



Rail Accident Investigation Branch



Annual Report 2005

Department for
Transport

Preface

This is the Rail Accident Investigation Branch's (RAIB) first annual report and covers the operational period of 2005 (17 October – 31 December).

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 will investigate.

Section 2 deals with the preparation work that was undertaken in 2005 prior to the RAIB becoming operational on 17 October.

Section 3 provides details of the investigative work that the RAIB undertook in the two-and-a-half month operational period of 2005, and section 4 provides information on the outcome of those investigations commenced in 2005 that have now been completed.

Further details on the reporting schedules and accident statistics can be found in the appendices at the rear of the report. This also includes glossaries explaining the following:

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

RAIB Annual Report 2005

Contents

Chief Inspector's foreword	4
1. Introduction to the Rail Accident Investigation Branch	6
2. Preparing for Operations	11
3. Operations	17
4. Recommendations	21
Appendix A - Summary of schedules and notification requirements	32
Appendix B - Summary of investigations undertaken by RAIB and summary of incidents by industry sector	34
Appendix C - Glossary of abbreviations and acronyms	35
Appendix D - Glossary of terms	36

Chief Inspector's Foreword

The Rail Accident Investigation Branch (RAIB) became operational on 17 October 2005. This is the RAIB's first annual report and includes both an overview of our preparations for becoming operational during 2005, as well as details of the investigations undertaken in our first two-and-a-half months of operations.

The RAIB is a totally new organisation; there was no shadow or designate organisation before it. It is responsible for improving safety through the investigation of rail accidents and incidents and is totally independent in this task: from industry, the police, HSE, HMRI and other government departments. It does not involve itself in issues of prosecution, blame or liability.

To form the RAIB it was necessary to recruit and train the team, establish offices in Woking and Derby, develop operating policy and procedures and establish our enabling legislation, the Railways (Accident Investigation and Reporting) Regulations 2005. These regulations, which gave the RAIB the necessary powers to become operational, are more fully described in this report and are detailed on our website¹.

Deciding how the RAIB would carry out its work was one of the first considerations as this shaped the organisation and the development of the regulations. In doing this, the RAIB actively sought the views and experience from the many parties who would or could be affected or served by our work. This included consulting with industry parties (mainline, light rail and metro operators), passenger representatives, suppliers of rail equipment and services, the unions, HMRI, the police, the Crown Office and Procurator Fiscal Service. These discussions took place from the very beginning and continued throughout 2005, and indeed continue today to maintain feedback on our delivery.

Organisationally the railway is a complex industry and there are many parties who may have an interest in investigating the same accident or incident. We have therefore worked hard to forge clear arrangements with other investigating parties to avoid duplication, dilution of effort or conflicts of interest. These arrangements have served our early investigations well; we have good co-operation with the other statutory authorities² without risk to our independence. Equally we continue to work with industry parties to ensure we appropriately co-ordinate our efforts to maximise the quality and efficiency of investigation.

The primary means by which we deliver improved safety benefits is through recommendations arising from our investigations. This annual report includes information on investigations initiated in 2005, their recommendations and, where available, the industries' and the safety authority's response to the recommendations.

The RAIB can only make recommendations; it can not mandate their implementation. It is extremely important that there is feedback on our recommendations so that we, the Secretary of State for Transport to whom I am responsible, and those affected by our work can view what effect our recommendations have in leveraging safety.

¹ The address is www.raib.gov.uk.

² The Safety Authorities in the UK are: the Office of Rail Regulation (ORR); the Northern Ireland Department (NID); and the Intergovernmental Commission (IGC) for the Channel Tunnel.

The European Railway Safety Directive requires the safety authority to firstly ensure that those to whom we direct our recommendations at consider them and where appropriate act upon them, and secondly to report progress of implementation of measures arising from our recommendations. It is extremely important that this communication between the 'end implementers' of our recommendations, the safety authority and the RAIB works well.

The statistical analysis of recommendations in this report is only based on the investigations launched in the two and a half months that we were operational in 2005. But from this, and supported by the findings of other investigations undertaken up to the time of writing this foreword, there are emerging common issues:

- the management of train preparation in yards; and
- the way in which staff work on or around the operational railway.

Additionally, we have, in the period of this report, chosen to undertake two investigations³ into subject matters where we considered the risks to be broader across the railway:

- pedestrian crossings at stations; and
- wheel-rail adhesion problems.

Our published reports contain the specific and common recommendations.

On the subject of the statistics included in this report; the RAIB received 100 notifications during the period between 17 October and 31 of December. This resulted in 17 RAIB investigations. The Regulations require the reporting of both accidents resulting in serious injury and damage as well as those that have minor or no consequence. This enables the RAIB to also investigate incidents which under slightly different circumstances could have had a serious outcome. In this way the RAIB is proactive in its role and maximises the potential to improve safety. Consequently, the number of notifications should not be considered an indicator of the safety of railway systems in the UK.

The RAIB team are privileged to have a role that can make a positive and direct contribution to the improvement to safety and I am seeking to maintain the dialogue with those whom our work affects to ensure we are delivering the maximum benefit to both the travelling public and industry.



Carolyn Griffiths
Chief Inspector of Rail Accidents

29 September 2006

³ The reports into these two investigations are, at the time of writing this foreword about to be sent to the relevant parties for formal consultation prior to publication.

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 2003 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 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 are integrated. It provides for 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 fulfils the UK's duty under this Directive.

Role

The RAIB is independent of the government; railway industry; safety authorities; and prosecution bodies, and the Chief Inspector reports on accident investigation directly to the Secretary of State. Like the Air and Marine Accident Investigation Branches the RAIB is part of the Department for Transport, but is functionally independent.

The RAIB is not a prosecuting body and 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 are 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 professionally investigated in an efficient and timely manner; and
- 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.

The only exception 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 Executive and the RAIB will investigate any accidents or incidents on tramways by invitation of the Scottish Executive.



Types of railway

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

- the national rail networks in Great Britain and Northern Ireland;
- the Channel Tunnel (in co-operation with its equivalent operation in France);
- 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 including narrow gauge systems over 350 mm gauge; and
- cable-hauled systems of 1 km or longer, for example the Cairngorm Mountain Railway and the Great Orme Railway.

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 damage⁴ to rolling stock, the infrastructure or the environment.

In addition to these serious accidents the RAIB has the discretion to investigate those accidents and incidents, which under slightly different circumstances may have led to a serious accident. The investigation of other accidents and incidents will be based upon the RAIB's 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; or
- accidents/incidents involving trespassers or suicides.

Accident and incident notification

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 the Appendix. 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 which may be of importance to the investigation and is of a perishable nature.

The occurrence of Schedule 2 and 5 incidents where immediate site attendance is not time 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.

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.

⁴ '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.

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. Upon receipt of notification of an accident or incident, the RAIB will determine its response and the form of any investigation. This decision is influenced by:

- whether an investigation is likely to bring about improvements in safety;
- whether the investigation is mandated by law;
- the seriousness of the accident or incident and if there is likely to be important evidence at the scene; and
- whether an accident forms part of a series of accidents or incidents.

When appropriate, inspectors will be dispatched immediately to the accident site. Additional teams of inspectors are on standby and can be mobilised as back up or as a second shift if required.



