RAIB

Rail Accident Investigation Branch

Annual Report 2008

Department for Transport

This report is published in accordance with:

- the Railway Safety Directive 2004/49/EC;
- the Railways and Transport Safety Act 2003; and
- the Railways (Accident Investigation and Reporting) Regulations 2005.

Any enquiries about this publication should be sent to:

RAIB
The Wharf
Stores Road
Derby UK
DE21 4BA

Email: enquiries@raib.gov.uk
Telephone: 01332 253300
Fax: 01332 253301
Website: www.raib.gov.uk

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Preface

This is the Rail Accident Investigation Branch's (RAIB) annual report for the calendar year 2008. It is produced in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005 (SI1992) and also meets the requirement of the European Railway Safety Directive (2004/49/EC).

Section 1 – explains the background and organisation of the RAIB and sets out its aims, statutory duties and scope of accidents investigated.

Section 2 – provides details of the RAIB's investigatory work opened in 2008.

Section 3 – provides a brief overview of progress of actions taken to implement recommendations made in RAIB's reports by the parties identified as the responsible duty-holders, and an analysis of the causes of accidents.

Section 4 – provides a summary of other Branch activities.

Section 5 – contains the annexes which provide reference material as well as details of completed investigations, investigations opened in 2007 but not completed at the end of 2008, and the status of recommendations.

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RAIB Annual Report 2008

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Chief Inspector's foreword

This is the Rail Accident Investigation Branch's (RAIB) fourth Annual report. By the end of December 2008, the end of this reporting period, the Branch had been operational for 38 months.

The aim of the Branch is to improve the safety of the public, rail passengers and rail staff by investigating accidents and near misses on the UK's railways. This includes the mainline railway, metros, tramways and heritage railways.

The Annual Report provides an opportunity to share information about the work and findings of the RAIB, and to publish the actions that have been taken in response to our safety recommendations.

In February 2007 a rail accident occurred in Grayrigg, Cumbria where sadly, a lady lost her life, and 30 others were seriously injured. Last year was a particularly busy period for the Branch, the Grayrigg investigation, published in October 2008, generated a considerably higher workload than the other investigations we have undertaken to date. Nevertheless, during 2008, the Branch commenced 31 new investigations and published 27 reports and 3 bulletins. At this time we were still establishing our organisation and only operating with 75% of our intended compliment of investigators. The further staff, who will largely complete our establishment, are joining us now in 2009; they will join the investigator team once they complete their training.

I am pleased that we continue to have a very positive relationship with the organisations in the industry whose interest and engagement play a significant part in the success of our investigations.

The safety arrangements in the UK are such that for the vast majority of RAIB recommendations it is the Safety Authority's responsibility to ensure the industry takes appropriate measures. The RAIB's follow up on recommendations is limited to when this is relevant to a further investigation.

The feedback from the Office of Rail Regulation (ORR), the safety authority for the majority of the UK's railway system, indicates that for those recommendations where they have concluded their follow up, indicates there has been a running average of 98% reported as accepted and either implemented or in the process of implementation. The Branch is therefore bringing about positive changes and improvements to safety.

The RAIB has now reached a very interesting juncture. In earlier RAIB annual reports I have remarked that because we have not been operational for long, and because we do not investigate all accidents on UK's railways, we have not had a large data set on which to base observations. However, from the number of investigations we have now completed, there is clear evidence that some types of accident are recurring for the same or similar reasons; in some cases it is because the RAIB's previous recommendations have yet to be implemented, or that they have not been implemented fully. The RAIB is now finding in more recent investigations that we are identifying the need for the same preventative measures as we have previously recommended. There are a number of key areas of industry activity where this has occurred including:

- worksite planning and management;
- management of fatigue for safety critical staff;
- planning possessions and the weaknesses in the arrangements for conveying key information to safety critical staff;
- inspection standards for track and related guidance to staff;

- location and signage of decision points at crossings, examination and assessment of risks associated with crossings and design for good sighting; and
- management and operation of Road Rail vehicles.

These occurrences, which we have already brought to Network Rail's attention, are a powerful message to the industry about the ongoing risks. Through its reports, the RAIB continues to bring recurring issues to the industry's attention and believes that greater benefit can be obtained if our investigation reports, and their own, are considered in a wider context rather than just treating each report in isolation.

Due to the timing of publication of the RAIB's report into the Grayrigg accident the feedback on the recommendations is not covered in this Annual Report. In view of the seriousness of that accident, I feel this foreword would not be complete if it did not include comment on the status of delivery of the recommendations. The main focus of our recommendations concerned the design and maintenance of track points, and Network Rail's safety management systems. Throughout the investigation, the RAIB worked closely with the industry and the ORR, and our emerging findings and areas of recommendations were made known to the industry as the investigation progressed.

However, at the time of this publication, 11 months after the RAIB's Grayrigg recommendations were published, for those recommendations where the industry have indicated that they intend to take measures, or believe that they have already taken sufficient action, the RAIB is not yet aware of the full details or the implementation timeframes. The ORR has reported that Network Rail has indicated to them that it has completed 15 of the 22 recommendations directed to Network Rail. However, the ORR is still in the process of satisfying itself whether the RAIB's recommendations have been properly acted upon. The exception is for one recommendation made to Network Rail concerning working hours of staff engaged in safety critical work; in this case the ORR has stated that it does not intend to exercise its powers to require action of Network Rail.

The RAIB is in dialogue with the ORR to secure greater clarity; it is the ORR's sanction to follow up the recommendations made to industry.

I believe the RAIB has achieved a great deal to date; and because each year, we get further insight through our investigations, I believe our potential for improving safety, and for helping those involved in accidents, increases.

Our thanks go to those organisations and individuals who have worked with us during the year. Their involvement in our work is vital to our investigations improving railway safety. I also thank my team for their commitment to the Branch's work and whose achievements are described in this report.

On a more personal note, I would like to pay particular tribute to those who have been injured or bereaved for the immensely constructive manner in which they have engaged with us. Their reaction to our work is both humbling and rewarding.

Carolyn Griffiths
Chief Inspector of Rail Accidents
30 September 2009

1 Introduction to the Rail Accident Investigation branch

1. Introduction to the Rail Accident Investigation Branch

Figure 1: View of the train following collision with the footbridge, Barrow on Soar Report 18/2008.

'Our aim is to improve safety on the UK's railways by conducting accident investigations, that are independent and do not apportion blame or liability, and making recommendations to prevent similar accidents in the future.'

Role

The RAIB is independent of the government, the railway industry, the safety authorities and prosecuting bodies. The Chief Inspector reports directly to the Secretary of State on matters concerning accident investigation. The RAIB is part of the Department for Transport, but is functionally and operationally independent.

The RAIB is not a prosecuting body. Its investigations are focused solely on improving safety and do not apportion blame or liability. Breaches of legislation are dealt with by other organisations, primarily the police and safety authorities and none of their statutory duties have been changed by the creation of the RAIB.

The legal framework under which the RAIB operates is found in the:

- Railways and Transport Safety Act 2003, referred to as 'the Act' in the remainder of this report;
- Railways (Accident Investigation and Reporting) Regulations 2005 (SI1992); referred to as 'the Regulations' in the remainder of this report; and
- European Railway Safety Directive (2004/49/EC).

1 Introduction to the Rail Accident Investigation branch

Aims

The RAIB aims:

- to improve the safety of the railways and prevent railway accidents and incidents by:
  - carrying out investigations to determine the causes and circumstances of accidents and incidents, along with any other factors that contributed to the event or made the outcome worse;
  - making evidence based recommendations to reduce the likelihood and mitigate the consequences of similar accidents and incidents occurring in the future; and
  - improving standards of rail accident and incident investigation through the development of best practice and improved methods of investigation;
- to satisfy the public in general, railway users in particular, and the railway industry, that rail accidents are being independently and professionally investigated, and that recommendations to prevent recurrences are being made to the persons or organisations best placed to implement them;
- to fulfil the requirements of the relevant parts of the European Railway Safety Directive by:
  - co-operating and assisting in rail accident investigations with other member states; and
  - sharing findings and best practice with other member states.

Figure 2: Collision between a train and tractor on crossing XL202 near Limavady Junction, Northern Ireland (Report 10/2008)

Geographic territory

The RAIB provides a rail accident investigation service for the whole of Great Britain and Northern Ireland.

1 Introduction to the Rail Accident Investigation branch

Types of railway

The RAIB investigates accidents and incidents on the following systems:

- the national rail networks in Great Britain and Northern Ireland;
- the Channel Tunnel (in co-operation with its opposite number in France 'Bureau d'enquêtes sur les accidents de transport terrestre – BEA-TT');
- private freight only lines – but excluding railways within industrial premises such as factories, freight terminals and quarries;
- metros – this includes the London Underground, Tyne and Wear Metro, Docklands Light Railway and Strathclyde Partnership for Transport, subway;
- tramways;
- heritage railways running on track whose gauge exceeds 350 mm; and
- cable-hauled systems of 1 km or longer, specifically the Cairngorm Mountain Railway and the Great Orme Tramway.

Scope of accidents investigated

The RAIB is mandated by the Act to investigate any serious railway accident, as defined in the Regulations. In this context, a serious accident means an accident involving a derailment or collision of rolling stock which has an obvious impact on railway safety regulation or management of safety and includes such an accident that results in:

- the death of at least one person;
- serious injuries to five or more persons; or
- extensive damage to rolling stock, the infrastructure or the environment.

However, it is not required to investigate these accidents if they fall outside of the RAIB's general aim:

- to improve the safety of railways; and
- to prevent railway accidents and incidents.

The Act also provides the RAIB with the discretion to investigate less serious accidents and incidents, where the Branch believes that there may be safety lessons to be learnt, which could improve the safety of railways and prevent future accidents or incidents.

Collision damage to derailed locomotive

Derailed 3rd, 4th and 5th wagons

Figure 3: Locomotive struck by runaway train from quarry October 2008 RAIB Bulletin 3/2009

Accidents and incidents excluded from investigation

The RAIB will not investigate:

- worker accidents/incidents that are not associated with train movements and which are not relevant to the operation of the railway;
- accidents/incidents involving trespassers or suicides; or
- accident/incidents that occurs within an industrial curtilage.

Accident and incident notification

The Regulations require the notification of a range of accidents, from those resulting in serious injury and damage, through to incidents of "near miss". This enables the RAIB to investigate accidents or incidents, which under slightly different circumstances could have resulted in serious consequences, and to also identify repeats of similar events.

The Regulations place a duty on railway industry bodies (railway infrastructure managers, railway operators, or maintainers), whose staff or property is involved in an accident or incident, to notify the RAIB of certain types of accident or incident.

Details of the types of railway accidents and incidents that must be notified, along with the reporting timescales, are contained in Schedules to the Regulations. A summary of the schedules is included in Annex D. Schedules 1, 2 and 3 relate to accidents and incidents occurring on all rail systems, with the exception of the Channel Tunnel, which are covered in Schedules 4 and 5.

The occurrence of Schedule 1 and 4 incidents must be notified immediately to the RAIB. This enables the RAIB to react quickly if there is potential evidence at a site that may be important to the investigation and which may be perishable or otherwise disturbed with time.

The occurrence of Schedule 2 and 5 incidents, where immediate site attendance is not critical to the investigation, must be notified to the RAIB within three working days of the incident occurring.

Events that fall within the definitions of Schedule 3 are required to be notified to the RAIB on a monthly basis so the RAIB can monitor for emerging trends.

Full details of the legislation and the requirements regarding notification, and the RAIB response can be found in the RAIB document 'Guidance on the Railways (Accident Investigation and Reporting) Regulations 2005' at www.raib.gov.uk.

RAIB's response to notifications

The RAIB has a duty co-ordinator and a team of inspectors on call 24 hours a day, 365 days per year. On receiving notification of an accident or incident the duty co-ordinator will obtain sufficient further detail to decide whether RAIB will investigate. The duty co-ordinator will deploy inspectors to the site to conduct a preliminary examination, where there is perishable evidence or evidence that needs to be secured before releasing the site back to the industry.

It should be noted that following the initial emergency response, the regulations require that an accident site be preserved as closely as possible to its state immediately after the accident and nothing should be interfered with or moved without the consent of the RAIB inspector. Unless there is an essential need for the police or safety authority to take action to secure evidence.

1 Introduction to the Rail Accident Investigation branch

On arrival at the site, inspectors will liaise with emergency services and other key industry stakeholders to plan and agree an initial evidence collection strategy that should enable the release of the site back to industry as quickly as possible.

The purpose of the preliminary examination is to gather sufficient information to enable the RAIB to make an informed decision about whether or not to conduct a full investigation. This decision will be based upon evaluation of the potential for safety lessons to be learned for the improvement of railway safety and the prevention of future accidents.

If the RAIB concludes that an investigation will not achieve this aim, the RAIB involvement ends. An example could be following a fatal accident at a level crossing, where it was confirmed that at the time of the accident the level crossing was working appropriate for the current type of use as designed, and the train was being driven correctly.

The investigation

RAIB investigations are conducted completely independently of any investigations by other parties, although the investigation may be side by side.

During the investigation the RAIB will share technical evidence and factual data arising from tests and examinations carried out by the RAIB, with industry stakeholders and other investigatory bodies. However, this will not include sharing information from witnesses as all the RAIB's witness statements are kept confidential.

The Report

On completion of the analysis, the RAIB produces a report that takes account of schedule 6 of the Regulations, which identifies the principal content of an accident report. Once the draft report is complete, the RAIB will consult as is required by the Regulations, with the industry stakeholders, safety authority, individuals and anyone to whom a recommendation may be directed, who were involved in the RAIB investigation.

The RAIB consults to verify the accuracy of the report and to give opportunity for the relevant parties to give additional considerations. The RAIB considers representations and will revise the report only if it considers that the changes are appropriate.

On completion the report is sent to the Secretary of State for Transport and published on the RAIB's website.

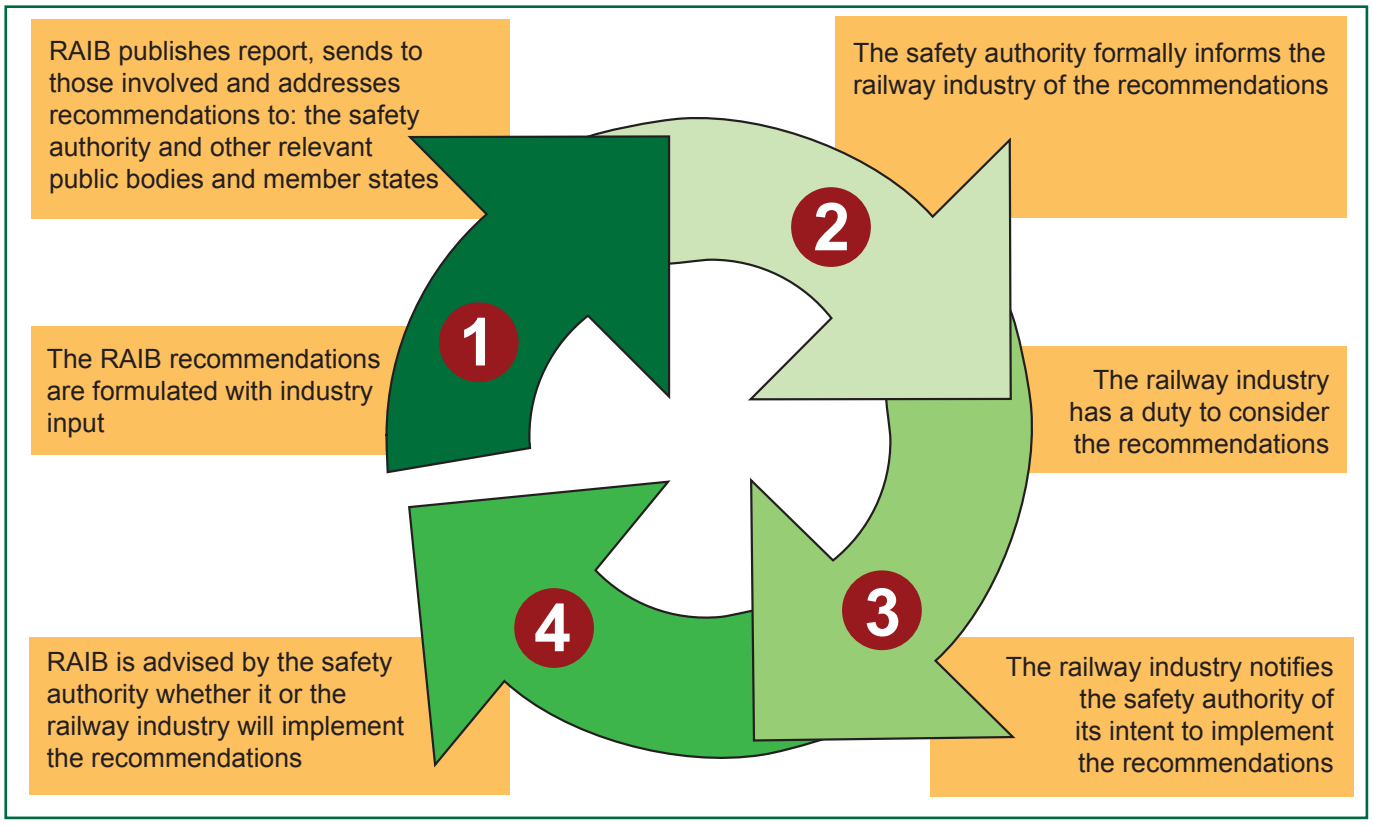
The recommendation process

Recommendations are the prime output of the RAIB's investigations, and the RAIB can make recommendations to any organisation or person it thinks is best placed to implement the changes required. This includes railway and non-railway, private and public sector organisations. Those who are identified in the recommendations have a general and ongoing duty to comply with health and safety legislation, and need to take the RAIB's recommendations into account in ensuring the safety of their employees and others.

The recommendations are also addressed to the relevant safety authority, or other public bodies where they are the end implementer. This is to enable these organisations to meet their duty, in accordance with the Regulations, to ensure that the recommendations are properly considered and appropriate action taken.

The Regulations also give the safety authority the power to require end implementers to provide full details of the measures they intend to take, or have taken, to implement the recommendations, the proposed timescales for implementation, and details on the progress made with implementation. This is to enable the safety authority to inform the RAIB of the measures taken. The exception is where the recommendations are made to a public body, in which case the public body must provide a response on the recommendation directly to the RAIB.

Feedback to the RAIB of the response and details of the action taken is very important to provide a clear view of the process and enable everyone to have a view of the safety improvements arising from the RAIB's investigations.



The possible responses that the end implementer may give to the safety authority, or in the case of public bodies directly to the RAIB, are:

a. acceptance of the recommendation and a timetable for implementation;

b. proposed alternative action – this will include the reasons for the alternative action and a timetable for implementation; and

c. rejection of the recommendation – disagree with the end implementor's response and consider any appropriate action to ensure implementation.

Upon receipt of the end implementer's response the safety authority will:

a. accept the response; or

b. discuss, with the end implementer, a modification to its response or timetable; or

c. reject the end implementer's response and consider potential enforcement.

Once the safety authority has considered and is satisfied with the end implementer's response, it will close the recommendation. This closure can occur when:

a. the implementer has taken the measures necessary to satisfy the safety authority; or

b. the safety authority has confidence in the work being completed and decides it will not further chase progress; or

c. the implementer has decided to take no measures to effect the recommendation and the safety authority has considered this and is satisfied with the implementer's full explanation.

In accordance with the Regulations the RAIB publishes in this report details reported to it of measures taken in response to its recommendations; see Annex C.

Introduction to the Rail Accident Investigation branch 1

Personnel

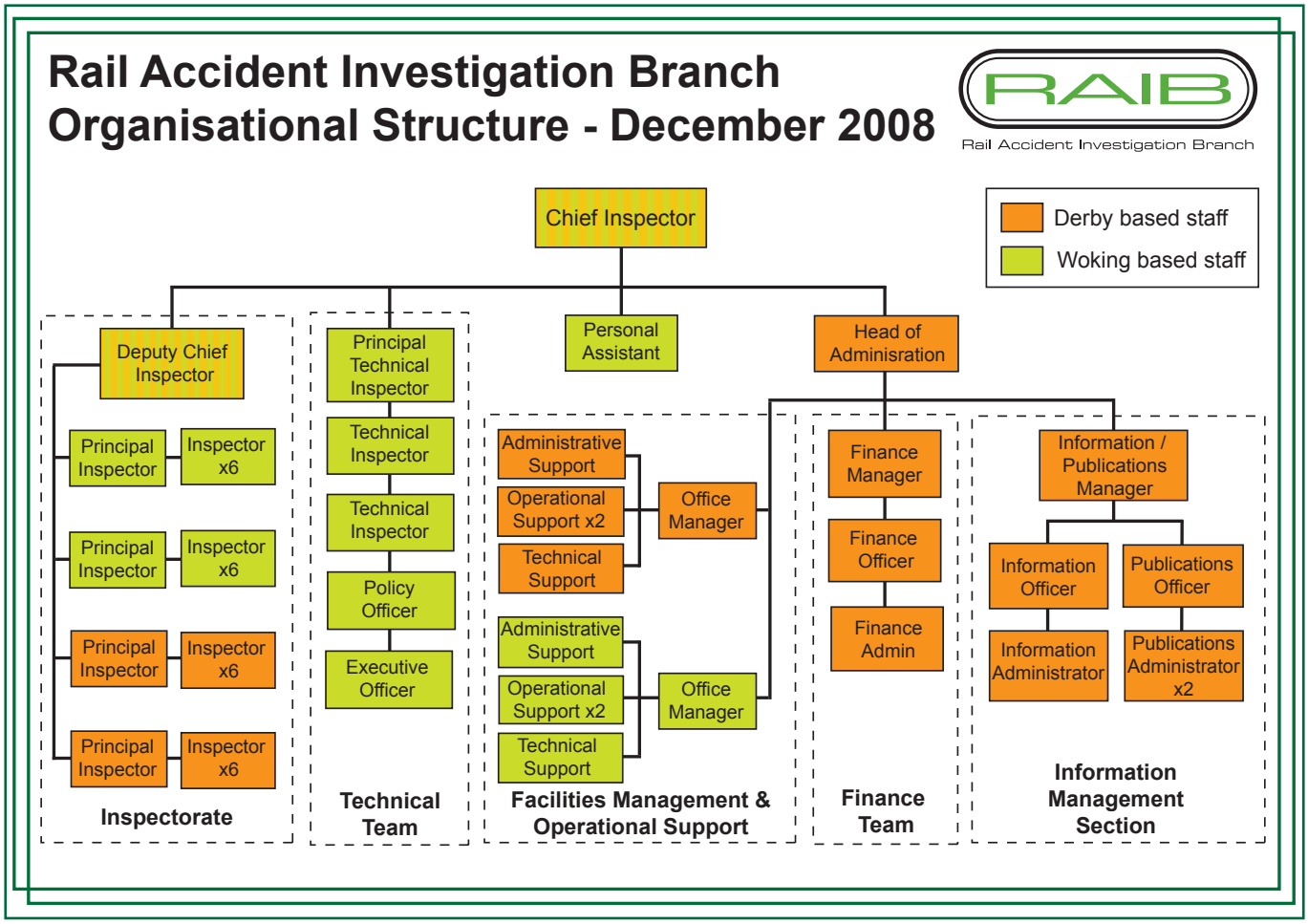
The RAIB has been established to operate with 54 personnel including 31 inspectors and 23 support staff.

The Branch is in the process of recruiting to the full inspector team strength. During 2008 three persons joined as inspectors and commenced the inspector training programme. By the end of 2008 there were 46 full time staff, including 21 support staff, located at the RAIB's Derby and Woking offices. A further recruitment campaign was launched in late 2008 with the aim of completing the complement of inspectors.

Further information about the RAIB

The RAIB has its own website, which contains details about the Branch relevant legislation; a register of the current RAIB investigations, brief reports on the initial findings from each accident or incident, and copies of the final investigation reports and safety bulletins.

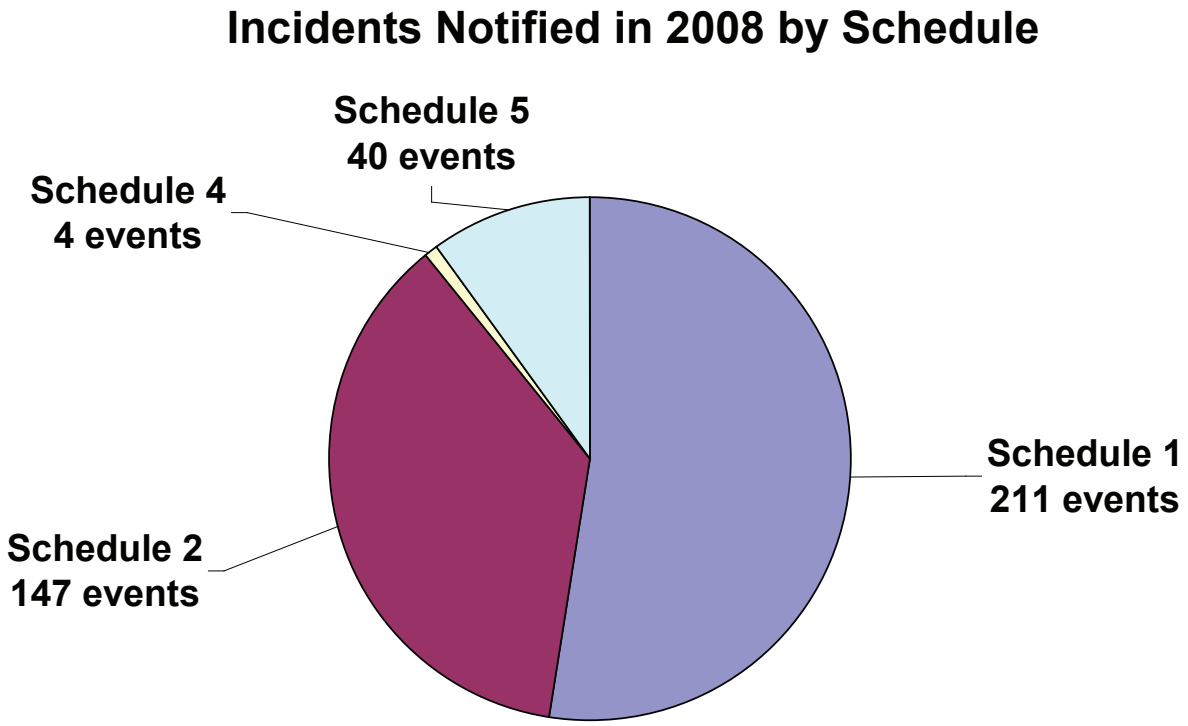
Over 4500 members of the public have registered to receive news alerts from the RAIB. The address is www.raib.gov.uk and anyone can subscribe, free of charge, to automatically receive updates on investigations by email.



2 Operations

Number of notifications

In the period from 1 January to 31 December 2008 the RAIB received 352 notifications of railway accidents and incidents under Schedules 1 and 2 of the Regulations (see Annex D). A further 44 notifications were received under Schedules 4 and 5 for events occurring in the Channel Tunnel. Together these resulted in 61 immediate deployments of RAIB inspectors to the accident site to carry out a preliminary examination; of these 32 full RAIB investigations were started.



Accident investigation reports published in 2007

The RAIB completed 27 investigations in 2008, including the investigation into the accident at Grayrigg in February 2007 which generated a considerably higher workload than other accidents and incidents investigated to date. A list of the investigation reports published in 2008 is included in Annex A.

For investigations started in 2007 and published in 2008 the average time from the date of the incident to publication was 12 months. For the 5 investigations started and published in 2008 the average time from the incident date to publication was 9 months. While the RAIB's aim is to publish reports within 12 months, the length of individual investigations can sometimes extend beyond this because of the complexity and scale of the investigation, and the Branch's overall workload of other investigations.

Details of the investigations opened and ongoing are at annexes A and B. Their recommendations and the recommendation implementation status as reported to the Branch can be found in Annex C.

In addition the RAIB is assisting its French counterpart, the Bureau d'Enquêtes sur les Accidents de Transport Terrestre (BEA-TT), in the investigation of an accident in the Channel Tunnel that occurred on 11 September 2008.

Accredited agents

The RAIB is a relatively small organisation, covering a large geographic area. However, there may be occasions when the RAIB requires assistance to ensure a rapid initial presence at the more remote locations that require attendance on site. For this purpose, the RAIB can ask the railway industry to assign specific industry personnel from its own staff, known as 'Accredited Agents', to act on behalf of the RAIB until inspectors arrive on site. Their role is limited to recording important perishable evidence, identifying other evidence that needs to be protected and providing the RAIB with early information from the site. Accredited Agents are trained, assessed and approved by the RAIB. At the end of 2008 the RAIB had 417 approved Agents at various locations throughout the UK. The arrangements have worked very well and have provided valuable assistance to the RAIB.

Accredited Agents were deployed to site by the RAIB Duty Co-ordinator on 11 occasions during 2008, including four derailments, on various systems, and four cases of staff struck by trains. Their assistance, which the RAIB gratefully acknowledges, has ensured that the most perishable evidence at the accident site, that would otherwise have been lost, was recorded.

Incidents and accidents on the National Railway Network

The national railway network represents the largest railway system in the UK, and operates the fastest (apart from the high speed link to Europe) and heaviest trains. In 2008 the RAIB published 19 investigation reports concerning accidents and incidents on the national network in 2007, and commenced another 24 such investigations.

Interaction with road vehicles and pedestrians

The interaction of road vehicles with trains, and of pedestrians with trains, represent the greatest cause of loss of life on the railways of the UK. In the case of accidents on level crossings where there is no evidence of intent of suicide, or of clear misuse by a road vehicle driver, cyclist or pedestrian, the RAIB will carry out a preliminary examination of the scene; if the condition of the crossing, or other railway controlled features have the potential to either be causal or contributory[1] to the accident, the RAIB will normally carry out a full investigation.

There were four investigations started in 2005, four in 2006, one in 2007 and ten in 2008 concerning the interaction between trains and road vehicles or pedestrians.

During 2008 the RAIB published one report on the interaction of a road vehicle with the national railway system (when a lorry demolished a footbridge, which in turn derailed a passenger train at speed), and one concerning a pedestrian who was struck and killed on a footpath level crossing.

As a result of investigating a number of collisions on *User Worked Crossings* the RAIB commenced a 'class' investigation of safety at this type of crossing in 2008. It published this report in June 2009.

Derailments

Apart from two derailments that resulted from road vehicle issues (a lorry striking a bridge at Barrow-on-Soar, and a car running onto the track near Macclesfield), the RAIB commenced four investigations into derailments on the national network in 2008: all concerned freight trains. The RAIB commenced five investigations into derailments in 2005, thirteen in 2006, and seven in 2007.

[1] For definitions of factors affecting the occurrence of accidents/incidents see page 24

2 Operations

During 2008 the RAIB published four reports on derailments of passenger trains on the national system. Two were associated with slips of earthworks in cuttings, and one was caused by the failure of a level crossing surface.

No-one was injured in any of these derailments.

The fourth passenger train derailment on which the RAIB reported was at Grayrigg in Cumbria on 23 February 2007, and led to the death of one passenger, as well as serious injuries to other passengers and members of the train crew. The immediate cause of the derailment was the failure of a set of points, and the RAIB's investigation identified shortcomings concerning the design and maintenance of the type of points involved, and also concerning Network Rail's overall management of safety issues regarding points.

The RAIB also published two reports on freight train derailments in 2008. One was caused by a combination of track and wagon defects, and the other by the incorrect loading of a container train.

Collisions

The RAIB has not yet investigated any collisions between passenger trains on the national network.

Doors

The RAIB commenced one investigation concerning a train door incident on the national network in 2008; there were no such investigations started in 2005 or 2007, and two in 2006. The three investigations have each been into different door systems, with no common features found between them.

There were no reports published in 2008 concerning train doors on the national network.

Possession management

A 'possession' is when engineers close the line to carry out maintenance or renewal work.

The RAIB started one investigation concerning possession management on the national network in 2005, two in 2006, three in 2007, and three in 2008. One of these was an investigation into the use of road-rail vehicles on the national network, the second concerned a collision between two engineering trains, and the final one involved a passenger train hitting engineering equipment that had been placed on the line outside a possession.

There were two reports published on possession management issues on the national system during 2008. In one, due to a misunderstanding between those involved, a wagon was stabled on a gradient without the handbrake applied, and not coupled to any other vehicle. As the air pressure in the wagon's brakes leaked off it rolled down the gradient until it collided with a road rail vehicle, fortunately without casualties. In the second case, a track worker had removed the detonators that are provided to mark the end of possessions and was returning to his access point when he was struck and killed by a train. Whilst his own action in stating that he had cleared the protection while he was still on the track was the immediate cause of the accident, the RAIB welcomes Network Rail's proposals to remove the use of protection markers at the end of possessions, as this will greatly reduce the risk of staff to this sort of accident.

The RAIB remains concerned that information about the geographical limits of possessions, and how this information is conveyed to staff in a number of differing formats that are not mutually compatible, is a cause for misunderstanding that can lead to accidents. The RAIB made a recommendation as to how this might be addressed after an incident at Thirsk in 2006; the same issues were still present in its investigation into a similar incident at Acton in 2008, despite Network Rail having accepted the RAIB's original recommendation, and declared to the Office of Rail Regulation that it had been implemented. This information mis-match dates back to former British Rail functions, and appears to be a nationwide problem.

Staff accidents

The RAIB started one investigation concerning staff accidents on the national network in 2005, one in 2006, five in 2007 and, excluding the possession fatality referred to above, three in 2008. One of these involved staff inspecting a failed train, who were nearly struck by a train on the opposite line, and two were staff working on the line and being struck by trains after dark.

The RAIB published three reports concerning staff accidents in 2008. One was the near miss with a failed train referred to above. Both the other two involved staff working in the vicinity of points; one resulted in a fatality, and the other a serious, life-changing, injury. There was one such accident in 2005 and three in 2007. Two of these four accidents had fatal consequences.

The RAIB is particularly concerned about the safety of staff working on points while trains are running, following the staff accident at Leatherhead, and the derailment at Grayrigg.

Signals Passed at Danger (SPADs)

At the turn of the millennium SPADs represented the highest risk of a catastrophic accident on the UK national network. The introduction of the Train Protection and Warning System (TPWS) is estimated to have reduced this risk by approximately 90%. The RAIB only investigates the highest risk SPADs, which have significant potential to cause an accident.

The RAIB commenced one investigation into a SPAD in 2005, one in 2006, one in 2007, and none in 2008.

There was one report on a SPAD on the national system published during 2008. This concerned a high speed move at Didcot, where a collision was narrowly avoided. The RAIB made recommendations about the layout of the TPWS at the location, and about the braking rate of High Speed Trains.

Other

There were no other investigations started by the RAIB on the national network in 2005. However, there were ten other investigations in 2006, seven in 2007, and three in 2008. Two of these three concerned the loading of containers onto trains. In one case two containers blew off one train and five containers from another train at separate locations on the same night. In the second a container was sent by a route for which it was over-size, and struck a station canopy. The third investigation concerned the collapse of a temporary support on a newly installed, but still incomplete, bridge just outside Liverpool Street station in London.

The RAIB published five other investigations in 2008. These concerned runaway wagons after they were left uncoupled, overspeeding through a temporary speed restriction, two trains being on the same single line at the same time, a collision between a stanchion on a freight wagon and a passenger train, and Network Rail's management of earthworks.

2 Operations

Light railways (Tramways)

Six towns or cities in the UK currently have tram systems. In 2008 the RAIB commenced two investigations on light rail systems, and published one report on them.

Interaction with road vehicles and pedestrians

The RAIB started one investigation into the interaction with road vehicles and pedestrians on a light railway in 2005, one in 2006 and one in 2008; there were no such investigations started in 2007. The investigation commenced in 2008 concerned a cyclist who lost his life when he was struck by a tram at a level crossing.

Derailments

The RAIB commenced one investigation into a light rail derailment in 2005, four in 2006, one in 2007 and one in 2008. This concerned a derailment on the Manchester system.

There was one report published in 2008 on an accident that occurred in 2007, also concerning a derailment on the Manchester system. This was caused by the condition of the track, and the RAIB has now investigated three such derailments. The RAIB is concerned about the information provided to those maintaining this system, and repeated postponement or delay in carrying out track repairs to the system. The RAIB welcomes the Greater Manchester Passenger Transport Executive's decision to entirely renew the track on the street running section of this tramway, work on which is now taking place.

Metros

There are four metro systems in the UK. London Underground is the largest of these by a considerable margin, and is the second largest railway system in the UK.

The RAIB commenced three investigations in 2006, four in 2007, and one in 2008; there were no investigations started in 2005. The 2008 investigation concerned the derailment of a train on the Docklands Light Railway, when equipment was left on the line after engineering work.

The RAIB published four reports on metros in 2008. All involved the London Underground system. One concerned a collision between two engineering trolleys, one a train operator (driver) getting into the wrong cab of his train, and driving it in the wrong direction, and one a passenger whose coat was trapped in a train door as it started to move.

The fourth report concerned the derailment of a rush hour train on the Central Line at Mile End. Fortunately there were no serious casualties, but over 500 people had to be evacuated from the tunnels. The derailment was caused by a fire proofing material that had been left in a passage between two tunnels being blown out into the running tunnel, and the RAIB's investigation revealed that the wind speeds in cross tunnels were considerably higher than had previously been suspected, resulting in LUL changing their approach to storage of materials in these passages.

Northern Ireland Railways

The RAIB commenced one investigation in Northern Ireland in 2006, two in 2007 and one in 2008; there were no investigations started in 2005. The investigation that started in 2008 concerned the derailment of a road rail machine.

Operations 2

The RAIB published one report concerning Northern Ireland Railways in 2008. This concerned a collision between a train and a tractor on a user worked crossing, in which the tractor driver lost his life.

Channel Tunnel

Investigations about incidents in the Channel Tunnel and its immediate approaches are governed by a Memorandum of Understanding between the RAIB and BEA-TT. There was one RAIB investigation concerning the tunnel started in 2006, none in 2005 or 2007, and one in 2008; this concerned a road coach that moved within a Eurotunnel shuttle, injuring its driver and causing damage to the train and to road vehicles. In addition the RAIB is assisting BEA-TT in its investigation into the fire that occurred in the French part of the tunnel on 11 September 2008.

The RAIB published no reports on the Channel Tunnel during 2008.

Heritage railways

The heritage sector is a relatively small part of the UK's railway operations. In 2007 the RAIB carried out 10 investigations in the Heritage Sector, and commented that this was out of proportion to the sector's size. In 2008 this total reduced, and only two investigations were started.

Derailments

The RAIB commenced two investigations concerning derailments on heritage railways in 2006, two in 2007 and one in 2008; there were no such investigations started in 2005.

The 2008 derailment was on the Ffestiniog Railway, a narrow gauge line, and was caused by a local track condition that had not been previously identified. The guard of the train received minor injuries.

Staff injuries

In 2008 the RAIB published its report into an accident in which a level crossing keeper on the Dean Forest Railway was seriously injured when a train struck the crossing gates.

Other

In 2008 the RAIB investigated, and published its report into, an accident when a young child opened the door, and fell from, a Danish railway carriage on the Nene Valley Railway. Advice about this was circulated throughout the EU in case the design was in use in other countries.

2 Operations

Urgent safety advice

The RAIB can issue urgent safety advice when it believes that there is a need to provide immediate information to the relevant industry bodies about safety issues that have been identified during an investigation. The purpose is to give the industry the opportunity to assess for themselves whether there are any similar safety implications for their operations. During 2008 the RAIB issued urgent safety advice on five occasions, as follows:

- **18 February 2008 –** advice re door handles on preserved Danish railway carriages, and risk of them being accidentally opened whilst the train is under way.
- **8 April 2008 –** advice re visibility of trains and audibility of warnings for pedestrians at Tackley level crossing, Oxon.
- **25 June 2008 –** advice re using "low rail" RRVs.
- **27 June 2008 –** advice re the need to check UIC spigots on FEA wagons to ensure that they are set up accurately to meet the original designer's intentions.
- **24 November 2008 –** advice re the possible risks if the set timings of AOC(L) or ABC(L) crossing lights mean that the lights regularly do not change to white before a correctly driven driver's cab has passed the SSRB.

Bulletins

In 2008 RAIB started to publish Bulletins. Normally, when RAIB deploy inspectors to an accident site, they conduct a preliminary examination to identify the causes and facts. In some instances, this demonstrates that it would not be appropriate to conduct a full investigation as there is little potential for a full investigation to lead to recommendations that would improve the safety of railways and prevent railways accidents and railway incidents. However, sometimes more general issues and lessons are identified where the RAIB nevertheless believes that it would be beneficial to make these more widely known across the industry.

The RAIB uses Bulletins as the means of disseminating this information. They are purposely kept brief, since they are only intended to provide sufficient information to enable readers to understand the particular circumstances and the learning points in the context of the accident or incident.

Three Bulletins were published in 2008 covering:

- Shunter struck by train in August 2007.
- Container door struck by a passenger train in January 2008.
- Freight train derailed in July 2008.

Analysis of recommendations and causes 3

The Ladbroke Grove Public Inquiry[2] criticised the lack of clarity in the rail industry with respect to the measures taken to implement and track recommendations made in accident investigation reports, and commented on the need for the industry to put in place strong and effective systems to do this.

The arrangements and responsibilities for following up the implementation of the RAIB's recommendations are described in part 1 of this report.

Recommendations

This report provides a summary of whom the RAIB made recommendations to in 2008 (see Annex C, Appendix 6). The report also provides details of the implementation status, as at 31 Dec 2008, of the 181 recommendations made by the RAIB in its 27 investigation reports published in 2008, as well as the status of the 265 recommendations that were classed as open or completed in the 2007 report (Annex C, Appendix 4 and 5). The status is based upon the information provided by the ORR or other public bodies (see section 1).

