the role sleep disorders can play in fatigue.
- Help employees understand their responsibility to book on only when fit for duty, and that the management of their lives outside of work can impact on their ability to perform safely at work.
- Where possible, plan work so that fatigue-related incidents become a thing of the past.
- Improve the design of equipment, such as driver alert systems, using new technologies.

Where can I find out more?

- ORR has published guidance on ***Managing Rail Staff Fatigue***, aimed at companies and individuals who have responsibility for managing fatigue.
  http://orr.gov.uk/what-and-how-we-regulate/health-and-safety/guidance-and-research/worker-safety/working-patterns-fatigue
- RSSB has published a good practice guide supporting the ORR guidance. It offers infrastructure managers and railway undertakings a practical illustration of how fatigue risk can be managed, to improve the health and safety of the workforce.
  http://www.rssb.co.uk/rgs/standards/RS504%20Iss%201.pdf
- The ASLEF union has published a booklet on good practice in rostering and research into the effect of shift work on lifestyle and health.
  http://www.aslef.org.uk/information/102222/102624/102202/fatigue_matters/
- The International Air Transport Association has done extensive research into fatigue management in the aviation industry and published an implementation guide on fatigue risk management systems in 2011.
  http://www.iata.org/publications/Pages/frms.aspx
- RSSB published a special topic report, *Fatigue and its contribution to railway incidents in 2015,* to support industry understanding of the contribution of fatigue to incidents.
  http://www.rssb.co.uk/Library/risk-analysis-and-safety-reporting/2015-02-str-fatigue-contribution-to-railway-incidents.pdf

Infrastructure Safety Leadership Group

5.7 Workforce safety



Vision

Across Britain's railway good practice will be shared on workforce safety to deliver a reduction in the harm caused to our people. Companies will collaborate to improve best practice. Britain's railway will benchmark favourably with the performance and approaches of leading high-risk industries.

Britain's railway companies will work together to identify specific improvements to workforce safety management, including the creation of a single reporting framework, unified competency management and the development of robust risk models which will underpin action by relevant railway companies to deliver effective safety improvements. There will be a complete picture of the risk to our people at work, through comprehensive and reliably reported incident and close call data.

The case for collaboration

The rail workforce includes those directly employed on, or for, the railway and extends to those working outside the railway infrastructure (not trackside) but still on railway related construction projects, such as station redevelopment. The exposure to safety risks across these wide variety of activities is therefore complex and includes all construction related hazards (such as working at height, dropped objects) as well as railway specific hazards associated with moving trains and overhead electrification.

Industry recognises that management of workforce safety could be improved to reduce risk from today's level. Looking ahead specific additional challenges are likely to increase the potential exposure of our workforce to safety risk:

- A high number of construction projects, many of which have a high public profile, for example, new stations, station redesign, HS2, electrification, re-signalling.
- The drive for a 24/7 railway and the challenge of achieving this whilst carrying out required track renewal programmes.
- A fragmented supply chain for construction and infrastructure projects.

An increase in the size and number of projects means there will be an increasing demand for workers, and to fill gaps there will need to be a reliance on a workforce who are inexperienced in the rail environment.

What do we do at the moment?

All companies in Britain have responsibilities under legislation to manage the health and safety of both their own workforce and those who may be affected by their activities. Specific requirements also exist (such as those in CDM[18], CSM, ROGS) for cooperation and coordination between parties to ensure that the health and safety of the workforce is being managed.

Collaboration in the area of workforce safety currently exists in a number of sector forums including ISLG (Infrastructure Safety Leadership Group) which involves principal contractors, Network Rail, TfL and ORR, and NRCG (National Rail Contractors Group) which comprises leaders from the contracting community. These groups provide a focus for information sharing, and increasingly at ISLG a focus on what activities need to be undertaken to mitigate the key risks to the workforce from construction activity. Freight operators have established the National Freight Safety Group, charter operators the Charter Trains Safety Group, and ATOC the Safety Forum for similar purposes.

What can we do better?

A number of specific activities for improving workforce safety have been identified.

Embed safety in design on construction projects from the planning stage, which require collaboration between a wide range of parties to ensure that the project delivers on requirements to improve safety in operations phase.

Create a single reporting framework for incidents and close calls to provide consistent and robust information to underpin risk reduction in the right areas. This aligns with planned improvements to the industry's SMIS. This will then help to determine the risk by type of worker to direct further effort.

