OFFICE OF RAIL REGULATION

Health and Safety Report

July 2012

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Foreword

This year's health and safety report shows that Britain continues to have one of the safest railways in Europe. Indeed, safety on our railways is improving in key areas. This year's report highlights a number of successes, including:

- A reduction in the level of passenger harm - with the number of passenger journeys taken into account, the overall rate of harm decreased by 12% over the past year, to the lowest level ever recorded.
- London Underground, Overground and Docklands Light Railway all achieved a year without any workforce and industry caused passenger fatalities.
- level crossing safety improved, as levels of recorded harm reduced by 15% over the past year, maintaining historically low rates.

Safety on Britain's railways is ORR's chief priority – and while Britain's railways are safe, we must not be complacent. It is vital that the whole rail industry continues to work together, builds on its successes, and tackles areas where there is room for improvement.

We are looking towards the next steps on improving safety and in particular, over the coming year, our inspectors will focus on helping the industry to implement excellent safety management processes, to implement change safely against a background of industry reform and to move towards the whole sector embedding a professional culture where safety is front and centre of everything it does.

Richard Price
Chief Executive, ORR

Ian Prosser,
Director, Railway Safety, ORR

Introduction

About us

1. ORR is the independent economic and safety regulator for Britain's railways. We are responsible for:

- regulating health and safety standards and compliance across the whole industry, as the national health and safety authority for Britain's railways;
- regulating Network Rail as a monopoly provider of rail infrastructure, including setting its funding and the outcomes to be achieved;
- competition and consumer rights issues across the industry as a whole;
- publication of key statistics on the performance of the railways; and
- economic and safety regulation of HS1.

2. We work with the industry's funders in England, Scotland and Wales to get clarity on what they want the railways to deliver (for instance in terms of punctuality and capacity) for the £3.9bn a year they spend on rail.

Our priorities are

- reducing the industry's **costs**;
- a sharper focus on **customers**;
- excellence in **safety** culture and management across the industry.

ORR as rail industry regulator[1]

3. As the independent regulator of Britain's railways, the Office of Rail Regulation (ORR) plays a pivotal role in ensuring the industry delivers a safe, effective and efficient system, focused on the needs of users and responsive to the priorities of funders.

4. We are committed to ensuring that our regulation helps the industry to get a better grip on its costs, whilst delivering the levels of safety, performance and efficiency that passengers, freight customers and taxpayers rightly expect.

5. Achieving excellence in safety culture and management is an essential element of our strategy as we seek to ensure a zero tolerance to industry-caused passenger workforce and public fatalities, with an ever decreasing overall safety risk. Responsibility for the safety of the rail system sits with railway infrastructure managers and train operating companies. We use our regulatory and enforcement powers to make sure they meet their responsibilities so that safety is maintained.

[1] For more information, see ORR's Annual Report and resource accounts 2011-12, at http://www.rail-reg.gov.uk/server/show/nav.1240

ORR's safety vision and goals

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

7. We aim to make sure that:

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

8. Our goal is reduced harm.

9. We seek excellence in asset management, operations, health and safety management and culture. This will result in better management capability, reduction in risks, and a reduction in harm to workers, customers and the public.

Legal framework

10. We operate within a domestic and European legal framework.

11. We are the national safety authority for European legislation, particularly the Railway Safety Directive, and we are the enforcing authority for the UK Health and Safety at Work Act and associated regulations.

12. As such, we grant permission to operate to each railway business on the basis that they understand the risks they create in running their business and have a management system to control those risks. We review permissions at least every five years, working to a common European standard. We also check control of risks on a day-to-day basis by the management in each business, through our risk-based inspection work and investigations of incidents.

Excellence in management

13. A well run business tends to be both safe and efficient.

14. We recognise that individual managers are human, and that their performance varies. This is why we push for excellence in management systems. We want businesses to be so good at managing risk that it becomes increasingly unlikely that they will fail through dips in performance of individuals, leading to injury or ill health.

15. Excellent businesses may from time to time 'fail' but will always learn from the failure and will have a much greater likelihood of getting things right. This will also mean they are more likely to be complying with their legal responsibilities. Less capable businesses may be complying with the law, but are more likely to get it wrong than businesses which are closer to excellence - and getting it wrong on the railway can have fatal consequences.

16. It is how a business achieves effective risk management that defines excellence. An excellent business:

- anticipates hazards and assesses risks leading to timely and efficient spend on effective control measures, i.e. doing the right things, in the right way, first time and at the right time;
- continuously challenges the status quo and is opportunistic in seeking improvements;
- recognises the value of wider benefits to its business from excellent health and safety risk control; and
- views its statutory health and safety duties as part and parcel of managing its total business risks.

17. Excellence is not about gold-plating risk controls, or "safety at any price" by throwing money at risk mitigation that goes beyond what is required by the law to deliver ever decreasing amounts of risk reduction**.** It is about delivering legal compliance in an efficient way through an effective management system.

ORR's health and safety regulation strategy

18. To deliver our health and safety vision we need to ensure that the industry addresses the right issues in the right way. Some of our programmes are related to areas of physical risk such as workforce safety or asset safety, and others focus on areas of the safety management system that are key to protecting against harm, for example, management of change and competence of people . By focussing on both and ensuring that rail businesses are doing the right things in the right way, we believe that we gain a rounded view of the industry's risk management capability and encourage it to adopt a risk-based mind-set.

19. We understand the different risks for each sector of the railway (i.e. mainline, Transport for London, Trams & light railways, heritage). Taken together these form a "risk landscape" which informs our own priorities and our planned activities and resources so that they are targeted on improved risk control.

20. Since 2008/9, the resources we solely devote to health and safety regulation (expressed as "whole time equivalents", which is a unit of the numbers of people involved), has reduced from 150 in 2008/09 to 115 in 2012/13. We have achieved this by improving our efficiency, effectiveness and prioritisation as a regulator, against a backdrop of an observed reduction in precursor risks and greater focus by us on driving improvements in risk management by the duty-holders. We were also responding to a change in legislation away from an approvals regime that required more resources. (See annex 3 for how we will deploy our resources in 2012-13)

ORR and Europe

21. ORR works with other European regulators to help deliver sensible regulation and a common European approach. This allows trains to run through the Channel Tunnel to British and European destinations safely, and allows trains built in one country to operate in another. Like our European neighbours, we keep the legal framework for safety on the railway under review and can propose changes if necessary. We do this in line with the principles of better regulation, which underpin all that we do.

1. Strategic overview: health & safety regulation of Britain's railways

1.1 ORR's priorities are:

- reducing the industry's **costs**
- a sharper focus on customers
- excellence in **safety** culture and management across the industry

1.2 ORR has always been clear that a fundamental part of our role is to strengthen health and safety on the railways. Now, more than ever, this role is absolutely crucial, as Britain's railways drive to improve their efficiency and their responsiveness to customers. The process of change includes both incremental and structural change, with, for example, Network Rail's devolution making the railways more responsive to local communities. Throughout this period of change, the regulator is there to check that rail safety is not compromised.

1.3 This report gives our view of the health and safety performance on Britain's railways in 2011-2012 and what we draw from it to help influence our work plans. Latest safety statistics for the period show that Britain continues to have one of the safest railways in Europe.

1.4 For example, on the mainline:

- there has been a reduction in the level of passenger harm, to the lowest level ever recorded;
- the industry's safety model shows that the risk to passengers from train accidents reduced by 17% over the year;
- level crossing safety improved, as levels of risk and recorded harm reduced, albeit in the year when Network Rail were heavily fined for the double fatality at Elsenham level crossing.

1.5 In London:

- the Underground, Overground and Docklands Light Railway all achieved a year without any workforce and industry caused passenger fatalities;
- workforce and passenger safety continued to improve on the Underground.

1.6 These statistics, which are presented in more detail in section 3, tell part of the performance story; that the industry is achieving the right things. The other part is how well managers can control risk so that unsafe events do not happen; that the industry is managing safety in the right way. There would be fewer unsafe events if the rail industry improved their safety management performance towards excellence, because then all the systems their people use to avoid unsafe events would be working effectively and efficiently. This is our goal.

1.7 By this measure, in our view, the industry overall is still short of the goal of excellence in health and safety management. Consequently, ORR has had to be vigilant and enforce the law to a greater extent than would be needed if excellent management was being achieved. As long as the regulator continues to

have to step in to enforce safety improvements, or bring prosecutions where things have gone wrong then, despite progress, it is clear that Britain's rail safety culture still has some way to go, and this observation is reflected in our work-plans for the future.

1.8 Our determination is that the industry proactively manages safety, spotting potential safety issues before they become a problem or require the regulator to step in. ORR believes that an organisation can achieve proper safety performance only through excellent safety management. That is why we have developed and implemented our Rail Management Maturity Model, known as RM3. RM3 is a vital tool for assessing, and managing an organisation's ability to control health and safety risks and for identifying issues to be improved. It defines what excellent management looks like. We talk regularly with companies across the industry about how they can improve. Best performing companies are those which have fully integrated health and safety practices into their culture.

1.9 Our report highlights:

- Network Rail's management team has made progress this year, and is driving forward positive safety improvement plans on, for example, level crossing safety.
- 80% of train and freight operators are making progress towards 'excellence' in health and safety management, as measured against RM3.

1.10 Tramways safety performance remains very good, and comparable to the best performing in Europe, aided by a positive safety culture and robust safety management systems.

1.11 There are also some concerning safety trends, which industry managers need to address:

- there was an increase in the number of potentially higher risk train accidents from 18 to 34, although 34 is the second lowest on record and 18 the lowest;
- workforce safety on the mainline railway has deteriorated slightly, perhaps as a result of improved reporting of minor injuries, although harm to train drivers and on board crew has increased;
- while Network Rail is ensuring Britain's railways are safely maintained, we have also seen an increasing backlog of work, as some parts of Network Rail's maintenance organisation appear to be under-resourced. Network Rail has responded to this issue by committing additional resources, which ORR will be monitoring throughout 2012-13.
- further work is needed to improve the management of low adhesion, train protection systems and train dispatch at stations on the mainline railway.
- on the heritage railways, 2011-12 saw a rise in the number of safety incidents. ORR has had to intervene on far too many occasions this year to enforce safety, particularly the requirement to have effective safety management systems.

1.12 During 2011-12, we set up a project that reviewed the evidence on industry safety performance and summarised our assessment of the significance of key risks, taking into account statistical data and qualitative information from our own inspections and audits. The findings have been discussed with key stakeholders including industry, the Department of Transport and passenger representatives.

1.13 The project has enabled us to refresh our strategic risk priorities, setting out what we do and why, taking account not only of the data, but also of the level of concern among the public; relevance to our aim of reducing risk; enforcement history; likely future development and our ability to have an impact. All of these factors were incorporated into a weighted 'scorecard' which allowed us to rank the risks in order of

significance and ensured we included a broad range of intelligence, not just relying on statistical data from reports and risk models.

1.14 The outcome of this work has reinforced our confidence that our plans for inspection and audit are tackling the right issues. The group of top priority risks are all captured by one of our nine proactive work programmes focussed on improving the industry's management of risk and securing a safe railway.