The classification of the status of the recommendations is fully explained in Annex C. A recommendation is closed if the safety authority is either satisfied that:

- it is implemented;
- An alternative solution is implemented which the safety authority views as appropriate;
- It is not implemented but the implementer has committed to implement it or an alternative that the safety authority deems as appropriate, and the safety authority is confident that the implementer will complete in an appropriate timescale.
- The safety authority agrees with the proposed implementer that it is not appropriate for the recommendation to be implemented.

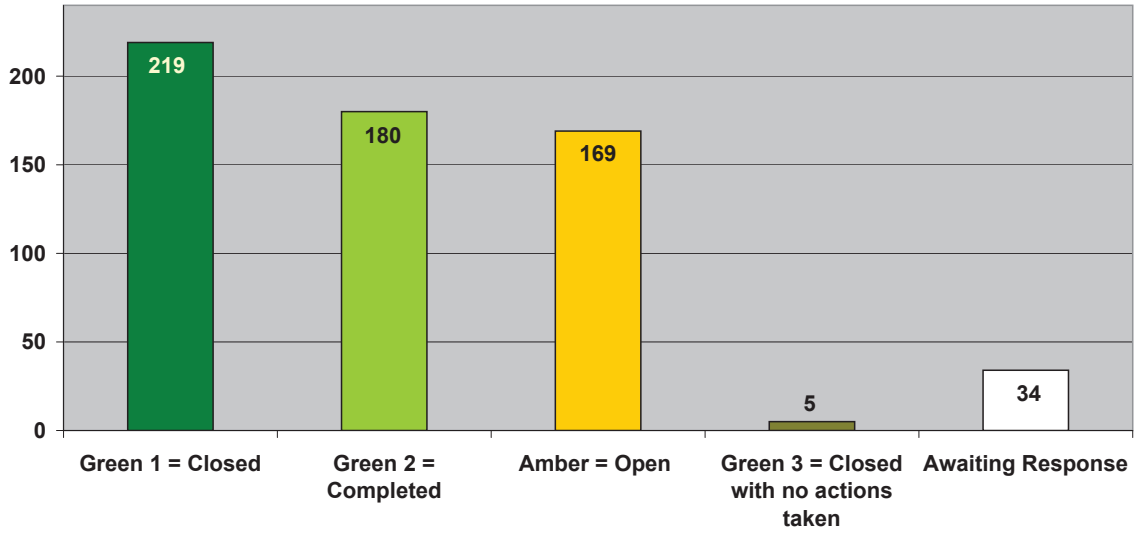
The number of accidents investigated and the number of recommendations made should not be taken as an indicator for assessing the safety of the UK's railways; statistical data on railway safety is published by the ORR. The current report is the Railway Statistical Report 2007, which can be found at www.rail-reg.gov.uk.

Between October 2005 and December 2008, RAIB made a total of 607 recommendations.

[2] The Ladbroke Grove Rail Inquiry in 2000 was conducted by the Rt Hon Lord Cullen PC and among others made recommendations relating to the establishment of an independent accident investigation branch

3 Analysis of recommendations and causes

Status of 607 recommendations made by RAIB between 2005 and 2008



From the publication date of the RAIB investigation report, the average time taken by end implementors to report that the recommendation had been fully implemented and completed is just over 9 months, with an added time of around another 6 months for the ORR to decide 'closure' making an average of approximately 15 months to fully implement and close a recommendation (see Annex C for clarification of the recommendation status terms).

The full distribution of recommendations, over the period from Jan 2008 to 31 Dec 2008, addressed to duty holders identified by the RAIB, is shown in Annex C, Appendix 3. Of these the majority of recommendations were targeted at the following organisations:

- Network Rail (90).
- Mainline passenger and freight train operators (34).
- Railway contractors (16) on the national network.
- Heritage railways (11).

These recommendations arose from the 19 investigations of accidents or incidents on the national network and heritage railways.

- Seven recommendations were aimed at Light Rail Operators (tramways).

Factors affecting the occurrence of accidents / incidents

The following define the meanings of the terms RAIB uses when describing these categories.

Immediate Cause: the condition, event or behaviour that directly resulted in the occurrence. An example of an immediate cause would be an obstruction on the track formed by timbers from a retaining wall displaced by a tree root ball from the cutting side.

Causal Factors: any condition, event or behaviour that was necessary for the occurrence. Avoiding or eliminating any one of these factors would have prevented it happening. An example of a causal factor would be the lack of understanding by the infrastructure manager about the risks presented by the tree root ball and the complex geology of the immediate area.

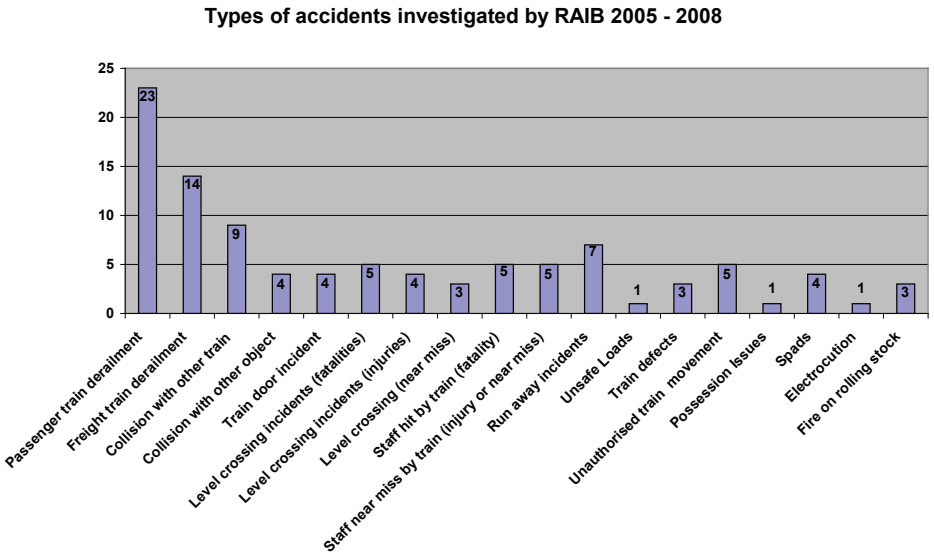
Contributory Factors: any condition, event or behaviour that affected or sustained the occurrence, or exacerbated the outcome. Eliminating one or more of these factors would not have prevented the occurrence but their presence made it more likely, or changed the outcome. An example of a contributory factor would be lack of a system to alert the train about the obstruction and the speed of the train.

Underlying Factors: any factors associated with the overall management systems, organisational arrangements or the regulatory structure. An example of an underlying factor would be lack of guidance in rule books concerning the management of earthworks where tree root balls are present.

To support its investigations, the RAIB has developed a system for the categorisation of factors to identify repeats of similar unsafe events or situations and trends. The categorisation of the immediate causes is by the main sectors of the rail industry and the key areas within each sector. The categorisation goes further to identify the causal, contributory and underlying factors and the relevant safety defences and the reasons for their failure.

This categorisation has been applied to all the factors identified in each of the RAIB investigation reports published since going operational on 17 October 2005. The sections below provide a summary of the analysis.

The first two bar charts show the total number of investigations carried out by the RAIB broken down by type of accident for the period 2005 to 2008 and for 2008 alone.



Causal Factors

Since October 2005, RAIB's investigations identified a total of 255 causal factors (72 in 2006,128 in 2007 and 55 in 2008) these were attributed to:

		2006	2007	2008	Total
a	Infrastructure	43	33	23	99
b	Operations	12	53	13	78
c	Signalling and Telecommunications	2	7	1	10
d	Third Party Action	4	4	7	15
e	Rolling Stock	11	31	11	53

3 Analysis of recommendations and causes

1. Infrastructure

Of the 99 causal factors associated with infrastructure, the most common categorisation of these related to:

		2006	2007	2008	Total
a	Planning	13	8	5	26
b	Procedures/instructions	13	2	6	21
c	Supervision	10	5	0	15
d	Inspection and maintenance	2	12	5	19
e	Equip/system/infrastructure	0	0	5	5

2. Operations

Of the 78 causal factors associated with operations, the most common categorisation of these related to:

		2006	2007	2008	Total
a	Competence & compliance	4	19	4	27
b	Procedures/instructions	3	11	5	19
c	Human capabilities & performance	0	11	3	14

3. Signalling and Telecommunications

There were 10 causal factors associated with S&T, these related to:

		2006	2007	2008	Total
a	Human capabilities and performance	2	4	0	6
b	Competence and compliance	1	2	0	3
c	Equip/system/infrastructure	0	0	1	1

4. Third Party Action

Investigations completed in 2008 where third party action was a causal factor were: Limavady Junction 10/2008; and Barrow on Soar 18/2008.

There were 15 causal factors associated with third party action and the most common categorisation of these related to:

		2006	2007	2008	Total
a	Human capabilities and performance	1	3	5	9
b	Competence and compliance	2	0	1	3
c	Protection of railways from 3rd parties	0	0	1	1

5. Rolling Stock

There were 53 causal factors associated with rolling stock and the most common categorisation of these related to:

		2006	2007	2008	Total
a	Equipment systems	2	14	1	17
b	Competence and compliance	4	6	2	12
c	Procedures/instructions	2	5	1	8
d	Inspection and maintenance	0	0	3	3
e	Equip/system/infrastructure	0	0	3	3

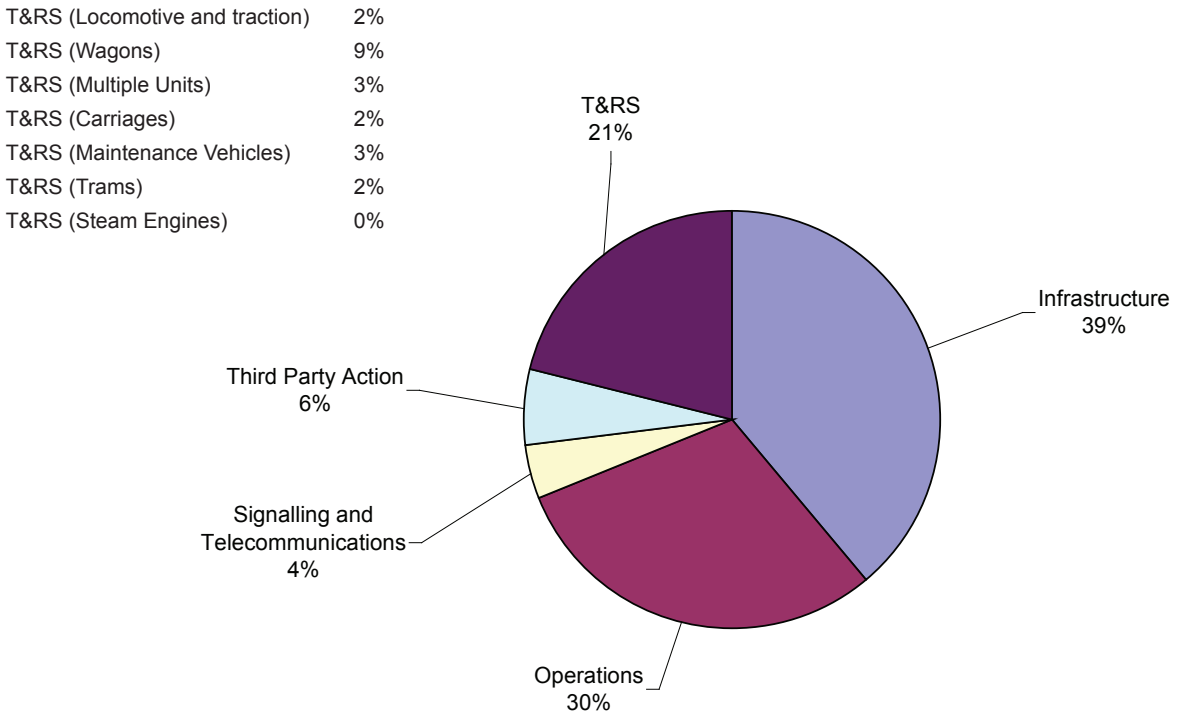


Figure 2: Causal factors of accidents/incidents

3 Analysis of recommendations and causes

Contributory Factors

There were 88 contributory factors in 2006, 191 in 2007 and 89 in 2008 totalling 368; the most common of these were attributed to:

1. Operations

There were 129 contributory factors associated with operations, and the most common categorisation of these related to:

		2006	2007	2008	Total
a	Procedure/instructions	7	24	7	38
b	Competence and compliance	3	21	10	34
c	Planning	2	11	6	19
d	Human capabilities & performance	0	6	3	9

2. Infrastructure

There were 108 contributory factors associated with infrastructure, and the most common categorisation of these related to:

		2006	2007	2008	Total
a	Inspection and maintenance	12	11	3	26
b	Equipment systems	6	8	5	19
c	Procedure/instructions	8	5	5	18
d	Competence and compliance	2	2	3	7

3. Signalling and Telecommunications

There were 25 contributory factors associated with signalling & telecommunications the most common categorisation of these related to:

		2006	2007	2008	Total
a	Equipment systems	2	11	1	14
b	Planning	1	4	1	6
c	Competence & compliance	0	3	0	3

4. Rolling Stock

There were 78 contributory factors associated with rolling stock and the most common categorisation of these related to:

		2006	2007	2008	Total
a	Equipment systems	4	15	3	22
b	Competence and compliance	6	5	6	17
c	Procedures/instructions	3	6	0	9
d	Inspection and maintenance	2	4	4	10
e	Audit or review	1	2	0	3

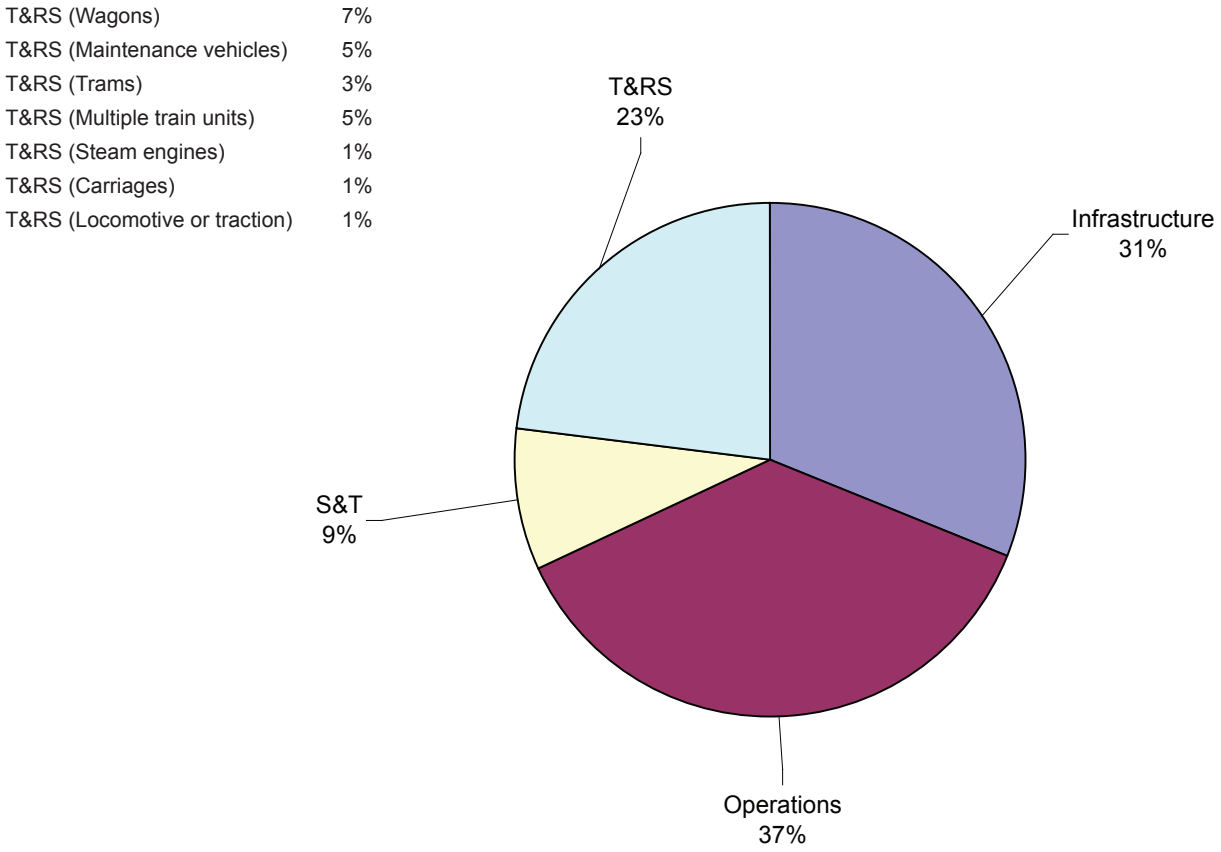


Figure 3: Contributory factors of accidents/incidents

3 Analysis of recommendations and causes

Underlying Factors

There were 12 underlying factors in 2006, 60 in 2007 and 29 in 2008 totalling 101; the most common of these were attributed to:

1. Operations

There were 29 underlying factors associated with operations and the most common categorisation of these related to:

		2006	2007	2008	Total
a	Procedure/instructions	0	9	2	11
b	Competence & compliance	0	5	2	7
c	Supervision	0	4	0	4

2. Infrastructure

There were 44 underlying factors associated with infrastructure, and the most common categorisation of these related to:

		2006	2007	2008	Total
a	Procedure/instructions	5	2	3	10
b	Competence & compliance	2	5	0	7
c	Sufficient resources	0	5	1	6
d	Planning	0	0	3	3

3. Rolling Stock

There were 23 underlying factors associated with traction and rolling stock and the most common categorisation of these related to:

		2006	2007	2008	Total
a	Equipment systems	1	7	0	8
b	Procedure/instructions	1	3	1	5
c	Competence and compliance	0	1	0	1
d	Inspection & Maintenance	0	0	1	1
e	Approval process and management	0	0	1	1
f	Organisational information management	0	0	1	1

T&RS (Wagons)	8%
T&RS (Maintenance vehicles)	3%
T&RS (Trams)	0%
T&RS (Multiple train units)	8%
T&RS (Steam engines)	3%
T&RS (Carriages)	3%
T&RS (Locomotive or traction)	1%

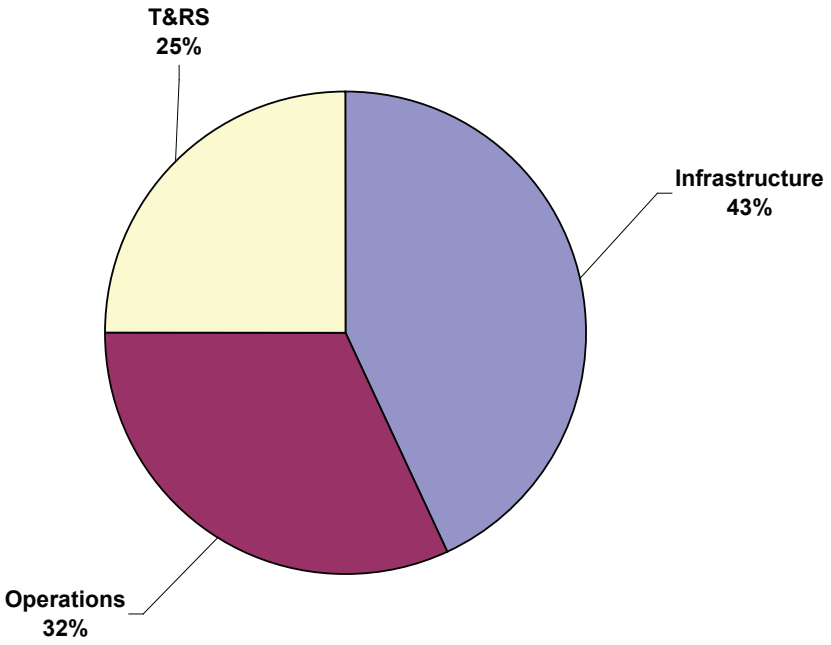


Figure 4: Underlying factors of accidents/incidents

Over the last three years the RAIB has published a total of 106 investigation reports and has identified a total of 538 factors affecting the occurrence of accidents or incidents. The breakdown was 26 reports in 2006 with 127 factors, 47 reports in 2007 with 286 factors, and 33 reports in 2008 with 125 factors.

The 2007 annual report, identified that the most common issue amongst the causal, contributory and underlying factors related to:

- procedures or instructions, predominantly in relation to the stewardship of infrastructure and operations;
- competence of staff and compliance with instructions, which mainly featured in the operations and rolling stock categories;
- equipment / system / infrastructure, particularly relating to railway infrastructure;
- inspection and maintenance, mainly of the infrastructure; and
- planning, mainly related to the infrastructure sector with most of the remainder in the operations sector.

Analysis of the number of factors for 2008 alone shows that they break down into almost the same relationship as that for 2007 and in the order shown above. The meaning of the terms is explained in more detail at the end of this section.

For all three of the past years the factors associated with procedures or instructions, and competence of staff and compliance with instructions have accounted for approximately 50% of all factors, split equally.

The next most frequent factor (16%) relates to equipment /systems/ infrastructure, followed by inspection and maintenance (11%) and planning (10%).

3 Analysis of recommendations and causes

As an aid to understanding the weaknesses identified by RAIB, the following descriptions have been used as examples of effective systems (barriers, defences, safeguards). The RAIB categories of issues that caused or contributed to the accidents or incidents it investigated as referred above are defined as follows;

- Procedures or instructions - properly documented practices, procedures and systems of work that are: up to date; comprehensive; accurate; unambiguous and clearly understandable; and capable of being complied with.
- Competence of staff and compliance with instructions - effective and implemented processes for the selection and training of staff. Content of training courses correctly specified, delivered, and assessed to ensure that staff have the required knowledge, skills, capability, and relevant and timely experience to carry out their tasks consistently to a required standard, and in a way that promotes compliance with standards and procedures.
- Equipment / system / infrastructure - equipment / system / infrastructure that is fit for purpose in terms of functionality, integrity, quality, availability. All the correct equipment and tools provided in good working order and in calibration.
- Inspection and maintenance - adequately specified, planned and resourced systems for inspection and maintenance to ensure equipment continues to function at the design level of performance and safety. Active consideration of the impact of the age related deterioration of the equipment considered in setting maintenance and inspection schedules. Good physical access and adequate time allocated for maintenance and functional testing and pre-operational checks and tests.
- Planning - comprehensive planning and organisation of tasks including an adequate hazard evaluation. All hazards identified and properly understood with appropriate mitigation measures implemented. A clear definition of the scope of the work/activity and the tools/equipment required. Limits of worksite clearly specified and adequate time allocated to carry out work in a safe and satisfactory manner.

Other branch activities 4

Conferences and Seminars

The RAIB believes it is very important to inform others in the industry about what the Branch does and how it operates. Besides ongoing liaison within the industry, the RAIB made presentations at local, national and international conferences and seminars throughout the year.

Emergency exercises

The RAIB ran two emergency exercises with Network Rail, the Police and Emergency Services and The Crown Office and Procurator Fiscal Service in Scotland, and one with Network Rail, Heritage Railways, the Police and Emergency Services in Wales. RAIB also participated in a major emergency exercise in Northern Ireland with Northern Ireland Railways, and the Northern Ireland Police and emergency services.

International activity

The European dimension

The RAIB continues to work closely with the European Railway Agency and other member states to further the requirements of the Railway Safety Directive for engendering European co-operation and standardisation. As the UK was the first Member State to implement the Directive it has been able to share its early experiences of implementation of the Directive and its ongoing operations and actively participate in a number of ERA Task Forces.

One of the requirements of the Directive is that Member States should co-operate on investigations where accidents or incidents occur on or close to a border between Member States. To facilitate such co-operation, the RAIB have worked with its neighbours to develop specific cross-border Memorandum of Understandings.

Memorandum of Understanding with the Bureau d'enquetes sur les accidents de transport terrestre (BEA-TT)

BEA-TT is the French national independent investigation body and has agreed a cross-border Memorandum of Understanding with RAIB which covers the practical arrangements for joint investigations in the Channel Tunnel. This provided the framework of co-operation for the investigation into the shuttle train fire that concluded with the report being published in October 2007, and the ongoing investigation into the fire on an HGV shuttle train in the Channel Tunnel dated 11 September 2008, which is being led by BEA-TT with RAIB assisting.

Memorandum of Understanding with the Republic of Ireland

The Railway Accident Investigation Unit (RAIU) is the permanent investigating body for railway accidents and incidents in the Republic of Ireland and has agreed a cross-border Memorandum of Understanding to provide a framework of co-operation between RAIB and the RAIU when investigating accidents in the following circumstances; an accident or incident that occurred on or close to the border; and an accident or incident which occurred anywhere in the jurisdiction of the RAIB or the RAIU involving a train or vehicle from either the UK or the Republic of Ireland.

Other international activities

The RAIB received a number of visits from the following overseas organisations who were interested in the establishment and work of the RAIB.

4 Other branch activities

Training RAIB inspectors

The aim of RAIB's training is to provide all inspectors with the investigatory and technical skills and knowledge necessary to investigate railway accidents and incidents, supported by a thorough understanding of the underpinning principles and theory.

The range of training covers the four key railway technical areas: operations; signalling; traction & rolling stock; and infrastructure, as well as the investigative skill areas e.g. accident site management, the law, evidence gathering/ handling/ and testing, photography, witness interviewing, and causal analysis.

During 2008, the RAIB undertook a complete review of its training needs based on 3 years of operational experience. This information has been used to update and further develop the training specifications for inspectors.

Trainee inspectors from other accident investigation branches have also participated in the RAIB run courses.

Annex A

List of investigations opened in 2006 and completed in 2008

Date	Location	Date Report Published
12 September 2006	Croxton Level Crossing	13 May 2008

List of investigations opened in 2007 and completed in 2008

Date	Location	Date Report Published
13 January 2007	Hooley Cutting, near Merstham, Surrey	28 February 2008
15 January 2007	Kemble	27 March 2008
17 January 2007	Pomona, Manchester	24 April 2008
28 January 2007	Armathwaite	24 April 2008
23 February 2007	Grayrigg	23 October 2008
29 April 2007	Ruscombe junction	28 February 2008
10 May 2007	King Edward bridge, Newcastle	31 January 2008
10 June 2007	Camden Town, Northern Line	11 March 2008
05 July 2007	Mile End station	31 January 2008
19 July 2007	Camden Road tunnel	22 May 2008
01 August 2007	Burton on Trent	10 January 2008
02 August 2007	Limavady junction, Northern Ireland	24 April 2008
10 August 2007	Lawley Street, Duddeston junction, Birmingham	31 July 2008
15 August 2007	Lydney Town	02 July 2008
22 August 2007	Didcot North junction	20 November 2008
27 August 2007	Aylesbury	11 June 2008
29 August 2007	Leatherhead	23 October 2008
29 August 2007	Ty Mawr	30 October 2008
25 October 2007	St. John's Wood	26 November 2008
01 November 2007	Tooting Broadway station, Northern Line	28 August 2008
29 November 2007	Reading	28 October 2008

5 Annexes

List of investigations opened and completed in 2008

Date	Location	Date Report Published
20 January 2008	Between Bishop's Stortford and Stansted Mountfitchet, Essex	23 December 2008
01 February 2008	Barrow upon Soar	25 September 2008
16 February 2008	Nene Valley Railway	17 July 2008
28 February 2008	Network Rail's management of earthworks	23 December 2008
16 April 2008	Moor Lane, Staines	23 December 2008

Annex B

Summary of investigations opened in 2007 but not completed by 31.12.2008

31 October & 04 November 2007	Snow Hill, Birmingham and Brentwood, Essex	On 31 October 2007, at approximately 03:15 hrs, as a mobile elevating work platform was being removed from the track at Livery Street near Snow Hill station in Birmingham, it ran away toward another mobile elevating work platform which was parked 10m from it. There were persons on both machines when the runaway started; one person was unable to dismount before the collision occurred. There were no injuries, but one of the machines was damaged. When engineering staff placed a road rail machine, a mobile elevating working platform, onto the track at Brentwood on 4 November 2007, between 09.30 hrs and 10.00 hrs the machine immediately ran away towards London, travelling a total of some seven miles before being stopped west of Romford. The operator of the machine jumped from it at Gidea Park, and received minor injuries, but otherwise no-one was injured, and there was no physical damage. The machine came to rest on the down Electric Line near Romford.
13 November 2007	London Victoria	At approximately 14:00 hrs on 13 November 2007, the 13.00 hrs Maidstone East to London Victoria train was approaching London Victoria station on the up Chatham fast line at Grosvenor Road Bridge. A team of three permanent way staff were inspecting the track on the adjacent down Chatham fast line. When the train reached them one of the team (the Controller of Site Safety), was struck and seriously injured.

Summary of investigations opened in 2008 but not completed by 31.12.2008

25 January 2008	Scunthorpe	At 10:53 hrs the leading bogie of the tenth wagon of a freight train, loaded with coal, derailed near Foreign Ore Branch junction, three miles east of Scunthorpe station. The train ran derailed for over a kilometer, and caused considerable damage to the track. There were no casualties.
1 March 2008	Cheddington and Hardendale	Two separate incidents involving freight containers being blown off freight trains, at Cheddington in Bedfordshire and at Hardendale in Cumbria. The first incident, at Cheddington, on the down fast line of the West Coast Main Line (WCML) between Hemel Hempstead and Leighton Buzzard, occurred at approximately 02:30 hrs. A freight train hauling 20 container flat wagons lost two empty containers while travelling at approximately 70 mph (112 k/h). The detached containers blocked the running lines and caused damage to overhead line equipment (OLE) and to the track. The second incident occurred at approximately 03:15 hrs adjacent to Hardendale Quarry, between Tebay and Penrith, on the down line of the WCML. A freight train hauling 20 container flat wagons lost five empty containers from the rearmost four wagons of the train while travelling at approximately 70 mph (112 k/h). The detached containers blocked running lines and again caused damage to the OLE and track. Both incidents took place at a time of high cross winds, and in both cases there were no injuries.
25 March 2008	Moor Street station Birmingham	At 06:38 hrs four empty scrap carrying wagons in the 01:46 hrs Aldwarke to Handsworth freight train, derailed on the approach to Moor Street station. At this location the railway is carried on a viaduct. The four derailed vehicles were overturned or partly overturned, there was some damage to the parapet of the viaduct and a quantity of brickwork fell to the ground below. No-one was injured during the accident.
31 March 2008	Tackley station, Oxfordshire	At 15:16 hrs Arriva Cross-Country passenger train from Dundee to Bournemouth struck and killed an 82 year old woman who was accessing Tackley station via a user worked level crossing on Network Rail's Oxford to Banbury (Cherwell valley) line.
4 April 2008	Docklands Light Railway near Deptford Bridge station	At 05:27 hrs the 05:19 hrs service from Lewisham had just left Deptford Bridge station, and was travelling towards Greenwich, when it struck an object on the track and was derailed by the second axle of the first bogie. The front of the train came to a rest 88 metres after hitting the object. There were no injuries and the people on board were evacuated safely back to Deptford Bridge station.
4 April 2008	Eurotunnel tourist shuttle train in transit from the UK to France	At 17.08 hrs a road coach moved as a shuttle train departed from the UK terminal of the Channel Tunnel trapping the coach's driver against the internal fire barrier door. Another passenger activated the emergency alarm to alert the train crew. As the train stopped the coach moved forward releasing the coach driver. The coach driver received injuries that required him to be admitted to hospital for treatment.
26 April 2008	Leigh on Sea	At 06:27 hrs, an engineering train from Whitemoor to Benfleet was stationary in an engineering possession when the following train, also from Whitemoor to Benfleet, struck it at 15 mph (24 km/h). No-one was injured in the collision, but two wagons were severely damaged.

5 Annexes

3 May 2008	Gysgfa, Gwynedd	The 15:00 hrs train from Porthmadog to Tan y Bwlch consisted of a steam locomotive, three four wheeled carriages, a bogie carriage and a bogie van. At 15.30 hrs the two bogie vehicles derailed. The train was running at approximately 20 mph (32 km/h) some 5 miles from Porthmadog. The passengers in the bogie carriage activated the emergency brake and the train stopped. No passengers were injured, although the guard received very minor injuries.
23 May 2008	Kennington junction, near Oxford	At approximately 21:47 hrs, the 20:51 hrs service from Paddington to Oxford, struck a signal technician who was working close to the track between Radley and Oxford. The technician had been undertaking routine inspection of points at Kennington junction.
28 May 2008	Bridge GE19 near London Liverpool Street station	Bridge GE19, part of Transport for London's East London line extension project, was installed during the weekend 3 - 5 May 2008, and remained temporarily supported as part of the planned installation process. Part of this support subsequently failed, displacing objects from the partly-completed deck onto the track below. Some of these objects were struck by the 19:15 London Liverpool Street to Southend Victoria. All traffic was halted and the traction current was isolated as a precaution. Trains in the vicinity were evacuated by the emergency services. There were no reported injuries.
12 June 2008	Marks Tey	At 14.05 the train operated by Freightliner consisting of twelve loaded and four empty container wagons, derailed. It was passing through Marks Tey station at 76 mph (122 k/h) when one bogie derailed. There were no casualties from the derailment, but there was minor damage to train and to some 4 km of track.
19 June 2008	User Worked Crossings	The RAIB is carrying out a study of the risk at user worked crossings, which will review the precautions that are taken to prevent collisions, why they happen, and make recommendations to reduce the risk at such crossings. Issues covered will include the ways in which crossing users can be warned about the approach of trains, the signs which are used to tell vehicle drivers how to use the crossings, and the statutory framework surrounding the provision, design, operation, maintenance and closure of user worked crossings.
24 June 2008	Ealing Broadway station, West London	The 00:15 hrs First Great Western service from Reading to London Paddington had just crossed from the up main to the up relief line at Acton West Junction when it struck an engineers' trolley. There were maintenance staff in the vicinity of the trolley and they were able to move to a position of safety before the collision occurred. The trolley was wedged under the train after the collision, but the train did not derail. No-one was injured in the collision, and the passengers were subsequently taken by road transport to their destinations.
29 June 2008	St Peter's Square, Manchester	The 22:44 hrs tram from Altrincham, had just departed from St Peter's Square stop travelling along Mosley Street towards the city centre when the middle bogie of the rear unit derailed to the left at 23:10 hrs. The tram travelled a further 100 metres before coming to a stop across the junction with Princess Street, with the derailed bogie having partially mounted the pavement. No other wheels derailed. One passenger was taken to hospital. The tram damaged its own overhead electrical equipment poles and signal stanchions.
1 July 2008	Poplar Farm level crossing, Attleborough, Norfolk	At 16:12 hrs the 15:52 hrs East Midlands Trains service from Norwich to Liverpool Lime Street approached the level crossing when the level crossing gates were open to allow road users to cross. Three vehicles were able to cross before the train reached the crossing, but a fourth vehicle had to reverse clear.
18 July 2008	Collisions and runaways involving road-rail engineering machines	The RAIB is carrying out an investigation into collisions and runaways involving road-rail engineering machines, commonly known as road-rail vehicles (RRVs) – those where an item of contractor's plant has been converted to run on rail wheels as well as road wheels. The RAIB is concerned at the ongoing number of such accidents, and has decided to carry out a more general investigation, to review the systems and controls that are in place on Network Rail to prevent runaways and collisions with RRVs and their trailers, and to see whether these systems are sufficient to control the risks.
27 July 2008	New Southgate, North London	At approximately 11:20 hrs on Sunday 27 July 2008 a sliding-plug door opened, and subsequently came away from its mountings, on the trailing power car on the 11:00 hrs HST from London Kings Cross to Aberdeen in the vicinity of New Southgate, some 6 miles north of Kings Cross. The door struck and damaged the carriages of the 08:24 hrs HST from Leeds to Kings Cross, causing damage to the bodysides, door handles, and doors on several carriages. The southbound train continued to Kings Cross, arriving there at 11:28 hrs. The northbound train was stopped at Peterborough for examination, and withdrawn from traffic at Doncaster. Both trains were then moved to depots for examination and investigation. There were injuries to some passengers in the southbound HST.

11 September 2008	HGV shuttle train in the Channel Tunnel	The Bureau d'Enquêtes sur les Accidents de Transport Terrestre (BEA-TT) and the Rail Accident Investigation Branch (RAIB) are carrying out a joint investigation into a fire that occurred on a heavy goods vehicle (HGV) shuttle train in the French part of the Channel Tunnel. A fire broke out on a train carrying HGVs from the UK terminal at Folkestone to the French terminal at Coquelles, just outside Calais. The train was subsequently stopped 11.5 km from the French tunnel portal (39 km from the UK portal). All passengers and crew were safely evacuated although several suffered from the effects of smoke inhalation and some had minor cuts and bruises. The fire spread to involve other HGVs on the train.
13 September 2008	Morden Hall footpath crossing, on the Croydon tramlink system	At 14:37 hrs a tram, travelling from Wimbledon towards Croydon, struck and killed a man as he cycled over the footpath crossing adjacent to Morden Hall Park.
21 October 2008	Llanbadarn Level Crossing	At approximately 11:25 hrs on Tuesday 21 October 2008 the 08:33 hrs train from Birmingham to Aberystwth ran across Llanbadarn level crossing, near Aberystwth, whilst the barriers of the crossing were raised. The train was braking heavily, and stopped with its rear end still on the crossing, but a collision with a tanker lorry was only avoided by the actions of a pedestrian and the lorry driver. There were no injuries, and no damage was caused, as a result of the accident.
3 November 2008	Wraysholme, near Flookburgh, Cumbria	At 12:30 hrs the 09:27 hrs Carlisle to Lancaster service, collided with a car on an automatic open locally monitored (AOCL) type of level crossing located between Kents Bank and Cark and Cartmel on Network Rail's Cumbria Coast line. The car driver was killed as a result of this collision.
10 November 2008	East Somerset Junction	At 02:33 hrs two locomotives hauling the delayed 22:31 hrs (9 November) service from Merehead Quarry in Somerset to Acton Yard in west London derailed at low speed on trap points as the train approached the main line at East Somerset Junction. There were no injuries arising from the derailment, and only minor damage to the track, signaling equipment and the two locomotives.
22 November 2008	Bayles and Wylies footpath crossing, Bestwood Park, Nottingham	A fatal accident occurred at Bayles and Wylies footpath crossing. At 18:40 hrs the 17:45 hrs East Midlands Trains service from Worksop to Nottingham struck and killed a woman and a child on the level crossing.
7 December 2008	East Coast Main Line at Stevenage	A track worker was struck and seriously injured by a train as it passed a work site located to the north of Stevenage station on the East Coast Main Line. The injured worker had been carrying out work within a. engineering possession in connection with the renewal of the up fast line. At about 17:30 hrs he was struck by a train passing on an adjacent line that was still open to traffic for trains travelling at reduced speed.
18 December 2008	Road vehicle incursion onto Network Rail running lines from privately managed property	Investigation into the derailment of a train as a result of a collision with a car that had rolled onto the line. At 17:58 hrs, a four-wheel-drive car rolled from its intended parking position in a depot, through a wire-link fence, down a railway cutting slope and onto the up line at North Rode, on the West Coast Main Line between Congleton and Macclesfield. A class 323 electric multiple unit travelling at 90 mph (145 km/h), struck it and pushed it along the track in the direction of Congleton. After 34 metres, the car-train combination encountered a road-rail access point which caused the train to become derailed towards the cutting slope and the car to be ejected towards the other line. The Class 323 travelled a further 328 metres in a derailed state, demolishing a signal, before stopping. As the Class 323 train stopped it was passed by a Class 221 Super Voyager diesel-electric multiple unit, travelling at 105 mph (169 km/h) on the down line. The Class 221 struck the remains of the car and one rubber block that had been dislodged previously from the road-rail access point. The Class 221 did not derail, and came to a stand 798 metres after striking parts of the car. No-one in either of the trains, or outside the trains, was injured in the collisions and the derailment. However, the car was demolished; there was substantial damage to the Class 323, the track, the signaling; and minor damage occurred to the Class 221.
19 December 2008	Wakefield and Wallers Ash (near Micheldever)	An out-of-gauge load was conveyed on a freight train between Wakefield (West Yorkshire) and Wallers Ash (Hampshire). An empty 9' 6" container was loaded in error onto a FIA type flat-bed wagon at Wakefield Europort. This wagon formed part of the 0433 service from Wakefield Europort to Eastleigh. The loading error was not identified prior to the train's departure and consequently the roof of the container was outside the loading gauge for trains over the route concerned. At about 10:24 hrs, the train passed through platform 1 at Basingstoke and struck the edge of the platform canopy, causing it minor damage. The station staff reported the incident to the signaller who ensured the train was stopped before it entered the first of five tunnels between Basingstoke and Eastleigh. The train was subsequently driven at reduced speed to Micheldever sidings (via Waller Ash loops) to permit the over-sized container to be unloaded.

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Annex C

The Recommendation Progress Report

The following section contains all the recommendations made by the RAIB in 2008, and details of recommendations made in previous years which have not been closed by the relevant safety authority or public body.

It also contains information, supplied to RAIB by the safety authorities, of the implemeter's responses and the safety authorities' view of those responses.

There were 181 recommendations made in 2008 and of these 172 fell within the Office of Rail Regulation (ORR) area of responsibility as the relevant safety authority. Five were addressed to the Department of Regional Development in Northern Ireland and the remainder to individual public bodies.

The accidents/incidents are listed by the report number in chronological order of the date of publication. A summary of the details of each accident/incident, including details of the location and date of occurrence is also included.