Understand workforce safety construction risk by developing a data collection framework to strengthen consistency and reporting of rail construction related risk.

Harmonise worker competence for all tasks including activities across construction, station operations etc.

Adopt harmonised arrangements for workforce management such as the use of Sentinel for time management across all industry players.

[18] CDM - The Construction (Design and Management) Regulations 2015

Develop a strengthened contractor assurance framework and associated arrangements for improving consistency and alignment between contractor organisations.

Develop improved mechanisms for knowledge sharing including good practice and learning from incidents. Topics include: minimising material left on the railway, reducing people/plant interfaces, and improving access and egress from the railway.

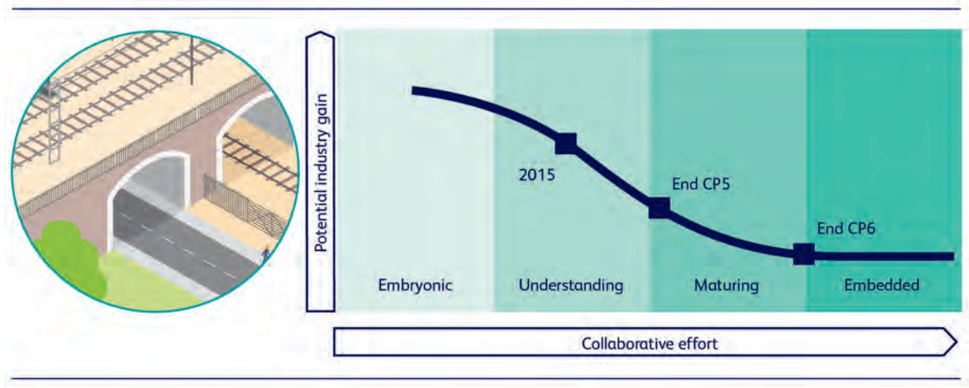
Strengthened work planning, which involves all relevant parties, including train operators, to optimise the balance between operational performance, workforce safety, and project timescales.

Where can I find out more?

- ISLG's website outlines what they do. They have an Integrated Plan which supports the delivery of workstreams to improve workforce safety. www.islg.org
- Network Rail's *Transforming Health and Safety Strategy*, which sets out its objectives and targets for workforce safety, can be found on its website.
  http://www.networkrail.co.uk/browse%20documents/strategicbusinessplan/cp5/supporting%20documents/transforming%20network%20rail/transforming%20safety%20and%20wellbeing.pdf
- Information can be found on the RSSB website associated with the groups that provide a collaborative forum for improving our workforce safety performance.
  http://www.rssb.co.uk/groups-and-committees

Train Accident Risk Group

5.8 Infrastructure asset integrity



Vision

Britain's railway will improve the operational and safety performance of its infrastructure asset, by moving away from the reliance on the infrastructure manager. Collaboration across infrastructure managers, passenger and freight train operators, and contractors will help provide more comprehensive and up-to-date knowledge of the asset, and enable improved infrastructure maintenance, design and performance.

Improved asset design will bring wide benefits, including reduced likelihood of damage to existing infrastructure, improved safety of passengers on our trains and at stations, and reduced risk to staff that access our railway infrastructure to undertake work such as enhancements and renewals.

Understanding of asset integrity will be strengthened by improved data collection which will allow implementation of robust, risk-based maintenance and renewals or enhancement activities.

The case for collaboration

The integrity of our infrastructure assets is vital to the safe operational performance of our railways and ever improving reliability. It is critical as it enables the staff, passengers and public who work on, use or access our railway network to do so safely.

Infrastructure failures have the potential to cause major accidents, such as at Hatfield in 2000. As well as the loss of four lives and over 70 injuries, the Hatfield accident resulted in severe reputational damage to Railtrack and longer-term operational disruption to TOCs and FOCs.

The integrity of our infrastructure underpins many other areas of this strategy and facilitates improved health and safety

for those who interface with our railway. The scope of this area covers assets that constitute the operational railway (track, signalling, civils – structures and earthworks, buildings – stations and depots, electrical power, drainage, and telecommunications).