2. Preparing for Live Operations



RAIB commenced operations and was officially launched on 17 October by the then Secretary of State for Transport, Alistair Darling

Regulations

The Regulations were developed during 2004 and 2005 with significant input from a broad base of stakeholders. The Regulations were then laid before Parliament on 20 July 2005. They came into force on 17 October 2005 for mainland UK and on 31 January 2006 for the UK part of the Channel Tunnel system, allowing time for industry parties to make the necessary operational arrangements for implementing the Regulations.

Guidance on the Rail (Accident Investigation and Reporting) Regulations 2005

To support the industry in implementing the Regulations a comprehensive guidance document was produced by the RAIB. Drafts were shared with the industry to ensure that the document met with their needs and the guidance was published in October 2005 to coincide with the Regulations coming into force.

Development of working arrangements with other statutory bodies

The creation of the RAIB does not change the existing legal duties of the police, Crown Office and Procurator Fiscal Service or HMRI in relation to investigating rail accidents and incidents to identify if there has been a breach of the law. This means that following an accident or incident on a railway, a number of investigations may be running in parallel by different organisations and the objectives of each investigation will be different.

Working arrangements have been agreed between the investigatory bodies which set out the principles for effective liaison, communication and co-operation between all parties. The purpose is to ensure that rail accidents, and related criminal incidents and deaths can be independently investigated by each party in a manner which achieves the best outcome for all concerned and which best meets the public interest.

These arrangements specifically cover: the preservation of an accident site to secure evidence; on site working and co-operation to minimise delays; and sharing of technical evidence to avoid duplication (the only exception to the sharing of evidence is witness statements which will remain confidential to the RAIB).

In most circumstances the RAIB investigation will take precedence and will provide the lead for the investigation into the causes and consequences of the accident. However, if there are firm indications of serious criminality⁵ having caused the accident, the police investigation will normally take precedence. In these circumstances the RAIB may still decide to investigate in respect of the seriousness of the consequences, to determine whether there are any safety issues which need to be addressed.



Operational policy and procedures

As a new organisation with new staff and a new interface with other investigative and statutory bodies it was particularly important for the RAIB to develop its own internal operating procedures and policies. This was done in parallel with the development of the Regulations. The purpose of the 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.

Shadow operations

From April 2005, until the Regulations came into force, the RAIB undertook a period of operating in shadow mode with mainline, light rail and metro sectors. The purpose was to provide inspectors with early experience of site response and to test the RAIB's operational policies and procedures. It also gave the industry the opportunity to understand how the RAIB would operate once the Regulations came into force. Shadow operations continued until the RAIB became fully operational on 17 October 2005.

⁵ 'Serious criminality' includes the crimes of murder and culpable homicide, and any act which result in a terrorist incident, deaths, multiple casualties, serious injury and/or other serious consequences eg derailment of a train, or a train collision. This does not include criminal offences which properly fall to be investigated by the ORR.

Recruitment

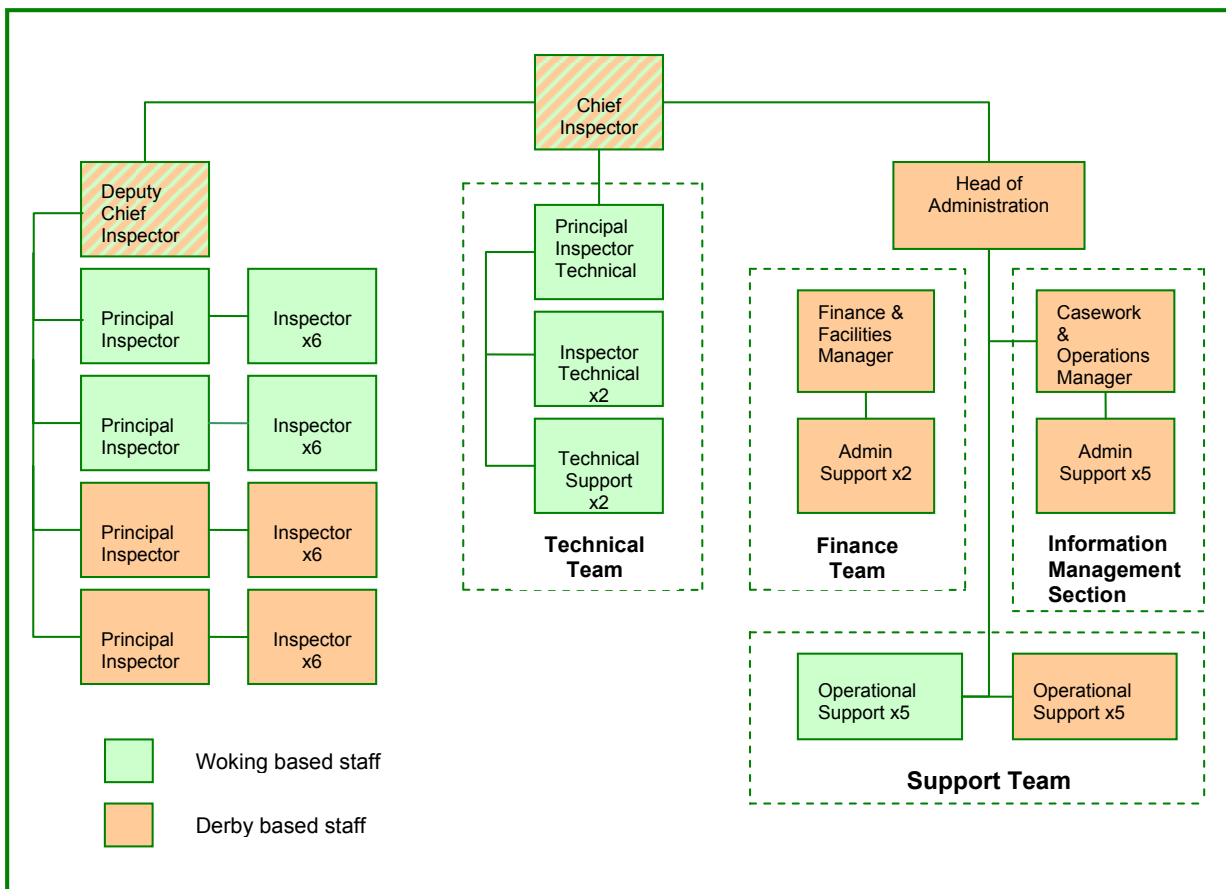
The Chief Inspector was appointed in mid-2003 and an interim team was established to begin the process of setting up the RAIB. Further members of staff were recruited during 2004 and 2005 for both inspector and administrative positions. The interim team was disbanded at the end of 2005. Recruitment for the limited number of inspector and administrative vacancies will continue in 2006.

Personnel

Inspectors have been recruited from a range of railway backgrounds with expertise that covers all sectors of the industry including heavy rail, light rail, metro systems and heritage railways. All inspectors undergo a comprehensive training programme.

To support its investigations and operations the RAIB employs an administrative team, which includes Finance, Facilities and an Information Management section.

A Technical Team also exists to provide support in areas related to policy, operational procedures, technical analysis, and training and development of staff.



