

TRANSPORT FOR LONDON

SAFETY, HEALTH AND ENVIRONMENT ASSURANCE COMMITTEE

SUBJECT: OFFICE OF RAIL REGULATION HEALTH AND SAFETY REPORT

DATE: 2 AUGUST 2011

1 PURPOSE AND DECISION REQUIRED

- 1.1 This paper is to inform the Committee of the Office of Rail Regulation's (ORR) Health and Safety Report for 2010/11, published on 19 July 2011, and specifically the comments relating to TfL and London Underground (LU).
- 1.2 The Committee is asked to note the paper and the attached report.

2 BACKGROUND

- 2.1 The ORR's health and safety report for 2010/11, attached at Appendix 1, contains a number of helpful comments concerning TfL and LU, for example on pages four, 24 and 25.
- 2.2 The chart on page 14 shows that UK national rail (not including LU) is the third safest in Europe, beaten only by Sweden and Luxembourg and over three times better than the European average.
- 2.3 The chart on page 15 shows that, measured on respective fatality rates (the same measure used for the chart on page 14), LU is approximately five times safer than UK national rail and that, therefore, LU is the safest significant railway in Europe and around 15 times safer than the European mainline rail average.
- 2.4 The issue about LU's change management ability does not take into account the huge volume of changes of all types that LU has undergone in the last decade or so, including a considerable amount in approximately the past three years. ORR's concern is based on its perception of LU's recent station staffing changes. This issue has been taken up with the ORR, on which discussions will be held.

3 RECOMMENDATION

- 3.1 The Committee is asked to NOTE the paper and the attached report.

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OFFICE OF RAIL REGULATION

Health and Safety Report

July 2011

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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:

- Dutyholders protect the health, safety and welfare of passengers, railway employees and members of the public who may be exposed to risks from the railway.
- The 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 practicable.

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;
- Structured inspection and targeted audit to highlight best practice and areas for improvement, and 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) to identify areas of greatest risk and ensure action is taken;

- 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

Section 1 – ORR director of railway safety’s foreword

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

Following Sir Roy McNulty’s report on value for money and recommendations to improve efficiency in the industry, we will be heading for change. But as has been clearly stated by the Secretary of State, this change will be evolutionary and the industry, monitored by ORR, needs to make sure that this change is managed so that safety continues to improve and is in no way compromised.



Sir Roy’s report published in May 2011 recognised the importance of improving the way the rail industry manages risks and also strengthens its safety culture. We have always said that improvements in efficiency and safety, as well as performance, go hand-in-hand. Excellent safety management is excellent business management too.

In this time of change, 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”.

Our annual health and safety report, which provides the rail industry with our assessment of health and safety on Britain’s railways and outlines our role in improving safety, this year highlights a number of positive safety strides made across the rail industry and again shows that we have one of the safest railways in Europe.

But we must never be complacent, and our report also brings to attention areas of real concern. With great sadness, we reflect on a year which saw one rail worker lose his life - an avoidable and tragic death which reminds us why we must never lose sight of the paramount importance of safety on our railways.

The 2011 safety report cites areas of health and safety progress, achievements and good practice:

- European rail safety data again shows that Britain has one of the safest railways in Europe.
- Potential High Risk Train Accidents (PHRTAs) on the mainline railway showed a very significant reduction, from 42 in 2009/10 to 18 in 2010/11 - a record low.
- Fewer collisions (five) between trains and vehicles at level crossings.

- Overall, workforce safety continues to improve on both the mainline and London Underground (LUL). This is despite increased reporting rates of minor injuries by Network Rail following the regulator's intervention last year. Network Rail's leadership and culture change programme is a vital step to achieving improvements in its workforce safety.
- London Underground (LUL) achieved our vision of zero workforce and industry caused passenger fatalities as it has done on past occasions.

But there are findings in the report from which we will be working to ensure that the industry maintains, and in some cases redoubles efforts, to address areas of real concern:

- ORR continues to have to step in to enforce improvements, or bring prosecutions, where things have gone wrong and to address safety risks. Last year the regulator issued 48 enforcement notices and completed eight prosecutions, as detailed in Annex B.
- On the mainline railway, overall passenger harm increased by a further 2%, with more passengers coming to harm at the platform and train interface.
- An increase of around 15% in train accident risk to passengers and the public indicated by the Rail Safety and Standards Board (RSSB) Precursor Indicator Model (PIM). This key safety indicator for the mainline railway showed more signals being passed at danger (SPADs). Improved reporting of precursors also contributed to the rise.
- Network Rail's comprehensive review of level crossing risk management was a positive step. But it is now essential that this good work is translated into real action to better control level crossing risk appropriate at each level crossing - a large proportion of overall risk on the railways.
- There were a number of notable and worrying near misses on LUL last year.
- We are particularly concerned about the ongoing use of Pacers beyond their intended design life and we will be carefully scrutinising the industry's plans for ensuring they can continue to be used safely.
- Low adhesion remains a significant concern and we are not convinced that the industry has a reliable strategy, both for existing rolling stock and the specification for new rolling stock. Consequently, we are examining all aspects of low adhesion and the practicability of introducing a best common European practice.

We work to ensure safety is never compromised and support the industry's successes and to enable improvements. We are always seeking to improve the way we do things.

ORR believes that an organisation can only achieve excellence in safety through effective and efficient management. That is why we developed and implemented a rail management maturity model, known as RM3. RM3, which has been welcomed by Sir Roy, is a vital tool for assessing an organisation's ability to control health and safety risks and for identifying issues that should be improved. RM3 has been embraced by the rail industry as it is increasingly recognised that the best performing companies are those that have fully integrated health and safety practices into their culture.

We are also undertaking more proactive inspections and audits of Britain's railways on the ground, and continue to emphasise the importance of occupational health by promoting our proactive occupational health programme: 'ORR review of work related ill health in the GB rail industry in 2010'. This clearly demonstrates that although there are pockets of excellence, the industry as a whole still has considerable scope for improvement.

ORR works with the rail industry to help make sure that the health and safety of passengers, railway employees and members of the public are protected, and that the rail industry achieves excellence in health and safety. But it is important to remember that it is for Network Rail and train operating companies to deliver improved safety on the mainline railway.

This report shows that Britain's railways have made some real improvements. But it is crucial that the rail industry, in striving for long-term and sustainable excellence, shows real leadership, maximises everyone's contribution, and steps up to considerable challenges ahead including improving worker safety, passenger safety at stations and safety at level crossings. All of this needs to be done without compromising safety but while reducing unnecessary costs. I see no conflict since improvements in risk management are absolutely consistent with improved business efficiency.

Section 2 – The wider health and safety landscape

Legislative framework

ORR's work to ensure that the railway industry improves its health and safety culture, and has effective risk control measures, relies on having the right 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 the Department for Transport (DfT) to ensure that the UK has the appropriate framework of law and meets its obligations under European requirements.

ORR supports the development of a European framework which promotes market opening, and improved competitiveness of rail, 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 obligations and responsibilities in the Railway Safety Directive, and other measures in the second railway package;
- Developing cooperation arrangements between national safety authorities (NSAs) to ensure effective supervision and enforcement.

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 finalised criteria for assessment of applications for safety certificates and authorisations;
- 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 harmonisation of freight wagon maintenance; and
- Initiating work by ERA to prepare a drafting guide for Technical Standards for Interoperability. This will help provide better focused standards that are more consistent.

Legislative policy work during the year:

On level crossings we have:

- Continued to work with the Law Commissions for England and Wales and Scotland to develop proposals to modernise and simplify the way in which risks at level crossings are governed. A formal consultation was held in November 2010.
- Published guidance on how to use level crossings safely.
- Consulted on revisions to core guidance covering the design, management and operation of level crossings (the revised version will be published in 2011/12).
- Gained the agreement of the Sentencing Council for England and Wales to review sentencing guidelines for level crossing offences.

We have also:

- Consulted on proposals to amend 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.
- Ensured that effective arrangements are in place to issue train driver licences, initially for drivers of cross-border trains, as required by the Train Driver Licensing Directive.
- Developed an effective enforcement regime for regulations covering rail vehicle accessibility.
- Issued revised guidance for assessing applications for safety certificates and safety authorisations to reflect the introduction of pan-European criteria.
- Issued guidance on using the common safety method on risk assessment in the UK.

Safety Management

Trends in instances of accidents and near misses give part of the picture on safety performance¹. The other part is how well managers can control risk so that such unsafe events do not happen. There would be fewer incidents if the rail industry improved its safety management performance towards excellence, when all of the systems to avoid such events would be working effectively and efficiently.

ORR's railway management maturity model, called RM3, describes the components of effective safety management, such as leadership, competence

¹ See section 3 for key statistics.

and proper risk management. These components and the model are described in more detail on [our website](#).