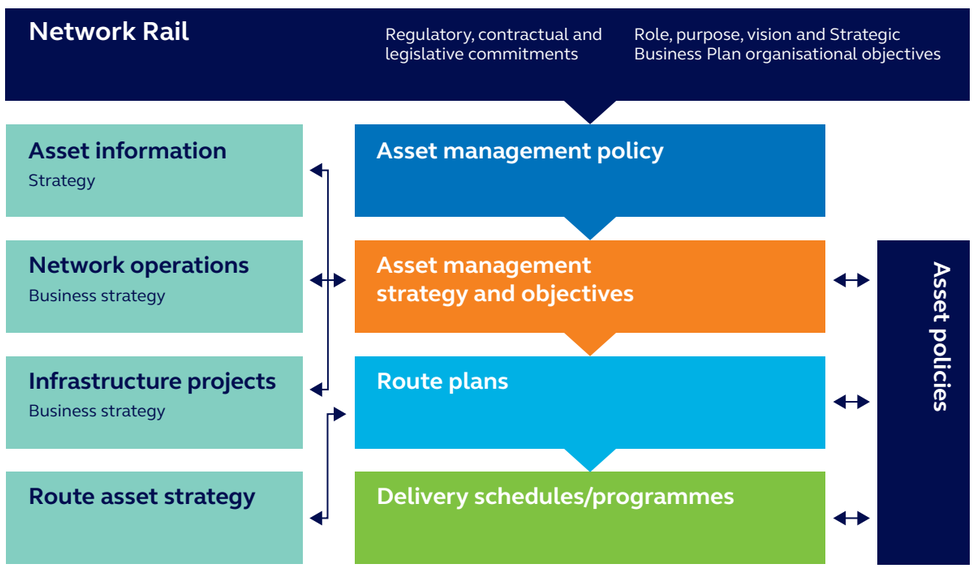
What do we do at the moment?

The integrity of infrastructure assets is, and will remain, the responsibility of the infrastructure manager (IM). The largest IMs are Network Rail and London Underground.

There are other IMs too, such as HS1 and Tyne & Wear Metro. Network Rail is accountable for the management of assets which include over 30,000 bridges, 2,500 stations and 20,000 miles of track.

Stakeholder engagement is key to ensuring the strategy delivers agreed objectives – whilst Network Rail and London Underground are the main duty holders as IMs, collaboration with other railway companies can deliver many benefits.

Figure 15
Network Rail asset management policy



What can we do better?

There are three areas relating to asset infrastructure integrity that present opportunities for improvement through collaboration.

Asset information: railway asset information and data – prognostic and diagnostic – can provide opportunities for early intervention, to minimise the occurrence of asset and infrastructure integrity issues that present safety risk. Collaboration between IMs and

train operators can maximise the opportunity for train-borne asset information and data collection systems (such as cameras and lasers). Train operators and contractors who are on and can see the railway could better understand and report asset related issues.

Asset and infrastructure perturbation: collaboration to improve how we respond to unexpected service perturbation as a consequence of asset failure or late infrastructure works can improve our performance and reduce risk. (For example, the overrunning engineering works at Kings Cross in winter 2014/2015)

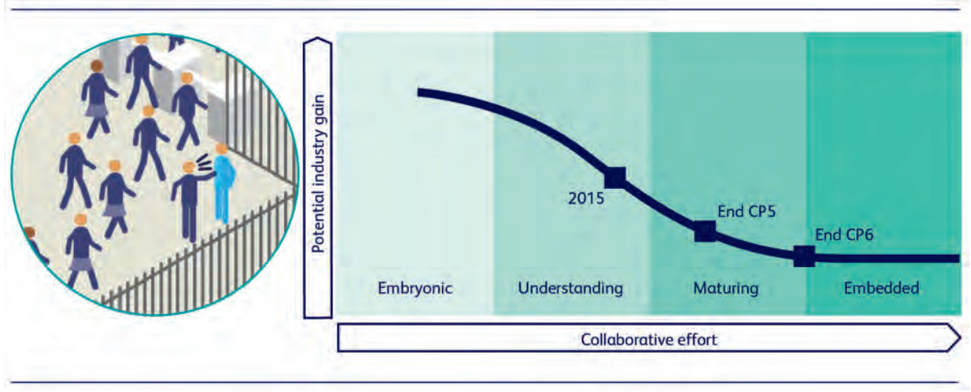
Network Rail is implementing a Risk Control Framework across the whole lifecycle for asset control. It identifies assets and their data to better manage risk, links competencies to risk management activities, defines critical limits centrally, for consistent use across the network.

Where can I find out more?

