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**RAILWAY SAFETY**

Working for a safer railway

# Railway Group Safety Plan 2002/03





# Objectives and Actions

## 1a page 9

The objective of the Railway Group is to achieve an accidental equivalent fatality rate no greater than 0.3 per million train miles by 2009.

### Achieving the objective

Industry partners will collaborate to achieve improvements in safety performance.

## 1b page 10

The objective of the Railway Group is to achieve an accidental equivalent fatality rate no greater than 0.1 per million train miles by 2009 for those risks within its direct control.

## 2a page 12

During 2002/03, Railway Group members will implement measures to further reduce the number of events with the potential to cause catastrophic consequences.

### Achieving the objective

Achieve at least a 10% annual reduction in Precursor Indicator Model (PIM) annual moving average. Work towards eliminating catastrophic accidents by application of existing control measures and new initiatives. Review targets for reducing accident precursors. Participate in national initiatives.

## 2b page 13

The objective of the Railway Group is to reduce the risk arising from SPADs on or affecting the running line by at least 80% of the 2000/01 level by 2009.

### Achieving the objective

Research into SPAD human factors. Reduce SPADs not on running lines. Progress the priority SPAD initiatives.

## 3a page 17

The objective of the Railway Group is to ensure that the risk of accidental passenger fatality will be no greater than one in 133 million passenger journeys per annum by 2009.

### Achieving the objective

Implement platform height/length strategy. Research passenger behaviour at stations. Identify and share best practice. Review company targets for station safety and develop action plans.

## 3b page 18

The objective of the Railway Group is to ensure that the risk of accidental passenger major injury will be no greater than one in 7.5 million passenger journeys per annum by 2009.

### Achieving the objective

Benchmark slips, trips and falls against other industries. Identify good practice, incorporate in Railway Group Standards. Produce train and station security guidance note. Set challenging targets to reduce on-train accidents.

## 4a page 20

The objective of the Railway Group is to ensure that the risk of accidental fatality to members of the public will be no greater than 0.7 per million UK population by 2009.

### Achieving the objective

Implement findings of fencing strategy review and other engineering controls. Liaise with local authority planners. Develop targeted education proposals for 2002/03. Run effective and carefully targeted local campaigns.

## 4b page 21

All user-worked level crossings will be risk assessed using a standard methodology and reasonably practicable controls introduced where necessary by 2004.

### Achieving the objective

Implement reasonably practicable controls at level crossings. Develop more effective controls for passive crossings. Develop national strategy for level crossings with particular focus on Automatic Open Crossing, Locally monitored (AOCL).

## 4c page 21

During 2002/03, Railway Group members will continue to support the research project being undertaken to understand the causes of suicide on the railway.

### Achieving the objective

Support the SOVRN project and respond to its findings.

## 5a page 23

The objective of the Railway Group is to ensure that there is no accidental fatality to any worker on Railtrack controlled infrastructure and stations during 2002/03.

### Achieving the objective

Include initiatives tailored to risk exposure in company safety plans. Check training and control of subcontracted staff. Implement strategy to reduce red zone working. Undertake analysis of red zone working. Seek changes to performance incentives regime.

## 5b page 24

The objective of the Railway Group is to ensure that the risk of accidental major injury to any group of workers on Railtrack controlled infrastructure and stations will be no greater than one in 750 employees per annum by 2009.

### Achieving the objective

Develop challenging company targets to reduce accidental major injuries. Develop and implement lineside safety policies. Ensure effective health screening of prospective employees. Ensure employees declare health, drugs or alcohol problems.

## 2c page 14

Railway Group members will continue to take action to reduce the number of line of route offences by 10% of the 2000/01 rate by March 2004.

### Achieving the objective

Support trespass and vandalism reduction groups.  
Develop national T&V strategies.  
Pursue engineering solutions, education and enforcement.  
Research how best to target educational initiatives.  
Support effective policing.

Remove scrap materials from the lineside by October 2002.

## 2d page 15

Railway Group members will collaborate to bring about an improvement in track integrity and a reduction in the number of track defects which can endanger trains during 2002/03.

### Achieving the objective

Set numeric targets for the reduction of rail breaks.  
Ensure wheel impact meets standards.  
Determine further actions for wheel/rail interface through Wheel Rail Interface Systems Authority (WRISA).  
Respond to review of structure management.

## 5c page 25

Railway Group members will reduce the incidence of assaults on staff on Railtrack controlled infrastructure and stations by 10% of the April 2002 rate, by March 2004.

### Achieving the objective

Take action to reduce assaults on staff

Focus on OH issues affecting safety, including stress and trauma  
Review actions to reduce toilet waste discharge  
Set challenging target to reduce category B SPADs  
Set challenging target to reduce unplanned changes of signal aspect

## 5d page 26

During 2002/03 Railway Group members will develop their competence management systems for front-line staff and their managers in accordance with the strategic framework provided by Railway Safety.

### Achieving the objective

Develop and implement strategic framework  
Develop safety licensing schemes for drivers and signallers  
Review all medical and competence standards for safety critical activities



# Glossary of Terms and Abbreviations

AOCL	Automatic Open Crossing, Locally monitored
ALARP	As Low As Reasonably Practicable
CIRAS	Confidential Incident Reporting and Analysis System
CCTV	Closed Circuit Television
DRA	Driver Reminder Appliance
DTLR	Department of Transport, Local Government and the Regions
ERA	European Rail Agency
ETCS	European Train Control System
EU	European Union
Equivalent Fatalities	All fatalities and injuries expressed in terms of equivalent fatalities: 10 major injuries are taken as 1 equivalent fatality 200 minor injuries are taken as 1 equivalent fatality
HMRI	Her Majesty's Railway Inspectorate (part of the HSE)
HSE	Health & Safety Executive
NTVCG	National Trespass and Vandalism Coordination Group
ORR	Office of the Rail Regulator
PIM	Precursor Indicator Model
Railtrack	Railtrack PLC (in Railway Administration)
Railway Group	Railtrack PLC (in Railway Administration), Railway Safety and the train and station operators who hold Railway Safety Cases for operation on or related to infrastructure controlled by Railtrack PLC (in Railway Administration)
RAIB	Rail Accident Investigation Body
RIAC	Railway Industry Advisory Committee
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995
RISB	Rail Industry Safety Body
RSC	Railway Safety Case
SOVRN	Suicides and Open Verdicts on the Railway Network
SPAD	Signal Passed at Danger
SMIS	Safety Management Information System
TPWS	Train Protection and Warning System
VPF	Value of Preventing a Fatality
WRISA	Wheel Rail Interface Systems Authority

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# The Railway Group

The Railway Group Safety Plan is published by Railway Safety for the Railway Group. Each Railway Group member will develop a supporting, action-oriented plan setting out how they will deliver their commitment to achieving the Railway Group Safety Plan objectives. The safety plans of all Railway Group members are subject to a formal annual review by Railway Safety to confirm that they are fit for purpose and, together, capable of underpinning the Railway Group objectives.

## Railway Group

The Railway Group is defined as Railtrack PLC (in Railway Administration), Railway Safety and the train and station operators who hold Railway Safety Cases for operation on or related to infrastructure controlled by Railtrack PLC (in Railway Administration).

At 1 January 2002, the Railway Group comprised the following:

AMEC Rail Ltd

Amey Rail Ltd

Anglia Railways (UK) Ltd

Arriva Trains Merseyside

Arriva Trains Northern

Balfour Beatty Rail Maintenance Ltd

Balfour Beatty Rail Plant Ltd

Birse Rail

C2C Rail Ltd

Cardiff Railway Company Ltd

Carillion Construction Ltd

Central Trains Ltd

Chiltern Railway Company Ltd

Connex South Eastern Ltd

Cross Country Trains Ltd

Dean & Dyball Construction Ltd

Direct Rail Services Ltd

English, Welsh & Scottish Railway Ltd

Eurostar (UK) Ltd

EWS Railway International Ltd

First Engineering

Fountain Forestry Ltd

Freightliner Ltd

GB Railfreight

GT Railway Maintenance Ltd

Gamble Trackline Services Ltd

Gatwick Express Ltd

Geoffrey Osborne Ltd

Grantrail Ltd

Great Eastern Railway Ltd

Great North Eastern Railway

Great Western Trains Company Ltd

Heathrow Express Ltd

Hull Trains Ltd

J Murphy & Sons Ltd

Jackson Group PLC

Jarvis Facilities Ltd

Jarvis Fastline Ltd

London Underground Ltd

May Gurney (Construction) Ltd

Midland Main Line

Motherwell Bridge Rail

Mowlem Railways

North Western Trains Ltd

Prestwick International Airport

Rail Express Systems

Railtrack PLC (in Railway Administration)

Railway Drainage Ltd

Railway Safety

Scotrail Railways Ltd

Serco Metrolink

Serco Rail Maintenance Ltd

Serco Railtest Ltd

Silverlink Train Services

South Central Ltd

South West Trains Ltd

Thameslink Rail Ltd

Thames Trains

WA Developments Ltd

WS Atkins Rail Ltd

Wales & West Passenger Trains Ltd

West Anglia Great Northern Railway Ltd

West Coast Railway Company

West Coast Trains Ltd

Westinghouse Signals Ltd

# Foreword

This is the second Railway Group Safety Plan since the formation of Railway Safety on 31 December 2000. At a time when there is much comment about the fragmentation of our railway structure, it is important and reassuring to emphasise how well the industry has worked together in the development of this industry-wide Safety Plan. The role of Railway Safety, is in leading, supporting and facilitating the process and I am particularly pleased with the growing senior level of participation from all the key players. There is clear evidence of a growing safety culture – but we can and must do better.

Last year, we introduced the concept of zero tolerance of unsafe acts and conditions across the industry. It continues to be the subject of debate – itself a good thing, since it is primarily about culture. In practice, it is about emphasising a need for continuous improvement and not accepting that a particular level of unsafe practices is to be tolerated. This is spelt out in more detail on page 5 of the Plan. It is a regime of increasing understanding of safety issues and continuing to drive down the high-risk situations – not a blame culture.

The three principal causes of train accidents are: track and vehicle defects, SPADs and vandalism. There is always a danger that the last of these three receives less attention, partly due to less public concern and partly because it is, to some extent, more difficult to address. Nevertheless, as with all safety measures, there are always a few simple things that can be achieved. In the case of vandalism, a major effort in removing line-side debris and rubbish can have a major, immediately visible impact in this area. Similarly, in the case of SPADs, attention to those drivers with a significant SPAD record, coupled with more rigorous SPAD investigations, are examples where readily achievable levels of further effort could produce significant benefits.

One area where significant safety gains can be made is in the planning and execution of possessions. All industry partners will need to cooperate to ensure that ‘green zones’ are more easily obtained so that the workforce most exposed to risk can work in the safest possible environment. We have set ourselves a target of there being no accidental workforce fatalities this year, and the availability of ‘green zones’, together with strict compliance with rules and standards, will be essential if this is to be achieved.

2001 saw the publication of the two reports by Lord Cullen following the Ladbroke Grove accident in 1999. Both reports have given the industry valuable advice and recommendations on how safety can be improved, in terms of both specific actions associated with railway operations, the organisation and governance of safety across the industry. This has been well received and work is in progress to bring about these changes within the recommended timescales. We, at Railway Safety, are looking at methods to secure our independence as suggested in the Cullen report and our proposals are receiving strong support from all quarters. We are also working to ensure that these changes are implemented in a way which carries the support of the industry and other stakeholders to ensure a smooth transition to the new structure.



Sir David Davies  
Chairman, Railway Safety

# Introduction

Welcome to the ninth annual Railway Group Safety Plan, the second to be published by Railway Safety. These plans draw together the thinking of the Railway Group, identifying critical safety issues and what we plan to do about them. This year's plan builds on its predecessors, and confirms the industry's commitment to achieving the long-term objectives first published in 1999/2000.

The last two years have been unusually traumatic for Britain's railway industry, and the difficulties and uncertainties look set to continue for some time yet. No individual working for a Railway Group company can fail to have been affected in some way; it is a tribute to our workforce that we can identify real progress on many of the safety issues facing the industry.

Nevertheless, it would be a mistake to think that the industry has cracked the safety problem; not only would it be easy to lose the gains made so far, but, as the recent tragic deaths of four track workers in separate incidents demonstrate, there remain areas where we are still a long way from getting it right.

We know that the themes developed in successive safety plans will deliver long-term benefits. For this reason, this year's Plan has, deliberately, not been too radical in promoting new initiatives. During the extensive consultation process that went into the development of this Plan there was one message coming through very loudly and clearly: the emphasis needs to be firmly on completing the delivery of initiatives already in place. Throughout the Plan, we have highlighted many actions from previous plans that still remain relevant to achieving our long-term objectives.

We continue to concentrate on the precursors to catastrophic accidents. Principal precursors are: signals passed at danger (SPADs), vandalism, and track and vehicle defects. In this Plan, we have included a new objective on track integrity as a reflection of the concerns that have arisen as a result of the Hatfield accident.

Although the Plan is about the safety objectives which the industry sets itself, and the means of achieving them, it is important to be aware that there are also significant developments taking place that will affect the way safety is managed on the railways.

Lord Cullen's second report into the Ladbroke Grove accident made a number of important recommendations including the establishment of an independent rail accident investigation body and a new, independent, railway safety body. There are also major developments at the European level, including a proposed railway safety directive and the establishment of a European Rail Agency. Both of these issues are discussed in more detail in the Plan.

Underpinning the achievement of many of the objectives in the Plan is the ability of railway businesses to commit to delivering projects that have a direct impact on safety, in the light of assured funding. Examples include the programme to replace and upgrade lineside fencing to prevent trespass and vandalism, and the alignment of platform heights to reduce boarding and alighting accidents. The Strategic Rail Authority has confirmed its support for the contents of this Plan in a statement which is reproduced on page 7.