Different dutyholders are likely to perform at a different level of capability for each component. There are five levels of capability - from 'ad hoc' (poor) through to 'managed', 'standardised' and 'predictable', and ultimately to 'excellent'. RM3 describes what you would expect to see at each level for each component. This allows either inspectors or companies themselves to compare the actual situation found to the description of what is expected; to deduce where the organisation is on the scale of management capability for that component, and to identify how they might improve.

We used RM3 to judge the management capability of most railway organisations, including Network Rail, who used the results to target what they should do to address their weaker management areas. We commend this approach.

Our experience of using RM3 with 11 railway organisations in the last two years, from small TOCs to large infrastructure managers, indicates that 'managed', 'standardised' and 'predictable' judgments were most frequently used to describe the management capabilities, based on the evidence we looked at. This result, albeit based on a sample, indicates that management ability for key components of management in the rail industry overall is some way below excellent. Improving management capability and performance towards excellence is our priority.

The table below explains what we think our focus on safety management, and the RM3 tool, is about.

Is about	It is not about
Evidence	Pre-conceptions
Judgement	False precision
Consistency	Uniformity
Dialogue with the company	Silence
Challenge	Acceptance of the status quo
Sustained improvement	Short term fixes
Openness	For ORR only
Targeting interventions	Labelling as "pass" or "fail"
Clear goals and aspirations, as set out in each component's description of "excellent"	Accepting the mediocre as good

Occupational Health

In support of our [Health Programme for 2010-14](#), we have carried out a baseline review of [work-related ill health](#) and its management in the rail industry. The review paper also reports against a small number of baseline indicators on health, informed by rail industry responses to our health survey carried out in December 2010 against which the impact of our health programme by 2014 will be assessed.

Our aim in publishing this baseline paper, which reflects a snapshot view during the first year of our health programme, is to encourage improved leadership and awareness of occupational health and to act as a benchmark for the railway industry. We welcome comments from the industry and will also publish these alongside the baseline paper.

A key element in moving the industry towards excellence in management of occupational health will be encouraging the gathering and use of good data, and effective monitoring and reporting. We encourage rail companies who are keen to act as exemplars in occupational health management to measure their progress year on year against the external indicators in our baseline review (those on incidence, cost, and public reporting on health) and share these with us. If you are happy for us to do so, we will publish your progress against the baseline indicators on our website as further examples of good practice.

We intend to review, and publish, progress against the three key themes in our programme – excellence in health risk management, leadership, and awareness, in 2014/15. We expect to repeat the health survey in 2013/14 to help with our assessment, and we have improved the survey form to make clearer exactly what data we are seeking. We ask all rail dutyholders to make a full contribution to the repeat survey in 2014, so that we have a fuller picture of how well occupational health is being managed across the industry.

Section 4 of this report illustrates some of our inspection and audit evidence. On several occasions, formal enforcement has been necessary, clearly showing why improved occupational health risk management is vital.

Fatigue management

We have revised our *Managing Fatigue in Safety Critical Work* guidance that was originally published in 2006. The update takes into account many encouraging developments in fatigue management in rail and other comparable industries. The revision is currently out for consultation.

We encouraged, and participated in, a fatigue forum which helped companies share good practice. We have maintained our inspection oversight of fatigue management by duty-holders, challenging weaker performance where we see it. We are concerned that some companies still hark back to working hours

limits developed in the 1980s and we will continue to press for better risk management.

RAIB investigations and recommendations

In 2010-11 RAIB published 21 reports addressing 87 recommendations to us for consideration/ action. Over this period we also reported back to RAIB in relation to 260 recommendations - 247 of which were made in earlier years.

As of 31 March 2011, 137 recommendations remained outstanding of which 74 were made in 2010-11 and 63 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 2011 falling to 117 recommendations - this includes 11 new recommendations that RAIB have addressed to us in 2010-11.

On 8 April 2011 we also reported to RAIB on the 29 recommendations made in the Grayrigg report, and published a summary of our response on our website.

RAIB have indicated to us a number of themes emerging from their investigations, such as level crossing risk assessment, fatigue management, the complexity of maintenance standards and earthworks management. These align closely with our own priorities and are reflected in our inspection program.

Public inquiry report recommendations

In addition, three public inquiry report recommendations are still in progress following the enquiries into Southall and Ladbroke Grove and these continue to be monitored by ORR. Major investment in railway infrastructure often requires long-term planning. For the Great Western main line, direct voice communication between the signaller and driver, as recommended, will be provided by GSM-R and is expected to be implemented by the end of 2012. On the same line, ERTMS, as recommended, is expected to be installed as an overlay to the existing signaling system by 2016.

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 inspections.

The Tunnel continues to enjoy a very good safety record. Significant activities during 2010/2011 included:

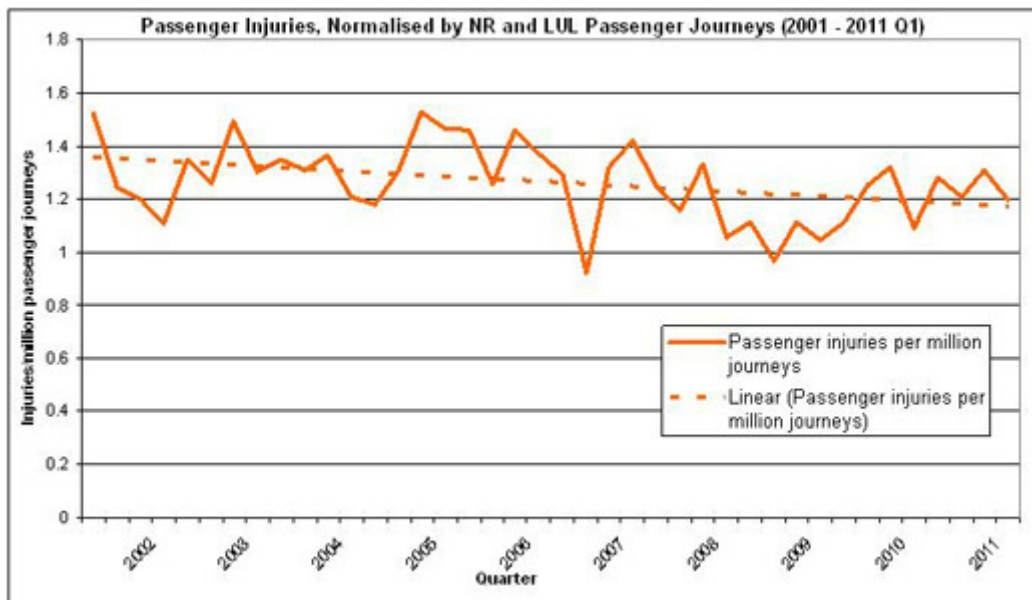
- positive engagement with potential new operators of international services via the Tunnel;
- progressing our work to update the Tunnel's safety and technical rules for passenger and freight trains to reflect European

developments. This included bringing the debate about the acceptability of a different form of traction for rolling stock (distributed power) to a successful conclusion; and

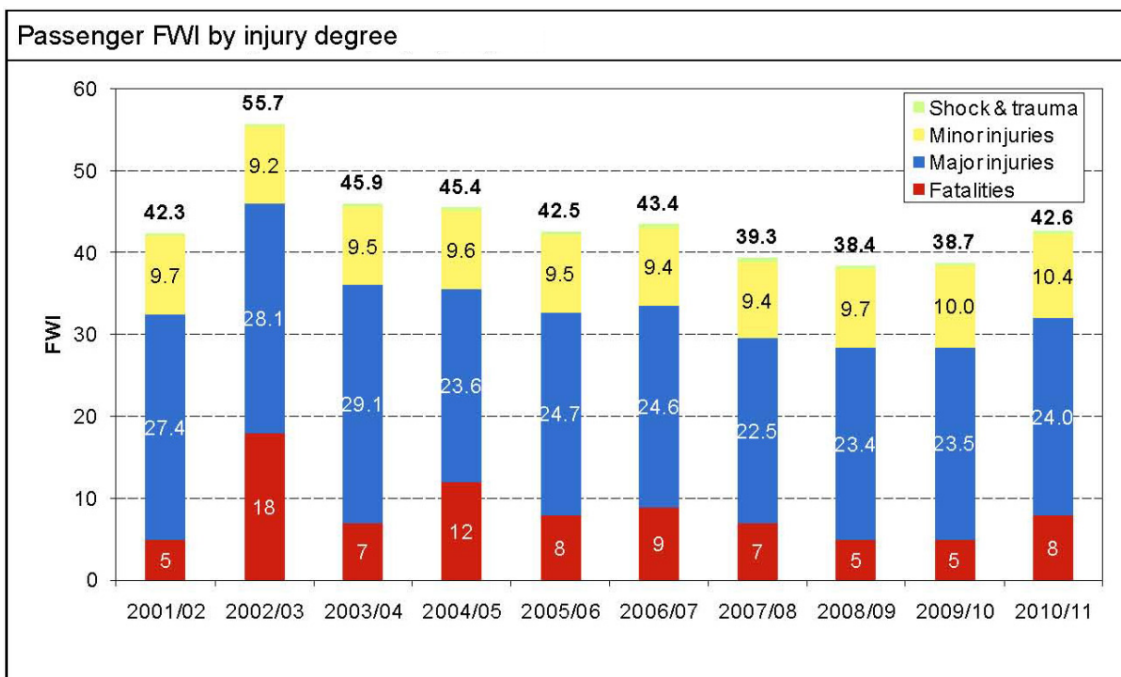
- continuing to hold Eurotunnel to account for implementing measures to address the implications of the September 2008 fire for the safety arrangements relating to the tunnel.