- The *Rail Technical Strategy 2012* produced by the Technical Strategy Leadership Group sets out the technical strategies in six themes to support the transformation of the railway and deliver rewards over the next 30 years. The themes are control, command and communication, energy, infrastructure, rolling stock, information, and customer experience. This strategy will be reviewed during 2016. http://www.rssb.co.uk/future-railway-programme/railway-of-the-future
- Network Rail has an *Asset Management Policy* and an *Asset Management Strategy* and each route has a Route Plan (see Figure 15). These describe the enhancement, renewal and capacity plans for the railway and can be found on Network Rail's website. http://www.networkrail.co.uk/aspx/12210.aspx

People on Trains and at Stations Risk Group

5.9 Workforce assaults and trauma



Vision

There will be a demonstrable reduction in workforce assaults and trauma across Britain's railway.

A reduction in trauma to train drivers will be delivered primarily through reducing suicides, trespass and level crossing incidents (see other sections of this strategy). Where incidents leading to trauma do occur, good practice chain of care processes will be consistently deployed to minimise the impact.

Staff assaults will be reduced by working to target underlying causes, for example, by improved management of disruption, through improved information flows, and through optimising and extending the use of CCTV. Anti-social behaviour will not be tolerated. Leaders of Britain's railway will be aware of the situations that could place staff at risk from assault, and actively avoid the potential for such situations arising.

The case for collaboration

Assaults and trauma to our workforce are ongoing concerns that the railway is committed to address. The range of staff exposed to the potential for assaults is wider than commonly assumed; engineering staff attending failed trains, platform staff during disruption, lone workers, as well as train crew and revenue protection employees are all susceptible to assault.

Reducing assaults requires railway companies to work with one another, for example in managing disruption between multiple operators, as well as with other organisations such as BTP. Leadership understanding is required to avoid placing operational employees in situations that may put them at risk.

Trauma affects a broad range of railway workers from train drivers to conductors and station staff, as well as customers, not just from witnessing suicides, but also as a secondary consequence of assault and major incidents. Progress in reducing trespass and suicide on the railway, and further reducing accidents at level crossings will directly reduce incidents of trauma.

Greater collaboration on both assault and trauma can extend benefits beyond that which individual duty holders can achieve on their own, existing pockets of good practice in the rail industry already exist, which need to be better replicated.

What do we do at the moment?

Initiatives to avoid and reduce assaults is managed in a localised manner according to arrangements for broader station management. Collaboration does exist between train operators and BTP, although this occurs on a regional basis, with limited wider coordination.

The installation of ticket gate lines at many stations has changed the dynamics of managing the potential for assaults. In particular, ticket gates have meant that revenue protection activity has shifted from trains onto stations, which is inherently an easier environment to control.

Assault and trauma is an area of significant concern for trade unions. In the case of trauma following suicide, train operators have formal processes in place that benefited from extensive union involvement. Defined chain of care arrangements, with free, direct access to external counselling services for all employees, are in place at several train operators.

What can we do better ?

Stronger uniformity: in the approach between different geographic areas and rail organisations. For example, consistent approaches across the country by train and station operators, and stronger alignment between the regions of BTP. This is a key priority.

Improved practices: are needed in several areas. This includes between BTP, station operators, and train operators on the management of assaults, considering the impact of managing or removing disruptive passengers from trains or stations, and how to manage potentially problematic passengers through ticket barriers.

Establishing good practice: is important in a number of areas. At a national level, collaboration between rail companies to share good practice could help mitigate the frequency of assaults.

For example, by establishing, better use of information systems and CCTV to reassure passengers feeling vulnerable, and communication protocols to prevent escalation of anti-social behaviour. Other examples include: sharing how organisations support staff following an event, how they embed defined processes, and sharing areas where there are good quality levels of counselling and support available, including recovery and back to work processes.