1.15 We also reviewed the quantitative safety risks models used by the industry, which provided assurance that we can continue to rely on what they tell us about safety performance.

1.16 ORR will keep its approach to ensuring safety under regular review, aided by information from the safety risk models, and we will sharpen our management of safety regulation. We will use the results of an audit by fellow regulators in other European countries to help us do this. We aim to bring the performance of all our inspectors closer to the practice of our best and to better ensure that regulatory decision making is clearly in line with our policies. As part of that, we will press forward with our programme to sustain a competent workforce for health and safety regulation.

2. The wider health and safety landscape

Legislative framework

2.1 Our work to ensure that the railway industry improves its health and safety culture, and has effective risk control measures, relies on having the right goal-setting health and safety law in place. ORR is responsible for preparing proposals for railway-specific safety regulations and for ensuring that these are accompanied by simple, clear guidance to support compliance. Most railway-specific safety law originates from Europe and we work closely with Department for Transport (DfT) to ensure that the UK has the appropriate framework of law and meets its obligations under European requirements.

2.2 ORR supports the development of a European framework which promotes market opening, and improves rail's competitiveness, while ensuring that a robust safety regime is in place. To achieve these goals, we believe that the priorities are:

- Ensuring proper implementation throughout Europe of the existing obligations and responsibilities in the Railway Safety Directive, and other measures in the second railway package; and
- Developing cooperation arrangements between national safety authorities (NSAs) to ensure effective supervision and enforcement.

2.3 We have worked constructively with the European Commission and the European Railway Agency (ERA) throughout the year. Key aspects of our engagement include:

- Chairing the European committee which has developed a programme of 'cross audits' of national safety authorities;
- Influencing the development of a joint Network Secretariat which will enable NSAs, the sector and ERA to take a strategic approach to the European safety regulatory regime.
- Influencing the development of a common approach to post-certification supervision by NSAs and monitoring by duty holders of their management system;
- Ensuring a pragmatic approach to the certification regime for entities in charge of maintenance for freight vehicles;
- Influencing the development of proposals to migrate to a single safety certificate in Europe by 2020 (to replace the current Part A /Part B regime).

Legislative policy work during the year:

2.4 On level crossings we have:

- Continued our work with the Law Commissions for England and Wales, and Scotland to develop further their policy to modernise and simplify the way in which level crossing risks are governed. Their final report, draft regulations and Bill are expected autumn 2012.
- Published improved guidance on the design, management and operation of level crossings.

- Worked with the British Transport Police to improve sentencing for level crossing offences. This work will be implemented in 2012/13.

2.5 We have also:

- Amended the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS) to implement the revised European Railway Safety Directive and introduce new rules for the maintenance of freight vehicles.
- Developed systems and processes in order that ORR can discharge its role as a certification body for entities in charge of maintenance by May 2012.
- Issued 71 train driver licences to drivers of trains entering mainland Europe through the channel tunnel as required by the Train Driver Licensing Directive.
- Worked with the Department for Transport on its response to the Coalition's Red Tape Challenge, considering all rail-specific legislation and presenting cases for retention, removal or improvement. Projects to review formally some regulations, such as the Railway Safety Regulations 1999, will take place in 2012/13.

Our health and safety risk priorities

2.6 We have undertaken some important work to review and refresh our thinking on the principal health and safety risks that are created by Britain's railway industry and which can affect the workforce, passengers and the general public. As part of this work, we have produced a "core message" which summarises in two pages our responsibilities as health and safety regulator. This is set out in Annex 1. We will publish a more detailed document that describes our 'strategy for health and safety risks'; which will include a 'scorecard' showing how we ranked the risk priorities and the list of industry risks ranked in order of priority.

2.7 The conclusions presented in the strategy for health and safety risks will be used to inform our future business plans, which we publish each year. We will review, and periodically update our thinking, to ensure it remains current. These reviews will be informed by work we intend to do with the industry's safety risk models, in collaboration with the Rail Safety & Standards Board (RSSB) and London Underground Limited (LuL).

2.8 This work provides us with a firm foundation for the common approach to supervision by NSAs, which requires us to have a strategy (that is risk based, proportionate and targeted), which drives our plans for supervision of duty-holders.

Occupational Health

2.9 ORR's vision is of a rail industry that consistently achieves best practice in occupational health. This is why we have developed an occupational health programme[2] to improve the way in which the industry tackles health issues. In particular we want to:

- encourage industry leadership on health;

[2] http://www.rail-reg.gov.uk/server/show/nav.2497

- promote awareness of health issues; and
- encourage a culture of excellence in the management of health.

2.10 On our website we have set out our progress on the key activities in the first year of the programme. We have also produced a quarterly update for rail duty holders on progress with some of the activities in our health programme.

2.11 There are signs of the rail industry responding to the programme by developing their own company strategies on health.

2.12 RSSB has started a project focussing on health data collection across railway companies.

2.13 Health risk management continues to show a mixed picture. We have found:

- an absence of work-activity risk assessments;
- over-reliance on data sheets in the mistaken belief that they are risk assessments;
- assessments that do not identify process bi-products, such as fume or dusts; and
- insufficient attention to the "hierarchy of control" principles, such as ignoring opportunities for elimination or engineering controls and moving to PPE directly.

2.14 On a positive note, we have found:

- collaborative work by the ballast dust working group, led by Network Rail, on the risks posed by exposure to silica dust;
- activity on the health risks arising from welding and cutting of rail; and
- cleaning regimes to reduce risk of legionella related disease or microbiological hazards in aerosol water.

2.15 The pivotal role of managers and supervisors in health management is very clear to us and we have embarked on work with the National Examination Board in Occupational Safety & Health (NEBOSH) on developing a competence syllabus for raising awareness of health hazards, risk control and health management.

2.16 A significant amount of effort has been devoted to promotional activity in 2011-12 with publication of case studies on our website, presentations and a major event with union representatives on Workers Memorial Day.

Fatigue management

2.17 ORR published "Managing Rail Staff Fatigue" in January 2012 after extensive consultation.

2.18 This updated guidance advocates a fatigue risk management system approach that calls for duty-holders to take a comprehensive look at their arrangements for managing fatigue. The guidance advocates lesser reliance on bio-mathematical models for assurance.

2.19 We have maintained our inspection oversight of fatigue management by duty-holders, focusing on contract staff working on renewal sites. Weaknesses we have identified included:

- a lack of recognition of Network Rail's 14 hour door to door guidance;
- individuals working double shifts with the consequence of increased risk of fatigue induced errors and safety incidents;
- fatal road accidents resulting from excessive working hours on the railway;
- staff not always declaring any second non-rail jobs they might have (thus importing risk);
- no NR on-site scrutiny of the issues; and
- contractor's staff saying that they fear raising health and safety issues (including fatigue) in case they are denied work on future projects.

2.20 ORR has written to Network Rail calling on the company to fundamentally review its approach for managing fatigue.

Rail Accident Investigation Branch (RAIB) investigations and recommendations

2.21 In 2011-12 RAIB published 18 reports and addressed 76 recommendations to us for consideration/action. Over this period we also reported back to RAIB on 114 recommendations - 102 of which were made in earlier years.

2.22 As of 31 March 2012, 96 recommendations remained outstanding of which 64 were made in 2011-12 and 32 from earlier years.

2.23 We publish our responses to RAIB on their recommendations, and these can be found at the following link for 2011-12: http://www.rail-reg.gov.uk/server/show/nav.2601

2.24 RAIB's annual reports give more details: http://www.raib.gov.uk/publications/annual_report.cfm

The Channel Tunnel

2.25 We provide the UK Secretariat for the joint UK/French 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 policy expertise and inspectors.

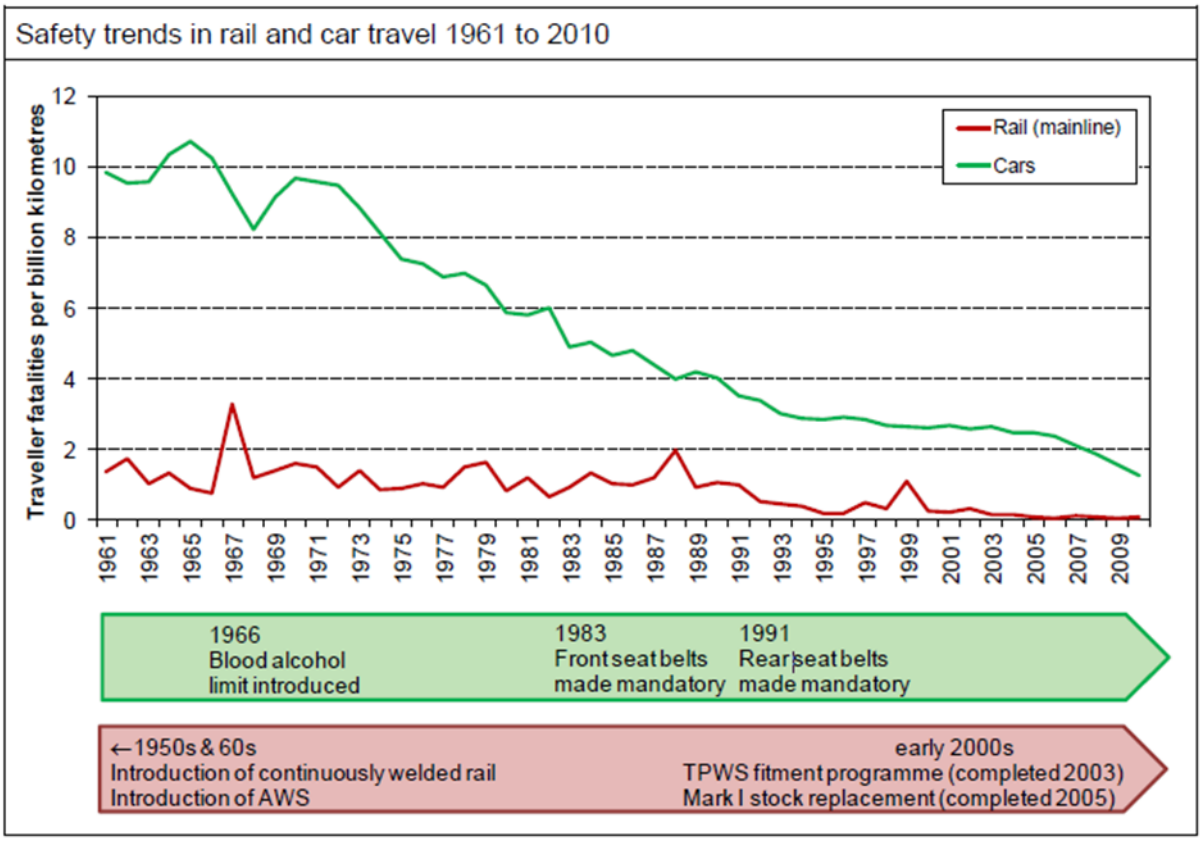
2.26 With the co-operation of our French IGC and CTSA colleagues and Eurotunnel, we aim to help regulate the tunnel in the same way we regulate the rest of Britain's railway infrastructure. We believe this will help CTSA ensure the Tunnel's very good safety record is maintained, while delivering benefits in terms of greater competition through new operators and services.