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

Passenger Safety - overall picture

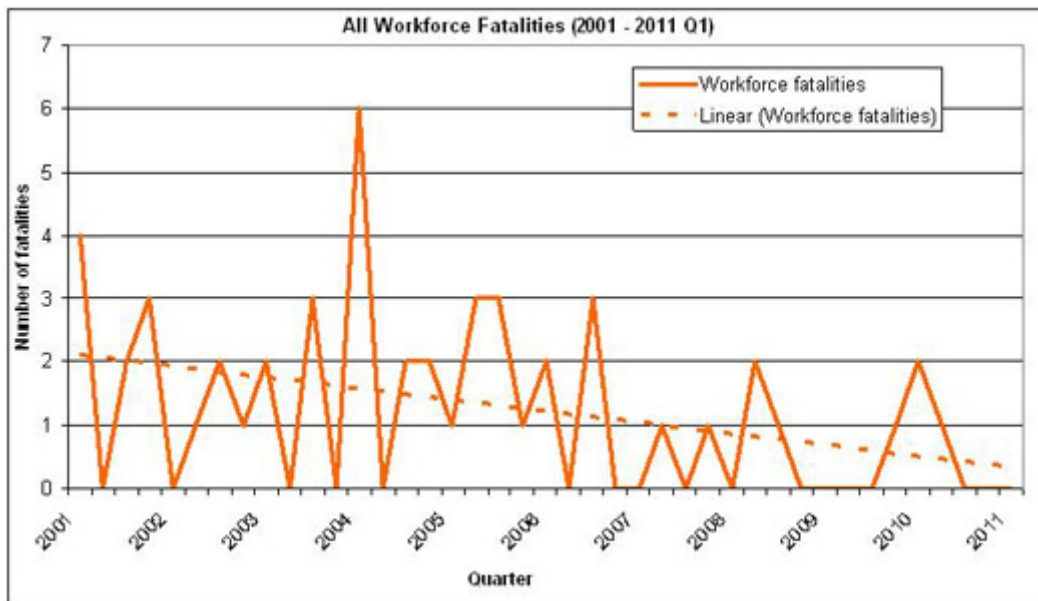


The overall trend since 2001-02 shows that the number of injuries per passenger journey is falling. However, the number of passenger injuries increased in 2010-11 compared to the previous year with a growing number of injuries occurring at stations.



Overall the passenger harm graph shows a 10% increase. Even when normalised by passenger journeys, which have also grown, there is still an increase of 2%. The number of passengers coming to harm when getting on or off trains at stations remains a concern for us. The industry has recognised this and is working jointly through a project established by RSSB to improve operational focus and risk assessment of this key area.

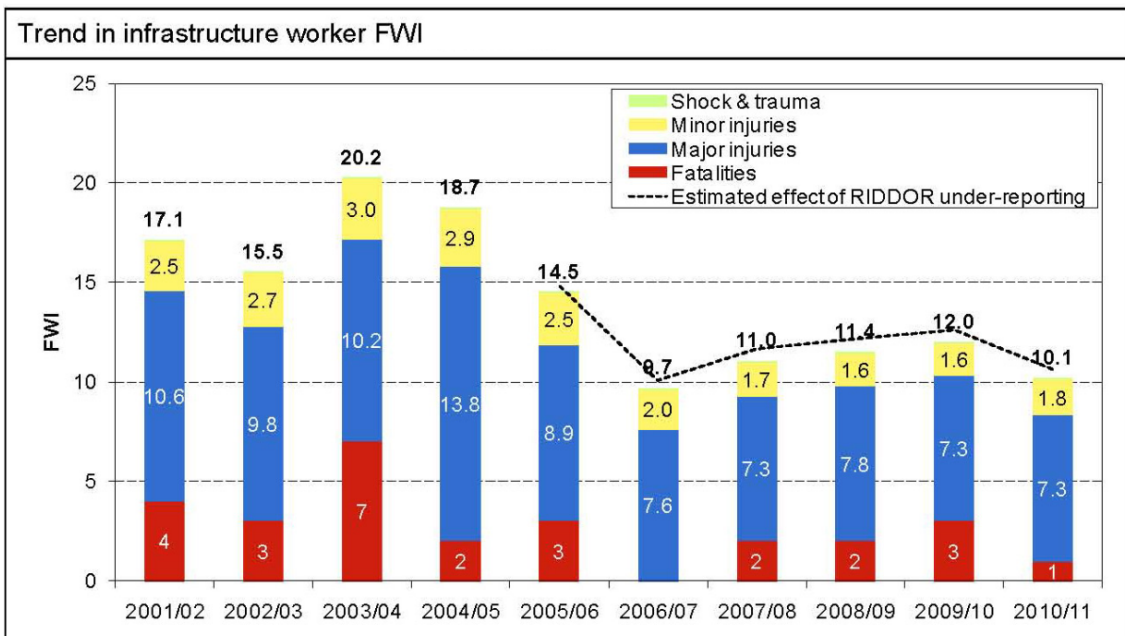
Worker safety



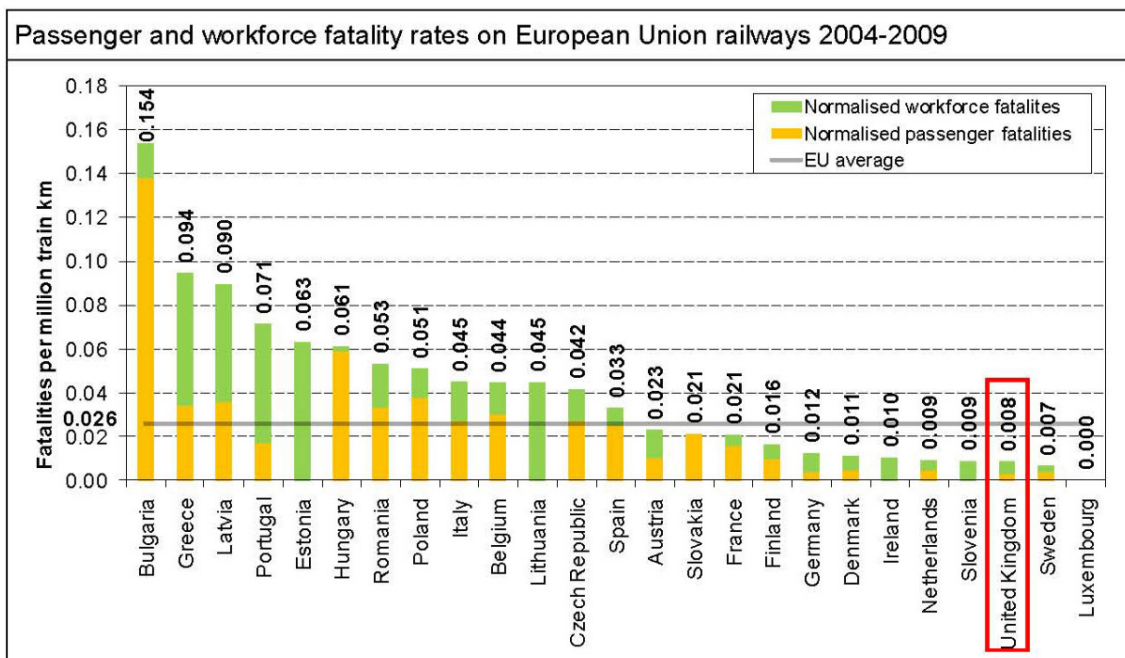
The number of workforce fatalities has reduced from three in 2009-10 to one in 2010-11. The death in 2010-11 occurred during construction work in Scotland.



The long-term downward trend in workforce injuries continued in 2010-11 with a reduction in both major and minor injuries compared to 2009-10.