The Railway Group Safety Plan is a high-level document from which each member of the Railway Group develops its own safety plan. Each of these plans will contain specific objectives, appropriate to the nature and scale of the company's operations, that will contribute to the achievement of the objectives in the Railway Group Safety Plan. Delivery of the company plans is key to the achievement of the Group objectives and Railway Safety has published a guidance note to assist companies in the preparation of their own plans.

Finally, we have given a great deal of thought this year to how better to present the Plan but without losing the sense of continuity from previous plans. I do hope you like the new look.



Rod Muttram  
Chief Executive, Railway Safety

# The strategic context

## Safety decision making

Underpinning all objectives is the legal requirement on duty holders to ensure that the risks to health and safety are reduced so far as is reasonably practicable (Health and Safety at Work, etc. Act 1974).

The Railway Group objectives in no way diminish or detract from that responsibility. They seek to provide an overarching direction for safety on infrastructure and stations controlled by Railtrack PLC (in Railway Administration) (known as Railtrack), and to indicate the areas where individual Railway Group members should focus their attention and set their own safety objectives to maximise their contribution to overall safety on the railways.

## The ALARP principle

The approach which is used as the basis for making safety decisions on infrastructure and stations controlled by Railtrack is based on guidance in the Health and Safety Executive (HSE) publication *Tolerability of risks from nuclear power stations 1992*. This introduced the concept of three regions of risk:

- an intolerable region where risks must be reduced
- a broadly acceptable region where no further risk reduction measures are required
- an intermediate region where the cost and trouble of reducing risk further should be weighed against the benefits, to ensure risks are as low as reasonably practicable (ALARP).

The approach is outlined in Railtrack's Railway Safety Case (RSC) and confirmed in all Railway Group members' RSCs. It states, in summary, that where risks lie in the ALARP region, decisions on whether to implement further safety measures are guided by balancing the safety benefits of the scheme against the costs of implementation.

## Safety benefits and costs

Safety benefits are measured in terms of fatalities and injuries avoided, which are converted into an index of equivalent fatalities:

10 major injuries or 200 minor injuries = 1 equivalent fatality

The number of equivalent fatalities avoided is valued by applying an appropriate 'value of preventing a fatality' (VPF). These values are calculated by using the Department of Transport, Local Government and the Regions (DTLR) formula for road safety expenditure.

In 2002/03, the VPFs are £1.24 million per equivalent fatality avoided for prevention of single fatalities and £3.46 million per equivalent fatality for prevention of multiple fatalities or where risks are close to intolerable. However, recent regulation (for example, the required fitment of the Train Protection and Warning System and the withdrawal of unmodified Mark 1 rolling stock) has set a precedent for requiring investment in safety with an implied cost of averting a fatality in the order of £10 million. This, it is

argued, is justified to meet increasingly high public expectations for railway safety to avoid catastrophic risks and to match comparable good practice elsewhere.

Therefore, certain Railway Group Standards have adopted a comparable VPF to justify measures addressing aspects of catastrophic risk. Examples are standards for on-train data recorders and enhanced emergency braking. This approach has been endorsed by the independent Safety Advisory Board.

## Zero tolerance of unsafe conditions, decisions and acts

Key to achieving the strategic objectives in the Railway Group Safety Plan is the concept of zero tolerance, which was first introduced in the 2001/02 Plan. In the railway industry, zero tolerance means not accepting unsafe acts and conditions within the control of the Railway Group. It follows that there can never be an 'acceptable' level of accidents – no matter what is achieved over a period of time, efforts must continue to ensure that better results are achieved in future.

Zero tolerance is an attitude which is about always seeking better and safer ways of operating, within the grounds of reasonable practicability. It is about front-line staff taking daily responsibility for their own actions, and establishing a culture in the workplace which seeks to positively reinforce safe practices.

Other examples are:

- Boardroom and planning decisions – always taking full account of the safety implications of actions proposed.
- SPADs – never accepting that a certain level of SPADs is either tolerable or inevitable, but requiring each SPAD to be investigated and lessons learnt to prevent it happening again.
- Vandalism – not accepting as inevitable that there will always be a certain amount of scrap and waste material at the lineside which can be used by vandals to damage the railway.
- Safe stations – developing an attitude among front-line staff and contractors that unsafe conditions at stations, which could cause injury to other staff or customers, must be dealt with immediately to reduce the risk.
- Safe working – a refusal by managers to accept or turn a blind eye to short cuts taken by staff to get work done, possibly compromising safety arrangements.
- Engineering work – a real commitment to make green zones available for engineering work and a culture which does not accept unplanned red zone working.

Development of a strong safety culture, demonstrated by behaviours such as those above, will reinforce the industry's absolute commitment to sustainable safe performance – which in turn is underpinned by the requirement to do all that is reasonably practicable to achieve that.

### **Safety culture**

To work effectively, zero tolerance needs improved safety leadership, management and investigation of safety failures in an open and blame-free – but not responsibility-free – culture. It is not a regime in which mistakes and failures will always be punished. A step towards achieving a culture that values and promotes safety was the introduction of the national confidential reporting system (CIRAS).

### **Changes in safety management**

Fundamental changes are taking place in the way safety is managed and regulated in the railway industry. Railway Safety was established in December 2000 as a subsidiary company of Railtrack Group PLC, with its own board of directors. Although Railway Safety took over most of the functions of the former Safety and Standards Directorate of Railtrack, it is now widening its safety leadership role to the Railway Group. The company will lead a number of national initiatives to help implement safety improvements in key risk areas such as level crossings, stations and trackside safety.

### **National research programme**

Separately, a national programme of research and development has received additional public funding. The programme will be dedicated to all aspects of railway safety and is intended to be both comprehensive and wide-ranging. These efforts will support the industry's different objectives in a number of ways, which are identified in this Plan where appropriate.

### **Summary of the Cullen report recommendations**

Part 2 of Lord Cullen's report on the Ladbroke Grove Rail Inquiry recommends a structure for the management of safety on the railways, which meets the requirements of the industry, its regulators and its customers.

Lord Cullen sets a timescale of three years for all the changes to be implemented, with some to be implemented within six months or a year. The Government now has the task of aligning these timescales with the time required to introduce the necessary licence changes or new legislation.

### **Separation of responsibilities**

Central to the new structure is the separation of responsibilities where there could have been conflicts of interest.

The Health & Safety Executive (HSE) will no longer be responsible for both rail safety regulation and accident investigation. The future safety regime is to be built around a strengthened Her Majesty's Railway Inspectorate (HMRI), with an adequately resourced, competent workforce properly engaged on the real risk issues of the industry.

Railtrack will no longer be responsible for advising the HSE on the acceptability of train and station operator's safety cases. Most of Railway Safety's current functions will be undertaken by an independent body, rather than a Railtrack subsidiary company.

### **Practical concerns**

From Railway Safety's perspective, the greatest concern is not about structure or implementation, but the need to retain and recruit the expert personnel needed to give life to the new organisation. Lord Cullen allows up to three years for the new Rail Industry Safety Body (RISB) and Rail Accident Investigation Body (RAIB) to be implemented. The HSE is required to take over the assessment of safety cases within the next 12 months.

The establishment of the independent railway safety body will have to run in parallel with Railway Safety's existing work, such as the review and revision of Railway Group Standards, which runs on a five-year cycle, the delivery of the £75 million safety-related research programme, plus running initiatives such as the SPAD Focus Group, the Railway Group Safety Plan and supporting the new Systems Authorities. Railway Safety has developed proposals for how this might be achieved quickly within the context of ORR licences and contracts. These should form the basis of initial ORR consultation to be conducted early in 2002.

Railway Safety expects to be closely involved in the formation of the new RAIB, as it is responsible for the relevant Railway Group Standard GO/RT3473. In formulating its response to Lord Cullen's recommendations, Railway Safety will be consulting with aviation safety experts to gain first-hand experience of the coming regime.

### European legislation

The European Union is about to launch its second tranche of railway legislation, a large part of this will be focused on completing the single market through extending interoperability. This is likely to see the High Speed Interoperability Directive (96/48/EC) provisions brought into line with the Conventional Interoperability Directive (2001/16/EC) and in particular its coverage of renewal projects. It is also likely to see the scope of interoperability extended beyond the Trans-European Network to a much larger proportion, if not all, of the rail network in Great Britain. Even more significant is the proposed Rail Safety Directive introducing a harmonised safety regulatory framework for the European Union rail industry. The framework will harmonise existing national safety regulatory regimes to ensure safety legislation and safety rules do not act as a barrier to open access and a single supply market.

Key mandatory provisions of the safety directive for the European Union (EU) are likely to include:

- common safety targets
- common safety methods for assessing compliance with targets
- definition of the respective safety responsibilities of the regulators, train operators, infrastructure managers and industry
- European Commission approval of new or amended national safety rules to ensure harmonisation
- development of harmonised safety rules and standards at EU level
- establishment of a national accident investigation body which is independent of regulators and industry
- minimum contents of the safety management system
- minimum contents of accident reports and publication requirements
- minimum requirements for accident investigation
- reporting to the EC against specified safety indicators
- harmonised safety certification and mutual recognition of elements of the certificate.

Implementation of the package of railway legislation will need considerable resources to develop the detailed targets and rules and monitor their application. The European Commission is therefore including in the package a regulation establishing a European Rail Agency (ERA) to support them in the areas of safety and interoperability. The structure and governance of the ERA will be key, since this will determine its method of working and influence of the industry.

It is clear from the key provisions of the directive that it has the potential to have significant impact on the business of every Railway Group member. It is likely that the proposed directive will be published for consultation in early 2002. Considerable work has already been done to assist the European Commission's development of the proposal. The industry must now carefully consider the proposed directive and provide a British response to the consultation, ideally in partnership with government and regulators. This response must consider whether the proposal will help maintain and where practicable improve safety on the rail network in Great Britain. Experience with interoperability has shown that the transition process built into the directive will also be a critical issue and need detailed consideration by industry.

#### Strategic Rail Authority

Our customers have high expectations of safety on the railway. The process of producing the annual Railway Group Safety Plan, involving as it does all members of the Railway Group is an important demonstration of the industry's commitment to continuous improvement in safety. The targets set provide a focus on the way forward for all Railway Group members and from which company safety plans can be derived; thus ensuring consistency across the network.

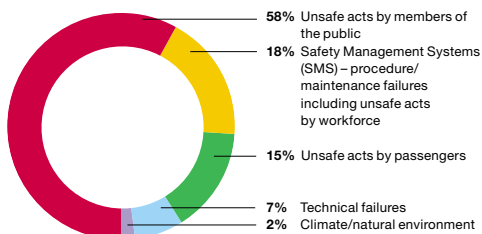
The Strategic Rail Authority is pleased to support the Railway Group Safety Plan and to commit to working together with duty holders to secure the resources to implement the plan.

Richard Bowker  
Chairman  
Strategic Rail Authority

# 1 Risk Management Strategy

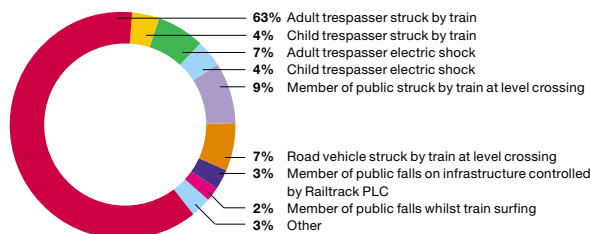
**1a** The objective of the Railway Group is to achieve an accidental equivalent fatality rate no greater than 0.3 per million train miles by 2009.

**1b** The objective of the Railway Group is to achieve an accidental equivalent fatality rate no greater than 0.1 per million train miles by 2009 for those risks within its direct control.



#### Residual risk on the railway

These figures are calculated using Railway Safety's Safety Risk Model. They exclude incidents on station concourses or on board trains. Risk estimates for movement and non-movement accidents are based on RIDDOR 95 reportable injuries.



#### Analysis of unsafe acts by members of the public

## 1a

The objective of the Railway Group is to achieve an accidental equivalent fatality rate no greater than 0.3 per million train miles by 2009.

This objective was originally set in 1999 to give an overarching 10-year target for the reduction of fatalities and major injuries on the network. It was intended to achieve a 50% reduction from the 1998/99 figure, which equates to a reduction in accidental equivalent fatalities per year from 178 in 1998/99 to 89 in 2008/09. The objective excludes suicides and suspected suicides which are separately addressed in objective 4c.

#### Emphasis on results

The Railway Group's purpose in setting this long-term objective was to make a clear statement that a significant overall improvement in safety performance was both desirable and achievable.

Since then, multi-fatality accidents at Ladbroke Grove (October 1999) and Hatfield (October 2000), as well as the accident at Great Heck (February 2001) caused by a road vehicle leaving a motorway and obstructing the railway, have brought into question the safety of the railways and have impacted on the relative safety of rail and other transport modes. The industry's safety performance has never been under greater scrutiny from its regulators, the Government and the media. Against this background, it is especially important that the industry continues to pursue actions that will produce tangible safety improvements.

This Railway Group Safety Plan continues to state this target as the cornerstone which sets the context for all other objectives in the Plan – which together will take the industry closer to achieving a very challenging target.

#### Achieving the objective

It is recognised that simply reiterating an ambitious target will not bring about its achievement. That is why the emphasis must be on practical initiatives capable of delivering results.

Although modest progress had been made towards achieving the headline objective midway through 2001/02, two-and-a-half years into the 10-year programme, it is clear that a substantial task faces the industry over the next seven years. An annual rate of improvement of 7.7% will now be required, significantly greater than the rate so far achieved.

However, it should be expected that progress will be relatively slow over the earlier years as initiatives are put in place that bear fruit over a period of time. For example, the installation of the Train Protection and Warning System (TPWS), due for completion by the end of 2003, is alone expected to bring about a 70% reduction in risk from signals passed at danger (SPADs). The European Train Control System (ETCS), which is planned to be introduced on all lines covered by the High Speed and Conventional Interoperability Directives by the end of the decade, will bring further reductions in risk of train collisions. The development of an ETCS implementation plan is discussed in objective 2b.