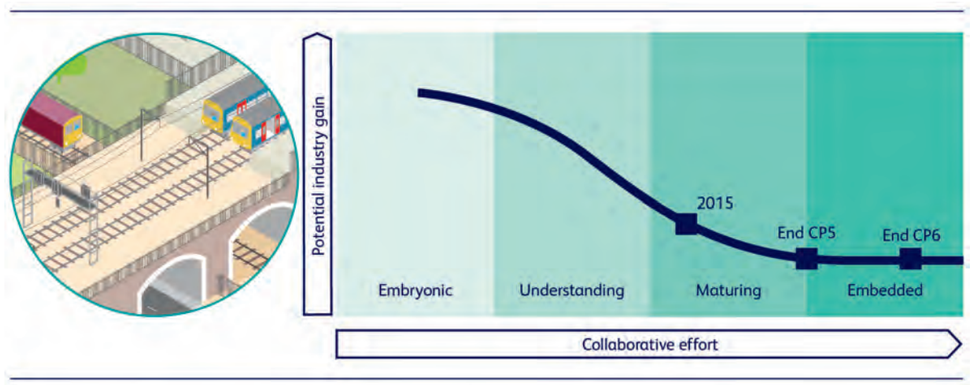
Revenue strategy: clarity from the DfT and TS will improve the management of this area. For example, balancing revenue collection requirements with the potential for assaults, such as at large events.

Where can I find out more?

The Home Office has issued guidance on CCTV system operational requirements, which also provides technical guidance on system use and camera location guidelines.

https://ico.org.uk/for-organisations/guide-to-data-protection/cctv/

5.10 Train operations



Vision

The risk arising from train operations will be reduced through a combination of intelligent use of new performance data (enabled by SMIS), the development and introduction of new technology, and further improvements to safety critical communications.

Cross-industry management controls for priority risk areas will be developed by rail companies working together, for example the SPAD Risk Reduction Strategy which outlines a 10-year improvement programme.

Delivery of some elements of the Rail Technical Strategy will be instrumental in driving further safety improvement in train operations.

The case for collaboration

Train operations covers the planning, movement and control of trains. Reliable and safe train operation needs competent people to operate trains and signalling systems; inspect, maintain and renew the infrastructure and rolling stock; set timetables; and manage degraded operations.

Safe and reliable train operations can be compromised by a wide range of events from vandals throwing stones, to a high-speed passenger train collision. Previously, the industry's focus has been on the more serious accidents (such as train collisions arising from signals passed at danger, and derailments), but collaboration in all areas is growing in prominence.

Concerted effort and investment has reduced the risk of train accidents (collisions and derailments) considerably, such that they are relatively rare events[19]. The industry is not, however, complacent as there remains the potential for single or multiple fatalities if a train accident should occur. The rail industry monitors precursors to such train accidents, and is investing to enhance these capabilities as part of the SMIS project (which will include comprehensive collection of human error, system and management issues).

Continued collaboration is critical. Successful train operations inherently require all parties to work together across interfaces.

What do we do at the moment?

The Train Accident Risk Group (TORG) is a dedicated, expert subgroup of the System Safety Risk Group (SSRG) facilitated by RSSB. Its purpose is to understand and review the proportion of total system risk relevant to train operations. It monitors the effectiveness of current control arrangements, identifies and sponsors improvement opportunities, learning from and promoting good practice, and facilitates collaboration.

TORG makes use of the Precursor Indicator Model (PIM). This provides a predictive measure of underlying train accident risk by tracking changes in the occurrence of accident precursors. This is an important risk management capability, because the low frequency of train accidents means a predictive approach is needed to determine potential high areas of risk, and to direct risk management effort accordingly. The PIM for TORG covers nine main areas: track, structures, earthworks, signalling, SPAD[20] and adhesion, infrastructure operations, level crossings, objects on the line, and train operations and failures.

At geographic route level, new collaborative arrangements between routes and local operators are currently under development. These will consider the management of train operational risk during delivery of train services and are replacing the Operational Risk and Mitigation (OPSRAM) groups that previously served the same purpose. (See Section 1.4)

[19] At the time of writing the last train accident on Britain's railway in which there was an on-board fatality was the derailment at Grayrigg in February 2007, which resulted in one passenger fatality. The last train accident with ten or more fatalities was at Great Heck in February 2001 and occurred as a result of a train colliding with a road vehicle, following a vehicle incursion.

[20] SPAD -Signal passed at danger.

Priorities for working together

What can we do better?

Collaboration in managing train operation risk has been gradually maturing for many years and has supported a significant reduction in train accident risk over the past decade.

