RAIB

Rail Accident Investigation Branch

Annual Report 2006

Department for Transport

Preface

This is the Rail Accident Investigation Branch's (RAIB) annual report for the calendar year 2006.

Section 1 deals with the background to the RAIB and sets out its aims and statutory duties in relation to the types of accidents that it investigates.

Section 2 provides details of the RAIB operations during 2006.

Section 3 looks at the causes of accidents and the related recommendations arising from all investigations concluded in 2006, from commencement of the RAIB on 17 October 2005 to 31 December 2006.

Section 4 deals with other Branch activities.

Further details on the reporting schedules and accident statistics can be found in annexes D and E. Annexes F and G include glossaries explaining:

- abbreviations and acronyms that have been used within the report; and
- technical terms, shown in *italics* when they appear in text.

RAIB Annual Report 2006

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Chief Inspector's Foreword

2006 was the Rail Accident Investigation Branch's (RAIB) first full calendar year of operation, having 'gone live' in October 2005. During the year we commenced 47 investigations and concluded 26 (22 per cent were both started and completed within the year).

The reports we produce on our investigations into accidents are public documents and in them we make recommendations aimed at preventing future similar occurrences. We have no restrictions regarding to whom we can make those recommendations and the distribution can be seen in Annex C, Appendix 2. In total, we made 133 recommendations, an average of 5 per report.

Accepting that the recommendations of the 26 reports published after 14 months of operations give a limited statistical basis, I have included in part 3 of this report some brief comments on common causes of accidents and common areas of recommendations.

A criticism levied at the rail industry in the past has been that the outcome of recommendations from investigation into accidents and the lessons learned were not visible to the public and others in the rail industry. I have therefore committed a significant section of this report for this purpose. Part 1 explains how implementation of these recommendations is tracked within the industry, and the status of all the recommendations we have made during 2006 is shown in Annex C Appendix 3.

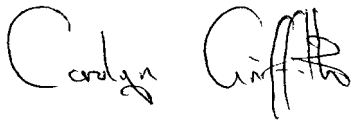
The Railways (Accident investigation and Reporting) Regulations 2005, under which the RAIB operate, requires that the UK's safety authorities[1] ensure that the recommendations made by the RAIB are duly taken into consideration and where appropriate are acted upon by the end implementers identified by the RAIB. The safety authority must inform the RAIB of the measures taken. The exception is where recommendations are made to a public body in which case the public body must report its response to the recommendation directly to the RAIB.

Of the 133 recommendations made by the RAIB in the reports published in 2006, the Office of Rail Regulation (ORR) has reported the status on 132 of them. They have confirmed that they have considered and closed 38. A further 47 have been reported by the industry as complete and await consideration by ORR, and in another 34 cases the industry are in the process of implementation. The one recommendation made to public bodies is also being implemented.

We are also encouraged by early feedback from a survey conducted on our behalf in 2007, which indicates that the industry believes the RAIB has in its short time of operation has already made an impact in improving safety.

[1] Recommendations are addressed to the following safety authorities: mainland England, Wales and Scotland - The Office of Rail Regulation (ORR); Channel Tunnel - Intergovernmental Safety Commission; Northern Ireland - Department of Regional Development (NI).

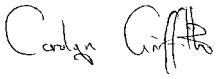
We are still a new organisation and there will always be more we can do in an industry the size of the rail industry. However, I want the Branch to be known for being an open and listening organisation, which is why we put significant store on our meetings with both individuals and the organisations that may be affected by our investigations, and we welcome their feedback.



Carolyn Griffiths
Chief Inspector of Rail Accidents
30 September 2007

1. An introduction to the Rail Accident Investigation Branch

'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.'



Legal framework

The Rail Accident Investigation Branch (RAIB) is the independent railway accident investigation organisation for the UK. It was established by the Railways and Transport Safety Act 2003 (the Act) following recommendations made by the public inquiry into the Ladbroke Grove rail accident. This Act enabled the Secretary of State for Transport to make detailed provisions in regulations - the Railways (Accident Investigation and Reporting) Regulations 2005 (the Regulations). Under these Regulations the RAIB became operational for investigating accidents and incidents on the UK's mainline railways, tramways and metros on 17 October 2005. In respect of accidents and incidents occurring in the Channel Tunnel the RAIB became operational on 31 January 2006.

The Regulations:

- define the types of accidents and incidents which may be investigated;
- set out the requirements for notifying accidents to the RAIB;
- specify how the RAIB will conduct its investigations and how it will deal with other people and organisations that are involved in rail accidents; and
- set out the requirements for the publication of reports.

The European Railway Safety Directive 2004/49/EC (the Directive) of 29 April 2004 aims to secure continuous improvement of safety as Europe's railways become more integrated. It also requires the establishment of independent accident investigation bodies in the member states and sets out the principles of mandatory investigations of serious accidents and incidents. The establishment of the RAIB fulfilled the UK's duty under this Directive.

Role

The RAIB is independent of all other bodies, the: government; railway industry; safety authorities; and prosecution 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 independent.

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

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 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 professionally investigated, and that recommendations to prevent future 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 Rail Safety Directive by:
    - co-operating and assisting in rail accident investigations with other member states;
    - sharing findings and best practice with other member states.

Geographic territory

The RAIB provides a rail accident investigation service for the whole of the United Kingdom, including Northern Ireland.

Types of railway

The RAIB investigates accidents and incidents on the following types of railway[2]:

- the national rail networks in Great Britain and Northern Ireland;
- the Channel Tunnel (in co-operation with its equivalent operation in France 'Bureau d'enquetes 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 (however, accidents that occur in exchange sidings where trains are entering or leaving industrial premises will be investigated);
- metros – this includes the London Underground, Tyne and Wear Metro, Docklands Light Railway and Strathclyde Metropolitan Railway;
- tramways;
- most heritage railways running on track whose gauge exceeds 350 mm; and
- cable-hauled systems of 1 km or longer, for example the Cairngorm Mountain Railway and the Great Orme Tramway.

[2] The only exception in the regulations to the UK-wide coverage is the investigation of accidents and incidents on tramways in Scotland. There are no tramways in Scotland at present. Powers relating to any which may be built are devolved to the Scottish Government and the RAIB will investigate any accidents or incidents on tramways by invitation of the Scottish Government.

Scope of accidents investigated

The RAIB is mandated by the Directive to investigate all rail accidents, where potential safety lessons can be learned, that involve a derailment or collision which result in (or could result in):

- the death of at least one person;
- serious injury to five or more people; or
- extensive[3] damage to rolling stock, the infrastructure or the environment.

In addition to these serious accidents the RAIB has the discretion to investigate other accidents and incidents. The RAIB's decision to do so 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.

Accidents 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; and
- accidents/incidents involving trespassers or suicides.

Accident and incident notification[4]

The legal obligation to notify an accident or incident to the RAIB is upon those railway industry bodies (railway infrastructure managers, railway operators, or maintainers) whose staff or property is involved in an accident or incident.

Details of the types of railway accidents and incidents that must be notified to the RAIB, along with the timescales in which they must be reported 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.

Schedule 3 incidents are recorded mainly for identification of trends. These are required to be notified to the RAIB monthly.

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[3] 'Extensive damage', as defined by the European Railway Safety Directive 2004/49/EC, means damage that can be immediately assessed by the investigating body to cost at least 2 million euros in total.

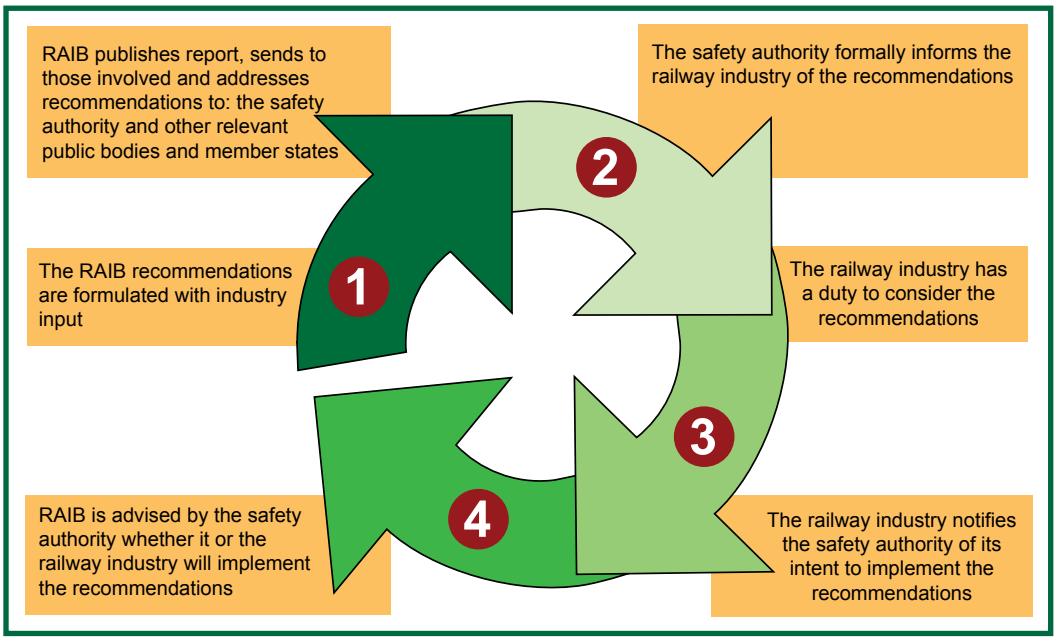
[4] Full details of the legislation, requirements regarding notification and the RAIB response can be found in the RAIB document 'Guidance on the Railways (Accident Investigation and Reporting) Regulations 2005' at www.raib.gov.uk.

RAIB's response to notifications

The RAIB has a duty co-ordinator and team of inspectors on call 24 hours a day, 365 days per year. If it is important that evidence is secured quickly, RAIB inspectors will be dispatched to site immediately. In some cases, it is clear from the information that is notified and/or that which the duty co-ordinator secures in the immediate aftermath of the accident that the RAIB should investigate. In other cases it may not be clear and the RAIB conducts a preliminary examination in order to decide what further action to take and whether a full investigation should take place.

The recommendation process

Recommendations are the prime output of the RAIB's investigations in improving safety and as required by the Directive and the Regulations[5], they are addressed to the appropriate safety authority, and public bodies where they are the end implementer.



Nevertheless, it is the Office of Rail Regulation (ORR) as the safety authority for Great Britain that is responsible for ensuring that most of the recommendations made by the RAIB are duly taken into consideration and where appropriate are acted upon by the end implementers as identified by the RAIB. They can, where considered appropriate, enforce compliance with recommendations.

The safety authority is also responsible for subsequently informing 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 report its response to the recommendation directly to the RAIB. Feedback to the RAIB of the response and details of the action taken is very important in providing transparency of the process and enabling everyone to have a view of the safety improvements arising from the RAIB's investigations. Additionally, the RAIB are required by the Regulations to produce an annual report providing details of the measures that have been reported to the Branch as having been taken in response to its recommendations.

[5] The Railway Safety Directive (2004/49/EC) and Railways (Accident Investigation and Reporting) Regulations 2005.

The Regulations give the safety authority the power to require any person to provide full details of the measures they intend to take, or have taken, to implement the recommendations, the proposed timescales for securing that implementation, and details on the progress made with implementation.