#### Industry collaboration

Many different parties make up the railway industry, including all elements of the supply chain. It is vital that all those parties collaborate closely in driving through improvements in safety performance, if the industry is to make significant progress towards achieving the objective.

#### Safety risk within direct control

The current profile of residual risk on the railway (see diagram above left – *Residual risk on the railway*) shows that although train accidents attract enormous amounts of publicity, the risk to the occupants of trains in accidents is a relatively small proportion of the total residual railway risk. Far greater is the risk to members of the public from their own unsafe conduct, which accounts for 58% of the total risk. The Railway Group will need to have a significant impact in reducing this behaviour if it is to achieve the headline target.

However, it is sensible that the greatest effort should be put into areas for which the industry is directly responsible and where there will be the greatest safety benefit. The sharpest focus must therefore be on the precursors of residual safety risk that lie within the direct control of the industry and are primarily addressed under the area of catastrophic risk (objective 2) – although the precursors to public, passenger and workforce safety are equally important.

### Key actions

- 1 Industry partners will collaborate to achieve improvements in safety performance

## 1b

**The objective of the Railway Group is to achieve an accidental equivalent fatality rate no greater than 0.1 per million train miles by 2009 for those risks within its direct control.**

The 2001/02 Railway Group Safety Plan identified a measure of accidental equivalent fatalities under the direct control of the Railway Group. This refers to the risks posed by legitimate activities directly related to the safe operation of the railway. It excludes trespassers, level crossing misuse, vandalism and passenger misbehaviour at stations, which are specifically addressed elsewhere in the Plan.

In this year's Plan, the measure has been given more focus by the introduction of a specific objective.

### **Achieving the objective**

The target of 0.1 accidental equivalent fatalities per million train miles by 2009 equates to a reduction in accidental equivalent fatalities per year from 103 in 1999/00 to approximately 34 in 2008/09.

At the end of period 6 2001/02, the rate for risks under direct control of the Railway Group was 0.23, equivalent to 73 accidental equivalent fatalities per annum. A further 56% improvement is therefore required by 2009. This figure represents a subset of the total target and should be seen as complementary to the headline target stated in objective 1a. The emphasis in this Safety Plan will therefore be on achieving objectives which help to deliver this target, while not losing sight of the overall target.

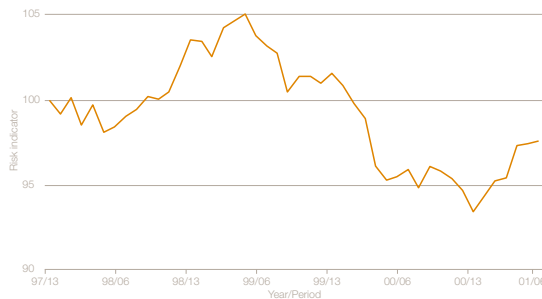
## 2 Catastrophic Risks

**2a** During 2002/03, Railway Group members will implement measures to further reduce the number of events with the potential to cause catastrophic consequences.

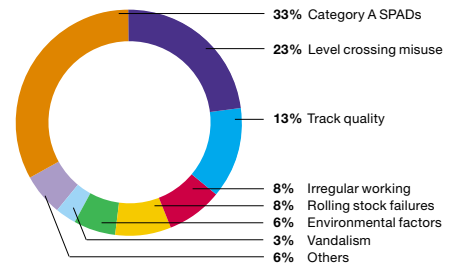
**2b** The objective of the Railway Group is to reduce the risk arising from SPADs on or affecting the running line by at least 80% of the 2000/01 level by 2009.

**2c** Railway Group members will continue to take action to reduce the number of line of route offences by 10% of the 2000/01 rate by March 2004.

**2d** Railway Group members will collaborate to bring about an improvement in track integrity and a reduction in the number of track defects which can endanger trains during 2002/03.



**Train accident Precursor Indicator Model (PIM)**  
The PIM measures the underlying risk of a train accident. The chart shows how this indicator has moved over the last four years. It currently stands at 97.7, indicating that there is a slightly lower risk of a train accident now, compared to 1997/98. This model helps to identify trends at the precursor level. These are incidents that could lead to a more significant accident (i.e. train collision, derailment, buffer-stop collision, train fire or striking a vehicle at a level crossing).



**Train accident precursors**

## 2a

During 2002/03, Railway Group members will implement measures to further reduce the number of events with the potential to cause catastrophic consequences.

Catastrophic risks are defined as those events with the potential to cause multi-fatality accidents. The main focus of this objective is on train collisions and derailments but Railway Group members will also address other events such as fire or terrorist attack.

Any accidental death, whether in a multi-fatality event or an individual accident, has a devastating effect on those close to the deceased, but major catastrophic train accidents also have an effect well beyond those directly involved. In the modern age, pictures of accident sites are beamed instantaneously around the world. In the aftermath of events such as Ladbroke Grove and Hatfield, the nation as a whole feels directly and personally affected.

What is more, expectations have changed. It is not enough for the industry to be able to demonstrate that railways are statistically safer today than they have ever been, or that they remain the safest form of land transport by a significant margin. Passengers boarding a train today expect, rightly, that they will reach their destination unharmed. Multi-fatality accidents damage their confidence that this will happen.

### Achieving the objective

Up to now, performance against this objective has been measured by the rate of significant train accidents as defined by the HSE. However, this measure is dominated by buffer-stop collisions which by their very nature are of relatively low risk.

It is therefore proposed that in future, the train accident Precursor Indicator Model (PIM) developed by Railway Safety is used to measure the risk associated with train accidents. The PIM weights each contributor to the total risk figure, so lower-risk events such as buffer-stop collisions have less impact on the measure (see graph above).

At least a 10% year-on-year reduction in the PIM annual moving average is required from April 2002. The level at the end of period 6 2001/02 is 97.7, but the downward trend evidenced during 2000 needs to be re-established.

### New control measures and systems

Evidence suggests that train accident risk has become more concentrated in high-fatality, or catastrophic, accidents with a corresponding reduction in accidents with a relatively small number of fatalities, where initiatives such as central door locking have had a significant impact. In more recent years – and this will continue in years to come – there has been significant investment by the industry in new trains and train protection systems.

This has brought with it more reliable equipment, better crashworthiness of passenger vehicles, reduction of slam door stock and better protection against the risks associated with a train passing a signal at danger. All these contribute to the railway becoming an even safer form of transport.

The Railway Group will continue to work towards eliminating the risk associated with catastrophic accidents by applying both existing control measures and new initiatives.

### Reducing the precursors

It is essential that the Railway Group does not become so preoccupied with addressing the causes of the most recent accident that it fails to consider adequately the full range of potential causes of future accidents.

Catastrophic accidents are relatively rare, so the only effective monitoring that can be done is of the precursors to such accidents. The most effective way of reducing the risk of a catastrophic accident is to identify the precursors and to take action both to reduce them and to mitigate against the consequences. It is equally important that routine maintenance and inspection regimes are robust in order to identify and prevent precursor events before they happen.

Railway Group members will review and revise, where appropriate, their targets for the reduction of train accident precursors, depending on their individual risk profile.

Category A SPAD rates, for example, vary between train operating companies depending on a range of factors such as the size and nature of their operations. Similarly, vandalism tends to be concentrated in hotspots often, although not exclusively, associated with urban areas.

Railway Group members will also actively participate in national initiatives to address the precursors of catastrophic accidents.

### Signals passed at danger

The Safety Risk Model indicates that signals passed at danger (SPADs) remain the principal precursor of train accident risk (see chart above). The term SPAD has become well known to the public since Ladbroke Grove, although the reasons why they occur and their likely consequences are less widely understood.

The Railway Group has put a great deal of effort into understanding the phenomenon and using this knowledge to reduce their number and consequences. These initiatives will continue to have a high priority. This subject is dealt with in more detail in objective 2b.

### Track integrity

Since the Hatfield accident in October 2000, broken rails and the effects of gauge corner cracking have achieved a high profile. As with SPADs, the subject is complex and cannot be considered in isolation from wider issues of

### Key actions

- 1 Achieve at least a 10% annual reduction in PIM annual moving average
- 2 Work towards eliminating catastrophic accidents by application of existing control measures and new initiatives
- 3 Review targets for reducing accident precursors
- 4 Participate in national initiatives

## 2b

track integrity. The causes of gauge corner cracking, a worldwide phenomenon, are currently the subject of intensive research. Track integrity is specifically addressed in objective 2d.

### Vehicle integrity

The integrity of traction and rolling stock is also a precursor to catastrophic risk and a Railway Group Standard which requires the reporting of safety-related defects on rail vehicles was introduced in June 2001. From April 2002, Railway Safety will monitor the reporting of such defects and build them into the PIM.

5

### Vandalism

Vandalism continues to be a very significant precursor, although the solution is not wholly within the control of the Railway Group. Attempts to derail trains with large obstructions and instances of stone-throwing at trains occur all too regularly and the Railway Group will continue to assist the authorities to bring the perpetrators of such serious offences to justice. The accident at Great Heck, although not caused by vandalism, illustrates the catastrophic consequences that can arise from a train striking an obstruction. Vandalism is dealt with in greater detail under objective 2c.

6

### Learning from accidents

The Railway Group will take the opportunity to learn fully the lessons from Ladbroke Grove and Hatfield. The first part of the Cullen report into the Ladbroke Grove accident, published in June 2001, contains 89 recommendations. Most of these require action by one or more members of the Railway Group, who have developed plans for their implementation.

The accident at Great Heck was exceptional. A road vehicle left the carriageway of a motorway and came to rest in the path of a passenger train on the East Coast Main Line. The train derailed and was then struck by a freight train travelling in the opposite direction. Approximately 70 road vehicles intrude onto the track each year, just over half of which foul the running line, and about four are struck by a train. About once a year this leads to a derailment of the train. Very rarely – statistically about once in 350 years – the derailed train can be expected to foul the adjacent line and be involved in a high-speed collision with another train. In most cases, the risk from this cause lies outside the control of the Railway Group, and the Government has set up a working group, which includes representation from Railway Safety, to consider road/rail interfaces and related issues and is due to report early in 2002. Railway Group members will respond appropriately to the recommendations the working group may make.

7

Unauthorised access to the track by road vehicles is possible from depots, platforms and car parks, while level crossings pose the greatest risk of a catastrophic accident at the road/rail interface. Railway Group members will review arrangements at these locations to ensure such events do not occur.

8

**The objective of the Railway Group is to reduce the risk arising from SPADs on or affecting the running line by at least 80% of the 2000/01 level by 2009.**

This objective has been developed from the 2001/02 objective which required a 65% reduction in risk from category A SPADs by 2009. It will be kept under review during the course of the year with a view to developing an intermediate target for inclusion in the 2003/04 plan.

### Achieving the objective

To enable progress against the objective to be monitored, SPADs are now ranked according to their potential risk contribution using a new SPAD risk ranking methodology. This comprises three parts:

- Initial collision potential assessment: provides an assessment of the direct potential for a collision between two trains following a SPAD.
- Accident vulnerability ranking: indicates how the SPAD train was brought to a halt and how close it came to a potential accident point before it was stopped.
- SPAD risk ranking: indicates the level of risk from SPADs in terms of the likelihood of the SPAD train reaching a point where an accident could occur and the average consequences of the 'most likely' resultant accident.

More extensive installation of the Train Protection and Warning System (TPWS), with priority given to signals preventing conflicting movements, means that SPADs with significant potential will begin to reduce at a faster rate from 2003. A review of actions to reduce SPAD risk over the next few years has shown that the introduction of TPWS alone is expected to contribute up to 70% reduction in SPAD risk. The target allows for the full effect of TPWS to be realised by setting an achievement date of 2009, so allowing a period for teething troubles to be ironed out after installation.

Other measures that will contribute to the reduction of risk from SPADs include the withdrawal of Mark 1 rolling stock, fitment of sanders to trains and improved braking systems on new trains.

### Train protection systems

The installation of TPWS equipment at signals preventing conflicting movements and on rolling stock is due to be completed by the end of 2003. Railway Group members have already developed and agreed installation programmes for trains and infrastructure to ensure that this is achieved. This approach was endorsed by the Cullen/Uff report. However, because both trains and infrastructure have to be fitted if TPWS is to be effective in preventing any potential SPAD incident, the impact of TPWS will initially be small but will increase during the course of this Plan.

The final form of train protection recommended by the Cullen/Uff report and required in response to the EU High Speed Interoperability Directive, is the European Train Control System (ETCS). Installation of this system, which is not yet in full service in other European countries, has full industry support and has been endorsed by the Strategic Rail Authority. However, there are considerable technical difficulties to be overcome and funding of the project has

## Key actions

- 5 Monitor rolling stock defects and build into PIM
- 6 Bring perpetrators of serious offences to justice
- 7 Respond to road/rail working group recommendations
- 8 Review arrangements to prevent unauthorised access by road vehicles

## Key actions

- 9 Research into SPAD human factors
- 10 Reduce SPADs not on running lines
- 11 Progress the priority SPAD initiatives
- 12 Support trespass and vandalism reduction groups
- 13 Develop national T&V strategies
- 14 Pursue engineering solutions, education and enforcement

## 2b

not yet been agreed. It will be dependent on a joint government/industry commitment to the project. A national implementation programme team has been established with a remit to develop an implementation plan by April 2002.

### Other SPAD management measures

Train protection systems cannot in themselves provide a full solution to the problem of SPADs. There will always be the human factor, and the Railway Group will continue to pursue other SPAD management measures. (See *Priorities for action* below.)

The National SPAD Focus Group will continue to lead and coordinate initiatives to reduce SPADs and spread good practice in SPAD management. Railway Safety will continue to sponsor research into the human factors aspects of SPAD reduction and mitigation.

9

### SPADs not on running lines

A relatively small proportion of SPADs occur in yards, depots and sidings, which are excluded from the scope of the objective. In these locations, overlaps are minimal and, in most cases, TPWS will not be fitted. These SPADs can generate collision potential and Railway Group members will take action to reduce the risks associated with them.