2.27 There remains much work to do for us to achieve this aim. However, some key stages in the process were accomplished in the last work year, including the removal of a number of Tunnel-specific train design requirements, meaning more different types of train now have the possibility to operate via the Tunnel. We have also made significant progress towards updating the legal framework for safety in the Tunnel – which is planned to bring it into line with European Directives by the end of 2012. This year also saw completion of Eurotunnel's important "SAFE" project to construct and operate fixed fire suppression systems in the Tunnel and the closure of all recommendations arising from the serious Eurostar train failures of winter

2009. IGC also issued renewed safety certification to operate to three railway undertakings (Eurostar, DB Schenker and EWSi).

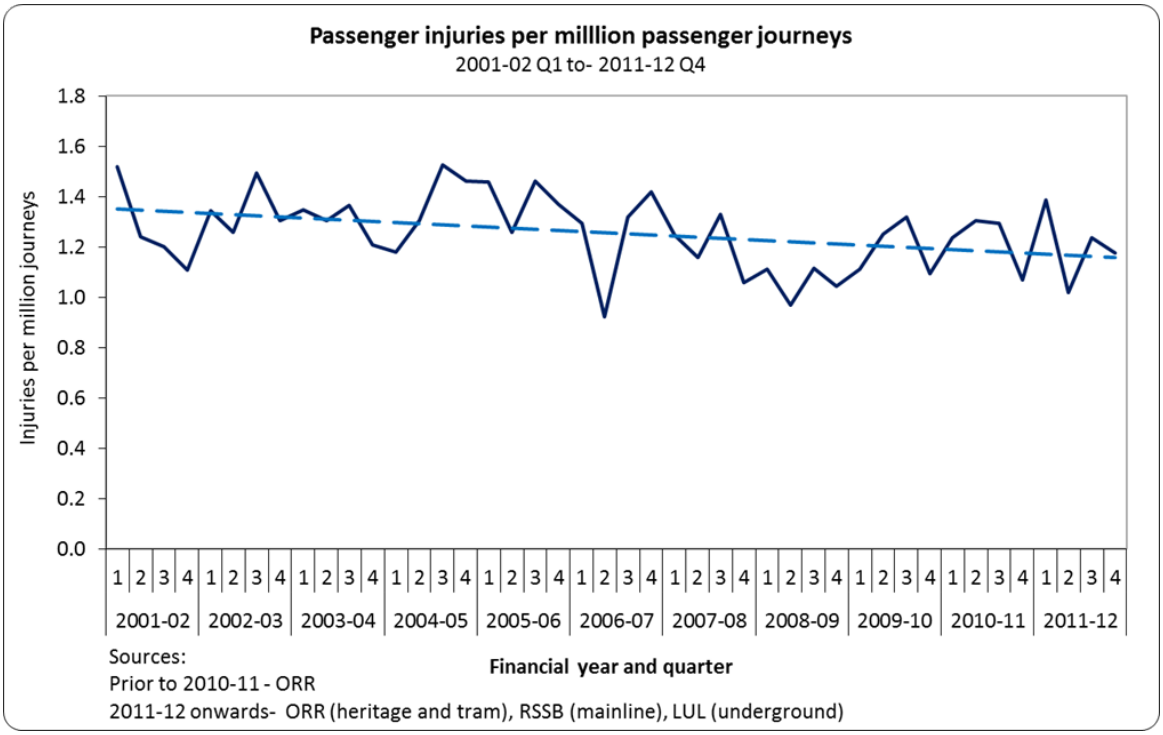
3. Facts and figures: an overview of the railway's health and safety performance

3.1 Rail is a safe means of transport compared to road.



Source: RSSB

Passenger Safety - overall picture



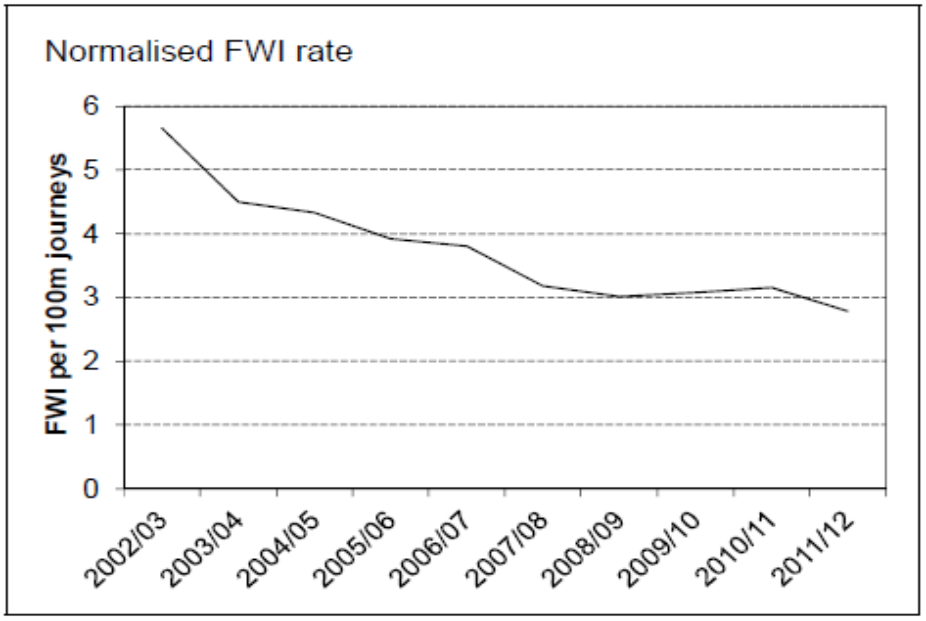
3.2 The overall trend for all railways since 2001-02 shows that the number of passenger injuries per passenger journey is falling. After a slight upward trend in 2010-11, this reversed last year.

Fatalities and Weighted Injuries

3.3 Fatality and Weighted injuries (FWI) shows the number of each injury type that is deemed to be 'statistically equivalent' to one fatality. The equivalent of one fatality is:

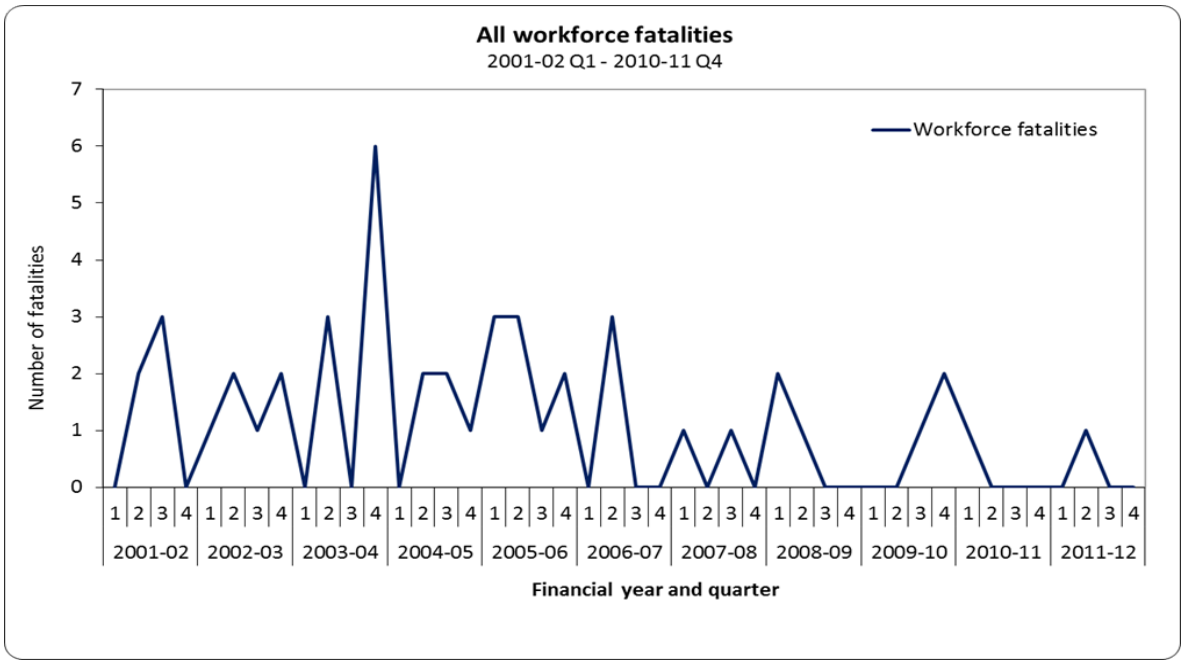
- 10 major injuries
- 200 RIDDOR reportable minor injuries and class 1 shock/trauma
- 1000 non-RIDDOR reportable minor injuries and class 2 shock/trauma

3.4 Four passengers died in separate incidents, all at stations. When non-fatal injuries are also taken into account, the total level of passenger harm was 40.7 fatality and weighted injuries (FWI); this is 5% lower than the 42.7 FWI (seven fatalities) recorded for 2010/11. When normalised by passenger journeys, the rate of passenger harm shows a 12% decrease compared with 2010/11. This is shown in the following graph.