Reports are made periodically or can additionally be specifically requested by the Chief Inspector if warranted. The possible responses that the end implementer may give to the safety authority in terms of their intentions to implement 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;

c. rejection of the recommendation – this will include the reasons for the rejection.

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

a. accept the response;

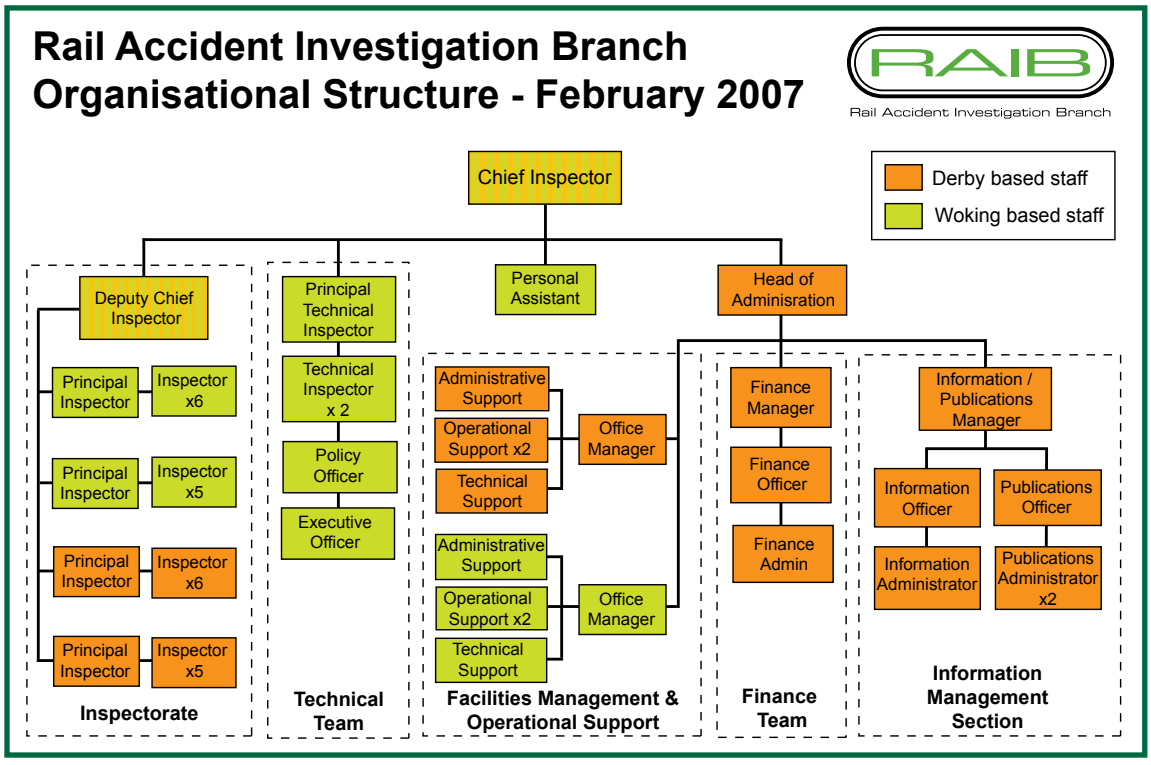
b. discuss, with the end implementer, a modification to its response or timetable; or

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

Personnel

The RAIB has been established to operate with 54 personnel consisting of 31 inspectors and 23 support staff. Currently there are 45 full-time personnel working from operational centres located at Derby and Woking. During 2006 three inspectors completed their training and went on the on-call roster.

The Branch is working to recruit to the full complement of inspectors and a recruitment campaign will be run late in 2007.



2. Operations

Number of notifications

In the period from 1 January 2006 to 31 December 2006 the RAIB received 451 notifications of railway accidents and incidents that were required to be notified under Schedules 1 and 2 (see Annex D). A further 35 notifications were received under Schedules 4 and 5 for accidents occurring in the Channel Tunnel. Together these resulted in 47 RAIB investigations being opened in 2006.

The reason for the high number of notifications is that the Regulations require the reporting of a range of accidents from those resulting in serious injury and damage through to incidents of "near miss". The reason for this is that the RAIB investigates accidents or incidents which under slightly different circumstances could have resulted in serious consequences. In this way the RAIB is proactive in its role and maximises the potential to improve safety.

Accident investigation reports

An investigation report is produced following each RAIB investigation. These will, as appropriate, contain recommendations which the RAIB considers will improve railway safety[6]. The reports are public documents and are available on the RAIB website at www.raib.gov.uk (hard copies can be provided upon request).

The RAIB completed 26 investigations in 2006. This total includes 16 reports into investigations opened in 2005 and 10 reports into investigations opened in 2006. A list of the investigation reports published in 2006 is included in Annex A.

Investigation reports are produced in the shortest possible time and normally not more than 12 months after the date of the accident or incident. For those investigations started in 2005 and published in 2006 the average was 9 months (accident/incident date to the publication date). For investigations started and published in 2006 the average was 7.5 months. The length of investigation will be influenced by the complexity and scale of the investigation.

[6] Statistics for accidents and incidents can be found on the ORR website at www.rail-reg.gov.uk

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 2006 the RAIB issued urgent safety advice on five occasions, as follows:

Investigation Name	Date of Incident	Urgent safety advice
Liverpool Central	17 October 2005	Derailment of a passenger train - failure to carry out adequate checks of track forms in tunnel environments where there is sharply curved track can lead to derailment due to dynamic movement of rails under traffic.
Larkhall Branch Line	2 November 2005	Runaway trolley - the incorrect fitting of the brake handle to certain types of manually propelled trolleys can significantly reduce the brake forces, and even when fitted correctly there can be a reduction in brake force in wet conditions.
Dagenham Bronwydd Arms	17 July 2006 19 July 2006	Fatal injury to two shunters – need to remind staff about safe practices to be followed when carrying out shunting movements.
Croxton level crossing	12 September 2006	Derailment of a passenger train - deformation of the base plates supporting elastomeric (rubber) level crossing panels can lead to a vertical movement of the panel under the wheels of passing road vehicles.
Copenhagen Tunnel	15 October 2006	Road/rail mobile run away - it is possible on certain types of 'high rail' road/rail mobile extendable platforms for both sets of wheels to be in contact with the running rails and out of contact with the road wheels, which provide traction and braking, leading to the vehicle being un-braked.

3. Analysis of causes and recommendations

The Ladbroke Grove Public Inquiry[7] 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.

This report (Annex C, Appendix 3) provides the implementation status of all of the 133 recommendations made by the RAIB in its 26 investigation reports published in 2006 based upon the latest information from the ORR or other public bodies. This is in compliance with the RAIB's duty under the Regulations to report the details of the measures that have been reported to the Branch as having been taken in response to its recommendations.

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 2006, which can be found at rail-reg.gov.uk.

As at 30 September 2007, as reported by the ORR, the status of the RAIB recommendations made in 2006 is that:

- ORR accepts that the industry has fully considered the recommendation and has taken action as necessary - in 38 cases, the ORR has closed the recommendation[8] as it does not intend taking any further action.
- Industry has reported that they believe they have completed the necessary action - in 47 cases, the ORR confirmation or otherwise of this status is awaited. Since publication of the recommendations, the average time before reporting completion is just under 13 months.
- In another 35 cases the industry/public bodies have reported that they either intend to, or are in the process of, fully implementing the recommendations.

Annex C, Appendix 2 shows the distribution of recommendations among the end implementers identified by the RAIB. It is not surprising, considering the scale of the operation of the mainline railway, that the majority were aimed at Network Rail (51) and the mainline passenger and freight train operators (22 in total). These recommendations arose from 13 investigations of accidents or incidents on the mainline railway and 5 in freight yards or sidings. Nineteen recommendations were aimed at Light Rail Operators (tramways). A total of 14 recommendations were aimed at contractors: of these, 13 related to contractors working on the mainline railway.

[7] 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.

[8] A total of 21 recommendations were quoted as closed in the ORR Annual report for 06-07, another 17 recommendations have since been closed making a total of 38 closed recommendations.

By the end of 2006 the RAIB had only been operational for 14 months and completed 26 investigations. The data set relating to accident causes and recommendations is therefore relatively small and the following observations should be read in that context.

The three most significant categories of recommendations concerned:

a) Condition of the infrastructure (23 %). These predominantly related to: modifications to the infrastructure; the owner's knowledge of the asset; and planning and implementation of maintenance and repairs.

b) Rules, standards and procedures (22 %). These predominately concerned inadequate or wrongly applied company procedures; the two largest categories related to Network Rail's engineering staff and train operating companies' train dispatch staff.

c) Competence management (17 %). These predominately related to issues associated with train preparation and planning and working in possessions.

The main immediate causes of incidents fell into the following categories:

a) operations: around a fifth were attributed to train operations including shunting and a fifth to infrastructure operations;

b) around half related to equipment failures; predominantly on rolling stock.

The causal factors were roughly evenly distributed between the following categories:

a) staff training, experience, skills and competency assurance, roughly equally between infrastructure staff and train operating staff (including shunting staff);

b) the availability or adequacy of procedures or incorrect application of procedures; more concerning infrastructure work than train operations;

c) equipment design or product defects: around a third relating to the infrastructure and two thirds to rolling stock;

d) planning and organisation of maintenance; roughly equally between infrastructure and rolling stock.

4. Other Branch activities

Operational policy and procedures

The RAIB conducts investigations in accordance with its own internal operating procedures and policies. The purpose of these policies and procedures is to have a consistent process for the conduct of investigations to ensure that each inspector carries out investigations effectively and to standards that meet the expectations of industry and the public in general. During the year these have been reviewed and modified to take account of operational experience.

Internal Audit

As a new organisation it was important for the RAIB to review its operational policies and procedures after an initial period of operation. An ongoing programme of systematic audits was installed during 2006 such that peer reviews are carried out on the processes followed during investigations. This is in addition to the team reviews of the quality of the investigation and the recommendations.

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 to the more remote locations that require attendance on site.

To enable this, 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 must be approved by the RAIB. During 2006 the RAIB trained, assessed and approved 325 Agents at various locations throughout the UK. The arrangements have worked very well and have provided valuable assistance to the RAIB.

Conferences and Seminars

The RAIB put a high level of importance on informing others in the industry about what the Branch does and how it operates. Besides ongoing liaison within the industry the RAIB presented at diverse industry and technical conferences and participated in industry emergency exercises.

RAIB website

The RAIB has its own web site, which is an independent and up-to-date resource accessible to both industry and members of the public. It contains: details about the Branch; the Regulations; 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. In 2006 a subscribe facility was set up to enable people to register for a monthly news letter from the RAIB and over 950 people subscribed. The address is www.raib.gov.uk.

International activity during 2006

The European dimension

The RAIB continues to work closely with the European Commission, the European Rail Agency (ERA) and its counterpart organisations in other member states to further the requirements of the Directive for 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.

The Channel Tunnel

The RAIB works in parallel with the Intergovernmental Commission and its French counterpart (Bureau d'enquetes sur les accidents de transport terrestre – BEA-TT) and has established working arrangements for the investigation of accidents and incidents on the Channel Tunnel. The RAIB and BEA-TT have agreed a cross-border Memorandum of Understanding which covers the practical arrangements for the joint investigation in the tunnel. This provided the framework of co-operation for the investigation into the shuttle train fire on 21 August 2006.