The need for continued collaboration is well understood, and specific strategies are currently in under development, including:

- *National SPAD Risk Reduction Strategy* for the next decade
- *National Safety Critical Communications Improvement Plan*

Other high priority precursor areas are being considered by industry due to their contribution to train accident risk, including landslips, non-rail vehicles on the line, runaway trains, operating incidents, and twist and geometry faults.[21]

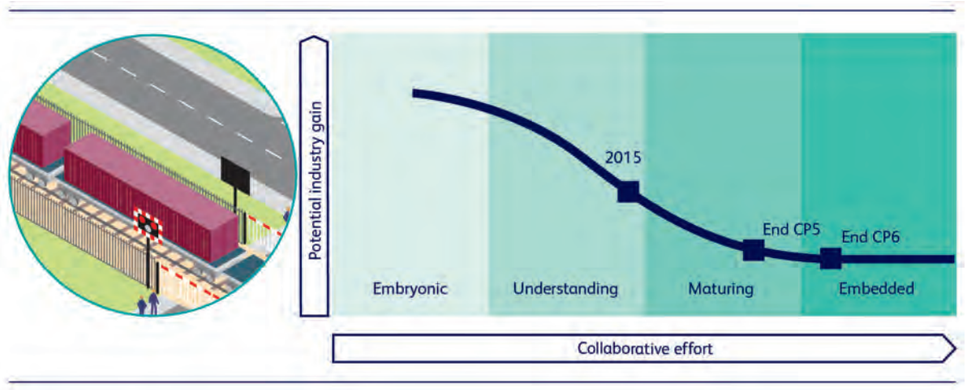
Where can I find out more?

- The Rail Technical Strategy published in 2012 discusses the future operating model and changes to operations which will reduce operational risk, for example the introduction of train protection systems. The strategy promotes system optimisation by supporting the development of a better understanding of interface issues and the introduction of appropriate market incentives into technical requirements, franchise agreements, and other commercial contracts.
  http://www.rssb.co.uk/future-railway-programme/railway-of-the-future
- RSSB publishes information resources concerning train operations risk on SPARK.
  http://www.rssb.co.uk/groups-and-committees/rssb-board/safety/system-safety-risk-group/train-operations-risk-group
  http://www.sparkrail.org/
  (Needs registration)
- OpsWeb is an RSSB website resource containing details of operational risk matters.
  http://opsweb.co.uk/about-opsweb/
  (Needs registration)

[21] Although level crossings are within the scope of TORG, they give rise to a significant portion of train accident risk, and are managed by a dedicated Level Crossing Risk Group (a subgroup of SSRG).

National Freight Safety Group

5.11 Freight



Vision

Operational and workforce risk related to freight operations will be demonstrably reduced as Britain's freight network expands over the years ahead. A key enabler will be freight operators and infrastructure managers working together to develop a more complete understanding of risk specific to freight activity.

Improvement will be delivered by extending joint working across all operators, supported by activities identified within the National Freight Plan. The National Freight Safety Group (NFSG), through its representative on SSRG will update the industry on its activities and thereby the potential impacts on the overall management of system safety risk.

The case for collaboration

Rail freight is vital for the future economic well-being of Britain's economy, and is essential for securing continuing competitiveness and business wealth creation through its part in an integrated supply chain. Rail freight has a particularly large potential for Great Britain over the next 30 years as containerised imports increase. Today, freight is around 30% of total rail traffic on Britain's railway.

Rail freight operations involve numerous interactions between multiple parties including wagon owners and maintainers, customers, infrastructure controllers, other freight operators, and third parties involved with the loading of vehicles.

Freight operators are competing to provide a seven-day accessible freight network, and striving towards the achievement of 24-hour operation, against a background of network capability constraints.

Co-ordination across freight operations is needed to balance this competitive position with developing improved safety management. At the outset, freight risk needs to be better understood, with data accurately collected, to prioritise risk reduction activities.

What do we do at the moment?

Each freight operating company is a single duty holder with its own arrangements for managing health and safety risk. Whilst freight operators are responsible for the safe operation of their services, they are reliant upon third parties to provide numerous services such as loading, provision and maintenance of rolling stock, and upon infrastructure controllers who provide safe infrastructure on which to operate.

The National Freight Safety Group (NFSG) was established as a sector level group, to enable the freight operating companies to develop and implement arrangements for the ***'duty of co-operation across both mainline and non-mainline networks'***. NFSG is represented on SSRG (System Safety Risk Group) to provide and maintain an interface, and to ensure that the contribution of freight operating risk towards overall system safety is addressed.

NFSG is supported in the management of freight risk by the Rail Freight Operators Group (RFOG) in respect of railway operational and technical activities, the Dangerous Goods Working Group (DGWG), and the Freight Technical Committee (FTC), which addresses the areas of risk applicable to locomotives and rolling stock. The group works to promote the effective management of risk arising from freight operations, across the UK Rail network and other infrastructure where they operate.