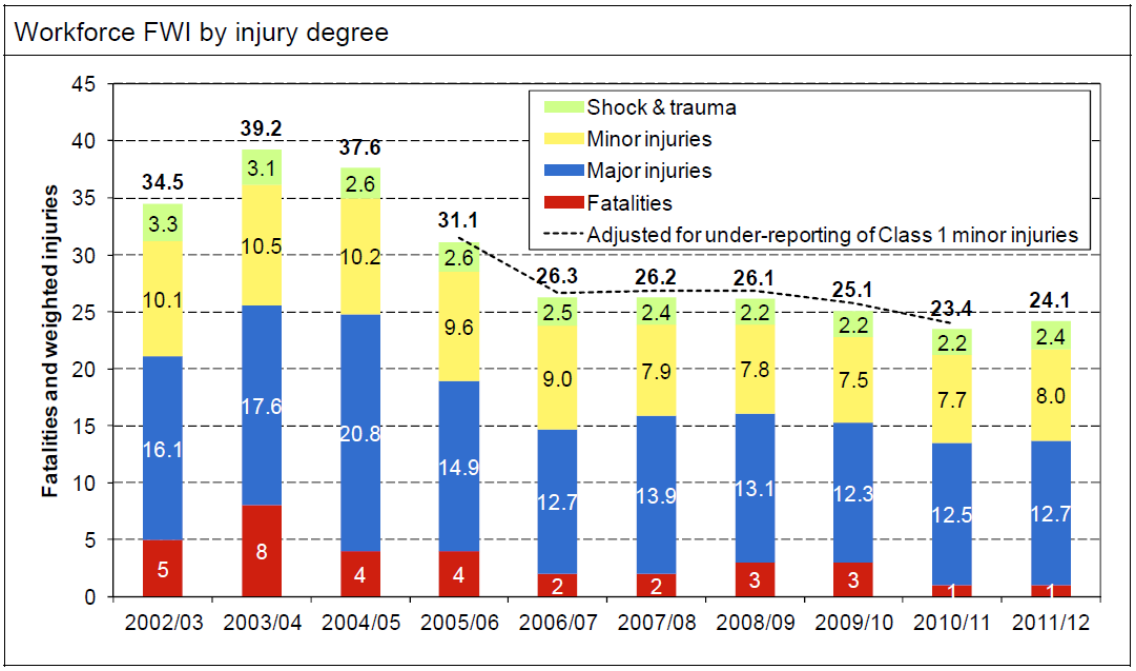


Source: RSSB

Workforce safety



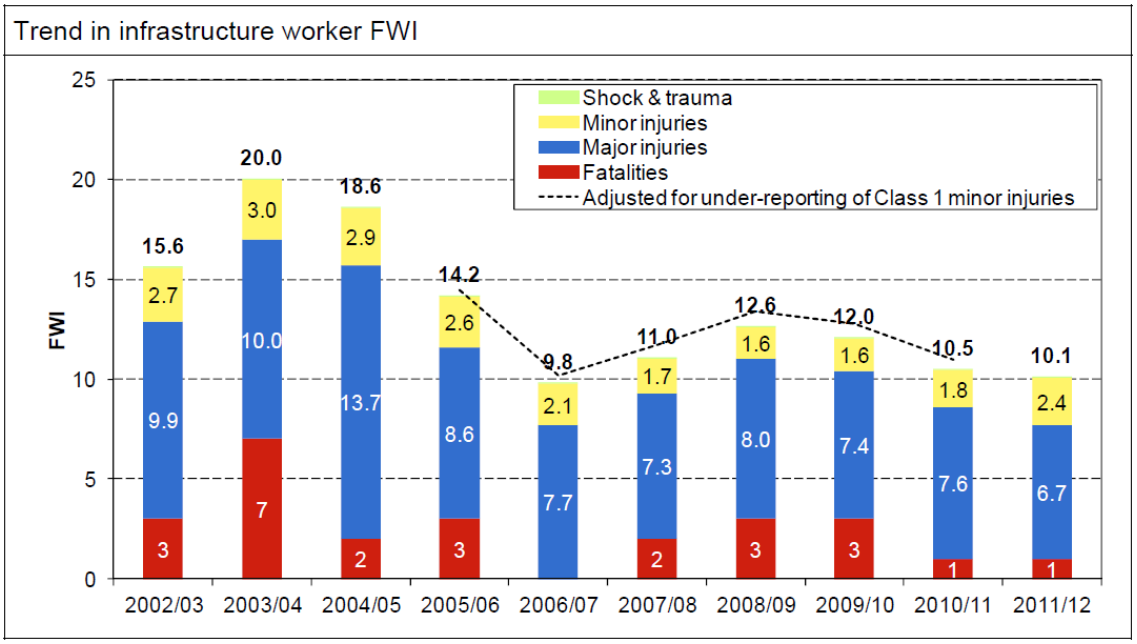
3.5 There was one fatality that was associated with a road traffic incident.



Source: RSSB.

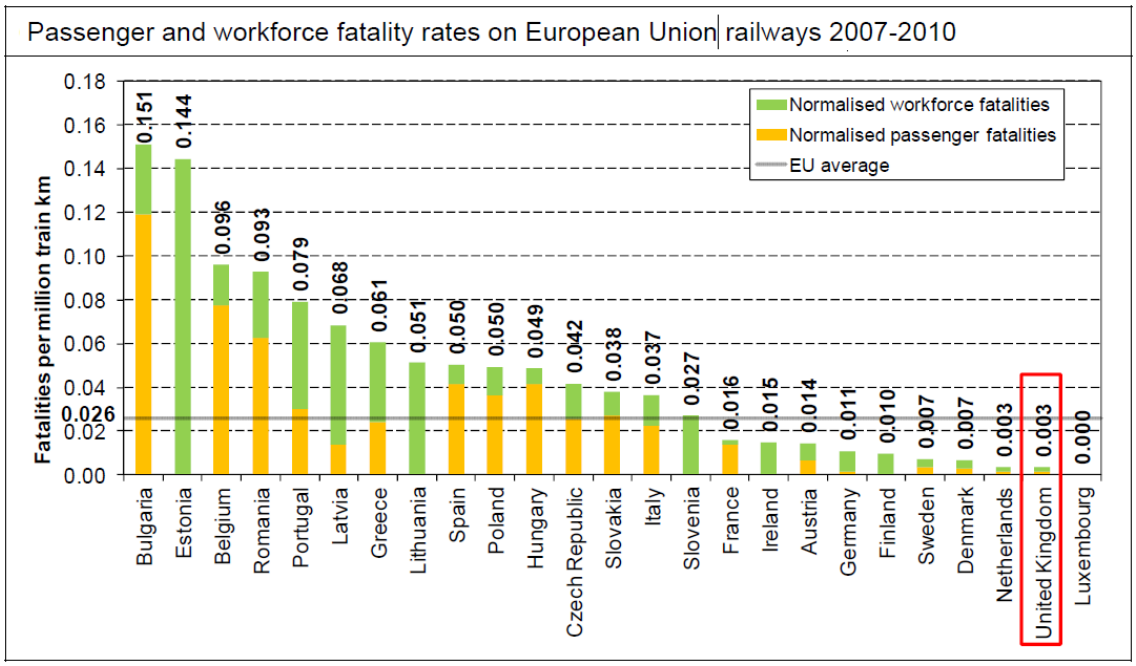
FWI = Fatalities and weighted injuries

3.6 The level of workforce harm for 2011/12 showed a normalised increase of 4% compared with the previous year. The areas where there was an increase in harm were amongst train drivers and on-board crew. The increase can also be explained by the improved reporting of minor injuries following ORR's exposure of areas of inadequate safety reporting at Network Rail.



Source: RSSB.
Class 1 minor injuries = reports that need to be made to ORR if someone is off work for over 3 days.
FWI = Fatalities and Weighted Injuries.

3.7 There was again a welcome downward trend in harm to infrastructure workers, who are generally at the highest risk on the railway. Network Rail still has a long way to go in improving its safety culture, although they now have a plan in place, which we fully support. Workforce safety remains one of our key priorities in all railway sectors.



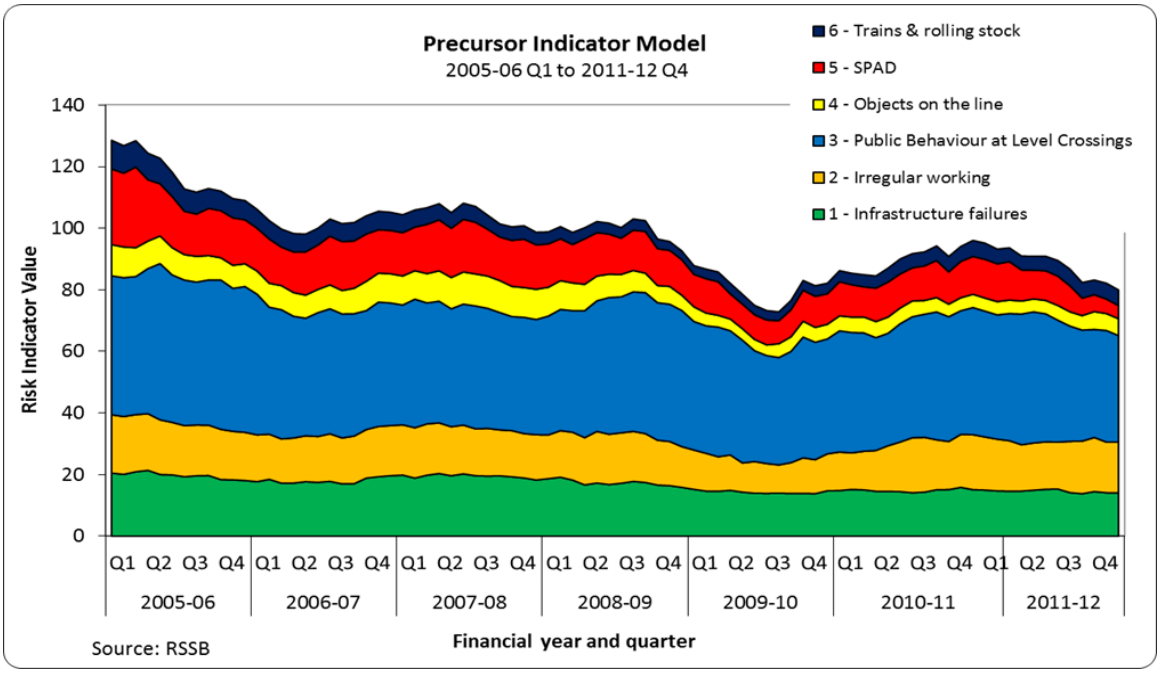
Source: RSSB (based on data from Eurostat).

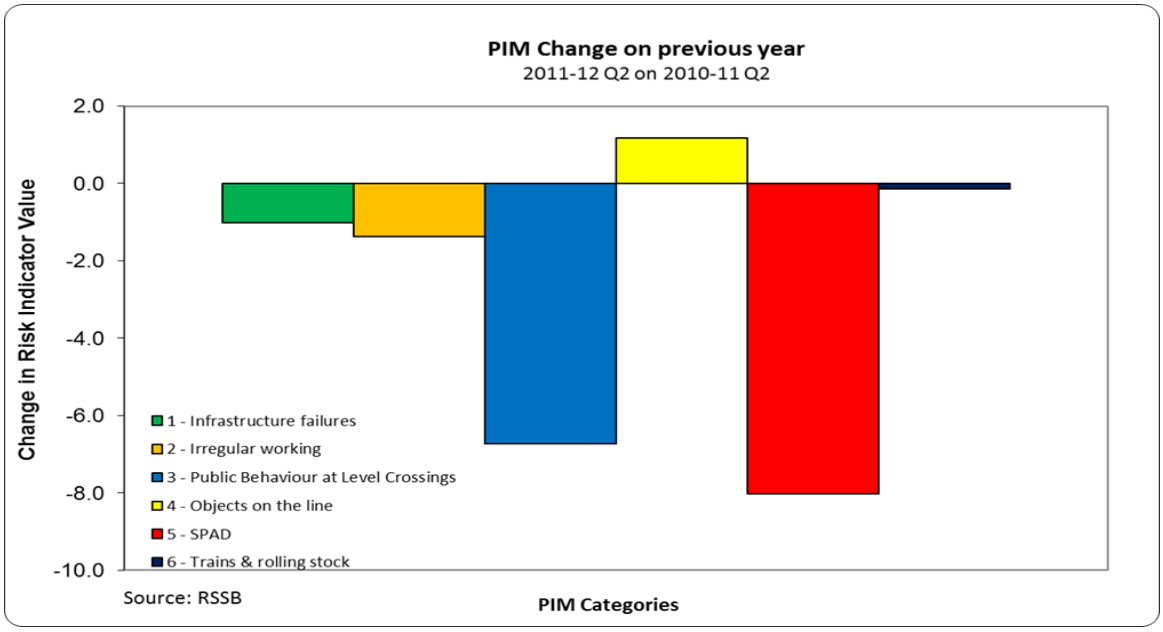
3.8 Countries across Europe have been submitting their Common Safety Indicators (CSIs) to the European Railway Agency (ERA) since 2007. In 2011 ERA unveiled the second set of National Reference Values (NRVs) that will be used to monitor safety performance across member states. NRVs indicate the maximum tolerable level for a particular risk (e.g. level crossing risk) for each member state. They provide a benchmark based on member states' past performance.