The status of implementation of the RAIB's recommendtions, as reported by the safety authority or public body, has been divided into five categories:

Key to Recommendation Status in Annex C Appendix 3

Green 1 = Closed:	The implementer has declared that it has taken measures to effect the recommendation and the safety authority or other public body is either satisfied that the work has been completed or it has confidence in the work being completed and intends taking no further action.
Green 2 = Complete:	The implementer has declared that it has taken measures to effect the recommendation and the safety authority or other public body has yet to decide whether it is satisfied with the response.
Green 3 = Closed with no actions taken:	The implementer has decided to take no measures to effect the recommendation and the safety authority or other public body has considered this and is satisfied with the implementer's full explanation.
Amber = Open:	Feedback from implementer or other public body is awaited or actions have not yet been completed.
White = Awaiting Response	Awaiting initial response.

1. National Network(s)
2. Light Rail (LR)
3. Metro
4. Heritage
5. Channel Tunnel

ANNEX C Appendix 1

Statistics, recommendations from reports published in 2006, with a status of open or complete in the RAIB 2007 Annual Report

No	Investigation Title	Status Category				
		1	2	3	4	
		Amber = Open	Green 1 = Closed	Green 2 = Complete	Green 3 = Closed with no action taken	Total Recommendations open/completed from 2006 report
2	Watford Yard derailment		1			**1**
4	Phipps Bridge 1		2			**2**
7	Collision at Great Central Railway - Loughborough			4		**4**
8	Derailment of freight train at Hatherley, near Cheltenham Station			1		**1**
11	New Addington Derailment		3			**3**
12	Blackhorse Drove Crossing	1		1		**2**
14	Liverpool Central derailment	3	2	2		**7**
15	Thirsk Station - near miss		2	5		**7**
16	Trafford Park, Manchester		3			**3**
17	Carlisle North Junction - derailment of rear vehicle			4		**4**
19	Oubeck Derailment	1			1	**2**
20	Near Miss - P'way trolley at Larkhall	2	3	3		**8**
21	York - Freight wagon derailment	2		2		**4**
22	Moy derailment	2	2	2		**6**
23	Elsenham level crossing	3	4			**7**
Total		**14**	**22**	**24**	**1**	**61**
Percentage of total		**23 %**	**36 %**	**39 %**	**2 %**	**100 %**

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ANNEX C Appendix 2

Statistics, recommendations from reports published in 2007, with a status of open or complete in the RAIB 2007 Annual Report

No	Investigation Title	Status Category					
		1	2	3	4	5	6
		Awaiting Response	Amber = Open	Green 1 = Closed	Green 2 = Complete	Green 3 = Closed with no action taken	Total recommendations per report
1	Autumn adhesion events (inc SPADs, Esher (25/11/05) & Lewes (30/11/05)		12	1	6		**19**
2	Freight train derailment at Brentingby		1	3	4		**8**
3	Cricklewood Curve		2	1	2		**5**
3	Haymarket East Junction				1		**1**
4	NYMR Grosmont				4		**4**
5	Chalmerston Branch Line (Patna) - Freight Train derailment				3		**3**
6	Ravenglass & Eskdale derailment of passenger coach		2		3		**5**
7	Collision at Bratts Blackhouse UWC		2		4		**6**
8	Long Millgate, Manchester Victoria - LRV derailment				4		**4**
9	Huntingdon train door incident		1	1	3		**5**
10	Near Miss involving runaway trolley at Notting Hill Gate			3	5		**8**
11	Runaway loco - East Didsbury				8		**8**
12	Driver fatality at Deal		4	1	2	1	**8**
13	Starr Gate - Derailment of Tram				1		**1**
14	Crofton Old Station LC			5	1		**6**
15	Tram collision at Benson Road			2			**2**
16	Wrong direction move at High Street Kensington			2	4		**6**
17	Derailment at Ropley				5		**5**
18	Derailment on Seaton & District Electric Tramway			1	1		**2**
19	Dagenham Dock				7		**7**
20	Derailment of two freight wagons at Maltby				1	1	**2**
21	Trooperslane Level crossing			1			**1**
22	Near miss at Manor Park		2	1			**3**
23	Serious SPAD at Purley			1	4		**5**
24	Pickering Station NYMR				1		**1**
25	Collision between ballast regulator & tamper at Badminton Old Station			2	1		**3**
26	Train door open in traffic at Desborough		4		5		**9**
27	Derailment at Fisherground - Ravenglass and Eskdale		1		1		**2**
28	Collision and Derailment at Copmanthorpe			2			**2**
29	Derailment at Epsom		2				**2**
30	Swanage collision		2		3		**5**
31	Collision at Aylesford/M20		2		4		**6**
32	Eurotunnel fire		3		3	1	**7**
33	Derailment at Snowhill, Birmingham			1	2		**3**
39	Washwood Heath derailment		2	1	1		**4**
41	Blackpool tram fire				2		**2**
42	Derailment at Cromore		5		2		**7**
43	Near miss with trackworkers, Tinsley Green Junction nr Gatwick		5		3		**8**
44	Derailment at Waterloo		5		9		**14**
45	Collision at Shenley Hill Road LC, Leighton Buzzard Railway		2		1		**3**
46	Collision with tractor at Cavalry Horse crossing, Leighton Buzzard Railway		1		1		**2**
Total			**60**	**29**	**112**	**3**	**204**
Percentage			**30 %**	**14 %**	**55 %**	**1 %**	**100%**

ANNEX C Appendix 3

Statistics, recommendations made in 2008 and status

No	Investigation	Status Category					
		1	2	3	4	5	6
		Awaiting Response	Amber = Open	Green 1 = Closed	Green 2 = Complete	Green 3 = Closed with no action taken	Total recommendations per report
1	Passenger train struck by heavy object passing a freight train at Willington		4				4
2	Newcastle King Edward bridge		3		1		4
3	Train derailment at Mile End on London Underground		3	2			5
4	Ruscombe Junction		4	1	2		7
5	Derailment at Merstham tunnel		3	2	4		9
6	Near miss incident Camden Town		1		2	1	4
7	Passenger train derailment at Kemble		1		1		2
8	Collision runaway freight wagon and road/rail vehicle at Armathwaite		2		1		3
9	Derailment of LRV at Pomona Station		2		3		5
10	Train collision with tractor at Nutts Craig UWC, Northern Ireland		6				6
11	Derailment of passenger train at Croxton AHB LC		8		3		11
12	Two runaway vehicles at Camden Road Tunnel		1		7		8
13	Two trains in a single section at Aylesbury North		2		2		4
14	Injury to crossing keeper		4		6		10
15	Young child fell from a train on the Nene Valley Railway at Wansford			1			1
16	Freight train derailment at Duddeston junction		8				8
17	Injury to a member of the public at Tooting Broadway		1				1
18	Collision / Derailment at Barrow on Soar		4				4
19	Member of P'way staff struck by train at Leatherhead	5	1				6
20	Derailment at Grayrigg	4	18	1	6		29
21	Fatal accident to trackworker east of Reading station		3		2		5
22	Overspeeding at Ty Mawr	5	2				7
23	Didcot North junction near miss following SPAD	6	1		2		9
24	Runaway trolley at St Johns Wood	14					14
25	Earthworks - class investigation		4		2		6
26	Near miss with train crew & technicians at Bishops Stortford		5				5
27	Fatality at Moor Lane LC		4				4
Total		34	95	7	44	1	181
Percentage		19 %	52 %	4 %	24 %	1 %	100 %

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ANNEX C Appendix 4

Recommendations made in 2008 to end implementer

End Implementer	Number
Freight, Train Operating Company (FOC)	21
Heritage Railway	11
Infrastructure Companies (Underground Only)	3
Light Rail Tram (LTR) Infrastructure	4
Light Rail Tram (LTR) Operating Company (TOC)	3
London Underground Ltd	12
Manufacturers	4
Network Rail	90
Non Railway Contractors	1
Northern Ireland Railway	6
Other Public Bodies	4
Passenger, Train Operating Company (TOC)	13
Rail Safety and Standards Board	10
Railway Contractors	16
The Office of Rail Regulation (ORR)	1
Total Note: a number of Safety Recommendations are made to more than one end implementer	**199**

ANNEX C Appendix 5

Recommendations made in 2006 that had an open or complete status from the 2007 Annual Report

Equipment Type	Place	Time	Date	Incident
National Networks: Empty 4-car Electric Multiple Unit	Watford Junction Yard	05:30	28 October 2005	Derailment
RAIB Report No:	02/2006		**Published:**	28 March 2006

Summary
A train was derailed in the yard at Watford Junction station. There were no injuries to staff and the derailment was limited to the second bogie of the second vehicle. Some damage occurred to the track which was repaired, enabling the branch to be reopened by 16.00 hrs that day.
Recommendations

RECOMMENDATION	3	Status: Green 1 = Closed
As soon as practical Network Rail should issue written instructions for the operation of Watford Yard ground frame in conjunction with the appropriate TOCs, who should specify and implement competency assessment applicable to all staff involved with operation of the ground frame.		
Comment		
Network Rail has considered and carried out the Recommendation. ORR has closed the Recommendation.		

Equipment Type	Place	Time	Date	Incident
Light Rail: Tram 2530	Phipps Bridge, between Croydon & Wimbledon	10:38	21 October 2005	Derailment
RAIB Report No:	04/2006		**Published:**	29 March 2006

Summary
A three-section articulated tram unit, travelling eastbound on the single line between Wimbledon and Croydon with approximately 45 passengers on board, became derailed as it passed over facing points PBR02G at the single to double line junction on the approach to Phipps Bridge tram stop near Merton, Surrey. As the tram approached the points, they were set, incorrectly, for the right-hand route. As the front of the tram passed over, the points sprang back to the left-hand route and the leading bogie of the tram split the points and became derailed. The rear portion of the tram took the left hand route. The tram came to rest about 37 m beyond the points. There were no injuries, and the passengers were evacuated to the adjacent tram stop by the driver and other staff. Recovery of the tram began at 14.00 hrs and re-railing was completed by 18.25 hrs. Following repairs to minor track damage, normal services were reinstated at 21.10 hrs on the same day.
Recommendations

RECOMMENDATION	2	Status: Green 1 = Closed
As soon as practicable, the infrastructure manager and the maintenance contractor should review the inspection and maintenance regime for the points at Phipps Bridge to ensure that the risks associated with the use of facing spring points at speeds up to 40 km/h are being adequately controlled. Any applicable lessons from this review should be extended to the rest of the Tramlink system.		
Comment		
Tramtrack Croydon Ltd has carried out a review of its standards and proposes no change to them. ORR has closed the recommendation		

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RECOMMENDATION	3	Status: Green 1 = Closed
The infrastructure manager and operating company should jointly complete their review of the number and nature of the alarms received in the control room with a view to sorting them by risk and eliminating unnecessary information being presented to the controllers (this action is already in hand).		
Comment		
Tramtrack Croydon Ltd considered the recommendation. ORR served an improvement notice on TCL on 2/10/06, which was complied with by April 2007. ORR has closed the recommendation.		

Equipment Type	Place	Time	Date	Incident
Heritage: Steam Locomotive 45305	Loughborough Central Station	09:50	04 February 2006	Collision with carriages
RAIB Report No:	07/2006		**Published:**	10 July 2006

Summary	
Steam locomotive 45305 was travelling at slow speed towards Loughborough Central station when it collided with the rearmost of six coupled carriages that were berthed in platform one. Two members of Great Central Railway's staff sustained minor injuries. The locomotive and one carriage were damaged.	
Recommendations	

RECOMMENDATION	1	Status: Green 2 = Completed
The Great Central Railway should revise its Rule Book and training to require: • drivers to keep a good look out and not, unless absolutely necessary, operate controls other than those used for driving when proceeding at caution as far as the line is clear, and when staff, members of the public and other rail vehicles may be nearby; • firemen to keep a good look out when proceeding at caution as far as the line is clear, and when staff, members of the public and other rail vehicles may be nearby.		
Comment		
The Great Central Railway has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
The Great Central Railway should put in place a supervisory system to ensure that members of its staff comply with the requirements of their medical certificates.		
Comment		
The Great Central Railway has considered and carried out the recommendation. ORR is considering whether to close the recommendation		

RECOMMENDATION	3	Status: Green 2 = Completed
The Great Central Railway should put in place a supervisory system to ensure that its policy on medical certification and recertification is properly applied to all staff.		
Comment		
The Great Central Railway has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Green 2 = Completed
The Great Central Railway should ensure that a first-aid kit is provided and its provision clearly indicated in all locomotive driving cabs.		
Comment		
The Great Central Railway has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 66 Locomotive	Hatherley, just south of Cheltenham Spa Station	05:20	18 October 2005	Derailment
RAIB Report No:	08/2006		**Published:**	14 July 2006

Summary	
Freight train 6V19 was travelling between Bescot and Margam on the Birmingham to Bristol line when all the wheels of one of its wagons became derailed near Hatherley, just south of Cheltenham Spa station. The derailed wagon was the 14th vehicle in the formation.	
Recommendations	

RECOMMENDATION	4	Status: Green 2 = Completed
Freight Operators should: • determine appropriate limits for handbrake application force, consistent with the requirement for ease of operation; • put systems in place to ensure that handbrakes on SSA and other fleets are maintained to these limits; and • put systems in place to ensure that handbrake indicators are maintained to provide reliable indication to staff.		
Comment		
All operators of freight trains except Freightliner have implemented the recommendation. ORR is considering whether to close the recommendation.		

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Equipment Type	Place	Time	Date	Incident
Light Rail: Tram 2538 and Tram 2533	New Addington, Croydon Tramlink	08:16	23 November 2005	Collision between two Trams
RAIB Report No:	11/2006		**Published:**	20 July 2006

Summary

Tram 2538 was travelling southbound with about 10 passengers from Croydon towards the New Addington terminus in thick fog. The tram passed KHD02 signal which was displaying 'STOP'. This signal, beyond King Henry's Drive tram stop, protects the entry into the short single line section leading to New Addington. The tram came to a stand partially blocking the adjacent line to Croydon. About the same time, tram 2533, left the New Addington terminus for Croydon with more than 25 passengers on board. It immediately entered the single track section and accelerated to a maximum of 27 km/h. The brakes were only applied when the tram was about 1.5 m from tram 2538, resulting in a collision. Tram 2533 then travelled another 18 m before stopping. Neither tram was derailed, however the collision significantly damaged the leading ends of both trams and one side of tram 2533. There were no injuries to passengers or staff that were reported at the time. Subsequently two whiplash injuries were reported.

Recommendations

RECOMMENDATION	1	Status: Green 1 = Closed

Tram Operations Ltd should carry out a programme to re-train all their drivers on the necessity to use the hazard brake in an emergency. Training and routine assessments should include understanding and demonstration by the driver in the operation of the hazard brake. The process of 'feathering' to avoid the final jerk should be retained.

Comment

Tram Operations Ltd has considered and carried out the recommendation.
ORR has closed the recommendation.

RECOMMENDATION	4	Status: Green 1 = Closed

The Office of Rail Regulation (ORR) should consider reviewing Railway Safety (Principles and Guidance), Part 2G "Guidance on Tramways" to include the provision of suitable over-run distances, and/or detection and warning systems at the design stage of tramway systems where they are a simple and cost effective means to mitigate against fouling point collisions at the entry to single line sections.

Comment

ORR has considered the recommendation, and has implemented it in the revision of RSPG Part 2G.
ORR has closed the recommendation.

RECOMMENDATION	5	Status: Green 1 = Closed

Tram Operations Ltd should carry out a programme to remind all drivers on the importance of using the hazard warning lights whenever a potentially hazardous situation occurs. Training and routine assessments should include practice in the immediate use of hazard warning lights.

Comment

Tram Operations Ltd has considered and carried out the recommendation.
ORR has closed the recommendation.

Equipment Type	Place	Time	Date	Incident
National Network: Class 365 Electric Multiple Unit	Black Horse Drove Crossing, near Littleport, Cambridgeshire	12:04	19 October 2005	Collision between train and Farm Vehicle
RAIB Report No:	12/2006		**Published:**	21 July 2006

Summary
A passenger train from King's Cross to King's Lynn collided with a tractor, which was hauling a trailer over a user worked level crossing between Littleport and Downham Market.
Recommendations

RECOMMENDATION	2	Status: Amber = Open
ORR and the Department for Transport should evaluate whether highway signs at user worked crossing with *miniature stop lights* are appropriately designed and located to provide adequate information to unfamiliar or occasional users on how to operate the crossing safely. This evaluation should include consideration of the relative position of the signs that the road user must obey and remedial action should be taken as necessary. The introduction of new LED units should be progressed with this work.		
Comment		
ORR will review RSPG2E and are therefore accept the broad intent of recommendation. ORR, is also examining the case for a review of level crossing legislation. However, given that the initiative for taking forward changes to any legislation, including that which deals with the specifics of signage at crossings, will probably lie with DfT, ORR's ability to deliver any changes it might consider are appropriate may be limited by DfT's willingness and/or ability to engage with the process and to find time for new legislation to be made. ORR and the Department for Transport has considered the recommendation, and is carrying it out. ORR and the RAIB are satisfied with the position.		

RECOMMENDATION	3	Status: Green 2 = Completed
Network Rail should instigate a robust means of recording the features required at each user worked crossing and ensure that these features are maintained in the same way as that Level Crossing Order provisions are.		
Comment		
Network Rail has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation		

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Equipment Type	Place	Time	Date	Incident
National Networks: Class 508 Electric Multiple Unit, no. 508124	Liverpool Central underground station	17:41	26 October 2005	Derailment
RAIB Report No:	14/2006		**Published:**	11 August 2006

Summary
Train 2W43, the 17:06 hrs Merseyrail passenger train from West Kirby to West Kirby, via Liverpool Lime Street, derailed about 200 m on the approach to Liverpool Central underground station in Network Rail's London North Western Territory. The last bogie of the train derailed.
Recommendations

RECOMMENDATION	1	Status: Green 2 = Completed
For the Liverpool Loop, Network Rail supported by Merseyrail should carry out a risk assessment of the compatibility between the rolling stock and the infrastructure and create an appropriate maintenance regime that may require going beyond current maintenance standards applicable to the track and to the trains. The risk assessment should consider parameters relating to track and trains, the operation of trains and the environment such as speed including TSRs (temporary speed restriction), curvature and stiffness. It should also consider how these elements interact at the wheel-rail interface. Network Rail should also extend this study to see if the effect of lowered speed restrictions increasing gauge spreading forces could exist elsewhere on their system.		
Comment		
Network Rail has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation		

RECOMMENDATION	2	Status: Green 2 = Completed
Network Rail should review and change the competence assurance system covering the staff that maintain the track in the Liverpool Loop tunnel to ensure that it is appropriate to the special features of its construction.		
Comment		
Network Rail has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	3	Status: Green 1 = Closed
Network Rail should review and enhance, where appropriate, its current instructions on the use of tie-bars in order to clarify under what circumstances their use is appropriate and to prevent situations (as occurred on the Loop) where an over-reliance on their use may occur at the expense of carrying out more permanent repairs.		
Comment		
Network Rail have carried out a review and are satisfied their procedures meeting this requirement. ORR has closed the recommendation.		

RECOMMENDATION	4	Status: Green 1 = Closed
Network Rail should require that any dispensations on the six months timescale applying to the use of tie-bars should be justified by risk assessment and formally authorised at Territory level.		
Comment		
Network Rail has considered and carried out the recommendation. ORR has closed the recommendation.		

RECOMMENDATION	5	Status: Amber = Open
Network Rail should carry out studies to predict the fatigue life of tie-bars in different applications and ensure consistency with standards and practice to deliver tie-bars that are fit-for-purpose for all situations.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	6	Status: Amber = Open
Taking the outcome of the work in Recommendation 1 above, Network Rail should review the level of resources - both staff and supervision - available to the Merseyrail Track Maintenance Engineer and ensure enough are provided to implement and then sustain the appropriate maintenance regime required for the Liverpool Loop.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	7	Status: Amber = Open
Network Rail should implement a system to regularly clean the track bed of the Liverpool Loop Tunnel so that the build up of corrosive contaminants is minimised.		
Comment		
Network Rail has accepted the recommendation and implementation is in progress.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 158 DMU	East Coast Main Line near Thirsk Station	23:35	11 January 2006	Removal of rail from open line
RAIB Report No:	15/2006		**Published:**	18 August 2006

Summary	
A gang of track workers started to remove a rail from the down slow line on the approach to Y427 signal, just to the North of Thirsk station. As a consequence of this action a track circuit was interrupted causing it to show as occupied. Subsequently, train 1P64, the 21:22 hrs Manchester Airport to Newcastle, was held at signal Y423 which could no longer be cleared due to the track circuit showing occupied. It was then discovered that the rail had been severed on a line that was still open to traffic and was in the process of being removed (i.e. the worksite had been established outside of an engineering possession).	
Recommendations	

RECOMMENDATION	1	Status: Green 2 = Completed
The Rail Safety and Standards Board, in consultation with Network Rail and other Railway Group members, to modify forms RT 3198 and 3199 to include a record of the mileage of the possession limits (linked to Recommendation 5). This should be done in such a way that the PICOP (Person In Charge Of Possession) and ES (Engineering Supervisor) are able to easily identify any inconsistency between the location of the worksite and the extent of the possession.		
Comment		
RSSB has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

5 Annexes

RECOMMENDATION	2	Status: Green 2 = Completed
Network Rail, in consultation with contractors, to re-brief track maintenance staff in the London North Eastern Area on their roles and responsibilities in the works planning process and the need for careful examination of the WON (Weekly Operating Notice) during the planning and execution of safety critical activities. This briefing should include the process and documentation to support late notice changes to planned work activities.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	3	Status: Green 2 = Completed
Network Rail, in consultation with contractors, to develop and adopt a universal standard process, with associated documents, for use by PICOPs, when planning possession activities. In all cases it should be clear who is responsible for the preparation of documents, submission of forms and approvals of work activities. Documents developed for this purpose should be designed for the avoidance of errors when transposing data from the WON.		
Comment		
Network Rail has developed alternative proposals to simplify the process of possession management. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Green 2 = Completed
Network Rail to take steps to ensure that all track maintenance staff make reference to the definitive line diagrams and signalling plans when planning engineering activities (currently available via national railway network intranet) and to ensure that such diagrams feature in possession planning documentation prepared by PICOPs. In consequence Network Rail should ensure that these diagrams are subject to regular validation and updates as appropriate.		
Comment		
Network Rail has developed alternative proposals that will simplify the process of possession management. ORR is considering whether to close the recommendation.		

RECOMMENDATION	5	Status: Green 2 = Completed
Network Rail to implement a system to ensure that all relevant staff (including PICOPs and Engineering Supervisors) have easy access to accurate mileage information for all published possession limits and to ensure that the written descriptions of possession limits are sufficiently precise to enable staff to identify the actual geographical locations that are referred to.		
Comment		
The accident at Acton on 23 June 2008 raises questions over whether this recommendation has been fully implemented.		

RECOMMENDATION	6	Status: Green 1 = Closed
Network Rail and PICOP service providers to implement formal management arrangements for PICOP Briefings. These should include the provision of a suitable venue, definition of required attendees, the specification of key documents to be available and a process for management checks to verify that PICOP Briefing meetings are being conducted in a correct and effective manner.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	7	Status: Green 1 = Closed
Network Rail procedure NR/PRC/MTC/PL0056 should be enhanced by a review of safety critical information at each meeting. These should include an explicit requirement to check that the mileage of each worksite is consistent with the published limits of the possession.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Three Car class 170 Diesel Multiple Unit	Trafford Park, Manchester	09:28	26 October 2005	Track worker fatality
RAIB Report No:	16/2006		**Published:**	25 August 2006

Summary	
A train travelling between Liverpool and Manchester struck and fatally injured a railway track worker at Trafford Park West Junction, 2 miles to the west of Manchester. The railway infrastructure is controlled by Network Rail. The line at this location is double track with a double junction into the freight terminal at Trafford Park. The train involved was 1L13, the 08:52 hrs Liverpool Lime Street to Ely. The train was operated by Central Trains and was being driven by a Driver employed by that company. The Driver had driven the train from Liverpool and was to take it forward as far as Nottingham. The deceased was employed as the UK Operations Manager by Schweizer UK, who were operating as a subcontractor to Carillion. He was engaged in the installation of an Automatic Track Warning System (ATWS) at this location. At the time of the incident he was carrying out a visual inspection of the track layout with a Supervisor from Carillion, the main contractor, and a second Schweizer employee. The Schweizer Operations Manager was fatally injured; the Carillion Supervisor received minor injury. The train was not damaged and no one on the train was injured.	
Recommendations	

RECOMMENDATION	4	Status: Green 1 = Closed
Carillion should review, and amend as necessary, their procedures and arrangements for site access to ensure that only those persons who are relevant to planned activities are able to access site. Appropriate monitoring arrangements should be made.		
Comment		
Carillion has considered and carried out the recommendation. ORR has closed the recommendation.		

RECOMMENDATION	5	Status: Green 1 = Closed
Carillion should review, and amend as necessary, their procedures and arrangements for site management to ensure that only those staff nominated as COSS within Method Statements are able to act as such. Appropriate monitoring arrangements should be made		
Comment		
Carillion has implemented an alternative approach to this recommendation, ensuring that site managers are named in the method statement, but that the site manager can allocate COSSs at the time work starts. ORR have closed the recommendation.		

5 Annexes

RECOMMENDATION	9	Status: Green 1 = Closed
Network Rail should consider further work and the expansion of the current programme of research into understanding the causes of rule violation, in direct contravention to the training people have received to include track safety skills.		
Comment		
Network Rail has considered the recommendation, and considers that the SAF 7 work stream and associated initiatives address it. ORR have closed the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Engineering Train Class 66 Locomotive	North end of Carlisle Station	13:20	6 February 2006	Derailment of Plough Brake Van
RAIB Report No:	17/2006		**Published:**	19 September 2006

Summary	
An engineering train, reporting number 6L57, became derailed on 756A points at the north end of Carlisle station. The train was in transit following its use within an engineering possession near Barrow-in-Furness. There were no injuries and the derailment was limited to all wheels of a plough brake van at the rear of the train. Minor damage occurred to the track and the vehicle.	
Recommendations	

RECOMMENDATION	1	Status: Green 2 = Completed
EWS (English, Welsh & Scottish Railways Ltd) should ensure that the advice and instructions given to site train preparers' in Operating Digest Advice Number 121 are incorporated into normal working procedures.		
Comment		
EWS (now trading as D B Schenker) has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
EWS should consider providing further assistance to train preparers in regard to plough stowage by painting locking keys a bright colour and/or placing reminder/warning notices on the exterior of the vehicles.		
Comment		
EWS has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	3	Status: Green 2 = Completed
EWS should rebrief their site train preparers' that they must receive a CoR in the correct format, as shown in The White Pages, before accepting engineering trains following their use in possessions.		
Comment		
EWS has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Green 2 = Completed
EWS should ensure that the unofficial 'authorisation slip / substitute driver's slip' is withdrawn from use.		
Comment		
EWS has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Three Car Class 175 Diesel Multiple Unit 1C62	Oubeck North, near Lancaster	13:56	4 November 2005	Derailment due to Landslide
RAIB Report No:	19/2006		**Published:**	2 November 2006

Summary
Passenger train, 1C62, operated by Trans Pennine Express, travelling on the Preston to Lancaster section of the West Coast Main Line, derailed after running into a landslip in a cutting at Oubeck North. The trailing wheel set on the leading bogie derailed to the right. No other wheels were derailed. The train travelled a further 1430 m before coming to rest in an upright position. There was no collision with structures or other trains and there were no injuries as a result of this derailment. Two coupler lateral bump stops were dislodged from the leading vehicle and came to rest 200 m after the landslip. They caused damage to the under frame, including holing the fuel tank on the leading vehicle. There was extensive damage to the rail fastenings over the length of track that the train ran on in a derailed state. Additionally, eighteen rail fractures were identified.
Recommendations

RECOMMENDATION	2	Status: Green 3 = Closed with no actions taken
Network Rail should identify priority cutting slopes prone to earth flow failure due to drainage flows from neighbouring property. These should be prioritised according to their likelihood of failure (eg on the basis of catchment area, slope angle and history of previous failures) and the consequence on the safe operation of trains. For priority cuttings, Network Rail should ensure that it understands all associated drainage arrangements, that they are adequate and that their functionality is maintained. Alternatively they should isolate their land from the effects of such drainage flows (eg by implementing engineered collector drains).		
Comment		
Network Rail rejected the recommendation on the grounds that all cutting slopes are now being prioritised taking into account the parameters identified. Network Rail states it is not practicable for them to understand all associated drainage arrangements on priority sites, although where adverse impact is clearly identifiable, this is included in the prioritisation. It is not possible for Network Rail to isolate its land from hidden drainage flows, or those created by outside parties, unless they are readily observable. Under case law (Rylands v Fletcher 1868) landowners are responsible for the satisfactory discharge of water run-off from their property. ORR has closed the recommendation without being implemented.		

RECOMMENDATION	5	Status: Amber = Open
Alstom should ensure that the design of the coupler lateral bump stop mounting arrangements for the Class 175 and 180 trains is reviewed against load cases from 'credible accident scenarios', including longitudinal loads experienced at the coupler head.		
Comment		
The RAIB has not seen the basis for closing this recommendation, although Alstom have declared it complete.		

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Equipment Type	Place	Time	Date	Incident
National Networks: Manually-Propelled Trolley	Between Larkhall and Barncluith Tunnel	06:49 - 06:51	2 November 2005	Runaway
RAIB Report No:	20/2006		**Published:**	2 November 2006

Summary

A manually propelled trolley being used within a T3 engineering possession on the partially built Larkhall branch in the Hamilton area in Scotland ran away from the trolley operator. The trolley travelled over three miles down hill, passing over steep gradients of up to 1 in 48 and reaching speeds above 20 mph (32.1 km/h), eventually leaving the limits of the possession and running onto a railway line open to traffic. The trolley eventually came to a stand within Barncluith tunnel. A possible collision with a passenger unit was prevented by the activation of a track circuit within the tunnel by the trolley.

Recommendations

RECOMMENDATION	2	Status: Green 1 = Closed

RSSB should propose a change to the Railway Group Standard GM/RT/1310 to include appropriate stopping distances for a fully loaded manually propelled rail plant on a 1 in 30 gradient. This stopping distance should be achieved in conditions representative of operational conditions (ie including wet and dry conditions). The proposed changes should also recognise the requirements of EN 13977.

Comment

RSSB states that Railway Group Standard GM/RT/1310 is to be withdrawn, the industry support a voluntary Railway Industry Standard in its place, and that they have accommodated the recommendation within that Industry Standard.
ORR has closed the recommendation

RECOMMENDATION	9	Status: Amber = Open

RSSB should propose revision of the rulebook to recognise the risks associated with the braking performance of trolleys in wet or icy conditions, on gradients and with contaminated brakes, along with instruction to perform any necessary brake test to demonstrate the trolley brake is performing to its specification in all circumstances.

Comment

RSSB has considered the recommendation, and believes that the recommendation's intent is already covered by the rule book. The conflicting approach to how trolleys are covered in Modules T2 & T3 of the Rule Book remain un-resolved over three years after the Larkhall accident.
ORR is considering the response.

RECOMMENDATION	10	Status: Amber = Open

Network Rail should revise its training requirements to match the output of recommendation 9, and introduce a competency within the Sentinel system for a person in charge of trolleys.

Comment

Network Rail has considered the recommendation, and believes that a specific training module in the sentinel suite is disproportionate to the risk of runaway trolleys.
ORR is considering the response.

RECOMMENDATION	12 Status:	Status: Green 2 = Completed

Network Rail should review their guidance on product acceptance processes and 'grandfather rights', with particular reference to plant, to ensure that there is clarity to relevant parties on the design change approvals criteria and particularly in respect where it affects grandfather rights.

Comment

Network Rail have reviewed their guidance, as required by the recommendation, and consider that the existing process addresses the issue of approvals in clear terms, and that new approval should be sought for stock when used on new routes, or when subject to substantial modifications.
ORR is considering whether to close the recommendation.

RECOMMENDATION	13	Status: Green 2 = Completed
All Infrastructure Controllers should brief relevant contractors and staff of the risks associated with braking performance on gradients, in wet/icy conditions, and with contaminated brakes.		
Comment		
Most Infrastructure Controllers have considered and carried out the recommendation. However, network rail have recently issued A Code of Practice, which they consider meets the need of this recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	14	Status: Green 2 = Completed
Network Rail should carry out a risk assessment on the use of red lights on trolleys used in T2 sites and either; • enforce the existing requirement for such lights, which will include the fitting of brackets to all existing and future trolleys on the national railway network; • or propose a modification to Rule Book Module T2, paragraph 15.5, to remove the requirement for a red light on a trolley.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	15	Status: Green 1 = Closed
Network Rail and Carillion should review their instructions to staff and contractors to ensure that accidents and incidents are notified to RAIB as required by the RAIR Regulations 2005.		
Comment		
Network Rail and Carillion have considered and carried out the recommendation. ORR has closed the recommendation.		

RECOMMENDATION	16 Status:	Status: Green 1 = Closed
Network Rail should review its procedures for accident investigation to ensure that lessons learned from such investigations are adequately reviewed as potential precursor events, and when so identified are briefed on an industry wide basis.		
Comment		
Network Rail has considered and carried out the recommendation. ORR has closed the recommendation.		

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Equipment Type	Place	Time	Date	Incident
National Networks: Class 66 Locomotive	York Station	23:22	18 January 2006	Wagon derailment
RAIB Report No:	21/2006		**Published:**	14 November 2006

Summary
Freight train 6V49, from Tees Yard to Newport, was travelling through York station when one wheel set on a wagon became derailed. The wheel set re-railed at the first set of points south of the station.
Recommendations

RECOMMENDATION	1	Status: Green 2 = Completed
GE Rail Services should revise their maintenance arrangements for link and pin type suspensions to ensure that degraded link pins are detected and replaced at a periodicity that minimises the risk of in-service failure.		
Comment		
GE Rail Services has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Amber = Open
GE Rail Services should determine in-service link pin strain and ensure that either link pins of an appropriate specification are used or that in-service loads are reduced to within the link pin load carrying capability.		
Comment		
GE Rail Services has considered the recommendation, and is carrying it out.		

RECOMMENDATION	3	Status: Amber = Open
English Welsh and Scottish Railway should revise their system of assurance to ensure that wagons are assessed and documented as fit to run before commencing in-service operation.		
Comment		
English Welsh and Scottish Railway have considered the recommendation, and are carrying it out.		

RECOMMENDATION	4	Status: Green 2 = Completed
Freight Operating Companies that operate wagons with link and pin type suspensions should review their maintenance arrangements to ensure that degraded link pins are detected and replaced at a periodicity that minimises the risk of in-service failure.		
Comment		
The affected FOCs have considered and carried out the recommendation. ORR is considering whether to close the recommendation		

Equipment Type	Place	Time	Date	Incident
National Networks: Passenger Train 1B08, 3-Car Class 170 Diesel Multiple Unit	Moy, Inverness-shire	07:02	26 November 2005	Derailment due to landslip
RAIB Report No:	22/2006		**Published:**	29 November 2006

Summary

Passenger train 1B08, a 3-car Class 170 diesel multiple unit (DMU) operated by First Scotrail, travelling from Inverness to Edinburgh on the Inverness to Perth section of the Highland Line, derailed after encountering a landslip in a cutting north of Moy in Inverness-shire.
All wheels of the leading car derailed to the left. No wheels of the other two cars were derailed. The derailed train travelled approximately 122 m before coming to rest upright close to the 105 ½ milepost.
The impact with the landslip debris, and the subsequent derailment, resulted in damage to the leading vehicle. This was mainly restricted to the front cab, the bogies and the vehicle under frame equipment. The impact also caused the release of a ceiling panel in the passenger saloon which hinged downwards and prevented the driver from being able to open the cab-to-passenger-saloon door.

Recommendations

RECOMMENDATION	1	Status: Green 1 = Closed

Network Rail should take actions either to prevent infiltration of water through the Parking Area or to install an engineered drainage system capable of managing the water which is expected to run on to it. The capacity of any drainage shall take into account the changes in surface condition due to the development activity on the surrounding land.

Comment

Network Rail has considered and carried out the recommendation.
ORR has closed the recommendation.

5 Annexes

RECOMMENDATION	3	Status: Green 1 = Closed

Network Rail should review their procedures to address the issues identified below and implement the resulting changes to their operations:

a) Water infiltration risks on land adjacent and above cutting slopes. Ensure that these risks, which will include issues such as areas of permeable and semi-permeable land on which surface run-off could collect, are identified and managed;

b) Introduction of new works by Network Rail alongside the railway or change of use of existing works, both of which may import risk with respect to earthwork stability (either during construction, transition, or subsequently). The TEDE (Territory Earthworks and Drainage Engineer) should be consulted and should determine any mitigating action and ensure its implementation. For example, relevant risks could be those associated with a detrimental change in ground loading or drainage conditions;

c) Unknown active or dormant surface extraction activities on land above the level of any track and within the boundary Network Rail have assessed may import risk. Ensure there are no such unknown activities that may import risk;

d) Lack of definition and process break-down in the earthworks Evaluation process that may lead to problems in determining which of the candidate earthworks identified by the Examination process are physically at risk of failure and in need of action. Ensure the review defines the key process stages and gives sufficient guidance to a suitably competent engineer (for example with regard to the information to be considered and decision criteria to be used) to ensure the objective, consistent and repeatable identification of such earthworks;

e) Lack of a formal process and guidance that leads to problems in identifying the earthworks to be inspected when adverse or extreme weather is forecast. The review needs to consider the weather forecasting arrangements (for example, the geographical area to which any forecast applies), the reporting and communication process, and the actions to be taken to ensure the safe operation of trains. It should ensure an integrated response by operations and infrastructure controls, and should be adopted nationwide; and

f) The lack of guidance in classifying earthworks for inclusion in the 'at-risk' list for adverse or extreme weather warnings. The guidance should, on a regular basis, import the latest knowledge from the earthworks management process into the 'at-risk' classification process. The guidance should also enforce regular review and update of the 'at-risk' list. Appropriate consideration should be given to earthworks, which are prone to failure due to water infiltration during intense rainstorms.

Comment

Network Rail has considered and has implemented all the sections of this recommendation, except part c. ORR has closed the recommendation.

RECOMMENDATION	4	Status: Amber = Open

The Scottish Executive and the Department for Communities and Local Government in England and Wales should ensure that Network Rail becomes a statutory consultee for planning applications for developments in the vicinity of the railway.

Comment

The Department for Communities and Local Government in England and Wales have accepted the recommendation and are carrying it out.

The Scottish Executive (Scottish Government) has accepted the recommendation and negotiations have been opened with Network Rail in Scotland with the regard making them a statutory consultee on planning applications. The discussions with Network Rail have identified wider issues regarding changes in the hydrology of catchments upstream of railway infrastructure. As a result, discussions have also been held with the Scottish Environment Protection Agency (SEPA) to examine if the issues raised can be addressed by through use of the Controlled Activities Regulations. Actions are on-going with respect to the implementation of the recommendation.

RECOMMENDATION	8	Status: Green 2 = Completed
Bombardier should identify all vehicles manufactured with a similar method of secondary retention to that of unit 170431 and inform relevant train owners and operators of the risk of failure identified in this report. Bombardier should modify all new rolling stock under manufacture, and the design for future rolling stock, to mitigate this risk.		
Comment		
Bombardier has considered and carried out the recommendation. ORR is considering their response.		

RECOMMENDATION	9	Status: Amber = Open
All rolling stock owners should identify rolling stock in their ownership with a similar method of secondary retention to that of unit 170431 and carry out modifications to mitigate the risk identified in this report.		
Comment		
Rolling stock owners have considered the recommendation, and are carrying it out.		

RECOMMENDATION	10	Status: Green 2 = Completed
As part of their research into 'Whole train dynamic behaviour in collisions and improving crashworthiness' (project T188), RSSB should consider the practicability of design elements on the bogie that limit the degree of deviation from the track following derailments.		
Comment		
RSSB has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks	Elsenham Station (wicket gates)	10:40	3 December 2005	Fatal Accident
RAIB Report No:	23/2006		**Published:**	11 December 2006

Summary

This investigation was initiated following a fatal accident at Elsenham station on 3 December 2005. The remit can be summarised as follows:

- to identify the number and distribution of station pedestrian crossings in the UK (including pedestrian gates associated with highway crossings);
- to investigate the safety issues associated with crossings of this type;
- to make general recommendations for the improvement of safety at station pedestrian crossings;
- to investigate the circumstances of the accident at Elsenham; and
- to make specific recommendations for the improvement of safety at Elsenham.

Recommendations

RECOMMENDATION	1	Status: Green 1 = Closed
Network Rail to establish standard definitions and terminology to cover the various types of foot crossings at stations and to prepare a validated list of all station pedestrian crossings on its network.		
Comment		
Network Rail has considered and carried out the recommendation. ORR has closed the recommendation.		

5 Annexes

RECOMMENDATION	2	Status: Green 1 = Closed
Network Rail in consultation with Station Operators to ensure that a suitable quantified risk assessment is conducted for each station pedestrian crossing. In conjunction with these risk assessments Network Rail should develop and implement a programme to address each of the following: • the upgrading of all station pedestrian crossings at which the individual risk to the most exposed user is assessed as being above the upper limit of tolerability; and • the implementation of improved safety measures, where shown to be necessary, commensurate with the level of risk at each station pedestrian crossing. Any risk assessments undertaken in furtherance of this recommendation should take into account local factors such as the number of school aged children and elderly persons using the crossings.		
Comment		
Network Rail has accepted and completed the recommendation. ORR has closed the recommendation.		

