



ORR Health and Safety Report

Published July 2010

Our Health and Safety Report provides an overview of the health and safety landscape as we see it, both at a strategic level and from our frontline inspections and audits.

Our key messages are:

- Britain’s railways continue to be amongst the safest in Europe
- Whilst worker safety is improving we have continuing concerns about track worker safety
- Significant concerns about the reporting of minor injuries
- Despite a positive overall picture on passenger safety the short-term trend on passenger harm is up
- The industry needs to raise its game on occupational health

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Introduction

The Office of Rail Regulation (ORR) is the national health and safety authority for Britain's railways.

ORR's aim

We aim to make sure that the:

- health, safety and welfare of passengers, railway employees and members of the public who may be exposed to risks from the railway is protected;
- rail industry achieves excellence in health and safety culture and risk control.

ORR's vision

Our health and safety vision is for zero workforce and industry-caused passenger fatalities, with an ever-decreasing overall safety risk.

ORR's approach

We aim to ensure that the rail industry manages risks adequately, and continuously improves its health and safety performance as far as is reasonably practical.

Informed through regular audits and inspections, the investigations of incidents and complaints, we are able to take an efficient risk-based approach to regulation.

Our regulatory approach includes:

- using our newly-developed railway management maturity model which helps to identify how well duty holders are meeting the requirements of their safety-management systems;
- proactive inspection and audit to inform the railway management maturity model;
- monitoring health and safety performance indicators, including the assessments undertaken by other bodies, such as the Rail Safety and Standards Board (RSSB) and the Rail Accident Investigation Branch (RAIB);
- providing industry advice and guidance to help duty holders comply with the law;
- using our powers and influence to help the industry tackle common issues such as competence, supervision, managing change and safety awareness; and
- using appropriate enforcement to:
 - make sure duty holders take immediate action to deal with serious risks;
 - ensure duty holders meet the legal requirements; and
 - if appropriate, make sure duty holders are held to account in the courts for any health and safety failings.

What does excellence in health and safety culture and risk control look like?

It is about	It is not about
trust	gold plating
people and behaviours	harming workers
legal compliance	having dissatisfied stakeholders
transparent reporting	blame
two-way communication	lots of paper
having a strong continuous improving learning culture	tick box audit
managing risks	inappropriate standards and procedures
doing things right the first time	paying less attention to contractor safety
making the most of everyone's capabilities	endless debate or complex processes

Roles of the key industry bodies

ORR	Railways' duty holders
<ul style="list-style-type: none">• enforces compliance with Health and Safety at Work Act (HSWA) and subordinate regulations for GB railways by:<ul style="list-style-type: none">> setting railway specific policy;> producing guidance;> inspection, audit and investigation of risk controls;> driving improvement through advice and formal enforcement; and> ensuring research is carried out.• assuring system safety for mainline railway; and• acts as National Safety Authority (Europe).	<ul style="list-style-type: none">• duty to eliminate or control risk by:<ul style="list-style-type: none">> conducting risk assessments;> implementing control measures within a Safety Management System (SMS) through setting safe systems of work, instruction, training, supervision, monitoring and review of the effectiveness of their controls; and> co-operating with other operators and parties.• licence condition requires railway group members (but only the mainline railway) to join RSSB. Others, for example suppliers, can join voluntarily.
RSSB	RAIB
<ul style="list-style-type: none">• supports the mainline industry only;• manages Railway Group Standards for interfaces (operational/performance benefits as well as safety);• assists the industry in securing health and safety by:<ul style="list-style-type: none">> data gathering & modelling;> research; and> providing technical expertise.	<ul style="list-style-type: none">• independent investigation body for railways accidents/incidents;• has no enforcement powers;• produces reports with recommendations about preventing a recurrence;• can produce urgent safety advice notices; and• does not apportion blame or liability.

Section 1 – ORR director of safety’s foreword

The Office of Rail Regulation has always been clear that health and safety on the railways is its absolute priority.



We are in a period when economic issues are, quite rightly, at the forefront of the rail sector’s thinking. However, **we must all remain absolutely committed to achieving excellence** in health and safety, alongside value for money and performance.

For the rail industry, continuous improvement in health and safety will support greater efficiencies, as excellence in business performance and health and safety go hand-in-hand.

I can assure you that the **regulator will not lose its focus** on the fundamental importance of achieving the highest standards of health and safety across the railways – without the need for “gold plating”.

So it is with great sadness that the rail sector should look back on a year in which three workers lost their lives while at work and a member of the public lost her life at Moreton-on-Lugg level crossing. These tragic incidents were all avoidable and important reminders of the need to remain vigilant.

This new annual publication - the *ORR Health and Safety Report* - provides our industry-wide analysis of the state of health and safety across the rail sector. The report will define and cite best practice across the rail industry, highlight areas for attention and explain the regulator's role in ensuring the railways continue to be challenged to deliver excellence.

Health and safety on the railways is showing continuous improvement. I am particularly pleased that the industry has clearly recognised the importance of developing and measuring its health and safety culture alongside business performance – although there is no room for complacency. Further highlights outlined within this report include:

- When benchmarked with Europe through the European Rail Agencies common safety indicators, there is no doubt that **Britain’s railways are one of the best performing**. A key indicator for the mainline railway is RSSB’s precursor indicator model for system safety risk to passengers and the public at level crossings - in 2009/10 it showed an 11.35% improvement.
- In overall terms **total worker safety across the whole industry continues to improve** – for example, there were no fatalities or major injuries reported to shunters or ground staff in what has been a very high risk activity. However, concerns persist regarding track workers on the mainline railway.
- **London Underground’s (LUL) health and safety performance continues to improve** with the trend in major passenger injuries down, alongside significant reductions in the number of asset failures over the last five years.
- **Network Rail is making efforts to improve its own safety culture** and address issues like controller of site safety competency and the need to improve track worker risk minimisation.