3.9 The chart of Passenger and workforce fatality rates on European Union railways 2007-2010 shows that the mainline railway (GB rail) is below the EU average and one of the safest in Europe.

The overarching picture: Precursor indicator model (PIM)

3.10 The PIM measures the underlying risk from train accidents to passengers and members of the public such as motorists on level crossings.



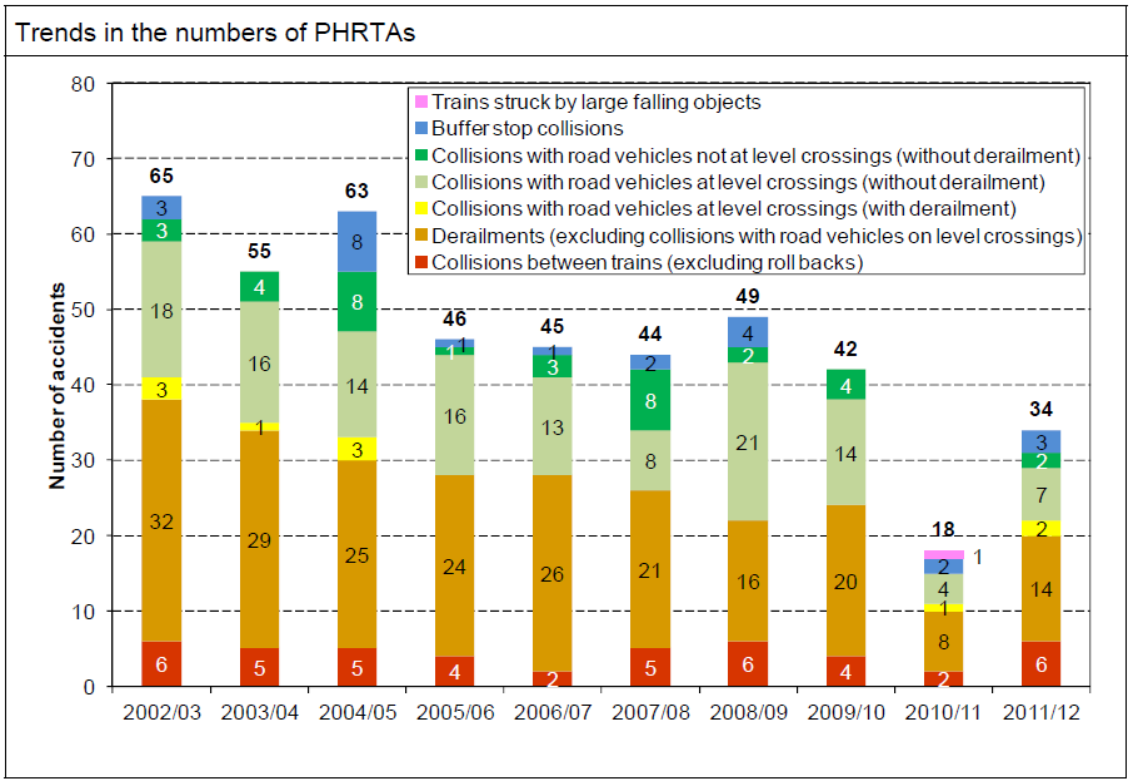


SPAD = Signal passed at danger

PIM = Precursor indicator model

3.11 The graph above shows the changes that have occurred in the elements of the PIM over the year. Five of the six areas showed percentage decreases over the year. The only element increasing slightly was objects on the line. The largest reductions occurred in level crossing and SPAD risk, which has fallen substantially since 2006. The reduction in risks for infrastructure failures was small, and we think more can be done here by the duty-holders. Asset safety remains one of our key risk priority areas.

Potentially higher risk train accidents

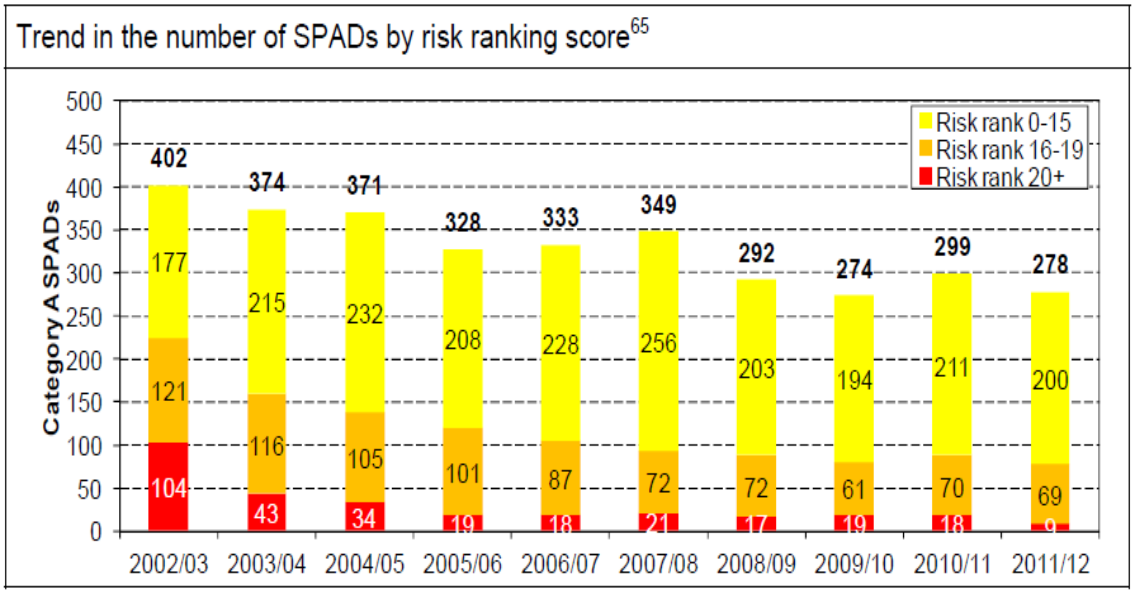


Source: RSSB

PHRTAs = Potentially Higher Risk train accidents.

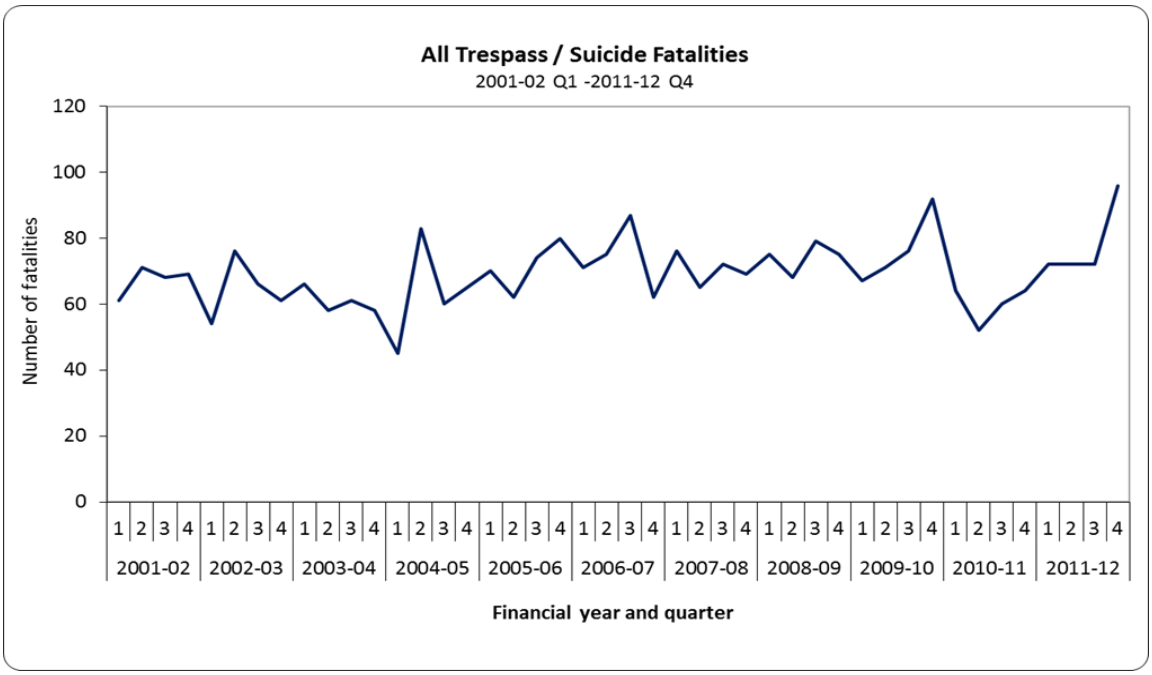
3.12 The number of potentially higher risk train accidents showed a significant increase compared with 2010/11. However, it is still the second lowest on record. One of the main reasons for the rise was an increase in freight derailments (of which only two occurred on the mainline), but this is still below the freight derailment average since 2002-03.

Signals passed at danger (SPADs) Source: RSSB



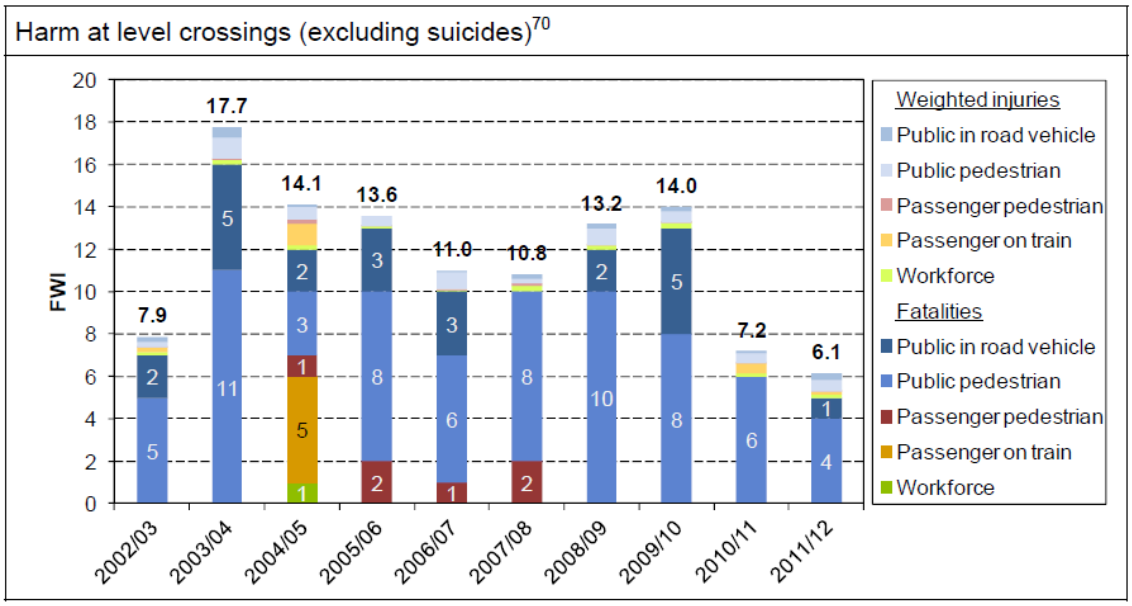
3.13 Signals passed at danger are events when a train passes a railway signal instructing the train to stop without authority from the signaller to do so. There was a reduction in the number of SPADs, and a significant reduction in SPAD risk, particularly those with a higher risk ranking, to the lowest on record. Improved autumn leaf-fall preparedness, including the industry focus on train sanding equipment and a relatively benign weather pattern, may have been factors in the improvement.