RECOMMENDATION	3	Status: Green 1 = Closed
Network Rail to review its management system to ensure the competence of the persons carrying out risk assessments at station pedestrian crossings.		
Comment		
Network Rail has considered and carried out the recommendation. ORR has closed the recommendation.		

RECOMMENDATION	4	Status: Amber = Open
ORR, in consultation with Network Rail and DfT, to undertake a comprehensive review of existing guidance relating to the design of station pedestrian crossings. This should include a review of current technologies and the modern understanding of human factors. This review should include each of the following: a. Use of fencing to direct passengers to approach the crossing by the route that best enables them to observe the approach of trains whilst drawing their attention to any associated signs or stop lights. b. An assessment of the safety benefits and disbenefits of providing pedestrian gates on the final approach to station pedestrian crossings. c. Research into the technical feasibility and safety benefit of providing an additional set of stop lights on the far side of the crossing from an approaching user to repeat the indication of the lights on the near side ('back-to-back' lights). d. Research into the most effective means of providing users with an active warning to alert them of the approach of a second train. This should encompass research into the effectiveness of visual displays and/or voice messages as a means of alerting users.		
Comment		
ORR has agreed with RSSB that they will commission this research. The findings will feed into a comprehensive review of the guidance that ORR is in the process of commissioning.		

RECOMMENDATION	5	Status: Amber = Open
Network Rail, to carry out the necessary research, tests and trials to inform a review its own designs and operating policies for station pedestrian crossings and as an input to the review of guidance to be undertaken by ORR in line with Recommendation 4.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	6	Status: Amber = Open
Network Rail to seek approval from ORR for the installation of fixed signage at station pedestrian crossings that cross more than one running line to remind users of the risk from a second train.		
Comment		
Network Rail has initially rejected the recommendation. ORR are considering the response.		

RECOMMENDATION	7	Status: Green 1 = Closed
Network Rail to expedite its programme for the installation of LED stop lights at all station pedestrian crossings that are currently equipped with miniature stop lights and to revise its Company Standards accordingly.		
Comment		
Network Rail has considered and carried out the recommendation. ORR has closed the recommendation.		

5 Annexes

ANNEX C Appendix 6

Recommendations made in 2007 that had an open or complete from the 2007 Annual Report

Equipment Type	Place	Time	Date	Incident
National Networks	Autumn Adhesion Investigation Pts 1, 2 & 3	06:30/ 19:07	25 & 30 November 2005	Review of adhesion-related incidents
RAIB Report No:	2006/25		**Published:**	8 January 2007

Summary
The immediate cause of the SPAD incidents that occurred at Esher on 25 November 2005 and Lewes on 30 November 2005 (which are the subject of Parts 1 and 2 of this investigation report) was poor adhesion between wheel and rail. Both trains involved had failed to stop within normally expected distances, despite the systems on the train performing in accordance with their specifications and the drivers correctly implementing the professional driving policy prevailing within the relevant Train Operating Company (TOC) at the time. Both trains had travelled a distance of approximately 3 km from the time that the driver had first applied the brake. Stopping distances under normal circumstances would have been less than 2 km. These two incidents occurred against a backdrop of an increase in the number of adhesion related SPAD incidents and a significant increase in the number of adhesion-related station overrun incidents on the national rail network during autumn 2005, as compared with autumn 2004.
Recommendations — **Twenty-five recommendations are made**

RECOMMENDATION	**2**	**Status: Green 2 = Completed**
Network Rail and South West Trains to review jointly the adequacy of their Control Room procedures for dealing with trains that have been involved in severe overrun incidents to ensure that it is explicitly established whether any allegation has been made about the involvement of the train braking system in the incident before a decision is made on whether to allow the train to remain in service. Depending on the outcome from the review, the procedures should be modified and changes implemented as necessary.		
Comment		
Network Rail and South West Trains have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	**3**	**Status: Green 2 = Completed**
South West Trains to ensure that a brake test is undertaken on Class 444 and Class 450 units as a precondition for allowing a train to proceed after any SPAD and after any incident where the stopping performance of the train has fallen significantly below a driver's expectations.		
Comment		
South West Trains has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Green 2 = Completed

Network Rail to:

- conduct a review of the approach used to assess the competence of new and existing signallers in their use of emergency equipment and amend it as necessary to ensure that the questions used probe a signaller's understanding of how they would use the emergency equipment provided;
- use the training simulator at Redhill to test signallers employed in the Sussex Route periodically on their response to rarely-experienced scenarios such as the need to stop all trains and specific trains in an emergency; and
- review and modify as appropriate their current practice on other routes to exploit the availability of simulators for testing signallers periodically on their response to rarely-experienced scenarios such as the need to stop all trains and specific trains in an emergency.

Comment

Network Rail has accepted the recommendation, and has carried it out.
ORR is considering whether to close the recommendation.

RECOMMENDATION	6	Status: Green 2 = Completed

Network Rail, Sussex and Southern Railway to jointly review, and modify as appropriate, their Control Room procedures governing the communication of incident details to ensure that they correctly identify the key information, including details of all staff involved and ensure that appropriate action is taken to promote the welfare of staff and the safety of the railway.
The review should consider the need to amend procedure C32 of the Network Rail Control Manual, and if appropriate arrange for the necessary amendments to be made and implemented.

Comment

Network Rail, Sussex and Southern Railway have accepted the recommendation, and have carried it out.
ORR is considering whether to close the recommendation.

RECOMMENDATION	7	Status: Green 2 = Completed

Train operators to:

- make modifications to multiple units already fitted with sanding equipment to permit application of sand in brake step 2 and above (or the equivalent of brake step 2 and above on multiple units fitted with step-less brake controllers) for the duration of the period when the WSP system is active on the leading vehicle;
- adjust, as appropriate, rolling stock maintenance activities during the autumn low adhesion period to include enhanced monitoring of sand hoppers to ensure that sand is always available; and
- review their maintenance polices and practices for sanding systems to check that they are targeted at ensuring that the system continues to deliver sand to the point where wheel meets rail.

Comment

Most train operators have accepted the recommendation, and have carried it out, although some responses remain outstanding.
ORR is considering whether to close the recommendation.

RECOMMENDATION	8	Status: Green 2 = Completed

Train operators to:

- modify as appropriate their instructions to drivers regarding the braking of trains equipped with a WSP system in low adhesion conditions to ensure that if the expected level of retardation is not achieved during the initial stage of braking, the optimum position of the brake controller is immediately selected to maximise braking efficiency. This may involve selecting a full service brake application or, where appropriate, an emergency brake application.
- brief any revised instructions to drivers.

Comment

Most train operators have accepted the recommendation, and have carried it out, although some responses remain outstanding.
ORR is considering whether to close the recommendation.

5 Annexes

RECOMMENDATION	9	Status: Green 2 = Completed
Train operators of multiple units operating in single unit formations to consider increasing the length of train consists during the autumn low adhesion season where reasonably practicable, e.g. • where rolling stock is available; • where platforms can accommodate longer trains; and • where, based on the train operator's review of low adhesion events and knowledge of problem areas for adhesion, there is a demonstrable benefit in so doing on specific routes and/or at specific times of day.		
Comment		
Most train operators have accepted the recommendation, and have carried it out, although some responses remain outstanding. ORR is considering whether to close the recommendation.		

RECOMMENDATION	14	Status: Amber = Open
RSSB to extend research and testing into how severe low adhesion conditions occur with particular reference to the phenomenon of micro layers of contamination on rail surfaces, invisible to the eye. The research will seek to establish the nature of the contaminant, how it reaches the rail and bonds with it, the circumstances under which the contaminant poses a particular threat to train braking (eg the factors that exacerbate its impact), the factors that determine how long it endures, possible methods for identifying its presence and methods for preventing its formation and dispersing it.		
Comment		
RSSB has accepted the recommendation and is carrying it out.		

RECOMMENDATION	15	Status: Amber = Open
Train operators to fit automatic sanding equipment to those multiple units of five cars or less that are not currently so equipped, unless they are specifically excluded from doing so by GM/RT2461.		
Comment		
Some train operators have accepted the recommendation, and have carried it out, but ORR is still awaiting responses from other TOC's. ORR is considering whether to close the recommendation.		

RECOMMENDATION	16	Status: Amber = Open
RSSB to lead research into ways of deriving quantitative criteria for braking performance under low adhesion conditions and the implications of each identified approach (including the potential impact on railway infrastructure). The research should include a consideration of the levels of adhesion against which performance (e.g. stopping distances or deceleration rates) should be demonstrated. The implications of adopting the approach proposed in the draft second issue of the high speed rolling stock TSI should be considered. The results from the research should be incorporated into the relevant RGS as appropriate and disseminated to those who are revising the high-speed rolling stock TSI.		
Comment		
RSSB has accepted the recommendation, and is carrying it out.		

RECOMMENDATION	17	Status: Amber = Open
RSSB to review the relevance of existing sanding parameters within GM/RT 2461 and amend, enhance or supplement them with additional guidance where appropriate. The review is to encompass: • implications (cost, benefits and disbenefits) of increasing the guide value of 2 kg/minute for maximum sanding rate (taking account of the trials undertaken during August 2006 by Southern Railway); • the current sanding initiation threshold (full service and emergency braking) and the effect of reducing it to Step 1 or equivalent value for trains equipped with stepless brake controllers; • the need for criteria covering minimum sanding duration; • the need for criteria on sanding at low speeds including the implications of permitting sanding until the train has come to a stand; and • identification of ways in which currently excluded vehicles (eg Classes 142-144, 153) can be equipped with sanders.		
Comment		
RSSB has accepted the recommendation, and is carrying it out.		

RECOMMENDATION	18	Status: Amber = Open
RSSB to carry out research in conjunction with Network Rail and train operators into the implications, (cost, benefits and disbenefits) of: • adopting enhanced sanding rates under emergency conditions above a defined speed threshold (either activated manually by the driver or automatically activated by the placing of the brake controller into the emergency position when WSP is active); • allowing leading wheel sanding for high speed emergency braking; • permitting units other than the leading unit to dispense sand under emergency conditions; and • methods of avoiding the problem of excessive sand causing failures to operate track circuits (e.g. use of different materials or additives).		
Comment		
RSSB has accepted the recommendation, and is carrying it out.		

RECOMMENDATION	19	Status: Green 1 = Closed
Train operators to ensure that until RGS GM/RT2461 has been reissued, clauses on sanding are contained within specifications for new rolling stock. TOCS should specify, as a minimum, the requirement for continuous sanding while WSP is active in Brake Step 2 (or equivalent for trains equipped with stepless brake controllers) and above and a sanding rate of 2 kg/minute.		
Comment		
Train operators have accepted the recommendation, and are carrying it out. ORR has closed the recommendation.		

RECOMMENDATION	20	Status: Amber = Open
Train operators to check the sand dispensing rate of each train within their fleets and ensure that it is set to the RGS GM/RT2461 guidance value of 2 kg/minute except where a higher value has been permitted.		
Comment		
Train operators have accepted the recommendation, and are carrying it out.		

5 Annexes

RECOMMENDATION	21	Status: Amber = Open
RSSB to establish a project to: • Measure the accuracy of existing WSP (Wheel Slide Protection) simulation rigs that could be used to support rolling stock approvals. This validation should include reference to records obtained from train data recorders following actual incidents and full-scale testing as appropriate. The latter should include a direct comparison between UIC (International Union of Railways) detergent test data and a simulation of the same. • Examine the feasibility of extending the capability of an existing WSP simulation tool in order to predict more accurately the behaviour of an entire train in low adhesion conditions (e.g. allowing for rail head conditioning, the effect of sanding and more than one vehicle). The results from the project should be used to inform the developing Euronorm on WSP equipment testing.		
Comment		
RSSB has accepted the recommendation, and is carrying it out.		

RECOMMENDATION	22	Status: Amber = Open
Subject to the successful development of the simulation tool described in Recommendation 15, RSSB to undertake a programme of modelling to evaluate the impact of different control strategies for minimising stopping distances under various low adhesion conditions. The simulation should specifically address potential alternative strategies for extreme circumstances including: • changing WSP (Wheel Slide Protection) control algorithms for the level of slip permitted from the current value of 17 - 20%; and • permitting different levels of slip on wheels on the same train to optimise overall braking during low adhesion conditions. All the simulations should be designed to evaluate the effect of different strategies on braking performance and rail head conditioning and should include simulations with sanding operative. The results from the programme should be shared with those responsible for drafting relevant highspeed and conventional TSIs (Technical Specification for Interoperability) for possible inclusion in new or revised versions of those documents.		
Comment		
RSSB has accepted the recommendation, and is carrying it out.		

RECOMMENDATION	23	Status: Amber = Open
RSSB to initiate a project to evaluate the costs and benefits of equipping multiple units operating over the British mainline network with magnetic track brakes for use in emergencies under low adhesion conditions. The project will: • Address and resolve the outstanding issues identified in Interfleet report ITLRT17544-001. • Subject to successful resolution of outstanding issues, specify and procure magnetic track brake (MTB) equipment and fit it to a small number of units. The units chosen should represent different traction types with different operating regimes and operate in different geographical areas. • Develop and implement trials of these units, incorporating in-service experience and specific comparative tests with a similar unit not equipped with MTB. The project will aim to determine whether MTBs are a cost effective solution for new-build rolling stock and/or retrofitting to existing rolling stock.		
Comment		
RSSB has accepted the recommendation, and is carrying it out.		

RECOMMENDATION	24	Status: Amber = Open
RSSB to establish a study into the potential uses of systems on modern rolling stock to: • automatically sample adhesion conditions, e.g. by the controlled braking/release of a single wheel-set on service trains (other than during train braking); • establish the profile, nature and distribution of low adhesion conditions on the national rail network currently and provide input to WSP simulation packages; and • improve intelligence about adhesion conditions in real time, e.g. use of wireless data transmission to feed details of low adhesion conditions encountered during braking to a monitoring system. The study should take into account operating experience with the Low Adhesion Warning System (LAWS) and consider the lessons learnt in relation to the development of a network wide solution for monitoring low adhesion conditions. The study should be developed in the context of the work currently being undertaken by RSSB in research project T540, 'Scoping and Development of the Adhesion Management System'. The output from this study must include consideration of how the information can be used by the railway industry including the need for signallers and drivers to be made aware of low adhesion conditions in real time.		
Comment		
RSSB has accepted the recommendation, and is carrying it out.		

RECOMMENDATION	25	Status: Amber = Open
Network Rail to review ERTMS (European Rail Traffic Management System) low adhesion assumptions in the light of the findings of this report and consider whether any changes are needed to ERTMS design or operating parameters in the light of the review.		
Comment		
Network Rail has accepted the recommendation, and is carrying it out.		

Equipment Type	Place	Time	Date	Incident
National Networks: Freight train & Class 66 Locomotive	Brentingby Junction, near Melton Mowbray	05:31	9 February 2009	Derailment
RAIB Report No:	01/2007		**Published:**	23 January 2007

Summary	
At 05:31 hrs on 9 February 2006, train 6Z41, the 05:17 hrs freight train, operated by EWS, from Mountsorrel, Leicestershire, to Barham, Suffolk, derailed at trap points at the end of the Up Goods Loop at Brentingby Junction, near Melton Mowbray. The derailment of the class 66 locomotive and the first three wagons occurred after the train passed signal 53 at the end of the Up Goods Loop at danger. No-one was injured as a result of the accident.	
Recommendations	**Ten recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
EWS should include napping within its fatigue management system and implement it as a fatigue counter-measure if the assessed risk of fatigue indicates that it is necessary.		
Comment		
EWS has accepted the recommendation, and has carried it out. In addition Freightliner and DRS have revised this area and taken similar actions. ORR is considering whether to close the recommendation.		

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RECOMMENDATION	2	Status: Green 2 = Completed
If the assessed risk of fatigue requires napping as a fatigue counter-measure, EWS should provide facilities so that naps may be taken at locations where drivers take breaks and build sufficient time into rosters for taking naps and recovery afterwards.		
Comment		
EWS has accepted the recommendation, and has carried it out. In addition Freightliner and DRS have revised this area and taken similar actions. ORR is considering whether to close the recommendation.		

RECOMMENDATION	3	Status: Green 1 = Closed
The RSSB should initiate research to investigate whether a technique to deliberately shorten a night's sleep when changing from day shift to night shift and following this by sleep in the afternoon could be a viable means of reducing the risk of fatigue during the subsequent nightshift.		
Comment		
RSSB has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	4	Status: Green 1 = Closed
The RSSB should investigate and if reasonably practicable instigate a change to Railway Group Standard GO/RT3251 so that screening for sleep disorders is required as part of the system of regular medical surveillance applied to train drivers and following incidents/accidents where fatigue has been identified as a possible causal or contributory factor.		
Comment		
RSSB has proposed and implemented an alternative action to that recommended by the RAIB, which meets the objectives of the RAIB. ORR has closed the recommendation.		

RECOMMENDATION	5	Status: Green 2 = Completed
EWS should produce simple, targeted guidance for train drivers that provides clear advice on how they should conduct their lifestyles outside work so that levels of alertness are adequate when at work. The guidance should include the specific issue of how drivers should prepare for a first night shift.		
Comment		
EWS has accepted the recommendation, and has carried it out. In addition Freightliner and DRS have carried out a similar briefing. ORR is considering whether to close the recommendation.		

RECOMMENDATION	6	Status: Green 2 = Completed
EWS should implement a system to rebrief at intervals the guidance issued as a result of Recommendation 5 above and include the families of drivers in the briefing if possible.		
Comment		
EWS has accepted the recommendation, and has carried it out. In addition Freightliner and DRS have carried out a similar briefing. ORR is considering whether to close the recommendation.		

RECOMMENDATION	7	Status: Green 1 = Closed
The RSSB should initiate research to investigate the practicalities of implementing personal responsibility statements and/or sleep contracts, and to investigate the benefits these could provide in reducing the risk of fatigue of persons working in the railway industry.		
Comment		
RSSB has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	8	Status: Amber = Open
EWS should implement a system where standard, simple questions are asked of drivers when being checked face to face for fitness for duty in order to identify cases of very long spells without sleep and alert managers to cases of particularly high levels of fatigue.		
Comment		
EWS has accepted the recommendation and is carrying it out.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 59 locomotive & 18 Hopper Wagons	Cricklewood Curve	02:25	31 January 2006	Derailment
RAIB Report No:	02/2007		**Published:**	23 January 2007

Summary	
On 31 January 2006 at 02:25 hrs a freight train was traversing the Cricklewood Curve in North London on its way from St. Pancras to Acton Yard. The linespeed on this part of the curve is 10 mph (16 km/h) and the train was travelling at 7.5 mph (12 km/h) when two of the wagons derailed. The derailed wagons overturned and started to slide down the embankment but were held by the couplings between them and the remainder of the train. One of the wagons was loaded with aggregate which discharged from the wagon down the bank. The other derailed wagon was empty. There were residential flats at the foot of the embankment, the residents of which were evacuated by the police as a precaution in case the derailed wagons moved further down the bank.	
Recommendations	**Six recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
Network Rail LNET (London North East Teritory) MP&I (Major Projects & Investment) should revise their systems for implementing the CDM (Construction Design and Management) regulations to minor works so as to ensure that information on the condition of the asset that might affect the safety of those who might be affected by the construction work is passed to the contractor in a manner which is clear, precise and in a form suitable for the users.		
Comment		
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR propose to close the recommendation, but will monitor ongoing progress through their normal inspection procedure.		

RECOMMENDATION	2	Status: Amber = Open
Network Rail LNET MP&I and the Network Rail LNE territory civil engineer should revise their internal procedures to ensure the following: • for division of responsibility: MP&I, in conjunction with the earthworks engineer, should establish for each project the responsibility for determining the need for, and the implementation of, monitoring of the track; • for internal Communication: all MP&I project engineers and project managers on all territories should be made aware of the procedures used to monitor the track during site works and when these procedures should be employed; and • for external Communication: MP&I should ensure that they communicate clearly the responsibilities for track monitoring, and any other matters that might affect safety of the line, to the track engineers and that this information is received and understood by them.		
Comment		
Network Rail LNET and MP&I have accepted the recommendation, and are carrying it out.		

5 Annexes

RECOMMENDATION	4	Status: Green 1 = Closed
Network Rail should revise the track inspection handbook associated with work instruction NR/WI/TRK/001 to refer to the cant deviation limits in NR/SP/TRK/001.		
Comment		
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR has closed the recommendation, despite the RAIB's concerns. The derailment at Scunthorpe on 25 January 2008 indicates that there is still an issue, and the RAIB has made further recommendations in this area.		

RECOMMENDATION	5	Status: Green 2 = Completed
Network Rail MP&I should improve the technical control of works undertaken by the minor works team to ensure that risk information provided by the designer of a scheme and any knowledge within Network Rail of risks inherent in the condition of the asset are properly taken into account.		
Comment		
Network Rail MP&I has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	6	Status: Green 2 = Completed
Network Rail should ensure that at all stages of a project there is an appropriate competent person to oversee it, and that if the competent person changes at any stage in the life of the project, an appropriate handover takes place.		
Comment		
Network Rail has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 66 locomotive and 35 loaded ballast wagons	Haymarket, Edinburgh	15:00	14 January 2006	Unauthorised train movement and subsequent derailment
RAIB Report No:	03/2007		**Published:**	30 January 2007

Summary
During engineering work on the railway between Haymarket East Junction and Curriehill on 14 January 2006, a train loaded with spent ballast left the section of line that was under engineers' possession without authority and ran onto a line open to other traffic. On reaching Haymarket East Junction it was diverted onto a line on which a passenger train was approaching in the opposite direction. The ballast train stopped in Haymarket station when the driver realised that he was travelling on the wrong line. The passenger train was stopped by the action of the signaller. Subsequently, during tests on the brakes of the ballast train, one wagon became derailed by one set of wheels. There were no injuries, and minor damage to a set of points.
Recommendations — **Three recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
The Rail Safety and Standards Board (RSSB), in conjunction with Railway Group members, should undertake an urgent revision of Rule Book modules T3 and T11 to provide clarity in the requirements for the protection of possessions. This should include: • clearer definition of the responsibilities of persons authorised to lift protection at possession limits; • emphasising the preference for placing protection on the approach to the last signal rather than clear of the points at the junction; and • stressing the importance of a minimum separation distance between protection and an open line when protection is placed clear of points.		
Comment		
RSSB has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
Heritage: Steam Locomotive	Grosmont on the North Yorkshire Moors Railway	10:10	16 April 2006	The blowback of a locomotive fire
RAIB Report No:	04/2007		**Published:**	31 January 2007

Summary
At around 10:10 hrs on 16 April 2006, locomotive 75029, hauling the 09:45 hrs passenger service from Grosmont to Pickering on the North Yorkshire Moors Railway, suffered a blowback of its fire approximately 1160 metres south of Grosmont station. The blowback filled part of the footplate with flame for between 4 and 10 seconds. The locomotive driver suffered minor burns.
Recommendations — **Nine recommendations are made**

RECOMMENDATION	3	Status: Green 2 = Completed
Steam Powered Services Limited should have in place procedures to ensure that when defining and agreeing outsourced works to be carried out, the scope of any provision for mechanical inspections is explicitly defined.		
Comment		
Steam Powered Services Limited has initialy rejected the recommendation. ORR are considering their response.		

5 Annexes

RECOMMENDATION	4	Status: Green 2 = Completed
NYMR and other operators of locomotives fitted with blastpipes or blastpipe bases welded to the saddle plate, should ensure that the maintenance procedures for those locomotives include NDT inspection of the welds at a periodicity determined by assessing the risk of failure prior to the next inspection.		
Comment		
NYMR has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	8	Status: Green 2 = Completed
NYMR should use steel smoke box blower feed pipes as recommended by ORR RSPG (Railway Safety Principles and Guidance) or, if copper is to be used, should put in place procedures to ensure that it is maintained in a fully annealed state.		
Comment		
NYMR has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	9	Status: Green 2 = Completed
RSSB should allow the HRA direct access to the NIR (National Incident Register) system, both to raise NIRs and receive them.		
Comment		
RSSB has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation		

Equipment Type	Place	Time	Date	Incident
National Networks: Locomotive 66056 & 21 HTA bogie hopper wagons	Waterside, East Ayrshire	03:19	21 January 2006	Derailment
RAIB Report No:	05/2007		**Published:**	31 January 2007

Summary	
Train 6C64 travelling from Chalmerston colliery to Ayr became derailed at low speed at 03:19 hrs on 21 January 2006. The train departed Chalmerston bound for Drax power station in Yorkshire and was partially derailed less than a mile into its journey on the section of single line owned by Scottish Coal. The train, comprising 21 loaded HTA bogie hopper wagons hauled by locomotive 66056, continued for 2¼ miles (3800 m) until being brought to a standstill at 03:29 hrs. The train was halted by the increasing drag experienced when the track disintegrated beneath the rear six wagons as it passed through the village of Patna.	
Recommendations	**Seven recommendations are made**

RECOMMENDATION	4	Status: Green 2 = Completed
EWS should review its internal quality assurance processes to ensure that the sign-off of safety critical reports is accompanied by a review of the content. The submission of photocopied data should be prohibited unless the summary sheet confirms that conditions have been checked and previous readings are fully replicated.		
Comment		
EWS has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	5	Status: Green 2 = Completed
EWS should enhance the level of information arising from inspection reports to provide quantative information and guidance for maintenance planning, for example: prioritisation of defects and timescales for non-urgent action.		
Comment		
EWS has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	6	Status: Green 2 = Completed
EWS should review its private-party activities nationally and take immediate steps to correct any situations where local inspection or maintenance arrangements have allowed infrastructure condition to fall below the applicable standards.		
Comment		
EWS has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
Heritage: Diesel locomotive	Ravenglass & Eskdale Railway	13:40	29 May 2006	Passenger Train Derailment
RAIB Report No:	07/2007		**Published:**	27 March 2007

Summary	
On 29 May 2006, a diesel locomotive hauled passenger train was travelling from Dalegarth to Ravenglass when the leading bogie of the sixth coach derailed at 13:40 hrs, on the exit from a left hand curve (known as Spout House Curve) located approximately 5.75 miles (9.2 km) from Ravenglass. The derailment took place at 10 -12 mph (16-19 km/h); there were no casualties and no significant damage to either the track or train. On 5 July 2006 at 10:45 hrs, another diesel locomotive hauled passenger train, travelling from Dalegarth to Ravenglass was passing through Millwood Bank, located approximately 1.5 miles (2.4 km) from Ravenglass, when the leading bogie of the fifth coach derailed while travelling at 15 - 18 mph (24 - 29 km/h). The derailed coach, which was different in design from the coach in the first accident, was empty (tare) at the time. There were no casualties and no significant damage to the track or the train.	
Recommendations	**Eight recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
Undertake a full fleet check to ensure that axlebox clearances are adequate to ensure free movement, carry out remedial work where necessary and mandate a requirement in maintenance documentation for periodic checks on these clearances to be made. An assessment should also be made of the safety benefits of introducing lubrication at the axlebox/horn guide interface and, where practicable, identified improvements should be implemented.		
Comment		
Ravenglass & Eskdale Railway has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

5 Annexes

RECOMMENDATION	3	Status: Amber = Open
Develop and bring into use, a rolling stock maintenance regime which is based on the assessment of hazards identified from both past experience and analysis of possible future failure modes. This assessment should include consideration of allowable tolerances in track condition. The revised documentation should identify critical dimensional parameters and component conditions to be checked at maintenance.		
Comment		
Ravenglass & Eskdale Railway has accepted the recommendation, and is carrying it out.		

RECOMMENDATION	5	Status: Green 2 = Completed
Review the effectiveness of the existing system for reporting track faults, prioritisation of repairs and the use of temporary speed restrictions. Any identified improvements should then be Implemented and the system formalised and mandated.		
Comment		
Ravenglass & Eskdale Railway has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	6	Status: Amber = Open
Establish a system for routine inspection of the track condition and establish track standards such that temporary speed restrictions and/or remedial works are effected as appropriate to mitigate the risk of derailment due to excessive sway.		
Comment		
Ravenglass & Eskdale Railway has accepted the recommendation, and is carrying it out.		

RECOMMENDATION	8	Status: Green 2 = Completed
Develop and implement means of ensuring that the body/bogie bolsters remain lubricated between maintenance checks.		
Comment		
Ravenglass & Eskdale Railway has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
Light Rail: Tram 1011	Long Millgate, Manchester	08:03	22 March 2006	Derailment
RAIB Report No:	08/2007		**Published:**	17 April 2007

Summary

At 08:03 hrs on Wednesday 22 March 2006, two wheelsets of tram 1011, operating the 07:42 hrs Bury to Altrincham service on the Manchester Metrolink system, became derailed as the tram was entering the street running section of the network at Long Millgate, near Victoria Station. The derailed wheels remained close to the track, and the tram stopped 44 m from the point of derailment.

Recommendations	**Four recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed

GMPTE (Greater Manchester Passenger Transport Executive) should ensure that a standard for Metrolink grooved rail track, including tolerances and limits for wear and gauge, is developed and implemented, and that there is guidance to inspection staff on appropriate levels and types of intervention corresponding to measured values and observations.

Comment

GMPTE has accepted the recommendation and has carried it out. The RAIB's investigation into the derailment at St Peter's Square on 29 June 2008 indicates that this recommendation has not been fully implemented.
ORR is considering whether to close the recommendation.

RECOMMENDATION	2	Status: Green 2 = Completed

GMPTE should ensure that the risk of transitions between flat-bottomed and grooved rail on curves on the system is assessed, and that they are repositioned on to straight track where this is warranted and it is reasonably practicable to do so.

Comment

GMPTE has accepted the recommendation and has carried it out.
ORR is considering whether to close the recommendation.

RECOMMENDATION	3	Status: Green 2 = Completed

The infrastructure maintainer of Manchester Metrolink and GMPTE should jointly introduce a system for initiating, planning and implementing track renewals on the Metrolink system.

Comment

GMPTE and Manchester Metrolink have accepted the recommendation and have carried it out. The RAIB's investigation into the derailment at St Peter's Square on 29 June 2008 indicates that this recommendation has not been fully implemented.
ORR is considering whether to close the recommendation.

RECOMMENDATION	4	Status: Green 2 = Completed

GMPTE should ensure that the infrastructure design change and quality control procedures for the Metrolink system are reviewed, to ensure the proper control of alterations made to the infrastructure during maintenance.

Comment

GMPTE has accepted the recommendation, and is carrying it out.
ORR is considering whether to close the recommendation.

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Equipment Type	Place	Time	Date	Incident
National Networks: Class 20 Locomotive	Bratts Blackhouse near Sizewell, Suffolk	09:21	22 May 2006	Freight train collision with road vehicle on level crossing
RAIB Report No:	09/2007		**Published:**	26 April 2007

Summary
On 22 May 2006, a freight train was conveying a discharged nuclear flask from Willesden Brent Yard to Sizewell via a freight only branch line that runs between Saxmundham and Sizewell. As the train crossed over Bratts Blackhouse No 1 User Worked Crossing (UWC) on the Sizewell Branch at 19 mph (30 km/h), it was in collision with a road vehicle travelling from the north side to one of the private dwellings on the south side of the crossing. The linespeed at this point is 25 mph (40 km/h). No one was injured in the collision. The train was not derailed but suffered some minor damage. The road vehicle also suffered some damage to its front and nearside front area.
Recommendations — **Eight recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
Network Rail should explain to the authorised users about the method of safe operation of Bratts Blackhouse No 1 UWC and their responsibilities and confirm this in writing. In addition, a notice to comply with GI/RT7012 Part K3 (Railway Group Standard Requirements for Level Crossings August 2004 Issue 1), should be sent to the authorised users and a copy displayed at the crossing. Network Rail should also take reasonably practicable steps to verify users' compliance with the method of safe operation.		
Comment		
Network Rail has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
Network Rail should audit the effectiveness and implementation of the maintenance and inspection measures mandated by Network Rail company standards for UWCs within the maintenance area that includes Bratts Blackhouse No 1 UWC and amend company practices to address deficiencies that come to light.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	3	Status: Green 2 = Completed
Network Rail should duplicate the stop sign on the north side to a position on the left hand side of the hinge gate post next to the 'Private' sign.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	5	Status: Green 2 = Completed
Network Rail should ensure that all track maintenance staff in the Anglia Area are briefed on the need to preserve evidence following an accident that has been notified to the RAIB.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	6	Status: Amber = Open
Network Rail should modify the relevant company standard(s) to require the provision of a telephone number of the signaller on all signs at UWC's and to implement a programme for ensuring compliance.		
Comment		
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR is in ongoing discussion with Network Rail about this recommendation.		

RECOMMENDATION	7	Status: Green 2 = Completed
Network Rail should ensure that the signaller at Saxmundham is made aware of power and UPS failures that will affect the operation of the voice recorder and other safety related equipment.		
Comment		
Network Rail have fitted a voice recorder with a back up auto fault to notify Engineering Support Centre (ESC). RAIB is satisfied with the alternative solution. ORR is considering whether to close the recommendation.		

RECOMMENDATION	8	Status: Amber = Open
Network Rail should install a sign at all UWCs indicating the name of the crossing to comply with Railway Safety Principles and Guidance, Section 2 part E, paragraph 287.		
Comment		
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR is in ongoing discussion with Network Rail about this recommendation.		

5 Annexes

Equipment Type	Place	Time	Date	Incident
National Networks: Class 365 EMU	Huntingdon	15:59	15 February 2006	Train door incident
RAIB Report No:	11/2007		**Published:**	30 April 2007

Summary

On Wednesday 15 February 2006 at 15:59 hrs a member of the public was standing on the edge of platform two at Huntingdon station seeing a passenger off when he became trapped by the edge of his coat in the leading door of the third vehicle of train 1P71, the 15:44 hrs Peterborough to Kings Cross West Anglia and Great Northern (WAGN) service. The Driver Only Operated (DOO) train departed and the person ran, then was pulled along the platform before falling down the gap between the train and platform edge. The person sustained serious injuries to his left arm and hand. The passenger that was accompanying the injured person prior to boarding the train had difficulty in following the correct procedure for stopping the train in the emergency. The person was not aware of the passenger emergency communication system on the train and ran towards the leading end to find and alert a member of staff, the Revenue Collection Officer (RCO). The train was brought to a stand when the RCO entered the cab and asked the driver to stop.

Recommendations	**Six recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
FCC (First Capital Connect) should ensure that driver training is reviewed with a view to increasing the emphasis placed on, and understanding of, aligning the unit correctly with the optimum viewing position of the monitor bank. The training should also identify what actions the driver should take if a person is observed to be in close proximity to the side of the train when the driver is taking power.		
Comment		
FCC has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Green 1 = Closed
Network Rail should ensure that the specification for replacement and new CCTV monitors require improved image contrast when viewed at an angle. The specified viewing angle should make a reasonable allowance for variation in a driver's stopping performance.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	3	Status: Amber = Open
HSBC should review the design of the Class 365 Unit door seal and the door control mechanism so as to reduce the door closing forces, with a view to reducing, so far as is reasonably practicable, the forces required to extract trapped objects. This review should take into account existing standards.		
Comment		
HSBC has considered and is carrying out the recommendation.		

RECOMMENDATION	4	Status: Green 2 = Completed
Network Rail should review the position of the cameras associated with the CCTV system for DOO at Huntingdon station with the objective of minimising the likelihood that a passenger standing in close proximity to the train will obstruct the driver's view of passengers standing at other doors.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	6	Status: Green 2 = Completed
FCC should review and if necessary modify the signage and controls for emergency exits at doors on the Class 365 Unit in view of the passenger reaction in this accident so as to ensure 'best' passenger reaction in an emergency is achieved. This review should be carried out in consultation with the Association of Train Operating Companies (ATOC) and with reference to the existing ATOC standard (Reference 13).		
Comment		
FCC has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
Metro: Manually propelled track trolley	Notting Hill Gate	01:40	24 May 2006	Runaway permanent way trolley
RAIB Report No:	12/2007		**Published:**	2 May 2007

Summary	
At 01:40 hrs on 24 May 2006, a manually propelled track trolley being used in connection with engineering works on the Circle Line of London Underground ran away down a gradient of 1 in 70 and collided with a stationary trolley of a similar type. A warning had been given and all staff were clear of the line. There were no injuries.	
Recommendations	**Nine recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
London Underground Ltd (LUL) should amend site management procedures to record the satisfactory completion of pre-use brake checks. This should consider predelivery and on-site physical inspections recognising that the current tests are only partially effective.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Green 1 = Closed
LUL should ensure that standards which relate to trolley design and acceptance require assessment and mitigation of risks associated with unauthorised modification of brake systems.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	3	Status: Green 1 = Closed
LUL should ensure that existing trolleys are assessed against the requirements of Recommendation 2.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	4	Status: Green 2 = Completed
LUL and Network Rail should conduct studies into trolley design with an objective of improving the ergonomic issues connected with propelling and braking hand trolleys.		
Comment		
LUL and Network Rail have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		

5 Annexes

RECOMMENDATION	5	Status: Green 1 = Closed
LUL together with Metronet and Tube Lines, should review and determine how to ensure Track Trolley Operators are aware of and know how to apply the controls to mitigate the risks relating to gradients when operating track trolleys.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	6	Status: Green 2 = Completed
LUL should ensure that the training of Track Trolley Operators includes the provision of appropriate reference material to carry on site.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	7	Status: Green 2 = Completed
LUL should revise the Site Person in Charge training and reference material to ensure that the SPIC's (Site Person in Charge) responsibilities for accident and incident reporting to LUL are defined.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	8	Status: Green 2 = Completed
LUL, Metronet and Tubelines, if applicable, should ensure that all contracts and subcontracts for work on the national railway network are aligned in respect of legal accident and incident reporting requirements.		
Comment		
LUL has accepted the recommendation, and is carrying it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 66 Locomotive	East Didsbury	01:58	27 August 2006	Locomotive runaway
RAIB Report No:	13/2007		**Published:**	24 May 2007

Summary

At around 01:58 hrs on 27 August 2006, unmanned locomotive 66 084 became uncoupled from the rear of train 6L22 as it approached Heald Green Station. The locomotive then ran back northwards towards Manchester in the direction from which the train had come for around 3 miles (4.8 km), through a worksite set up between Gatley and Mauldeth Road stations. Staff working on the track within the worksite at East Didsbury station were not positioned on the same line as the runaway locomotive and consequently no one was injured.

Recommendations	**Eight recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed

Operators of locomotives that require the manual operation of a cock to allow such locomotives to be safely dead-hauled in single piped trains, should investigate possible design changes to mitigate the risks associated with the cock not being correctly operated. Design changes should be implemented so far as is reasonably practicable.

Comment

TOCs have accepted the recommendation, and have carried it out.
ORR is considering whether to close the recommendation.

RECOMMENDATION	2	Status: Green 2 = Completed

EWS should review and modify its procedures as necessary to ensure that when a maintenance action is not carried out at the scheduled time, the vehicle concerned is not returned to traffic and operated as if the maintenance action had taken place.

Comment

EWS has accepted the recommendation, and has carried it out.
ORR is considering whether to close the recommendation.

RECOMMENDATION	3	Status: Green 2 = Completed

EWS should train all drivers in the correct use of AFT cocks, include an assessment procedure to confirm that driver's understanding and thereafter put in place a monitoring regime to confirm that AFT cocks are being operated correctly. This should apply to all relevant classes of locomotives and methods of operation.

Comment

EWS has accepted the recommendation, and has carried it out.
ORR is considering whether to close the recommendation.

RECOMMENDATION	4	Status: Green 2 = Completed

EWS should modify their ongoing driver assessment procedures to ensure that drivers maintain a full understanding of, and can correctly use, the AFT cock. This should apply to all relevant classes of locomotives and methods of operation.

Comment

EWS has accepted the recommendation, and has carried it out.
ORR is considering whether to close the recommendation.

5 Annexes

RECOMMENDATION	5	Status: Green 2 = Completed
EWS should ensure that all their procedures, documents and labels use the same terminology to describe the AFT cock. They should also assess whether moving away from the term, 'AFT cock' at this juncture will add to or reduce confusion, bearing in mind that if a design modification is implemented the AFT cock or a need to separately isolate it, may be obsolete.		
Comment		
EWS has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	6	Status: Green 2 = Completed
EWS should ensure that the AFT cock is clearly labelled with its name, function and open/closed positions.		
Comment		
EWS has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	7	Status: Green 2 = Completed
EWS should undertake a full and thorough review of their processes for conveying critical information to drivers in a consistent manner and for assessing that the information has been understood. The control of these processes should also be considered as should the ongoing access to the information and ongoing understanding by drivers. Reasonably practicable measures should be implemented.		
Comment		
EWS has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	8	Status: Green 2 = Completed
EWS should review and if necessary modify their procedures to ensure that there are more thorough processes in accordance with best practice for hazard identification, risk assessment and mitigation associated with the introduction of technical or operational change. These processes should be proportionate to the change and be carried out before the change is implemented.		
Comment		
EWS has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 66 Locomotive	Deal, Kent	14:46	29 July 2006	Fatal accident involving a train
RAIB Report No:	14/2007		**Published:**	29 May 2007

Summary	
At around 14:46 hrs on 29 July 2006 train 6Z25 arrived at signal EBZ41 on the down line between Dover Priory and Deal, near Deal station, Kent. Whilst checking that the brakes of one of the wagons were released the driver elected to enter between that wagon and the wagon behind with the objective of reaching the other side of the train. In doing so the driver came into simultaneous contact with the live conductor rail and the buffer of the wagon and was fatally injured.	
Recommendations	**Nine recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
RSSB, in consultation with affected parties, should review the Rule Book module DC with a view to incorporating a specific provision prohibiting railway staff from stepping over a live conductor rail whilst passing between coupled vehicles.		
Comment		
RSSB has accepted the recommendation, and is carrying it out.		