10

### Priorities for action

The list of SPAD reduction measures identified in the 2001/02 Railway Group Safety Plan are detailed below and ongoing, and Railway Group members will continue to give them priority. In addition, the National SPAD Focus Group has identified these top five priorities for reducing the risks from SPADs:

- achieving 100% professional driving
- clearing and preventing SPAD traps
- avoiding 'starting against signal' (SAS) SPADs at platforms
- harmonising signal sighting processes and competencies
- introducing 21st century route learning techniques.

All parties will cooperate to progress these initiatives. They are central to SPAD reduction and mitigation programmes coordinated at Railtrack zonal level and need to be seen as integral to individual company safety plans.

11

### SPAD reduction measures

These actions were identified in the 2001/02 Railway Group Safety Plan and must continue to be kept in focus:

- professional driving programmes
- adherence to common driver training standards
- proper use of the Driver Reminder Appliance
- good practice in train despatch
- intolerance of disregard for rules, regulations and defensive driving practices
- leaf-fall skid pan training
- maintenance of signalling to ensure clear sighting and modification of potentially confusing track and signalling layouts
- improved vegetation control
- modification of potentially confusing operating practices
- focus on signals subject to multiple SPADs.

## 2c

**Railway Group members will continue to take action to reduce the number of line of route offences by 10% of the 2000/01 rate by March 2004.**

This objective carries over from the 2001/02 Plan and addresses vandalism, one of the most significant catastrophic risk precursors.

### Achieving the objective

Over the year 2000/01, line of route offences did in fact reduce by 10%, thus achieving the objective. However, it is retained until the downward trend of these offences is confirmed. Over the same period, there was an increase in the more serious offences which endanger safety. Tackling these more serious offences must be central to Railway Group members' action plans that should be aligned with those of industry partners, including the British Transport Police.

### Jointly funded initiatives

The causes of vandalism, as with other aspects of anti-social behaviour that can affect the railway, are deep rooted and cannot be solved by the industry in isolation. Analysis of vandalism offences has identified a number of hotspots around the country and targeting these with local initiatives such as Operation Scarecrow has proved very successful in reducing the number of offences. Other jointly funded local initiatives have also proved successful. An example is Railtrack installing CCTV at stations and the station operator providing the manpower to operate it.

### Coordinated rail industry response

Concentrating on the identified hotspots alone will only ever be one element of the solution. Part of Railway Safety's national initiatives programme will coordinate the industry's response to trespass and vandalism issues. Railtrack and train and station operators will continue to support the work of the trespass and vandalism reduction and mitigation groups.

12

This work will be overseen by the National Trespass and Vandalism Coordination Group (NTVCG), facilitated by Railway Safety, which will develop strategies to ensure greater consistency across the network.

13

Long-term solutions will inevitably be cross-industry and cross-agency. An American model originally used in level-crossing safety campaigns, *Operation Lifesaver*, is relevant here. This categorises initiatives into areas of engineering, education and enforcement and looks for a balanced contribution from each. This approach can be adopted for many areas of railway safety and the strategies to be developed by the NTVCG will be built around these themes.

### Engineering, education and enforcement

Railtrack and train and station operators will continue to pursue engineering solutions, including more effective fencing and access arrangements, together with education and enforcement initiatives to reduce the incidence of vandalism on the railway.

14

### Engineering solutions to vandalism

There are a number of actions that can be taken to reduce or mitigate vandalism; these will depend on the nature of the location and the extent of the problem:

- design of bridge parapets
- running 'Q' trains
- 'Skyhawk' helicopter initiatives
- toughened glass for driving cab windows
- high-profile publicity for successful prosecutions.

The industry has traditionally undertaken a range of educational initiatives, although it is not always clear how effective these have been. These efforts will continue, with Railway Safety sponsoring research into how best they can be targeted and evaluated.

15

The Railway Group will continue to work closely with the British Transport Police and civil police to ensure that the railway is effectively policed and that action is taken against those who commit crimes against the railway.

16

### Removal of scrap materials

Scrap materials left by the lineside after engineering work provide the opportunity for vandals to place obstructions on the line. The 2001/02 Railway Group Safety Plan referred to a joint programme between Railtrack and its infrastructure contractors to remove such materials. The increase in maintenance activity since the accident at Hatfield has resulted in more materials at the lineside, but Railtrack and its contractors will cooperate to ensure that the network is cleared of all such materials by October 2002. Furthermore, from April 2002, all scrap and surplus materials will be removed from the site of a possession within seven days of completion of the work.

17

One solution would be the better planning and availability of possessions, so that adequate time can be built in for materials to be delivered and removed.

## 2d

**Railway Group members will collaborate to bring about an improvement in track integrity and a reduction in the number of track defects which can endanger trains during 2002/03.**

The Hatfield accident in October 2000 brought issues of track integrity and the interface between the wheel and the rail sharply into focus. Along with discrete track faults, this represents 13% of the overall risk associated with train accidents – ranking third only to Category A SPADs and level-crossing misuse. It is therefore appropriate that the Railway Group Safety Plan should include an objective specifically devoted to such issues.

### Rail defects and track faults

Track integrity issues to be considered include the causes of broken rails and geometric track faults such as track twist.

Track geometry faults are found by visual track inspection or by using track recording vehicles which run at specified periods across the network. Track geometry faults lead to a significant number of derailments, principally of freight wagons, with potentially catastrophic results through blockage of an adjoining line on which a passenger train is approaching.

### Achieving the objective

By the end of period 6 2001/2, the number of broken rails had reduced by approximately 30% over the position two years previously. Much of this improvement is directly attributable to Railtrack's focus on broken rail reduction and train operators' focus on eliminating vehicle defects that transmit excessive loads to the rail infrastructure.

In the aftermath of the Hatfield accident, the railway industry has created the Wheel Rail Interface Systems Authority (WRISA) to ensure that initiatives across this vital interface are properly coordinated and managed. It is essential that the impetus in creating WRISA is maintained in driving through coordinated improvements in wheel and rail management.

Railtrack will continue to develop equipment and techniques to reduce broken rails and discrete track geometry faults which may lead otherwise to train derailments, and will set numeric targets for the reduction of rail breaks.

18

Train operators will contribute to this objective by ensuring that their wheel maintenance regimes are adequate and that the levels of exceedence recorded on wheel impact load detectors are reduced to ensure compliance with Railway Group Standards.

19

Railway Group members will also work together through WRISA to determine further actions to optimise the wheel and rail interface to reduce the risk of derailment.

20

### Management of structures

Railway structures can also be the cause of catastrophic risk. Failures of structures and earthworks can lead to derailment and – in the worst-case scenario – fatalities to passengers, the workforce or members of the public.

It is therefore essential that these structures are regularly inspected and well maintained. Railtrack has undertaken a review of its processes for the management of structures and earthworks, which is due for completion by June 2002. During 2002/03, Railtrack will act on the findings of the review and amend its management processes as necessary.

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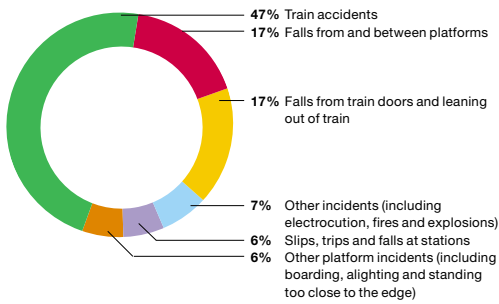
## Key actions

- 15 Research how best to target educational initiatives
- 16 Support effective policing
- 17 Remove scrap materials from the lineside by October 2002
- 18 Set numeric targets for the reduction of rail breaks
- 19 Ensure wheel impact meets standards
- 20 Determine further actions for wheel/rail interface through WRISA
- 21 Respond to review of structure management

## 3 Passenger Safety and Security

**3a** The objective of the Railway Group is to ensure that the risk of accidental passenger fatality will be no greater than one in 133 million passenger journeys per annum by 2009.

**3b** The objective of the Railway Group is to ensure that the risk of accidental passenger major injury will be no greater than one in 7.5 million passenger journeys per annum by 2009.



Accidental passenger fatalities

## 3a

The objective of the Railway Group is to ensure that the risk of accidental passenger fatality will be no greater than one in 133 million passenger journeys per annum by 2009.

This objective carries forward the 10-year target set in 1999. It equates to approximately seven accidental fatalities per year in 2008/09 compared to the current rate of 14. The objective does not include trespassers but does include anybody travelling, or intending to travel, whether or not they have a valid ticket.

### Achieving the objective

Analysing progress against this target over the first two years of the 10-year term is difficult because results are dominated by the effects of major accidents. Train accident risk is largely addressed by actions under objective 2 – Catastrophic Risk – while this objective focuses primarily on other causes. A further 46% improvement on current performance will be required in order to meet the 2009 target.

### Rolling stock improvements

This Railway Group Safety Plan takes forward many of the actions already identified in the 2001/02 Plan, with the emphasis now on ensuring delivery.

One action that will be delivered during the lifetime of this Plan will be the withdrawal of unmodified Mark 1 passenger rolling stock with slam doors. This will reduce the number of fatalities resulting from passengers falling from train doors and leaning out of windows and, because of improved crashworthiness, resulting in fewer injuries as a consequence of a collision. The continued introduction of new trains will also bring more of these benefits to the passenger.

However, modified Mark 1 rolling stock which may continue in service until 2005 will not benefit from these improvements. Also, passenger security may be compromised by the removal of through corridors from these trains, which is necessary for the anti-override modification.

### Engineering solutions at stations

A significant number of passenger fatalities continue to occur at stations. In the 2001/02 Railway Group Safety Plan, several engineering solutions were identified for Railtrack (as the landlord) and train and station operators to consider. These included:

- station design
- better matching of platforms and trains
- the provision of warning signs, announcements and CCTV systems.

The risk profile of accidental passenger fatalities (see diagram above) confirms that falls from platforms and boarding and alighting incidents together account for 23% of the risk. The 2001/02 Plan required Railtrack to develop a long-term strategy to determine the risks from stepping distances and for dealing with the risks associated with short platforms. Clearly, Railtrack must be adequately funded in order that this significant programme can be implemented with the cooperation of affected station operators.

1

### Passenger behaviour at stations

The engineering initiatives remain important, but attention will now begin to turn to understanding passenger behaviour at stations. The data suggest that passenger accidents are often alcohol-related and that certain age and occupational groups may be more susceptible to accidents. Railway Safety will sponsor research into different aspects of passenger behaviour to inform better the actions of duty holders.

2

There are a number of ways in which this research may be done, one of which involves the use of focus groups to discover how the public view safety at stations. There is undoubtedly much good practice already in place on the network, and train and station operators will continue to collaborate to ensure that best practice is identified and shared.

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### Objectives for station operators

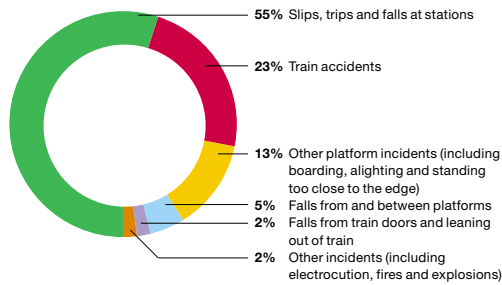
The 2001/02 Railway Group Safety Plan committed station operators to set challenging numeric objectives for passenger safety at stations. The targets set will now be reviewed against progress made and revised, if necessary, to drive further improvements in passenger safety.

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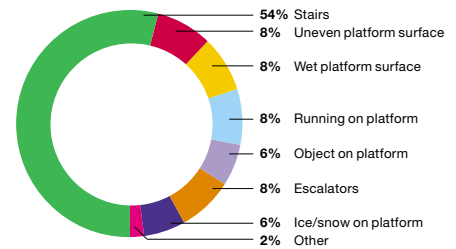
Comprehensive action plans will back up the objectives.

## Key actions

- 1 Implement platform height/length strategy
- 2 Research passenger behaviour at stations
- 3 Identify and share best practice
- 4 Review company targets for station safety and develop action plans



Accidental passenger major injuries



Analysis of causes of slips, trips and falls

## 3b

The objective of the Railway Group is to ensure that the risk of accidental passenger major injury will be no greater than one in 7.5 million passenger journeys per annum by 2009.

This again re-states the 10-year objective set in 1999. Although the objective now includes accidents to passengers on trains, these are relatively few and insignificant in the overall picture, so the target remains unchanged.

The objective equates to approximately 130 accidental major injuries per year in 2008/09 compared to the current rate of 244.

### Achieving the objective

Based on performance to the end of period 6 2001/02, a 47% improvement will be necessary to achieve the objective.

Actions identified under objective 3a will, of course, help to reduce major injuries. Slips, trips and falls are still by far the principal cause of major injuries on stations (see diagram, above left), so it is essential to concentrate considerable effort into reducing them.

### Reducing slips, trips and falls

The industry needs to have a clearer picture of the causes of slips, trips and falls and how they relate to individuals and different local conditions. Railway Safety will undertake a benchmarking exercise against other industries and publish the results. This will help station operators to draw up action plans relevant to their locations.

It will also enable the industry to identify good practice. Railway Safety will ensure that this is encapsulated in Railway Group Standards, where appropriate, and disseminated through the Railway Group.

#### Slips, trips and falls

There are a number of actions that station operators can take to reduce slips, trips and falls. These are some examples:

- ensure adequate lighting, especially at the platform edge
- inspection regimes to identify any deterioration of platform and concourse surfaces
- prompt action to repair infrastructure faults
- prompt action to identify and clear spillages
- tight control of vehicle movements.

### Passenger security

Groups representing railway passengers are particularly concerned about security at stations and aboard trains. Although violent crime is, in fact, relatively rare on the railway network, the perception of poor security is a strong disincentive to using public transport.

Engineering solutions can improve both actual security and passenger confidence. These include improved CCTV systems, with sharp enough definition to ensure that the images can be used as evidence in criminal prosecutions. A more prominent staff presence also helps passenger confidence.