All trespass/suicide fatalities



3.14 There was an increase in the number of people committing suicide on the railway this year. Sadly, this reflects previous patterns seen when there was an economic downturn.

Harm at level crossings (excluding suicides)



Source: RSSB.

FWI = Fatalities and Weighted Injuries

3.15 Although everyone in the industry recognises that there is more to be done, it is pleasing to note that the level of harm at level crossings is the lowest in the last decade, with a railway that is busier than at any time since the 1920s. Even so, there is still much to do. Network Rail (in particular) has committed to reduce harm year-on-year at level crossings.

Data quality

3.16 All measures will only give us a good picture if the data quality is good.

3.17 On behalf of its members, the mainline railway companies, RSSB undertakes an annual data quality health check. It provides the results of the check to ORR to reassure us that the data which RSSB publishes on behalf of the industry is reliable.

3.18 At the end of 2011, the quality of safety data input into the industry's Safety Management System (SMIS) by each organisation on the mainline railway was reviewed and ranked by RSSB for the third time. This score was based on four factors: timeliness, under-reporting, response to actions and quality of input. The ranking allows each organisation to see clearly where their weaknesses lie and peer review their performance. Companies will be re-measured again at the end of 2012 against slightly enhanced assessment criteria.

3.19 At the end of 2009, the average data quality ranking score was 74%, at the end of 2010 this was 81%, and by the end of 2011 it had improved to 90%. Of the 30 rail stakeholders involved, 15 improved their data quality scores compared with the previous year, and of these, 12 improved by more than 10%, and four improved by more than 25%. 12 companies maintained the same level as 2010.

4. Health and safety across the rail sector: the regulator's view

Railway Operators

4.1 Our inspection teams specialise in passenger train operators, freight operators, heritage and light rail operators and Transport for London's rail businesses. Our teams apply the Railway Management Maturity Model (RM3) to ensure in depth assessment and analysis of each duty holder's health and safety management. We use the results of inspection, audit and investigation when judged against the benchmarks in the model to take an overview of the performance in each sector.

4.2 We have used RM3 for the last two years to provide an initial benchmark and a means of verifying each duty holder's progress towards excellence in health and safety management.

4.3 In many cases we were pleased to identify good health and safety management arrangements although there are some specific topics where we made recommendations for improvements.

4.4 Overall, workforce safety continues to improve on London Underground (LUL).

4.5 Transport for London railway duty holders (London Underground (LUL), London Overground (LOROL) and Docklands Light Railway (DLRL) all achieved our vision of zero workforce and industry caused passenger fatalities.

4.6 Train dispatch at stations on the mainline remains an issue and there have been a number of very serious incidents that have resulted in fatal or serious injuries.

4.7 The standards of corporate governance and management for some companies within the heritage railway sector are of concern and some have fallen below an acceptable level. Significant ORR enforcement activity has been required to ensure safety on some heritage lines.

Mainline Train Operating Companies and Freight Operating Companies

Key messages:

- The industry shows high levels of commitment to effective management of rolling stock maintenance and driver competence.
- Encouraging signs that companies are producing strategies for occupational health issues.
- Some challenging management issues still to be tackled including low adhesion, train protection systems, SPADs caused by distraction and more effective monitoring of the platform-train interface for train dispatch and passenger behavioural issues. These issues are reflected in our priorities for 2012/13.

What ORR found:

Low adhesion

4.8 This year has seen additional fleets of trains fitted with sanding equipment with a commitment to have all passenger rolling stock fitted by the autumn of 2012. Inspectors have pushed for engineering improvements to the sanding rate for existing units and more reliable delivery of sanding due to enhancement of maintenance standards. However the industry needs to do more to ensure sanding equipment remains viable during times of demand for sand especially in the autumn leaf fall season.

Train Protection and Warning System (TPWS).

4.9 We have continued to challenge the industry to improve train protection, manage the inherent residual safety risks associated with the ageing TPWS system and develop a robust strategy for train protection that includes migration to the European Rail Traffic Management System (ERTMS). We recognise that the industry has a strategy to manage the TPWS system and we are engaged with individual companies to make sure they have appropriately worked through the implications of the strategy for their fleets and operations.

Emergency Planning

4.10 We carried out an audit of emergency planning arrangements with several train operating companies. Although the inspections indicated that duty holders were broadly compliant with legislative requirements and industry standards there were concerns about the variability in the level of compliance being achieved.

4.11 We encouraged the use of simulators for training train crew in emergency procedures, building emergency preparedness into competence management systems assessment processes and looking for more effective and realistic testing of emergency arrangements.

4.12 We recommended that all train operators have systems in place to:

- Effectively review their emergency plans;
- Consider locations with unique risks, such as tunnels, cuttings, viaducts etc.; and
- Ensure risk assessments, especially at stations, include local factors.

Train Dispatch

4.13 Train dispatch remains an issue with a number of very serious incidents resulting in fatal or serious injuries. Platform-train interface incidents clearly show that greater care and communication with passengers is necessary where visibility and supervision of passengers boarding or alighting is reduced, as in the case of ‘driver only’ or ‘guard only’ dispatch.

4.14 ORR investigated a number of dispatch accidents this year and confirmed findings from previous inquiries that the behaviour of members of the public concerned played a major role in the root cause. However, there have also been a number of accidents that could have been prevented if staff had carried out the train safety checks correctly. Duty holders were reminded to make a realistic assessment of the factors that influence train dispatch when carrying out risk assessments and designing dispatch methods. They were asked to ensure their staff remain competent to undertake these duties and are able to discharge their responsibilities in a professional manner, even when passengers’ behaviour is challenging.

4.15 ORR supports good management of the risks from train dispatch. This includes the use of unobtrusive monitoring, including Closed Circuit Television (CCTV) footage, not just to monitor dispatch arrangements but also to establish the full range of passenger behaviours. It also extends to making sure that 'Driver Only Operation' equipment is regularly assessed so it still works as designed and CCTV systems (both on train and platform) are maintained to ensure they provide good quality images. Good risk management can also be achieved by adopting technology to enhance dispatch such as CCTV for dispatchers and wireless handsets to activate 'Right Away' indicators.

Loss of concentration/distraction issues

4.16 Interrupted concentration and distraction continues to account for the majority of operational incidents we investigated. We believe the industry needs to do more to establish causal factors and we support the installation of cameras in the cab to help understand what causes drivers to become distracted as they approach signals.

Rolling stock maintenance

4.17 We found some high standards of maintenance and concluded that all of the companies inspected were able to demonstrate a high level of commitment to effectively manage this risk area. We noted good practice in regard to:

- Document control in maintaining current versions of vehicle maintenance instructions at all locations.
- Attention to ensuring a high standard of sign off and record keeping
- High level of monitoring of performance and defects, with demonstrable efforts to have the issues visible to staff.
- Action to tackle the issue of poor quality component supply and overhaul.

4.18 However some duty holders need to do more in the areas of

- defect management
- competency management and
- the quality of supplied components.

Rolling stock failures

4.19 ORR continued its work to oversee whether operators with ageing fleets continue to take a risk-based approach to maintenance. Risk based maintenance can enable different ages of rolling stock to be maintained adequately. Rolling stock failures, such as the loss of a final drive, or bearing failures, could result in multi-fatality incidents. We flagged these concerns in the annual report for 2010-11 in relation to Pacer[3] trains. We still have concerns about the planned continued use of these trains because their age means they can be more susceptible to failures and they often require more maintenance and monitoring.

[3] Pacer is the operational name of the British Rail classes 140, 141, 142, 143 &144 diesel multiple unit rail-buses built between 1984 and 1987. They number in the hundreds, with significant use by Northern Rail.

4.20 In the last year, we have encouraged the duty-holders involved with Pacer trains to introduce temperature monitoring and to undertake more effective oil sampling to provide early indication of potential failures. We will maintain our oversight in this area.

4.21 In the last year, some rolling stock failures arose from poor overhaul practices. The duty-holders involved are addressing these issues.

Occupational health

4.22 It is encouraging to note that the industry is now placing greater emphasis on this important issue with many companies having strategies in place or working towards producing a strategy document.

4.23 Our occupational health inspections found improvements in standards particularly in the area of under-frame washing, a key risk area for train operators.

4.24 One company we visited agreed to install automatic wash facilities, thereby clearly applying the hierarchy of risk control. We also saw improvements to the standard of PPE, with the use of air fed hoods, where operatives needed to carry out manual washing with pressure washing equipment.

4.25 However there were still examples where more could be done in respect of assessing the exposure to legionella and in regard to monitoring and auditing of the under-frame control arrangements.

4.26 We note continuing progress in post-traumatic incident management, with new practices in managing stress disorders from traumatic incidents using cognitive behavioural therapy and eye movement desensitisation and reprocessing therapies.

Freight specific issues

4.27 Freight volumes have increased slightly this year but we believe that freight risk in total has reduced. Risks from train divisions and incidents of handbrakes being left on have declined, partly due to increasing use of scotches and better train preparation procedures.

4.28 ORR remains concerned about vehicle and track compatibility for some designs of wagon when presented with track twist levels that comply with GB standards but are currently higher than accepted by other European infrastructure managers. A number of derailments, including one at Bordesley Junction on 26th August, have illustrated this interface issue, which needs a resolution in respect of maintenance limits currently applied.

4.29 Freight SPAD risk continues to be low, reflecting the generally low risk nature of the majority of freight SPAD incidents, but the freight operating companies are continuing to focus effort on reducing these events.

4.30 Throughout the year ORR has been preparing for a major new system of certification for Entities in Charge of Maintenance that comes into force in the 2012-13 work year. Systems for assessment and certification have been developed and a successful learning trial was conducted with VTG Rail UK, one of the UK's private freight wagon owning companies.