Summary of investigations opened in 2005 and completed in 2006 Annex A

Date	Location	Date Report Published
18 October 2005	Hatherley, near Cheltenham Spa	14 July 2006
19 October 2005	Black Horse Drove, near Littleport Cambridgeshire	21 July 2006
21 October 2005	Phipps Bridge, Croydon	29 March 2006
26 October 2005	Trafford Park, Manchester	25 August 2006
26 October 2005	Liverpool Central	11 August 2006
27 October 2005	Staniforth Road, Sheffield	6 March 2006
28 October 2005	Watford Junction	28 March 2006
2 November 2005	Larkhall Branch	2 November 2006
4 November 2005	Oubeck, near Lancaster	2 November 2006
8 November 2005	Radcliffe, Manchester	17 July 2006
13 November 2005	Swainsthorpe, near Norwich	28 March 2006
21 November 2005	Barratt's Lane, Attenborough near Nottingham	21 July 2006
23 November 2005	New Addington, Croydon	20 July 2006
26 November 2005	Moy, near Inverness	29 November 2006
3 December 2005	Elsenham Station (wicket gates - general investigation into the design and use of gated pedestrian crossings at public highway level crossings)	11 December 2006
21 November 2005 & 3 & 10 December 2005	Runaway incidents at Blackpool	30 March 2006

List of investigations opened and completed in 2006

Date	Location	Date Report Published
5 January 2006	Urchfont and Kennington	20 December 2006
8 January 2006	Scate Moor level crossing between Whixley and Cattall in North Yorkshire	16 June 2006
11 January 2006	Thirsk	18 August 2006
12 January 2006	Haywards Heath	20 July 2006
18 January 2006	York	14 November 2006
27 January 2006	Sudbury	20 December 2006
4 February 2006	Loughborough Central	10 July 2006
6 February 2006	Carlisle	19 September 2006
2 June 2006	Archway, London	11 December 2006
6 July 2006	Blackpool Pleasure Beach	26 October 2006

Annex B

Summary of investigations opened in 2006 but not completed by 31.12.2006

14 January 2006	Edinburgh Haymarket	At 15:18 hrs, an engineer's train formed by locomotive and thirty-five loaded wagons left an engineering *possession*. At the junction the train was diverted from its anticipated route and sent in the wrong direction on the Down South line. The driver, realising this, stopped the train at once. The signaller was alerted by an alarm triggered when the train went through the junction and replaced signals to protect it. Subsequently, the train rolled back and one wagon derailed. The alarm system immediately alerted the signaller to the problem, and enabled him to take action to protect the line; thereafter the train was protected by signals at all times until it was re-railed and removed.
21 January 2006	Chalmerston	At 03:45 hrs the driver of a coal train from Chalmerston to Carlisle reported that the rear 6 wagons of his train had become derailed at Patna, on the single line between Chalmerston and Dalrymple Junction. The train formed of a locomotive and 21 loaded wagons had come to rest on Network Rail infrastructure, with the derailed wagons lying upright. After inspection, the point of derailment was found within the Chalmerston complex on Scottish Coal infrastructure. Over three kilometres of track were damaged in the derailment. No-one was injured in the accident.
31 January 2006	Cricklewood	Two wagons of a train from St. Pancras Stoneyard to Angerstein Wharf derailed while traversing the curve from Cricklewood station to Dudding Hill Junction at low speed, approximately 6 mph. No one was injured in the derailment.
9 February 2006	Melton Mowbray	Part of a freight train from Mountsorrell to Barham, formed of a Class 66 locomotive and a set of stone wagons, derailed at the exit from the Up Goods loop at Brentingby Junction near Melton Mowbray. The locomotive and two wagons were completely derailed, along with the first bogie of the third wagon. There were no injuries as a result of the derailment.
15 February 2006	Huntingdon	A member of the public was seriously injured when his coat was trapped in the door of a departing train. There were no other casualties.
21 February 2006	Basford Hall	On its journey from Crewe to Toton on 21 February 2006, a freight train contained 14 wagons with unsecured loads of redundant track panels. These wagons should not have been included in this train, and had not been prepared for dispatch from Basford Hall Yard.
19 March 2006	Manor Park	The driver of a passenger train stopped short of Manor Park to report that the train had struck and run over six wheelbarrows on the main line. It was subsequently reported that three track workers attended hospital having been struck by flying stones.
22 March 2006	Manchester Victoria	A tram that had just departed Manchester Victoria heading for Piccadilly Gardens derailed two of its axles at Long Millgate. There were no casualties and there was no risk of collision with other trams as the derailed tram remained upright and in line with the track. Damage to the tram and track was minor.
7 April 2006	Camden Road	An empty passenger train passed CR1102 signal at red by one coach length. It was subsequently discovered that the train's traction control system had malfunctioned in such a manner that the driver was unable to adequately control its speed on the approach to the signal. There were no casualties or serious damage as a consequence of this event.
16 April 2006	Grosmont	A locomotive driver of a passenger service from Grosmont to Pickering suffered minor burns when a blowback of the locomotive fire filled the footplate with flames.
23 April 2006	Trooperslane, NI	An engineering train derailed while en route to a work site. The train comprised two track maintenance machines. There were no casualties as a consequence of this event.

29 April 2006	High Street Kensington	At 23:09 hrs, 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 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.
1 & 18 May 2006	Crofton Old Station	The RAIB initiated an investigation into two similar incidents, when trains crossed Crofton Old Station level crossing while the gates of the level crossing were not correctly closed to protect the railway. Whilst there were no consequential collisions there was potential for such an accident in both cases.
23 May 2006	Saxmundham	A train from Willesden to Sizewell, made up of two Class 20 locomotives and a single wagon, was involved in a collision with a car on Bratts Blackhouse No. 1 User Worked Level Crossing. There were no casualties or serious damage to train or car as a consequence of this collision, as both vehicles were moving at low speed.
24 May 2006	Notting Hill Gate	An engineering trolley ran away from a work site at Notting Hill Gate on the Circle Line of London Underground. The system was closed to passenger traffic so there was no risk to the public. The trolley collided with another similar trolley after running some 480 m and this brought it to a halt.
25 May 2006	Phipps Bridge 2	At approximately 15:57 hrs a tram running from Wimbledon to Elmers End derailed at Phipps Bridge. There were no casualties or serious damage to the tram. There was a previous derailment at this location on 21 October 2005 which was investigated by the RAIB.
29 May 2006 & 5 July 2006	Ravenglass & Eskdale Railway	On 29 May a diesel locomotive hauled passenger train was travelling from Dalegarth to Ravenglass when the leading bogie of the sixth coach derailed, on the exit from a left hand 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, 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 at the time. There were no casualties and no significant damage to the track or the train.
30 May 2006	Starr Gate, Blackpool	The centre pair of wheels of an experimental tram derailed as it was reversing on the loop at Starr Gate. There were no passengers on the tram, and no-one was injured as a result of the derailment.
8 June 2006	Swan Lane crossing near West Bromwich	A tram car travelling towards Wolverhampton collided with a taxi on Swan Lane level crossing. The collision took place at approximately 4mph (7 km/h). The taxi subsequently collided with a lorry. As a result of the collisions two people were taken to hospital for treatment.
10 June 2006	Desborough	A train from London St Pancras to Sheffield consisted of a four car Meridian train. During its journey passengers attempted to open a door in the first class vehicle at the various station stops without success. After the train left Kettering the door opened when the train was moving at 79 mph (127 km/h) Passengers informed the train crew of the open door, and the train was stopped. The door was locked, and the train then moved forward to Market Harborough, the next station, where it was taken out of service. No-one was injured as a result of the incident.
28 June 2006	Maltby Colliery	A freight train from Redcar to West Burton, consisting of a locomotive and 17 wagons, derailed at 03:00 hrs near Maltby Colliery signal box. Nobody was injured in the derailment.

17 July 2006	Dagenham	A shunter employed by Freightliner (Heavy Haul), who had been engaged in a shunting movement, involving coupling a locomotive and a single wagon, was found lying adjacent to the siding from which the train had just moved. The emergency services were summoned, but attempts to resuscitate the shunter failed and he was declared dead on site.
19 July 2006	Bronwydd Arms	At Bronwydd Arms on the Gwili Railway, near Carmarthen, a locomotive was being used to add an additional carriage to a train. The move was controlled by hand signals. During this move the guard of the train was trapped between the carriage and the train, and sustained fatal injuries as a result.
25 July 2006	Ropley	A passenger train from Alton to Alresford on the Mid Hants Railway derailed on points as it entered the station at Ropley. There were no injuries to passengers or staff as a result of the accident. The train and track suffered only limited damage.
29 July 2006	Deal	A locomotive was hauling a train formed of wagons from a work site near Deal to Hoo Junction. A member of staff observed smoke coming from one of the wagons and notified the driver. The driver left the locomotive and went to investigate the smoke. While he was inspecting the train he came into contact with the live conductor rail and was fatally injured.
18 August 2006	Purley	A freight train passed a signal at danger at Platform 4 at Purley station. An adjacent passenger train in Platform 5 was departing when the driver of the passenger train observed the freight train move away alongside. The driver of the passenger train stopped his train whilst it was still in the platform; the signaller then stopped the freight train at Purley Oaks by placing the next signal to danger. There were no injuries, and only minor damage to track as a result of this incident.
21 August 2006	Channel Tunnel	A series of fire alarms alerted staff that there was a problem with the train from the UK Terminal through the tunnel to the French Terminal at Coquelles, near Calais. The train, a shuttle carrying 30 lorries, was brought to a controlled stop at a cross passage, and the crew and passengers were evacuated into the service tunnel, and then on to France. The train stopped some 20 km from the UK tunnel portal, in UK territory. The fire was found to be on a lorry on the penultimate carrier wagon of the train. The fire was extinguished and the train was removed to the French end of the tunnel. Damage to the tunnel infrastructure was repaired and full services resumed the following day. Nobody was injured in the incident.
27 August 2006	East Didsbury	An engineering train, consisting of a locomotive, 38 wagons, and a second, uncrewed, locomotive, was running towards Heald Green. As the train approached Heald Green the coupling between the last wagon and the locomotive at the rear of the train failed, allowing the locomotive to roll away from the rest of the train. The locomotive came to a halt, after passing through a work site at East Didsbury where staff were carrying out engineering work. The staff saw the tail light of the approaching locomotive, and were able to move clear of the line before it reached them.
8 September 2006	Washwood Heath	A freight train, consisting of a locomotive and 17 wagons, was leaving the sidings at Washwood Heath, in north-east Birmingham, and crossing over the Derby to Birmingham line on its journey to Southampton. As the train pulled forward the signaller in Washwood Heath No 1 signal box observed that the front bogie of the 13th wagon was running derailed. He then saw the wheels re-rail themselves and made arrangements for the train to be stopped in the Saltley area. There were no injuries, and only minor damage to the track as a result of the derailment.
11 September & 24 October 2006	London Waterloo	On 11 September an empty electric train derailed entering the sidings at Waterloo South. One pair of wheels on the penultimate bogie was found to be derailed, and a further pair had clearly derailed and then climbed back onto the track. The point of derailment was found to be in the points at the entry to the sidings from the down slow line. There were no injuries, and only minor damage to the track as a result of the derailment. On 24 October an electric train was entering platform 2 at Waterloo Station at the end of its journey from Dorking. As the train was entering the platform the leading bogie of the seventh carriage became derailed, and following this the rear bogie of the seventh carriage was diverted towards platforms 3 and 4 and the whole of the next carriage was derailed. The train stopped before the derailed carriages entered the platform. The passengers were evacuated into Waterloo station through the front carriages. No injuries were reported.