However, the Railway Group needs to address a wider range of issues if it is to achieve a step change in perceptions of station security. These include better staff training and partnerships with other agencies such as local authorities and the British Transport Police.

These principles are integral to Secure Station accreditation, which some station operators have already obtained. It is recognised that accreditation is not necessarily appropriate or possible at all locations, and in these cases station operators must meet the standards of security set out in the Government's transport security requirements (Transec). Railway Safety will develop a guidance note addressing standards of security on trains and stations.

#### Improving station security

Ways of improving station security include:

- good lighting
- CCTV schemes
- public Help Points
- staff presence.

### Passenger accidents on trains

Accidents in the interior of trains were included for the first time in the scope of the 2001/02 Railway Group Safety Plan, recognising the need to address all the risks associated with train travel. The Plan put forward a number of actions for consideration, although there was little data to determine the significant areas of risk.

In the lifetime of this Plan, train operating companies will set challenging numerical targets to reduce on-train accidents and draw up action plans, based on their individual risk profiles.

#### Improving on-train safety

Action points for improving on-train safety include:

- maintenance of floor surfaces, carpets, etc
- maintenance of automatic internal doors
- maintenance of lighting systems
- training for catering staff to avoid spillages of hot liquids.

### Key actions

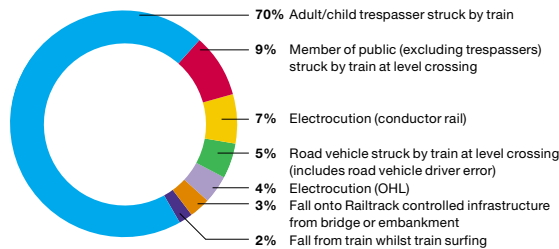
- 5 Benchmark slips, trips and falls against other industries
- 6 Identify good practice, incorporate in Railway Group Standards
- 7 Produce train and station security guidance note
- 8 Set challenging targets to reduce on-train accidents

## 4 Public Safety

**4a** The objective of the Railway Group is to ensure that the risk of accidental fatality to members of the public will be no greater than 0.7 per million UK population by 2009.

**4b** All user-worked level crossings will be risk assessed using a standard methodology and reasonably practicable controls introduced where necessary by 2004.

**4c** During 2002/03, Railway Group members will continue to support the research project being undertaken to understand the causes of suicide on the railway.



Accidental fatalities to the public

## 4a

### Key actions

- 1 Implement findings of fencing strategy review and other engineering controls
- 2 Liaise with local authority planners
- 3 Develop targeted education proposals for 2002/03
- 4 Run effective and carefully targeted local campaigns

The objective of the Railway Group is to ensure that the risk of accidental fatality to members of the public will be no greater than 0.7 per million UK population by 2009.

This objective re-states the 10-year objective set in 1999. It equates to approximately 42 accidental public fatalities per year in 2008/09 compared to the current rate of approximately 58 per year. Suicides and suspected suicides are not included in this objective.

#### Achieving the objective

At the end of period 6 2001/02, the accidental fatality rate was 0.97 per million UK population. Of these, 0.86 fatalities per million UK population were classified as accidental trespasser fatalities.

It is clear that trespass on the railway remains a very serious problem and that the trend appears to be worsening, although it reversed during the first six periods of 2001/02. The issue is closely linked with vandalism, dealt with under objective 2c. However, while it is true that most vandalism involves trespass, by no means all trespassers are intent on vandalism.

It is essential that the industry understands why individuals trespass. There are fundamentally two types of trespasser: those who use the railway as a shortcut and those who go onto the railway to carry out some activity – principally children playing and vandals.

#### The railway as a shortcut

People who use the railway as a shortcut are more likely to be deterred by engineering controls such as fencing and bridges or even vegetation. Railtrack will implement the findings of its review of its fencing strategy subject to adequate funding being in place, and also provide other reasonably practicable engineering controls to deter trespass.

1

Unfortunately, there are plenty of instances where poor planning in the past has resulted in situations that encourage trespass, such as housing estates and schools or pubs on opposite sides of the railway. There may be no easy solutions here, but Railtrack and station operators are encouraged to develop and maintain relations with

2

local authority planning departments.

#### Children and vandals

The other trespasser group consists predominantly of young people and this is reflected in the age profile of fatalities. It includes children who find the railway an exciting playground and others intent on vandalism.

Engineering solutions may be effective here, but education and enforcement is also important. An example of how this group can be targeted effectively is a joint Rail Industry Advisory Committee-sponsored initiative, the *Track Off Campaign*, which included posters and videos aimed specifically at children and young people. Another is an initiative coordinated by the National Trespass and Vandalism Coordination Group (NTVCG), based on the popular *Thomas the Tank Engine* stories. This group will lead the development of strategies for 2002/03 that will require the involvement of the Railway Group acting in a coordinated and targeted manner.

3

#### Public educational initiatives

The case of the adults in mid-Wales during the summer of 2000 who allowed children to play on the railway – resulting in the death of two small girls – highlights the educational task that the railway industry faces.

Educational initiatives need to be effective and carefully targeted. For example, there is evidence that the dangers of third-rail electrification are often not appreciated by the public, and this should be the target of local campaigns in areas with this form of electrification.

4

#### Sharing best practice

Reducing trespass will need a variety of solutions. Educational initiatives aimed at adults may be as appropriate as engineered solutions. The NTVCG, facilitated by Railway Safety, will identify, promulgate and coordinate good practice.

#### Discouraging trespass

Suggested action points for discouraging trespass:

- signage
- increased staff awareness and vigilance
- CCTV systems
- physical barriers at platform ends
- robust fencing in areas where trespass is a known problem
- use of suitable vegetation as a deterrent.

## 4b

All user-worked level crossings will be risk assessed using a standard methodology and reasonably practicable controls introduced where necessary by 2004.

This objective is again included to reflect the 2004 achievement date.

### Achieving the objective

During the lifetime of this Plan, Railtrack will complete the implementation of reasonably practicable controls at user-worked crossings where the warning time is less than 20 seconds and/or the difference between the warning time and decision plus crossing time is five seconds or less.

5

This will leave the remainder of crossings which do not fit the above criteria, and do not have a history of accidents or near misses, where additional reasonably practicable controls will be implemented by 31 March 2004.

### Report on passive level crossings

The work undertaken by Railway Safety to review control measures at passive level crossings (where users have to decide for themselves whether it is safe to cross, by observation or telephone) was completed in 2001. The report\* on this work and its recommendations will be evaluated and used to inform the development of more effective controls and Railtrack's action plan for this type of crossing.

6

#### This is a summary of the report's main recommendations:

- monitor traffic levels to ensure that appropriate risk controls are implemented
- promote better understanding of the risks among drivers of works vehicles
- mandate provision of wardens at busy periods (eg at harvest time)
- develop alternative technical solutions where appropriate
- where train frequencies and/or line speeds are increased, ensure that regular users are aware of the increasing risk
- improve accident data reporting to provide an improved basis for analysis of accident causes.

### Understanding and influencing behaviour at level crossings

Much of the focus in the future is likely to be on educational issues and attempting to influence public perceptions. The industry needs to have a greater understanding of public behaviour at level crossings and it will be important to involve outside agencies in the work, such as police forces and the motoring organisations.

It was noted under objective 2a that the Government has set up a working group to address road and rail interfaces in response to the accident at Great Heck. Both Railway Safety and Railtrack are represented in this group. Although level-crossing safety is not part of the group's remit, the fact that channels of communication are open between road and railway authorities offers an opportunity for joint consideration of level crossings – where the risk is significantly greater than from vehicle incursions on the line of route.

Railway Safety will work with HMRI, Railtrack and other agencies to develop a national strategy to address risk associated with level crossings. Particular focus will be placed on Automatic Open Crossings, Locally monitored (AOCL), which contribute about 20% of residual level crossing risk.

7

## 4c

During 2002/03, Railway Group members will continue to support the research project being undertaken to understand the causes of suicide on the railway.

Although suicides are excluded from the target stated in objective 4a, they nevertheless represent the largest group of fatalities on the railway – there were over 200 in each of the last two years. This objective continues from previous plans, recognising the continuing work of the Suicides and Open Verdicts on the Railway Network (SOVRN) project.

### Achieving the objective

Railway Safety will sponsor enabling studies based on emerging findings from the SOVRN project so that the Railway Group can be prepared to assess and implement the final recommendations as quickly as possible. There are also plans for a conference to help form a consistent understanding of the SOVRN conclusions across all agencies involved in suicides. This will enable rapid agreement on a method of reducing both the number and consequences of railway suicides. The SOVRN project is due for completion in August 2002, during the lifetime of this Plan. Railway Group members will continue to support the project as requested and respond appropriately to the findings of the study.

8

### Key actions

- 5 Implement reasonably practicable controls at level crossings
- 6 Develop more effective controls for passive crossings
- 7 Develop national strategy for level crossings with particular focus on AOCL
- 8 Support the SOVRN project and respond to its findings

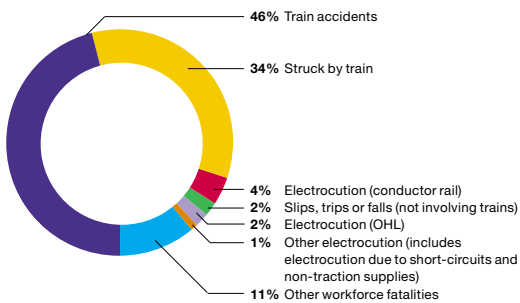
## 5 Workforce Safety

**5a** The objective of the Railway Group is to ensure that there is no accidental fatality to any worker on Railtrack controlled infrastructure and stations during 2002/03.

**5b** The objective of the Railway Group is to ensure that the risk of accidental major injury to any group of workers on Railtrack controlled infrastructure and stations will be no greater than one in 750 employees per annum by 2009.

**5c** Railway Group members will reduce the incidence of assaults on staff on Railtrack controlled infrastructure and stations by 10% of the April 2002 rate, by March 2004.

**5d** During 2002/03 Railway Group members will develop their competence management systems for front-line staff and their managers in accordance with the strategic framework provided by Railway Safety.



Accidental fatalities to the workforce

## 5a

The objective of the Railway Group is to ensure that there is no accidental fatality to any worker on Railtrack controlled infrastructure and stations during 2002/03.

Any accidental fatality to a member of the workforce is unacceptable. In the relatively recent past, the Railway Group has achieved zero worker fatalities for periods in excess of 12 months, so demonstrating that such a target is achievable. The objective for workforce accidental fatalities published in the 2001/02 Railway Group Safety Plan has therefore been amended to state that the target in future will be to have no accidental workforce fatalities.

### Achieving the objective

The profile of residual risk to the railway workforce (see diagram above) confirms that those groups of workers who are exposed to trains and the railway infrastructure, *ie* trackside workers and drivers, are most at risk of accidental fatality. The accidental fatality rate at the end of period 6 2001/02 for trackside workers was 3.72 per annum and for drivers 2.9 per annum per 20,000 workers.

Most recently, track workers were struck and killed by trains in incidents at Purley Oaks in July 2001, Desborough in August, Waterloo in October and Hitchin in December, highlighting the efforts still necessary in this area.

### Company safety plans

Company safety plans will be the prime driver for initiatives related to workforce safety. This is because each company's risk profile is different, depending on the nature of its business and its operating environment. Therefore, each company safety plan will contain a range of initiatives tailored to the company's risk exposure, to enable the achievement of zero worker fatalities.

1

Two of the fatal incidents quoted above involved subcontracted staff. Railtrack and their contractors will ensure that the training and control of subcontracted staff are to the same rigorous standards as those of its own permanent staff.

2

### The priority issues

It is important to give sufficient prominence to initiatives that must be pursued industry-wide. The Track Safety Strategy Group has identified five priority issues to be tackled over the lifetime of this Plan:

- Achieving the mindset that green zones are the first choice and automatic track safety warning systems second.
- Targeted worksite hazard reduction and safer access.
- Improving planning and execution of work on or about the line.
- Competence assurance for all safety-critical staff.
- Enhancing safety awareness for all.

In addition to these important issues, specific activities which pose significant risks to the workforce and therefore need addressing include:

- track patrolling
- verbal communications between safety-critical staff when working in degraded mode
- the use of signal post telephones, a particular risk to drivers.

### Reducing red zone working

Trackside workers continue to be a vulnerable group. A key action in the 2001/02 Plan was the requirement to ensure that green zones are made available wherever reasonably practicable. (See *Red and green zones* below.) However, the evidence suggests that operating pressures make green zones difficult to obtain in practice.

To address this, Railtrack and its contractors committed to developing a strategy to reduce red zone working to defined targets by March 2002. This strategy will be implemented during the course of this Plan. It will require both improvements in planning and changes in the established culture.

3

The key to minimising red zone working is more effective planning combined with increased simplicity and availability of green zones. Railtrack will continue its drive to improve the arrangements for protecting track workers by:

- requiring more effective work planning
- implementing a hierarchy of protection measures
- working with the industry to develop simpler and quicker methods for taking green zones
- working to plan green zone opportunities into future timetables.

Railway Safety will support this work by leading an analysis of red zone working to reveal the full extent and root causes of this type of working, together with recommendations for policies to increase the use of green zones.

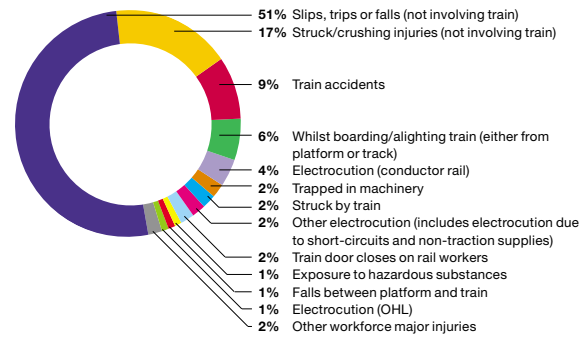
4

### Red and green zones

- Green zones: Sites of work on or near the line within which workers are protected from train movements.
- Red zones: Sites of work on or near the line where it has not been possible to stop the passage of trains, and protection is only available by means of a warning to workers of the approach of trains in sufficient time to permit them to move to a position of safety. This includes the movement of trains within possessions.