Training

All RAIB inspectors are required to have a common standard of knowledge across all rail disciplines (operations, infrastructure, signalling, traction, and rolling stock) as well as a high level of expertise in their 'home' discipline. In addition, inspectors need to be fully competent in investigation techniques and have a full understanding of the RAIB investigation and operating procedures and standards.

To facilitate this, a wide-ranging training package was developed consisting of modular courses which were delivered using expertise obtained either internally or from third-party suppliers.

Accredited agents

The RAIB is a relatively small organisation with a large geographic area to cover. 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 2005 the RAIB trained, assessed and approved some 200 Agents at various locations throughout the UK. The arrangements have worked very well and have provided valuable assistance to the RAIB.

Accommodation

Early in the establishment of the RAIB it was decided that there would be two operational centres, in Derby and in Woking. In deciding on these locations account was taken of the need for:

- good access to the railways that the RAIB investigates;
- access to stakeholders, suppliers, facilities;
- good access to rail and other transport networks including road and air; and
- recruitment of suitably experienced and qualified personnel.

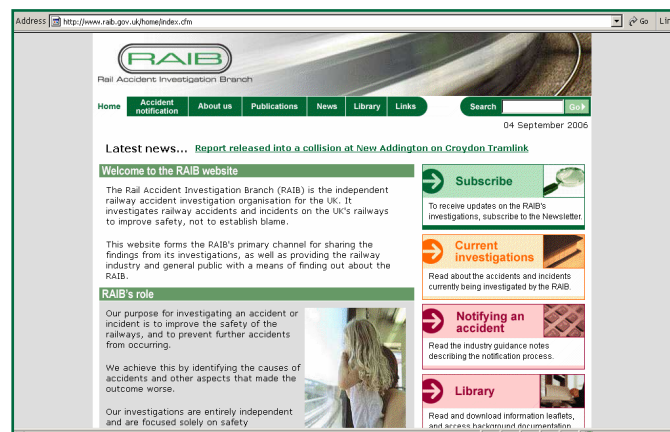
The Derby office was the first to be occupied at the end of December 2004. Temporary accommodation in the Woking office was occupied in May 2005 pending the completion of the permanent office space (this was occupied in March 2006). A workshop and facilities for carrying out testing and analysis of evidence is also available at each site.

At each site there is a fully equipped incident response vehicle. A larger incident management vehicle is based at the Derby office. This will usually be mobilised in slower time for larger incidents to provide additional communication and accommodation facilities for the team on site.



RAIB website

The RAIB has established a 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. The address is www.raib.gov.uk.



RAIB implementation stakeholder programme

During 2005 and in preparation for the Regulations coming into effect, the RAIB met with many industry stakeholders. This included: government bodies; infrastructure controllers; the train, freight and light rail operating companies; heritage rail companies; unions and passenger representative groups. The purpose of this was to ensure that the interface arrangements would work well and that each organisation would have a clear understanding of the RAIB's role in the investigation of accidents and incidents. The RAIB maintains communications with its stakeholders to ensure the quality of its operations and delivery.

International activity during 2005

The European dimension

During 2005 the RAIB has worked 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 and was able to share its early experiences of implementation of the Directive. The Chief Inspector has also worked with the European Commission's Rail Accident Investigation Expert Group. This group focused on the implementation of the Directive, as well as looking at lessons learned and cross-modal methodology, and reports have been made to the Commission.



The Channel Tunnel

The Regulations in respect of the investigation of accidents on the Channel Tunnel were not in effect during the RAIB's operational period of 2005. In preparation, the RAIB worked with the Intergovernmental Commission and its French counterpart (Bureau d'enquêtes sur les accidents de transport terrestre – BEA-TT) to establish 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.

Republic of Ireland and Northern Ireland

Similarly during 2005, the RAIB worked with the Interim Railway Safety Commission in the Republic of Ireland to establish working arrangements for the investigation of rail accidents affecting both the Republic of Ireland and Northern Ireland.

3. Operations

Number of notifications

In the period from 17 October (commencement of operations) to 31 December 2005, the RAIB received 100 notifications of railway accidents and incidents that were required to be notified under Schedules 1 and 2 (see Appendix A). The number of notifications should not be considered as an indicator of the safety of railway systems in the UK. The Regulations require the reporting of both accidents resulting in serious injury and damage as well as those that have minor or no consequence. 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.

This resulted in 17 RAIB led investigations. No notifications were received under Schedules 4 and 5 as the Regulations relating to the Channel Tunnel did not come into effect until 31 January 2006.

Summary of all investigations opened in 2005

Date	Location	Incident
18 October 2005 Report published on 14 July 2006	Cheltenham	On Tuesday 18 October at 05:20 hrs, a freight train was travelling between Bescot and Margam when all the wheels of one wagon became derailed at Hatherley, just south of Cheltenham Spa station, on the Down Birmingham to Bristol line. Following the derailment, the train remained coupled together and travelled for a distance of 4 miles, causing extensive track damage before it was brought to a controlled stand near the approach to Barnwood Junction near Gloucester. There were no collisions with structures or other trains and no injuries as a result of this derailment.
19 October 2005 Report published on 21 July 2006	Black Horse Drove	Black Horse Drove lies between Littleport and Downham Market on the Network Rail line from Ely to Kings Lynn. A northbound train, consisting of a four car Class 365 unit, travelling at approximately 90 mph, struck a tractor on the Black Horse Drove user worked crossing at 10:45 hrs. The train remained on the track, coming to a stop some half-a-mile from the point of impact. The driver of the tractor was fatally injured and minor injuries were sustained by the train driver and one passenger. There was significant damage to the leading vehicle of the train.
21 October 2005 Report published on 29 March 2006	Phipps Bridge, Croydon	At approximately 10:38 hrs tram 2530, travelling eastbound on the single line between Wimbledon and Croydon with approximately 45 passengers on board, became derailed as it passed over the <i>facing points</i> at the single to double line junction on the approach to Phipps Bridge tram stop near Merton, Surrey. There were no injuries and minor track damage occurred as a result of the derailment.
26 October 2005 Report published on 25 August 2006	Trafford Park	A small team of contractors were working at Trafford Park West Junction, 2 miles to the west of Manchester, when a train travelling between Liverpool and Manchester struck and fatally injured one of the <i>trackworkers</i> at approximately 09:28 hrs. One other worker sustained minor injury. No one on the train was injured and the train was not damaged.