Delivery will be led by the development and introduction of an Integrated Freight Plan.

What can we do better?

There are four areas that present key opportunities for improvement through collaboration.

Understanding of freight risk: Working with RSSB, the freight community will develop a tool to extract freight-specific risk profiling information from the industry's Safety Risk Model (SRM). Further developments to the SRM may be required to improve the understanding of freight risk (including human factors elements). Further work will be carried out to better understand the risks jointly encountered in depots, yards and sidings, and on customer owned infrastructure.

Measuring current safety performance: A freight-specific safety performance and information pack will be developed. It will comprise data and precursor information relevant to: freight operations including operational safety, workforce and occupational safety, infrastructure safety, imported risk, individual accident or incident events, international learning opportunities, and regulatory action or enforcement. This will help inform decision making in single organisations and across the freight sector.

Planning of risk reduction activities: An integrated plan will be developed to help provide a consistent national approach to risk reduction and improvements across the freight community.

Risk control improvements: A common risk control framework and consistent methods of working will be developed. Specific areas will include track quality, improving arrangements for safe loading of wagons, gauge compliance, and loose materials.

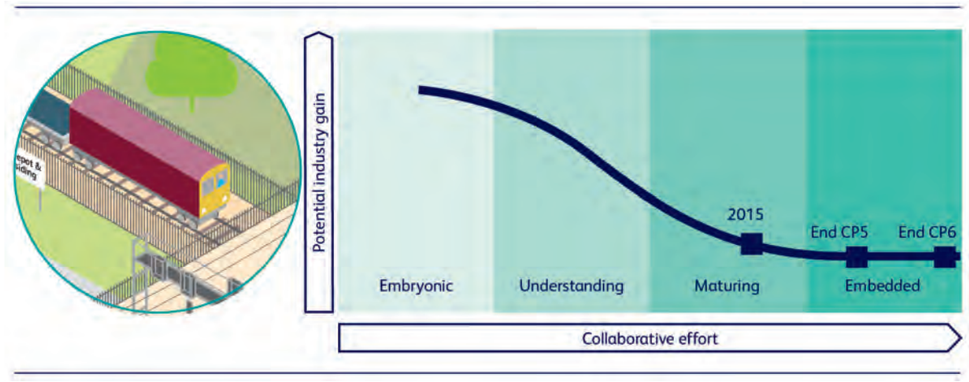
Where can I find out more?

National Freight Safety Group

http://www.rssb.co.uk/groups-and-committees/rssb-board/other-groups/national-freight-safety-group

RoSCos, RDG Engineering Council
Freight Technical Committee, M&EE Group

5.12
Rolling stock asset integrity



Vision

Risk associated with failures of the integrity of rolling stock will be demonstrably reduced by improved co-ordination across all parties, including the original equipment manufacturers (OEM), train operators, and infrastructure managers. This will be achieved by taking a system-wide view of risk and how this is affected by rolling stock, including degraded operational modes.

Risks across the whole-life cycle, such as during maintenance and mid-life refurbishment, will be reduced at the design stage. Wide cross-industry communication will mitigate future risks arising from software-based control systems and cyber-security concerns.

The case for collaboration

Passenger rolling stock is a public-facing front of the railway with many interfaces. Over the life-cycle of rolling stock, there are several parties with responsibility for health and safety, which require management across physical and organisational boundaries.

OEMs, vehicle owners, train operators (TOCs and FOCs), and maintainers (ECMs) collaborate to minimise safety risk and environmental impact during the working life of rolling stock.

Mechanical and electrical failures of rolling stock are a cause of a number of hazardous incidents. Fortunately, fatalities and serious injuries are rare, but the potential exists for multiple fatalities, for example the derailment of a Class 222 Meridian vehicle at East Langton in 2010 due to a gearbox failure.

An additional challenge is posed by increasing passenger numbers and the drive for lighter and faster vehicles. Freight trains face commercial challenges from road transport and there is a drive to minimise capital and operating costs.

Incidents involving on-track plant and machines when in working mode have led to a number of serious accidents.

Communication and co-ordination at interfaces from the design stage through maintenance, modification programmes, and ultimately disposal allows the rolling stock to operate in a way that reduces the potential for accidents, as no one party can effectively manage these. Closer collaboration between rolling stock operators and third-party maintenance contractors during heavy maintenance to ensure effective quality control will also become more important as the complexity of on-board systems increases.