Work in Possessions

4.31 Alongside their work hauling freight across Britain, many freight operators also provide services for trains working in engineering possessions on the mainline railway. Following a series of incidents in 2010-11 the railway industry undertook some work to try and improve possessions management. Once this was implemented we conducted a series of inspections and found that:

- the industry had failed to address the underlying issues of why the possession arrangements were not working properly;
- freight operators were being given information which was wrong or out of date;
- there was no evidence that freight operators had taken action to address the safety culture of drivers and shunters working within possessions/worksites; and
- some staff on site believed it acceptable to by-pass procedures.

4.32 Since all of these issues remain to be fully resolved inspectors will continue to work with Network Rail, freight operating companies and site contractors to achieve improvements in this area during 2012-13.

Heritage Railways

4.33 Key messages:

- After a number of years of reducing incident levels 2011/12 saw an unwelcome rise. Inspectors established that the root causes of many of these cases lay with the competence of people involved and the overall systems of safety management at heritage railways, where we found that there was a lack of understanding of the importance of strong Board governance to ensure the setting of procedures and their compliance.
- ORR had concerns that six years after the introduction of the ROGS regulations in 2006, there still remained a substantial number of railways where safety management systems, which are mandated by ROGS, were either inadequate or in some cases entirely absent.
- Enforcement action has been taken this year against a significant number of heritage railways, mostly focused on management system failures.

Tramways, Light Railways and other Guided Transport

4.34 Key messages:

- Safety performance of the sector remains very good and comparable to the best performing European systems. We found a high standard of safety culture and robust safety management systems.
- Change management was found to be inconsistent and the tramway industry is still struggling with the implementation of appropriate safety verification systems for new works. We found a number of failings in works and systems that were subject to safety verification and we are concerned about the continuing application of inappropriate heavy rail technology in the design of Britain's new tramways.

4.35 What ORR found:

4.36 Work through this year has continued to be dominated by the substantial construction and development projects underway at Manchester Metrolink, Blackpool, Croydon and Edinburgh.

4.37 Inspectors have continued to engage with these schemes to monitor the application of safety verification and the roles of the various Competent Persons. In some schemes ORR also carries out the functions of the Secretary of State where 'approval' is required under the various Private Acts and Orders under which many of these schemes are built and operated.

4.38 Reviews of Safety Verification and Competent Person work in these schemes have raised some concerns over the depth of understanding of these ROGS duties and we have worked to ensure that the schemes do deliver the appropriate levels of safety.

4.39 In operational matters the accident and incident rates remain relatively consistent year on year. There have been a series of incidents at Croydon Tramlink and Manchester Metrolink where pedestrians have been struck by trams, in one instance resulting in fatal injuries. Investigations by ORR and RAIB have not led to direct enforcement action however the RAIB investigation into a collision in Manchester has led to a report into the subject of tram pedestrian under run protection which has made some recommendations for further research in this area. ORR will be working with the tramway industry to ensure that this is taken forward in 2012-13.

4.40 ORR is also responsible for the oversight of safety on other forms of guided transit and this includes the people mover systems at UK airports. We investigated two incidents at the Gatwick Airport system during this year where components fell from vehicles in service. The investigation resulted in the serving of an Improvement Notice. We have also monitored the introduction on the new Personal Rapid Transit System at Heathrow Airport Terminal 5 which serves the business car park system.

London Underground and other Transport for London companies

4.41 Key messages:

- Safety performance of London Underground, London Overground and Docklands Light Railway remains high. This is reflected in the lower level of resource we allocate to these duty-holders, relative to those on the mainline railway.
- The continued challenging economic circumstances and steadily increasing customer demand mean that there remain strong pressures on all Transport for London duty holders.

What ORR found:

Railway operations.

4.42 While there has been a marginal increase in 'category A' signals passed at danger on London Underground, train protection systems continued to mitigate effectively the consequences of such SPADs. This marginal increase must be set in an environment of increasing passenger volumes and LUL's work to improve and increase service frequency and reduce delays. In this light LUL has maintained a low 'category A' SPAD risk despite increasing train mileage. Nonetheless we expect LUL to continue to work to limit the incidence of SPAD's on the system.

4.43 We monitored LUL's progressive introduction of new S-Stock trains on the Metropolitan line, implementation of the changes to Jubilee line train control system and the final phases of the Victoria line upgrade including the decommissioning of the legacy signalling system. All have at various times encountered difficulties that have affected service delivery. However we have no evidence that safety of staff or passengers has been fundamentally compromised as a result.

4.44 LUL staffing changes to stations introduced in 2010-11 have now had time to take effect. We have reviewed LUL's management of the introduction of these changes and believe that some aspects, notably those relating to risk assessment and updating of emergency plans, could have been managed better. In one or two cases, we are challenging LUL's risk analysis and conclusions, as evidence is emerging in some instances of incomplete recognition of local factors in relation to some stations, for example a shift in local industry workforce patterns.

Preparation for the Olympic Games 2012

4.45 All Transport for London dutyholders have made considerable efforts to ensure they are 'Olympic ready'. Our inspections have confirmed that extensive planning and preparation has being made. We are reassured by the thoroughness of the approaches adopted and the collaboration that has taken place. However we will continue to seek assurance that this preparation effort is translated into action 'on-the-ground' in the run up to the games.

Worker safety.

4.46 We inspected a range of operational activities at LUL, LOROL and DLR depots looking at risk control measures. These included safe management of work at height and control of vehicles in depots. Conditions seen at the depots visited were generally good but workplace transport risk assessments were found to require further work in some depots.

London Overground Limited & Docklands Light Railway Limited. (LOROL and DLR)

4.47 We were pleased by DLR's successful compliance with an Improvement Notice to filter control room alarm calls and in particular the apparent operational benefits gained from the changes made. DLR also successfully completed its re-submission for Safety Authorisation, producing a well thought through and set out description of its health and safety management system.

4.48 LOROL's development of a driver training programme and competency management system and its corresponding recognition from the independent UK Accreditation Service, reflects our own view of the organisations progressive and systematic approach to health and safety

LUL trades unions

4.49 As in previous years we have continued to meet LUL trades unions representatives from the stations and trains councils throughout the year and continue to value the health and safety perspective they provide.

Network Rail

4.50 Key messages:

- We noted a strong desire within Network Rail to improve health and safety performance. We are pleased to note the Chief Executive's personal commitment to employee and passenger health and safety and we have seen some changes that auger well for the future, including the appointment of a

new safety and sustainability director, safety improvement managers in the routes, the start of a safety leadership and culture programme, and a pilot exercise encouraging new safety behaviours.

- We continue to find patchy, inconsistent implementation of processes and procedures and a slow pace in making improvements. We routinely find issues which require our intervention and consider that an organisation that controlled its activities and monitored itself effectively ought to be able to identify these before we do.
- Overall, progress has been made during the year and we believe Network Rail is now in a better position than at the start of the year, but we are concerned about progress in specific areas being dependent on pressure from us.

What ORR found:

Level Crossings

4.51 The condition of level crossings is generally good. Mostly, they meet the specifications and standards they are expected to achieve. There have been some improvements in the management of level crossings; the trialling of new technologies, improved risk assessments, and strengthened level crossings leadership at Network Rail's centre are all encouraging signs. Conversely, the fragmented allocation of responsibilities and organisational structure and internal communications arrangements, as well as the standard of risk assessments and follow-up actions, represent real obstacles to effective risk management.

Track, switches & crossings

4.52 Overall the risk of derailment at switches and crossings, with the potential for multiple fatalities, is being adequately controlled through Network Rail's inspection and maintenance regime. However, improvements could be made which would bring benefits to safety, reliability and efficiency. There was evidence of failure to consistently record and report defects, and to identify these failures through monitoring processes. However, we found no evidence of failure to maintain assets in a safe condition.

4.53 For track maintenance work, broadly we found that work was identified and prioritised in accordance with Network Rail standards, based on engineering requirements and not resource availability. However, work was frequently rescheduled, often because of resource and access considerations. We found that some depots appeared under-resourced, particularly at section manager level, making maintenance management more reactive than proactive.

Maintenance restructuring, non-track assets and structures

4.54 We found clear evidence of resource issues following a major reorganisation in April 2011. There was a lack of resource for routine maintenance in rural areas, an inability to consistently plan and deliver maintenance, inconsistencies in how faults requiring repair were prioritised and managed and examples of failing to carry out certain inspections at switches and crossings. Network Rail's post-implementation monitoring identified this shortfall and they reinstated 200 posts in response.

4.55 For maintenance of off-track assets we found that key safety-critical assets were not always being proactively maintained to ensure risks were adequately controlled, e.g. vegetation control to maintain sight-lines at passive crossings. We noted that work backlogs were rising, there was no complete register of off-track assets, and some areas were struggling to keep pace with the work. Nevertheless we also found

innovative approaches to risk control and a positive attitude towards managing risks amongst staff. We will continue to monitor Network Rail maintenance units during 2012/13.

4.56 There has been a step change in the management of bridge examinations, but only after formal ORR enforcement action in May 2011 and with a significant amount of effort and resource from our Inspectors. For cuttings and embankments, Network Rail has made real progress in understanding performance and management issues, but has yet to apply the lessons learned from our intervention on bridges to earthworks, specifically those of identifying overdue examinations and any necessary interim mitigation measures.

4.57 Work has continued to rectify the issues found with track drainage management in the previous year. With some prompting from ORR, Network Rail made progress towards improving their management arrangements, including the fundamental area of maintaining an effective drainage asset database.

Worker Health and Safety

4.58 We acknowledge the considerable and on-going effort to improve track worker safety through the development of revised safe systems of work, increased emphasis on working while trains are not running and improved training for people responsible for setting-up safe worksites. However, ORR still has significant concerns at the continued number of track worker incidents where shortcomings in effective planning, risk assessment and implementation of suitable safe systems of work are evident. Staff behaviours and safety culture also give cause for concern in several cases where proper procedures were subverted by local pressures or work needs. This has been compounded by a rise in the number of signaller errors during the taking of line blockages following the recent Rule Book changes with potentially catastrophic consequences. With such heavy reliance on human factors there is always scope for error or violation. This needs to be minimised by the use of suitable technology and innovation which provides more automated and/or physical means of protection where this is reasonably practicable.

4.59 We found acceptable standards of health and safety on Network Rail's construction sites, and improvements in their understanding and implementation of their duties as client under the Construction (Design & Management) Regulations 2007. However, we found less understanding of their duties as principal contractor where they directly managed construction work. In particular we found that a structured approach to monitoring, auditing and review was lacking. We found variable standards across sites managed by Network Rail's contractors, especially in the areas of risk assessment and implementation of control measures and staff competence.

4.60 We found an improvement in the management of fatigue across the industry in the past year. Awareness of the necessity for fatigue management is now much more widely acknowledged.

Annex 1: Core Message: summarises in two pages our responsibilities as health and safety regulator

ORR as rail industry regulator

1. ORR is the economic and safety regulator for the railway industry in mainland Britain.

2. Our regulation focuses on business risk, recognising that business risk includes commercial risks and health and safety risks. Health and safety is not an overhead or an optional add-on. It is a fundamental requirement – and it is good for business.