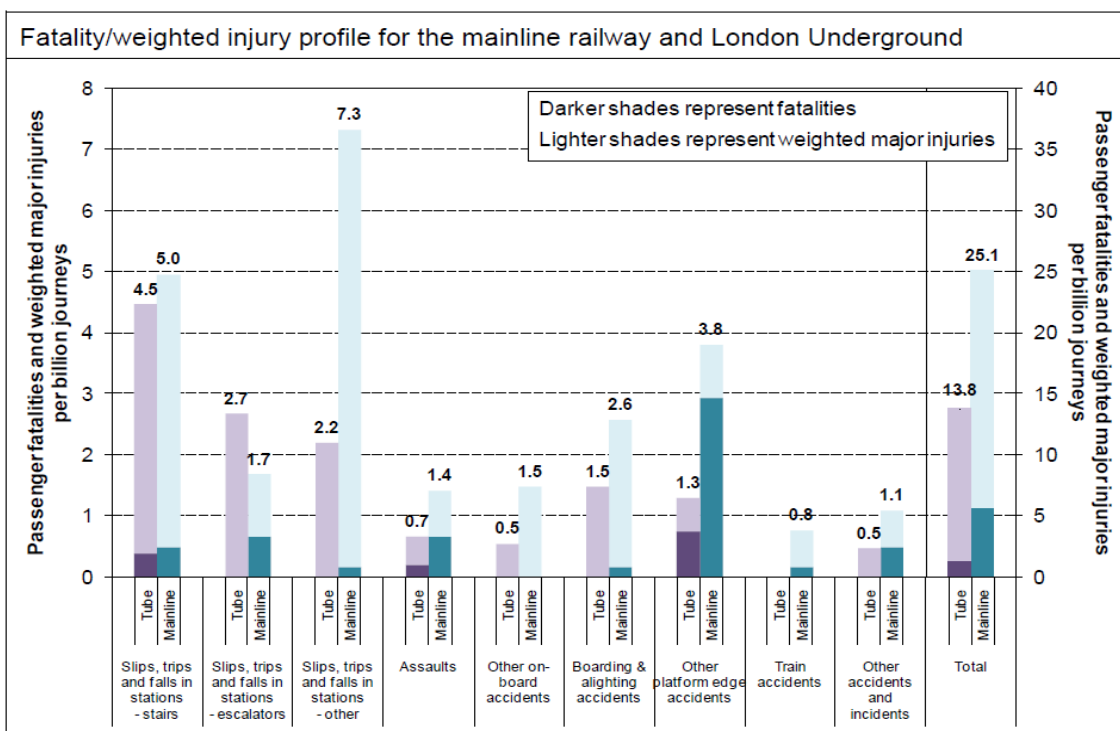


For the first time in five years the trend in this sector of workers, who are at the highest risk on the railway, has been downwards.



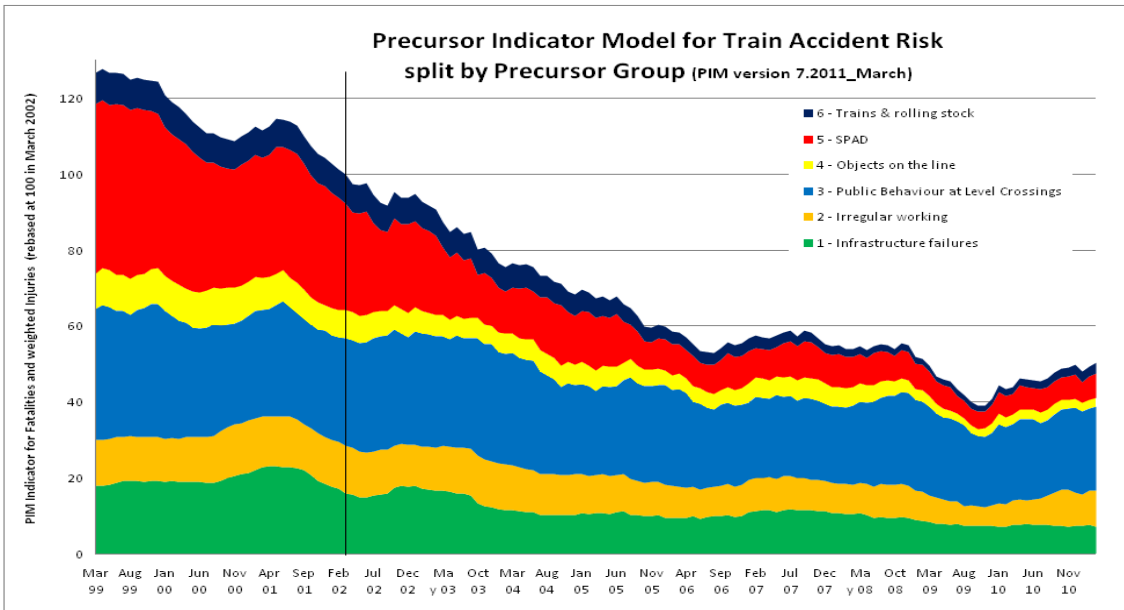
Countries across Europe have been submitting their Common Safety Indicators (CSI's) to the European Railway Agency (ERA) since 2007. In 2011 ERA unveiled the second set of National Reference Values (NRV's) that will be used to monitor safety performance across member states. NRVs indicate the maximum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

The chart of 'Passenger and workforce fatality rates on European Union railways 2004-2009' shows that the mainline railway (GB rail) is below the EU average and one of the best in Europe.

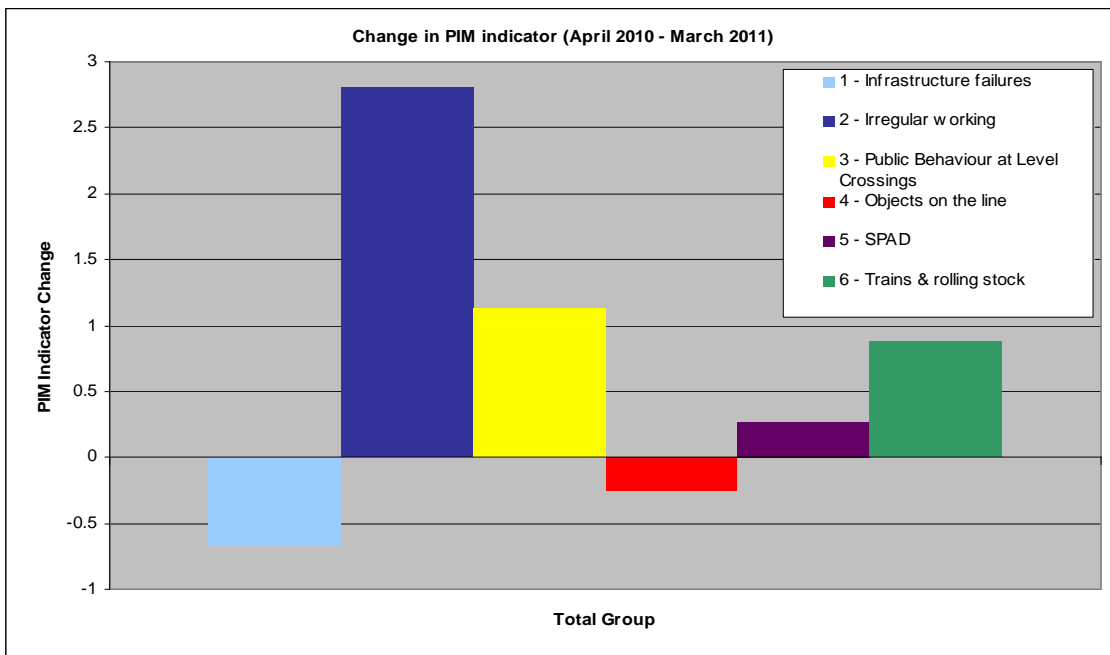


The graph above shows that London Underground is safer than the mainline railway.

The overarching picture: Precursor indicator model (PIM)