There are also some areas of concern:

- On the mainline railway **overall passenger harm went up for the first time** in seven years – this trend is dominated by injuries at stations.
- Structure failures on Network Rail infrastructure and serious incidents during the bad weather.
- The year was marked by three worker fatalities. **The safety of track workers on the mainline railway is of real concern.** Their safety in terms of overall harm showed an upward trend last year. There has been **significant enforcement activity** required on Network Rail in this area of track worker safety. I also have a concern regarding the ratio of major injuries compared to reportable over three day lost time injuries, which is very high compared with other industries and LUL.

We are determined to support the industry's successes and enable improvements, and to improve the way we do things.

Crucially we have successfully implemented our safety management system maturity model. This tool helps both the regulator and duty holders focus efforts more effectively and efficiently towards improving safety culture and safety management systems.

We are now using Rail Accident and Investigation Branch (RAIB) investigations to inform safety improvements beyond those specifically detailed in their recommendations. This year we completed an analysis of themes emerging from RAIB's work to identify key areas where causes of incidents could be more successfully addressed. Such themes – which are now being addressed by Network Rail - included level crossings risk assessment processes and site supervision.

This past year also represented the first in which our safety function operated in its new structure. A significant reorganisation, resulting in a reduction in staff numbers and management layers, has allowed our inspectors to spend more time out in the field and improved our focus on duty holders.

Overall, this first *ORR Health and Safety Report* details another year of sustained improvements in safety - this is to the credit of the entire rail industry. However, a continuing issue for us is the lack of information across the industry as a whole on occupational health. Although there are some areas of excellence, this is an area in which we hope, in future years, to see significant improvements.

However, with figures also indicating a recent increasing trend in passenger and track worker harm, there is absolutely no room for complacency.

Excellence in health and safety culture and risk control must become the goal for the industry so that our railways can maintain continuous improvements in safety, alongside greater efficiency and value for money, through world class systems, processes and leadership.

Section 2 – The wider health and safety landscape

The legislative framework for safety regulation

Having the right health and safety legislation in place is the foundation for our work in helping the railway industry to improve its health and safety culture and risk controls. As well as incentivising the right actions and behaviour within the industry, we need to be confident that duty holders can comply with the law and that it can be enforced by our inspectors. There is also a need to ensure that UK railway-specific law is consistent with any relevant European legislation.

We are responsible for preparing proposals for railway safety regulations, working closely with the Department for Transport (DfT) to ensure that the UK has the right overall framework of railway safety law. We also prepare guidance to support rail industry compliance and enforcement.

The main railway safety regulations are the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS). In 2009/10, we developed proposals to amend these regulations, primarily to implement the revised European Railway Safety Directive and new rules for maintenance of vehicles. Revised regulations are expected to be in force in 2010/11.

We support the European objective of removing barriers to entry to a safe and high-performing rail sector. Harmonising approaches to safety regulation and recognising each other's rules and processes are vital to achieving this objective. The majority of rail-specific safety legislation in the UK now originates from Europe. We are committed to ensuring that the UK's views are heard in the development of European initiatives which supports the European Railway Agency in its work to establish high level, safety management system requirements, rather than detailed or over-prescriptive rules.

In 2009/10 key outcomes of our engagement in Europe were:

- **helping to ensure an effective and risk-based approach** to the review of freight wagon maintenance across Europe, following an accident at Viareggio in Italy;
- **influencing the development of a greater role** for the European Rail Agency in harmonising approaches to regulation;
- **influencing the pan-European criteria** for assessing applications for safety certificates and safety authorisations, which are required in order to operate rail services or manage rail infrastructure.

Other key legislative work included:

- **finalising**, alongside DfT, regulations to implement the provisions of the train driver licensing directive;
- **ensuring** that effective arrangements are in place for our enforcement of regulations on accessibility provisions;

- **initiating** and providing support for the Law Commission review of level crossing law.

Framework for safety regulation in Britain

Last year we devised a railway management maturity model. The model helps us make judgments about a duty-holder's safety management capability based on evidence. It allows us to discuss improvements to safety management with duty-holders. Allied to this work, we have reviewed our tools for evaluating a duty-holder's safety culture and restated the approach to competence management.

<http://www.rail-reg.gov.uk/upload/pdf/management-maturity-model.pdf>

This year we introduced an occupational health programme. We collaborated with many people in the industry with an interest in occupational health to identify those activities likely to deliver the most benefit. The programme will run from 2010-14 and aims to deliver our vision of an industry that consistently achieves best practice in occupational health. The programme includes activities to encourage industry leadership, promote awareness of health amongst managers, and encourage excellence in health management by duty holders.

We also produced a guidance document "Assessing whether risks on Britain's railways have been reduced so far as is reasonably practicable" which clearly sets out our expectations for the railway industry wherever the issue of 'reasonable practicability' arises.

<http://www.rail-reg.gov.uk/server/show/nav.1118>

During 2009/2010 our inspectors served 38 notices (13 Prohibition Notices and 25 Improvement Notices) across the rail industry and completed two prosecutions as a result of significant failures combined with significant risks posed to workers or passengers.

RAIB investigations and recommendations

In 2009-10 RAIB published 31 reports addressing 188 recommendations to us for consideration/ action. Over this period we also reported back to RAIB in relation to 222 recommendations - 190 of which were made in earlier years.