RECOMMENDATION	2	Status: Green 2 = Completed
Freight Operators in areas of DC electrification should provide specific training to all drivers and ground staff with the objective of ensuring that they are fully aware of safe working practices when attending trains on lines with conductor rails. This training should also reinforce the message that the conductor rail should always be treated as live within possessions.		
Comment		
FOC's have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	3	Status: Green 2 = Completed
EWS should take steps to control oil contamination of brake blocks during lubrication of the brake rigging so far as is reasonably practicable.		
Comment		
EWS has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Amber = Open
RSSB should develop a Railway Group Standard provision to prohibit the wearing of shorts by persons who may require to step over or walk close to live conductor rail that is not fitted with guard boarding as part of their duties. The specification for any long trousers that may be mandated should allow for comfort in hot weather and enhanced electrical resistance.		
Comment		
RSSB has proposed a change in the rules to its relevant industry committee, which has rejected the RAIB's recommendation. The RAIB is concerned over the response, and awaits the ORR's comment.		

5 Annexes

RECOMMENDATION	5	Status: Amber = Open
Recommendations to address staff behaviour in proximity to the conductor rail within possessions: RSSB, in consultation with affected parties, should review the Rule Book modules DC and G2 with a view to incorporating an explicit statement that staff should always consider the conductor rail inside possessions to be live unless they have been briefed by a person holding a valid conductor rail permit. This should be incorporated into the PTS (Personal Track Safety) hand book and the requirements for PTS training courses.		
Comment		
TOC's & FOC's have accepted the recommendation, and are carrying it out.		

RECOMMENDATION	6	Status: Green 3 = Closed with no actions taken
Recommendations to address staff behaviour in proximity to the conductor rail within possessions: Network Rail should review the reference to isolation limits in the WONs with a view to modifying its wording such that railway staff are not misled or confused as to its meaning.		
Comment		
Network Rail has rejected the recommendation and the ORR has closed it. The RAIB has no record of being consulted on this decision and believes the recommendation still remains valid.		

RECOMMENDATION	7	Status: Green 2 = Completed
Recommendations to address staff behaviour in proximity to the conductor rail within possessions: Network Rail and Freight Operators, should jointly establish a regime for ensuring that all train crew working to and from engineering possessions are given a suitable safety briefing. In areas of DC electrification this should always include a reminder that the conductor rail inside the possession should be treated as live at all times.		
Comment		
TOCs & FOCs have accepted the recommendation, and have carried it out		

RECOMMENDATION	8	Status: Amber = Open
RSSB, in consultation with affected parties, should review the Rule Book module DC with a view to clarifying the instructions to staff when attending a train in the absence of an insulating trough.		
Comment		
RSSB has accepted the recommendation, and is carrying it out.		

RECOMMENDATION	9	Status: Green 1 = Closed
Network Rail, in consultation with affected parties, should carry out a review of standards and specifications related to new and upgraded DC electrification systems with the objective of simplifying the arrangements for the taking of isolations, minimising the requirement for trackside staff, and permitting the extension of isolations to include a greater proportion of the associated engineering possessions (e.g. additional remote switching and remotely operated short circuit devices).		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

Equipment Type	Place	Time	Date	Incident
Light Rail: Tram 611	Starr Gate, Blackpool	12:00	30 May 2006	Derailment
RAIB Report No:	15/2007		**Published:**	29 May 2007

Summary	
At 12:00 hrs on 30 May 2006, tram 611 was traversing the curve on the loop at Starr Gate on Blackpool Tramway when it became derailed. Tram 611 was a prototype design and was undertaking a series of test runs. It was a two car articulated vehicle and had a running gear arrangement under the connecting centralarticulation module which included an independent rotating wheel design. Independently rotating wheels have been used on trams in service on other tramways; however, the type of running gear used on tram 611 was significantly different to that used on other trams operating in Blackpool. The derailment occurred at low speed and involved only the pair of wheels under the articulation module. They derailed to the centre of the curve. There were no injuries or significant damage.	
Recommendations	**Two recommendations are made**

RECOMMENDATION	**2** **Status:**	**Status: Green 2 = Completed**
BBC should take measures to control the pattern of wear on the rail gauge face throughout the Blackpool Tramway. This should include the definition of quantitative limits and guidance for the management of rail sidewear in the relevant track maintenance procedures and documentation.		
Comment		
BTS has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

5 Annexes

Equipment Type	Place	Time	Date	Incident
National Networks: Class 66 locomotive	Crofton Old Station No.1 Level Crossing, West Yorkshire	12:45/ 09:45	1 & 18 May 2006	Two near misses, dated 1 and 18 May 2006
RAIB Report No:	16/2007		**Published:**	29 May 2007

Summary	
Incident 1: At around 12:45 hrs on 1 May 2006, Class 66 locomotive 66508, running light and forming train 0D52 from Midland Road to Sudforth Lane, passed over Crofton Old Station No.1 level crossing whilst the crossing gates were open to the road. The crossing gates had been open for approximately two minutes prior to the arrival of train 0D52. A car had used the crossing around a minute prior to the train passing over the crossing. Incident 2: At around 09:45 hrs on 18 May 2006, Class 155 diesel multiple unit (DMU) 155345, forming train 2F65 from Wakefield Kirkgate to Knottingley, passed over Crofton Old Station No.1 level crossing whilst the down line side crossing gate was open to the road. At the time of the train's passage over the crossing, the crossing keeper was attempting to close the gates to the road.	
Recommendations	**Six recommendations are made**

RECOMMENDATION	1	Status: Green 1 = Closed
Network Rail should provide interlocking between the gates and all protecting signals at Crofton Old Station No.1 level crossing. This should ensure that the protecting signals are not able to indicate a proceed aspect to trains when the gates are not fully closed and locked to the road. A non-standard version of interlocking has already been implemented. Risk assessment should be undertaken to ensure that any residual risk which remains following fitment, including from sources of human error, is mitigated so far as is reasonably practicable.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
Network Rail should undertake a risk assessment on all staffed level crossings that have no gate to signal interlocking safeguards to ensure that the risks from human errors are considered and are mitigated so far as is reasonably practicable.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	3	Status: Green 1 = Closed
Network Rail should review operational level crossing standards relating to staffed level crossings, or those which are UWC temporarily staffed, where the safe system of operation relies solely upon the correct following of procedures. Such standards should enforce assessment of the risk from errors in the following of correct procedures.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	4	Status: Green 1 = Closed
ORR should have processes in place to ensure that when issuing level crossing orders, any supporting risk assessments are suitable and sufficient.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	5	Status: Green 1 = Closed
ORR should have processes in place to ensure that the requirements within level crossing orders have been implemented, and action when necessary is taken to ensure compliance.		
Comment		
ORR has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	6	Status: Green 1 = Closed
Network Rail should assess the extent and review the practice of 'quick swings' on manually operated crossings where the crossing gates are not interlocked to the signalling to ensure either that the practice is banned or that risks are reasonably mitigated.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

Equipment Type	Place	Time	Date	Incident
Light Rail: TMM trams 09 & 10	Soho Benson Road, Midland Metro	11:51	19 December 2006	Tram Collision
RAIB Report No:	17/2007		**Published:**	7 June 2007

Summary	
At 11:51 hrs on 19 December 2006 TMM trams 09 and 10, both returning from Wolverhampton St. Georges to Birmingham Snow Hill, were involved in a collision near Soho Benson Road tram stop.	
Recommendations	**Three recommendations are made**

RECOMMENDATION	1	Status: Green 1 = Closed
TMM (Transport Midland Metro) should: (i) modify the design of the tram sunblinds to ensure that, when deployed, they remain in position during tram operation; (ii) amend the maintenance regime to ensure that sunblind mechanisms remain fit for purpose over their working lives; and (iii) amend their procedures to ensure that fleet checks are carried out to a standard sufficient to correctly identify faults.		
Comment		
TMM has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	2	Status: Green 1 = Closed
TMM should amend their procedure for tram failure to require the use of hazard warning lights immediately a tram is causing an obstruction.		
Comment		
TMM has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

5 Annexes

Equipment Type	Place	Time	Date	Incident
Metro: District Line D stock	High Street Kensington	23:09	29 April 2006	Unauthorised train movement
RAIB Report No:	19/2007		**Published:**	21 June 2007

Summary
At 23:09 hrs on 29 April, District Line train 73 left Earls Court with approximately 150 passengers on board en route for High Street Kensington. On the approach to High Street Kensington the Train Operator realised that the wrong route had been set and stopped the train. A wrong direction move (WDM) was authorised to reverse the train a short distance so that the route could be reset. After considerable delay, when the train reversed it did not stop at the authorised limit; shortly after it was halted by the discharge of traction current. After several minutes the traction current was recharged; the train was then authorised by the Service Controller to travel to High Street Kensington where it terminated 67 minutes late.
Recommendations — **Fourteen recommendations are made**

RECOMMENDATION	5	Status: Green 1 = Closed
LUL should review procedures for maintaining emergency equipment in a state of readiness and amend them as necessary.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	6	Status: Green 1 = Closed
LUL should introduce procedures to ensure that staff are advised where emergency equipment such as station train radio, station radio and portable phones may be expected to work and where not.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	8	Status: Green 2 = Completed
LUL should ensure the instructions necessary for undertaking safety critical communications detailed within the new Rule Book are supported by training, familiarisation and a system of regular monitoring to confirm compliance with the instructions.		
Comment		
LUL has accepted the recommendation and are carrying it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	9	Status: Green 2 = Completed
LUL should review the instructions for undertaking WDMs to ensure that it contains no requirements capable of misinterpretation and that the WDM form contains information that will remind staff of key procedures when carrying out the move.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	13	Status: Green 2 = Completed
LUL should introduce procedures so that serious incidents of radio equipment failure or poor communication links are fully investigated. This should include full functional testing of the equipment involved.		
Comment		
LUL has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	14	Status: Green 2 = Completed
LUL should review the capability, disciplines and capacity of the Earls Court Control Room for the control of the District Line in times of normal and disrupted operations. The review should include the time necessary for a disciplined application of working procedures.		
Comment		
LUL has accepted the recommendation, and has carried it out. The reaction to a signal passed at danger at Hanger Lane on 27 March 2009 indicates that there may still be issues with this Control Room. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
Heritage: Class 117 DMU	Ropley (Mid-Hants Railway)	11:15	25 July 2006	Derailment
RAIB Report No:	20/2007		**Published:**	21 June 2007

Summary	
At approximately 11:15 hrs on Tuesday 25 July 2006, the leading bogie of the 10:50 hrs Mid Hants Railway (MHR) service from Alton to Alresford derailed on No.4 points approaching Ropley station. The derailed bogie followed a path midway between the routes to platforms 1 and 2, while the second bogie remained on the track, but followed the route towards platform 1. An instructor who was in the cab with the driver applied the emergency brake and the train stopped within 20 metres of the point where the front bogie derailed.	
Recommendations	**Six recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
MHRPLC (The Mid Hants Railway plc) should ensure that existing plans for the provision of train detection on No.4 points at Ropley are implemented without further delay.		
Comment		
The MHRPLC has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
The MHRPLC should ensure that if staff other than signalmen are to be involved in receiving tokens from or handing tokens to drivers at any station: a. their use should be planned; b. the specific individual undertaking the role should be identified within the relevant operating notice; c. they should always work under the supervision of the signalman; and d. they should be competent to perform the role.		
Comment		
The MHRPLC has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

5 Annexes

RECOMMENDATION	3	Status: Green 2 = Completed
The MHRPLC should make explicit in its procedures that staff who are to be subject to drugs and alcohol screening do not leave MHR premises until the screening has been undertaken.		
Comment		
The MHRPLC has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Green 2 = Completed
The MHRPLC should conduct a review of its safety management system to identify non-compliances and develop/implement actions plans to resolve them.		
Comment		
The MHRPLC has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	5	Status: Green 2 = Completed
The MHRPLC should provide train detection on the points at the north end of Medstead station.		
Comment		
The MHRPLC has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
Light Rail: Tram No.10	Seaton Tramway	12:55	18 March 2007	Derailment
RAIB Report No:	21/2007		**Published:**	3 July 2007

Summary	
On 18 March 2007 at 12:55 hrs tram No 10 was approaching Seaton station on the Seaton Tramway, when it derailed at the points at the entry to the station. There were no casualties. The derailment was probably caused by persons unknown placing an object in the points. The RAIB has made two recommendations with regard to modifying the operation of points on the Seaton Tramway.	
Recommendations	**Two recommendations are made**

RECOMMENDATION	1	Status: Green 1 = Closed
The Seaton Tramway should replace the weighted lever at the entry to Seaton station with a point lever that is capable of being locked when not in use, in order to prevent it from being used to move the points without authority. The points could be operated from the lever via a slotted joint, and be spring loaded, so that operational flexibility is not lost.		
Comment		
The Seaton Tramway has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
The Seaton Tramway should implement, so far as is reasonably practicable, the provision of visual indicators that show to drivers whether sprung and weighted points on the system that are used by trams carrying passengers are correctly set for the normal route.		
Comment		
The Seaton Tramway has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 47 Locomotive	Dagenham Dock	12:22	17 July 2006	Fatal accident to Shunter
RAIB Report No:	23/2007		**Published:**	12 July 2007

Summary	
At 12:22 hrs on 17 July 2006, a 42-year-old shunter, employed by Freightliner Heavy Haul Limited (Freightliner), was crushed between a locomotive and a wagon during a shunting move at Dagenham Dock own yard. There were no immediate witnesses.	
Recommendations	**Seven recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
Freightliner should review the management of its infrastructure to ensure that risk factors identified in the local working instructions are recorded and assessed by trained personnel. The process should include follow-through checks to an agreed timescale to ensure that remedial action has been taken, and should provide a mechanism to elevate the issue to senior managers if compliance is not achieved. The local working arrangements should be changed where necessary.		
Comment		
Freightliner has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
Freightliner should review the method of working at Dagenham and similar facilities to ensure that wagons are loaded from the points end wherever possible. Wagons could then easily be detached if there were not enough containers for a full train, and the number of shunting movements reduced. The local working arrangements should be changed where necessary.		
Comment		
Freightliner has responded to ORR, and the RAIB has commented on the response. ORR is in ongoing discussion with Network Rail about this recommendation.		

RECOMMENDATION	3	Status: Green 2 = Completed
Freightliner should designate safe walking routes between frequently used parts of its yards. This includes marking or signing any hazards, and should include an instruction not to use walkways with substandard clearances where moving trains are present.		
Comment		
Freightliner has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Green 2 = Completed
Freightliner should review its methods for checking and enforcing compliance with the Rule Book during shunting activities, in particular those relating to the proximity of staff to moving trains, the control of locomotives and the use of correct radio procedure.		
Comment		
Freightliner has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

5 Annexes

RECOMMENDATION	5	Status: Green 2 = Completed
Freightliner should review and enhance the training given to new staff and ensure that it is overseen by independent assessors.		
Comment		
Freightliner has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	6	Status: Green 2 = Completed
Freightliner should re-brief staff on the importance of being in a position of safety before giving instructions for a driver to move a locomotive or train.		
Comment		
Freightliner has accepted the recommendation and taken action to carry it out. ORR are reviewing this action with Freightliner.		

RECOMMENDATION	7	Status: Green 2 = Completed
Freightliner should re-brief staff on wearing headgear that provides protection from impact and excessive exposure to the sun.		
Comment		
Freightliner has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 66 Locomotive	Maltby North	03:00	28 June 2006	Derailment of freight train
RAIB Report No:	24/2007		**Published:**	18 July 2007

Summary	
On 28 June 2006 train 6C51, a Freightliner Heavy Haul coal train from Redcar to West Burton, was traversing the facing turnout in the crossover (points number 31B) from the single South Yorkshire Joint Line to the loop at Maltby North when three of the wagons became derailed. The derailed wagons remained upright and did not spill their loads. The track was damaged for a distance of 80 m. The train was travelling at 17 mph (27 km/h) at the time of the derailment and was quickly brought to a halt by the automatic air brake. Nobody was injured in the accident.	
Recommendations	**Four recommendations are made**

RECOMMENDATION	2	Status: Green 3 = Closed with no actions taken
Network Rail should find out whether there are other similar installations where time of operation locking is specified but not implemented. Based on this, Network Rail should implement appropriate control measures to control the risk of a similar incident occurring at these locations.		
Comment		
Network Rail has demonstrated that implementation of the recommendation would not produce a proportinate reduction in risk. ORR has closed the recommendation without it being implemented.		

RECOMMENDATION	4	Status: Green 2 = Completed
Network Rail should alter the design of the interlocking at Maltby so that movement of lever 31 positively destroys detection on the points until they have moved to the new position.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Plasser & Theurer 08 series tamper & Ballast Regulator	Trooperslane, near Carrickfergus	09:17	23 April 2006	Derailment
RAIB Report No:	25/2007		**Published:**	18 July 2007

Summary	
On Sunday 23 April 2006, a Northern Ireland Railways (NIR) engineering train, head code 1C93 departed York Road depot in Belfast on the down Larne line en route to a planned possession at Whitehead. The train consisted of a Plasser & Theurer 08 series tamper towing a Plasser & Theurer USP Type 3000 ballast regulator. At approximately 09:17 hrs whilst travelling at 33 mph (54 km/h), the train traveled over Trooperslane Manually Controlled Barrier (MCB) crossing located immediately prior to Trooperslane station. The torque arm of the ballast regulator, which had become partially detached, hit the road surface panels of the crossing, causing the derailment of the ballast regulator. The tamper did not derail but suffered major damage during the incident. The ballast regulator had just emerged from a 3-month maintenance program which also included some refurbishment at York Road depot. The incident journey was its first operational use since that work had been completed.	
Recommendations	**Eight recommendations are made**

RECOMMENDATION	1	Status: Green 1 = Closed
NIR should review its maintenance procedures for OTP (On Track Plant) to identify the specific risks for each type of plant, and ensure that such risks are addressed in the relevant VMI (Vehicle Maintenance Inspection).		
Comment		
NIR are considering the recommendation. ORR has closed the recommendation.		

5 Annexes

Equipment Type	Place	Time	Date	Incident
National Networks: Class 360 EMU	Manor Park	09:23	19 March 2006	Possesion irregularity, train struck
RAIB Report No:	26/2007		**Published:**	25 July 2007

Summary
At 09:23 hrs on Sunday 19 March 2006, train 1Y06, the 09:02 hrs London Liverpool Street to Ipswich service, struck two wheelbarrows as it approached Manor Park station at over 80 mph under clear signals. The staff on the track with the wheelbarrows had been able to jump clear, but two members of staff were injured.

Recommendations	**Three recommendations are made**

RECOMMENDATION	1	Status: Amber = Open

(a) Network Rail should: Review their possession planning principles and formulate criteria for limiting the complexity of work sites within a possession. This is to aid compliance with Rule T3 10.7 which requires that COSSs sign form RT3199 personally.

(b) Network Rail should: Undertake a review of the risks/benefits associated with long work sites covering different items of work compared to multiple short work sites unless those items of work are less than 300 m apart.

(c) Network Rail should: Review, and implement changes as necessary in, procedures to ensure that contractors are aware of major changes to planned possessions and that a record of this communication is maintained.

Comment

Network Rail has considered and is carrying out the recommendation.

RECOMMENDATION	2	Status: Green 1 = Closed

(a) Kier Rail should: Introduce systems to ensure that any changes to planned possessions are identified by systematic review of Network Rail planning documents, and are identified to all staff involved in the planning and mobilisation of the work.

(b) Kier Rail should: Introduce formal controls over the handling of changes to possessions and work sites so that the changes can be tracked, and so that it is clear that all involved have been correctly informed.

(c) Kier Rail should: Revise their RIMINI plan design to highlight key information such as the possession and site location and times, and to remove superfluous information;

(d) Kier Rail should: Revise their document distribution system to allow COSSs sufficient time to read RIMINI plans thoroughly before they start shifts.

(e) Kier Rail should: Revise their contract supervision systems to ensure that COSSs are appropriately briefed by their supervisors before they start work, and that the contract supervisor and the COSS have a clear understanding of the work to be carried out, its time and location.

Comment

Kier Rail has accepted the recommendation, and has carried it out.
ORR has closed the recommendation.

RECOMMENDATION	3	Status: Amber = Open

(a) Network Rail should: Review the possession planning system to ensure that any changes in possessions reflect back into the planned work sites that are recorded in the system.

(b) Network Rail should: review the procedures for the storage of archived data, particularly any information associated with an incident which may be required to support a subsequent investigation, whether internally or by a statutory body.

Comment

Network Rail has considered and is carrying out the recommendation.

Equipment Type	Place	Time	Date	Incident
National Networks: Class 377 EMU	Signal T172, Purley Station	11:03	18 August 2006	Signal Passed at Danger (SPAD)
RAIB Report No:	27/2007		**Published:**	8 August 2007

Summary

On 18 August 2006 a freight train conveying empty wagons from Purley yard to Acton yard passed signal T172 at danger by 35 m (38.27 yards) following a shunting move at Purley station. The freight train was stopped following a Train Protection Warning System (TPWS) intervention. The driver immediately reset the equipment without speaking to the signaler and continued his journey towards Acton yard. The freight train was finally stopped by the driver at signal T160 at Purley Oaks station,which had been changed to show a red aspect by the signaller at Three Bridges Area Signalling Centre (ASC).

Recommendations	**Five recommendations are made**

RECOMMENDATION	1	Status: Green 1 = Closed

EWS should install a specific stop marker 26 m (28.43 yards) on the approach to signal T172 on platform 4 at Purley station to mark the point at which the driver of a freight train should stop his front cab when propelling from Purley yard; or in consultation with Network Rail, EWS should prohibit the use of platform 4 by freight trains exiting from the yard. In both cases above, a revised MOW (Method of Working) for drivers, ground staff and signallers should be produced by EWS, in conjunction with Network Rail, for all train shunting movements at Purley. EWS should also ensure that the route knowledge of all relevant drivers includes an awareness of the signalling arrangements and any associated stop markers at Purley.

Comment

EWS has accepted the recommendation, and has carried it out.
ORR has closed the recommendation.

RECOMMENDATION	2	Status: Green 2 = Completed

EWS should deliver a specific TPWS training module for all drivers and assessors; new and experienced. This should include the correct procedures in the case of TPWS intervention.

Comment

EWS have accepted the recommendation, and have carried it out.
ORR is considering whether to close the recommendation.

RECOMMENDATION	3	Status: Green 2 = Completed

EWS should put in place a company process for the initiating, checking, authorising, issuing and briefing of local method of work instructions.

Comment

EWS have accepted the recommendation, and have carried it out.
ORR is considering whether to close the recommendation.

RECOMMENDATION	4	Status: Green 2 = Completed

RSSB should make a Proposal, in accordance with the Railway Group Standards Code, to amend Railway Group Standards as appropriate to:

- mandate that in-cab TPWS should specifically identify a TPWS activation associated with a SPAD, (if reasonably practicable); and
- prevent the use of the driver's reverser key to reset TPWS once activated.

Comment

EWS have accepted the recommendation, and have carried it out.
ORR is considering whether to close the recommendation.

5 Annexes

RECOMMENDATION	5	Status: Green 2 = Completed
Subject to the retention of arrangements for shunting into platforms 4 and 5, EWS should review the method of working instructions for ground staff in order to eliminate the requirement for staff to cross over a live conductor rail.		
Comment		
EWS has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
Heritage: Steam locomotive number 62005	Pickering Station on the North Yorkshire Moors Railway	15:24	5 May 2007	Locomotive collision with Carriages
RAIB Report No:	29/2007		**Published:**	8 August 2007

Summary	
On 5 May 2007 at approximately 15:24 hrs a former British Railways (BR) steam locomotive, number 62005, in the process of running round its train at Pickering station on the North Yorkshire Moors Railway (NYMR), entered the platform line from which it had come, and collided with the carriages it had left there. The collision was caused by the driver of the locomotive becoming distracted, and not changing the points before giving the fireman permission to drive the locomotive across them. The RAIB has made two recommendations to modify the operation of points at the headshunt at Pickering, and one recommendation concerning actions after an accident.	
Recommendations	**Two recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
The NYMR should immediately mandate that the person who operates the hand points at Pickering south should remain at the points after operating them, and should only call a locomotive past them when the ground signal clears, after again checking the lie of the points; or the NYMR should install a system at Pickering south that provides an indication to the train crew in the cab as to the lie of the points.		
Comment		
The NYMR has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Two self-propelled track maintenance machines	Badminton	22:54	31 October 2006	Collision between two track maintenance machines
RAIB Report No:	30/2007		**Published:**	22 August 2007

Summary
At about 22:54 hrs on Tuesday 31 October 2006 two self-propelled track maintenance machines, a tamper and a ballast regulator, collided near the site of the former station at Badminton, Gloucestershire. The collision occurred on the up line of the railway between Bristol Parkway and Swindon stations, on a section of line that was closed to normal traffic for track renewal work. The tamper was travelling at about 35 mph (56 km/h), and the ballast regulator was stationary. All four people on board the machines, the drivers and two machine operators, were injured, two of them seriously.
Recommendations — **Four recommendations are made**

RECOMMENDATION	1	Status: Green 1 = Closed
RSSB should make a proposal, in accordance with the Railway Group Standards Code, to amend Module T3 of the Rule Book to require work sites to be kept as short as possible.		
Comment		
This recommendation was redirected to Network Rail who has responded to ORR, the RAIB has commented on the response. ORR has closed the recommendation.		

RECOMMENDATION	3	Status: Green 2 = Completed
RSSB should make a proposal, in accordance with the Railway Group Standards Code, to amend Module T11 of the Rule Book to require that on-track machines are operated in tandem/multiple within possessions and work sites where it is practicable to do so.		
Comment		
Network Rail has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Green 1 = Closed
Operators and suppliers of on-track machines should assess the hazards to staff working in them from contact with sharp edges and corners, and take appropriate action to reduce the risk of injury.		
Comment		
Colas Rail and Plasser have accepted the recommendation and have carried it out. ORR has closed the recommendation.		

5 Annexes

Equipment Type	Place	Time	Date	Incident
National Networks: Train 1D17 Class 222 Meridian unit	Desborough	11:34	10 June 2007	Passenger door open on a moving train
RAIB Report No:	31/2007		**Published:**	30 August 2007

Summary

At 11:34 hrs on Saturday 10 June 2006, a passenger on train 1D17, the 10:30 hrs London St Pancras to Sheffield service, reported to on-board staff that an exterior door was open in the first class coach (vehicle 60249) while the train was moving. The train was formed of a class 222 Meridian unit, number 222 009. The door became unlocked and able to open as result of a locking fault which occurred at 10:52 hrs when the train stopped at Luton station (30 miles 19 chains). The door came open at 11:31 hrs, two minutes after departing from Kettering station (72 miles 1 chain) while the train was travelling at 79 mph (127 km/h). There was no obvious indication – such as a visual or audible alarm – to the on-board staff of the locking fault at the station stop at Luton or afterwards. To the driver, the indications in the cab, when the door opened north of Kettering, were ambiguous. The train travelled for about five minutes with the door open, and it was only secured closed after the driver finally brought the train to a stand. Following this, the train went forward to Market Harborough (82 miles 74 chains) where the service was terminated and the passengers detrained. There were no injuries or material damage as a result of the incident.

Recommendations	**Nine recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed

HSBC Rail (UK) Limited and operators of class 222 trains (as appropriate) should review, in conjunction with Bombardier Transportation UK and Faiveley Transport, the door control algorithm and implement any changes necessary to ensure that:

- when door locking is required, the falling latch engages with the locking hook in all normal and degraded operating scenarios; and
- following the identification of a locking fault, real or otherwise, the motor is controlled so that the door is not left in an unrestrained condition.

Comment

HSBC Rail (UK) has accepted the recommendation and has carried it out.
ORR is considering whether to close the recommendation.

RECOMMENDATION	2	Status: Green 2 = Completed

Bombardier Transportation UK, Faiveley Transport and operators of class 222 trains (as appropriate) should review, in the light of the investigation findings, their processes for software specification, development, upgrading and verification. They should implement any changes necessary to ensure they identify and manage the risks due to performance errors occurring during fault conditions.

Comment

Bombardier Transportation UK, Faiveley Transport and operators of class 222 trains have considered and are carrying out the recommendation.
ORR is considering whether to close the recommendation.

RECOMMENDATION	3	Status: Amber = Open

Bombardier Transportation UK and Faiveley Transport (as appropriate) should require their supplier Schaltbau to review and, if necessary, upgrade its manufacturing process and switch design in the light of the evidence presented in this report with the objective of minimising the risk of foreign bodies being present.

Comment

Bombardier Transportation UK and Faiveley Transport have considered and are carrying out the recommendation.

RECOMMENDATION	4	Status: Green 2 = Completed
HSBC Rail (UK) Limited, Bombardier Transportation UK and operators of class 222 trains (as appropriate), should review fault alarms and handling on class 222 units and implement any changes necessary to ensure that on-board staff are adequately warned and able to take the appropriate action (for instance, operation of the out-of-service lock or stopping the train) in the event of a door system failure. This should include the need for: • the train manager to be aware of door locking faults before authorising train departure; and • the driver to be aware of any door-related fault which may put the safety of the train 'in danger'.		
Comment		
HSBC Rail (UK) Limited, Bombardier Transportation UK and operators of class 222 trains has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	5	Status: Amber = Open
HSBC Rail (UK) Limited and operators of class 222 trains (as appropriate) should review the design of the 'pass comm/door activated' indication light and the two conditions requiring it to illuminate. If necessary, improvements should be made to the general design of indications on class 222 trains to ensure that the driver is clearly aware of which condition has occurred.		
Comment		
HSBC Rail (UK) Limited, Bombardier Transportation UK and operators of class 222 trains have considered and are carrying out the recommendation.		

RECOMMENDATION	6	Status: Amber = Open
HSBC Rail (UK) Limited and operators of class 222 trains (as appropriate) should review the ergonomics of the 'door close/locked' light to determine whether its conspicuity could be improved and therefore be more likely to be observed by drivers if a door opens when the train is moving.		
Comment		
HSBC Rail (UK) Limited and operators of class 222 trains have considered and are carrying out the recommendation.		

RECOMMENDATION	7	Status: Green 2 = Completed
Operators of class 222 trains should review the content of training courses and the assessment of drivers, train managers and customer hosts in the practical application of procedures relating to unexpected incidents that may occur while trains are running in service. This should include ensuring that on-board staff members have an adequate understanding of their roles and responsibilities, particularly with regard to the use of the emergency brake override (and where the train should be brought to a stand), the operation of the passenger communication alarm system, and the use of the TMS and other sources of fault and event indication.		
Comment		
Operators of class 222 trains has have considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	8	Status: Amber = Open
HSBC Rail (UK) Limited and operators of class 222 trains (as appropriate) should review the ergonomics of the PCA emergency brake handle and, if necessary, make improvements to ensure that, when either passengers or on-board staff attempt to use it, it will successfully operate.		
Comment		
HSBC Rail (UK) Limited and operators of class 222 trains have considered and are carrying out the recommendation.		

5 Annexes

RECOMMENDATION	9	Status: Green 2 = Completed
RSSB should make a Proposal, in accordance with the Railway Group Standards Code, to clarify the various requirements of the Rule Book relating to PCA and power operated doors to ensure they minimise the duration of any hazard affecting the safety of a train. This should include conditions for the use of the emergency brake override.		
Comment		
RSSB has considered and is carrying out the recommendation. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
Heritage: Steam locomotive 'Wroxham Broad' and 7 carriages	Fisherground (Ravenglass & Eskdale Railway)	19:00	12 May 2007	Derailment
RAIB Report No:	32/2007		**Published:**	30 August 2007

Summary	
On 12 May 2007, a steam locomotive hauled passenger train, fully laden with passengers, was travelling from Dalegarth to Ravenglass when the leading wheelset of the trailing bogie on the third coach derailed at Hollin How near Fisherground. The derailment occurred while the train was travelling at between 5 and 7 mph (8 and 11 km/h). There were no passenger injuries or significant damage to the train or the track.	
Recommendations	**Two recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
Review and identify safety critical elements of engineering work on their bogies, including the re-fitting of compensating bars, and implement work procedures which include: • a primary check by the person undertaking the work; and • a secondary independent check signed off by a competent R&ER person to ensure that any problems are detected before entering service.		
Comment		
Ravenglass & Eskdale Railway has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Amber = Open
Review their safety management system and operational procedures to identify if there are other areas where safety critical maintenance or design work is undertaken, or decisions are made, which should be subject to independent checking, and implement appropriate changes to procedures.		
Comment		
Ravenglass & Eskdale Railway have accepted the recommendation, and are carrying it out.		

Equipment Type	Place	Time	Date	Incident
National Networks: Virgin Cross Country class 221 Super Voyager train	Copmanthorpe	20:56	25 September 2006	Collision between Train and Car
RAIB Report No:	33/2007		**Published:**	5 September 2007

Summary

At 20:56 hrs on 25 September 2006, a car passed through the fence at the end of Moor Lane just outside Copmanthorpe, south of York. Moor Lane is the site of a former level crossing, closed in 1982. The car came to rest with its front wheels in the four foot of the nearest railway line, the down Leeds line. It was dark and the weather was drizzly with some fog. At that time, a Virgin Cross Country class 221 Super Voyager train was approaching Copmanthorpe on the down Leeds line travelling towards York at 100 mph (161 km/h). The train was the 14:25 hrs Plymouth to Edinburgh service, reporting number 1S91. The driver of the train sounded the horn and applied the emergency brakes after he first saw the car approximately a quarter of a kilometre ahead of him. However there was not sufficient time to decelerate, and at 20:57 hrs the train struck the car and pushed it along the track, breaking it up in the process. The driver of the car died from his injuries. As parts of the front-half of the car broke up, they passed under the train and caused wheelsets two, three, and four of the leading vehicle to derail. The leading wheelset remained on the track. However, the train remained upright and ran in-line throughout its deceleration; no one on the train was injured. The train came to a stand 907 metres beyond the point of the collision. The train crew performed all necessary train protection duties and the emergency services were informed.

Recommendations	Two recommendations are made

RECOMMENDATION	1	Status: Green 1 = Closed
Network Rail should ensure that all cul-de-sacs currently leading directly to their railway are or have been assessed in line with the DfT guidance, and that their procedures enforce such assessment for any future changes to the highway infrastructure immediately adjacent to their boundary.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	2	Status: Green 1 = Closed
Bombardier, in conjunction with HSBC, Voyager Leasing and Angel Trains, should review the protection provided to vulnerable components in the underfloor equipment areas of Class 220, 221 and 222 trains, and assess whether further improved protection against being struck by objects likely to pass under the train can be provided to reduce the risk of damage to safety or environmental related systems in accidents.		
Comment		
Bombardier, in conjunction with HSBC, Voyager Leasing and Angel Trains, have accepted the recommendation, and have carried it out. ORR has closed the recommendation.		

5 Annexes

Equipment Type	Place	Time	Date	Incident
National Networks: Two 455 electric multiple units (EMUs) & 8 Carriages	Epsom	19:42	12 September 2006	Derailment
RAIB Report No:	34/2007		**Published:**	13 September 2007

Summary	
A South West Trains service from London Waterloo to Effingham Junction became derailed as it approached Epsom station, Surrey, at 19:42 hrs on Tuesday 12 September 2006. One bogie of the fourth coach of the eight-carriage train derailed towards the left as the train was travelling at about 17 mph (27 km/h). The train came to a stop partly in Epsom station, and the passengers (estimated at between 300 and 400 people) were able to alight onto the platform. There were no injuries, and minor damage to the train and track.	
Recommendations	**Three recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
Network Rail should review the resourcing of the track maintenance organisation in the Wessex area, Wimbledon section to ensure that it is adequate for its existing and planned workload. The review should consider the recruitment and retention arrangements in the area, the numbers of posts and the necessary competences, the arrangements for ensuring that all sections of line are given appropriate levels of attention, and the technical and professional support available to the inspection and maintenance staff.		
Comment		
Network Rail has considered and is carrying out the recommendation.		

RECOMMENDATION	2	Status: Amber = Open
Network Rail should revise its instructions to staff to ensure that patrollers and local track managers have clear and specific instruction and guidance on the identification of and response to alignment faults and localised poor rail condition.		
Comment		
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR has been considering the position with this recommendation and the RAIB's views since July 2008.		

Equipment Type	Place	Time	Date	Incident
Heritage: Class 33/1 diesel locomotive 33 108 (engineers train)	Swanage Station	12:21	16 November 2006	Collision of locomotive with carriages
RAIB Report No:	35/2007		**Published:**	13 September 2007

Summary

At 12:21 hrs on Thursday 16 November 2006 an engineer's train entered platform 2 at Swanage and collided with a rake of carriages that were stabled there.
Two members of Swanage Railway personnel were treated by ambulance staff, but neither required hospital treatment. The locomotive and one carriage sustained damage to the buffers and surrounding bodywork.

Recommendations	Five recommendations are made

RECOMMENDATION	1	Status: Green 2 = Completed

The Swanage Railway should amend their Rule Book to:

- ensure that shunting movements are made by the safest possible route; and
- ensure that whenever possible shunting moves are driven from the leading cab of the locomotive.

Comment

The Swanage Railway has accepted the recommendation, and has carried it out.
ORR is considering whether to close the recommendation.

RECOMMENDATION	2	Status: Amber = Open

The Swanage Railway should review its implementation and monitoring of the rule book requirements for safety critical communication to ensure that the requirements are being complied with, and implement such changes as are found necessary.

Comment

The Swanage Railway has accepted the recommendation and is carrying it out.

RECOMMENDATION	3	Status: Amber = Open

The Swanage Railway should amend its medical standards for drivers to comply with the new guidance from the Heritage Railways Association when that guidance is issued.

Comment

The Swanage Railway has accepted the recommendation and is carrying it out.

RECOMMENDATION	4	Status: Green 2 = Completed

The Swanage Railway should implement the use of a system that informs staff that trains are not to be moved whilst work such as maintenance or interior cleaning is being carried out on them.

Comment

The Swanage Railway has accepted the recommendation, and has carried it out.
ORR is considering whether to close the recommendation.

RECOMMENDATION	5	Status: Green 2 = Completed

The Swanage Railway should enforce rule F 22.2, with illuminated lights provided, when vehicles are stabled in Swanage platform.

Comment

The Swanage Railway has accepted the recommendation, and has carried it out.
ORR is considering whether to close the recommendation.

5 Annexes

Equipment Type	Place	Time	Date	Incident
National Networks: Class 466 EMU	M20 overline bridge, Aylesford	22:25	5 February 2007	Collision between a train and a road vehicle
RAIB Report No:	36/2007		**Published:**	26 September 2007

Summary	
On 5 February 2007 a bridge inspection unit working on the M20 was deployed over a railway bridge between Maidstone Barracks and Aylesford stations. The gantry on the bridge inspection unit was struck by a scheduled passenger train, causing significant damage to the leading carriage and wrecking the gantry. The train driver and the sole passenger were slightly injured. Nobody was on the gantry at the time.	
Recommendations	**Six recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
InterRoute should review the briefing process for their staff and contractors to ensure that all concerned are adequately aware of any railway that crosses or adjoins the highway worksite. Procedures should be amended where necessary.		
Comment		
Formal site safety management training for bridge inspectors and similar worksite supervisory personnel has been carried out. The subcontractor and plant hire procurement process has been strengthened to ensure that method statements are incorporated and understood. The method statements and risk assessments for bridge inspection works have been rewritten to incorporate lessons learned. Awaiting response from Health and Safety Executive.		

RECOMMENDATION	2	Status: Green 2 = Completed
InterRoute should rebrief the bridge inspector on the processes for managing safety at a worksite.		
Comment		
All concerned have been briefed on the revised risk assessments and method statements. Awaiting response from Health and Safety Directive.		

RECOMMENDATION	3	Status: Amber = Open
InterRoute should review their systems in order to ensure site supervisory competence is effective for the duties required.		
Comment		
The revised procedures require competence checks and pre-site briefings for all personnel. Awaiting response from Health and Safety Directive.		

RECOMMENDATION	4	Status: Amber = Open
E.S. Access Platforms (NE) Ltd. should ensure that the Moog operator is retrained in railway Personal Track Safety.		
Comment		
The operator concerned will re-attend and complete the PTS Training Scheme. Awaiting response from Health and Safety Directive.		

RECOMMENDATION	5	Status: Green 2 = Completed
E.S. Access Platforms (NE) Ltd. should ensure their staff know to receive a site safety briefing prior to entering a worksite, and ask for one if it is not provided by the person in charge at the site.		
Comment		
Site procedures regarding site inductions for Underbridge Unit Operators have been amended. There is a formal 'signing off procedure, which requires the client contact and the driver to confirm that a site induction has been carried out and received. The client contact must also sign to say that the driver has been escorted to the correct bridge. Work must not start until these declarations are made. Awaiting response from Health and Safety Directive.		

RECOMMENDATION	6	Status: Green 2 = Completed
InterRoute should review their Safety Induction system so that the cards issued have an expiry date, and that there is a robust method of rebriefing personnel when changes are made to working practices.		
Comment		
The safety induction system has been amended with cards expiring after 2 years. All employees, and subcontractors were reinducted at the end of 2007 and new cards issued. There is an annual health & safety update with interim ones as required. Awaiting response from Health and Safety Directive.		