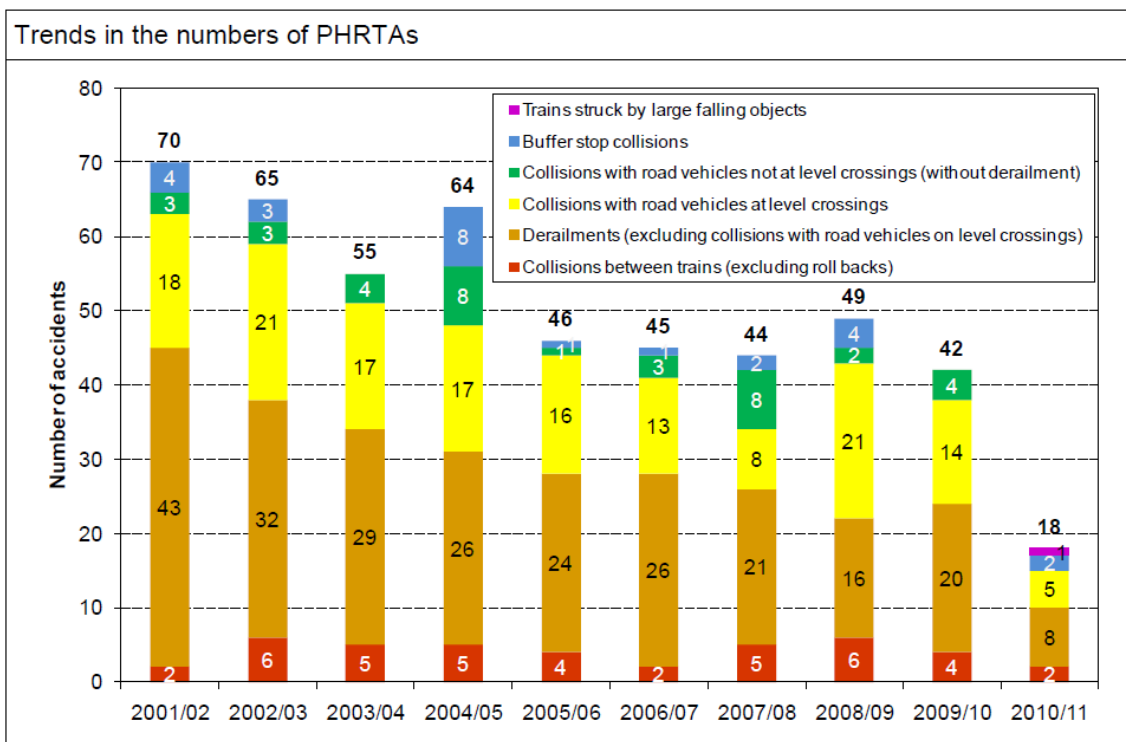
The PIM shows a concerning increase in risk of around 15% across the year.



The graph above shows the changes that have occurred in the elements of the PIM over the year. The four areas showing percentage increases being irregular working, public behaviour at level crossings, SPADs and trains and rolling stock.

Potentially high risk train accidents (PHRTAS)

The types of train accident with the greatest potential to cause harm are termed “potentially high risk train accidents” (PHRTAs). These account for 6% of the total number of events that are classed under RIDDOR as train accidents, but disproportionately contribute around 92% of the train accident risk.



The number of PHRTAs showed a very significant reduction from 42 in 2009/10 to 18 in 2010/11, a record low. While this seems counter to the overall increase in the PIM, this can be explained, in part, by the increase in the number of SPADs in 2010/11, partly due to very poor autumn performance. SPADs being a key precursor rather than a top event, increase risk in the PIM model directly. In addition, due to some of the restructuring and remodelling undertaken as part of the latest RSSB Safety Risk Model, their importance in the overall risk profile has increased.

Improved reporting of precursors

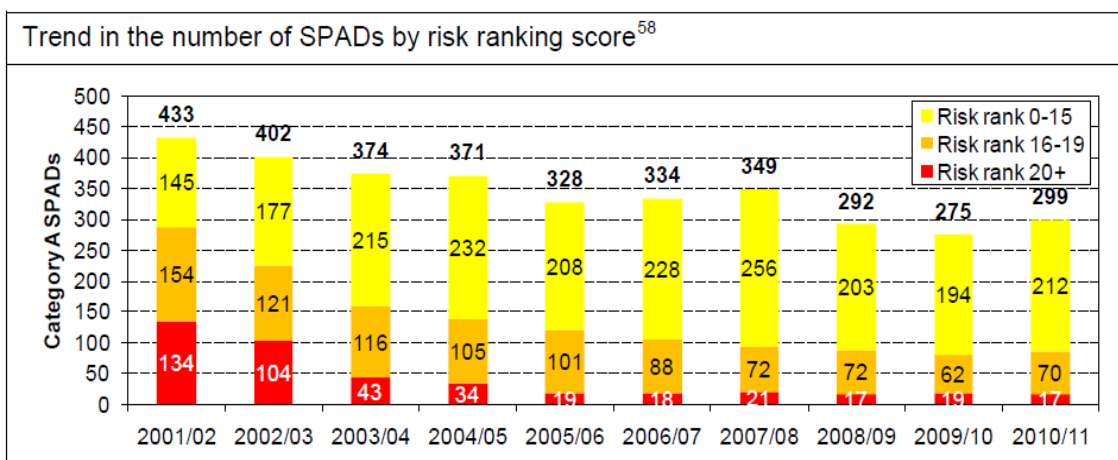
Level crossings: The number of collisions with vehicles at level crossings has decreased significantly over the last two years (only five last year) while the reported level of misuse has remained static. We also have evidence from a number of incidents (e.g. the collision with a lorry at Sudbury) around the previously poor quality and quantity of near miss reporting. This has

consequently been a factor we have addressed with Network Rail and the industry in driving improved level crossing risk assessment.

RSSB’s own Safety Management Information System (SMIS - the data source for the risk model) data quality auditing programme for last year showed an improvement of 7% to 81% across the duty holders compared with the previous year. The quality of data inputted into SMIS has also improved. We are now pressing individual duty holders to ensure this improvement continues.

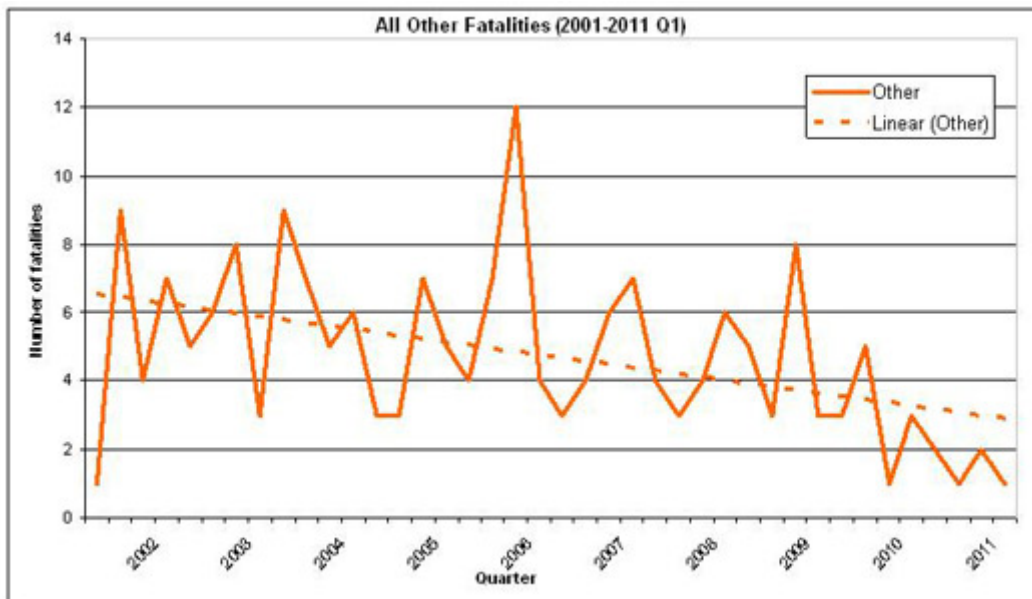
SPADs

This shows the trend over the last ten years on the mainline railway.



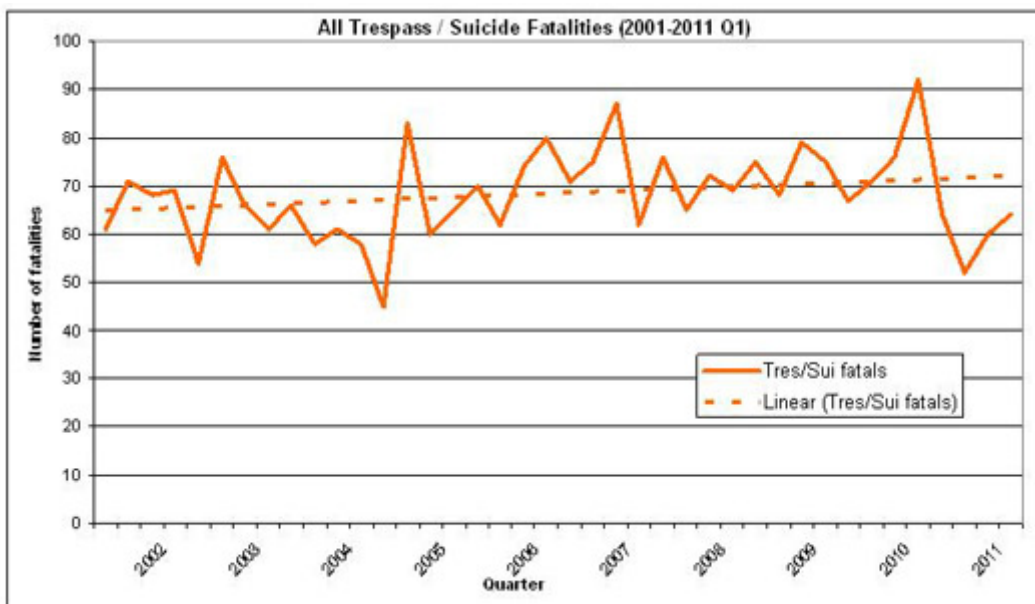
The above graph shows the increase in SPADs by 8.7%, at least in part due to poor autumn adhesion performance.