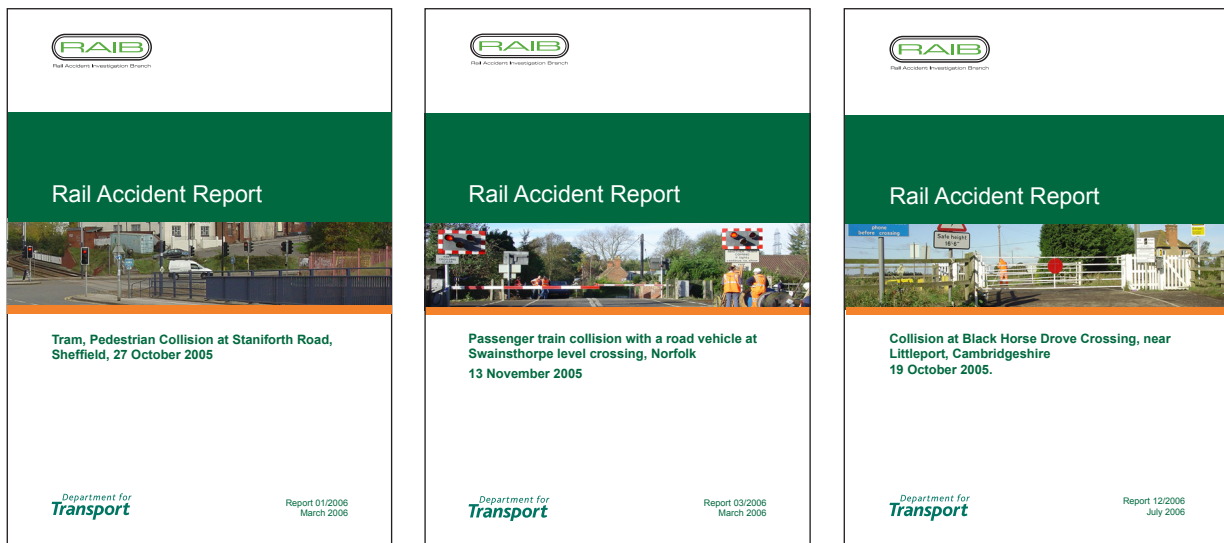
Date	Location	Incident
26 October 2005 Report published on 11 August 2006	Liverpool	The accident occurred at 17:41 hrs when the rear bogie of the 17:06 hrs passenger train from West Kirby to West Kirby, via Liverpool Lime Street, derailed in a tunnel, 222 m on the approach to Liverpool Central underground station. The train was running at 12 mph (19 km/h) when the leading wheelset of the last bogie derailed. There were no casualties and the passengers and train crew were safely evacuated. There was limited consequential damage to the track and the train.
27 October 2005 Report published on 6 March 2003	Junction of Woodbourne and Staniforth Road, Sheffield	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. As the tram approached the foot/cycle crossing, the pedestrian turned towards the crossing and was first noticed by the tram driver beyond the end of the fencing at the crossing. The tram driver braked but was unable to avoid the collision. No one on the tram was injured.
28 October 2005 Report published on 28 March 2006	Watford Yard	At approximately 05:30 hrs a class 321, empty 4-car electric multiple unit, was derailed in the yard at Watford Junction station. There were no injuries to staff and the derailment was limited to the second bogie of the second vehicle. Some damage occurred to the track which was repaired, enabling the branch to be reopened by 16:00 hrs that day.
2 November 2005	Haughead Junction	Contractors' staff working on the re-opening of the Larkhall branch line, near Glasgow, were using a manually propelled trolley to move scrap rail at Merryton. At 06:59 hrs the trolley ran away from the site and entered a line open for normal traffic at Haughead Junction. The trolley came to a halt in Barncluith tunnel, after travelling over three miles, This had significant potential for a serious accident although no-one on was hurt as a result of the runaway, and no collision took place with any other train.
4 November 2005	Oubeck	At 13:57 hrs a Class 175 three-car train from Manchester Airport to Windermere, derailed at Oubeck, two miles south of Lancaster. The train came to a halt after a distance of approximately one mile from the initial point of derailment. No-one was injured in the derailment. There was some damage to the train and to the track as a result of the derailment.
8 November 2005 Report published on 17 July 2006	Radcliffe, Manchester	At 09:10 hrs a southbound tram from Bury to Manchester was involved in a near miss with a group of trackworkers near Radcliffe station. No-one was injured in the incident, but a potentially serious accident was narrowly avoided. Apart from a small machine being struck by the tram there was no physical damage.
13 November 2005 Report published on 28 March 2006	Swainsthorpe	At 13:05 hrs, the 13:00 hrs southbound train from Norwich to Diss, was involved in a collision with a car on Swainsthorpe automatic half-barrier level crossing, approximately three miles south of Norwich. No-one on the train was injured in the accident but the car driver was fatally injured in the collision. Following the collision, the car caught fire and there was resultant damage to the train.
21 November 2005 Report published on 21 July 2006	Attenborough, near Nottingham	At 10:35 hrs the 09:19hrs train from Birmingham New St to Nottingham, struck a pedestrian on a foot crossing in the vicinity of Attenborough station. The pedestrian was fatally injured in the collision. No-one on the train was injured.

Date	Location	Incident
23 November 2005 Report published on 20 July 2006	New Addington, near Croydon	<p>At 08:17 hrs a tram, travelling in a westbound direction, collided with another tram as the westbound tram was leaving the single-line section between the New Addington terminus and King Henry's Drive tram stop.</p> <p>No-one on either tram was injured in the accident. Damage was caused to both trams.</p>
26 November 2005	Moy, near Inverness	<p>A derailment occurred at 07:06 hrs when the 06:48hrs Inverness – Edinburgh Waverley train left the track on the single line between Culloden and Moy, due to a landslide blocking the track. The leading carriage of the train, a three-car class 170 unit, derailed all wheels but remained upright. The rear two carriages stayed on the track</p> <p>There were 74 passengers on the train. Six passengers, the driver and conductor received injuries.</p>
25 November 2005 30 November 2005	Esher Lewes	<p>Both incidents involved trains failing to stop at signals showing red aspects, and running past the signals by a sufficient distance to raise the possibility of a collision with another train.</p> <p>On 25 November, at 06:33 hrs, a Class 450 Desiro train, the 05:44 hrs from Alton to London Waterloo was travelling between Woking and Surbiton on the 'Up Fast' line. At Esher it passed two signals on the 'Up Fast' line at red, before coming to a halt underneath the fly-over at Hampton Court Junction. At this point it was catching up with a preceding train, with the closest point of approach estimated at 300 metres.</p> <p>On 30 November, at 19:08 hrs, the 18:54 hrs Brighton to Hastings train passed a signal at red on the 'Down East Branch' line (platform 3) at Lewes by eight coach lengths, coming to a halt to the East of Lewes station where it had been due to call. At the same time, a route had been set from platform 5 at Lewes for the 19:07 hrs Lewes to Seaford to precede the Brighton to Hastings train. There was potential for a collision between the trains but the driver of the train to Seaford stopped the train in time to avoid this.</p> <p>In neither case did the over-run lead to a collision or to any injury.</p> <p>The RAIB commenced investigations into both incidents, and are also investigating whether there is any wider pattern of trains failing to stop in the autumnal weather conditions.</p>
21 November, 3 & 10 December 2005 Report published on 30 March 2006	Gynn Square, Blackpool	<p>On the Blackpool tramway, during November and December 2005, there were three uncontrolled movements of trams when they were reversing due to engineering works at Glynn Square. On each occasion the driver was able to bring the tram to a stop after it had travelled a short distance. No one was injured in the events.</p>
7 December 2005	General investigation into the design and use of gated pedestrian crossings at public highway level crossings	<p>On 3 December two young girls were struck by a train on the pedestrian crossing at Elsenham and were fatally injured.</p> <p>An investigation was initiated to assess the design, application and risks associated with this crossing and similar crossings on the mainline network.</p>

Accident investigation reports

An investigation report is produced following each RAIB investigation. These will normally contain recommendations which the RAIB considers will improve railway safety. The reports are public documents and are available on the RAIB website at www.raib.gov.uk. Hard copies can be provided upon request.