12 September 2006	Croxton level crossing	A passenger train passed over Croxton Level crossing on the Ely to Norwich line near Thetford. As the train went over the crossing it struck a displaced panel which formed part of the crossing surface for road vehicles. The leading bogie derailed. The train was running at 89 mph, and took 415 metres to come to a stop. There were no injuries as a result of the derailment, but the track was damaged and required repairs before opening.
12 September 2006	Epsom	A London Waterloo to Effingham Junction service was approaching Epsom station when all the wheels of the front bogie on the 4th vehicle became derailed. The train came to a stand with the leading unit in the platform at Epsom. All passengers were detrained onto the platform. No injuries were reported.
25 September 2006	Copmanthorpe	A train from Plymouth to Leeds struck a road vehicle that was across the track at the site of a closed level crossing at Moor Lane, Copmanthorpe. The train was partially derailed in the collision, but remained upright until brought to a controlled stop. There were no injuries to staff or passengers on the train. The driver of the car was fatally injured. There was consequential damage to both the train and the track.
31 October 2006	Badminton	Two track maintenance machines were travelling from Chipping Sodbury to Hullavington. The first machine had stopped at Badminton station to pick up some staff and whilst stationary the second machine collided with the rear of it. Two members of staff were seriously injured, and two others received minor injuries. There was substantial damage to both machines.
16 November 2006	Swanage	A diesel locomotive hauling a works train collided with five passenger coaches parked in platform two at Swanage station whilst performing a low speed shunting manoeuvre. Four members of staff were on the coaches at the time; one was taken to hospital for treatment. The locomotive and one passenger coach suffered structural damage.
20 November 2006	Greenford	A rail crane and its associated vehicles derailed while traversing Greenford East Curve in the up direction at a speed of approximately 13 mph (21km/h). There were no injuries. There was some damage to the crane and track.
19 December 2006	Soho Benson Road	Two trams were in transit toward Birmingham. The leading tram was stopped due to a technical fault when the second tram collided with it at approximately 15mph (24 km/h). There were minor injuries to passengers and tram crew and damage to both tram cabs.

The Recommendation Progress Report

The following section contains all the recommendations made by the RAIB in 2006, and the response of the parties who were identified as the implementer for considering the recommendation and when appropriate acting upon them also included is the response of the safety authority. 133 recommendations were made in 2006 of these 132 recommendations were progressed by the Office of Rail Regulation (ORR), the remaining one was addressed to the Scottish Executive and the Department for Communities and Local Government.

The accidents/incidents are listed by the report number in chronological order and the date shown in the heading is the date that the accident/incident occurred. The publication date can be taken as the date that recommendations are submitted to the safety authority and made public.

The status of responses to safety recommendations, as determined by the ORR and used in this report, has been divided into three categories:

Key to Recommendation Status in Annex C Appendix 3

Green 1 = Closed:	**Recommendation has been passed to dutyholder. Dutyholder has considered the recommendation and has either implemented measures or decided to take no measures. ORR has considered this and has closed the recommendation.**
Green 2 = Complete:	**Recommendation has been passed to dutyholder. Dutyholder feel it has implemented necessary measures. ORR to consider closure.**
Amber = Open:	**Recommendation has been passed to dutyholder for consideration and action where appropriate: either feedback from the dutyholder is awaited, or ORR is considering a partial implementation, or actions have not yet been completed.**

Annex C Appendix 4 shows the recommendations grouped according to the specific rail sectors as follows:

1. Heavy Rail (HR)
2. Light Rail (LR)
3. Metro
4. Heritage

Recommendations made in 2006 and status:

No	Investigation	Status Category			
		1	2	3	
		Green 1 = Closed	Green 2 = Complete	Amber = Open	**Total Recommendations per report**
1	Staniforth Rd	1		2	**3**
2	Watford Junction	3	1		**4**
3	Swainsthorpe Level Crossing				**0**
4	Phipps Bridge 1	2	2		**4**
5	Blackpool	4			**4**
6	Scate Moor				**0**
7	Loughborough Central Station		4		**4**
8	Hatherley	3		2	**5**
9	Manchester Metrolink, Radcliffe	7	2		**9**
10	Hayward's Heath Station	1	1		**2**
11	New Addington	1	2	1	**4**
12	Black Horse Drove Crossing	1	1	2	**4**
13	Barratt's Lane				**0**
14	Liverpool Central		3	5	**8**
15	Thirsk	1	4	3	**8**
16	Trafford Park	4	4	1	**9**
17	Carlisle Station		6		**6**
18	Blackpool Pleasure Beach	2			**2**
19	Oubeck	1		5	**6**
20	Larkhall	4	5	7	**16**
21	York Station		1	3	**4**
22	Moy		3	7	**10**
23	Elsenham Station (wicket gates)		2	8	**10**
24	Archway Station		3		**3**
26	Sudbury Station		1	1	**2**
27	Urchfont & Kennington	3	2	1	**6**
Total		**38**	**47**	**48**	**133**
% of total		**29%**	**35%**	**36%**	**100%**

Recommendations made in 2006 to end implementer:

End Implementer	Number
The Office of Rail Regulation (ORR)	4
Rail Safety and Standards Board	5
Department for Transport DfT	1
Network Rail	51
Light Rail Tram (LRT) Infrastructure	8
Light Rail Tram (LRT) Operating Company (TOC)	19
Freight, Train Operating Company (TOC)	14
Passenger, Train Operating Company (TOC)	8
Heritage Railway	5
Contractors	14
Mainline Infrastructure Owners	4
ROSCO Rolling Stock Leasing Company	4
Manufacturers	6
Equipment Suppliers	1
London Underground Limited	3
Infrastructure companies (Underground only)	1
Other public bodies	1
Total Note: that a number of Safety Recommendations are made to more than one end implementer	149

Recommendations summary and status

Equipment Type	Place	Time	Date	Incident
Tram: 112 (LR)	Staniforth Road, Meadowhall, Sheffield	14:10	27 October 2005	Pedestrian struck by Tram
RAIB Report No:	01/2006		Published:	6 March 2006

Summary

Tram 112, carrying around 20 passengers and travelling north-east towards Meadowhall, Sheffield, struck and seriously injured a pedestrian on the foot/cycle crossing adjacent to the Staniforth/Woodbourn road junction. The pedestrian, who had been walking away from the City Centre along Woodbourn Road beside the tramway, stepped onto the crossing directly in front of the oncoming tram. On being struck, the pedestrian was thrown onto the road junction some distance from the tramlines. The tram continued across the foot/cycle crossing and the road junction before coming to a stop. No one on the tram was injured.

Recommendations	Three recommendations are made.

RECOMMENDATION	1	

Stagecoach Supertram should either replace the fence with a design that provides the tram driver with better visibility of pedestrians as they approach the crossing, introduce compulsory audible warnings and/or take other appropriate measures so as to reduce the likelihood of such an event reoccurring. Until this has been done, the interim use of compulsory audible warnings should be maintained.

Comment

Stagecoach Supertram has accepted the recommendation and implementation is in progress.

ORR is satisfied with the position.

Status	Amber = Open

RECOMMENDATION	2	

Stagecoach Supertram should examine the risks generated by other crossings where the tram driver's view of the pedestrian's final approach is restricted and improve the driver's sightlines, introduce compulsory audible warnings and/or take other appropriate measures to reduce the likelihood of such an event reoccurring.

Comment

Stagecoach Supertram has accepted the recommendation and implementation is in progress.

ORR is satisfied with the position.

Status	Amber = Open

RECOMMENDATION	3	

HMRI should amend Railway Safety Principles and Guidance Part 2 Section G to ensure that the design of pedestrian crossings should consider not only "insufficient visibility of an approaching tram", but also tram drivers' insufficient visibility of approaching pedestrians.

Comment

ORR has considered the recommendation, and has amended RSPG Part 2 Section G, the recommendation is now considered as closed.

Status	Green 1 = Closed

Equipment Type	Place	Time	Date	Incident
Empty 4-car electric multiple unit. (HR)	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 16.00hrs that day.

Recommendations	Four recommendations have been made.

RECOMMENDATION	1	
The Silverlink management should take immediate steps to ensure that personnel managing and operating Watford Yard *ground frame* are fully aware of the presence, purpose and effect of the indicator light and *track circuit* ZA.		
Comment		
Silverlink have reported implementation as complete. ORR regards the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	2	
Silverlink should issue instructions immediately that operators stand away from Watford Yard ground frame and observe the completion of a movement over the points before returning to the ground frame to move the points or give up the *release*.		
Comment		
Silverlink has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	3	
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 is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	4	
In the longer term, consideration should be given by Network Rail to the provision of a locking arrangement on the Watford Yard ground frame points when any alterations are made to the yard or the signalling in the Watford area.		
Comment		
Network Rail stated that they will review the location and consider any changes against Railway Group Standard requirements should alterations to the yard or signalling be made in Watford Yard. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

Equipment Type	Place	Time	Date	Incident
Passenger Train 1G33 (HR)	**Swainsthorpe level crossing**	**13:05**	**13 November 2005**	**Collision with a road vehicle**
RAIB Report No:	**03/2006**		**Published:**	**28 March 2006**

Summary

Collision between a passenger train and a car at Swainsthorpe level crossing, near Norwich. Regrettably, the driver of the car was killed. The train was not derailed and none of the passengers or train crew was injured. The RAIB investigated the performance of the level crossing equipment and the crashworthiness and fire resistance of the train as it became apparent early in the investigation that the car was driven onto the level crossing after the road traffic light signals had been seen to start flashing and the crossing barriers had lowered. The reasons why the car was driven onto the crossing are outside the scope of the RAIB's investigation.
The driving and maintenance of the train and the operation of the level crossing did not contribute to the collision. There was no action that the train driver could have taken to prevent the collision occurring.
The train performed well in the areas of both crashworthiness and fire performance.

Recommendations	No recommendations were made.

Equipment Type	Place	Time	Date	Incident
Tram No 2530 (LR)	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 37m 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	Four recommendations were made.

RECOMMENDATION	1
The conspicuity of the points position indicator 'abnormal' indication should be assessed and improved by an appropriate means, such as display of a horizontal white bar when the points are not correctly set.	
Comment	
Tramtrack Croydon Ltd (TCL) accepted the recommendation, but after reviewing the position decided to take no action. ORR served an improvement notice on TCL on 2/10/06, and the work was completed by April 2007. ORR regard the recommendation as closed.	
Status	**Green 1 = Closed**

RECOMMENDATION	2
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 is currently validating the review and proposal.	
Status	**Green 2 = Completed**

RECOMMENDATION	3
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 is considering whether to close the recommendation.	
Status	**Green 2 = Completed**

RECOMMENDATION	4
As soon as practicable, the operating company should review the control room procedures, taking account of the controllers' workload, with particular reference to instructions relating to points which are not correctly set, to ensure that controllers respond promptly and appropriately to each incident	
Comment	
Tram operations Ltd has considered and carried out the recommendation. ORR regard the recommendation as closed.	
Status	**Green 1 = Closed**

Equipment Type	Place	Time	Date	Incident
Tramway (LR)	Blackpool		21 November 2005 03 & 10 December 2005	Runaway Incidents x3
RAIB Report No:	05/2006		Published:	30 March 2006

Summary

The report covers three separate incidents. They were all associated with an abnormal method of operating the tramway. The tram operating company usually schedules track repairs and renewals to take place during the winter months. This involves closure of one of the two lines of this double track tramway, and trams in both directions have to use the other line. During late 2005, track renewals meant that single line working was taking place between Gynn Square and Talbot Square, over a distance of about one mile, and it was necessary for southbound trams to change direction twice at each end of this section to reach the opposite track.