All other fatalities (apart from trespass/suicides)



Other fatalities, including level-crossing users fell in 2010-11 compared to the previous year. There were six fatalities in 2010-11 which represented the lowest number of fatalities between 2001-02 and 2010-11.

All trespass/suicide fatalities



The number of trespass/suicide fatalities fell by 66 in 2010-11 compared to 2009-10. The number of fatalities fell sharply in the first half of 2010-11 before showing an increase in the second half of the year.

Since 2004-05, the number of fatalities in the second half of the year has been consistently higher, or equal to the number recorded in the first half of the year.

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

Railway Operators

Our inspection teams have continued to focus their inspection activity using sector specific teams (specialising in either passenger TOCs, freight operators, heritage and light rail operators or Transport for London’s rail businesses) to ensure in depth assessment and analysis of health and safety management. This structure has enabled us to take an overview of performance in each sector.

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. We have used the evidence we obtained to extend the application of the railway management maturity model to each mainline operator and London Underground Ltd.

Mainline Train Operating Companies and Freight Operating Companies

Overview:

- The industry shows high levels of commitment to effective management of rolling stock maintenance and driver competence.
- Some challenging management issues still to be tackled including low adhesion, TPWS and SPADs caused by distraction.

What ORR found:

- **Low adhesion** remains a significant concern and we are not convinced that the industry has a reliable strategy both for existing rolling stock and the specification for new rolling stock. We found a worrying lack of understanding over the need for efficient and reliable sanding which manifested itself in a number of extremely serious runaways. Signals past at danger (SPADs) have again increased this year primarily due to the poor performance of train operating companies to mitigate the effects of low adhesion. Many European operators fit electromagnetic track brakes to their trains which are capable of stopping independent of adhesion between the wheels and the rails. We are examining all aspects of low adhesion and the practicability of introducing best European practice.
- **Train Protection and Warning System (TPWS)**. Implementation of standard self monitoring TPWS continues to be of concern. We perceived reluctance within the industry to develop a coherent strategy for upgrading the onboard equipment and ensuring continuing reliability

for a safety system that is no longer a short term measure but something that will be fitted to the network for many years. We will be seeking assurance from dutyholders that the proper risk analysis for their fleets has been completed and appropriate controls implemented.

- **Driver management and competence.** All of the companies inspected were able to demonstrate a high level of commitment to the need to effectively manage this high risk area. As well as this commitment to safety we found examples of strong leadership in the pursuit of continual improvement. We found examples where companies were moving to a more risk based approach and had a desire to adopt best practice and to learn from others both inside and external to the rail industry.
- **Loss of concentration/distraction issues** now account for the majority of operational incidents and we investigated a number of incidents due to lack of concentration. We believe this to be an industry wide issue and we urge operators to consider further work to identify solutions.
- **Train operating companies' liaison** on emergency planning with other members of the railway group, the emergency services and other interested parties was found to be patchy. Although there were some examples of regular engagement there were also examples where this was not properly managed. Station emergency plans were generally well managed, although testing appeared to be patchy with some operators performing regular emergency exercises, including some multi-agency events, with others limiting their testing to evacuation drills.
- **Freight operations on third party sites** were found to have safety management arrangements that were less than adequate to deliver good conditions for train operation. In some cases there was reluctance, or more frequently, a lack of awareness by staff to report site conditions which reflected a weakness in the safety culture. We also believe that the reluctance of freight operators to push for better standards on site is a reflection of the climate in which freight currently operates.
- **Maintenance of rolling stock** is a key activity for train and freight operators, and all of the companies inspected were able to demonstrate a high level of commitment to effectively manage this high risk area. In the main there was a good performance in respect of the standard of maintenance. We concluded, from an extensive inspection of sites around the country, that with the appropriate controls in place, wagons can be safely maintained away from a workshop. There were issues with some of the companies but overall the picture is a positive one.
- **Rolling stock failure.** There were a number of notable incidents with rolling stock, the causes of which are as yet inconclusive; gearbox and

axle failure on a class 222 'Meridian' and cardan shaft failures on class 142 'Pacers'. More rolling stock is being used beyond its intended design life and we have devoted an increasing amount of time monitoring the safety performance and maintenance of older rolling stock to verify that procedures are in place to ensure ongoing safe operation. We are particularly concerned about the ongoing use of Pacers beyond their intended design life and we will be scrutinising the industry's plans for ensuring they can continue to be used safely..

- **Occupational health.** There was varied commitment to the management of occupational health issues and although there were some examples of good practice it is clear there is more the industry needs to do to effectively manage these risks. In particular there is a need to have clear occupational health policies, understand the issues that lead to work-related ill health and have arrangements for controlling and reducing health risks. We found some evidence of good practice in dealing with work-related stress and employee well-being. We were concerned to find that compliance with the control of Substances Hazardous to Health Regulation (COSHH) was not always good with risk assessments often failing to consider the way hazardous materials were being used.

Heritage railways

Overview:

- Good overall safety performance is encouraging.
- The industry needs to improve maintenance of pressure systems and overall competence management.

What ORR found:

- **Safety performance** of the UK heritage railways has remained good with the number of incidents slightly higher than last year, which remains the lowest on record.
- **Competence Management Systems.** We are concerned at the lack of awareness within the heritage railways of the importance of a robust Competence Management System, being the primary control measure that underpins all activities. All of the railways inspected this year were found to be deficient in some aspects of their management system, including some of the larger railways. We commend to all railways ORR's Railway Safety Publication No. 1: Developing and maintaining staff competence, published on the ORR website.
- **Boiler repairs and inspection** remain of concern and we found examples of poor workmanship, use of incorrect materials, lack of

material traceability and worse of all we found some workshops that still have a make do and mend culture. This culture has no place in the maintenance of high pressure steam systems. Good work has however continued with the Heritage Railway Association (HRA) to develop industry codes of practice for the maintenance and repair of boilers. The agreed codes of practice are published on the HRA website.

Tramways

Overview:

- Good overall safety performance is encouraging.
- The sector needs to improve its management of change.

What ORR found:

- **Safety performance** of the tramways remains very good and comparable to the best performing European systems. We found a high standard of safety culture and implementation of robust safety management systems.
- **Change management** was found to be inconsistent and the tramway industry has struggled 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 lack of a holistic approach to system safety and the application of inappropriate heavy rail technology in the design of the new UK tramways.

London Underground and other TfL companies

Overview:

- **Safety performance** of London Underground, London Overground and Docklands Light Railway remains high and, in terms of worker safety, better than the mainline railway.
- Challenging economic circumstances have demanded careful scrutiny of proposals for change.

What ORR found:

LUL

- **Economic pressures** on LUL have led to some significant changes in staffing and, in some cases, we are challenging LUL's risk analysis and

change management processes.

- **Railway operations.** We carried out inspections of a range of operational risk control measures including the use of safety critical communications and route knowledge for uncommon moves. In general we were satisfied that safety critical communications are taken seriously but there are still occasions where standards are not as good as they should be, for example poor 'repeat-back' and inadequate confirmation of understanding. On route knowledge we found that the system for ensuring drivers undertake uncommon moves works reasonably well, with a good variety of training techniques used.
- **Preparation for the Olympic Games 2012.** LUL has taken this challenge seriously and has looked in detail at plans for maintenance during the games and ensuring sufficient resilience of the service. We will continue to seek assurance as the start of the games approaches.
- **Construction (LUL and Tube Lines Ltd).** We found evidence of poor practice in health and safety management e.g. risks of work at height and welfare provision, on site although Tube Lines' assessments and management of exposure to dusts and hand-arm vibration risks were good.
- **Asbestos.** We carried out a number of visits to assess LUL's and Tube Lines' management arrangements and made recommendations for improvement to management arrangements in LUL.
- **Rolling stock.** Our inspections of management of rolling stock assets led to a range of recommendations regarding both existing, and in some cases ageing, stock, and design and operational issues relating to the new stock .
- **Worker safety.** Our inspection topics included electrical safety, depot protection and track worker protection in traffic hours. In general these risks were effectively managed although we made a number of recommendations regarding monitoring of safe systems of work.

Other TfL dutyholders (LOROL and DLR)

- We discussed preparation for the Olympic Games and these discussions will continue throughout 2011/12. Other inspection activity included driver management arrangements and risk assessment. We found generally good standards of management in these areas.

Network Rail

Overview:

- A disappointing year with clear evidence of a poor safety culture, patchy implementation of procedures and slow progress on some key risks, often requiring formal enforcement.
- Encouraging changes originating from new management and commitments which now must be translated into reality.

What ORR found:

During the year, we were pleased to note a much more constructive and positive engagement by senior Network Rail managers on health and safety issues. We noted in particular some positive steps to start using ORR's rail management maturity model (RM3) in the company. We welcomed the recognition that our earlier assessment of the company health and safety management system, as reflected in the Investment Projects division, was broadly accurate, leaving considerable scope for improvement.