### Key actions

- 1 Include initiatives tailored to risk exposure in company safety plans
- 2 Check training and control of subcontracted staff
- 3 Implement strategy to reduce red zone working
- 4 Undertake analysis of red zone working



Accidental major injuries to the workforce

## 5a

### Performance incentives and pressures

It is believed in the industry that the performance incentive regime operated by the Rail Regulator may discourage effective possession planning. The Regulator is to undertake a possessions review and is expected to invite all Railway Group members to contribute. Railway Safety has already identified the performance incentive regime as a barrier to possessions and green zones being made available. The company will continue to press for change in this area, to bring about incentives that are consistent with the safest practicable operation of the network.

5

Infrastructure contractors have also expressed concerns that the pressure to complete the recovery programme in the aftermath of the Hatfield accident led to workers adopting corner-cutting and unsafe practices. It is unacceptable for commercial or political pressure to 'make the railway safe' to result in increased risk for the workforce, and no such risk transfer will be tolerated.

### Safety-critical communications

The 2001/02 Plan identified communications as a critical issue in railway operations and this continues to be the case. A communications protocol introduced in 1999, governing messages between signallers, drivers and other safety-critical workers, has reduced the risk of misunderstandings. However, the issue remains of vital importance and Railway Group members will continue to take measures through training and assessment to ensure that communications standards improve further.

6

### Revised Rule Book

Railway Safety is currently undertaking a project to revise the Rule Book to make it more readily understandable by front-line staff. This is part of an ongoing process seeking to eliminate ambiguities and anomalies from this and other operating publications. This work will continue during 2002/03, requiring the support of the Railway Group in preparing to implement the new Rule Book later in 2003.

7

### Risks away from the infrastructure

Members of the workforce are also exposed to significant risks while at work away from Railtrack controlled infrastructure – for example, when travelling to and from worksites by road or working in depots, yards and sidings. Railway Group members have a duty to address these risks in the same way as any other, and they have agreed that a national picture of the extent of such risks should be established. Therefore, from April 2002, all accidents to members of the workforce which occur in the course of their work but off the Railtrack controlled infrastructure will be reported into SMIS.

8

Company safety plans will include objectives and action plans to reduce such accidents and to inform the development of an objective for inclusion in the 2003/04 Railway Group Safety Plan.

9

### Key actions

- 5 Seek changes to performance incentives regime
- 6 Ensure communications standards improve further
- 7 Support development and implementation of new Rule Book
- 8 Report work accidents away from the infrastructure into SMIS
- 9 Develop company objectives and actions to reduce these accidents
- 10 Develop challenging company targets to reduce accidental major injuries
- 11 Develop and implement lineside safety policies

## 5b

The objective of the Railway Group is to ensure that the risk of accidental major injury to any group of workers on Railtrack controlled infrastructure and stations will be no greater than one in 750 employees per annum by 2009.

This re-states the 10-year objective set in 1999. It equates to a reduction from the current annual total of major injuries to trackside workers of 78 to approximately 29 per annum by 2009.

### Achieving the objective

Performance for this objective is measured for trackside workers, the group most at risk. At the end of period 6 2001/02, the rate of accidental major injury was 2.8 per 750 employees, so a further 65% improvement will be needed to achieve the objective by 2009.

The objective applies to all groups of staff from Railway Group companies. Each company will develop its own challenging but achievable targets, based on their current performance and risk profile, to support the Group objective.

10

(Infrastructure maintenance companies, for example, are likely to have a worse performance than train operators because of the nature of their work.)

### Reducing slips, trips and falls

The risk profile for workforce major injuries (see diagram above) shows that by far the greatest causes are slips, trips and falls. This is in common with industry in general, but the nature of the railway network makes its workers particularly vulnerable.

Slips, trips and falls at stations are the most common cause of accidents to passengers (see objective 3b) and the problem is potentially even greater for the workforce, who need access to all parts of the infrastructure.

A safe trackside environment is also of vital importance. Increased vegetation growth in recent years and poor storage of materials at the lineside, have created numerous areas where there is no safe place to walk alongside the track. Railtrack and its contractors will work together to identify such areas and remedy them by developing and implementing active policies for managing lineside safety.

11

### Occupational health issues affecting safety

The 2001/02 Railway Group Safety Plan required the Railway Group to continue to focus on occupational health issues which may affect the safe operation of the railway, and to support the HSC initiative *Securing Health Together*. This focus will remain important.

## 5c

Historically, the railway had a settled, stable workforce, allowing the employer to maintain comprehensive occupational health records, but modern labour movement patterns have made this more difficult. Railway Group members will ensure that they have comprehensive systems in place to ensure effective health screening of prospective employees.

12

They will also ensure that employees have a clear responsibility to declare health, drugs or alcohol problems that may affect their work.

13

For the purpose of the Railway Group Safety Plan, Railway Group members will continue to focus on occupational health issues which may affect the safe operation of the railway. These will include stress, fatigue and trauma caused by witnessing a fatality or other serious incident and dealing with the aftermath.

14

### Occupational health research programme

Railway Safety's research and development programme identified occupational health as a key workstream. During 2001, the company undertook a project to identify what research is needed in this area. The results will be given to Railway Group members during early 2002.

The issue of discharge of toilet waste from trains was identified in the 2001/02 Railway Group Safety Plan and is incorporated in Railway Safety's research programme, to determine the health and safety risks. Regardless of those risks, this practice is a very unpleasant one for trackside workers and train operators should review what action can be taken to reduce or eliminate it.

15

### Reduction of category B SPADs

Passing a signal at danger can be traumatic for a train driver. Category B SPADs are those where a stop aspect or indication was not displayed in sufficient time for the driver to stop safely at the signal.

They may result from a failure of signalling or level-crossing equipment, or because a signal was returned to danger in error. Analysis shows that over 48% are caused by technical defects, 24% by power failures or surges and about 20% by staff error. The balance represents incidents where the investigation was inconclusive.

The category B SPAD rate for 2000/01 shows an improvement of 8% over the 1999/00 average, and Railtrack will again set a challenging target to continue this trend.

16

In working towards achieving this, the emphasis must be on change of aspects – the precursor to category B SPADs – so Railtrack will also set a challenging target for the reduction of unplanned signal aspect changes during 2002/03.

17

**Railway Group members will reduce the incidence of assaults on staff on Railtrack controlled infrastructure and stations by 10% of the April 2002 rate, by March 2004.**

This objective is carried forward to reflect the 2004 end date and includes assaults to staff on trains.

Frustrations caused by the network problems after the Hatfield accident resulted in an increase in cases of aggressive behaviour by passengers. Along with the emphasis now placed on reporting physical and verbal assaults on staff, this has significantly increased the rate of assaults. The original 2000/01 base rate of the objective therefore became unrealistic, and it has now been amended to the rate of assaults for the year ending April 2002.

### Achieving the objective

Actions have been put in place to improve the reporting of incidents. Companies with staff who have a direct interface with the public have developed policies on violence at work. Many companies have introduced training to teach staff how to manage potentially threatening situations. The effect of this is often to turn what might have been a physical assault into a verbal one – thus increasing significantly the rate of verbal assaults.

Railway Group members will continue to take action to reduce the risk of assaults on their staff. These actions will depend on their individual risk profiles and the range of measures already identified.

18

#### Ways of reducing the risk of assault on staff

- conflict management training for staff
- personal security procedures (eg for working away from home location)
- CCTV systems
- good-quality lighting.

### Key actions

- 12 Ensure effective health screening of prospective employees
- 13 Ensure employees declare health, drugs or alcohol problems
- 14 Focus on OH issues affecting safety, including stress and trauma
- 15 Review actions to reduce toilet waste discharge
- 16 Set challenging target to reduce category B SPADs
- 17 Set challenging target to reduce unplanned changes of signal aspect
- 18 Take action to reduce assaults on staff

# 5d

## Key actions

- 19 Develop and implement strategic framework
- 20 Develop safety licensing schemes for drivers and signallers
- 21 Review all medical and competence standards for safety critical activities

During 2002/03 Railway Group members will develop their competence management systems for front-line staff and their managers in accordance with the strategic framework provided by Railway Safety.

Progress has been made under previous objectives to develop competence management systems and this objective focuses on front-line staff and their supervisors and managers.

### Achieving the objective

Independent research and the Cullen report have indicated two areas of vulnerability:

- Competence assessment processes are not as rigorous as they should be, both in consistency of application and in contributing to improvements in safety performance.
- Training of drivers and other groups such as train despatch staff and track workers does not always take advantage of good practice developed successfully in some Railway Group companies and elsewhere.

Railway Safety will develop a strategic framework, in consultation with Railway Group members, to enable the industry to move forward to a culture of continuous improvement. Railway Group members will take action to implement this framework when it is available.

19

### Safety-critical licensing

Competence assurance of safety-critical staff is of fundamental importance in the privatised railway, where staff may move rapidly between employers or agency labour suppliers.

In these circumstances, confirmation of competence becomes a major issue. Since 1999, Railtrack has been addressing this for its track safety staff and contractors through its *Competence Sentinel* scheme, which requires each worker to hold a photo ID card showing all track safety competencies held. Following the success of Sentinel, Railway Safety, supported by Railway Group members, will lead the development of licensing schemes for drivers and signallers and consider extension to other groups of safety-critical workers.

20

In addition, Railway Safety will commission a review of all medical and competence standards for safety-critical activities and take action to ensure that these are

21

appropriate and comprehensive.

### Safety culture

Previous Railway Group Safety Plans have included objectives designed to bring about a positive improvement in the safety culture of Railway Group members. These have included:

- A commitment to undertake safety culture surveys and act on their findings.
- A requirement to institute a programme of safety tours to be undertaken by senior management.

This work will be ongoing. However, the Railway Group recognises that a positive safety culture lies at the heart of its efforts to achieve the headline objectives, significantly reducing fatalities and injuries.

Railway Safety has therefore commissioned a study to examine ways in which the current safety culture in Railway Group companies might be developed and strengthened. The objectives of this study are:

- To determine the main characteristics of the existing safety culture in Railway Group companies and their principal suppliers, and the key factors driving this culture.
- To determine the vision and desired characteristics of a future, improved safety culture.
- To identify the levers to be used for driving the required change.
- To identify key success factors and barriers to implementation of the required change.

It is intended that the results of the study will inform the development of a challenging safety culture objective in the 2003/04 Railway Group Safety Plan.

## Progress against the 2001/02 Safety Objectives

This section provides a progress report against the 2001/02 Railway Group safety objectives at the end of period 6 (ending 15 September 2001). It uses data from the 2001/02 half-year *Safety Performance Report*.

For each objective there is a summary of the Railway Group's performance and, where appropriate, a graphical representation. A full analysis will be included in the 2001/02 year-end *Safety Performance Report* which will be published by Railway Safety in June 2002.

Safety Performance Reports may be accessed on the Railway Safety website at [www.railwaysafety.org.uk](http://www.railwaysafety.org.uk).

# 1 Risk Management Strategy

## 1

The Railway Group will aim to achieve an accidental equivalent fatality rate no greater than 0.3 per million train miles by 2009.

Performance against the objective is measured by tracking the accidental equivalent fatality rate for passengers, workforce and public to give a view of the overall safety performance of the Railway Group.

The rate of 0.52 accidental equivalent fatalities per million train miles at the end of period 6 shows that a 12% improvement has been made since the 2000/01 year end. A further 42% improvement on this rate is required if the objective is to be achieved.

### Accidental equivalent fatalities

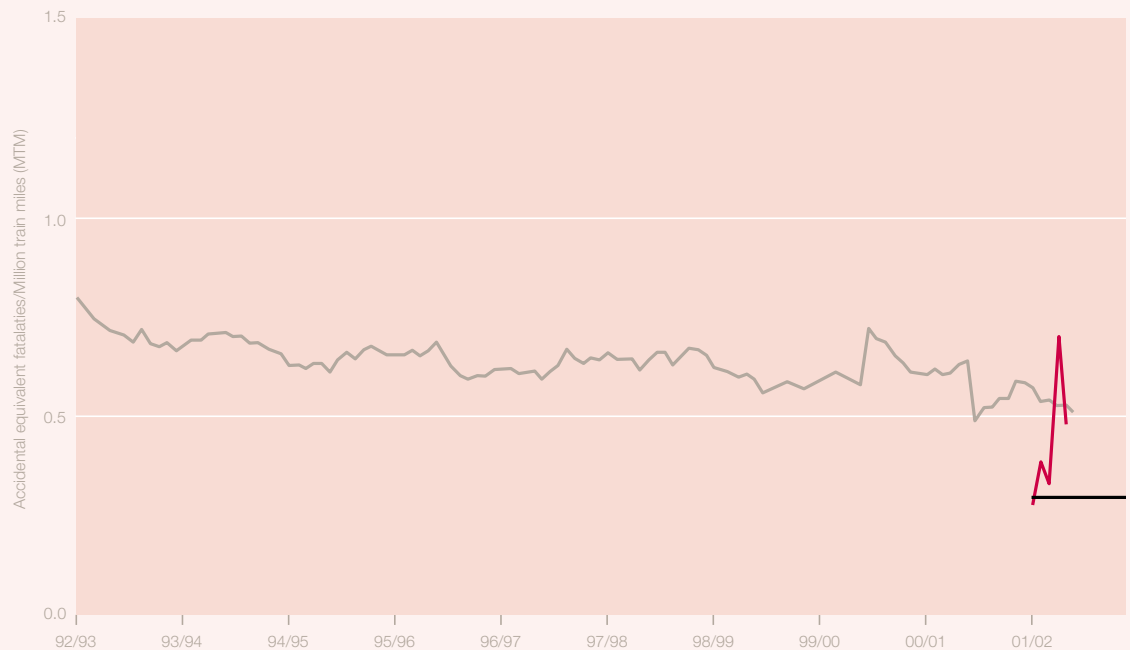
2008/09 target = 0.3 MTM  
2001/02 AMA = 0.52 MTM  
2000/01 AMA = 0.59 MTM