As of 31 March 2010, 303 recommendations remained outstanding of which 156 were made in 2009-10 and 147 from earlier years. We are continuing to make significant progress in ensuring that these are given full consideration, with the number outstanding at 30 June 2010 falling to 218 recommendations - this includes 11 new recommendations that RAIB have addressed to us in 2010-11.

Of the 29 recommendations made in the Grayrigg report, RAIB addressed a number of recommendations to us and we in turn directed:

- **20 to Network Rail.** Network Rail has reported that all actions have been taken to complete 15 of these, though we are still undertaking work to assure ourselves that all appropriate action has been taken. Network Rail has set up a

programme of work to deliver the remaining five recommendations by February 2012;

- **three to RSSB.** RSSB has reported that all three have been completed, but we are still undertaking assurance work in respect of one of these; and
- **one to Angel Trains and Virgin Trains.** Both companies have reported this as being completed, and we are currently seeking assurance that this is the case.

In addition, three RAIB recommendations remain outstanding in connection with the enquiries into Southall and Ladbroke Grove and these continue to be monitored by us.

The Channel Tunnel

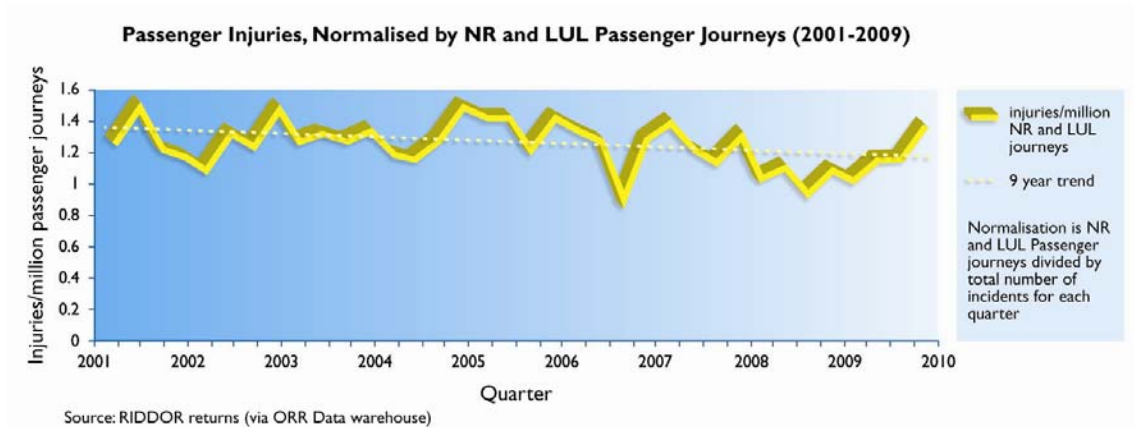
We provide the UK Secretariat for the bi-national Channel Tunnel Intergovernmental Commission (IGC) and the Channel Tunnel Safety Authority (CTSA). In addition we provide representatives to both bodies and other expert assistance, including inspectorial resources.

Significant activities during 2009/2010 included:

- carrying out a **review of the safety rules for passenger trains** using the tunnel in the light of European developments;
- **considering the implications of the September 2008 fire** for the safety arrangements relating to the tunnel;
- **considering the implications of the Eurostar failures** which occurred on 18/19 December 2009.

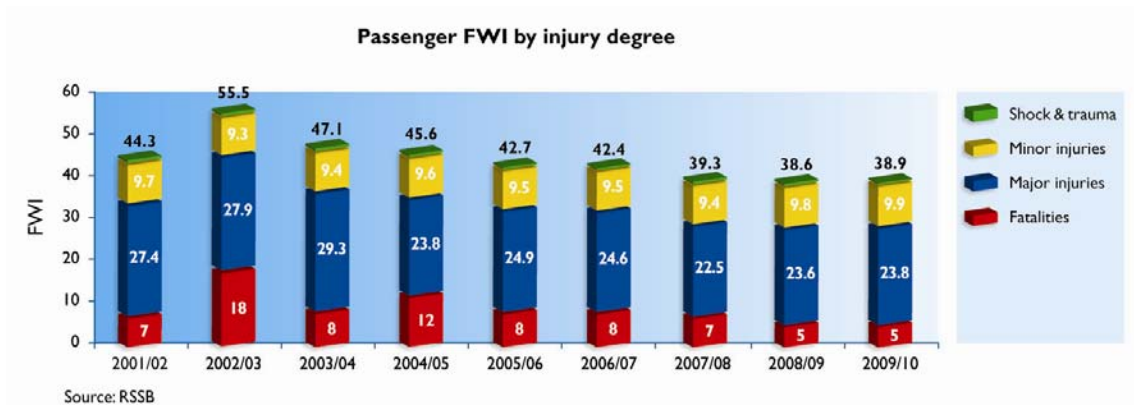
Section 3 – Facts and figures: an overview of the railway’s health and safety performance

Passenger Safety - Whilst passenger fatalities remained at the same level in 2009/10 compared with the previous year, passenger injuries have increased during this period. This increase was largely driven by passenger falls on stairs and escalators and while boarding or alighting trains.



While the long-term trend shows that the number of passenger fatalities and injuries are falling, the regulator will be keeping a close eye on the recent short term increase for all injuries.