Similarly, while originating from the extremely adverse picture that emerged on culture in RSSB's review of RIDDOR non-compliance, Network Rail's leadership and safety culture programme is a vital step in making future improvements.

And the comprehensive review of how the company manages risks at level crossings will play a key part in tackling level crossing risk - a stubbornly large proportion of overall system risk. That review was triggered by ORR's intervention on various aspects of level crossing management. We still see poor quality inspection and risk decisions, and the company must now take real action to implement the changes identified.

Our inspections and RM3 audits found in most cases that suitable written procedures and processes were in place but often poorly implemented in practice. We found some non-compliance with the procedures and processes across all of the Network Rail functions we inspected, including Maintenance, Operations and Infrastructure Projects. Network Rail uses the written procedures and processes (the 'company standards') to manage health and safety and other aspects of its business. The level of non-compliance found during our inspection work has led us to start a discussion about the complexity and suitability of the current standards approach, particularly in the Maintenance function. Overly complex standards that are not readily understood by those who have to implement requirements, or which drive a bureaucracy that hinders staff engagement, do not deliver safety.

We found increasing evidence that Network Rail's internal assurance processes to assess health and safety compliance are not effective. Too often, our

inspection activity revealed significant issues that came as a surprise to the company. An effective assurance regime would have found these beforehand and led to corrective action. The company cannot rely on ORR to do that which should be at the core of effective safety management.

We have been disappointed that stated commitments to improve health and safety are not reliably translated into action – especially when enforcement action had already covered the issue. We found, for example, workers exposed to risks from moving trains despite an improvement notice issued in Scotland in 2009, and poor management of track drainage despite an improvement notice in Anglia, again in 2009. In addition, a lack of resource slowed progress on the collection and analysis of data to identify accident precursors at switches and crossings, a key requirement following the Grayrigg derailment in 2007.

Asset Safety

We found evidence of missing or incomplete data in the three asset areas inspected (structures, track drainage and track). We welcome the appointment of a Director of Asset Information and the direction he has set. We now expect to see pace maintained in this area to deliver safety improvements.

Structures

We inspected the management of structures, particularly looking at the implementation of risk-based maintenance examination arrangements; whether critical defects are adequately identified during routine inspections and how hidden components are addressed. We found a significant backlog with all types of examination (visual, detailed, additional and underwater) and consequently served a national improvement notice. Separately, from an investigation of a culvert that collapsed below the track, we found weaknesses in the quality of examinations and with the management of the inspection process, and we served a separate improvement notice.

Drainage

We inspected management of track drainage maintenance and renewal in three routes finding similar failings, including: incomplete asset registers, missed inspections and a poor reporting on the results of drainage inspection. In one delivery unit, the overwhelming majority of planned drainage inspection was postponed. This was particularly disappointing because track drainage had been the subject of an improvement notice in January 2009 in Anglia after a freight derailment directly linked to poor drainage management.

Track

We continued our focus on how the company manages track inspection – issues that were highlighted by the Grayrigg derailment. The relevant company standards have been revised and improved. We found better levels of compliance than in 2009/10 but with some inconsistencies and areas of non-implementation that undermine the company's systems approach to managing

risk. The failure of the track inspection process to consistently take account of previous findings, to identify trends in track condition was of particular concern. From a national perspective, the individual gaps seen in isolation did not constitute risk, but taken together they may align to do so. However, in one depot, we found non-standard procedures dating from before 2004 that indicated a greater failing and we served two improvement notices.

Our inspection looking at the role of section managers in the track inspection process found they had a better understanding of their responsibilities compared to 2009/10 inspections and a better awareness about the importance of key track measurements. But, we also found some evidence that section managers were delegating switch and crossing inspections to their assistants, to a point where they may be unable to maintain a good working knowledge of the asset condition.

Managing maintenance at a local level

Our scrutiny of Network Rail's maintenance restructuring (known as phase 2b2c) found some lack of competency in the section planner and section administrator roles. Section planners and administrators are key support roles for the section manager. Our inspections found issues with the competency in the section planner posts that resulted in poor quality safe systems of work. We found difficulties with planners accessing relevant documents and with their local knowledge. This results in additional work for the section manager and the potential for fatigue. We found variable levels of compliance with the method for monitoring section manager hours of work.

While not a consequence of this change, the implementation of 2b2c highlighted gaps in how the company manages staff competence. It is to the company's credit that its change management procedures discovered the issue and led to plans for correction without the regulator becoming involved.

Construction safety

Our inspection activity looked at recognised safety risks on railway construction sites, including work at height, lifting operations, segregation of people from moving plant, use of road rail vehicles (RRVs) and on-track plant, manual handling, management of fatigue, control of lineside scrap and control of contractors.

Planning and management of construction activity was variable; we found good and poor practice. We found some scaffolds and other workplaces without the necessary edge protection; poor access and egress particularly relating to escape from fire on sites storing flammable materials; fall arrest equipment with out-of-date inspection records; poor site access controls and poor use of personal protective equipment. These are all basic, well understood safety requirements, but ORR inspectors were particularly concerned because some

of the sites visited had also been audited by Network Rail and its contractors without identifying the failings.

We found Network Rail repeatedly missed opportunities to specify health and safety standards as part of the contractual arrangements when acting as a client or sponsor.

We found numerous instances of failures by contractors to manage fatigue risks linked to the combination of travel and site working hours, resulting in enforcement action against several contractors. In some cases, the long work and travel times were made more difficult to manage because of complex sub-contracting arrangements. There were examples of recording excessive travel times in site access logs and site managers taking no action. Good practice by some contractors in one part of the country was not promulgated more widely.

It was disappointing to find (with a few notable exceptions) generic rather than task-specific risk controls, often presented in a format that was difficult to use, stating the safety aim but not how to achieve it. To compensate we found some site supervisors and crane controllers devising their own safe systems of work on the hoof.

We are concerned that site briefings are often poorly targeted, repetitive and ineffective. Information is given without effectively checking understanding.

Road rail vehicles (RRVs) were involved in a number of serious incidents, including runaways, overturns, and injuries incurred when working in close proximity. We welcome the work to improve braking performance but are concerned that it took another machine runaway before initiating this. We found it necessary to issue a national improvement notice to secure interim control measures while engineering changes to improve braking are rolled out.

Audit of occupational health at bridge refurbishments

We audited Network Rail's management of bridge refurbishment, particularly focussing on health risks arising from exposure to lead and isocyanates. Formal enforcement was required because some workers were exposed to significant risks to their health. Following our enforcement, we found the management of health risks improved because Network Rail, in its role as client, was clearer about its expectations to its contractors. We concluded that managing occupational health risks is not properly core to related standards and procedures.

Worker safety

Following our work last year to highlight RIDDOR under-reporting, improvements were made to better reflect the actual number of injuries occurring and this resulted in a higher than target accident frequency rate (AFR). The fatality and weighted injuries (FWI) is also higher than the target and this is

of more concern because this measure reflects numbers of major injury accidents, which were not under-reported and which remain unacceptably high.

Network Rail has made a number of significant changes that affect track worker safety and we welcome the increase in green zone working, (when there is no direct risk from moving trains). But we still found some examples where workers were at risk of being hit by trains, requiring immediate enforcement. We consider there is still scope for a further shift away from red zone working, particularly in high risk areas such as crossovers.

While much has been done to better understand the key interpersonal and behavioural skills required by critical staff, we are concerned at the delays in applying better selection criteria to existing staff.

Electrical safety remains of concern. Risks from the overhead line equipment and electrified 'third rail' system have been demonstrated in several incidents that came close to killing workers. We had to enforce improvements in the management of insulated tools but note the positive changes for better equipment to test whether rails are live. We believe isolation and permit to work arrangements should be strengthened.

Level crossings

We welcome the increased focus on level crossing risk in 2010/11, including establishing a national level crossing lead and a fundamental review of risk assessment and control. One key finding was that too many people are involved in the overall risk control processes, with questions about competence and the priority they give to level crossings. Site specific risk assessment, distinct from the prioritisation provided by the industry's All level Crossings Risk Model (ALCRM), remains a worry. The company has set ambitious targets for reducing risk before the end of the current control period, with more planned in CP5.

We welcome the moves now underway to target risks at crossings in long signal sections, such as that involved in a serious collision in Anglia. Similarly, the programme of work to improve passive crossings with compromised sighting is a positive recognition of a risk that had previously not been tackled. Network Rail has started to consider less expensive technical solutions to control risk. This is a positive development and we expect to see trials at a number of Automatic Open Crossings, in the next few months.

Our inspection work found continuing weaknesses with the maintenance of level crossings. We found issues with vegetation, road surfaces, signage and communication with regular users of user-worked crossings, some of which merited enforcement action.