Equipment Type	Place	Time	Date	Incident
National Networks: HGV Shuttle Mission 7370	Channel Tunnel	13.23	21 August 2006	Fire on Heavy Goods Vehicle
RAIB Report No:	37/2007		**Published:**	23 October 2007

Summary	
On 21 August 2006 a fire broke out in the load compartment of a lorry on HGV Shuttle Mission 7370, the 13:23 hrs service from the UK terminal to France. The shuttle train was brought to a controlled stop at PK3050, 20.5 km from the UK portal, at 13:40 hrs. All 34 persons on board (30 lorry drivers and 4 Eurotunnel staff) were evacuated into the service tunnel by 13:49 hrs without injury. They were subsequently evacuated out of the service tunnel to the French terminal, reaching the French service tunnel portal at 15:47 hrs.	
Recommendations	**Sixteen recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
Eurotunnel should update the procedure for HGV loading staff to include the requirement to visually check the roof and doors of the load compartment for signs of smoke escaping.		
Comment		
Eurotunnel considers that their current procedures address this recommendation. The IGC is discussing this response with Eurotunnel.		

RECOMMENDATION	2	Status: Amber = Open
Eurotunnel should review alternative means of more reliably detecting signs of fire or other abnormal situations on the rear sections of departing shuttles, which would include the number and positioning of Agents de Feu and should implement improved measures as appropriate.		
Comment		
Eurotunnel has accepted the recommendation and is carrying it out.		

5 Annexes

RECOMMENDATION	4	Status: Green 3 = Closed with no actions taken
Eurotunnel should provide a means for the automatic transmission of alarms from the on-board fire detection system on the HGV shuttles to the RCC.		
Comment		
RAIB is in further discussion with the IGC regarding this recommendation.		

RECOMMENDATION	11	Status: Green 2 = Completed
Eurotunnel should review the design of the ventilation control system with a view to reducing the possibility of controllers selecting a sub-optimal configuration.		
Comment		
Eurotunnel has considered and carried out the recommendation. IGC is considering whether to close the recommendation.		

RECOMMENDATION	13	Status: Amber = Open
Eurotunnel, in consultation with the emergency services in France and the UK, should carry out a study to assess the feasibility of decreasing the time taken to earth the catenary during an emergency situation. The best solution identified should then be implemented if reasonably practicable to do so.		
Comment		
Eurotunnel has accepted the recommendation and is carrying it out.		

RECOMMENDATION	14	Status: Green 2 = Completed
Eurotunnel, in conjunction with the Emergency Services, should review its emergency plan (and associated bi-national arrangements) with a view to ensuring that accurate information from the incident site is available promptly to those making strategic decisions within the ICCs.		
Comment		
Eurotunnel has considered and carried out the recommendation. IGC is considering whether to close the recommendation.		

RECOMMENDATION	16	Status: Green 2 = Completed
Eurotunnel should modify the RTM procedure to incorporate an explicit requirement to advise the RCC Supervisor when a message regarding a fire alarm on an HGV shuttle has been received and clarify the sequence of actions to be taken by the RTM Controller in the event that a rolling stock alarm and a Level 2 alarm are declared almost simultaneously.		
Comment		
Eurotunnel. has considered and carried out the recommendation. IGC is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
Light Rail: Tram 06	Birmingham Snow Hill (Midland Metro)	14:25	29 January 2007	Derailment
RAIB Report No:	38/2007		**Published:**	24 October 2007

Summary	
At 14:25 hrs on Monday 29 January 2007, the centre bogie of tram 06 became derailed at the switch and crossing (S&C) on the approach to Birmingham Snow Hill terminus. Tram 06 was operating the 13:50 hrs service from Wolverhampton to Birmingham at the time of the derailment.	
Recommendations	**Four recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
TMM should either employ or provide from elsewhere, personnel competent to specify and approve the inspection, maintenance and repair of switches and crossings.		
Comment		
TMM has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Amber = Open
TMM should develop or adopt and implement standards and procedures for effective switch and crossing inspection, maintenance and repair.		
Comment		
TMM has accepted the recommendation and is carrying it out.		

RECOMMENDATION	4	Status: Green 2 = Completed
TMM should verify, by monitoring and auditing, that switch and crossing inspection, maintenance and repair is carried out by them or on their behalf to a standard that achieves safe operation.		
Comment		
TMM has accepted the recommendation and is carrying it out.		

5 Annexes

Equipment Type	Place	Time	Date	Incident
National Networks: Class 66 Locomotive	Washwood Heath	11:47	9 September 2006	Derailment
RAIB Report No:	39/2007		**Published:**	21 November 2007

Summary

Train 4O26 was the 11:47 hrs service from Burton to Southampton Docks, operated by EWS. It comprised locomotive 66070 hauling 17 flatbed wagons. At about 15:48 hrs on the 9 September 2006 the train departed from Washwood Heath Up Side sidings. It left the yard along a reception siding from where it was routed onto the Down Goods via the series of four crossovers that link all tracks at the southwest end of Washwood Heath. As the train passed over the crossover between the Down & Up Goods line and the Up Main line the leading bogie of the 13th wagon, 609001, derailed to the left-hand side.

Recommendations — **Four recommendations are made**

RECOMMENDATION	1	Status: Amber = Open

EWS should complete its programme for installing UIC sprung side bearers in FAA wagons in order to overcome the known deficiencies with the existing arrangement.

Comment

EWS has considered and is carrying out the recommendation.

RECOMMENDATION	2	Status: Green 2 = Completed

EWS, pending the replacement of all existing side bearers, should test a representative sample of the unmodified fleet of FAA wagons in order to confirm that the values obtained for bogie rotational resistance and torsional stiffness remain acceptable once the central pivot and side bearer components have been subject to wear and to measure any change in the performance of the side bearer lubrication between PPM.

Comment

EWS has considered and is carrying out the recommendation.
ORR is considering whether to close the recommendation.

RECOMMENDATION	3	Status: Green 1 = Closed

Engineering Support Group Ltd. (formerly part of EWS - engineering service group), in its capacity as a Conformance Certification Body, should review the design scrutiny process that was applied to certify the FAA wagon type and its subsequent modifications. The review should identify any weakness in the management systems that resulted in the non-identification of the design defects associated with the side bearer assembly. The review should also consider the checks that are carried out to confirm the validity of testing done in support of the design. ESG Ltd. should implement any changes to its processes found necessary following this review.

Comment

Engineering Support Group Ltd has considered and is carrying out the recommendation.
ORR has closed the recommendation.

RECOMMENDATION	4	Status: Amber = Open

Engineering Support Group Ltd. should implement changes to its processes to mandate that when undertaking scrutiny of design and proposed maintenance the degradation of components in service is taken into account and the railway undertaking is advised of any additional maintenance and/or inspection requirements to keep the vehicle in a safe state as components wear.

Comment

Engineering Support Group Ltd has considered and is carrying out the recommendation.

Equipment Type	Place	Time	Date	Incident
Light Rail: Tram 611	Blackpool	16:15	24 January 2007	Fire on prototype tram
RAIB Report No:	41/2007		**Published:**	27 November 2007

Summary	
On 24 January 2007 at approximately 16:15 hrs, tram 611, a prototype City Class tram, was stationary near Foxhall Square in Blackpool when a fire occurred inside the vehicle near the front (B end) driving position. There were no casualties.	
Recommendations	**Two recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
Blackpool Transport Services (BTS) should develop vehicle acceptance procedures and integrate these into the "management of change" procedure within the Safety Management System.		
Comment		
BTS has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
Trampower Ltd should carry out an appropriate risk assessment relating to the design, construction and operation of the vehicle with reference to Regulation 3 of the Management of Health and Safety at Work Regulations. Part of this assessment should consider whether components and systems are appropriately constructed and installed in a way that is fit for their intended use. This risk assessment, and related currently-applicable technical documentation, should be provided to the operators of any network where the vehicle is used.		
Comment		
Trampower Ltd has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

5 Annexes

Equipment Type	Place	Time	Date	Incident
National Networks: Diesel electric locomotive no. 8113 & test vehicle	Cromore, Northern Ireland	01:00	14 April 2007	Derailment
RAIB Report No:	42/2007		**Published:**	28 November 2007

Summary	
At about 01:00 hrs on Saturday 14 April 2007, a Northern Ireland Railways (NIR) ultrasonic test train became derailed near Cromore, Antrim, while travelling at about 49 mph (77 km/h). The train consisted of a locomotive and a single ultrasonic test vehicle. All four wheels of the test vehicle were derailed. There was some damage to the track and to the test vehicle. No-one was hurt.	
Recommendations	**Seven recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
Northern Ireland Railways (NIR) should revise their process for the preparation and issue of the Weekly Operating Notice (WON) so the process ensures that the information that it contains is accurate and complete.		
Comment		
NIR has considered and has carried out the recommendation.		

RECOMMENDATION	2	Status: Amber = Open
Northern Ireland Railways should revise their process for the preparation, issue and circulation of Special Operating Instructions (SOIs) to ensure that they are seen and acted upon by all relevant staff at the appropriate time.		
Comment		
NIR has considered and is carrying out the recommendation.		

RECOMMENDATION	3	Status: Green 2 = Completed
Sperry Rail International should modify the suspension of the wagons that they use for ultrasonic testing to minimise their sensitivity to track irregularities including cyclic top (already complete).		
Comment		
Sperry Rail International has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Amber = Open
Northern Ireland Railways should revise their operating instructions to ensure that, where staff who are not qualified to act as guards travel unaccompanied in the rear cab of locomotives and trains, they are suitably briefed on action to be taken in case of emergency.		
Comment		
NIR has considered and is carrying out the recommendation.		

RECOMMENDATION	5	Status: Amber = Open
Northern Ireland Railways should assess the risk arising from the absence of communication between the front and rear cabs of locomotives and trains, and either provide suitable fixed equipment or make other appropriate arrangements to control such risk.		
Comment		
NIR has considered and is carrying out the recommendation.		

RECOMMENDATION	6	Status: Amber = Open
Sperry Rail International should revise the vehicle weight information that is marked on the ultrasonic test vehicle and shown in the maintenance documentation to accurately reflect the unladen and laden weights of the vehicle.		
Comment		
Sperry Rail International has considered and is carrying out the recommendation.		

RECOMMENDATION	7	Status: Amber = Open
Northern Ireland Railways should establish appropriate standards for track installation and maintenance throughout its network, define a timetable for the adoption of these standards, and implement them accordingly.		
Comment		
NIR has considered and is carrying out the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 377 EMU	Tinsley Green Junction	09:33	17 March 2007	Near miss involving track worker
RAIB Report No:	43/2007		**Published:**	18 December 2007

Summary	
This incident occurred at 09:33 hrs on the morning of Saturday 17 March 2007, at Tinsley Green Junction, near Gatwick Airport. The driver of train 1M20, the 08:55 hrs Brighton to Watford Junction service, reported to the signaller that a member of track maintenance staff had dived clear of his train with only seconds to spare. The incident had occurred as train 1M20 was being routed from the up fast line towards the up platform loop via a series of high-speed crossovers.	
Recommendations	**Eight recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
Network Rail's IMM (Infrastructure Maintenance Manager) Sussex should identify all welders in the Area who have only limited experience of working in the Red Zone. The IMM should ensure that all such welders that are qualified to act as COSS have the necessary skills, knowledge and experience to set up a safe system of work in the Red Zone.		
Comment		
Network Rail's IMM Sussex has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Amber = Open
Network Rail should update the COSS handbook and associated training material with the objective of ensuring that staff that are qualified to act as COSS are fully aware of the hazards associated with working in a Red Zone at locations beyond facing points and can set up appropriate safe systems of work. Included in the revised documentation should be a clear definition of the term 'approaching train'.		
Comment		
Network Rail has considered and is carrying out the recommendation.		

5 Annexes

RECOMMENDATION	3	Status: Green 2 = Completed
Network Rail should prohibit lookouts from being required to observe the position of points as a means of determining if an approaching train is routed towards the site of work. Associated rules (e.g. rule book, module T7) and training documentation should clearly state that when working beyond facing points lookouts should give a warning, and staff move to the position of safety, for all trains approaching those points in the facing direction.		
Comment		
Network Rail has considered and has carried out the recommendation. ORR is considering whether to close the recommendation		

RECOMMENDATION	4	Status: Green 2 = Completed
Network Rail should modify its management processes to require that all RT9909 'Record of Site Safety Arrangements and Briefing' forms issued to Controllers of Site Safety contain details of any high speed crossovers and/or points, the direction and speed of associated train movements and a specific warning about the hazards at such locations.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	5	Status: Amber = Open
Network Rail should carry out a detailed assessment of the way in which Business Process Document 0019 and Standard Maintenance Procedure 0094 are being applied. This assessment should include a survey of Work Schedulers to assess the extent to which they feel able to question, or challenge, requests made to them. The results of this assessment should be used to inform a review of the effectiveness of the existing management arrangements and steps taken to rectify any deficiencies identified.		
Comment		
Network Rail has considered and is carrying out the recommendation		

RECOMMENDATION	6	Status: Amber = Open
Network Rail should implement a process to ensure that any person requesting that a plan be prepared by a Works Scheduler checks that an appropriate safe system of work has been selected and the adequacy of the resulting 'Record of Site Safety Arrangements and Briefing' form. This check should include a review of the accuracy of data contained and completeness of hazard identification.		
Comment		
Network Rail has considered and is carrying out the recommendation.		

RECOMMENDATION	7	Status: Amber = Open
Network Rail should assess the feasibility of configuring the SSOWPS (Safe System of Work Planning System) to automatically check that the work site data entered in the system corresponds with the work site location.		
Comment		
Network Rail has accepted the recommendation and is carrying it out by alternative means.		

RECOMMENDATION	8	Status: Amber = Open
Network Rail should review the presentation of information in Table A of its Sectional Appendices with the objective of clarifying the direction of signalled train movements through junctions and crossovers.		
Comment		
Network Rail has responded to the ORR, and the RAIB has commented on the response. ORR is in ongoing discussion with Network Rail about the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Two class 455 electric multiple units	London Waterloo	22:48	11 September 2006	Derailment
RAIB Report No:	44/2007		**Published:**	18 December 2007

Summary	
At 22:48 hrs on 11 September 2006, a train formed of two class 455 electric multiple units derailed on 1565 points, which were traversed in the facing direction as the train made an empty coaching stock move into Waterloo south sidings. The points had recently been subject to unplanned maintenance. At 18:27 hrs on 24 October 2006, a loaded passenger train, also formed of two class 455 units derailed on 1507 points, which were traversed in the facing direction as the train approached Waterloo station from Dorking. These points had also been subject to recent unplanned maintenance.	
Recommendations	**Fourteen recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
Network Rail should review and revise the guidance provided for staff undertaking or supervising standard 053 inspections to make clear the following: a. the detailed requirements for visual and increased-frequency inspections, including the use of photographs, and the development of standard forms with suitable prompts for this purpose; b. the conditions where a switch blade repair cannot be safely achieved such that staff understand the alternative courses of action available; and c. that work should be suitably planned and organised so that there is time for it to be carried out and with sufficient lighting for individuals to complete necessary inspections.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
Network Rail should review the frequency and content of training to: a. improve skills retention amongst occasional standard 053 inspection practitioners; b. introduce a mentoring programme with individual staff log books; c. introduce refresher training; and d. introduce a programme of periodic monitoring of AIs and TSMs by a supervising manager.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	3	Status: Amber = Open
Network Rail should provide a handbook for use by front-line and supervisory staff which summarises the requirements of standard 053 inspections, post-inspection actions, and pre and post-grinding inspections. This should contain the necessary inspection forms. The handbook should be written in plain English and certified as such.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

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RECOMMENDATION	4	Status: Green 2 = Completed
Network Rail should establish a formal communication channel between Asset Inspection staff and TSMs such that the relevant TSM reviews and signs-off all standard 053 inspection reports.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	5	Status: Green 2 = Completed
Network Rail should update the training of TSMs to enable them to obtain the standard 053 derailment hazard recognition training and experience necessary to properly fulfil their functions when undertaking supervisor's inspections and signing-off standard 053 inspection reports		
Comment		
Issue 4 of Standard NR/L2/TRK/0053 mandates this requirement and the training package has now been reviewed to ensure that it properly delivers the requirements of the standard. Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	6	Status: Amber = Open
Network Rail should introduce the requirement for a follow-up inspection after a standard 053 repair is carried out involving welding or grinding. This should be undertaken by an independent and competent person within a timescale commensurate with minimising the risk of derailment.		
Comment		
Network Rail has responded to ORR, and the RAIB has commented on the response. ORR is in ongoing discussion with Network Rail about this recommendation.		

RECOMMENDATION	7	Status: Amber = Open
Network Rail should undertake a check of all S&C components held in stock within the Wessex area to check whether information on any remaining legacy renewal plans is identified and captured within the current planning system as appropriate.		
Comment		
Network Rail has considered and is carrying out the recommendation.		

RECOMMENDATION	8	Status: Amber = Open
Network Rail and South West Trains should jointly review and amend track access arrangements to ensure that sufficient and appropriate track access is provided to enable the safe inspection of switches and crossings between Waterloo and Clapham Junction. This should include consideration of Network Rail's daily T2(H) line blockage initiative and an extension of the existing Sunday possesssion arrangements if appropriate.		
Comment		
Network Rail and South West Trains have considered and are carrying out the recommendation		

RECOMMENDATION	9	Status: Green 2 = Completed
Network Rail should review resource requirements for the undertaking of special inspections in complex track areas to ensure that the problems identified at Waterloo do not exist elsewhere. Sufficient AI positions should be provided to allow the mandated inspections to be completed, and planning resources should be aligned to support TISE requirements for track access.		
Comment		
Network Rail has considered and is carrying out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	10	Status: Amber = Open
KCI Rail should ensure that any appointed GSM retains full authority and responsibility for site activities. Any transfer of responsibility between staff should be undertaken with the agreement of both parties and by reference to the grinding manager or duty shift manager.		
Comment		
KCI Rail has considered and is carrying out the recommendation.		

RECOMMENDATION	11	Status: Green 2 = Completed
Network Rail should provide sufficient technical resources to select and manage sub-contractors engaged in rail grinding activity effectively. This should include the pre-scoping of any non-routine work and the undertaking of on-site checks including periodic technical audits. Standard 053 repairs should not be attempted unless the work has been scoped in advance by an appropriately experienced and qualified person.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	12	Status: Green 2 = Completed
Network Rail should review inspection regimes at recognised high-risk sites (i.e. sites with little used turnouts, a history of sidewear, or a turnout of similar flexure) to ensure these are effective. This should consider the introduction of bespoke inspection regimes such as more frequent visual inspections or periodic detailed inspections regardless of the degree of wear apparent.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	13	Status: Green 2 = Completed
Network Rail should develop a handbook for use by staff who operate or otherwise use the Ellipse system. This document should provide guidance on the nature of information to be presented, and interpretation of the resulting reports.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	14	Status: Green 2 = Completed
Network Rail should mandate the provision of a standard 053 detailed inspection report or equivalent paperwork prior to all switch repair activity. The report should describe the defect and proposed repair and identify who will undertake the post-repair inspection and any subsequent inspections.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heritage: Diesel locomotive number 80 & 4 Carraiges	Shenley Hill Road on the Leighton Buzzard Railway	13:08	25 March 2007	Collision on level crossing with car
RAIB Report No:	45/2007		**Published:**	19 December 2007

Summary	
At approximately 13:08 hrs on 25 March 2007 a train on the Leighton Buzzard Railway (LBR), collided with a road vehicle at low speed on a level crossing at Shenley Hill Road on the outskirts of Leighton Buzzard, Bedfordshire.	
Recommendations	**Three recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
Leighton Buzzard Railway Ltd (LBR Ltd) should change the method of working of Shenley Hill Road open crossing to require the train to stop and allow road traffic to halt before entering the level crossing.		
Comment		
LBR Ltd has considered and is carrying out the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
Bedfordshire County Council should cut down the vegetation around Shenley Hill Road open crossing and introduce a process of vegetation management in order to meet the viewing zone requirements of RSPG 2E Appendix B.		
Comment		
LBR Ltd has considered and has carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	3	Status: Amber = Open
Bedfordshire County Council and Leighton Buzzard Railway Limited, as appropriate should ensure that traffic signs and road surface markings for which they are each responsible at LBR level crossings comply with diagrams 771, 775 and 785 as defined in the Traffic Signs Regulations and General Directions 2002, and recommended in Railway Safety Principles and Guidance Part 2E (Health and Safety Executive, 1996), Diagram 6.		
Comment		
LBR Ltd has considered and is carrying out the recommendation.		

Equipment Type	Place	Time	Date	Incident
Heritage: Locomotive, number 11 & 3 carriages	Cavalry Horse crossing on the Leighton Buzzard Railway	12:40	25 August 2007	Train struck tractor. Minor injury
RAIB Report No:	46/2007		**Published:**	19 December 2007

Summary	
At approximately 12:40 hrs on the 25 August 2007 the 12:20 hrs train from Pages Park to Stonehenge Works on the Leighton Buzzard Railway (LBR), collided with a tractor at low speed on Cavalry Horse User Worked Crossing (UWC) on the outskirts of Leighton Buzzard, Bedfordshire. One passenger was slightly injured, and damage was caused to the locomotive and the tractor.	
Recommendations	**Two recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
The LBR should complete the briefings and works identified in its assessment of field crossings dated 25 September 2007, to the timescales laid down in that document.		
Comment		
LBR Ltd has considered and has carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Amber = Open
The LBR should install signing for all farm crossings on the railway so as to ensure that users are informed of how to use the crossing.		
Comment		
LBR Ltd has considered and is carrying out the recommendation.		

5 Annexes

ANNEX C Appendix 7

Recommendations made in 2008

Equipment Type	Place	Time	Date	Incident
National Networks: Class 66 Locomotive	Burton on Trent	16:16	1 August 2007	Collision with other train
RAIB Report No:	01/2008		**Published:**	10 January 2008

Summary	
At 16:16 hrs on Wednesday 1 August 2007, a stanchion on EWS freight train 6E79 struck and damaged Central Trains passenger train 1G46 as they passed in opposite directions at a location north of Burton on Trent station. There were no injuries but there was some damage to the passenger train as a consequence of this incident. The 14:17 hrs freight train service from EWS Wolverhampton Steel Terminal to Scunthorpe Anchor Sidings comprised a locomotive and ten empty wagons. The 15:34 hrs passenger train service from Nottingham to Birmingham New Street comprised a two vehicle diesel multiple unit (DMU).	
Recommendations	**Four recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
EWS should put in place a system to assure itself that damaged stanchions are detected and replaced by its load examiners.		
Comment		
EWS has accepted the recommendation and is carrying it out.		

RECOMMENDATION	2	Status: Amber = Open
EWS should revise its manual and procedures to require the detection and replacement of damaged stanchions, where possible by those responsible for loading and unloading wagons, and by train preparers before every despatch.		
Comment		
EWS has accepted the recommendation and is carrying it out.		

RECOMMENDATION	3	Status: Amber = Open
EWS should revise its manual and procedures so they define the type of damage that would require a stanchion to be replaced using pass/fail criteria, diagrams or photographs.		
Comment		
EWS has accepted the recommendation and is carrying it out.		

RECOMMENDATION	4	Status: Amber = Open
EWS should evaluate the practicability of using stanchions similar in height to their associated loads and, if practicable, revise its manual, procedures and stanchion specifications accordingly so that the relevant members of staff are able to select stanchions appropriate in height to their loads.		
Comment		
EWS has accepted the recommendation and is carrying it out.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 66 Locomotive	King Edward Bridge, Newcastle	06:39	10 May 2007	Freight Train derailment
RAIB Report No:	02/2008		**Published:**	31 January 2008

Summary	
At 06:40 hrs on 10 May 2007 an empty coal train became derailed whilst passing through King Edward Bridge South Junction on the approach to Newcastle station.	
Recommendations	**Four recommendations are made**

RECOMMENDATION	**1**	**Status: Green 2 = Completed**
EWS and other operators of two axle wagons on the Network Rail system should ensure that their annual maintenance procedures adequately mitigate the risk of derailment which may arise due to frame twist. This could be achieved by post maintenance wheel weighing or by increased dimensional checks.		
Comment		
EWS has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	**2**	**Status: Amber = Open**
Network Rail should investigate the capability for Wheelchex data to be used to identify out-of-balance lateral wheel loading on vehicles and if practicable to instigate a warning system using Wheelchex to minimise the risk to the network.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	**3**	**Status: Amber = Open**
Network Rail should review and amend the design and maintenance of the layout of the up main line to up Carlisle line crossover at King Edward Bridge South junction or implement any necessary measures to ensure that it does not become out of specification within the monitoring interval.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	**4**	**Status: Amber = Open**
Network Rail should include guidance in NR/SP/TRK/001 Section 11.4.2 to ensure that additional consideration is given to the geometry monitoring frequency and methodology for locations where the dynamic track geometry is likely to deteriorate and exceed the maintenance limit without otherwise being detected. This may occur because of the proximity of the design geometry to the maintenance limit, where there is difficulty identifying the geometry or loaded parameters or where geometry deterioration rates are high.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

5 Annexes

Equipment Type	Place	Time	Date	Incident
Metro: '92 Tubestock	Mile End tube station	09:02	5 July 2007	Collision with other object
RAIB Report No:	03/2008		**Published:**	31 January 2008

Summary	
At 09:01 hrs on 5 July 2007 westbound train 117 struck a roll of fire resistant material lying on the track between Mile End and Bethnal Green tube stations on the Central Line of the London Underground Network. In consequence three bogies were derailed. The train operator applied the emergency brake and the train stopped after approximately 148 m (468 ft).	
Recommendations	**Five recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
LUL should amend the requirements on the content of the SPC training to ensure that it contains adequate information on the storage of materials including the effect of wind in cross passages.		
Comment		
LUL has accepted the recommendation and is carrying it out.		

RECOMMENDATION	2	Status: Amber = Open
Metronet or its successor organisation(s) should ensure that risk assessments related to storage of materials in cross passages are reviewed to ensure that they fully address risks to the operational railway. Where risk assessments that have been mandated or inherited from LUL are found to be deficient then LUL should be made aware of the shortcoming.		
Comment		
LUL has discharged implementation of the recommendation through the infracos who have accepted the recommendation and are carrying it out.		

RECOMMENDATION	3	Status: Amber = Open
LUL should address any advised deficiencies in risk assessments for stored materials which have been mandated or inherited by the Infracos from LUL, consistent with the current contractual responsibilities of LUL and the Infracos.		
Comment		
LUL has discharged implementation of the recommendation through the infracos who have accepted the recommendation and are carrying it out.		

RECOMMENDATION	4	Status: Green 2 = Completed
Metronet or its successor organisation(s) should review and if necessary, amend the instructions on the use of fire-resistant blankets.		
Comment		
Metronet has accepted the recommendation and is carrying it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	5	Status: Amber = Open
Metronet or its successor organisation(s) should take steps to ensure that appropriate staff, including work planners and SPCs, are made aware of the wind effects that can occur in the deep level tube system.		
Comment		
LUL has discharged implementation of the recommendation through the infracos who have accepted the recommendation and are carrying it out.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 165 DMU	Ruscombe Junction	11:30	29 April 2007	Staff hit by train (Fatality)
RAIB Report No:	04/2008		**Published:**	28 February 2008

Summary	
At 11:26 hrs on Sunday 29 April 2007, train 5Z71, the 10:45 hrs empty coaching stock train from Old Oak Common depot to Reading depot, struck and fatally injured a track welder at Ruscombe Junction, 5 miles (8 km) west of Maidenhead station. The accident occurred as train 5Z71 was being routed from the down main line towards the down relief line via two high speed crossovers.	
Recommendations	**Seven recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
Network Rail should update the COSS handbook and associated training material with the objective of ensuring that staff that are qualified to act as COSS are fully aware of the hazards associated with working in a Red Zone at locations beyond facing points and can set up appropriate safe systems of work. Included in the revised documentation should be a clear definition of the term 'approaching train'.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	2	Status: Amber = Open
Network Rail, in consultation with RSSB, should carry out human factors research into the impact of peer pressure, group communications and dynamics on safety decision making in small COSS led work teams. This should include a consideration of how teams are constituted and how a relatively inexperienced COSS can deliver authority, compliant behaviour, leadership and a challenge function. The findings of this research should be used to inform a review of training and management systems.		
Comment		
Network Rail has accepted the recommendation and is carring it out.		

RECOMMENDATION	3	Status: Green 2 = Completed
First Great Western should rebrief all train drivers on the use of a repeated series of horn blasts and the application of the emergency brake. Driver training modules should be updated to include a scenario of track workers not moving clear of an approaching train.		
Comment		
First Great Western has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Amber = Open
Associated rules (eg Rule Book, module T7) and training documentation should clearly state that when working beyond facing points lookouts should give a warning, and staff move to the position of safety, for all trains approaching those points in the facing direction.		
Comment		
RSSB are considering the recommendation. Subsequent accidents at Leatherhead 29 August 2007, Grosvenor Bridge 14 November 2007 and Kennington Junction 23 May 2008 all indicate there are ongoing issues with staff working in the vicinity of S&C.		

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RECOMMENDATION	5	Status: Amber = Open
Network Rail should implement a national plan to reduce the proportion of weld repairs at points and crossovers undertaken in Red Zones so far as is reasonably practicable.		
Comment		
Network Rail are considering the recommendation.		

RECOMMENDATION	6	Status: Green 2 = Completed
Network Rail should introduce a procedure that mandates the briefing of Safety Bulletins to its staff within specified timescales.		
Comment		
Network Rail has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	7	Status: Green 1 = Closed
Network Rail and the National Health Service should take steps to correctly implement the existing protocol governing the landing of air ambulance helicopters at rail incidents and accidents.		
Comment		
Network Rail and the National Health Service have accepted the recommendation, and have carried it out. ORR has closed the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 377 EMU	Hooley Cutting near Merstham Tunnel	12:22	13 January 2007	Passenger train derailment
RAIB Report No:	05/2008		**Published:**	28 February 2008

Summary	
On Saturday 13 January 2007 the 1C23 service left Bognor Regis at 10:59 hrs for London Victoria. It was formed of eight cars of class 377 electric multiple unit stock. The train had an uneventful journey from Bognor to the booked stop at Redhill after which it departed for the non-stop run to East Croydon. At 12:23 hrs the train emerged from Merstham tunnel into the deep Hooley cutting on the up Redhill line. The train was travelling at 83 mph (132 km/h). The driver, observing debris from a landslip on the line approximately 100 m from the tunnel mouth, immediately made an emergency brake application. The train hit the debris at approximately 70 mph (112 km/h) causing the leading wheelset to derail to the cess side of the track. The train remained upright and came to a stand after travelling another 320 m. The train was conveying about 413 passengers, none of whom were injured by the incident. Passengers were evacuated in small groups along the track and up steep access steps to the public highway.	
Recommendations	**Nine recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
Network Rail should review the content of the appropriate Company Standards including NR/SP/CIV/065 and NR/SP/TRK/05201 so that they are sufficiently comprehensive to manage the risks from root balls on, or adjacent to, their infrastructure.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
Network Rail should review the guidance it provides on felling of trees on embankments and cuttings. This guidance should include the criteria and actions to be taken on the retention of root balls and stumps.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	3	Status: Amber = Open
Network Rail should inspect or assess all cuttings of a depth where falling root balls or stumps could pose a risk to the operational infrastructure. Root balls or stumps posing high risk should be removed or otherwise stabilised within a defined time scale.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	4	Status: Amber = Open
Network Rail should develop a list of civil engineering assets that may be susceptible to severe weather conditions or rapid natural deterioration and should develop plans for mitigating the effects on the operational railway.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	5	Status: Amber = Open
Network Rail should periodically implement a process to assess Hooley Cutting for the risk posed to the operational infrastructure by any remaining tree roots and stumps. Such assessments should also include the stability of the cutting at the crest.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	6	Status: Green 1 = Closed
Network Rail should assess the practicability of installing a system to warn of the displacement of material or collapse of the king post wall in Hooley Cutting. If reasonably practicable it should do so.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

RECOMMENDATION	7	Status: Green 2 = Completed
Network Rail should issue the (credit card size) 'Special Inspections in Adverse Weather' to all track inspection personnel and widen its scope to cover any observation of earthworks.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		

RECOMMENDATION	8	Status: Green 2 = Completed
Network Rail, in connection with Southern, should ensure that access locations for relevant parts of the network are held at control rooms, and if appropriate, at signal boxes and manned stations. It should include street references, postcodes, grid references etc, as appropriate, along with information on any difficulties of use by emergency services and for passenger evacuation.		
Comment		
Network Rail have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		

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RECOMMENDATION	9	Status: Green 1 = Closed
In the light of the evacuation from Hooley cutting, Network Rail, in conjunction with Southern should review the evacuation strategies from deep cuttings, high embankments, and other difficult areas across the network. In doing so they should consider the practicality of passenger evacuation by a train on the adjacent track.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR has closed the recommendation.		

Equipment Type	Place	Time	Date	Incident
Metro: '95 Tubestock	Camden Town, Northern Line	17:42	10 June 2007	Unauthorised train movement
RAIB Report No:	06/2008		**Published:**	11 March 2008

Summary	
On Sunday 10 June 2007 repairs were being carried out to train regulation equipment on the Northern Line of the London Underground (LUL). A service operator, who was unaware of the work being carried out, altered the operating mode of the equipment to an inappropriate, but not unsafe, mode. At approximately 17:35 hrs this caused a northbound train (number 005) destined for Edgware to be wrongly routed towards High Barnet at the Camden Town junctions. This led to an exchange of passengers and train operators between this and the following train (042) while they were standing in the Edgware and High Barnet platforms at Camden Town station. The train operator who went to the train standing in the High Barnet platform (now to be renumbered 042) entered the cab at the south end instead of the north end and drove the train southwards away from Camden Town on the northbound track. After his train entered the tunnel, the train operator of train 042 became aware of a train (043) standing on the track ahead and brought his train to a stand some 108 metres south of the platform headwall and 20 metres away from the approaching train. There were no injuries and no damage to infrastructure or rolling stock.	
Recommendations	**Four recommendations are made**

RECOMMENDATION	1	Status: Green 3 = Closed with no actions taken
LUL should arrange for the installation of suitable signs at Camden Town northbound platforms to warn train operators if they are approaching a south end cab.		
Comment		
LUL developed and implemented alternative proposals that have been accepted by the safety authority. ORR has closed the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
LUL should investigate the possibility of either instructing train operators that when they leave a cab to which another train operator will return imminently and from which the train must be driven, the Traction Brake Controller is not to be placed in the 'stow' position, or the provision of some other method of being assured that they have entered the correct cab.		
Comment		
LUL developed and implemented alternative proposals that have been accepted by the safety authority. ORR are consididering closure of the recommendation.		

RECOMMENDATION	3	Status: Amber = Open
LUL should introduce a process to ensure service operators are given written notification, and an entry made in the service controller's log book, if a particular mode of operation is required or prohibited during a technical intervention.		
Comment		
LUL has accepted the recommendation and is carrying it out.		

RECOMMENDATION	4	Status: Green 2 = Completed
LUL should incorporate a familiarity induction to stations where train operators may be required to change platforms between trains in service into training procedures and ensure that this familiarity is maintained by train operators.		
Comment		
LUL has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 158 DMU	Kemble	22:15	15 January 2007	Passenger train derailment
RAIB Report No:	07/2008		**Published:**	27 March 2008

Summary	
On 15 January 2007, at approximately 22:14 hrs, the 21:52 hrs train from Swindon to Cheltenham Spa, consisting of a two-car diesel multiple unit (DMU), was travelling at 51 mph (82 km/h) when it struck debris from a collapsed wall following a landslip in the cutting just south of Kemble tunnel. The leading bogie of the train was derailed and the train was brought to a halt at the tunnel mouth. There were no injuries to passengers or crew. Evacuation of passengers from the derailed train was completed by 23:40 hrs. The line was closed until early on 18 January 2007 to enable repairs to be undertaken to the track and the cutting.	
Recommendations	**Two recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
Network Rail should identify, through the examination process, any other wall on the network which has a similar construction to the block wall at Kemble, and is also a free standing wall in front of a natural slope. Network Rail should consider the stability of such walls against any likely loading, taking due account of the blockage of weep holes and other drainage problems. Network Rail should instigate remedial action as appropriate.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	2	Status: Green 2 = Completed
Network Rail should undertake a review of the classification of walls on their infrastructure so that the purpose of each wall is correctly identified in the records and notified to structures examiners. Network Rail should inform structures examiners about any changes in the classification of structures that they are to examine in the current programme.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

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Equipment Type	Place	Time	Date	Incident
National Networks: Freight wagon/RRV	Armathwaite, Cumbria	14:37	28 January 2007	Collision with other train
RAIB Report No:	08/2008		**Published:**	24 April 2008

Summary	
At about 14:15 hrs on Sunday 28 January 2007, a bogie flat wagon known as a salmon wagon ran away along the down line in the down direction near Armathwaite, Cumbria and collided with a Case WX170 RRV positioning new rail with a thimble. This followed an accident earlier in the day, at 06:22 hrs, when a Kirow crane being used to lay new sleepers derailed.	
Recommendations	**Three recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
First Engineering Ltd should instruct their staff under what circumstances they are permitted to couple and uncouple vehicles that make up the consist of Kirow cranes.		
Comment		
First Engineering Ltd has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Amber = Open
First Engineering Ltd should ensure that their staff who are permitted to couple and uncouple rail vehicles are competent in the appropriate sections of the rule book.		
Comment		
First Engineering Ltd has accepted the recommendation and is carrying it out.		

RECOMMENDATION	3	Status: Amber = Open
First Engineering Ltd should ensure that operators of Kirow cranes are adequately trained to respond correctly to a cant compensator alarm.		
Comment		
First Engineering Ltd has accepted the recommendation and is carrying it out.		

Equipment Type	Place	Time	Date	Incident
Light Rail: T68 Tram	Pomona Station, Manchester	17:14	17 January 2007	Passenger train derailment
RAIB Report No:	09/2008		**Published:**	24 April 2008

Summary

At 17:14 hrs on Wednesday 17 January 2007 tram 1005, forming the 16:35 hrs service from Eccles to Piccadilly, was approaching Pomona station. The station and its approach tracks are situated on a viaduct and the approach to the station from the Eccles direction involves a 90 degree left-hand curve of 40 m radius. As the tram was negotiating this curve the left-hand leading wheel of the first bogie derailed by dropping into the four-foot. The speed of the tram at the time of derailment was 6.3 mph (10 km/h).

Recommendations	Five recommendations are made

RECOMMENDATION	1	Status: Green 2 = Completed
GMPTE should put in place procedures to enable them to review the audits carried out by their operating contractor, to satisfy themselves that their contractor's internal audit regime and safety management system are being complied with.		
Comment		
GMPTE has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
GMPTE should review, and if found necessary amend, their contractual arrangements for the Metrolink operation to ensure that essential repairs cannot be deferred for contractual reasons.		
Comment		
GMPTE has accepted the recommendation and has carried it out. The subsequent derailment at St Peter's Square on 29 June 2008 indicates that there are still problems with this issue. ORR is considering whether to close the recommendation.		

RECOMMENDATION	3	Status: Green 2 = Completed
Stagecoach Metrolink should review, and if necessary amend, their Safety Management System so as to require formal approval by a professional head of any derogation to a safety critical standard.		
Comment		
Stagecoach Metrolink has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Amber = Open
GMPTE, jointly with Stagecoach Metrolink, should investigate alternative locations for the safety equipment in Metrolink trams such that it is more accessible when the tram is fully loaded. If it is reasonably practicable, the emergency equipment should be relocated.		
Comment		
GMPTE, jointly with Stagecoach Metrolink has accepted the recommendation and both organisations are carrying it out.		

RECOMMENDATION	5	Status: Amber = Open
GMPTE, jointly with Stagecoach Metrolink, should investigate, and if reasonably practicable implement, changes to the door operating system to allow the driver to open the front set of doors on either side of the tram.		
Comment		
GMPTE, jointly with Stagecoach Metrolink has accepted the recommendation and both organisations are carrying it out.		

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Equipment Type	Place	Time	Date	Incident
National Networks: Class 330 DMU	Nutts Craig UWC, Northern Ireland	15:23	2 August 2007	Level Crossing fatality
RAIB Report No:	10/2008		**Published:**	24 April 2008

Summary	
At approximately 15:22 hrs on 2 August 2007, train B413, the 15:05 hrs Northern Ireland Railways (NIR) service from Londonderry to Belfast Great Victoria Street, collided with a tractor on User Worked Crossing XL202, located approximately 700 m south-west of the disused station at Limavady Junction.	
Recommendations	**Six recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
NIR should reissue its booklet, 'The Safe Use of User Worked Crossings' to enhance the section on special farm activities to include: 1. a clearer description of the circumstances that should trigger a request from a landowner for additional assistance in managing movements at the crossing; 2. details of who, within NIR, a landowner should contact for assistance in these circumstances; and 3. guidance on how long before the event the request should be made. NIR should use the reissuing of the guidance booklet and the accident at crossing XL202 as the basis for reminding users how to cross UWCs safely and how to consult with NIR regarding the provision of additional risk mitigation measures under the defined circumstances.		
Comment		
NIR are considering the recommendation.		

RECOMMENDATION	2	Status: Amber = Open
NIR should revise the risk assessment for crossing XL202 to ensure that it more accurately reflects usage of the crossing.		
Comment		
NIR are considering the recommendation.		

RECOMMENDATION	3	Status: Amber = Open
NIR should review its crossing risk assessment model in the light of this investigation report to establish whether the model's accuracy could be improved by reclassifying road crossing user types, giving greater significance to peak usage of the crossing, reconsidering how animal movements are treated in the model and considering the relative importance of factors affecting visibility and audibility of approaching trains for different types of crossing user. Consideration should also be given to the effectiveness of mitigation provided (e.g. sounding of train horns at whistle boards).		
Comment		
NIR are considering the recommendation.		