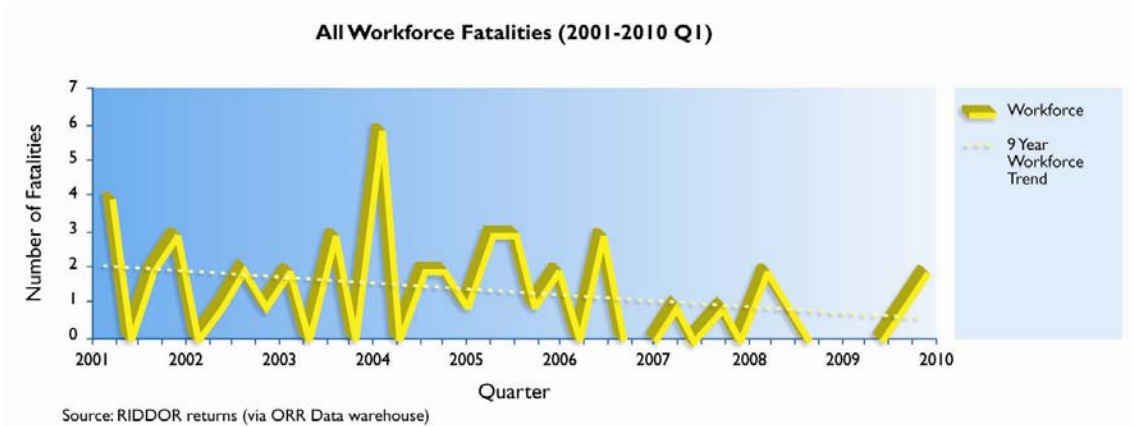
These trends are echoed within RSSB’s recent annual safety report which also shows that total harm to passengers did slightly increase last year – highlighting the need to remain vigilant.



Note: FWI (Fatalities Weighted Index) this includes data in a weighted form, minor, major as well as fatalities.

Worker Safety – Two of the three worker fatalities this year came from those working on Network Rail infrastructure projects. Our investigations show that the two contractor fatalities in 2009-10 and further contractor fatality in 2010-11, while all involving construction work at bridges/viaducts in Scotland, have no clear link.

Network Rail control of construction projects and contractors is being given increased emphasis in our inspection programme for 2010-11.

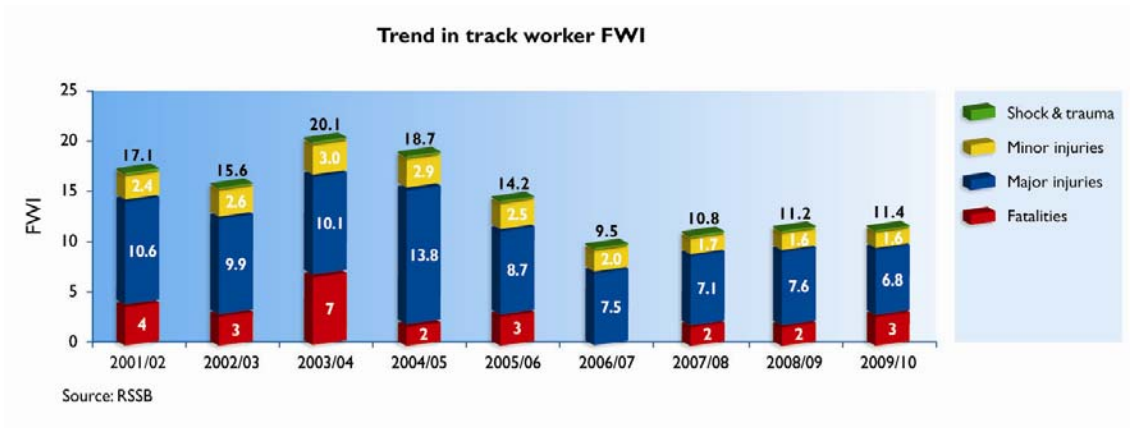


The number of worker major injuries has fallen over the past year. This follows a long-term downward trend. However, an apparent plateau has been reached for workers suffering minor injuries, mirroring the plateau for serious injuries reached some years earlier.

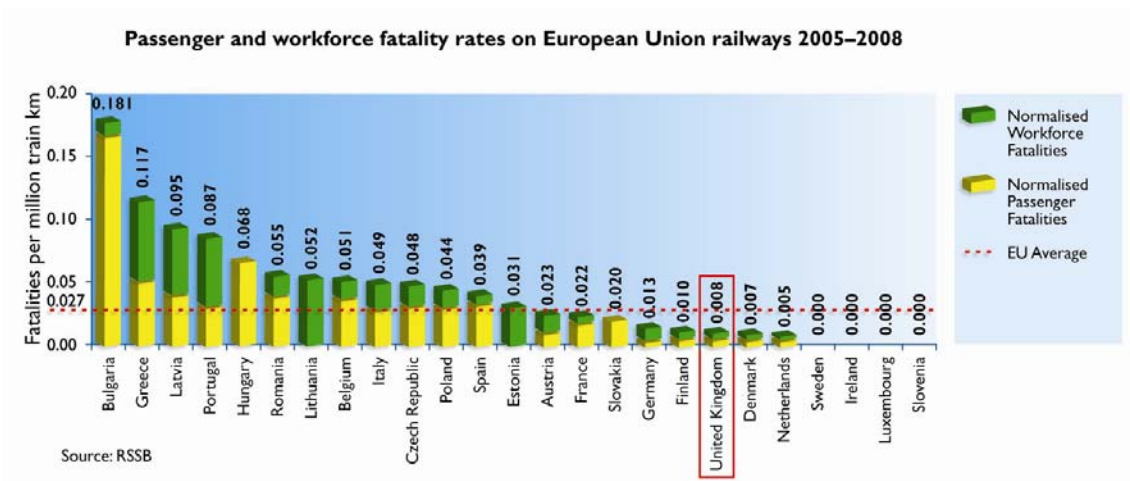
We have concerns that minor injuries within Network Rail are not being reported correctly and this is being investigated further.