Under the terms of the Directive, the RAIB is required to produce an accident investigation report in the shortest possible time and not normally more than 12 months after the date of the occurrence of the accident or incident. The RAIB was only operational for two and a half months in 2005 and no reports were published in that time. However, at the time of publishing the Annual Report (September 2006), reports into 12 of the 17 investigations opened in 2005 were published.



Urgent safety advice

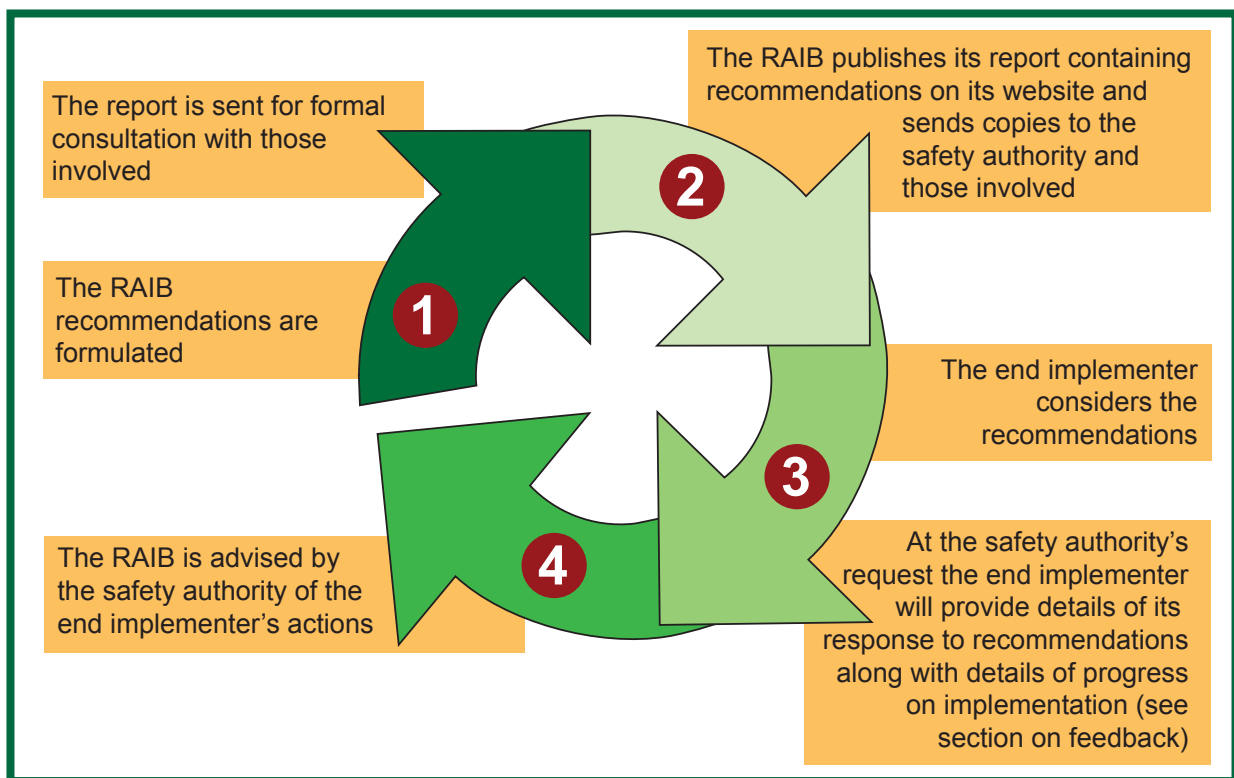
During the course of an investigation it may be deemed necessary to give urgent safety advice to the industry and inform the safety authority. This is to provide information to all parts of the industry who may have or operate similar equipment in similar circumstances.

One urgent safety advice was issued on 27 October 2005 following the derailment which occurred in Liverpool on the previous day.

4. Recommendations

The recommendation process

Recommendations are the prime output of the RAIB's investigations in improving safety. Feedback to the RAIB by the safety authority of the industry's response to these recommendations and details of the action taken is therefore very important in providing transparency of the process and enabling everyone to have view of the safety benefits arising from the RAIB's investigations. It enables the Secretary of State to have confidence that lessons learnt from accidents are being given due weight by all elements of the industry.



As required by the Directive and the Regulations, RAIB's recommendations are addressed to the safety authority or other public bodies where they are the end implementer. It is the safety authority's responsibility, under the Regulations implementing the Directive in the UK, to ensure that these recommendations, addressed to them, are duly taken into consideration and where appropriate acted upon by the end implementers. The RAIB identifies in its reports to whom the recommendations should be directed at. In this sense the term 'directed at' is used to indicate the end implementer who the RAIB believes, as a result of its investigation, owns the risk or is best placed to mitigate the risk. The RAIB's use of 'directed at' does not impose any extra duty upon the end implementer beyond the existing responsibilities under the framework for safety management established by the Health and Safety at Work Act 1974 and subordinate regulations.

Implementation and feedback on recommendations

The safety authority has the responsibility to monitor implementation and, where it considers it appropriate, enforce compliance with recommendations.

The Regulations give the safety authority the power to require any person to provide full details of the measures and actions 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.

The Regulations also require that the safety authority reports this information to the RAIB. Reports will be made periodically or they may be specifically requested by the Chief Inspector. 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 modification to the recommendation so that the outcome can be achieved in another way – this will include the reasons for the modification 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:

1. accept the response;
2. discuss with the end implementer, a modification to its response or timetable; or
3. reject the end implementer response and consider potential enforcement.

In cases where the safety authority is minded to accept an end implementer's modification or rejection of a recommendation, it will normally consult with the RAIB before finalising its decision.



Recommendations made from investigations opened in 2005

At the time of this publication, the RAIB has published reports into 12 of the 17 investigations that it opened in 2005.

The safety authority has provided details of the measures and actions to be taken in respect of recommendations contained in the first four reports published. The RAIB's later publication of the other reports means that the safety authority has not provided feedback.

Details of the reports published are listed below along with details of recommendations that have been made. Feedback, where available, is also included.

Investigation reports published where RAIB opened investigations in 2005

Publication date	Report Title	No. of recommendations made	Feedback available from safety authority
06 03 2006	Tram, pedestrian collision at Staniforth Road, Sheffield on 27 October 2005	3	Yes
28 03 2006	Derailment at Watford junction Yard on 28 October 2005	4	Yes
28 03 2006	Passenger train collision with road vehicle at Swainsthorpe level crossing on 13 November 2005	None	n/a
29 03 2006	Derailment at Phipps Bridge on 21 October 2005	4	Yes
30 03 2006	Runaway incidents at Blackpool on 21 November, 03 and 10 December 2005	4	Yes
14 07 2006	Freight train derailment at Hatherley, near Cheltenham on 18 October 2005	4	No
17 07 2006	Near miss of two track persons by a tram on the Manchester Metrolink at Radcliffe on 8 November 2005	9	No
20 07 2006	Collision at New Addington on Croydon Tramlink on 23 November 2005	5	No
21 07 2006	Collision at Black Horse Drove Crossing, near Littleport, Cambridgeshire on 19 October 2005	4	No
21 07 2006	The fatality at Barratt's Lane No 1 footpath crossing on 21 November 2005	None	n/a
11 08 2006	Derailment near Liverpool Central underground station on 26 October 2005	8	No
25 08 2006	Track worker fatality at Trafford Park on 26 October 2005	9	No
	Total	54	