RECOMMENDATION	4	Status: Amber = Open
NIR should work with the owner of the land adjacent to crossing XL202 to establish a safe system of work for crossing cattle.		
Comment		
NIR are considering the recommendation.		

RECOMMENDATION	5	Status: Amber = Open
NIR should work with DRDNI to add a template to the Private Crossings (Signs and Barriers) Regulations (Northern Ireland) 2007 that is appropriate to the circumstances at crossing XL202 and includes a permitted variant to allow the telephone number of the crossing operator to be added.		
Comment		
NIR are considering the recommendation.		

RECOMMENDATION	6	Status: Amber = Open
NIR should review the design of evacuation ladders to determine whether an alternative design incorporating handrails could be adopted to provide a more robust means for passengers to descend from train to track.		
Comment		
NIR are considering the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 170 EMU (Turbostar)	Croxton	06:10	12 September 2006	Passenger train derailment
RAIB Report No:	11/2008		**Published:**	13 May 2008

Summary	
At 06:03 hrs on 12 September 2006 the leading bogie of the 05:33 hrs train from Norwich to Cambridge, running number 1K55, derailed at 87 mph (140 km/h); the train ran for 463 m before the driver brought it to a stop. There were no casualties.	
Recommendations	**Eleven recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
Network Rail should assess the sleeper spacings and panel length of all HoldFast crossings until the rate of shrinkage is understood, and take such steps as are necessary so that no panel end is left unsupported by a sleeper. At the same time they should ensure that legged base plates are installed as specified by HoldFast Level Crossings Ltd.		
Comment		
Network Rail has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Amber = Open
Network Rail should review the information that they provide to their level crossing teams, so that the requirements of their standards, the risks of particular crossings using panel surfaces and the installation, inspection and maintenance actions that they expect are clearly communicated to front-line staff in a way that is useful and comprehensible to them.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

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RECOMMENDATION	3	Status: Amber = Open
HoldFast Level Crossings Ltd. should define the performance limits of their level crossing panels in consideration of the loads and layouts to which they are exposed. It is suggested that HoldFast seek assistance from Rosehill Polymers and Network Rail in this task.		
Comment		
Holdfast Level Crossings Ltd advises that feedback is required from Network Rail and Rosehill before they can progress this recommendation.		

RECOMMENDATION	4	Status: Amber = Open
Network Rail should arrange a complete generic risk assessment of the HoldFast level crossing system by an appropriately technically qualified person, once the service environment of level crossings and the limits of performance of panels have been assessed. This should involve Holdfast Level Crossings Ltd. and Rosehill Polymers Ltd. appropriately in accordance with Network Rail's Engineering Safety Management System definition of 'system supplier'. This assessment should review the risks associated with the design, manufacture, installation and maintenance of the system, and should be supported by a wide review of in-service experience. The principles of Network Rail's Engineering Safety Management System should be adopted for guidance. The generic assessment should then be used to develop a site-specific assessment methodology for all locations where HoldFast crossings are to be used.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	5	Status: Amber = Open
Network Rail should update specification NR/SP/TRK/040 to include any revisions or clarifications of load parameters and assurance measures necessary to better define the performance requirements of level crossing panel systems.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	6	Status: Green 2 = Completed
Network Rail should review how it controls any application and design change associated with level crossing panel systems, including working with suppliers, manufacturers and front-line staff.		
Comment		
Network Rail has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	7	Status: Amber = Open
Network Rail should ensure that HoldFast Level Crossings Ltd. have applied for and received product acceptance of their current base plate design.		
Comment		
Ongoing as per ORR 10th progress report.		

RECOMMENDATION	8	Status: Amber = Open
Network Rail should review their processes for approval of level crossing panels and consider adopting the principles of hazard identification and mitigation within their Engineering Safety Management System.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	9	Status: Amber = Open
Network Rail should review all their public highway crossings fitted with panel surfaces to identify any that do not comply with the normal operating conditions defined in NR/SP/TRK/040 or those outside of their limit of application. Any crossings identified as such, should be listed and the risks associated with operating them outside of these conditions assessed and reasonable steps taken to mitigate them.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	10	Status: Green 2 = Completed
HoldFast Level Crossings Ltd should amend their panel designs so that the manufacturing configuration of all panels supplied in the future is uniquely and indelibly marked on the panel, so as to be visible when the panel is in-situ in a level crossing.		
Comment		
Holdfast Level Crossings Ltd has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	11	Status: Amber = Open
HoldFast Level Crossings Ltd and Rosehill Polymers Ltd should put in place processes so that any lessons learned during the addressing of the recommendations of this report to other users of their level crossing surface system.		
Comment		
Holdfast Level Crossings Ltd advises that feedback is required from Network Rail and Rosehill before they can progress this recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 66 Locomotive	Camden Road Tunnel	22:40	19 July 2007	Runaway incident
RAIB Report No:	12/2008		**Published:**	22 May 2008

Summary	
When EWS train 7M59, the 20:10 hrs from Angerstein Wharf to London St Pancras Churchyard Sidings, started from signal WH204 at the south end of Camden Road Tunnel, the screw coupling broke between the second and third wagons from the back of the train. The driver examined the rear of the front portion of the train and concluded that while the train was stopped at signal WH204, vandals had opened the brake pipe cock and main reservoir cock and had removed the tail lamp. He did not realise that the train had divided and did not see the two detached wagons which were in the tunnel. After the front portion had worked into Churchyard Sidings, the two detached wagons ran away southwards for 200 to 300 metres, reversed direction and came to rest about 140 metres from where the runaway started.	
Recommendations	**Eight recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
EWS should revise their operational procedures to require drivers to take the TOPS list with them and use this to check the consist if they need to examine their train following an unsolicited brake application.		
Comment		
EWS advise that this recommendation has been implemented. ORR is considering whether to close the recommendation.		

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RECOMMENDATION	2	Status: Amber = Open
Network Rail should review the competence management system applied to signallers with the aim of improving the way that signallers' actions in response to accidents and incidents are practised and assessed.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	3	Status: Green 2 = Completed
EWS should revise their operational procedures to require maintenance controllers to always consider the possibility of a divided train when giving advice to drivers following a report of an unsolicited brake application.		
Comment		
EWS has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Green 2 = Completed
EWS should implement a process to brief its maintenance staff that heat should not be applied to forged components such as couplings to prevent a degradation in the material properties.		
Comment		
EWS has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	5	Status: Green 2 = Completed
EWS should review and amend, if necessary, its maintenance processes relating to the brake system of HLA/JHA and HGA wagons to ensure that all required maintenance and quality assurance measures are covered.		
Comment		
EWS has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	6	Status: Green 2 = Completed
EWS should introduce a system to monitor incidents of coupling failures by type of coupling.		
Comment		
EWS has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	7	Status: Green 2 = Completed
EWS should introduce a system to analyse coupling failures for individual types of coupling and implement any necessary measures to reduce the number of occurrences of train divisions for specific coupling types.		
Comment		
EWS has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	8	Status: Green 2 = Completed
EWS should revise its procedures for keeping wagon maintenance records to ensure that continuous records are available which provide an auditable trail of the maintenance history throughout each individual wagon's life.		
Comment		
EWS has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 121 DMU	Aylesbury	10:42	27 August 2007	Unauthorised movement
RAIB Report No:	13/2008		**Published:**	11 June 2008

Summary	
An operating irregularity occurred at 10:38 hrs on 27 August 2007 on the single line between Aylesbury and Claydon L&NE Junction. A passenger train ran onto a section of line already occupied by a locomotive which was part way through making a run-round move.	
Recommendations	**Four recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
All freight operators should revise their operating instructions for single lines with intermediate token instruments to state clearly that the token must not be returned while any part of the train is on the single line. This should be included in the regular briefing/assessment process.		
Comment		
All FOCS except EWS have accepted the recommendation, and have carried it out. The RAIB does not believe that EWS's arguments justify rejection and is discussing the issue with the ORR. ORR is considering the response.		

RECOMMENDATION	2	Status: Amber = Open
EWS should introduce processes so that all shunters are fully briefed on the method of operation of all locations at which they are required to work.		
Comment		
EWS has accepted the recommendation and is carrying it out.		

RECOMMENDATION	3	Status: Green 2 = Completed
Rail Safety and Standards Board (RSSB) should devise a means of disseminating to the industry safety lessons from incidents which are not so urgent as to require an NIR.		
Comment		
RSSB has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Green 2 = Completed
Network Rail and the operators who use this line should agree who is authorised to receive and deliver the token and update the sectional appendix and/or their operating instructions accordingly.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

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Equipment Type	Place	Time	Date	Incident
Heritage: Class 08 shunter	Lydney Town on the Dean Forest Railway	14:40	15 August 2007	Level Crossing injury
RAIB Report No:	14/2008		**Published:**	2 July 2008

Summary
At approximately 14:40 hrs on Wednesday 15 August 2007 a special passenger train from Norchard to Lydney Junction on the Dean Forest Railway (DFR), struck a partially open gate at Lydney Town level crossing, detaching the gate from its mountings. The gate struck and seriously injured one of the two crossing keepers. No other person was physically injured, and there was only superficial damage to the train.

Recommendations	Ten recommendations are made

RECOMMENDATION	1	Status: Green 2 = Completed
The Dean Forest Railway should review the system by which trains approach Lydney Town level crossing from the north so as to verify that the speed limit allows trains to stop before reaching the crossing in all cases of degraded braking and poor rail head conditions. The speed limit should also take into account a driver's ability to achieve the desired speed in a locomotive not equipped with a speedometer.		
Comment		
The Dean Forest Railway has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	2	Status: Green 2 = Completed
The Dean Forest Railway should introduce a process to formally and periodically instruct all drivers of the importance of adhering to all published speed limits.		
Comment		
The Dean Forest Railway has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	3	Status: Green 2 = Completed
The Dean Forest Railway should put in place systems to cover the provision, maintenance and use of the sanding systems on locomotives, autocoaches and (where appropriate) brake vans in use on the railway.		
Comment		
The Dean Forest Railway has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Green 2 = Completed
The Dean Forest Railway should amend its procedures and rule book such that in the event of signalling system malfunctions there are adequate degraded safety mode procedures in place. The systems should also include a process for formally warning ground based operational staff and train crew when a safety system has been degraded.		
Comment		
The Dean Forest Railway has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	5	Status: Amber = Open
The Dean Forest Railway should set up a system for the setup and maintenance of the treadle mechanism on the approach to Lydney Town level crossing, in accordance with a recognised industry standard.		
Comment		
The Dean Forest Railway has accepted the recommendation and is carrying it out.		

RECOMMENDATION	6	Status: Amber = Open
The Dean Forest Railway should document the optimum procedure, and train and assess footplate crews in the action to be taken, to stop an auto-train quickly in poor railhead conditions and other emergency situations.		
Comment		
The Dean Forest Railway has accepted the recommendation and is carrying it out.		

RECOMMENDATION	7	Status: Green 2 = Completed
The Dean Forest Railway should appoint a competent person to advise the company on the steps needed to comply with health and safety law.		
Comment		
The Dean Forest Railway has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	8	Status: Amber = Open
The Dean Forest Railway should, with advice from a suitably qualified person, review its safety management arrangements and implement any changes that are found to be necessary.		
Comment		
The Dean Forest Railway has accepted the recommendation and is carrying it out.		

RECOMMENDATION	9	Status: Amber = Open
The Dean Forest Railway should implement procedures to ensure the RAIB is notified of accidents or incidents in accordance with the requirements of the Railways (Accident Investigation and Reporting) Regulations 2005.		
Comment		
The Dean Forest Railway has accepted the recommendation and is carrying it out.		

RECOMMENDATION	10	Status: Green 2 = Completed
The Dean Forest Railway should take appropriate steps to bring its practice on the employment of drivers over 70 years old into line with its policies relating to medical fitness.		
Comment		
The Dean Forest Railway has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

5 Annexes

Equipment Type	Place	Time	Date	Incident
Heritage: Danske Statsbaner Carriage	Wansford on the Nene Valley Railway	12:10	16 February 2008	Train door incident
RAIB Report No:	15/2008		**Published:**	17 July 2008

Summary	
On 16 February 2008, a two-year-old child fell from the vestibule of a carriage in the late running 11:20 hrs train from Wansford to Peterborough on the NVR. The train was running at approximately 20 mph (32 km/h) at the time of the accident. The child received njuries to her head and some general bruising but was discharged from hospital the same day after treatment.	
Recommendations	**One recommendation is made**

RECOMMENDATION	**1**	**Status: Green 1 = Closed**
NVR should investigate and urgently implement measures to reduce the risk of people being able to accidentally open the doors of their ex-DSB coaches, and any other carriages on the railway employing internal door handles. Their considerations should include, either singly or in combination: • modify the door handles to make them less easy to open accidentally (for example by making them stiffer to turn); and • provide clear warning information to passengers, such as signs on the inside of the doors or safety announcements, in order to alert them and young children in their care, to keep away from the door handles while the train is in motion.		
Comment		
NVR has accepted the recommendation and has carried it out. ORR has closed the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 66 Locomotive	Duddeston Junction	02:20	10 August 2007	Freight train derailment
RAIB Report No:	16/2008		**Published:**	31 July 2008

Summary	
At around 02:20 hrs on Friday 10 August 2007, two wagons forming part of train 4O84, travelling from Freightliner's Lawley Street terminal to the Isle of Grain, became derailed just outside the terminal.	
Recommendations	**Eight recommendations are made**

RECOMMENDATION	**1**	**Status: Amber = Open**
Freightliner should investigate the possibility of modifying current, or developing new, software, to give warning if containers are loaded onto a wagon in a way that contravenes company loads standards with regard to the distribution of load. Appropriate solutions should be implemented.		
Comment		
Freightliner has accepted the recommendation and is carrying it out.		

RECOMMENDATION	2	Status: Amber = Open
Freightliner should take steps, including re-briefing and assessment, to ensure that loading staff clearly understand and can apply the company's rules on permissible loading of container wagons. Freightliner should monitor compliance with their loading standards to provide assurance that such rules are being complied with.		
Comment		
Freightliner has partially accepted this recommendation, but will work outside its standards on occasion for "commercial imperatives". The RAIB is discussing this issue with the ORR.		

RECOMMENDATION	3	Status: Amber = Open
Freightliner should re-examine how they present information on permissible container wagon loads. They should aim to present the information in a clear unambiguous way that suits the needs of the user of the information, be they terminal staff, Freightliner management, wagon manufacturers or approval bodies. This will involve the modification of MIE 0767 and the possibility of generating other related documents suited to the particular needs of the recipients.		
Comment		
Freightliner has accepted the recommendation and is carrying it out.		

RECOMMENDATION	4	Status: Amber = Open
Network Rail Vehicle Conformance Group should put in place procedures so that when considering derailment resistance during the approvals process of wagons, they determine the full range of loads and their distributions that can legitimately be encountered in service, and consider the sensitivity of the wagon to likely longitudinal and lateral offsets in loading. They should take these factors into account when deciding what testing and calculations need to be undertaken to demonstrate compliance with applicable derailment resistance standards.		
Comment		
Network Rail have rejected this recommendation. The RAIB is of the opinion that it remains valid, and is discussing this with the ORR.		

RECOMMENDATION	5	Status: Amber = Open
Freightliner should put in place procedures so that when procuring wagons, they unambiguously define to manufacturers and approvals bodies the full range of loads and distribution of loads that can reasonably expected to be encountered by the wagon in service.		
Comment		
Freightliner has accepted the recommendation and is carrying it out.		

RECOMMENDATION	6	Status: Amber = Open
Freightliner should arrange that the FEA-B wagon wheel unloading performance is re-evaluated taking into account the full range of load conditions they permit (currently defined in MIE 0767) to confirm compliance with GM/RT 2141. This should consider sensitivity to longitudinal and lateral offsets in load that can reasonably be encountered in service.		
Comment		
Freightliner have rejected the recommendation on the basis that it was disproportionate for a "one off" accident. The RAIB notes that there has been a subsequent derailment, and considers the recommendation remains valid. The RAIB is in discussion with ORR about this.		

5 Annexes

RECOMMENDATION	7	Status: Amber = Open
Freightliner should act upon and close NIR 2084.		
Comment		
Freightliner has accepted the recommendation and is carrying it out.		

RECOMMENDATION	8	Status: Amber = Open
Network Rail should amend NR/SP/TRK/001 section 11.4.2 to make clear into which regime, areas that are not covered by measurement vehicles but are operated at less than 20 mph (32 km/h), fall. They should also clarify under what conditions it is mandated for the TME to maintain a list of areas of track not covered by measurement vehicles.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

Equipment Type	Place	Time	Date	Incident
Metro: '95 Tubestock	Tooting Broadway, Northern Line	14:35	1 November 2007	Train door incident
RAIB Report No:	17/2008		**Published:**	28 August 2008

Summary	
On 1 November 2007, at approximately 14:30 hrs, the hem of a passenger's coat was trapped in the closing doors of a southbound Northern Line train at Tooting Broadway as she left the train. The passenger was not able to release herself from the coat until after the train began to move away. Although she fell to the platform while extracting the coat from the door, the injuries she sustained did not cause her to be detained in hospital. The train was stopped as it left the station following the activation of the PEA by a passenger on the train. On completion of its journey to Morden it was taken out of service for examination.	
Recommendations	**One recommendation is made**

RECOMMENDATION	1	Status: Amber = Open
London Underground should investigate the reasons for the apparently greater proportion of instances of persons being trapped and dragged by closed doors on the Northern Line when compared with the average for other LUL lines and take any reasonably practicable steps that are identified to reduce the number of incidents. This investigation should include an analysis of the impact of the following factors: • passenger flow patterns/densities; • visibility of trains during dispatch; • the interface between train operators, in-cab CCTV and other in-cab equipment during train dispatch; • operating procedures; and • the performance characteristics of train doors.		
Comment		
London Underground has accepted the recommendation, and is carrying it out. ORR is considering whether to close the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Network: Class 158 DMU	Barrow-on-Soar	06:32	1 February 2008	Passenger train derailment
RAIB Report No:	18/2008		**Published:**	25 September 2008

Summary	
At 06:32 hrs on 1 February 2008 train 1L03, the 06:13 hrs Nottingham to Norwich train,travelling at 65 mph (104 km/h) collided with debris from a collapsed footbridge at Barrow upon Soar, Leicestershire.	
Recommendations	**Four recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
Network Rail should assess the risks to the safety of workers and the infrastructure which may arise from the transit and operation of road vehicles onto land near the running line, for the purpose of delivering materials. This should include consideration of: a. the alarm systems that Network Rail require to be fitted to tipper lorries delivering to their sites indicating when the body is raised; and b. how road vehicles are to be controlled when operating on Network Rail land near the running line.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	2	Status: Amber = Open
Network Rail should then revise and implement procedures to manage those risks including emphasising the appropriate means of protection of the line.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	3	Status: Amber = Open
RSSB should consider the practicability of design elements on the bogie that limit the degree of deviation from the track following derailments and, where appropriate, proposals should be made to the relevant bodies to make changes to appropriate standards.		
Comment		
RSSB has accepted the recommendation and is carrying it out.		

RECOMMENDATION	4	Status: Amber = Open
Network Rail should review the arrangements for ensuring that their staff and contractors understand the differences between the purposes of T2 and T12 protections and the applicability of each.		
Comment		
Network Rail have rejected the recommendation on the basis that there is no evidence of a wider problem than on this occasion. ORR is considering this response.		

5 Annexes

Equipment Type	Place	Time	Date	Incident
National Networks: Class 455 EMU	Leatherhead	09:57	29 August 2007	Staff hit by train (injury/near miss)
RAIB Report No:	19/2008		**Published:**	23 October 2008

Summary	
At 09:55 hrs on 29 August 2007 a member of railway staff, engaged in routine track inspection work, was struck by a passenger train near Leatherhead station, Surrey, and seriously injured. The injured person was given first-aid by colleagues, treated on site by paramedics and later removed to hospital by air ambulance.	
Recommendations	**Six recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
Network Rail should prohibit red zone working at Leatherhead Junction (reported by Network Rail as already complete).		
Comment		
No response received from Network Rail or ORR.		

RECOMMENDATION	2	Status: White = Awaiting response
Network Rail should review the inspection arrangements for S&C throughout its network, especially at junctions where sighting is restricted by curvature or train speeds are high, so that the staff carrying out the inspection are adequately protected, considering for example: • S&C inspection in non traffic hours, or other green zone arrangements; • provision of suitable lighting to enable inspection in green zone in darkness; and • train operated warning systems.		
Comment		
No response received from Network Rail or ORR.		

RECOMMENDATION	3	Status: White = Awaiting response
Network Rail should review the arrangements for protection of patrolling staff and others whose work involves moving along the line, throughout its network so that adequate warning time to move to a position of safety is always available.		
Comment		
No response received from Network Rail or ORR.		

RECOMMENDATION	4	Status: White = Awaiting response
Network Rail should review its arrangements for the assessment and monitoring of staff who have to set up safe systems of work, so that there is regular confirmation that they are making appropriate arrangements, particularly for work which moves along the line.		
Comment		
No response received from Network Rail or ORR.		

RECOMMENDATION	5	Status: White = Awaiting response
Network Rail should review the implementation of mechanised inspection techniques for plain line, on routes laid with continuous welded rail with the objective of ending the practice of foot patrolling under traffic.		
Comment		
No response received from Network Rail or ORR.		

RECOMMENDATION	6	Status: White = Awaiting response
Network Rail should revise the standards and procedures for the inspection of S&C on the routes referred to in Recommendation 5, so that: • S&C inspections are carried out by specialist staff who are appropriately trained; and • S&C inspection takes place in green zone conditions.		
Comment		
Network Rail has rejected the recommendation as they consider the specialist inspection of S&C was not an issue. The RAIB considers that the issues identified at Grayrigg address that issue, and that the staff safety issues identified in the second bullet point of this recommendation mean it is still valid. The RAIB is still in discussion with the ORR about this.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 390 Pendolino EMU	Grayrigg	20:15	23 February 2007	Passenger train derailment
RAIB Report No:	20/2008		**Published:**	23 October 2008

Summary	
On 23 February 2007 at 20:12 hrs, an express passenger train derailed at facing points, known as Lambrigg 2B points, located near Grayrigg in Cumbria. The train, reporting number 1S83, was the 17:15 hrs service from London Euston to Glasgow, operated by West Coast Trains Ltd, part of Virgin Rail Group, and was travelling at 95 mph (153 km/h). All nine vehicles of the Class 390 Pendolino unit derailed. Eight of the vehicles subsequently fell down an embankment and five turned onto their sides. The train was carrying four crew and at least 105 passengers at the time of the accident. One passenger was fatally injured; 28 passengers, the train driver and one other crew member received serious injuries and 58 passengers received minor injuries. The remaining 18 passengers and two crew members were not physically injured in the derailment. The railway line through the area remained closed until 12 March 2007. Initially this was for the rescue of the injured, then solely for accident investigation, then (in parallel) for accident investigation, vehicle recovery and repairs to the infrastructure, and finally to complete the repairs to the infrastructure.	
Recommendations	**Twenty-nine recommendations are made**

5 Annexes

RECOMMENDATION	1	Status: Amber = Open

1. The intention of this recommendation is that Network Rail should modify the design of the non-adjustable stretcher bar assembly, including its joints, so that it can withstand normal operational loads (and credible faults) with a safety margin and without excessive reliance on human intervention. Network Rail should review its S&C non-adjustable stretcher bar assembly design, so as to understand the relationships between the design, loading, usage, and the inspection and maintenance regimes, and implement any appropriate modifications to the design or the regimes. The following elements (A to G) should be considered to achieve this:

A. Define the system level functional and safety requirements for S&C with non-adjustable stretcher bars.

B. Determine all of the functions that the non-adjustable stretcher bar assembly is required to deliver for the functional and safety performance of the S&C system, including from traffic, fastenings and operating/motor forces.

C. Determine a set of load cases for the non-adjustable stretcher bar assembly, including its rail fastening arrangement. This should include forces which it experiences during both normal and reasonably foreseeable fault conditions. All foreseeable combinations of normal and fault conditions that could exist within the stretcher bar assembly itself, other components and the S&C system, should be considered. This should include, but not be limited to:
   a. configurations of S&C on which it is fitted;
   b. traffic usage patterns and track geometries;
   c. manufacturing and installation variations.

   The load cases should be established and validated by field measurements, supported by appropriate other testing, modelling and/or calculation.

D. Assess the performance of the current non-adjustable stretcher bar assembly against the forces that arise from the load cases.

E. If justified by the outcomes of the previous work, modify the current design of the non-adjustable stretcher bar assembly to include an appropriate factor of safety. The revised design should be risk assessed, taking into account the quality and reliability of human intervention in inspection and maintenance (refer also to Recommendation 13). Should measures such as component redundancy or other defence barriers be necessary to achieve the required integrity, the reliability of each redundant element and defence barrier should itself be assessed using the above process.

F. Modify the current installation, inspection and maintenance regimes against the requirements determined in E so that they are appropriately risk based for the new design (refer also to Recommendation 13).

G. Introduce processes to implement the modified design and modified inspection and maintenance regimes and any associated mitigation measures where justified.

Comment

Network Rail has accepted the recommendation and is carrying it out.

RECOMMENDATION	2	Status: Amber = Open

The intention of this recommendation is that Network Rail should implement processes to gather and analyse data, both in the short term and thereafter, that will enable it to identify and monitor accident precursor events in its S&C. This information can then be used to identify potential problems before they can lead to catastrophic failure, and also to inform the development of process safety indicators (see Recommendation 14). Network Rail should implement processes to:

a. capture, and record on a single national database, data about component failures, and interventions made during maintenance and inspection activities, for each set of S&C;

b. use the data from a) above to monitor failure and intervention rates locally and nationally in the behaviour of S&C components;

c. identify precursor faults that might lead to more serious failures; and

d. identify those precursor faults where the failure and intervention rates indicate a need to reduce the risk of catastrophic failure.

Comment

Network Rail has accepted the recommendation and is carrying it out.

RECOMMENDATION	3	Status: Amber = Open
The intention of this recommendation is that Network Rail should implement the measures it identifies from Recommendation 2. Network Rail should introduce processes to implement any design modifications arising from Recommendation 2 using the principles outlined in Recommendation 1.		
Comment		
Network Rail has rejected the recommendation and ORR is considering its response. The RAIB considers that the recommendation remains valid.		

RECOMMENDATION	4	Status: Amber = Open
The intention of this recommendation is that Network Rail should move to a riskbased regime for the maintenance and inspection of S&C. Network Rail should introduce processes that require the adoption of a structured risk based approach when reviewing and enhancing its standards for the inspection and maintenance of all existing types of S&C.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	5	Status: Amber = Open
The intention of this recommendation is that Network Rail should, as soon as possible, provide its front line staff with clear guidance on when a defect, fault or failure requires investigating, and the scope of investigation required. Network Rail should include in maintenance standards and instructions: • the circumstances under which an investigation of a defect, fault or failure to S&C systems as a whole or its sub-components is required; and • definition of the scope of the investigation and other immediate actions to be taken (e.g. temporary speed restrictions, special monitoring) for each situation.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	6	Status: Amber = Open
The intention of this recommendation is that Network Rail should be able to systematically identify, and rectify, any potential or actual incidence of flange-back contact. Network Rail should review its processes for S&C examination so that the following are included: a. examination for, and reporting of, signs of flange-back contact; and b. measuring, recording and reporting gauge, free wheel clearance and residual switch opening dimensions,at frequencies commensurate with adequate risk control.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	7	Status: Green 2 = Completed
The intention of this recommendation is that Network Rail should provide its front line staff with adequate information on the correct installation, inspection and maintenance of fasteners associated with non-adjustable stretcher bars. Network Rail should modify its maintenance instructions to define: • how staff should initially fit and tighten non-adjustable stretcher bar fasteners; • how staff should inspect and maintain the fasteners if necessary during subsequent visits, including practical instructions to achieve any required torque; • when a fastener is considered to be loose taking into account the nut rotation required to achieve the required preload; • how staff should act in the event of a fastener being identified as loose; • how staff should record actions taken; and • how staff should carry out any other actions identified from Recommendation 4.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

5 Annexes

RECOMMENDATION	8	Status: Amber = Open
The intention of this recommendation is that Network Rail should provide its front line staff with clear information on permitted residual switch opening dimensions. Network Rail should revise its maintenance instructions to clearly specify the value (or range of values) required for residual switch openings, particularly with reference to the maximum permissible value (or range of values) and the frequency at which it must be checked.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	9	Status: Amber = Open
The intention of this recommendation is that Network Rail should provide its front line signalling maintenance staff with all the information that they need to carry out their work, including secondary documents referred from principal documents, and that its systems provide for checking and recording the actions taken. The information from this system should be readily accessible and usable on or off site. Network Rail should review management systems and associated documentation covering the maintenance of S&C systems so that signalling maintenance staff: a. have ready access to all relevant documentation on and off site; b. are reminded on site of all the required maintenance actions; c. positively record that each required maintenance action has been carried out; and d. are subject to regular supervisory checks to verify that actions that are required to be taken have been carried out to the required quality.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	10	Status: Green 2 = Completed
The intention of this recommendation is that Network Rail should improve the quality of the existing basic visual inspections. Longer term issues concerning track inspection are dealt with under Recommendation 19. Network Rail should review and amend its processes for basic visual track inspection so that the issues identified in this report are addressed. To achieve this Network Rail should consider issuing modified instructions to define: a. the contents of task instructions issued to staff undertaking basic visual inspections; b. the nature of defects that can occur and how to detect those that are difficult to readily observe; c. job cards to advise the start and finish locations and the direction of the inspection for every occasion; d. the information supplied to a patroller before an inspection in terms of clearly-presented intelligence on previously-reported defects; e. the scope of information that is to be recorded during an inspection (including definition of the need to record or comment on previouslyreported defects); f. the requirement to make positive statements about areas of the inspection where no defects have been found; g. the checks for completeness that should be made within the track section manager's office, including verification that every inspection has been carried out; h. the analysis and supervision that should be undertaken to confirm that inspections are being conscientiously completed; and i. a suitable level of continuity that can be achieved by identifying individual patrollers with individual sections.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	11	Status: Amber = Open
The intention of this recommendation is to ensure that when a supervisory and a basic visual inspection are combined, both are fully and correctly delivered, and recorded. Network Rail should modify its processes to specify the following safeguards when a supervisor's visual track inspection is combined with a basic visual inspection: a. all the paperwork relevant to the basic visual inspection (see Recommendation 10) is supplied to the supervisor; and b. an assurance check is carried out by a person other than the relevant supervisor to confirm that both inspections have been completed and recorded appropriately.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	12	Status: Amber = Open
The intention of this recommendation is that Network Rail should address the competence and management issues relating to the inspection and maintenance of S&C that have been demonstrated in this report. Network Rail should review its processes for practical training, assessment competence assurance for those undertaking S&C inspection and maintenance against current UK rail industry best practice (e.g. ORR's publication 'Developing and Maintaining Staff Competence'), and make relevant changes so that the requirements arising from Recommendations 6, 7, 8, 9, 10 and 11, as appropriate, and those from the more general observation about competence in this report, can be delivered.		
Comment		
Network Rail has rejected the recommendation and ORR are considering its response. The RAIB considers that the recommendation remains valid.		

RECOMMENDATION	13	Status: Amber = Open
The intention of this recommendation is that Network Rail should establish whether it is practicable, in human factors terms, for the inspection and maintenance processes to identify and rectify all defects to an adequate and consistent standard, and revise the design of S&C to allow for any identified impracticability or variability in those activities. Network Rail should conduct a review, focused on human factors, to develop an accurate understanding of the practicability of, and variability in, the performance and outcome of inspection and maintenance so that any issues identified can be taken into account in the design of S&C systems and the associated inspection and maintenance specification. This activity is integral to Recommendations 1 and 10, and a precursor to Recommendation 19.		
Comment		
Network Rail has rejected the recommendation and ORR are considering its response. The RAIB considers that the recommendation remains valid.		

RECOMMENDATION	14	Status: Amber = Open
The intention of this recommendation is that Network Rail should have adequate monitoring of S&C failure precursors. Network Rail should review and improve its management arrangements for monitoring performance in relation to the inspection and maintenance of S&C assets, taking account of the guidance contained in HS(G) 254, 'Developing process safety indicators' by introducing an suitable 'leading' and 'lagging' performance indicators. The indicators should encompass measures of the reliability of both maintenance and inspection activities and the performance and condition of key components.		
Comment		
Network Rail has rejected the recommendation and ORR are considering their response. The RAIB considers that the recommendation remains valid.		

5 Annexes

RECOMMENDATION	15	Status: Green 2 = Completed
The intention of this recommendation is that Network Rail's compliance and assurance systems should mandate site checks of its S&C asset so that it is independently aware of the actual state of its assets on the ground, any developing trends in its asset performance (see Recommendation 2), and their relationship to its records from inspections. Network Rail should extend its compliance and assurance processes to include independent end product checks on a sample of its S&C asset to: • confirm that its inspections and work database reflect the physical state of its assets; • confirm that the asset is compliant with appropriate standards; • confirm that the actions identified in Recommendations 1 to 3 are, in fact, delivering an improvement in the performance of S&C assets; and • observe for defects or problems that, although the asset and systems may comply with the appropriate standards, may effect the safety of the line.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	16	Status: Amber = Open
The intention of this recommendation is that Network Rail should specify adequate opportunities for inspection (and also for maintenance, although recognising that lack of maintenance opportunities was not an issue in the Grayrigg derailment) activities when developing infrastructure enhancement projects. Network Rail should include within its infrastructure enhancement project processes an assessment of the impact of any project on the inspection and maintenance of the assets at a stage of the project which allows identification and implementation of suitable measures before commissioning.		
Comment		
Network Rail has taken steps that it considers address the recommendation. ORR is considering these steps. The RAIB does not cosider the response addresses the issue raised, and is in discussion with ORR about this.		

RECOMMENDATION	17	Status: Green 2 = Completed
The intention of this recommendation is that Network Rail should review whether there is currently adequate access for inspection on its main-line routes. Network Rail should review and, if necessary, revise its access arrangements and plans (including Rules of the Route) for its main-line routes. This should be done to provide for the needs of maintenance and inspection of existing infrastructure, given current and planned traffic levels.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	18	Status: Green 2 = Completed
The intention of this recommendation is that Network Rail should review the interfaces in its headquarters' engineering department concerning S&C, with particular reference to track and signalling engineering. Network Rail should review and, if necessary, revise its management organisation to provide effective stewardship of S&C assets. The review should include consideration of the creation of a single professional department (design authority) responsible to the chief engineer for all aspects of S&C, including specifying design, procurement, installation, set-up, commissioning, inspection, maintenance and performance.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	19	Status: Amber = Open
The intention of this recommendation is that Network Rail should review its track inspection requirements so that best use is made of new technology for plain line and S&C inspections. Network Rail should re-assess the differing requirements of plain line and S&C track inspections with regard to: • the amount that is appropriate to be done by human intervention, and the amount by automated data capture, for both types of track; • the different relative frequencies that may be appropriate for both types of track; and • what protection arrangements should be provided. Consideration should be given to separate processes for plain line and S&C inspections to recognise the different requirements of each.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	20	Status: Amber = Open
The intention of this recommendation is that Network Rail should carry out its S&C engineering safety management in line with UK railway industry documented best practice. Network Rail should review its S&C engineering safety management arrangements with reference to current UK rail industry best practice (e.g. the 'Yellow Book') and address any deficiencies identified.		
Comment		
Network Rail has rejected the recommendation and ORR are considering its response. The RAIB considers the recommendation remains valid.		

RECOMMENDATION	21	Status: Amber = Open
The intention of this recommendation is to ensure that, in the short term, ORR explicitly includes S&C in its delivery plan assignments for as long as it remains an identified high risk in the ORR's assessment. In the longer term the intention is to ensure that the ORR includes assignments for all the higher risk items within its delivery plan, irrespective of the topic in which it is grouped. The ORR should amend its process for planning and briefing the annual delivery plan to make explicit when an area of high risk is to be included within an individual assignment.		
Comment		
ORR is considering the recommendation.		

RECOMMENDATION	22	Status: = White = Awaiting response
The intention of this recommendation is to minimise the risk of injury from detachment of seats in the event of an accident, by enhancing the requirement in the current design standard, for seats to deform in a ductile manner when overloaded, particularly in the lateral direction. RSSB should make a proposal in accordance with the Railway Group Standards code to introduce a specific requirement in the relevant interiors design standard, that future seats designs, including those that may be fitted at refurbishment, should demonstrate a ductile deformation characteristic, when overloaded in the vertical, lateral or longitudinal directions, in order to minimise the risk of complete detachment in accidents.		
Comment		
RSSB is considering the recommendation.		

RECOMMENDATION	23	Status: Amber = Open
The intention of this recommendation is to minimise the risk of injury arising from the detachment of heavy internal panels in the event of an accident. RSSB should consider, and where appropriate, make a proposal in accordance with the Railway Group Standards code to implement a requirement in the relevant design standard to provide sufficient means of retention for internal panels assessed as capable of causing serious injury in the event of complete detachment.		
Comment		
RSSB has accepted the recommendation and is carrying it out.		

5 Annexes

RECOMMENDATION	24	Status: Green 2 = Completed
The intention of this recommendation is to minimise the risk of the reading light panels in a Pendolino train becoming detached in the event of an accident. Virgin Trains and Angel Trains should review the mounting of the reading light panels on the Class 390 Pendolinos and take steps to minimise occupant injury from failure of the panel retention system.		
Comment		
Virgin Trains and Angel Trains have accepted the recommendation, and have carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	25	Status: = White = Awaiting response
The intention of this recommendation is that general safety lessons regarding rail vehicle crashworthiness emerging from the Grayrigg accident are considered and, where appropriate, research is undertaken to assess the practicability of making improvements. If suitable improvements are found, proposals should be made for changes to crashworthiness standards. RSSB should: a. Identify any gaps in industry knowledge about vehicle dynamic behaviour in derailments (for example the forces acting on inter-vehicle couplers and bogie retention systems) and where appropriate, undertake research to investigate improvements in vehicle performance. Where appropriate, RSSB should make a proposal in accordance with Railway Group Standards code to change relevant design standards. b. Investigate and, where practicable, make a proposal in accordance with Railway Group Standards code to introduce specifications for roll-over strength and penetration resistance of rail vehicle bodyshells in design standards to ensure consistency of performance in accidents across all future fleets. c. Undertake research into the injury mechanisms at Grayrigg to identify means of improving occupant survivability in future rail vehicle designs. Where appropriate, RSSB should make a proposal in accordance with Railway Group Standards code to change relevant design standards. d. Review and revise, if necessary, its past research into seat belts in rail vehicles in the light of the findings from the Grayrigg derailment, taking into account foreseeable changes to vehicle behaviour in future accidents, in order to check whether the conclusions reached therein remain valid. e. Confirm and publish the results of its cost benefit analysis as to the reasonable practicability of fitting seat belts to passenger trains. If the analysis shows that fitting seat belts is other than grossly disproportionate to the risks involved, further investigate how to take the issue forward.		
Comment		
RSSB is considering the recommendation.		

RECOMMENDATION	26	Status: Green 1 = Closed
The intention of this recommendation is to assist the emergency services to optimise their response to an accident. Cumbria Police should carry out a review of, and change as appropriate, its management, procedures and training relating to the rapid and accurate location of an accident from information received in emergency calls in the control room so that received information is filtered effectively and without loss of significant data.		
Comment		
Cumbria Police has accepted the recommendation and has carried it out.		

RECOMMENDATION	27	Status: Amber = Open
The intention of this recommendation is to promote the safety of Ambulance Service personnel who are called upon to carry out rescue work after a railway accident. The Department of Health's eleven mainland Ambulance Service NHS Trusts, the Welsh Ambulance Services NHS Trust and the Scottish Ambulance Service should: • agree and implement suitable processes so that their staff are suitably trained for work on the railway; and • agree a protocol with Network Rail to cover the necessary steps for the ambulance services to enter Network Rail property safely in an emergency.		
Comment		
The Welsh and Scottish Ambulance Services have accept the recommendation and are carrying it out.		

RECOMMENDATION	28	Status: White = Awaiting response
The intention of this recommendation is to improve communications between rescue organisations after an accident. The Ministry of Defence should equip the Royal Air Force and Royal Navy search and rescue fleet of helicopters with radio communication equipment that allows direct contact with civil emergency services.		
Comment		
The Ministry of Defence is considering the recommendation.		