12% better than 2000/01

42% improvement required to meet 10-year target

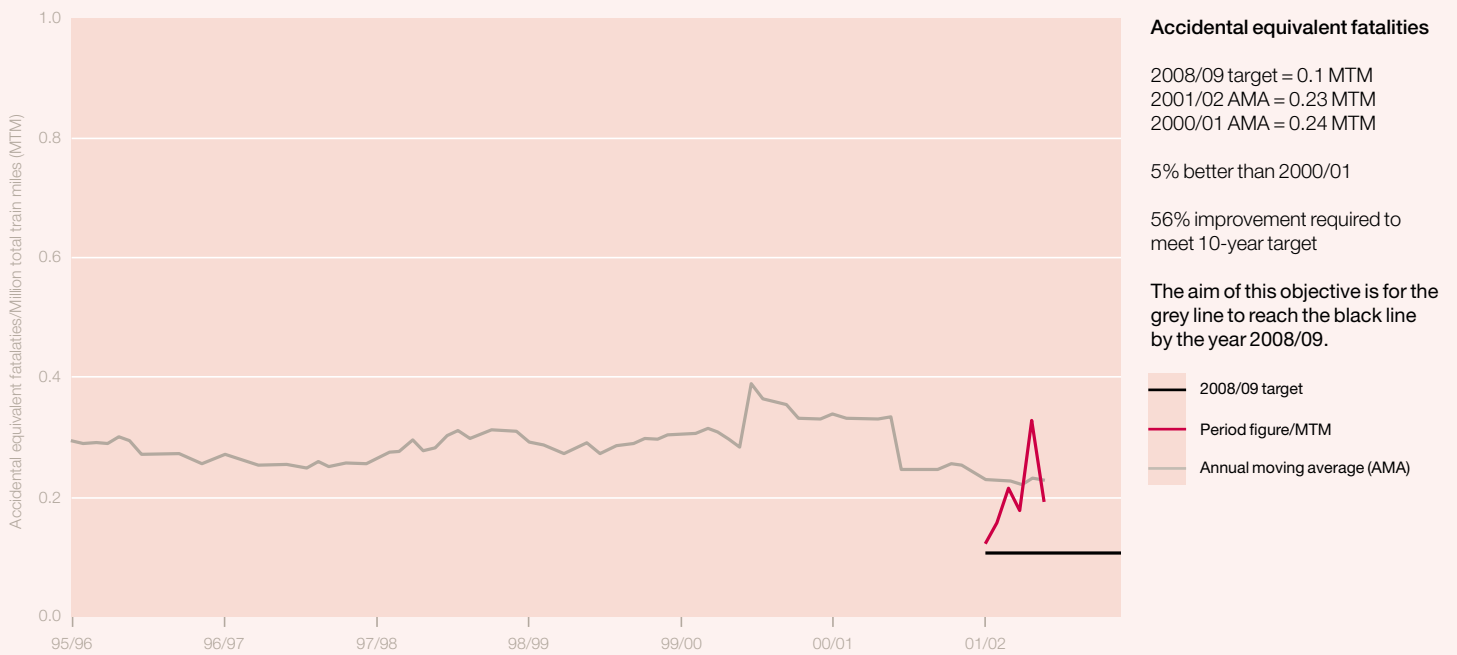
The aim of this objective is for the grey line to reach the black line by the year 2008/09.

— 2008/09 target  
— Period figure/MTM  
— Annual moving average (AMA)



An objective to reduce the risks within the direct control of the Railway Group to a rate of no more than 0.1 accidental equivalent fatalities by 2009 was introduced in the 2001/02 Railway Group Safety Plan.

The rate at the end of period 6 was 0.23 (down from 0.33 during 1999/00 and 5% better than 2000/01), so a further 56% improvement by 2009 is required.



# 2 Catastrophic Risks

## 2a

During 2001/02 Railway Group members will identify and take actions to reduce the incidence of precursors to events with a potential for catastrophic consequences.

Performance against this objective is measured by the rate of statutory reportable collisions and derailments, including buffer-stop collisions. This rate is weighted to take into account the consequences from the different types of accident.

At the end of period 6, the rate was 6% better than the rate at the end of 2000/01 but 19% worse than the five-year moving average. Measured separately, the rate of collisions was 5% worse than during 2000/01 and 14% worse than the five-year average. Derailments were 8% better than during 2000/01 and 10% better than the five-year average.

### Collisions and derailments

1996/2000 five-year average = 0.269/MTM  
2001/02 AMA = 0.319/MTM  
2000/01 AMA = 0.341/MTM

19% worse than five-year average

6% better than 2000/01

- 1996/00 five-year weighted average
- Weighted period rate/MTM
- Weighted annual moving average



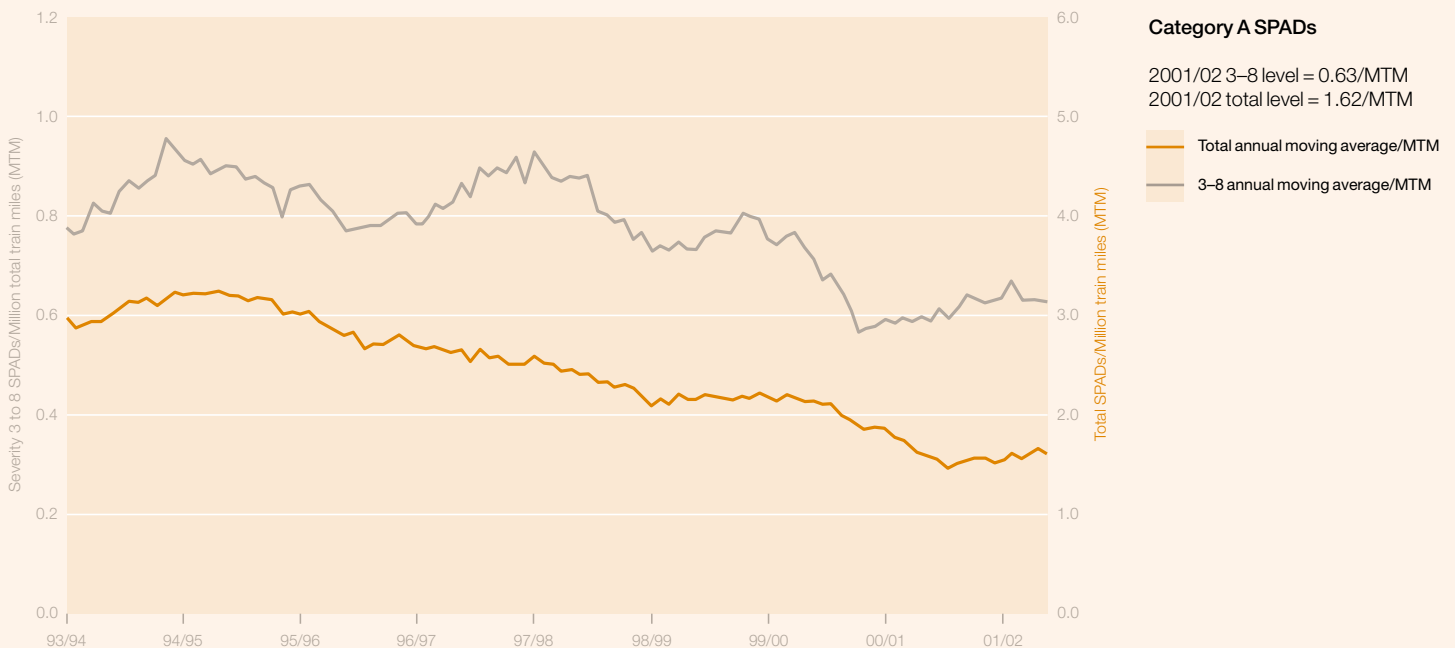
## 2b

The Railway Group will adopt a 'zero tolerance' approach to SPAD incidents, and adopt an intermediate target of reducing the risk arising from SPADs by 65% of the current rate by 2009.

At this stage it is not possible to report on the level of risk associated with SPADs. A new risk ranking model is currently being calibrated and the results are expected to be published in the year-end report.

The overall SPAD rate reduced steadily during 2000/01, achieving a 21% reduction over the previous year. However, the rate has since levelled off and the rate of more serious SPADs has now begun to rise.

A one-year target of achieving a reduction in the number of all SPADs against each corresponding quarter in 2000/01 was not met in either the first or second quarters of 2001/02.



# 2 Catastrophic Risks

## 2c

Railway Group members will take action to reduce line of route offences by 10% by March 2004.

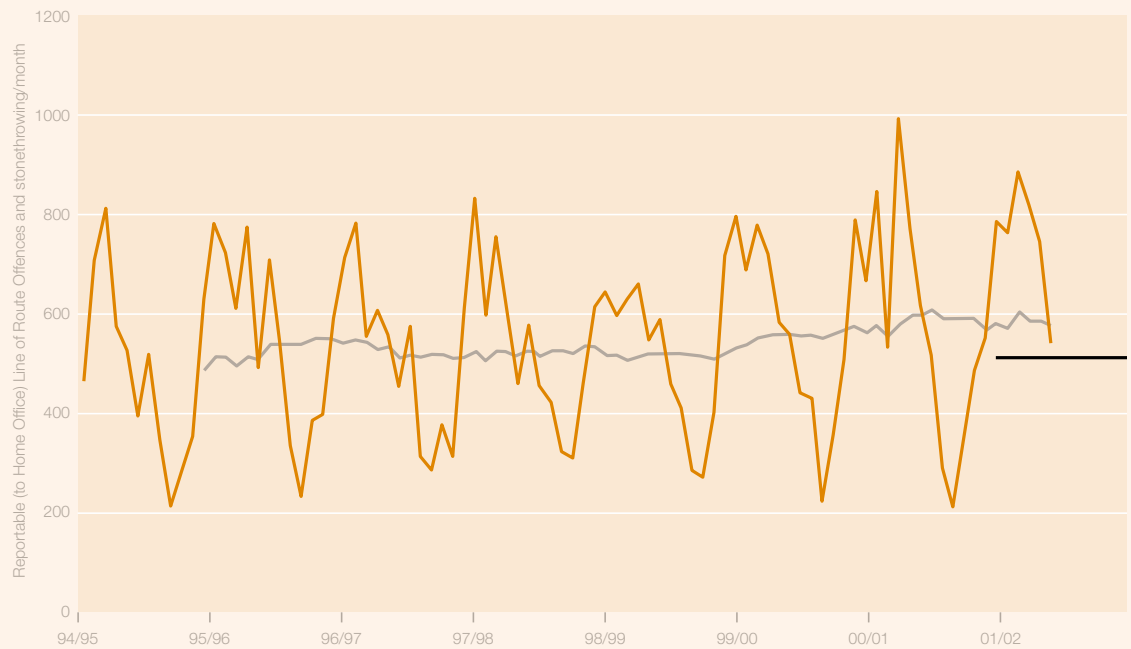
Progress against this objective has again been measured by the number of line of route offences as recorded by the British Transport Police. The graph for this objective includes the placing of objects on the line, and unlike previous years, stone throwing. This shows that a sustained increase in the number of stone-throwing incidents has had the effect of causing a gradual increase in the monthly rate of offences. It also shows the seasonal peaks and troughs of the incidents which roughly coincide with school holidays.

### Reportable (to Home Office) Line of Route Offences and stone throwing/month

2000/01 AMA = 505.9 offences/month  
2001/02 AMA = 601.1 offences/month

19% worse than target

- 2003/04 target
- Monthly value - LOR and stone throwing
- Annual moving average



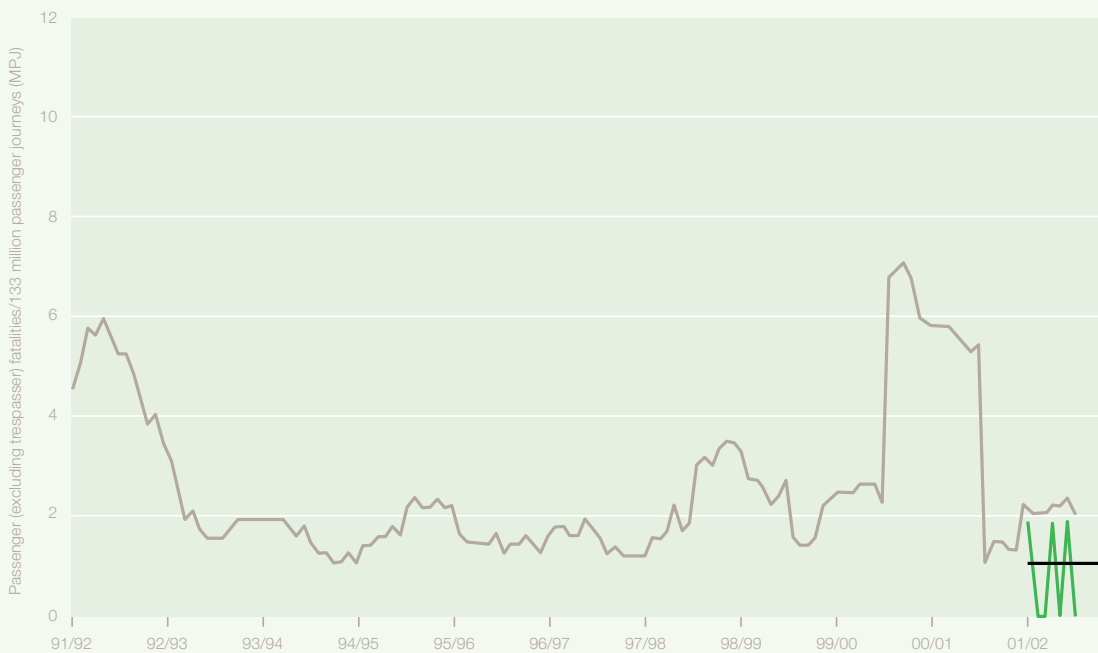
# 3 Passenger Safety and Security

## 3a

The Railway Group will aim to ensure that the risk of accidental passenger fatality will be no greater than one in 133 million passenger journeys per annum by 2009.