RSSB's safety figures show that workforce safety needs to improve - track worker safety has been on a slight upward trend since 2006/07.

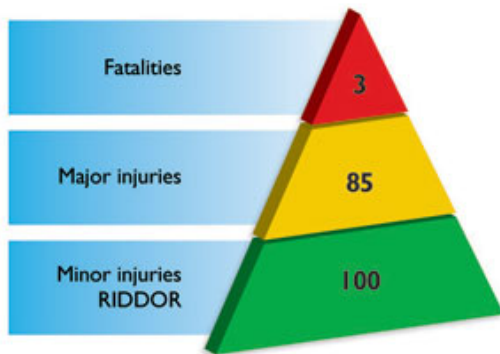


In 2008 countries across Europe submitted their second set of Common Safety Indicators to the European Rail Agency. Once this process is fully established, it will in future make it even easier to compare the safety performance of different railways. Great Britain was well below the EU average over the 2005-2008 period.



We do have significant concerns about the reporting of minor injuries within Network Rail and its contractors as highlighted by a comparison of the three accident triangles (Heinrich accident pyramids) taken from Health and Safety Executive data in a typical year across the industry.

Pyramid A – based on data from Network Rail



Ratio of major to minor injuries 1:1.2

Pyramid B – From HSE



Ratio of major to minor injuries 1:7

Pyramid C – based on data from LUL

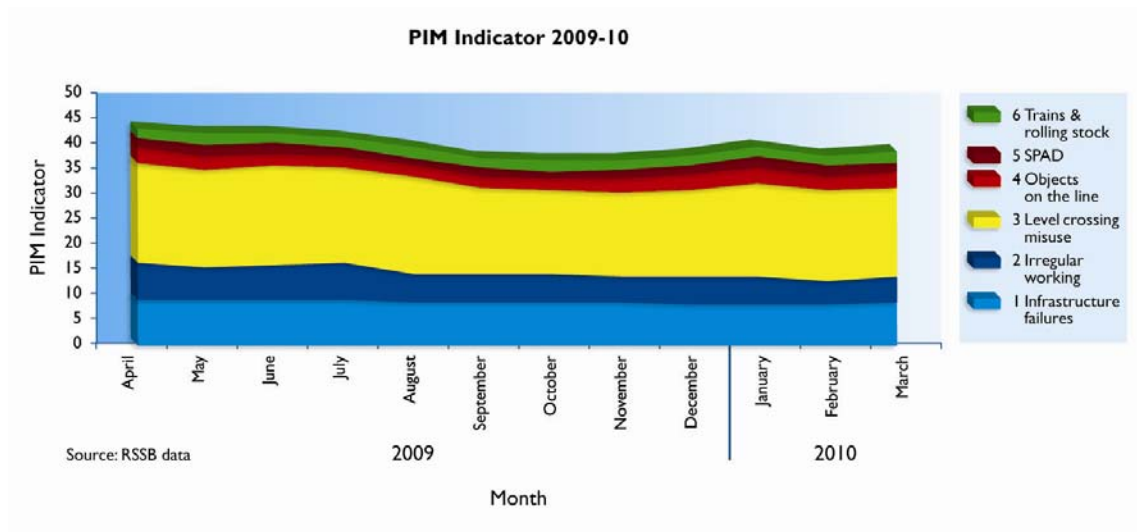


Ratio of major to minor injuries 1:15

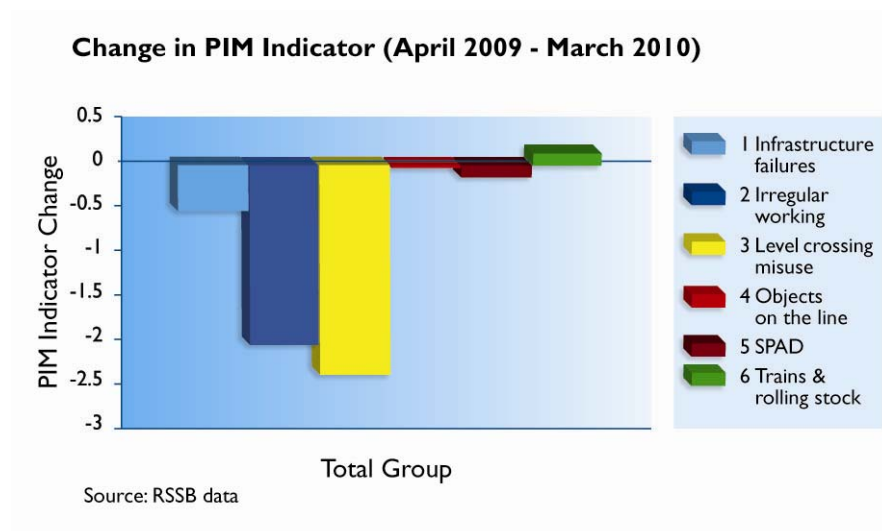
Network Rail and LU data comes from their 'Reporting of Injuries, Diseases and Dangerous Occurrences Regulations' reports of fatalities, major injuries and minor over 3 day injuries.

The overarching picture: Precursor indicator model (PIM) - The PIM measures the underlying risk from train accidents to passengers, the workforce and members of the public such as motorists on level crossings.