1. The first incident occurred on Monday 21 November 2005 at Talbot Square. Tram 644, travelling south, was leaving the single line section. The tram carried out the manoeuvres required, and following the second change of direction, the driver had just started the tram when the controller handle became detached. The driver was unable to replace the handle, and so he attempted to apply the emergency brake (activated by a button in the cab). The emergency brake failed to act and the tram, which was not under power, continued to roll down a gradient of about 1 in 100 along the promenade as far as the Old Lifeboat House (about 600 metres), where the gradient levelled out and it came to a stop.
2. The second incident was on Saturday 3 December 2005 at Gynn Square. The driver of tram 646, travelling south, left his cab to change ends for the reversal at the start of single line working. As he was walking through the tram it began to move and struck the barrier protecting the track repair works after rolling 5 metres. The driver then applied the emergency brake and the tram stopped.
3. The third incident occurred on 10 December, also at Gynn Square, and again involved tram 646. After completion of the reversing manoeuvre, the driver moved the tram forward a short distance, some 10 metres, and then attempted to stop to allow a member of staff to alight. The tram did not respond to a service brake application, so the driver applied the emergency brake and the tram stopped after moving about 27 metres past the point where the driver had intended to stop.
A different driver was involved in each incident.

Recommendations	Four recommendations were discussed with the tramway operator during the investigation. All of these have now been implemented.

RECOMMENDATION	1	
Following the first incident, Blackpool Transport Services (BTS) took action to fully brief drivers about the correct procedures when changing ends.		
Comment		
BTS has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	2	
BTS lagged air pipes on the 'Centenary' and 'Jubilee' tramcars to reduce the risk of the braking system freezing, (BTS has now added lagging to the pipework in this area to reduce the risk of freezing of moisture in the pipes and valves). RAIB agrees these actions would mitigate the risks associated with the first incident.		
Comment		
BTS has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	3	
After the second incident, BTS designed a modification to the controller end cover which prevents the shaft from turning while the handle is being removed. A prototype was inspected during the RAIB's investigation. A production version has since been fitted to all ten trams with this type of controller.		
Comment		
BTS has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	4	
Inspection and maintenance procedures for the controllers were reviewed following the first incident. Controllers are now inspected daily and the screws securing the covers tightened if necessary, and records are kept of this check.		
Comment		
BTS has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

Equipment Type	Place	Time	Date	Incident
Passenger train: 2C13 York to Leeds via Harrogate (HR)	**Scate Moor Bridleway crossing**	**17:35**	**8 January 2006**	**Serious Injury to a cyclist**
RAIB Report No:	**06/2006**		**Published:**	**16 June 2006**
Summary				
A cyclist suffered a severed leg as a result of the passage of a train over Scate Moor bridleway crossing (16 km west of York). The cyclist is the only person who at the time was aware of the incident. He has been unable to recall the period between pushing his bicycle up the slope to the railway and when the train was passing. No failings that could have contributed to the incident have been found relating to the railway infrastructure (including the crossing), the train, its operation or the signalling.				
Recommendations	No recommendations were made in respect of this incident.			

Equipment Type	Place	Time	Date	Incident
Steam Locomotive 45305 (H)	**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	Four recommendations are made.			

RECOMMENDATION	1	
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.		
Status	**Green 2 = Completed**	

RECOMMENDATION	2	
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.		
Status	**Green 2 = Completed**	

RECOMMENDATION	3	
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.		
RAIB Status	**Green 2 = Completed**	

RECOMMENDATION	4	
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.		
Status	**Green 2 = Completed**	

Equipment Type	Place	Time	Date	Incident
Freight Train 6V19 (HR)	**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	Five recommendations have been made.			

RECOMMENDATION	1	
English Welsh and Scottish Railway (EWS) should put in place a system to ensure all staff engaged in train preparation duties are re-briefed and regularly assessed on the requirement to carry out checks on every wagon, by using the handbrake indicator and brake rigging as appropriate to the vehicle design, in addition to operating the wheel or lever, to confirm that the handbrake is fully released, in accordance with GO/RT3056 sect C4.1 & E6.4.		
Comment		
EWS has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	2	
EWS should put in place a system to ensure all staff engaged in train preparation duties are re-briefed and regularly assessed on the requirement for performing the roll-by examination on departure of each train from yards where such examinations are mandated.		
Comment		
EWS has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	3	
Freight Operators should undertake a review of the effectiveness of the roll-by examination as a safeguard against the risk of trains departing from designated freight yards in an unfit condition and, where reasonably practicable, implement measures identified as a result. The review should include, as a minimum, consideration of whether: • Facilities provided to assist with the examination, particularly during hours of darkness, such as additional lighting and wheel markings, should be improved; • The current list of locations, where staff are made available to conduct roll-by tests, should be increased.		
Comment		
All operators of freight trains except Freightliner have accepted and implemented the recommendation. ORR are satisfied that Freightliner's existing system meets its requirements. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	4	
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 (a two axle freight wagon used to carry scrap steel) 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 reviewing Freightliner's position with regard to this recommendation.		
Status	**Amber = Open**	

RECOMMENDATION	5	
Freight Operators and Network Rail should jointly investigate the optimum strategy to reduce the risk from vehicles with handbrakes left on entering traffic, considering a combination of measures including: • Mandating roll-by tests at freight yards; • Fitting handbrake interlocks to freight wagons; • Locating hot wheel detectors to pick up skidding wheels or dragging brakes on vehicle emerging from freight yards in order to reduce the residual risk from any vehicles not fitted with handbrake interlocks; and instigate changes to appropriate standards so as to ensure consistent practice across the UK.		
Comment		
All operators of freight trains have accepted the recommendation and implementation is in progress.		
Status	**Amber = Open**	

Equipment Type	Place	Time	Date	Incident
Tram number 1016 Journey No 12AD (LR)	**Manchester Metrolink, Radcliffe**	**09:08**	**8 November 2005**	**Near Miss of two track workers**
RAIB Report No:	**09/2006**		**Published:**	**17 July 2006**

Summary

Two track workers were replacing a pair of fishplates on a section of the Manchester Metrolink system between Bury and Manchester Victoria. The workers were given inadequate warning of the approach of a tram and reached a position of safety with only seconds to spare. The tram then struck a large tool laid in the four foot that the workers had insufficient time to retrieve. After the incident, communications between the control room, tram drivers and the workers became confused. No party reached a clear understanding and neither trams nor the worksite were protected while work was completed. Normal running resumed when the fishplates had been satisfactorily replaced.

Recommendations	Nine recommendations have been made.

RECOMMENDATION	1	
Serco Metrolink should put in place a system to monitor and audit safe system of work arrangements to ensure their adequacy.		
Comment		
Serco Metrolink has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	2	
Serco Metrolink should put in place risk assessments for all permanent way repair tasks and should consider the difference in risk when tasks are executed in street and segregated sections.		
Comment		
Serco Metrolink has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	3	
Serco Metrolink should put in place a system to ensure that the control room is advised prior to Permanent Way staff working in segregated sections.		
Comment		
Serco Metrolink has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	4	
Serco Metrolink should put in place a structured and formalized system for the mentoring and supervision of all persons carrying out person in charge duties.		
Comment		
Serco Metrolink has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	5	
Serco Metrolink should put in place a system of monitoring and auditing to provide assurance that working practices outside Serco Metrolink procedures and Rule Book requirements are not employed.		
Comment		
Serco Metrolink has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	6	
Serco Metrolink should put in place a single source of documented information on system hazards to aid the planning of safe systems of work.		
Comment		
Serco Metrolink has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	7	
Serco Metrolink should put in place a board level supervisory system to ensure that the rule book and its supporting procedures are continually improved to (i) remove inaccuracies and anomalies and (ii) incorporate the developments of best practice elsewhere in the industry.		
Comment		
Serco Metrolink has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	8	
Serco Metrolink should ensure that safety critical communications are effectively executed and understood by all when staff on or about the railway system contact the control room.		
Comment		
Serco Metrolink has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	9	
Serco Metrolink should ensure that at all times the control room is staffed by suitably qualified personnel who can ascertain the severity of a reported incident and confirm its resolution before normal operation is resumed.		
Comment		
Serco Metrolink has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

Equipment Type	Place	Time	Date	Incident
2 class 319 Electric Multiple Units (HR)	Haywards Heath Station	02:40	12 January 2006	Station over-run.
RAIB Report No:	10/2006		Published:	20 July 2006

Summary

Thameslink service from Bedford to Brighton experienced difficulties when braking for the scheduled stop at Haywards Heath and over-ran the station by approximately 4 vehicle lengths. The train was set back into Haywards Heath and similar braking difficulties were experienced during this move. The train was terminated at Haywards Heath.

Recommendations	Two recommendations are made.

RECOMMENDATION	1	

First Capital Connect (formerly Thameslink) and Southern should arrange for an inspection mirror to be used when examining the interior of the drum switch. This recommendation has already been implemented.

Comment

First Capital Connect has considered and carried out the recommendation.

ORR regard the recommendation as closed.

Status	Green 1 = Closed

RECOMMENDATION	2	

Alstom to review procedures, processes and equipment in order to identify an effective means of preventing loose material from interfering with the operation of the drum switch.

Comment

Alstom has considered and carried out the recommendation.

ORR is considering whether to close the recommendation.

Status	Green 2 = Completed

Equipment Type	Place	Time	Date	Incident
Tram no 2538 and Tram no 2533 (LR)	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	Five recommendations have been made.

RECOMMENDATION	1	

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 is considering whether to close the recommendation.

Status	Green 2 = Completed

RECOMMENDATION	2	

Tramtrack Croydon Ltd should assess the possibility of moving signal KHD02 to a position at least 21 m from the fouling point, and if it is reasonably practicable should carry out that relocation.

Comment

See comments below under recommendation 3

Status	See comments below under recommendation 3

RECOMMENDATION	3
Tramtrack Croydon Ltd (TCL) should assess the possibility of fitting SPAS indicators to the King Henry's Drive to New Addington section thus making it similar to all other single track sections on the tramway. If Recommendation 2 has not been applied, Tramtrack Croydon Ltd should install SPAS indicators if it is reasonably practicable to do so.	
Comment	
Dutyholder response: Recommendations 2 and 3 are alternative means of reducing the risk of a Signal Passed at Stop (SPAS) at the entry to the short single line section between King Henry's Drive and New Addington. The section is unique on the Croydon system in not having SPAS protection. TCL has considered recommendation 2 and decided to take no action because they do not consider the action recommended to be reasonably practicable, TCL has considered recommendation 3, and decided not to progress it on the basis that they could not fit SPAS indicators without specific permission from the DfT as the site is a highway; TCL have provided a highly visible fouling point indicator at the junction which, combined with TOC's implementation of recommendation 5, they consider provide an adequate mitigation of the risk of collision in the event of a further SPAS. The ORR has accepted TCL's response and regards the recommendation as closed.	
Status	**Green 1 = Closed**

RECOMMENDATION	4
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 will implement it on the next revision of RSPG Part 2G.	
Status	**Amber = Open**

RECOMMENDATION	5
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 is considering whether to close the recommendation.	
Status	**Green 2 = Completed**

Equipment Type	Place	Time	Date	Incident
Class 365 Electric Multiple Unit. (HR)	**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	Four recommendations are made.			