Annex A: How ORR's safety regulation works in practice

As described in ORR's corporate strategy for 2009-14, our safety regulation activity has become more focussed on proactive work, where we test the effectiveness of management systems and risk control in priority risk areas. This now represents half of our time, the balance dealing with incidents, complaints, certification etc.

Our health and safety regulation activity is characterised by a substantial proportion of frontline, practical contact with the industry. Our railway safety directorate (including the CTSA/IGC secretariat) has 124 staff (some part time), 68% of which spend the majority of their time in direct contact with dutyholders, testing management systems, investigating some things that go wrong, and advising and enforcing as appropriate. In total, ORR has 94 warranted inspectors, but 11 of those work across our economic and safety functions, providing specialist engineering support to all of ORR's work. We maintain inspector competence using a competency framework and assessment process.

We undertook a series of significant safety management system audits across the industry in 2010/11. Such audits probe in depth the dutyholder's management system, comparing it with our Rail Management Maturity Model (RM3). The audits involve interviews with staff throughout the management chain, assessment of documentary evidence and, most importantly, a range of frontline inspection to test how the system works in practice. This mix really adds value and tests the management system effectiveness in a way that some industry 'standards compliance' audits cannot.

The management system audits included:

- One that focussed on driver management across all of First Group's rail and tram operations in Britain. The audit tested the effectiveness of the competence management systems in place. One improvement notice resulted.
- We followed up some of the issues raised by our 2009 scrutiny of Network Rail's Investment Projects division by auditing BAM Nuttall Ltd, one of their major infrastructure project contractors. The audit explored the contractor's own safety management and the system safety interface with Network Rail.
- In line with our occupational health strategy, we audited the way health risks in bridge refurbishment are managed by Network Rail as a client. We found some very poor practice by contractors, served some notices and assisted Network Rail spreading the resultant good practice around their entire contractor community.

- National Delivery Service – the logistics division of Network Rail that manages many possessions and arranges for materials to get to infrastructure worksites.
- Safety verification arrangements in Network Rail – examining the effectiveness of how the company designs, builds and commissions new works.

Annex B: Enforcement activity

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 enforcement decisions.

Enforcement action 2008-11

	Network Rail (including contractors)			London Underground (including contractors)			TOCs and FOCs			Other (PTEs, heritage, tramways etc)			Total		
	08/09	09/10	10/11	08/09	09/10	10/11	08/09	09/10	10/11	08/09	09/10	10/11	08/09	09/10	10/11
Improvement notices	21	17	23	1	2	1	3	3	2	4	3	10	29	25	36
Prohibition notices	3	10	10	0	1	1	0	0	0	1	2	1	4	13	12
Concluded prosecutions	5	2	2	0	0	2	0	0	1	1	0	3	6	2	8

Enforcement Notices

Details of notices that we served are shown [on our website](#). The tables below summarise the issues which led to 12 prohibition notices and 36 improvement notices. Two of these were subject of appeals to an Employment Tribunal, which were later withdrawn and the work completed.

A further improvement notice remains under appeal (and hence is not shown in this data) but we are satisfied that as with the others, the necessary work is underway and expect that appeal will also be withdrawn very soon.

Prohibition notices

Company	Issue	Date issued
Network Rail Infrastructure Ltd	Too few lookouts during track maintenance work	25 May 2010
J Murphy & Sons	Possible exposure to asbestos	24 June 2010
Strada Rail Ltd	Damaged respiratory equipment when applying paint containing toxic substances	20 July 2010

Company	Issue	Date issued
Tube Lines Ltd	Movement of rail grinder where the brakes are ineffective	16 August 2010
Travel Midland Metro	Electrical risk from live OLE	7 September 2010
Birse Rail	Unsafe access and means of working at height during roof repairs at a station	28 October 2010
Mains Roof Ltd	Unsafe access and means of working at height during roof repairs at a station	28 October 2010
Network Rail Infrastructure Ltd	Road Rail Vehicles working in a possession in a tunnel	8 November 2010
Collis Engineering Ltd	Lookout not in a suitable position	29 October 2010
JSS Rail Ltd	Inadequate scaffolding	25 November 2010
JL Engineering Ltd	Inadequate scaffolding	25 November 2010
May Gurney Ltd	Inadequate shoring of an excavation	22 March 2011

Improvement notices

Company	Issue	Date issued
Pontypool & Blaenavon Railway Company (1983) Ltd	Inadequate safety management system	6 April 2011
Tyne & Wear Passenger Transport Executive	Unsafe electrical systems in communication equipment	7 April 2010
Tyne & Wear Passenger Transport Executive	Unsafe electrical systems in communication equipment	7 April 2010
Tyne & Wear Passenger Transport	Inadequate risk assessment and control measures	7 April 2010

Company	Issue	Date issued
Executive		
Tyne & Wear Passenger Transport Executive	Inadequate risk assessment and control measures	7 April 2010
Network Rail Infrastructure Ltd	Insufficient sighting distance at a level crossing	7 May 2010
Everprime Ltd (t/a Skyblue)	Poor fatigue management	11 May 2010
Postworth Ltd (t/a Skyblue)	Poor fatigue management	11 May 2010
Network Rail Infrastructure Ltd	Inadequate warning systems at a level crossing	21 May 2010
London Underground Ltd	Inadequate safety verification arrangements	19 July 2010
Strada Rail Ltd	Health risks from paint spraying	30 July 2010
Strada Rail Ltd	Health risks from paint spraying	30 July 2010
East Lancashire Light Railway Ltd	Ineffective safety management system	23 August 2010
May Gurney Ltd	Lifting and fall-arrest equipment inadequately maintained	31 August 2010
Network Rail Infrastructure Ltd	Road Rail Vehicle overturn in a tandem lift	16 September 2010
QTS Group	Road Rail Vehicle runaway	22 September 2010
First Capital Connect Ltd	Train driver (and trainer) competence management	6 October 2010
Babcock Rail Ltd	Inadequate fatigue management arrangements	7 October 2010
Network Rail Infrastructure Ltd	Risk to users of a level crossing	11 October 2010
Network Rail Infrastructure Ltd	Access ramps unsafely stored at a station	8 November 2011

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Company	Issue	Date issued
Foxfield Light Railway Ltd	Ineffective competence management system	11 November 2011
Network Rail Infrastructure Ltd	Insulated tools for use near electrified rails	22 November 2011
Network Rail Infrastructure Ltd	Inadequate welfare provision	26 November 2011
Network Rail Infrastructure Ltd	Poor lifting operations planning	26 November 2011
First Hull Trains Ltd	Train put into service with faulty brakes	16 December 2010
Docklands Light Railway	Staff inadequately instructed how to prioritise and respond to alarms	19 January 2011
Shackerstone Railway Society Ltd	Inadequate safety management system	7 February 2011
Shackerstone Railway Society Ltd	Inadequate assessment and records of people carrying out safety critical work	7 February 2011
BAM Nuttall Ltd	Inadequate fatigue management	8 February 2011
Network Rail Infrastructure Ltd	Poor condition of a level crossing	15 February 2011
Network Rail Infrastructure Ltd	Failure to adequately inspect and record track defects	21 February 2011
Network Rail Infrastructure Ltd	Failure to adequately inspect and record the condition of switches and crossings	21 February 2011
Birse Rail	Inadequate fatigue management	28 February 2011
Dixon Scaffold (Transmission Ltd)	Inadequate fatigue management	28 February 2011
Colas Rail Ltd	Buried services risks	7 March 2011
Network Rail Infrastructure Ltd	Inadequate risk assessment of Road Rail Vehicle runaway risk	17 March 2011

Prosecutions

In rare circumstances, where the lack of compliance with legal duties is more extreme, we prosecute those who have failed to do what the law requires. In 2010/11, we completed eight prosecutions, all for offences that had occurred in earlier years.

Company	Issue	Result
Serco Ltd	Member of the public struck and killed by a DLR train	£450,000 fine. Costs £43,773
Individual	Failed to adequately inspect the boiler of an unsafe steam locomotive	£750 fine. Costs £1,500
South West Trains Ltd	Worker struck and injured by a hook being used to tow a train in a depot	£15,000 fine. Costs £5,000
London Underground Ltd	Three members of the public struck and injured by a loose inter-car barrier on the Central Line.	£5,000 fine. Costs £4,017
Network Rail Infrastructure Ltd	Member of the public killed at a level crossing	£75,000 fine. Costs £36,791
London Underground Ltd	A series of injuries to members of the public at steps in Cannon Street station over a six month period	£7,000 fine. Costs £6,000
Individual	Failed to adequately secure a digger bucket which subsequently fell and killed a co-worker	£13,000 fine. Costs £2,000
Network Rail Infrastructure Ltd	Inadequately maintained railway fencing at Whisby Nature Park	£15,000 fine. Costs £47,000

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