Health and safety regulation

3. We safeguard the public by challenging the rail industry to improve its health and safety performance and prevent people being killed, injured or made ill as a result of its activities.

What we do

4. The rail industry in mainland Britain is made up of many businesses. ORR oversees those businesses and how they work together to keep the rail system safe.

5. A business will be safe if its people manage risks effectively every day. The role of ORR is to motivate businesses to have excellent health and safety management and to check that they identify and assess risks properly, control them effectively and comply with the law.

6. ORR recognises that any business which either creates a risk or is partly responsible for a shared risk, must effectively manage that risk. This is irrespective of that business's profitability, availability of resources, or how long any contract they hold has left to run. Although ORR is also their economic regulator, this applies as much to ORR's dealings with Network Rail and HS1Ltd as with any other companies. .As the economic regulator for Network Rail, ORR decides what it has to deliver (its outputs) and how much this should cost. When we do this, we take safety into account so that the government's priorities are met. Quite simply, these are: a rail industry that maintains a high level of safety, controls its costs and delivers both value for money for the taxpayer and a good service to its customers..

Our core focus

7. ORR expects businesses to achieve proper control of risks by having an excellent safety management system. We expect leaders in the rail industry to understand their risks and how to measure their performance in controlling these.

8. Our major concern is to secure high standards of protection from train-crash risk without businesses losing sight of other risks that need to be controlled, such as asbestos or falls from a height.

9. ORR looks for evidence of what is being done by businesses to control health and safety risks. We actively seek evidence through our inspections, investigations of incidents and permissions for certain activities. And we strike a balance on the resources we allocate to each. At all times, we act fairly and compare evidence against consistent standards of what businesses should be doing. ORR can use its enforcement powers to require improvement if that is needed.

10. ORR will not settle for mediocrity or a culture of complacency. We will always ask whether improvement is needed, but we recognise that the law sets minimum standards and that an excellent organisation is one that delivers compliance with the law efficiently and consistently. ORR encourages excellence, but will not enforce beyond the standard set down in law.

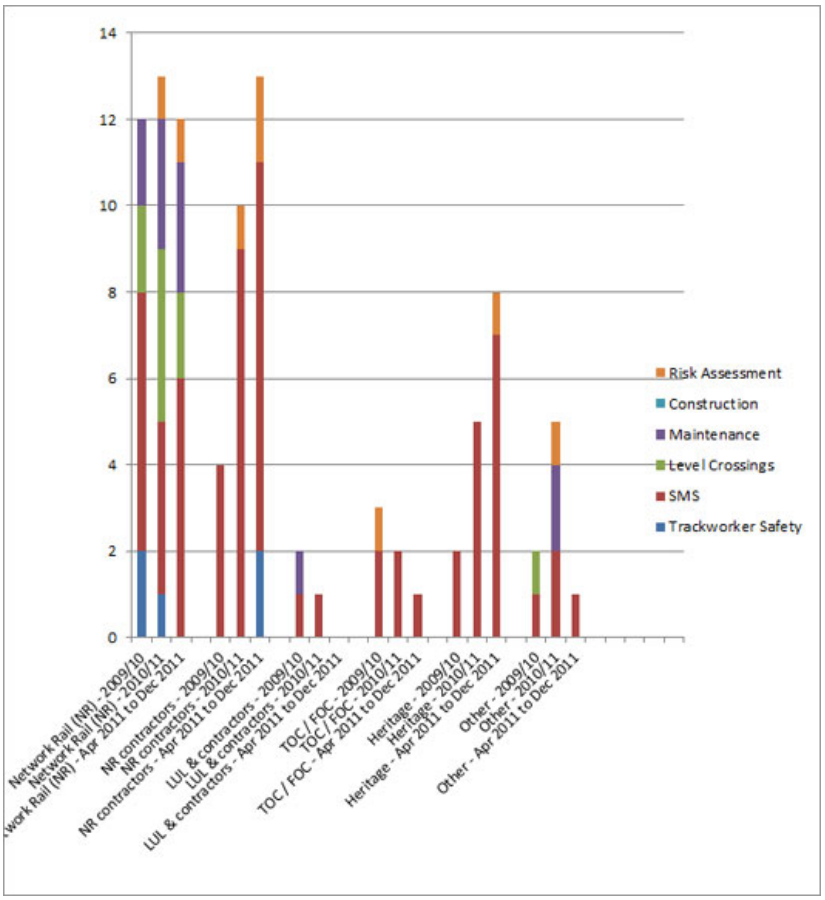
11. A railway system which is designed with safety in mind from the outset is more likely to deliver a railway that can be operated safely and efficiently for years to come. ORR expects careful thought during the design process to eliminate risks or reduce them where possible.

12. ORR works with other European regulators to help deliver sensible regulation and a common European approach. This is so that trains can run through the Channel Tunnel to British and European destinations safely, and so that trains built in one country can operate in another. Like our European neighbours, we keep the legal framework for safety on the railway under review and can propose changes if necessary. We do this in line with the principles of better regulation, which underpin all that we do.

Annex 2: Enforcement activity

1. Most of our effectiveness in health and safety regulation comes through evidence-based advice and encouragement to dutyholders to improve and adapt their risk management. But occasionally we have to use more formal powers to bring about change or deal with immediate risk. Most often, we use enforcement notices – whether to prohibit an activity involving serious risk or to rectify serious gaps in risk control. Our enforcement policy statement sets out how we will use these powers and we use an enforcement management model to ensure consistency and rigour in those enforcement decisions.

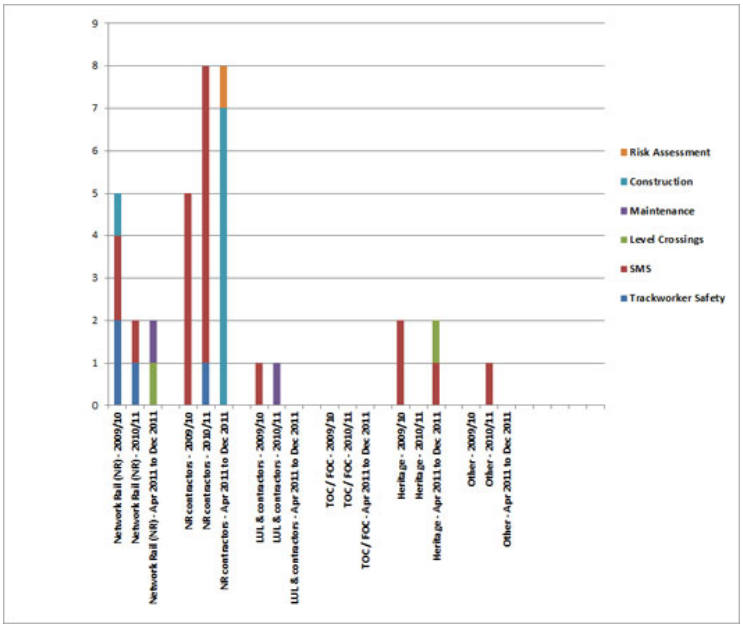
Improvement notices



SMS = Safety Management System

TOC = Train operating company; FOC = Freight operating company

Prohibition notices

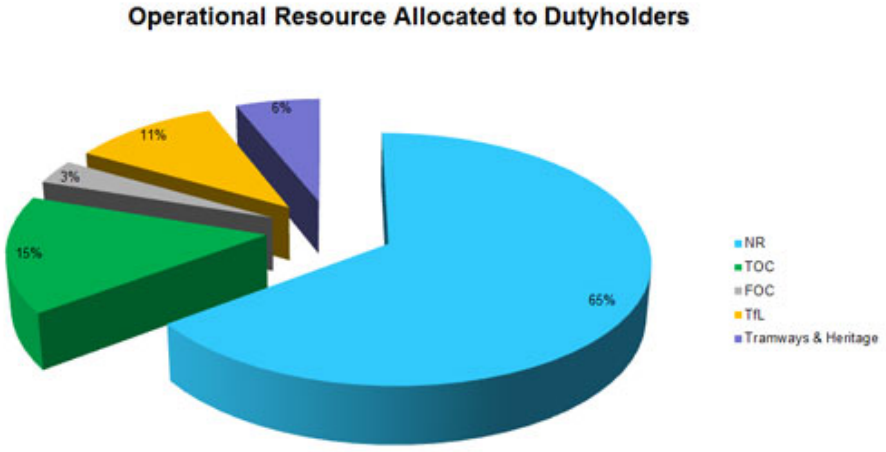


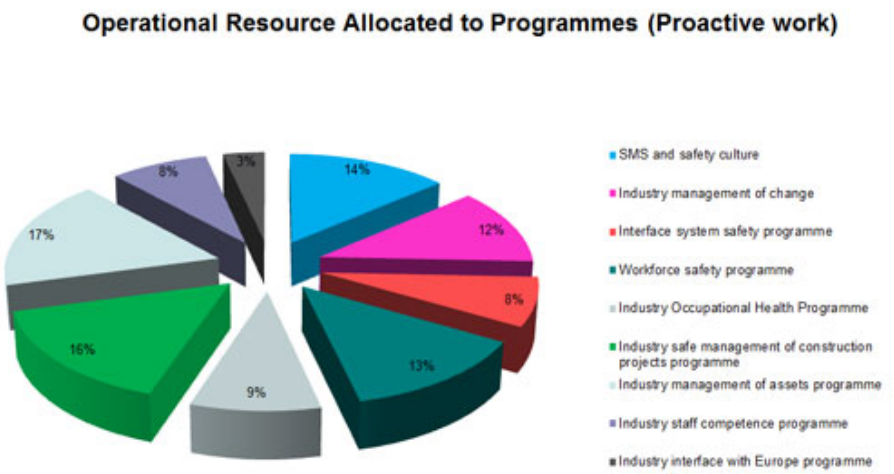
Prosecutions

2. In certain circumstances explained in our enforcement policy statement, where we find non-compliance with the law, we prosecute those who have failed to do what the law requires. The Courts decide on guilt and any penalty.

Company	Issue	Outcome
Network Rail Infrastructure Ltd	Potters bar derailment.	£3,000,000 fine. Costs £150,000
Merseyrail Electrics Ltd	Runaway train in freight depot, narrowly missed passenger service.	£85,000 fine. Costs £20,970
Network Rail Infrastructure Ltd	Lorry hit bridge causing rubble to fall on tracks below, leading to a derailment.	£80,000 fine. Costs £32,000
Network Rail Infrastructure Ltd	Failure to assess the safety risk, when building a structure next to a level crossing, causing sighting issues.	£20,000 fine. Costs £4,750
Network Rail Infrastructure Ltd	A train struck two grinding trolleys placed on the line by track workers for maintenance purposes.	£20,000 fine. Costs £9,000
Network Rail Infrastructure Ltd	Double fatality at Elsenham level crossing	£1,000,000 fine. Costs £60,015

Annex 3: Resources (2012-13)





SMS = Safety Management System

TOC = Train Operating Company

FOC = Freight Operating Company

NR = Network Rail

TfL = Transport for London

PR13 = Periodic Review 2013