RECOMMENDATION	1
Notwithstanding the fact that alternative means of warning of a train's approach may be provided, Infrastructure Owners should have a system to manage lineside vegetation as far as reasonably practicable such that visibility of the line from *user worked crossings* is not obscured.	
Comment	
Network Rail has rejected this recommendation on the basis that drivers of road vehicles should rely on the miniature warning lights and not look for oncoming rail traffic. ORR has accepted Network Rail's position.	
Status	**Green 1 = Closed**

RECOMMENDATION	2	
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 and the Department for Transport have considered the recommendation, and are carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	3	
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 considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	4	
Infrastructure Owners where they do not already do so should implement a system to regularly write to all authorised users of user worked crossings, regardless of type, to draw their attention to the safe method of use of these crossings.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering the response.		
Status	**Amber = Open**	

Equipment Type	Place	Time	Date	Incident
1: Class 170 Turbostar three-car diesel multiple unit. 2: Class 43 High Speed Train. (HR)	**Barratt's Lane, Attenborough, Nottingham.**	**10:35**	**21 November 2005**	**Collision between train and pedestrian**
RAIB Report No:	**13/2006**		**Published:**	**21 July 2006**
Summary				
The accident occurred on Barratt's Lane No. 1 footpath crossing in Attenborough village, six miles to the southwest of Nottingham. The weather at the time of the accident was foggy with an air temperature of around zero degrees Celsius. A train travelling towards Nottingham on the down line in the fog observed a person on the crossing, sounded the horn and concurrently made an emergency brake application. The train struck the pedestrian on the crossing and fatally injured him. In the course of the impact the pedestrian was knocked onto the other line. A second train was given a visual warning (hazard lights and hand danger signal) to stop by the first train but was unable to stop short of the accident site despite an emergency brake application and therefore passed over the body, coming to a halt quarter of a mile beyond the crossing. The pedestrian had a hearing impairment which may have contributed to the accident.				
Recommendations	No recommendations were made.			

Equipment Type	Place	Time	Date	Incident
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	Eight recommendations have been made.			

RECOMMENDATION	1	
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 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 considered the recommendation, and is carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	2	
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 considered the recommendation, and has implemented a special site specific brief for patrollers in the Merseyside tunnels. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	3	
Network Rail should review and enhance, where appropriate, its current instructions on the use of *tie-bar*s 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 has carried out a review and is satisfied their procedures meet this requirement. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	4	
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 is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	5	
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 stated that a fatigue assessment of tie bars is not necessary as they are removed from the track after six months. ORR are requiring Network Rail to provide further justification for this rejection. Dependant on the validity of this justification, ORR will pursue implementation if appropriate.		
Status	**Amber = Open**	

RECOMMENDATION	6	
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 strengthened their manpower resources in the Merseyside tunnels, but cannot close the recommendation until the review in recommendation 1 is fully implemented.		
Status	**Amber = Open**	

RECOMMENDATION	7	
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.		
Status	**Amber = Open**	

RECOMMENDATION	8	
Merseyrail should implement improvements to the emergency lighting system fitted to the class 507 and 508 trains to increase the duration for which it is effective in an emergency.		
Comment		
Merseyrail has considered the recommendation, and is carrying it out. Completion was due by March 2007 and confirmation of this is awaited.		
Status	**Amber = Open**	

Equipment Type	Place	Time	Date	Incident
Procedure Fault	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 (ie the worksite had been established outside of an engineering possession).

Recommendations	Eight recommendations have been made.

RECOMMENDATION	1	
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 Person In Charge Of Possession (PICOP) and ES 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.		
Status	**Green 2 = Completed**	

RECOMMENDATION	2	
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 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.		
Status	**Green 2 = Completed**	

RECOMMENDATION	3	
Network Rail, in consultation with contractors, to develop and adopt a universal standard process, with associated documents, for use by the person in charge of possessions (PICOP), 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 is developing alternative proposals involving track occupancy permits to simplify the process of possession management.		
Status	**Amber = Open**	

RECOMMENDATION	4	
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 the Network Rail 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 is developing alternative proposals involving track occupancy permits that will simplify the process of possession management.		
Status	**Amber = Open**	

RECOMMENDATION	5	
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		
Network Rail has developed and implemented alternative proposals by amending the design of forms for possession management to show mileage. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	6	
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 considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	7	
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 implementation is in progress.		
Status	**Amber = Open**	

RECOMMENDATION	8	
Network Rail procedure NR/PRC/MTC/PL0056 should be enhanced by providing clear guidance on who is responsible for processing the requests for any changes and additions to worksites that are agreed at each meeting (ie how to ensure that minuted agreements are correctly processed for inclusion in the WON).		
Comment		
Network Rail has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

Equipment Type	Place	Time	Date	Incident
Three Car class 170 Diesel Multiple Unit (HR)	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	Nine recommendations have been made.

RECOMMENDATION	1	
Network Rail should, through their Sentinel System, withdraw the Personal Track Safety and Controller of Site Safety certification of the two staff involved and not reissue them until the individuals have been retrained.		
Comment		
Network Rail has considered and carried out the recommendation. ORR regards the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	2	
Schweizer should develop and implement a procedure to monitor the compliance of all their staff with main contractor and Network Rail track safety requirements.		
Comment		
Schweizer has considered and carried out the recommendation. ORR regards the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	3	
Schweizer should brief all COSS certificated staff to comply with NR/SP/OHS/019 (Rimini) when working on Network Rail infrastructure.		
Comment		
Schweizer has considered and carried out the recommendation. ORR regards the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	4	
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 is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	5	
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 is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	6	
Carillion should review, and amend as necessary, procedures for client/internal client/supplier communication and specifically that between S&C, CAP and Schweizer. This should specifically consider how specialist activity method statements are to be integrated and visible to S&C site managers and how specialist suppliers are to be informed of main work programmes.		
Comment		
Carillion has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	7	
Carillion should re-brief their site staff regarding emergency procedures.		
Comment		
Carillion has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	8	
Network Rail must ensure the selection, training and performance assessment regime achieves and maintains the prescribed standard of performance required of the COSS. A review is required which should consider: • at the selection stage, an assessment of the individual's personal attitudes to safety, adherence to rules and inter-relational personal skills; • an assessment prior to qualification, and if appropriate, post-qualification, to more accurately reflect the performance required in the workplace; • the development of a new robust monitoring process to ensure that an individual's on-the-job performance routinely achieves the prescribed level. This work should also consider the circumstances where the normal working environment permits COSS to use some protection methods infrequently, and whether there is therefore a need to sub-categorise the skill, within COSS competency training and certification. The principles established may have application in the competency management process for other track safety skills; this should be looked into.		
Comment		
Network Rail has considered the recommendation but believe that carrying out an appraisal as recommended is the responsibility of the employer, and propose no further steps beyond existing competence standards. ORR is considering the response.		
Status	**Green 2 = Completed**	

RECOMMENDATION	9	
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 is evaluating this response.		
Status	**Amber = Open**	

Equipment Type	Place	Time	Date	Incident
Engineering Train 6L57	**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	Six recommendations are made.			

RECOMMENDATION	1	
English, Welsh & Scottish Railways Ltd (EWS) 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 has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	2	
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.		
Status	**Green 2 = Completed**	

RECOMMENDATION	3	
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.		
Status	**Green 2 = Completed**	

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

RECOMMENDATION	5	
As a result of observations and the proposal to withdraw GO/RT 3406 Network Rail should review their systems, procedures and documentation to ensure that trains leaving engineering worksites are in a secure and operationally safe state. The review should consider the requirements for competent staff and the competency / training needs.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	6	
WA Developments (WAD) and First Engineering Track Renewals Division (FETRD) should review their procedures to ensure that an appropriate competent person is clearly identified to perform the duties required during loading and unloading.		
Comment		
WAD and FETRD have considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

Equipment Type	Place	Time	Date	Incident
Tram 720 (LR)	**Blackpool Pleasure Beach**	**14:45**	**6 July 2006**	**Low speed Derailment of Tram**
RAIB Report No:	**18/2006**		**Published:**	**25 October 2006**
Summary				
Tram 720 was traversing hand points at Blackpool Pleasure Beach when it became derailed at less than 4 mph (6 km/h). There were no injuries and only minor marking to the switch tips and the surrounding concrete as a consequence of the incident.				
Recommendations	Two recommendations have been made.			

RECOMMENDATION	1	
Blackpool Transport Services should develop and document a method of hand points operation to ensure that the mechanism is not placed in an unstable state.		
Comment		
Blackpool Transport Services has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	2	
Blackpool Transport Services should put in place a system to ensure that the method identified in Recommendation 1 above is correctly trained at induction and applied in day to day operations by staff throughout their employment.		
Comment		
Blackpool Transport Services has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

Equipment Type	Place	Time	Date	Incident
Three Car Class 175 Diesel Multiple Unit 1C62 (HR)	**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 TransPennine 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 wheelset 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 underframe, 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	Six recommendations were made.

RECOMMENDATION	1	
Network Rail should ensure that modifications are made to intercept the field drain on Network Rail property and discharge via a carrier drain into an engineered drainage system with sufficient capacity to handle the additional flow.		
Comment		
Network Rail has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	2	
Network Rail should identify priority cutting slopes prone to earthflow failure due to drainage flows from neighbouring property. These should be prioritized 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 is considering the response.		
Status	**Amber = Open**	

RECOMMENDATION	3	
Network Rail should review their overall earthwork and drainage examination regime to introduce the five actions listed below: • Identify whether reliance is placed on examinations additional to those described in NR/SP/CIV/065 in managing the risk associated with cuttings. Network Rail should ensure that any additional examinations are clearly identified, undertaken at the correct periodicities and that formal arrangements exist for reporting findings back to the responsible earthworks and drainage engineer. • Ensure that, as far as practicable, the actions required to identify precursors to cutting failures can be completely and correctly executed. • Ensure that proper allowance is made in any risk assignment to compensate for any lack of accessibility, inadequate information or, the inability to fully complete an examination due to any practical or other constraints. • .Ensure a consistent and suitable approach to evaluation of the findings from examinations. • Introduction of a requirement that a percentage of all marginal and serviceable cuttings are subjected to independent spot checking.		
Comment		
Network Rail has considered the recommendation, and is carrying it out.		
Status	**Amber = Open**	

RECOMMENDATION	4	
RSSB should review the load cases representing credible accident scenarios in Railway Group Standard GM/RT 2100 to ensure that appropriate combinations of lateral, vertical and longitudinal loads experienced at the coupler head are included in the design of trains. This should include a review of the 'jack-knife' load case arising from a derailed unit coupled to a railed unit.		
Comment		
RSSB has rejected this recommendation on the grounds they do not accept the RAIB report on reasons for the bumpstop failure and do not regard its detachment and travel under the train as a significant hazard. ORR is considering the response.		
Status	**Amber = Open**	

RECOMMENDATION	5	
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		
Alstom contends the method of bumpstop detachment contained in the RAIB report is improbable. ORR is in discussion with Alstom.		
Status	**Amber = Open**	

RECOMMENDATION	6	
Angel Trains Limited should ensure that any modifications to the design made by Alstom in respect of Recommendation 5 above shall, where reasonably practicable, be implemented in the Class 175 and 180 trains that are in their ownership.		
Comment		
Angel Trains supports industry wide research on whether load cases for bump stop detachment need alteration, but do not consider that any changes should be retrospective to class 175 and 180 units. ORR is in discussion with Angel trains.		
Status	**Amber = Open**	

Equipment Type	Place	Time	Date	Incident
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	Sixteen recommendations have been made.