RECOMMENDATION	29	Status: White = Awaiting response
The intention of this recommendation is to identify possible links between working hours and performance, and to implement steps that can be taken to reduce any resultant risk: a. Network Rail should carry out research to establish if there is a link between working long hours over extended periods, including the number and distribution of rest days, and the propensity for human errors during safety critical tasks. The study should include, but not be limited to, those staff who have ordinary office-based duties interspersed with safety critical tasks, such as inspections. The output of the research should be a set of threshold levels of hours for differing roles. b. Using the output of the research, Network Rail should establish procedures to deliver compliance with the thresholds identified.		
Comment		
Network Rail and ORR are considering the recommendation.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 165 DMU	Reading Station	04:58	29 November 2007	Staff hit by train (Fatality)
RAIB Report No:	21/2008		**Published:**	28 October 2008

Summary	
At 04:53 hrs on 29 November 2007, a track worker was struck and killed by a train while walking on the line east of Reading station. He was on site to remove detonator protection from the up and down relief lines following a T3 possession.	
Recommendations	**Five recommendations are made**

RECOMMENDATION	1	Status: Green 2 = Completed
Network Rail should specifically prohibit the use of umbrellas by staff on or near lines which are open to traffic.		
Comment		
Network has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

5 Annexes

RECOMMENDATION	2	Status: Green 2 = Completed
Network Rail should introduce procedures to improve the safety of staff removing detonator protection by: a. reinforcing the message that persons removing detonator protection should either be permanently clear of the running lines, or have sufficient sighting to protect their own safety while walking back to the permanent position of safety before confirming to the PICOP that the protection has been lifted, for example by including this information in the RIMINI plan; and b. providing guidance to BRMs on the sequence for withdrawing detonator protection to reduce the opportunity for a possession to be given up unintentionally before staff are clear of the track.		
Comment		
Network Rail has accepted the recommendation, and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	3	Status: Amber = Open
Network Rail should look critically at the possession management process to reduce the need for staff to be on the track for the purpose of taking or giving back a possession.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	4	Status: Amber = Open
Network Rail should introduce a structured approach to the monitoring of compliance with Network Rail's standard maintenance procedure NR/PRC/MTC/0117 'Planned general safety inspections', and incorporate in this the means to assess the workload of those tasked with undertaking these inspections.		
Comment		
Network Rail's initial response to this recommendation is to take no action. The RAIB believe that the recommendation is still valid, and is in discussion with the ORR about this.		

RECOMMENDATION	5	Status: Amber = Open
Network Rail should, at those locations where T3 protection is regularly placed, introduce a system to physically mark the location of possession limit boards on the track to assist staff in positioning and checking the position of equipment, or consider installing a semi-permanent possession limit board system.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

Equipment Type	Place	Time	Date	Incident
National Networks: Two Class 158 DMUs	Ty Mawr	12:57	29 August 2007	Unauthorised train movement
RAIB Report No:	22/2008		**Published:**	30 October 2008

Summary	
At around 10:50 hrs on 29 August 2007, an emergency speed restriction (ESR) of 20 mph (32 km/h) was imposed between Newtown and Caersws on the Shrewsbury to Machynlleth line close to Ty Mawr Farm User Worked Crossing (UWC) because of two defects in a length of rail. The signaller at Machynlleth was responsible for advising drivers of the ESR. At around 12:35 hrs, the signaller contacted the driver of train 1G71, the 11:27 hrs Aberystwyth to Birmingham (New Street) operated by Arriva Trains Wales (ATW), at Talerddig and advised him of the ESR approximately 10 miles away at Ty Mawr. Train 1G71 left Talerddig and, after making a scheduled station stop at Caersws, approached Ty Mawr at a speed of 75 mph (120 km/h). The driver reduced speed to 58 mph (93 km/h) as he ran through the ESR.	
Recommendations	**Seven recommendations are made**

RECOMMENDATION	1	Status: Amber = Open
The RSSB should, in consultation with Network Rail and representatives from the train operators, develop and implement a method for formally dictating and recording communication between signallers and drivers to be used when it is necessary for a signaller to warn drivers of a hazard ahead that requires reduction in speed, and no physical warning of the speed restriction is present locally. Consideration should be given as to whether the chosen means could be designed in such a way as to enable it to be used as an effective visual reminder to the driver of the location of the hazard and the speed restriction applied.		
Comment		
Rejected by Network Rail, and redirected to ATOC who also rejected it. ORR is considering next steps.		

RECOMMENDATION	2	Status: White = Awaiting response
Network Rail should: a. use the circumstances of the incident at Ty Mawr to re-brief the requirements of 'Interpretation of Apply 20 mph ESR' (Appendix D, Page 79) in Standard NR/SP/TRK/001, 'Inspection and Maintenance of Permanent Way'; and b. within one year of the briefing taking place, conduct an audit of ESRs imposed in the intervening period, to identify the number of occasions when the duration of an ESR has exceeded two hours without emergency equipment being erected, and take action, as appropriate, to address any deficiencies found.		
Comment		
No response received from Network Rail or ORR.		

RECOMMENDATION	3	Status: White = Awaiting response
Network Rail should review the range of speed restrictions and the timings for trains between Talerddig and Caersws to determine whether rationalisation of the number of such restrictions and/or relaxation of timings could enhance the driveability of the route and reduce the potential for distraction and misunderstanding by train drivers under degraded operating conditions.		
Comment		
No response received from Network Rail or ORR.		

5 Annexes

RECOMMENDATION	4	Status: White = Awaiting response
Network Rail should conduct a review of the availability of warning equipment for emergency speed restrictions for the more remote areas of its network. The purpose of the review should be to identify how the requirement in NR/SP/TRK/001 to install warning equipment within two hours can be achieved. The review should include consideration of whether improvements in the speed of installation could be achieved, for example, by providing warning equipment at additional locations or on road vehicles used by staff who may have to install it as part of their duties.		
Comment		
No response received from Network Rail or ORR.		

RECOMMENDATION	5	Status: White = Awaiting response
Network Rail should: a. review the circumstances of this incident and identify other parts of the network where the length of signal sections results in the potential for a significant period of time to elapse between a driver being informed of an ESR and the ESR being encountered; and b. for each location identified, include within the relevant Sectional Appendix any additional locations where drivers should be reminded of the presence of an ESR ahead and how and by whom that reminder will be administered. The purpose of this recommendation is to identify those areas of the national network where there might be significant elapsed time between a warning of an ESR being given and it being encountered and to provide further warnings to drivers, where practical.		
Comment		
No response received from Network Rail or ORR.		

RECOMMENDATION	6	Status: White = Awaiting response
Network Rail should modify procedure NR/PRC/MTC/MG0110 to list the information that the signaller is required to be told when an emergency speed restriction is to be imposed as defined in section 9.1 of module SP of the rule book, and clearly identify who is responsible for providing each item of information.		
Comment		
No response received from Network Rail or ORR.		

RECOMMENDATION	7	Status: Amber = Open
The Association of Train Operating Companies should develop guidance for train operating companies on 'for-cause' drugs and alcohol testing with the objective of achieving greater consistency in its application. The guidance should address the issue of who should have the authority to permit a driver to continue driving after an incident. It should also consider different scenarios where drugs and alcohol testing might be required, including how to deal with a situation where an incident requires a member of staff to be screened as soon as reasonably practicable and that member of staff is remote from a location where such testing can easily be administered. The purpose of this recommendation is not to conduct a comprehensive review of drugs and alcohol policy or practice, but rather to offer guidance on the application of existing drugs and alcohol policy in order that a more consistent approach by train operating companies can be achieved.		
Comment		
ATOC has accepted the recommendation and is carrying it out.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 43 HST Power car & Class 165 DMU	Didcot North Junction	16:38	22 August 2007	SPAD
RAIB Report No:	23/2008		**Published:**	20 November 2008

Summary

At 16:38 hrs on 22 August 2007 train 1W47, the 15:51 hrs First Great Western passenger service from London Paddington to Worcester Shrub Hill, formed by an HST set, passed SB2209 signal at danger on the Down Avoiding line to the north of Didcot Parkway station. This signal is located on the approach to Didcot North junction and is fitted with TPWS equipment that is designed to mitigate the consequences of signals being passed at danger.

At the same time train 2P66, the 16:21 hrs First Great Western passenger service from Oxford to London Paddington, was just passing clear of the junction after being routed from the Up Oxford line towards Didcot Parkway station. Despite the correct operation of the TPWS equipment, train 1W47 did not come to a stand until it had run onto the Up Oxford line, foul of the junction. No injuries were incurred by any of the staff or passengers concerned. No damage was sustained by either train. However, had the circumstances been slightly different this event could have resulted in the two trains colliding.

Recommendations	Nine recommendations are made

RECOMMENDATION	1	Status: White = Awaiting response

First Great Western should review its driving policy with the objective of enhancing its guidance on driving technique when approaching signals that are showing restrictive aspects. This review should include consideration of the principle that when travelling at or near the maximum permitted line speed drivers should not apply power after passing a signal with a restrictive aspect and should not subsequently reapply power until the aspect of the next signal is observed to be no more restrictive than the signal they have just passed.

Having completed the above review First Great Western should ensure that its drivers are briefed on any changes to the driving policy and trained accordingly.

Comment

No response received from First Great Western or ORR.

RECOMMENDATION	2	Status: White = Awaiting response

Network Rail should, in consultation with train operators, review its existing risk assessments for all existing junction signals in order to verify that:

- the actual braking performance of trains signalled by that route has been correctly taken into account; and
- proper consideration has been given to any reasonably practicable measures identified.

When addressing this recommendation Network Rail should ensure that risk assessors are competent and have access to accurate input data.

Comment

No response received from Network Rail or ORR.

RECOMMENDATION	3	Status: Green 2 = Completed

In support of Network Rail's assessment of risk at junction signals (see Recommendation 2), RSSB should make a 'proposal', in accordance with the Railway Group Standards Code, to amend Railway Group Standards to require train operators, in consultation with rolling stock owners, to publish and disseminate to Network Rail any detailed data they may possess relating to the actual braking performance of the trains they operate on the national network (for a range of typical train formations). This should include the distance to stop from a range of speeds (or the duration of any freewheel time and the subsequent rate of deceleration).

Comment

RSSB has accepted the recommendation and has carried it out. Awaiting further discussion.
ORR is considering whether to close the recommendation.

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RECOMMENDATION	4	Status: Green 2 = Completed
RSSB, in consultation with industry stakeholders, should review the practicability of enhancing the minimum emergency braking performance mandated for new passenger trains in Railway Group Standards. The objective of any such enhancement shall be to improve consistency between the minimum braking performance of new passenger trains and the design of train protection systems in use on the network. If shown to be reasonably practicable, RSSB should make a 'proposal', in accordance with the Railway Group Standards Code, to amend Railway Group Standards accordingly.		
Comment		
RSSB has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	5	Status: White = Awaiting response
Network Rail should review its management processes with the objective of ensuring that: • the findings of signal and layout risk assessments (using tools such as SAT) are translated into reasonably practicable measures to address the risk identified; and • relevant risk assessments are properly considered when reviewing the actions to be taken in response to recommendations made following investigations.		
Comment		
No response received from Network Rail or ORR.		

RECOMMENDATION	6	Status: White = Awaiting response
ATOC should review its guidance note ATOC/GN007 with the objective of clarifying the advice to passenger train operators on good practice for driving technique when approaching signals displaying a restrictive aspect. This review should give detailed consideration to the adoption of the principle outlined in Recommendation 1.		
Comment		
No response received from ATOC or ORR.		

RECOMMENDATION	7	Status: White = Awaiting response
First Great Western should review its systems for the management of route knowledge with the following objectives: • to assess whether the extent of current route knowledge required by its drivers is compatible with the need for drivers to retain adequate situational awareness; • to assess whether the currently mandated minimum frequency of exposure to each route is sufficient (this review should be updated when the actions at Recommendation 8 have been completed); • to put in place systems for monitoring the actual exposure of drivers to each route they have signed for; and • to assess the adequacy of driver training and competency management systems related to route learning and the retention of route knowledge.		
Comment		
No response received from First Great Western or ORR.		

RECOMMENDATION	8	Status: Amber = Open
RSSB, in consultation with ATOC, and with reference to project T655, should carry out further research into the periodicity of driving turns/refresher training required to acquire and retain route knowledge.		
Comment		
RSSB has accepted the recommendation and is carrying it out.		

RECOMMENDATION	9	Status: White = Awaiting response
Network Rail should ensure that its methodology and computer systems for assessing the risk associated with signal overruns correctly take into account the actual braking performance of all trains scheduled to pass a signal. This should allow for freewheel time and the subsequent average deceleration.		
Comment		
No response received from Network Rail or ORR.		

Equipment Type	Place	Time	Date	Incident
Metro: Electric track trolley	St. John's Wood	02:40	25 October 2007	Runaway incident
RAIB Report No:	24/2008		**Published:**	26 November 2008

Summary	
At 02:40 hrs on 25 October 2007, an engineering unit (consisting of a motorised electric track trolley carrying four persons and two loaded trailers) failed to slow down at the rate the driver expected. The engineering unit was travelling at approximately 10 mph (16 km/h) from St. John's Wood station towards Baker Street station on the London Underground southbound Jubilee line, which was on a 1 in 39 falling gradient. The engineering unit collided at slow speed with two manual trolleys. During the collision the manual trolleys were pushed back about 0.3 m. There were no injuries.	
Recommendations	**Fourteen recommendations are made**

RECOMMENDATION	1	Status: White = Awaiting response
Consillia Ltd should undertake a review of the design of the braking system on its MTRL-1 trailers. The purpose of the review shall be: • to determine sensitivity to the initial set-up, adjustment, lubrication; • to determine subsequent mechanical damage; • to identify design modifications to improve the robustness of the design; and to • restore reliability in service. Any necessary improvements identified should be implemented.		
Comment		
No response received from Consillia Ltd or ORR.		

RECOMMENDATION	2	Status: White = Awaiting response
London Underground Ltd, in consultation with Tube Lines should amend its Track Trolley Operators training to include a pre-work brake test on all wheels of trailers before they are placed on the track and that this is recorded. Once the electric track trolley and trailer(s) have been electrically and mechanically connected, a functional test of the emergency brake should be carried out at that time (this is linked to recommendation 1 in the Notting Hill report, ref: 12/2007).		
Comment		
No response received from LUL or ORR.		

RECOMMENDATION	3	Status: White = Awaiting response
Tube Lines should restrict the operation of the Consillia Ltd MEC-4 electric track trolley and MTRL-1 trailers to a maximum speed of 5 mph (8 km/h) until both recommendations 1 and 2 have been completed.		
Comment		
No response received from Tube Lines or ORR.		

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RECOMMENDATION	4	Status: White = Awaiting response
London Underground Ltd, in consultation with Tube Lines, should investigate the safe operation of brakes on all existing types of trolleys when contaminated by grease and review their relevant design, engineering and operational specifications.		
Comment		
No response received from LUL or ORR.		

RECOMMENDATION	5	Status: White = Awaiting response
Consillia Ltd should prepare a maintenance document detailing the maintenance procedures and testing arrangements for MEC-4 electric track trolleys and MTRL-1 trailers and schedules to be carried out by either Consillia Ltd or Tube Lines.		
Comment		
No response received from Consillia Ltd or ORR.		

RECOMMENDATION	6	Status: White = Awaiting response
Tube Lines should ensure that: • Track Trolley Operators are provided with the appropriate reference material during training; and • Track Trolley Operators are trained to understand the information that they are required to carry on site (including information contained in method statements).		
Comment		
No response received from Track Trolley Operators or ORR.		

RECOMMENDATION	7	Status: White = Awaiting response
Tube Lines should amend its Track Trolleys Operators training to include how pre-work brake tests should be carried out on motorised trolleys and trailers (linked to Recommendations 2 and 6).		
Comment		
No response received from Tube Lines or ORR.		

RECOMMENDATION	8	Status: White = Awaiting response
Tube Lines should put in place a process to ensure that gradient data (obtained from either a database or the relevant method statement) is made available to Track Trolley Operators for each site.		
Comment		
No response received from Tube Lines or ORR.		

RECOMMENDATION	9	Status: White = Awaiting response
Tube Lines should review its process for the preparation of specifications for track plant equipment with the objective of ensuring that safety related performance requirements are correctly defined. Any necessary improvements identified should be implemented.		
Comment		
No response received from Tube Lines or ORR.		

RECOMMENDATION	10	Status: White = Awaiting response
Consillia Ltd should review its design validation and testing process against current industry good practice (e.g. Engineering Safety Management: the 'Yellow Book', Issue 4.0). Any necessary improvements identified should be implemented.		
Comment		
No response received from Consillia Ltd or ORR.		

RECOMMENDATION	11	Status: White = Awaiting response
London Underground Ltd should review the suitability of its process for the acceptance and approvals of trolleys, trailers and other items of on-track plant. Any necessary improvements identified should be implemented.		
Comment		
No response received from LUL or ORR.		

RECOMMENDATION	12	Status: White = Awaiting response
London Underground Ltd, in consultation with all the Infracos, should revise the Site Person in Charge training and reference material to ensure that the Site Person in Charge's responsibilities for accident and incident reporting are defined.		
Comment		
No response received from LUL or ORR.		

RECOMMENDATION	13	Status: White = Awaiting response
London Underground Ltd, in consultation with Tube Lines, should: • re-brief all staff (including subcontractors) on their obligations to report accidents and incidents; and • issue guidance on the circumstances in which they should do so.		
Comment		
No response received from LUL or ORR.		

RECOMMENDATION	14	Status: White = Awaiting response
Tube Lines, in consultation with Consillia Ltd, should clearly define the prehire checks that are required to confirm the correct operation of the equipment, the method for doing so and the pass/fail criteria to be applied (linked to the maintenance document to be written in response to recommendation 5).		
Comment		
No response received from Tube Lines or ORR.		

5 Annexes

Equipment Type	Place	Time	Date	Incident
National Networks: Class 158 DMU	Earthworks - class investigation	22:15	28 February 2008	Earthwork Failure
RAIB Report No:	25/2008		**Published:**	23 December 2008

Summary

Previous RAIB investigations into three accidents where earthworks failures were significant causal factors raised a broader question regarding the current state of the earthworks on the national rail network. This investigation was carried out to address this broader question and not, as is more common practice for the RAIB, in response to a specific incident. The format is therefore that of a technical review of the current status and practice within Network Rail. This investigation:

a) considered whether the risks were being adequately identified and managed;
b) identified whether there was any evidence of an undesirable trend in the incidences of major earthworks failures;
c) considered the accuracy and effectiveness of Network Rail's technical assessments; and
d) compared Network Rails' systems with other infrastructure owner's earthworks management systems.

Recommendations	Six recommendations are made

RECOMMENDATION	1	Status: Amber = Open

Network Rail should conduct a study into the potential contribution to the assessment and understanding of earthworks risk from the following factors, and amend their processes as appropriate to include any improvements identified:

a) the use of inspection intervals of one, five and ten years;
b) local maintenance staff not reporting all precursor earthworks related defects – these may have rectification measures applied locally without further reporting;
c) lack of a process for maintenance staff to report earthworks defects to the Territory Earthworks and Drainage Engineer organisation to enable appropriate action to be taken;
d) track inspection staff not routinely looking over cutting horizons;
e) a high focus by track inspection staff on track support areas and particularly embankments to the detriment of other earthworks elements;
f) track maintenance staff not having the capability, knowledge or time available to routinely inspect off-track issues – for example water in neighbouring land;
g) the potential for earthworks examiners to not observe all relevant factors and indicators, because of the infrequent and seasonal visits;
h) the relative weighting attached to the risks from cuttings and embankments in the Slope Stability Hazard Index algorithm – and particularly in view of b), d), e) above;
i) the risk weighting attached to the operational consequence of an earthworks failure; and
j) the value of information sources used in other inspections and whether this could be utilised in the reduction of risk from an earthworks failure.

Comment

Network Rail has accepted the recommendation, exept for points g and j. RAIB is discussing the response to these points with the ORR.

RECOMMENDATION	2	Status: Green 2 = Completed

Network Rail should review the best practice found in the following areas during this investigation and include within their procedures so that it is universally applied:

- maintenance of Territory Earthworks and Drainage Engineers resource levels;
- track maintenance staff briefings;
- the reporting arrangements for earthworks problems; and
- communication systems between maintenance staff and territory earthworks teams.

Comment

Network Rail has accepted the recommendation and has carried it out.
ORR is considering whether to close the recommendation.

RECOMMENDATION	3	Status: Green 2 = Completed
Network Rail should provide clear policy, information and guidance to staff, particularly those in the maintenance organisation, with regard to neighbours and problems related to the management of infrastructure risk.		
Comment		
Network Rail has accepted the recommendation and has carried it out. ORR is considering whether to close the recommendation.		

RECOMMENDATION	4	Status: Amber = Open
Network Rail should align the actions in regard to adverse weather which currently appear in NR/CIV/S/086, NR/L3/TRK/1010 and RT/LS/S/021 to provide a clearer and more cohesive response and ensure that this is communicated throughout the relevant parts of the organisation.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	5	Status: Amber = Open
Network Rail should develop and implement a communications procedure between Territory Earthworks and Drainage teams and local maintenance staff to provide relevant information and allow more effective management of the earthworks risk and Safety of the Line.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	6	Status: Amber = Open
Network Rail should clarify the requirements for maintenance inspectors to observe earthworks and develop an appropriate reporting process. This information should be included in NR/SP/TRK/001.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

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Equipment Type	Place	Time	Date	Incident
National Networks: Class 317 EMU	Bishop's Stortford	16:24	20 January 2008	Staff hit by train (Injury/near miss)
RAIB Report No:	26/2008		**Published:**	23 December 2008

Summary	
At about 16:21 hrs on Sunday 20 January 2008 the driver of train 1B78, the 14:25 hrs from London Liverpool Street to Stansted Airport, who was standing alongside his train while two fitters made repairs to it, had to take rapid evasive action to avoid being struck by another train travelling at speed on the adjacent line. The driver threw himself to the ground as the train passed. No-one was hurt in the incident, and there was no damage to trains or infrastructure. The train which was being repaired subsequently completed its journey.	
Recommendations	**Five recommendations are made**

RECOMMENDATION	**1**	**Status: Amber = Open**
Network Rail and London Eastern Railway (National Express East Anglia) should carry out an exercise to improve the quality of safety critical communications between drivers and signallers. This should be monitored by the Communications Review Group system.		
Comment		
Network Rail and London Eastern Railway (National Express East Anglia) have considered and are carrying out the recommendation.		

RECOMMENDATION	**2**	**Status: Amber = Open**
Network Rail, with the train operating companies, should evaluate the quality of communications between drivers and signallers when drivers have to go onto the track. This assessment should include the adequacy of the arrangements, and Network Rail should make any necessary improvements to the process. The Communications Review Group system may provide an appropriate means of gathering data for use in this evaluation.		
Comment		
Network Rail with the train operating companies, have accepted the recommendation and are carrying it out.		

RECOMMENDATION	**3**	**Status: Amber = Open**
London Eastern Railway (National Express East Anglia) should review the competence management arrangements for fitters acting as designated persons against recognised good practice (such as the ORR Railway Safety Publication 1 'Developing and Maintaining Staff Competence'), so that the occasions on which this qualification is used are recorded and used to inform the choice of recertification interval and nature of refresher training.		
Comment		
London Eastern Railway (National Express East Anglia) has accepted the recommendation and is carrying it out.		

RECOMMENDATION	**4**	**Status: Amber = Open**
Network Rail should devise and implement a more suitable method for recording occurrences at signal boxes and signalling centres which are not normally required to record the passage of each train.		
Comment		
Network Rail has accepted the recommendation and is carrying it out.		

RECOMMENDATION	5	Status: Amber = Open
London Eastern Railway (National Express East Anglia) should introduce arrangements to provide all staff undertaking Designated Person duties with suitable and sufficient information to enable them to identify and plan safe access to locations where they may have work.		
Comment		
London Eastern Railway (National Express East Anglia) has accepted the recommendation and is carrying it out.		

Equipment Type	Place	Time	Date	Incident
National Networks: Class 450 EMU	Moor Lane LC	08:13	16 April 2008	Level Crossing fatality
RAIB Report No:	27/2008		**Published:**	23 December 2008

Summary	
At about 08:10 hrs on 16 April 2008, a train travelling from London (Waterloo) to Windsor & Eton struck and fatally injured a pedestrian on Moor Lane footpath level crossing, near Staines, Surrey. There was no damage to the train or the railway infrastructure.	
Recommendations	**Four recommendations are made**

RECOMMENDATION	1	Status: White = Awaiting response
Network Rail should assess the risk to crossing users from slippery surfaces at all footpath, bridleway and user worked crossings, and take appropriate measures, such as the provision of a non-slip surface, to reduce them so far as is reasonably practicable.		
Comment		
No response received from Network Rail.		

RECOMMENDATION	2	Status: White = Awaiting response
Network Rail should review the operation of the 'Ellipse' computer system and the associated processes for managing work orders, and ensure that appropriate controls are in place to prevent the premature or inadvertent closure of work orders.		
Comment		
No response received from Network Rail.		

RECOMMENDATION	3	Status: White = Awaiting response
Network Rail should revise document NR/SP/OPS/100 to provide better guidance for risk assessors at level crossings on what level of upgrading of the crossing to improve safety can be regarded as reasonably practicable.		
Comment		
No response received from Network Rail.		

RECOMMENDATION	4	Status: White = Awaiting response
Network Rail should revise the guidance it gives to staff inspecting level crossings, ensuring that the importance of the correct position and layout of the warning signs is adequately emphasised.		
Comment		
No response received from Network Rail.		

5 Annexes

ANNEX C Appendix 8

Recommendations Closed by ORR between 01 January 2009 and 01 May 2009

Report Number	Investigation Name	Recommendation number(s)	Date recommendation closed
09/2007	Bratts Blackhouse	3, 5 and 7	16-Mar-09
08/2008	Runaway and collision at Armathwaite	1 and 3	1-May-09
02/2007	Cricklewood Curve	1, 2, 5 and 6	16-Mar-09
23/2007	Dagenham Dock	2, 3, 6 and 7	16-Jan-09
05/2008	Derailment at Merstham tunnel	1, 4, 7, 8 and 9	16-Jan-09
44/2007	Derailments at Waterloo	7	1-May-09
21/2008	Fatal accident to track worker east of Reading station	1	16-Mar-09
11/2007	Huntingdon train door incident	3 and 4	1-Jan-09
14/2008	Collision with the gates at Lydney Town level crossing	5 and 9	1-May-09
14/2006	Liverpool Central derailment	1, 2, 6 and 7	1-May-09
07/2007	Ravenglass & Eskdale derailment of passenger coach	1, 5 and 8	1-May-09
13/2007	Runaway loco - East Didsbury	5, 7 and 8	1-May-09
24/2008	Runaway trolley at St Johns Wood	3, 7, 9, 11 and 13	1-May-09
35/2007	Swanage collision	1 and 5	16-Mar-09
15/2006	Thirsk station - near miss	1, 3, 4 and 5	16-Jan-09
03/2008	Train derailment at Mile End on London Underground	1 and 4	16-Mar-09

ANNEX C Appendix 9

List of investigations published in 2008

Section 1			
National Networks	**Location**	**Date**	**Accident / Incident**
Class 66 Locomotive	Burton on Trent	01-Aug-07	Passenger train struck by heavy object while passing a freight train.
Class 66 Locomotive	King Edward bridge in Newcastle	10-May-07	Derailment of a freight train
Class 165 DMU	Ruscombe junction near Reading	29-April-07	Track worker fatality
Class 377 EMU	Hooley cutting, near Merstham	13-Jan-07	Derailment of passenger train
Class 158 DMU	Kemble, Gloucestershire	15-Jan-07	Derailment of passenger train
Engineers Vehicles	Armathwaite	28-Jan-07	Runaway and collision
Class 3300 DMU - Northern Ireland Railways	Limavady junction, Northern Ireland	02-Aug-07	Collision between train and tractor
Class 170 DMU (Turbostar)	Croxton level crossing,Norfolk	12-Sept-07	Derailment of a passenger train
Class 66 Locomotive	Camden Road, London	19-Jul-07	Runaway of two wagons
Class 121 DMU	Aylesbury, Bucks	27-Aug-07	Two trains in the same section
Class 66 Locomotive	Duddlestone junction, Birmingham	10-Aug-08	Derailment of freight train
Class 158 DMU	Barrow upon Soar	01-Feb-08	Collision of a train with a demolished footbridge
Class 455 EMU	Learherhead	29-Aug-07	Track worker struck by a passenger train
Class 390 EMU “Pendolino”	Grayrigg	23-Feb-07	Derailment of passenger train
Class 165 DMU	Reading station	29-Nov-07	Track worker was struck and fatally injured
Class 158 DMU	Ty Mawr Farm crossing	27-Aug-07	Train over speeding through speed restricted area
Class 43 HST Power Car and Class 165 DMU	Didcot North junction	22-Aug-08	Signal Passed at Danger and subsequent near miss
Class 158 DMU	Earthworks - Class Investigation	28-Feb-08	Network Rail’s Management of Earthworks
Class 317 electric multiple units	Bishop’s Storford, Essex	20-Jan-08	Near miss involving railway staff and train
Class 450 EMU	Moor Lane, Staines, Surrey	16-Apr-08	Fatal accident at footpath level Crossing

Section 2			
Light Rail	**Location**	**Date**	**Accident / Incident**
T68 Tram - Manchester Metrolink	Pomona, Manchester	17-Jan-07	Derailment

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Section 3			
Metro	**Location**	**Date**	**Accident / Incident**
1992 Tubestock	London Underground Central Line near Mile End station	05-July-07	Derailment
1995 Tubestock	Northern Line, Camden Town	10-June-07	Train driven in wrong direction
1995 Tubestock	Tooting Broadway station	01-Nov-07	Passenger trapped in door
On-track plant/machinery	St John's Wood, London	25-Oct-07	Minor collision between engineering unit and two manual trolleys

Section 4			
Heritage	**Location**	**Date**	**Accident / Incident**
Class 08 shunter	Lydney Town level crossing	15-Aug-07	Collision between train and crossing gates
Danske Statsbaner carriage	Nene Valley Railway	16-Feb-08	Child fell from train

Section 5			
Channel Tunnel	**Location**	**Date**	**Accident / Incident**
Nil	Nil	Nil	Nil

ANNEX D

Summary of Schedules and notification requirements for accident and incidents on UK railways (Annexes to the Regulations)

Schedule 1 – Notify immediately by telephone		*Schedule 2 – Notify in 3 working days in writing*		*Schedule 3 – Notify in bulk monthly in writing*
1 (1) Deaths to passengers, members of the public or staff, caused in accidents or incidents involving moving trains.	**Except:** Deaths as a result of suicide, trespass, assault, natural causes, any deaths as a result of an accident not involving moving trains.	2 (1) Collisions with objects other than animals or items placed by vandals on railway or tram tracks which would not otherwise have required reporting under any of the headings in Schedule 1.		**3 (1) Failures of equipment at level crossings which affect the level of railway safety at that crossing, that are not notified under Schedule 1 (9).**
1 (1) Serious injuries to passengers, members of the public, or staff, caused in accidents or incidents involving moving trains.	**Except:** Serious injuries as a result of attempted suicide, trespass, assault or any serious injury as a consequence of an accident not involving moving trains.	2 (2) Serious injuries to one person on trains, trams, stations or other railway property if the event leading to injury was connected with the operation of trains.	**Except:** Serious injuries as a result of attempted suicide, trespass, assault or any serious injury as a consequence of an accident not involving moving trains.	**3 (2) Broken rails or rails where pieces have broken off and buckled rails where the route has to be closed or a speed restriction put in place.** **(NB: Precautionary weather related speed restrictions need not be notified)**
1 (2) Level crossing accidents involving death or serious injury to a person except suicide and trespass as above.		2 (2) Incidents where road vehicles foul running lines or damage track.		**3 (3) Failures of structures on the railways such as cuttings, bridges, embankments and stations where under slightly different conditions there may have been a death, two or more serious injuries or 2 million euros worth of damage to rolling stock, infrastructure or the environment.**
1 (3) (between rolling stock), 1 (5) (buffer stops) Collisions between trains or trams on running lines or with buffer stops or other automatic stop devices which cause damage to the vehicles involved.		2 (4) Unintended divisions of any trains or trams while in service or being prepared for service.		**3 (4) Signal failures which reduce the level of railway safety by affecting the ability of the system to detect or protect trains that are not notified under Schedule 1 (9).**
1 (4) Derailments on lines open to traffic or which block running lines open to traffic.		2 (5) Failures of axles, wheels or tyres.		**3 (5) Signals passed at danger unless the incident is notified under Schedule 1 (9).**
1 (6) Release of, or fires involving dangerous goods (including radioactive material) requiring an area to be evacuated.		2 (5) Train fires, severe electrical arcing or fusing.		**3 (6) Collisions between trams and road vehicles which are not notified under Schedule 1(1).**
1 (7) Accidents or incidents leading to the closure of a route for more than 6 hours (but not including weather related matters).		2 (6) Failures of ropes on cable hauled railways whose total length is greater than 1 km.		
1 (8) Accidents causing an excess of 2 million euros worth of damage to trains, infrastructure or the environment. This includes rolling stock which is written off, major track or structure damage or significant pollution incidents.				
1 (9) Accidents or incidents which could have lead to deaths, serious injuries or 2 million euros worth of damage to trains, infrastructure or the environment but did not do so.				

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ANNEX D Appendix 1

Summary of Schedules and notification requirements for accidents and incidents on the Channel Tunnel

Schedule 4 – Notify immediately by telephone		Schedule 5 – Notify in 3 working days in writing
4 (1) An accident resulting in death or serious injury to a person.	**Except:** Deaths or serious injury as a result of suicide, trespass, assault, natural causes. Any deaths or serious injuries as a result of an accident not involving moving trains.	5(1) A fire, arcing or fusing which adversely affects the functioning of signalling, catenary or rolling stock control equipment
4(2) A derailment of rolling stock which causes damage to or blocks a running line.		5(2) A fire that results in the suspension of railway services or closure of a part or railway property affecting the track, for a period of more than one hour.
4(3) A collision that occurs on any line other than a siding, between rolling stock and: (a) other rolling stock; (b) an object capable of causing damage to or derailment of the rolling stock; or (c) a buffer stop.		5(3) Any unintended division of a train, or breakage of coupling.
4(4) An accident that causes extensive damage to rolling stock, the infrastructure or the environment.		5(4) The failure of rolling stock on the track caused by: (a) the failure or seizing of an axle; (b) the failure of a wheel or tyre, including a tyre loose on its wheel; (c) the failure of brakes on a train; or (d) a fire or severe electrical arching or fusing on rolling stock, whether or not extinguished by a fire fighting service.
4(5) A collision on a level crossing involving a vehicle or a pedestrian and rolling stock, whether or not a person suffers death or injury.		5(5) A broken rail, major failure or track equipment (weld, fastenings etc) or track deformation.
4(6) An accident involving the release or combustion of dangerous goods that necessitates the evacuation of a tunnel or part of the terminal.		5(6) Any significant safety related breakdown or any serious destruction or collapse of equipment, installations or structures.
4(7) Fire necessitating evacuation of passengers from one part of a train to another part of the same train or intervention of the fire brigade.		5(7) Any failure in the signalling system, or any other safety system, which endangers or potentially endangers the safe operation of the railway.
4(8) An accident or incident leading to the evacuation of passengers from a train.		5(8) Submersion of track that necessitates its closure.
4(9) Unauthorised passing of a closed marker or signal.		5(9) Unscheduled stopping of a train in a tunnel for more than 30 minutes.
4(10) Runaway train on a line.		5(10) Damage to track caused by rolling stock or a dragging object.
4(11) An accident or incident which, under slightly different conditions might have led to serious injury or extensive damage to rolling stock, the infrastructure or the environment.		5(11) Spillage of fuel from a road vehicle being carried on a shuttle train.
		5(12) A breach of the requirements for the transport of dangerous goods contained or referred to in the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004(a)
		5(13) Any incident during which installations, equipment or rolling stock come into unintended contact with live overhead power lines with a voltage in excess of 200 volts.

ANNEX E

Statistics

Summary of investigations opened in 2008 by type

Type of incident	Total
Passenger train derailment (all trains)	5
Freight train derailment	4
Collision with other train	1
Collision with other object	4
Train door incident	2
Level crossing incidents (fatalities)	6
Level crossing incidents (injuries)	0
Level crossing incidents (near miss)	3
Staff hit by train (fatalities)	0
Staff hit by train (injury or near miss)	3
Run away incidents	0
Unsafe Loads	3
Train defects	0
Unauthorised movement of train/ vehicle	0
Possession issues	1
Signal passed at danger by a significant distance (SPAD)	0
Electrocution	0
Fire on rolling stock	0
Total	**32**

Industry Sector Name	Total
Mainline passenger train operating company involved	5
Mainline freight train operating company involved	5
Tramways	2
Network Rail/Contractors involved	15
Heritage lines	2
Metro inc LUL	1
Euro Tunnel[3]	1
Northern Ireland Railway	1
Total	**32**

[3] The regulations in respect of accidents and incidents occurring on the Channel Tunnel did not come into effect until 31 January 2006.

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ANNEX F

Glossary of abbreviations and acronyms

COSS	Controller of Site Safety
DfT	Department for Transport
EWS	English Welsh & Scottish Railways, a freight operating company
FOC	Freight Operating Company
LUL	London Underground Ltd
ORR	Office of Rail Regulation (Her Majesty's Railway Inspectorate)
MoU	Memorandum of Understanding
PICOP	Person in Charge of the Possession
SPAD	Signal Passed At Danger
TOC	Train Operating Company
TPWS	Train Protection and Warning System

ANNEX G

Glossary of terms

All definitions marked with an asterisk, thus (*), have been taken from Ellis' British Railway Engineering Encyclopaedia © Iain Ellis. www.iainellis.com

Exchange sidings	Exchange sidings are locations where wagons bound for a private terminal or factory are placed and collected/returned by an industrial locomotive.
Facing points	Points where two routes diverge in the direction of travel.
Fouling point	The position on the track beyond which a tram will be certain to be hit by another tram on a conflicting track or route.
Ground Frame	A small group of signal and points levers located close to some isolated and infrequently used facility such as a trailing crossover. These levers are locked by the controlling signal box, and only released when required.*
Hot wheel detector	A track-mounted sensor which detects heat from skidding wheels or dragging brakes.
Infrastructure Manager	Any person who is responsible for establishing and maintaining infrastructure or a part thereof, which may also include the management of infrastructure control and safety systems, but does not include a maintainer.
Miniature stop lights	Miniature lights, most often Red (R) and Green (G), used as the warning at certain types of automatic level crossing.*
Multiple Unit Train	A train consisting of one or more vehicles (semi permanently coupled together) with a driving cab at both ends. Some or all the vehicles may be equipped with powered axles.
On Track Plant	Engineering plant with rail wheels, including on track machines (OTM) and road rail vehicles.
Possession	A period of time during which one or more tracks are blocked to trains to permit work to be safely carried out on or near the line.*
Rimini	('rimm-inn-ee') Risk Minimisation, a standardised process for identifying and recording the safest practical protection system for a particular activity undertaken on or near the line.*
Release	For a ground frame to be operated the signaller in the local signal box has to 'release' the frame, usually by operating a switch on the signalling control panel. Until the 'release' is given, the levers in the frame remain locked.

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Sentinel	Operated by the National Competency Control Agency (NCCA), Sentinel is the brandname for the competency control system based on photographic identity cards, covering medical fitness and AOD:HS, AOD:LXA, AOD:PO, Authorised Person (AP), Controller of Site Safety (COSS), Engineering Supervisor (ES), Handsignaller (HS), Individual Working Alone (IWA), Lookout (LKT, LO), Nominated Person (NP), Personal Track Safety (PTS), Person In Charge of Possession (PICOP), Protection Controller (PC), Points Operator (PO), Rail Incident Officer (RIO), Senior Person In Charge of Possession (SPICOP), Signaller, Track Welder (TW) competencies. The Sentinel branding is now being phased out.*
Tie-bar	A temporary piece of equipment that can be fitted across the bottom of two rails to prevent gauge widening occurring that is no part of the design.
Track circuit	An electrical train detection system, based on the principle of proving the absence of a train. In its basic form, a source of electrical current is connected between the running rails at one end of the section to be detected. At the other end a relay coil (or equivalent) is connected between the rails. When there is no rail vehicle present, the current source energises the relay coil and the section is proved clear. When a rail vehicle enters the section, the action of wheels and axles is to short the relay out, causing it drop away and create an open circuit.*
User worked crossing	A level crossing where the barriers or gates are operated by the user. There is generally no indication of the approach of trains, but a telephone will be provided to contact the signaller.*
Weekly Operating Notice	A document published on a region basis, providing information about engineering work, speed restrictions, alterations to national railway network and other relevant information to train drivers.

ANNEX H

Annual Report feedback form

Now you have had the chance to read the RAIB annual report, we would like to know your opinion of it. To help us improve the annual report we would welcome your feedback on the following:

To what extent do you agree or disagree with the following statements:

1. I found the information is easy to understand:
   a. Strongly agree
   b. Tend to agree
   c. Neither agree nor disagree
   d. Tend to disagree
   e. Strongly disagree

2. I found that there is sufficient detail in the report to make it interesting to read:
   a. Strongly agree
   b. Tend to agree
   c. Neither agree nor disagree
   d. Tend to disagree
   e. Strongly disagree

3. I found the technical information is easily understood:
   a. Strongly agree
   b. Tend to agree
   c. Neither agree nor disagree
   d. Tend to disagree
   e. Strongly disagree

4. This report is useful in providing an overview of how the RAIB conducts its investigations:
   a. Strongly agree
   b. Tend to agree
   c. Neither agree nor disagree
   d. Tend to disagree
   e. Strongly disagree

5. What did you particularly like about the report?

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6. What did you particularly dislike about the report?

7. What improvements would you like to see in the presentation of the report?

8. Is there any particular information you would like to see in future reports?

Please send any comments to the RAIB using any of the contact methods below:

- Telephone: 01332 253300
- Fax: 01332 253338
- E-form: found on the website at:
  www.raib.gov.uk/publications/annual_report/annual_report_published_in_2009.cfm
  which should be returned to the RAIB via: annualreportfeedback@raib.gov.uk
- Or Write to:

  Publications Team
  Rail Accident Investigation Branch
  The Wharf
  Stores Road
  Derby
  DE21 4BA

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Any enquiries about this publication should be sent to:

RAIB
The Wharf
Stores Road
Derby UK
DE21 4BA

Telephone: 01332 253300
Fax: 01332 253301
Email: enquiries@raib.gov.uk
Website: www.raib.gov.uk