Summary of organisations to whom recommendations have been directed following investigations opened in 2005

HM Railway Inspectorate	Dept. for Transport	Network Rail	Light rail infrastructure owners	Light rail operating companies	Freight operating companies	Passenger operating companies	Contractors
3	1	16	7	17	5	5	6

Note: Some recommendations have been directed to more than one organisation

Details of recommendations made where feedback has been provided by the safety authority

Incident		Pedestrian collision at Staniforth Road, Sheffield on 27 October 2005	
Date report published		6 March 2006	
No	Recommendation	Industry response	Status
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 recurring. Until this has been done, the compulsory audible warnings should be maintained.	Accepted - Compulsory audible warnings have been positioned on the approach to the location in both directions and all drivers have been briefed accordingly.	Open, partially implemented - Timetable to be agreed for the implementation of improved fencing. HMRI to follow up.
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.	Accepted - Stagecoach Supertram have carried out a pedestrian safety audit and all recommendations in the audit report regarding changes to fence lines, hedges and other vegetation have been completed. Consideration is being given to adding lettering on the ground prior to certain crossing points.	Open, largely implemented - HMRI in discussion regarding confirmation of completion.
3	HMRI should amend Railway Safety Principles and Guidance (RSPG) 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.	Accepted	Open - HMRI to advise when the revised document is available.

Derailment at Watford Junction Yard on 28 October 2005		
Date report published 28 March 2006		
No	Recommendation	Industry response
1	Silverlink management should take immediate steps to ensure that personnel managing and operating Watford Yard <i>ground frame</i> are fully aware of the presence, purpose and effect of the indicator light and <i>track circuit</i> 'ZA'	Accepted - Silverlink has reassessed all staff required to operate the <i>ground frame</i> and qualified them as competent in the operation of the equipment, including the 'F' indicator light and track circuit 'ZA'.
2	Silverlink should issue instructions immediately that operators stand away from Watford Yard <i>ground frame</i> and observe the completion of a movement over the <i>points</i> before returning to the <i>ground frame</i> to move the <i>points</i> or give up the <i>release</i> .	Accepted - Silverlink have reviewed and revised the competence management system for staff operating the <i>ground frame</i> .
3	As soon as practical Network Rail should issue written instructions for the operation of Watford Yard <i>ground frame</i> in conjunction with the appropriate Train Operating Companies, who should specify and implement competency assessment applicable to all staff involved with the operation of the <i>ground frame</i>	Accepted - Network Rail have issued new written instructions on 'Method of Working for the <i>Ground Frame</i> at Watford Yard' and have requested that the recommendation be closed.
4	In the longer term, consideration should be given by Network Rail to the provision of a locking arrangement on the Watford Yard <i>ground frame points</i> when any alterations are made to the yard or signalling in the area.	Rejected - Network rail consider the recommendation not justified as they have assessed the current measures and those taken in response to recommendations 1-3 adequately address the risk. Therefore there will be no need to consider locking in the future unless there is evidence of increased risk in the interim. Should that be the case then changes would be considered taking into account the Railway Group Standards requirements in force at the time (and subject to approvals) and alterations made as appropriate.
		Open - subject to HMRI's confirmation that all actions have been taken.
		Rejected - HMRI are content with Network Rail's assurances that they will undertake this review at the appropriate time.

Derailment at Phipps Bridge on 21 October 2005

Date report published 29 March 2006

No	Recommendation	Industry response	Status
1	The conspicuity of the <i>Points</i> Position Indicator (PPI) '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.	Accepted - Tram Operations Ltd (TOL) commissioned an assessment of the PPI conspicuity, which has been completed. Tramtrack Croydon Ltd/Mowlem (TCL) have subsequently commissioned a further study and the results of this will be used to determine whether a modification from centre dot to horizontal bar is reasonably practicable.	Open - HMRI are in discussion with TCL about the situation.
2	As soon as practicable, the <i>infrastructure manager</i> and the maintenance contractor should review the inspection and maintenance regime for the <i>points</i> at Phipps Bridge to ensure that the risks associated with the use of facing <i>spring points</i> 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.	Accepted - TCL have reviewed the failure rates, inspection and maintenance regime for points and propose no change.	Open - There was a subsequent derailment at this location on 25 May 2006 and HMRI are in discussion with TCL to determine the extent and basis of the review.
3	The <i>infrastructure manager</i> 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.	Accepted - In October 2005, TCL/Mowlem commissioned TOL to review the lists of alarms generated and a technical specification for modification was produced.	Open - HMRI are reviewing the outcome and timescales.
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 <i>points</i> which are not correctly set, to ensure that controllers respond promptly and appropriately to each incident	Accepted - TOL reviewed the Controller's work load and concluded that priority response to high level alarms needed to be clarified and briefed to relevant staff.	Open – pending site inspection by HMRI.

Incident	Runaway tram incidents at Blackpool on 21 November, 3 December and 10 December 2005		
Date report published	30 March 2006		
No	Recommendation	Industry response	Status
1	Drivers to be fully briefed about the correct procedures when changing ends.	Accepted	Implemented and closed
2	Add lagging to air pipes on the 'Centenary' and 'Jubilee' tramcars to reduce the risk of the braking system freezing.	Accepted	Implemented and closed
3	Modify the controller end cover to prevent the shaft from turning while the handle is being removed.	Accepted	Implemented and closed
4	Review inspection and maintenance procedures for controllers.	Accepted	Implemented and closed

Details of other recommendations made where feedback is not available due to recent publication

Incident	Freight train derailment at Hatherley, near Cheltenham Spa on 18 October 2005
Date report published	14 July 2006
No	Recommendation
1	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/RT 3056 section C4.1 & E6.4.
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.
3	<p>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 reasonable practicable, implement measures identified as a result. The review should include, as a minimum, consideration of whether:</p> <ul style="list-style-type: none"> • facilities provided to assist with the examination, particularly during hours of darkness, such as additional lighting and wheel markings, should be improved; and • the current list of locations, where staff are made available to conduct roll-by tests, should be increased.
4	<p>Freight operators should:</p> <ul style="list-style-type: none"> • determine appropriate limits for handbrake application force, consistent with the requirement for ease of operation; • put systems in place to ensure that handbrakes on SSA and other fleets are maintained to these limits; and • put systems into place to ensure that handbrake indicators are maintained to provide reliable indication to staff.
5	<p>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:</p> <ul style="list-style-type: none"> • mandating roll-by tests at freight yards; • fitting handbrake interlocks to freight wagons; • locating <i>hot wheel/ detectors</i> (HWDs) to pick up skidding wheels or dragging brakes on vehicles emerging from freight yards in order to reduce the residual risk from any vehicles not fitted with handbrake interlocks; and <p>instigate changes to appropriate standards so as to ensure consistent practice across the UK.</p>

Incident	Near miss of two track persons by a tram on the Manchester Metrolink at Radcliffe on 8 November 2005
Date report published	17 July 2005
No	Recommendation
1	Serco Metrolink should put in place a system to monitor and audit <i>safe system of work</i> arrangements to ensure their adequacy.
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 <i>segregated sections</i> .
3	Serco Metrolink should put in place a system to ensure that the control room is advised prior to permanent way staff working in <i>segregated sections</i> .
4	Serco Metrolink should put in place a structured and formalised system for the mentoring and supervision of all persons carrying out <i>Person In Charge (PIC)</i> duties.
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.
6	Serco Metrolink should put in place a single source of documented information on system hazards to aid the planning of <i>safe systems of work</i> .
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.
8	Serco Metrolink should ensure that safety critical communications are effectively communicated and understood by all when staff on or about the railway system contact the control room.
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.