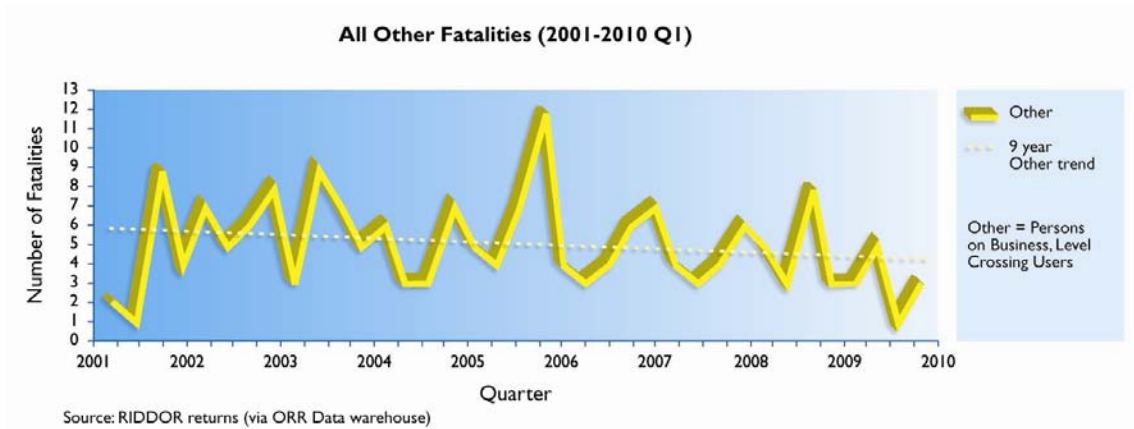
Over the year it showed an 11.35% improvement - the greatest risk is now associated with level crossings followed by infrastructure failures.



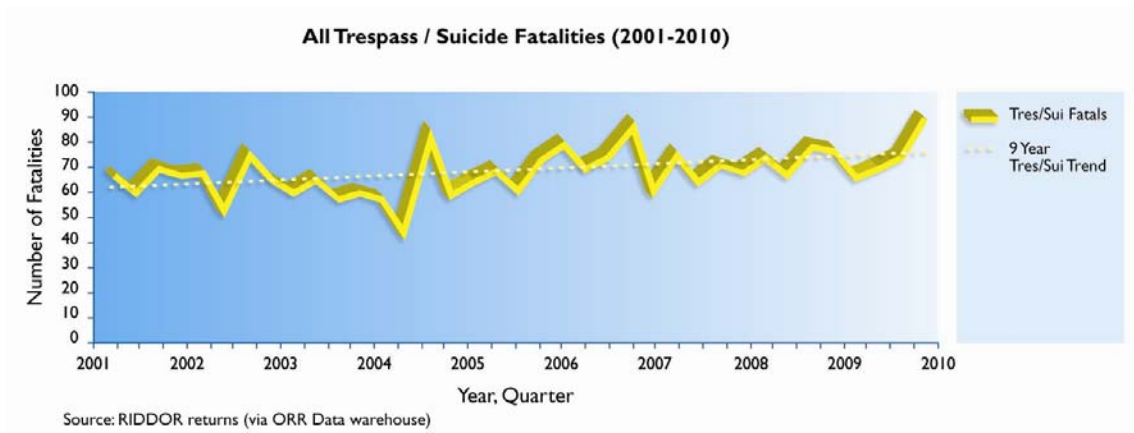
The reduction in level crossing and irregular working highlights the efforts being made by the whole industry in these areas.



All other fatalities, suicide and trespass – other fatalities and injuries, classified as, for example level crossing users, decreased in 2009/10 compared with 2008/09.



There was a sharp increase in the number of trespass/suicide incidents in Q4 2009/10, with 16 more incidents compared with the same quarter last year.



London Underground - health and safety performance continues to improve on LU. Major passenger injuries have declined from a stable average of 130 per year to 104 in 2009/10. In addition, there has also been a significant reduction in the number of asset failures over the last five years, for example broken rails reduced from an average of four per quarter in 04/05 to two per quarter in 09/10.

Measured by FWI per passenger journey, London Underground is safer than the mainline railway. This is also the case for workforce safety where it has not had a track worker fatality for many years.

Section 4 – Health and safety across the rail sector: the regulator’s view

Freight operating companies (FOCs)

Overview

In April 2009 ORR created a new team to deliver inspection of the nine freight operating companies active at that time. The team focussed its efforts on the priority risk areas of competence of the people preparing the train to go on the network, including the safety of shunters, and rolling stock maintenance.

What ORR found

Some operators have reached a position where there was a positive safety culture, but others are struggling to achieve visible leadership and mutual trust.

There is strong evidence that all duty holders have robust training and competence management systems for ground staff. The training and competence records are also well maintained and there is evidence of good quality monitoring arrangements by first line managers.

We audited the effectiveness of three duty holders’ safety management system. All three had robust and well documented procedures and standards which formed the basis of their safety management systems. However, it was disappointing to find that more than one freight operating company had failed to resolve genuine issues raised by employees at ground level - a failure to deal effectively with issues such as the reliability of radios has the potential to undermine an organisation’s objective of achieving a strong safety culture.

Our investigation of two serious incidents during December 2009 and January 2010 revealed concerns about the way operators ensure effective braking systems during very cold weather. While these incidents are currently subject to RAIB investigation, Freight Operators quickly identified the need to review the effectiveness of standards governing brake testing in severe winter weather and are working collaboratively to identify and deliver improvements.

Passenger train operating companies (TOCs)

Overview

There are 24 operators each with its own safety management system. Individual operators are allocated an ORR inspector as ‘account holder’ who is responsible for testing and assessing how well the SMS is working in practice. Operators are subject to a tailored inspection programme which tests the key systems necessary for ensuring passengers and employees’ safety, and that of other railway users.

The key risk control areas for train operating companies are train driver competence, rolling stock maintenance, and safety at the platform-train interface.