What do we do at the moment?

There is a legal requirement under EU Directives for rolling stock to be designed to comply with the requirements of Technical Specifications for Interoperability (TSI). Their primary role is to manage the interfaces between subsystems. The TSIs are complemented by a harmonised suite of European standards called Euronorms (EN). Where the TSIs or ENs have open points or are silent on certain requirements, the UK has a suite of National Technical Rules (NTR), which also serve to address UK-specific, or legacy infrastructure requirements.

A documented SMS underpins all stages of the rolling stock lifecycle to ensure conformity to the essential requirements in the European Directives. Prior to entry into service, conformity to these requirements is independently reviewed by approved assessment bodies.

The standards regime is continually evolving, taking account of accident investigations, rolling stock failure statistics, research initiatives, and other sources to enhance safety, performance and reliability.

However, potential new safety risks may arise from the introduction of computer-based train control systems interfacing with infrastructure, or other rolling stock subsystems. These risks may arise from unforeseen failure modes or from deliberate action (such as terrorism or sabotage). Reporting of such critical risks is currently managed through the National Incident Reporting (NIR) system, an online portal.

What can we do better?

Five areas represent opportunities for potential risk reduction, or to control emerging risks.

System integration: Interface of rolling stock software-based control systems with infrastructure, and other communication and control systems (CCS). Collaboration between OEMs and IMs to minimise dependence on single-source software suppliers. [Check compliance with competion law.] Collaboration to 'stress-test' the system incorporating degraded operational modes. Separating public and private (ring-fenced) networks on rolling stock to minimise the risk of hacking and sabotage.

Cross-interface system modelling: Collaboration between OEMs and IMs to improve the system modelling used to understand the electrical, mechanical, control systems interaction of the rolling stock with infrastructure when both sides of the interface are degraded. This would allow the railway system to optimise operational rules, such as applying targeted speed restrictions for container trains in high winds.

Cross-interface asset condition monitoring: Use of intelligent systems (condition monitoring) on rolling stock and infrastructure, each to monitor themselves and the other side of the interface. This allows more widespread use of condition-based maintenance and planned intervention to avoid failures.

Automation of test: Collaboration between OEMs and ECMs to automate routine testing of safety critical components (such as wheelsets, CCS, brakes) to remove reliance on subjective assessments by maintenance staff and address the potential for error arising from operator fatigue.

Quality control during heavy maintenance: Closer collaboration between maintenance contractors and rolling stock operators during heavy maintenance will reduce the number of quality control issues that arise and ensure continued reliable rolling stock operation.

Linking all these areas will be the implementation of approprate training and competence for rolling stock maintainers, and with improved documentation and specifications.

Asset design: better collaboration in the design of new rolling stock with infrastructure owners can enable improvements in the safety performance and management of assets, preventing infrastructure integrity issues. This can also reduce existing risk to staff (such as toilet discharge) and customers (PTI). Collaborative design of communication technology and protocols can also lead to technological and safety improvements associated with communications. For example, this could be between trains and stations for customers, or between trains and track workers for protecting work gangs.

Better collaboration and good practice sharing between asset and infrastructure owners can help improve infrastructure designs. This could reduce risk associated with the movement of people and goods through our assets and onto other assets, for example from station platforms onto trains.

Where can I find out more?

- Good practice relating to decision-making that affects safety is covered by Taking Safe Decisions. Some of the examples are based on decision-making relating to rolling stock. http://www.rssb.co.uk/risk-analysis-and-safety-reporting/risk-analysis/taking-safe-decisions
- The Rail Technical Strategy published in 2012 has useful content about rolling stock. The strategy assumes that TOCs and FOCs will specify requirements and OEMs will design rolling stock to deliver them. The strategy promotes system optimisation by supporting the development of a better understanding of interface issues and the introduction of appropriate market incentives into technical requirements, franchise agreements, and other commercial contracts. http://www.rssb.co.uk/future-railway-programme/railway-of-the-future
- RSSB publishes information resources with high-level information and guidance on cyber security. This is designed to support the rail industry in reducing its vulnerability to cyber attack. http://www.rssb.co.uk/improving-industry-performance/cyber-security
- The NIR system is used to rapidly report and disseminate safety-related information on trains, depots and track maintenance plant.
- NSAR works on the skills and competence gap. http://www.nsar.co.uk/