Incident	Collision at New Addington on Croydon Tramlink on 23 November 2005
Date report published	20 July 2006
No	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.
2	TCL should assess the possibility of moving signal KHD02 to a position at least 21m from the <i>fouling point</i> , and if it is reasonably practicable should carry out that relocation
3	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 single track sections on the tramway. If Recommendation 2, has not been applied, TCL should install SPAS indicators if it is reasonably practicable to do so.
4	The Office of Rail Regulation (HMRI) should consider reviewing Railway Safety (Principles and Guidance), Part 2G 'Guidance on Tramways' to include the provision of suitable <i>over-run distances</i> , 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 <i>fouling point</i> collisions at the entry to <i>single line</i> sections.
5	TOL should carry out a programme to remind all drivers on the importance of using the <i>hazard warning lights</i> whenever a potentially hazardous situation occurs. Training and routine assessments should include practice in the immediate use of <i>hazard warning lights</i> .

Incident	Collision at Black Horse Drive crossing, near Littleport, Cambridgeshire on 19 October 2005
Date report published	21 July 2006
No	Recommendation
1	Notwithstanding the fact that alternative means of warning a train's approach may be provided, Infrastructure Owners should have a system to manage line side vegetation as far as reasonably practicable such that visibility of the line from user worked crossings is not obscured.
2	ORR (HMRI) and the Department for Transport should evaluate whether highway signs at <i>user worked crossings</i> with <i>miniature stop lights</i> 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.
3	Network Rail should instigate a robust means of recording the features required at each <i>user worked crossing</i> and ensure that these features are maintained in the same way as Level Crossing Order provisions are.
4	Infrastructure Owners where they do not already do so should implement a system to regularly write to all authorised users of <i>user worked crossings</i> , regardless of type, to draw their attention to the safe method of use of these crossings.
Incident	Derailment near Liverpool Central underground station on 26 October 2005
Date report published	11 August 2006
No	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 the trains. The risk assessment should consider parameters relating to track and to trains, the operation of trains and the environment such as speed including <i>temporary speed restrictions</i> , 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.
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
3	Network Rail should review and enhance, where appropriate, its current instructions on the use of <i>tie-bars</i> 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.
4	Network Rail should require that any dispensations on the six months timescale applying to the use of <i>tie-bars</i> should be justified by risk assessment and formally authorised at Territory level.
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 <i>tie-bars</i> that are fit-for-purpose for all situations.
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.
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.
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.

Incident	Trackworker fatality at Trafford Park on 26 October 2005
Date report published	5 August 2006
No	Recommendation
1	Network Rail should, through their <i>Sentinel</i> System, withdraw the Personal Track Safety and <i>Controller of Site Safety</i> (COSS) certification of the two staff involved and not reissue them until the individuals have been retrained.
2	Schweizer should develop and implement a procedure to monitor the compliance of all their staff with the main contractor and Network Rail track safety requirements
3	Schweizer should brief all COSS certified staff to comply with NR/SP/OHS/019 (<i>Rimini</i>) when working on Network Rail infrastructure.
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.
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.
6	Carillion should review, and amend as necessary, procedures for client/internal client/supplier communication and specifically that between <i>Switch & Crossing</i> (S&C), Carillion Ancillary Projects and Schweizer.
7	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. Carillion should re-brief their site staff regarding emergency procedures.
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: <ul style="list-style-type: none"> • 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; and • 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.
9	The principles established may have application in the competency management process for other track safety skills; this should be looked into. 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.

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

Schedule 1 – Notify immediately by telephone		Schedule 2 – Notify in 3 working days in writing		Schedule 3 – Notify in bulk monthly in writing
1 (1) Deaths to passengers, members of the public or staff, caused in accidents or incidents involving moving trains.	Except: Deaths as a result of suicide, trespass, assault, natural causes, any deaths as a result of an accident not involving moving trains.	2 (1) Collisions with objects other than animals or items placed by vandals on railway or tram tracks which would not otherwise have required reporting under any of the headings in Schedule 1.		3 (1) Failures of equipment at level crossings which affect the level of railway safety at that crossing, that are not notified under Schedule 1 (9).
1 (1) Serious injuries to passengers, members of the public, or staff, caused in accidents or incidents involving moving trains.	Except: Serious injuries as a result of attempted suicide, trespass, assault or any serious injury as a consequence of an accident not involving moving trains.	2 (2) Serious injuries to one person on trains, trams, stations or other railway property if the event leading to injury was connected with the operation of trains.	Except: Serious injuries as a result of attempted suicide, trespass, assault or any serious injury as a consequence of an accident not involving moving trains.	3 (2) Broken rails or rails where pieces have broken off and buckled rails where the route has to be closed or a speed restriction put in place. (NB: Precautionary weather related speed restrictions need not be notified)
1 (2) Level crossing accidents involving death or serious injury to a person except suicide and trespass as above.		2 (2) Incidents where road vehicles foul running lines or damage track.		3 (3) Failures of structures on the railways such as cuttings, bridges, embankments and stations where under slightly different conditions there may have been a death, two or more serious injuries or 2 million euros worth of damage to rolling stock, infrastructure or the environment.
1 (3) (between rolling stock), 1 (5) (buffer stops) Collisions between trains or trams on running lines or with buffer stops or other automatic stop devices which cause damage to the vehicles involved.		2 (4) Unintended divisions of any trains or trams while in service or being prepared for service.		3 (4) Signal failures which reduce the level of railway safety by affecting the ability of the system to detect or protect trains that are not notified under Schedule 1 (9).
1 (4) Derailments on lines open to traffic or which block running lines open to traffic.		2 (5) Failures of axles, wheels or tyres.		3 (5) Signals passed at danger unless the incident is notified under Schedule 1 (9).
1 (6) Release of, or fires involving dangerous goods (including radioactive material) requiring an area to be evacuated.		2 (5) Train fires, severe electrical arcing or fusing.		3 (6) Collisions between trams and road vehicles which are not notified under Schedule 1(1).
1 (7) Accidents or incidents leading to the closure of a route for more than 6 hours (but not including weather related matters).		2 (6) Failures of ropes on cable hauled railways whose total length is greater than 1 km.		
1 (8) Accidents causing an excess of 2 million euros worth of damage to trains, infrastructure or the environment. This includes rolling stock which is written off, major track or structure damage or significant pollution incidents.				
1 (9) Accidents or incidents which could have lead to deaths, serious injuries or 2 million euros worth of damage to trains, infrastructure or the environment but did not do so.				