RECOMMENDATION	1	

Harsco should change the brake lining material used on their manually propelled trolleys to one that is capable of stopping a loaded trolley on a 1 in 30 gradient within a distance to be specified in a revised Railway Group Standard GM/RT/1310.

Comment

Harsco has considered and carried out the recommendation.

ORR regard the recommendation as closed.

Status	Green 1 = Closed

RECOMMENDATION	2	

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, but that the industry will support a voluntary Railway Industry Standard in its place, and that they propose to accommodate the recommendation within that Industry Standard.

Status	Amber = Open

RECOMMENDATION	3	

Harsco should change the design of the brake handle on the Type B trolley to prevent incorrect usage.

Comment

Harsco has considered and carried out the recommendation.

ORR regard the recommendation as closed.

RAIB Status	Green 1 = Closed

RECOMMENDATION	4	

Harsco should revise their user guidance on the use of the Type B trolley with particular reference to;

- the need for, and means of testing the braking system both at depot/works and at site as appropriate;
- the risks and mitigations associated with braking performance on gradients;
- the risk and mitigation associated with the braking performance in wet or icy conditions;
- the risk and mitigation associated with contamination of the brake linings.

Comment

Harsco has considered and carried out the recommendation.

ORR regard the recommendation as closed.

Status	Green 1 = Closed

RECOMMENDATION	5	

Torrent Trackside should ensure that:

- their maintenance procedures take account of the guidance issued by Harsco as in Recommendation 4;
- instruction is available to identify the operational checks required and risks associated with trolley operation taking account of the information in Recommendation 4. This should be issued to those using the trolley (for inclusion in method statements and risk assessments).

Comment

Torrent Trackside has considered and carried out the recommendation.

ORR is considering this response.

Status	Amber = Open

RECOMMENDATION	6	
Carillion should review its safety management system and related processes and introduce changes to: • ensure that information that affects safety can be easily sourced by those staff preparing method statements, and site supervisors, through the IMS database; • ensure that staff engaged in hazard identification, risk assessment and the production of method statements or safety critical documentation are competent for these tasks and that they have access to appropriate source information; • ensure that if short notice changes to working arrangements are to be made they are supported by appropriate risk assessments and method statements that are documented and can be subject to safety validation and audit; • ensure project staff are aware of safety critical information; • implement a means of assessing the effectiveness of site briefings so that necessary improvements are made; • ensure the national processes for checking competencies are adequately briefed and implemented.		
Comment		
Carillion has considered and carried out the recommendation. ORR is evaluating this response.		
Status	**Amber = Open**	

RECOMMENDATION	7	
Carillion should conduct a review of the supervision and audit arrangements of their safety management system including but not limited, to the Worksafe Procedures, to ensure that its policy intent is being delivered in practice and to enable suitable remedial action to be taken.		
Comment		
Carillion has considered and carried out the recommendation. ORR is evaluating this response.		
Status	**Amber = Open**	

RECOMMENDATION	8	
Carillion and Skyblue should ensure that there are auditable procedures in place to ensure all staff engaged upon safety management roles has the capability to manage the safety of relevant staff.		
Comment		
Carillion and Skyblue have considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Amber = Open**	

RECOMMENDATION	9	
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 it is based on a misunderstanding of Rules T2 and T3, and that the recommendation's intent is already covered by the rule book. ORR is considering the response.		
Status	**Amber = Open**	

RECOMMENDATION	10	
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.		
Status	**Amber = Open**	

RECOMMENDATION	11	
Harsco to ensure that plant acceptance approval is obtained for all existing plant (Harsco are awaiting a Network Rail response and approval to the Type B design change submission made in January 2006).		
Comment		
Harsco has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	12	
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 the response.		
Status	**Green 2 = Completed**	

RECOMMENDATION	13	
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, COP 18, which they consider meets the need of this recommendation. ORR is considering their response.		
Status	**Green 2 = Completed**	

RECOMMENDATION	14	
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 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.		
Status	**Green 2 = Completed**	

RECOMMENDATION	15	
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 is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	16	
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 is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

Equipment Type	Place	Time	Date	Incident
Freight train 6V49	York Station	23:22	18 January 2006	Wagon derailment
RAIB Report No:	21/2006		Published:	2 November 2006

Summary

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

Recommendations	Four recommendations have been made.

RECOMMENDATION	1	
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 avoids in-service failure.		
Comment		
GE Rail Services has considered and carried out the recommendation. ORR is evaluating their response.		
Status	**Green 2 = Completed**	

RECOMMENDATION	2	
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.		
Status	**Amber = Open**	

RECOMMENDATION	3	
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.		
Status	**Amber = Open**	

RECOMMENDATION	4	
Those Freight Operating Companies that operate wagons with link and pin type suspensions should review the maintenance arrangements for these suspensions in order 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 the recommendation, and are carrying it out.		
Status	**Amber = Open**	

Equipment Type	Place	Time	Date	Incident
Passenger Train 1B08, 3Car 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 underframe 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	Ten recommendations have been made.

RECOMMENDATION	1	
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 is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	2	
Network Rail should repair the blocked and leaking crest drain and ensure that it is fully functional.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	3	
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 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 their 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; 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. Network Rail rejected this part on grounds of reasonable practicability. ORR is considering this view. During its consultation with Network Rail the RAIB was advised that Network Rail's mining engineers would deal with this work, which could be accomplished within a two year timescale without problem; in addition, Network Rail makes regular use of helicopters to examine its infrastructure, and much of this work could easily be carried out using this resource during routine flights.		
Status	**Amber = Open**	

RECOMMENDATION	4
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 has accepted the recommendation and are already in contact with Network Rail about making them a statutory consultee. They will also be undertaking a review of statutory consultees during 2007, which will include a review of the types of development and their location with respect to the railway. 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.	
Status	**Amber = Open**

RECOMMENDATION	5
Network Rail should review their existing internal processes and ensure that the Territory Earthworks and Drainage Engineer is included in statutory consultations for planning applications for surface extraction developments in the vicinity of the railway. The output of this recommendation is dependent on any actions arising from recommendation 4 above.	
Comment	
Network Rail has accepted the recommendation and implementation is in progress.	
Status	**Amber = Open**

RECOMMENDATION	6
Network Rail should review the risks and benefits of undertaking earthworks Cyclical Examinations by aerial survey compared to foot surveys. The review should identify the mitigating actions needed to control any risks identified. If Network Rail intends to extend their use of aerial surveys to general use, conditions for this should be included in NR/SP/CIV/065. Their review should recognise the impact of aerial surveys, irrespective of specific or general use, on downstream process steps in NR/SP/CIV/065 and assess any mitigation measures necessary to ensure fitness for purpose. For example, SSHI weightings might need to be different if data collection is by aerial survey.	
Comment	
Network Rail has accepted the recommendation and implementation is in progress.	
Status	**Amber = Open**

RECOMMENDATION	7
Network Rail Scotland should ensure that processes are in place to assure that NR/SP/CIV/065 is fully adopted for undertaking earthworks Cyclical Examinations. This should include full compliance with the SSHI analysis process; justification for using aerial surveys and definition of attendant risk mitigation.	
Comment	
Network Rail has accepted the recommendation and implementation is in progress.	
Status	**Amber = Open**

RECOMMENDATION	8
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.	
Status	**Green 2 = Completed**

RECOMMENDATION	9
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.	
Status	**Amber = Open**

RECOMMENDATION	10	
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 implementation is in progress.		
Status	**Amber = Open**	

Equipment Type	Place	Time	Date	Incident
Pedestrian Crossings	**Elsenham Station (wicket gates)**		**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	Ten recommendations have been made.

RECOMMENDATION	1	
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 accepted the recommendation and implementation is in progress.		
Status	**Amber = Open**	

RECOMMENDATION	2	
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 the recommendation and implementation is in progress.		
Status	**Amber = Open**	

RECOMMENDATION	3	
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 is considering their response.		
Status	**Green 2 = Completed**	

RECOMMENDATION	4	
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.		
Status	**Amber = Open**	

RECOMMENDATION	5	
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 implementation is in progress.		
Status	**Amber = Open**	

RECOMMENDATION	6	
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 accepted the recommendation and implementation is in progress.		
Status	**Amber = Open**	

RECOMMENDATION	7	
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 accepted the recommendation and implementation is in progress.		
Status	**Amber = Open**	

RECOMMENDATION	8	
Station operators to identify those locations where intending passengers are required to use a station pedestrian crossing in order to use the station facilities (e.g. booking offices, ticket machines, waiting rooms or toilets). In all such locations train operators should, where it is reasonably practicable to do so, install suitable facilities (e.g. another ticket issuing machine) to reduce the need for passengers to cross the line.		
Comment		
Arriva, Chiltern Rail, First Group, Network Rail, Merseyrail and Southern have accepted the recommendation and implementation is in progress. ORR is considering the response.		
Status	**Amber = Open**	

RECOMMENDATION	9	
Network Rail, in consultation with the station operator and representatives of the local community, to adjust the operation of the station pedestrian crossing (at Elsenham) by requiring that the pedestrian gates be locked in the closed position before signals can be cleared for the approach of trains.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Amber = Open**	

RECOMMENDATION	10	
If necessary for the avoidance of delays, and subsequent misuse by intending passengers, a stepped footbridge should be constructed (at Elsenham) to provide an alternative route (mobility impaired users will be able to use the existing crossing in safety at all times when the gates are open to the highway).		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering their response.		
Status	**Green 2 = Completed**	

Equipment Type	Place	Time	Date	Incident
Six Car Unit of 1995 stock, no T6	Archway Station	10:51	2 June 2006	Derailment
RAIB Report No:	**24/2006**		**Published:**	**11 December 2006**
Summary				
A London Underground Ltd (LUL) Northern line tube train became derailed while entering the reversing siding at Archway station, north London. The only person on board, the train operator, was unhurt. The rear bogie of the last car was derailed, and the car became wedged across the entrance to the siding tunnel. Services on the High Barnet branch of the Northern line were suspended for the rest of the day.				
Recommendations	Three recommendations have been made.			