What ORR found

Overall, the driver management systems are delivering competent drivers within the

TOCs inspected. TOCs are making good use of simulators, where they are available, for assessing drivers' competence and are generally rigorous in their approach to investigating signals passed at danger (SPADs). This sends a positive message to drivers that all SPADs are significant and that constant vigilance is required to reduce their frequency.

Our inspections of rolling stock maintenance found that it is mostly satisfactorily specified and implemented, with some examples of good practice, although there are some aspects in need of improvement.

At some platforms it is necessary to have train dispatchers because the driver and conductor cannot see the full length of the train. Train dispatchers check that no-one is trapped in the doors before signalling to the driver or conductor that it is safe to move the train. The regulator's inspections of train dispatch were spread widely across the country and involved observing a range of dispatch methods and rolling stock, including dispatch by platform staff, driver-only operation, and self-dispatch by conductors.

All operators were generally in compliance with requirements, and unobtrusive observation of dispatch identified some high standards of professionalism and competence, with some examples of exemplary behaviour. Areas in need of improvement included risk assessment for specific platforms, better liaison between operators sharing platforms, and some improvement to record-keeping for competence management processes.

We also inspected management of occupational health in some TOCs. We found that TOCs recognised their obligations to manage occupational ill health and had arrangements and procedures in place to manage risks such as noise, manual handling and the use of hazardous chemicals. There is, however, evidence of systematic weakness in the proper identification of risk, and the implementation of appropriate controls, particularly in respect of control of substances hazardous to health. We served an improvement notice in one case where the risk assessment, procedures and equipment for under-train cleaning were inadequate.

Our investigations included incidents causing injuries, some serious, others fatal, to passengers at stations; a serious injury to an employee at a depot; a train runaway onto the mainline from a depot; a collision within a depot; and an axle failure leading to derailment. In some cases we found evidence of breaches of health and safety law and have proposed formal enforcement action. It is disappointing that, despite the efforts of many railway employees and employers, there are still occasions when systems or individuals fail, leading to a situation where people can get hurt.

Areas identified for improvement include record-keeping, better communication between trainers and managers, and better use of intelligence from investigations.

Heritage railways, tramways and other guided transport

Overview

We regulate 206 heritage railways (including heritage tramways and museums), six tramway systems and three airport people movers. 72 duty holders were inspected by us during 2009-2010. This year we served four Improvement Notices relating to failings

in safety management systems. The priority risk control areas we reviewed were boiler maintenance, level crossings maintenance and staff competence.

What ORR found

We examined the corporate governance and safety management systems of a number of heritage railways. Initial findings from inspections revealed concerns in respect of the adoption and implementation of safety management systems. There were also concerns about the repair, maintenance and inspection of locomotive boilers

New up-to-date safety guidance published by the Heritage Railway Association (HRA) and continuing advice and enforcement have made a significant positive impact on the governance of the heritage sector. There does however remain no room for complacency in a sector with such a heavy reliance on volunteer support.

The safety performance of the five second generation tramways is very good and our inspections found a high standard of safety culture and implementation of safety management systems. Considerable advice has been given by ORR to assist the industry to develop safety verification and the use of independent competent persons when introducing new equipment. The industry is developing verification processes and we are jointly working on enhanced guidance with the Confederation of Passenger Transport (CPT).

London Underground Ltd and Tube Lines Ltd

Overview

We undertook a programme of inspections of London Underground (LU) focused on key areas including the training and competence of station staff, and the control of risks from construction work on stations.

We also undertook inspections of LU and Tube Lines' (TLL) management of deferred track maintenance, and their maintenance of certain types of points. We also completed an audit of their safety verification process.

We looked closely at protection arrangements for workers during weekend and night engineering work, and the way in which LU learns from incidents through its investigation process.

What ORR found

While there were no major concerns with LU or TLL's management of health and safety, we found some areas for improvement in the competence of station staff, the management of construction work on stations and from our audit how they are carrying out safety verification.

Regarding worker safety we found no major concerns, although we will be monitoring the way LU deals with some occupational health issues during construction work, and staff protection arrangements for work on the track during traffic hours.

Other TfL companies

We also undertook a significant amount of work relating to the Docklands Light Railway, particularly in the areas of assessing and implementing risk controls, operational and

maintenance staff training on new rolling stock and fatigue management. Overall we found continuing improvements in the ways in which both Docklands Light Railway Ltd and Serco Ltd manage health and safety.

We continue to have discussions with the Olympic Delivery Authority and TfL transport providers regarding plans for controlling risks during the Olympic Games period. We have also had early discussions with Crossrail Ltd relating to design proposals.

Network Rail

Overview

Our safety directorate has a division dedicated to Network Rail and its contractors. There are seven route teams, with boundaries aligned with Network Rail's routes, and another providing national coordination. Each team leader oversees the route management arrangements and there is an allocated inspector for every maintenance delivery unit. This structure has enabled us to probe more deeply into the practical operation of the company's management system and to form constructive relationships at the key points within every route.

What ORR found

We welcome the open and positive engagement we have had from NR's managers and staff representatives across the country. We do however, have concerns around workforce engagement across NR's organisation.

Our work to proactively test the effectiveness of Network Rail's safety management system targeted key areas of risk. We applied our new audit approach to the way the company manages infrastructure projects and field-tested the new rail management maturity model. Other inspection projects focussed on issues such as worker safety from trains, track and structures assets, level crossings, change management and staff competence.

Network Rail is taking steps to assess its safety culture using the RSSB tool. This is a very positive step and should provide a good baseline on which to focus further improvements.

Our work to test the effectiveness of risk management where railway workers are at risk from operational trains found too many examples where 'red zone' work (where the trains are still running and workers have to stand clear each time one approaches) was not implemented safely. Network Rail is committed to planning work in safer 'green zones' (where the line is blocked or separated from where staff are working) where possible but the detail of how planning happens merits further improvement.