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

Schedule 4 – Notify immediately by telephone		Schedule 5 – Notify in 3 working days in writing
4 (1) An accident resulting in death or serious injury to a person.	Except: Deaths or serious injury as a result of suicide, trespass, assault, natural causes. Any deaths or serious injuries as a result of an accident not involving moving trains.	5(1) A fire, arching or fusing which adversely affects the functioning of signalling, catenary or rolling stock control equipment
4(2) A derailment of rolling stock which causes damage to or blocks a running line.		5(2) A fire that results in the suspension of railway services or closure of a part or railway property affecting the track, for a period of more than one hour.
4(3) A collision that occurs on any line other than a siding, between rolling stock and: (a) other rolling stock; (b) an object capable of causing damage to or derailment of the rolling stock; or (c) a buffer stop.		5(3) Any unintended division of a train, or breakage of coupling.
4(4) An accident that causes extensive damage to rolling stock, the infrastructure or the environment.		5(4) The failure of rolling stock on the track caused by: (a) the failure or seizing of an axle; (b) the failure of a wheel or tyre, including a tyre loose on its wheel; (c) the failure of brakes on a train; or (d) a fire or severe electrical arching or fusing on rolling stock, whether or not extinguished by a fire fighting service.
4(5) A collision on a level crossing involving a vehicle or a pedestrian and rolling stock, whether or not a person suffers death or injury.		5(5) A broken rail, major failure or track equipment (weld, fastenings etc) or track deformation.
4(6) An accident involving the release or combustion of dangerous goods that necessitates the evacuation of a tunnel or part of the terminal.		5(6) Any significant safety related breakdown or any serious destruction or collapse of equipment, installations or structures.
4(7) Fire necessitating evacuation of passengers from one part of a train to another part of the same train or intervention of the fire brigade.		5(7) Any failure in the signalling system, or any other safety system, which endangers or potentially endangers the safe operation of the railway.
4(8) An accident or incident leading to the evacuation of passengers from a train.		5(8) Submersion of track that necessitates its closure.
4(9) Unauthorised passing of a closed marker or signal.		5(9) Unscheduled stopping of a train in a tunnel for more than 30 minutes.
4(10) Runaway train on a line.		5(10) Damage to track caused by rolling stock or a dragging object.
4(11) An accident or incident which, under slightly different conditions might have led to serious injury or extensive damage to rolling stock, the infrastructure or the environment.		5(11) Spillage of fuel from a road vehicle being carried on a shuttle train.
		5(12) A breach of the requirements for the transport of dangerous goods contained or referred to in the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004(a)
		5(13) Any incident during which installations, equipment or rolling stock come into unintended contact with live overhead power lines with a voltage in excess of 200 volts.

Statistics

Summary of investigations by type

Type of incident	2005			
	October	November	December	Total
Passenger train derailment (all trains)	3	2	0	5
Freight train derailment	1	0	0	1
Collisions	0	1	0	1
Level crossing incidents	2	2	1	5
Staff hit by train	1	0	0	1
Staff hit by train (near miss)	0	1	0	1
Uncontrolled movement of train/ vehicle	0	1	1	2
Signal passed at danger by a significant distance	0	1	0	1
Total	7	8	2	17

Summary of incidents by industry sector

	2005			
	October	November	December	Total
Mainline passenger train operating company involved	3	5	1	9
Mainline freight train operating company involved	1	0	1	2
Tramways	2	2	0	4
Network Rail/Contractors involved	1	1	0	2
Heritage lines	0	0	0	0
LUL	0	0	0	0
Channel Tunnel ⁶	n/a	n/a	n/a	n/a
Total	7	8	2	17

⁶ The regulations in respect of accidents and incidents occurring on the Channel Tunnel did not come into effect until 31 January 2006.

Glossary of abbreviations and acronyms

BTS	Blackpool Transport Services
COSS	Controller of Site Safety
ERA	European Rail Agency
EWS	English Welsh & Scottish Railways
HMRI	Her Majesty's Railway Inspectorate
HWD	Hot Wheel Detector
MoU	Memorandum of Understanding
ORR	Office of Rail Regulation
PIC	Person in Charge
PPI	Point Position Indicator
S&C	Switch & Crossing
SSA	A two-axle freight wagon used to carry scrap steel
TCL	Tramtrack Croydon Ltd
SPAS	Signal Passed At Stop
TOL	Tram Operations Ltd

Glossary of terms

Controller of Site Safety	Person responsible for organising <i>Safe Systems of Work</i> on Network Rail infrastructure.
Exchange sidings	Exchange sidings are locations where wagons bound for a private terminal or factory are placed and collected/returned by an industrial locomotive.
Facing points	Points where two routes diverge in the direction of travel.
Fouling point	The position on the track beyond which a tram will be certain to be hit by a tram on a conflicting track or route.
Ground frame	A local control facility for operating <i>points</i> .
Hazard warning lights	Yellow or amber flashing lights that illuminate at each corner of the vehicle. They are similar to those provided on all road vehicles under the Road Traffic Act.
Hot Wheel Detector	A track-mounted sensor which detects heat from skidding wheels or dragging brakes.
Infrastructure manager	Any person who is responsible for establishing and maintaining infrastructure or a part thereof, which may also include the management of infrastructure control and safety systems, but does not include a maintainer.
Miniature stop lights	Small red and green lights mounted on a board adjacent to a user-worked level crossing or footpath crossing. The lights are operated by the passage of trains.
Normal	The position that spring-operated <i>points</i> are set to return to after a tram has passed over them.
Over-run distance	The distance beyond a signal which a tram can occupy without fouling an adjacent line or causing hazard to another tram.
Person in Charge	Person certified as competent to take responsibility for the safety of a worksite and the supervision of those working within it.
Points	The items of permanent way which may be aligned to one of two positions, <i>normal</i> or reverse, according to the direction of train movement required.
Release	For a <i>ground frame</i> 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.

Rimini	An industry name for NR/SP/OHS/019. This Network Rail Company Standard stipulates the safety considerations and arrangements to be implemented for work on or near the line. The Standard requires that non-urgent tasks are preceded by an assessment to identify the most appropriate <i>Safe System of Work</i> .
Safe system of work	The arrangements necessary to conduct work while fully protected from the hazards of moving trams, electrification, plant, slips, trips, falls etc.
Segregated section	Former British Rail lines used exclusively by Serco Metrolink trams.
Sentinel	A competency database operated by National Competency Control Centre on behalf of Network Rail. The system records designated personal safety and technical skills and issues Sentinel cards to authorised persons following training events carried out by approved training providers.
Single line	A section of route that permits trams to operate in either direction over a single track.
Spring points	Points which are set for one direction of a diverging route. They do not require to be reset when approached from the other route in the <i>trailing</i> (or converging) direction. The <i>points</i> return to the preset position by spring force after the wheels have passed through.
Switch & Crossing	Machined rails and their associated fittings which permit trains to move from one track to another.
Temporary speed restriction	A temporary reduction in the permissible speed along a section of railway line.
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 item of electrical signalling equipment connected to the rails to detect the presence of a train.
Trackworker	Employee within the rail industry who for a significant part of their time works 'on or near the line'.
Trailing	The direction of approach to a set of <i>points</i> that provides routes which converge. It is the opposite of the facing (or diverging) direction.
User worked crossing	A type of crossing where the road user has to operate the gates or barriers themselves.

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