RECOMMENDATION	1	
LUL should modify their design specification for bullhead switch rail to include a chamfer or other means of reducing the likelihood of stress raisers occurring on the machined lower edge of the rail.		
Comment		
LUL has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	2	
LUL should assess the risk arising from the continued use of unmodified bullhead switch rails in junction work (particularly facing points) and replace such rails where appropriate.		
Comment		
LUL has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	3	
Tubelines should carry out a review of their track inspection system to ensure that faults are being consistently detected and correctly identified, and the appropriate level of remedial action is being programmed.		
Comment		
Tubelines has considered and carried out the recommendation. ORR is considering their response.		
Status	**Green 2 = Completed**	

Equipment Type	Place	Time	Date	Incident
Class 156 Two Coach Unit	Sudbury Station	18:27	27 January 2006	Collision between train and buffer stops.
RAIB Report No:	**26/2006**		**Published:**	**20 December 2006**
Summary				
A passenger diesel train, reporting number 2T28, ran into the buffer stops at Sudbury Station. It was formed of two coach unit 156422, comprising vehicles 57422 (leading) and 52422 (trailing). Both the train and the station were operated by 'one'. The collision occurred at about 6.4 mph (10.2 km/h) as the train was braking to a stand. Approximately 100 passengers were on board at the time; a number of them received minor injuries as a result of falls caused by the rapid deceleration of the collision. First aid attention was given by other passengers and shortly afterwards by paramedics who were called to the scene. One passenger sustained suspected fractured ribs. No passengers were conveyed to hospital.				
Recommendations	Two recommendations have been made.			

RECOMMENDATION	1	
'One' should provide some clear guidance for the train crew on the ideal order of attending to various duties following an accident (it may be useful for this to be provided in a form that can easily be carried around or that could be provided in each driving cab and conductor's compartment).		
Comment		
'One' has accepted the recommendation and implementation is in progress.		
Status	**Amber = Open**	

RECOMMENDATION	2	
Network Rail should: • carry out a review, including cost benefit analysis, into the practicability of providing energy absorbing buffer stops at terminal platforms; • provide a copy of the review to the safety authority; • develop a programme to fit energy absorbing buffer stops to terminal platforms where it is reasonably practicable to do so.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is evaluating their response.		
Status	**Green 2 = Completed**	

Equipment Type	Place	Time	Date	Incident
Class 66 Locomotive & 14 JNA NLU 'Falcon' wagons.	**Urchfont & Kennington**	**11:40**	**5 January 2006**	**Broken Rails**
RAIB Report No:	**27/2006**		**Published:**	**20 December 2006**

Summary

Train 6F95 comprising a Class 66 locomotive hauling 14 JNA NLU 'Falcon' wagons, left Meldon Quarry near Okehampton in Devon bound for Hinksey yard near Oxford. One wagon in the train was empty, the remainder were fully loaded.
At 16:00 hrs and 17:20 hrs, track circuit failures occurred at Urchfont and Kennington respectively, in each case just after train 6F95 had passed by. Examination of the line to determine the cause of the track circuit failures, revealed broken rails at both locations, one at Urchfont and two at Kennington.
Subsequently, one of the wheelsets on loaded wagon NLU 29553 was found to have severe wheel tread damage, with flats which measured approximately 120 mm in length within a damaged portion on each wheel which extended 255-285 mm. The depth of the flats at 7-8 mm indicated that the flat length had been even longer (160-170 mm) at some point in the journey. Another wagon, NLU 29334, was also found to have much smaller wheel flats, within permissible tolerances, and it was returned into service.

Recommendations	Six safety recommendations have been made.

RECOMMENDATION	1	
Dartmoor Railway Company (DRC) should develop and implement measures to improve the rail head condition on the Meldon Quarry line with the aim of minimising occurrences of wheel flats.		
Comment		
DRC has accepted the recommendation and implementation is in progress.		
Status	**Amber = Open**	

RECOMMENDATION	2	
Freightliner Heavy Haul (FLHH) should develop driving instructions specifically for the current quarry train operations on the Meldon branch line, with the aim of minimising the risk of wheel flats. Those instructions should take into account the measures resulting from the implementation of Recommendation 1 and include consideration of changes to the working timetable and permissible line speeds. All drivers signed for the Meldon branch line should be briefed on the instructions, including the appropriate setting for locomotive brake timings, and monitored accordingly (eg by using OTMR downloads) to ensure compliance.		
Comment		
EWS, who share responsibility for the Meldon line with FLHH, has accepted and implemented the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	3	
FLHH should ensure that all trains from Meldon Quarry are examined in a roll-by test to a robust approved procedure at Coleford Junction. To maximise the integrity of the roll-by tests, consideration should also be given to: • setting up a system of regular checks to ensure the test is being performed in accordance with procedures; • enhancing the visibility of rotating wheels to aid inspection (eg paint marks on the wheel rims).		
Comment		
EWS has considered and carried out the recommendation. ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

RECOMMENDATION	4	
Network Rail should ensure that the requirement for a roll-by test at Coleford Junction is recorded in formal operational documentation, such as the Sectional Appendix, so that the practice will always remain, irrespective of the operator of the quarry trains.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	5	
Network Rail should assess the risks associated with: • not having any wheel impact load detectors on the Berks and Hants line and; • the current levels of operational unavailability of existing wheel impact load detector sites across the network; and determine whether they are as low as reasonably practicable. Where necessary, measures to address any identified shortcomings should then be implemented.		
Comment		
Network Rail has considered and carried out the recommendation. ORR is considering whether to close the recommendation.		
Status	**Green 2 = Completed**	

RECOMMENDATION	6	
Network Rail, FLHH and DRC should set up a joint system for alerting each other in the event of future wheel flat incidents on the Meldon branch line so that: • relevant evidence collection and investigation can be undertaken quickly to ensure safety lessons are learned; • existing mitigation measures are reviewed, and enhanced if necessary, to minimise the risk from broken rails on the wider network.		
Comment		
Network Rail, EWS and DRC have accepted the recommendation and implementation is in progress. The ORR regard the recommendation as closed.		
Status	**Green 1 = Closed**	

List of investigations by sector, in order of publication in 2006

Section 1			
Heavy Rail	**Location**	**Date**	**Incident / Accident**
Class 321 4-car Electric Multiple Unit	Watford Junction Yard	28 Oct 05	Derailment
Class 170 3-car Diesel Multiple Unit	Swainsthorpe level crossing	13 Nov 05	Collision with road vehicle
Class 144 3-car Diesel Multiple Unit	Scate Moor Bridleway crossing	8 Jan 06	Serious injury to a cyclist
Freight Train	Hatherley, South of Cheltenham Spa Station	18 Oct 05	Derailment
Two joined class 319 Electric Multiple Units	Haywards Heath Station	12 Jan 06	Station over -run
Class 365 Electric Multiple Unit	Black Horse Drove Crossing near Littleport Cambridgeshire	19 Oct 05	Collision between train and Farm Vehicle
1: Class 170 Turbostar 4-car Diesel Multiple Unit. 2: Class 43 High Speed Train	Barratt's Lane, Attenborough, Nottingham	21 Nov 05	Collision between train and pedestrian.
Class 508 3-car Electric Multiple Units	Liverpool Central Underground Station	26 Oct 05	Derailment
Procedure Fault	East Coast Main Line near Thirsk Station	11 Jan 06	Removal of Rail from open line
Class 170 3-car Diesel Multiple Unit	Trafford Park, Manchester	26 Oct 05	Track worker fatality
Engineering Train	North End of Carlisle Station	6 Feb 06	Derailment of Plough Brake Van
Class 175 3-car Diesel Multiple Unit	Oubeck North near Lancaster	4 Nov 05	Derailment due to Landslide
Manually Propelled Trolley	Between Larkhall and Barncluith Tunnel	2 Nov 05	Runaway
Freight train	York Station	18 Jan 06	Wagon Derailment
Class 170 3-car Diesel Multiple Unit	Moy, Inverness-shire	26 Nov 05	Derailment due to Landslide
Pedestrian Crossings	Elsenham Station (wicket gates)	3 Dec 05	Fatal Accident
Class 156 2-car Diesel Multiple Unit	Sudbury Station	27 Jan 06	Collision between train and buffer stops
Class 66 Locomotive & 14 JNA NLU 'Falcon' wagons	Urchfont & Kennington	5 Jan 06	Broken Rails

Section 2			
Light Rail	**Location**	**Date**	**Incident / Accident**
Tram	Staniforth Road, Meadowhall, Sheffield	27 Oct 05	Pedestrian struck by Tram
Tram	Phipps Bridge between Croydon & Wimbledon	21 Oct 05	Derailment
Tram	Blackpool	21 Nov 05 3 Dec 05 10 Dec 05	Runaway Incidents x 3
Tram	Manchester Metrolink, Radcliffe	8 Nov 05	Near miss of two track workers
Tram	New Addington, Croydon Tramlink	23 Nov 05	Collision between two Trams
Tram	Blackpool Pleasure Beach	6 Jul 06	Low speed derailment of Tram

Section 3			
Metro	**Location**	**Date**	**Incident / Accident**
1995 stock 6-car Electric Unit	Archway Station	2 Jun 06	Derailment

Section 4			
Heritage	**Location**	**Date**	**Incident / Accident**
Ex-LMSR Class 5MT steam locomotive	Loughborough Central Station	4 Feb 06	Collision with carriages

Summary of Schedules and notification requirements for accidents and incidents on UK railways (Annexes to the Regulations)

ANNEX D

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 led to deaths, serious injuries or 2 million euros worth of damage to trains, infrastructure or the environment but did not do so.				

Summary of Schedules and notification requirements for accidents and incidents on the Channel Tunnel

ANNEX D - Appendix 1

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 arcing 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.

Statistics

ANNEX E

Summary of investigations opened in 2006 by type

Type of incident	Total
Passenger train derailment (all trains)	10
Freight train derailment	9
Collision with other train	4
Collision with other object	2
Train door incident	2
Level crossing incidents (fatalities)	0
Level crossing incidents (injuries)	1
Level crossing incidents (near miss)	2
Staff hit by train	2
Staff hit by train (near miss)	1
Run away incidents	2
Unsafe Loads	1
Train defects	3
Uncontrolled movement of train/ vehicle	2
Possession issues	1
Signal passed at danger by a significant distance (SPADS)	2
Electrocution	1
Fire on rolling stock	2
Total	**47**

Summary of investigations opened in 2006 by industry sector

Industry Sector Name	Total
Mainline passenger train operating company involved	9
Mainline freight train operating company involved	12
Tramways	6
Network Rail/Contractors involved	9
Heritage lines	6
LUL	3
Channel Tunnel[9]	1
Northern Ireland Railway	1
Total	**47**

[9] The regulations in respect of accidents and incidents occurring on the Channel Tunnel did not come into effect until 31 January 2006

ANNEX F

Glossary of abbreviations and acronyms

COSS	Controller of Site Safety
EWS	English Welsh & Scottish Railways, a freight operating company
LUL	London Underground Ltd
MoU	Memorandum of Understanding
ORR	Office of Rail Regulation (Her Majesty's Railway Inspectorate)
PICOP	Person in Charge of Possession
SPAS	Signal Passed at Stop

Glossary of terms

All definitions marked with an asterisk, thus (*), have been taken from Ellis' British Railway Engineering Encyclopaedia © Iain Ellis. www.iainellis.com

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.*
Miniature stop lights	Miniature lights, most often Red (R) and Green (G), used as the warning at certain types of Automatic Level Crossing.*
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.*
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.
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 the network and other relevant information to train drivers.

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