Our work on how Network Rail manages its assets focussed on track and structures. For track, investigations looked particularly at how Network Rail were implementing key changes introduced after the Grayrigg derailment. We were disappointed in the way the company implemented a key standard intended to improve management of track patrolling with inconsistency between different parts of the network and a systemic failure to effectively brief and subsequently support staff undertaking new tasks. A second piece of work examining how switches are specifically inspected proved more positive but there were still some isolated examples of different interpretation and practice.

We also examined how Network Rail manages risks linked to a changed approach to track renewals where some work previously planned was deferred. There was initially a comprehensive failure to follow standards on how the company assessed any consequential risks. However in the light of our findings, Network Rail responded well to rectify identified shortcomings. We found no significant examples where risks were not locally managed but believe there are important lessons for how the safety management system is applied in practice.

Our work to examine the effectiveness of Network Rail's structures inspection regime was undertaken against the backdrop of three recent failures of bridges. This work was closely aligned with a scrutiny of the company's structures asset policy for the purposes of economic regulation, which we separately found to be deficient and signalled concerns about Network Rail's asset information. We found evidence of a significant breakdown in their management arrangements with overdue inspections and poor action in the light of those inspections and served an improvement notice.

Network Rail's work on infrastructure projects - which delivers renewal and enhancement work across the country - saw two worker fatalities in the year, both on bridge refurbishment work in Scotland. Investigations into these tragic events are still current. Reflecting the high risks involved in construction activities, ORR intensified its site inspections and served a number of notices on contractors.

We also undertook a significant audit of the management arrangements in infrastructure projects. There is strong leadership and commitment at the top of the organisation and quite robust arrangements in place. While the overall findings present a positive picture, questions remain regarding the effectiveness of the site supervision and coordination arrangements towards the point of delivery of the work.

On level crossing risk control, Network Rail's education programme with hard-hitting and effective media campaigns has been impressive. Similarly, we commend Network Rail's work to close level crossings which gathered pace with excellent progress to identify over 400 relevant crossings, negotiate closures and alternative routes with users, and remove key risk interfaces with the network.

We remain concerned at the need for consistently effective risk assessment at level crossings, ensuring proper consideration of likely user behaviour and providing users with the right information to be able to cross safely. This is a theme that has arisen in various RAIB investigations and accords with our own inspection findings. Some frontline staff in Network Rail do not appreciate that their All Level Crossings Risk Model provides useful prioritisation information but does not itself deliver a suitable and sufficient risk assessment. More effective action is needed to ensure that risk assessment findings, and those which arise during six-monthly inspections, are implemented in a timely manner. Failure to implement such control measures to maximise sighting and give time to cross safely, or to install other design changes, has been a feature in a number of fatalities that we have investigated.

The risks at automatic open crossings (where the user is instructed not to cross by road traffic signals alone) were brought into focus by a tragic triple fatality in the north of Scotland and the publication of RAIB's report into another fatality in Cumbria. Network Rail responded well to our advice for more concerted action at the 120 relevant crossings across the network, checking the currency of its user census data

(making a small number of minor changes to line speed as a result) and stepped up the pace to ensure the flashing red road signals (known as wig-wags) were all fitted with more intense LED or halogen bulbs. The company has also made good progress exploring more innovative solutions in some locations, by, for example, fitting barriers at a reasonable cost.

Network Rail's plans to implement a new maintenance structure – known as phase 2b2c – led to significant tension with the trades unions and complaints. Separately, we inspected the effectiveness of how the change was being managed and were impressed by the rigour of the companies change management arrangements using Network Rail's established methodology. We challenged some specific aspects of how Network Rail planned to implement the change and received the necessary reassurance of how the associated risks were being managed. Our complex work to test the planned changes was assisted by concerns and intelligence from staff representatives.

After a series of wrong-side signal failures in equipment recently installed or modified, we highlighted the need for improvements and are assured this is being taken seriously at a very high level in the company. We will soon be applying our in-depth audit approach to this area to provide a comprehensive picture of the strengths and weaknesses of what happens moving forward.

Good progress has been made in managing the competence of Network Rail's signal engineers and technicians. After a difficult period while their 'assessment in the line' arrangements settled down, we strongly support Network Rail's arrangements to ensure its competence management arrangements are consistent with standards established by the Institution of Railway Signalling Engineers.

Many events in recent years have highlighted the need for those in control of groups of workers on the railway to have key skills in communication, influence and supervision. The 'Controller of Site Safety' (COSS) role is absolutely critical in ensuring that a safe system of work is planned and implemented on site, and yet evidence points to patchy frontline performance with some poor communication and failures to act when a more experienced person disobeys the COSS's instructions. After significant delay in devising indicators for these interpersonal skills, we pressed Network Rail to commit to a timetable for implementing improvements in what company calls 'behavioural markers' for COSS's. We are pleased that an improved competence framework will be in place and operational by December 2010.

High speed rail

Overview

We host the secretariat for the Intergovernmental Commission (IGC) and Channel Tunnel Safety Authority (CTSA) and provide inspector resource to the CTSA with responsibility for any enforcement which may be necessary in the British territory up to the tunnel mid-point.

Our work this year was dominated by investigations into the high profile events of December 2009 when five trains failed in the tunnel and an earlier event when a train failed and a passenger rescue was delayed by several hours.

What ORR found

We found a number of areas where response to adverse events of December 2009 should have been swifter to ensure that passengers, particularly vulnerable groups, are provided with water and evacuated promptly. It is also vital that incident management and communication links deployed during such events are clear and consistent with established procedures.