During the first half of the year there were two accidental passenger fatalities, neither of which was the result of a train accident.

The annual moving average at the end of period 6 is 1% better than the rate at the end of 2000/01. A 50% improvement in the rate is required to meet the 2009 objective.



### Accidental passenger fatalities

2008/09 target = 1/133MPJ  
2000/01 AMA = 2.01/133MPJ  
2001/02 AMA = 1.98/133MPJ

1% better than 2000/01

50% improvement required to meet 10-year target

The aim of this objective is for the grey line to reach the black line by the year 2008/09.

- 2008/09 target
- Period figure/133 MPJ
- AMA/133 MPJ

# 3 Passenger Safety and Security

## 3b

The Railway Group will aim to ensure that the risk of accidental passenger major injury will be no greater than one in 7.5 million passenger journeys per annum by 2009.

There has been a 9% reduction in the rate of passenger major injuries, including those on trains, compared to the annual moving average for 2000/01. The major cause of these injuries continues to be slips, trips and falls and using stairs or escalators at stations.

A 47% improvement is required to achieve the 2009 objective.

### Accidental passenger major injuries

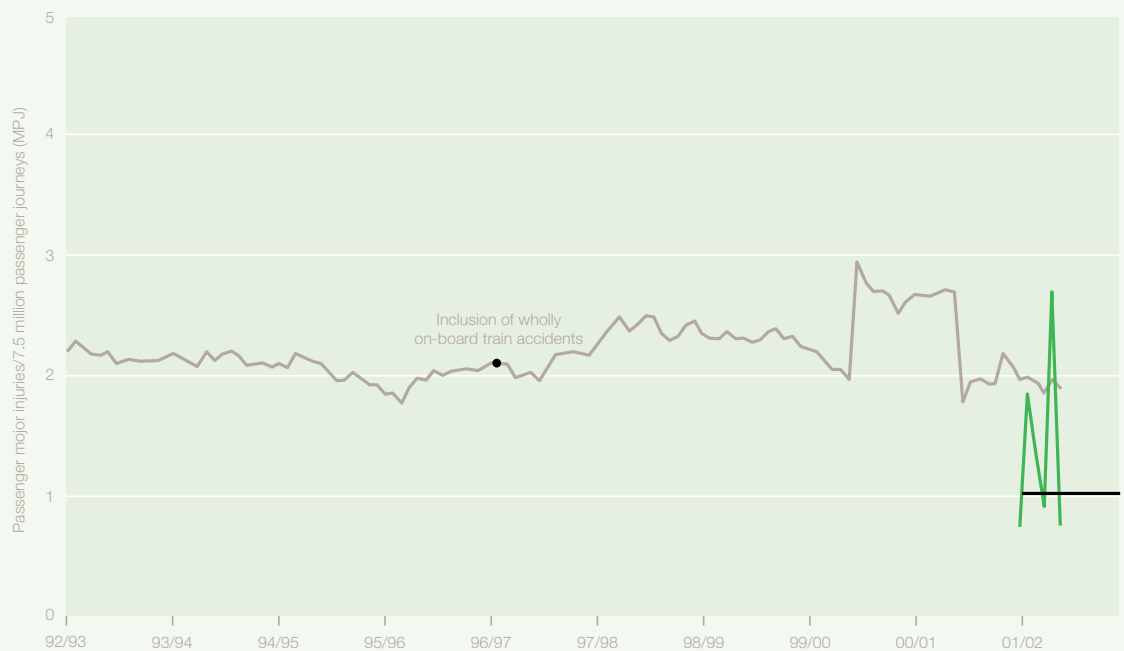
2008/09 target = 1/7.5 MPJ  
2000/01 AMA = 2.07/7.5 MPJ  
2001/02 AMA = 1.88/7.5 MPJ

9% better than 2000/01

47% improvement required to meet 10-year target

The aim of this objective is for the grey line to reach the black line by the year 2008/09.

- 2008/09 target
- Period figure/7.5 MPJ
- AMA/7.5 MPJ

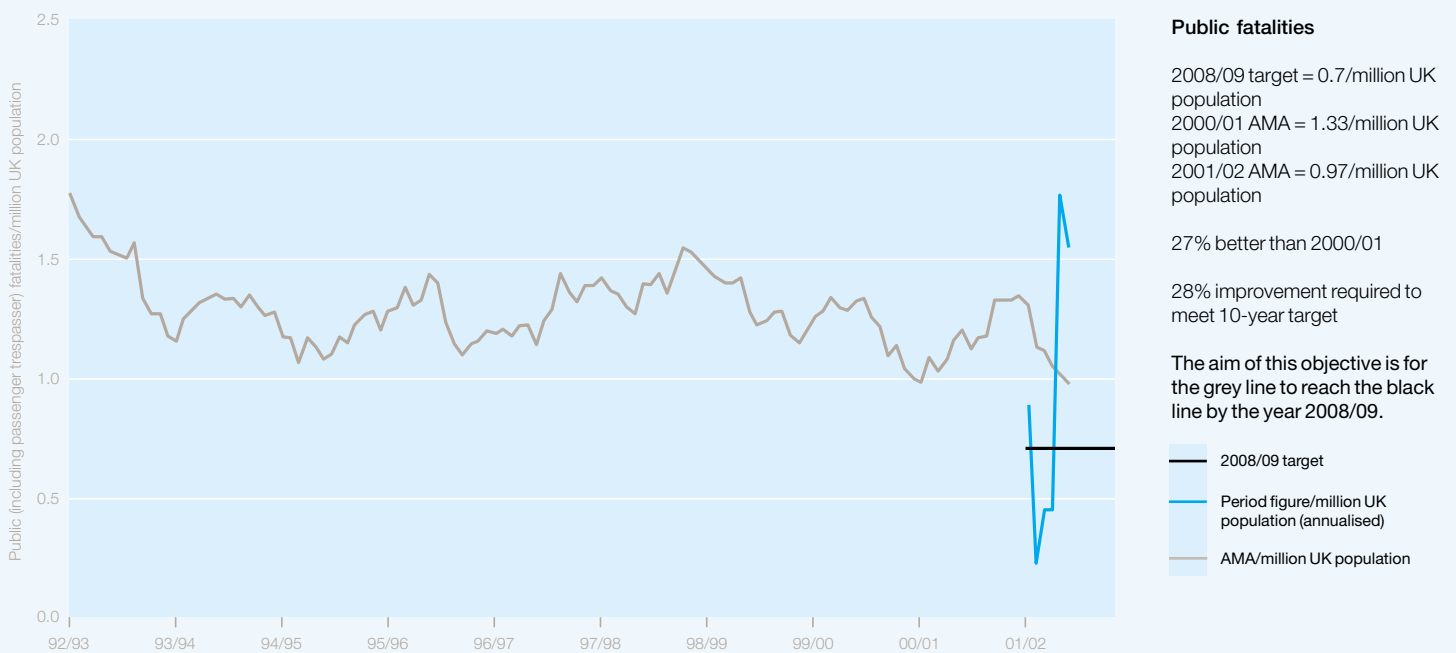


# 4 Public Safety

## 4a

The Railway Group will aim to ensure that the risk of accidental fatality to members of the public will be no greater than 0.7 per million UK population by 2009.

During the first half of 2001/02, the accidental public fatality rate reduced by 27% compared with the 2000/01 level. A further 28% improvement is required to achieve the 2009 objective. The largest proportion of public accidental fatalities are to trespassers, but this measure also showed a 24% improvement.



## 4 Public Safety

### 4b

All user-worked level crossings will be risk assessed using a standard methodology and reasonably practicable controls introduced where necessary by 2004.

All user-worked level crossings with a history of accidents or near misses were risk assessed by 31 December 1999 and 77% of those requiring modification had been completed by the end of period 6, against a target date of 31 December 2001.

Crossings where the warning time is less than 20 seconds and/or the difference between the warning time and decision plus crossing time is five seconds or less have been risk assessed, although this was completed after the target date of 31 December 2000. Of those requiring modification, 24% have been completed but it is unlikely that the target date of 31 March 2002 for completion of all modifications will be met.

Of the remaining crossings to be risk assessed by 31 December 2001, 71% had been completed at the end of period 6 2001/02.

### 4c

During 2001/02 Railway Group members will continue to support the research project being undertaken to understand the causes of suicides on the railway.

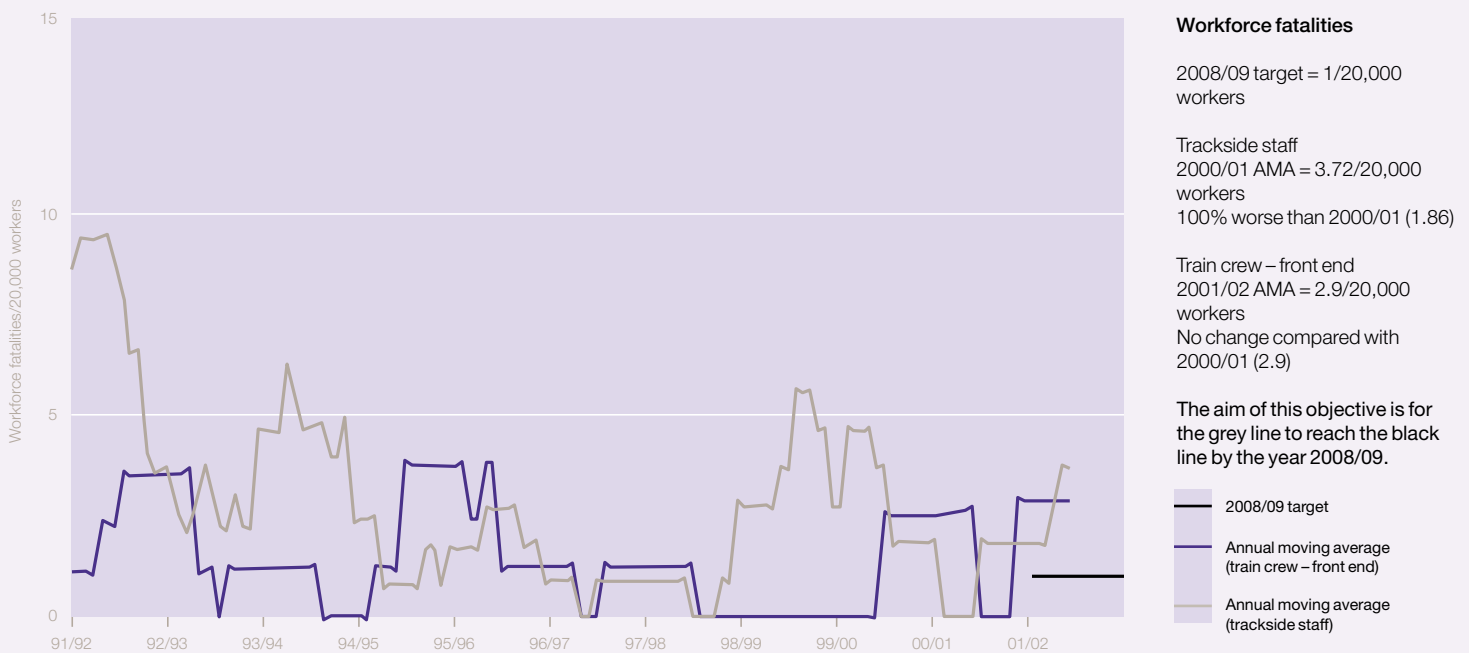
The SOVRN (Suicides and Open Verdicts on the Railway Network) project is ongoing and is due to conclude in August 2002.

# 5 Workforce Safety

## 5a

The Railway Group will aim to ensure that the risk of accidental fatality to any group of workers on Railtrack PLC controlled infrastructure and stations will be no greater than one in 20,000 per annum by 2009\*.

The workforce accidental fatality rate is measured against the two groups of workers most at risk – trackside workers and drivers. During the first half of 2001/02, there were two accidental fatalities to trackside workers. The accidental annual fatality rate at the end of period 6 2001/02 to trackside workers was 3.72 per 20,000 and to drivers was 2.9 per 20,000.



\*This objective has now been revised to require zero workforce accidental fatalities (see page 23).

# 5 Workforce Safety

## 5b

The Railway Group will aim to ensure that the risk of accidental major injury to any group of workers on Railtrack PLC controlled infrastructure and stations will be no greater than one in 750 employees per annum by 2009.

Performance against this objective is measured by the accidental major injury rate to trackside workers, the group most at risk in this category, who account for over half of all workforce major injuries. To the end of period 6 2001/02, there had been a slight worsening in the rate compared with the average during 2000/01, but a further 65% improvement is required if the 2009 objective is to be achieved.




### Workforce major injuries

2008/09 target = 1/750 staff  
 2001/02 AMA = 2.86/750 staff  
 2000/01 AMA = 2.83/750 staff

1% worse than 2000/01

65% improvement required to meet 10-year target

The aim of this objective is for the grey line to reach the black line by the year 2008/09.

-  2008/09 target
-  Period figure/750 staff (annualised)
-  AMA/750 staff



## **5c**

During 2001/02, Railway Group members will implement actions to address individual and team development competency needs.

Railway Group members are acting on the findings of competence self-assessments undertaken during 2000/01.

Additionally, Railway Safety is continuing to develop a strategic framework addressing the competency of front-line staff and supervisors.

## **5d**

Railway Group members will implement actions designed to address the findings of safety culture surveys undertaken in 2000/01 by September 2001.

In addition to the findings of safety culture surveys being addressed, Railway Group members have now implemented programmes of safety tours for senior and middle managers.

# 5 Workforce Safety

## 5e

Railway Group members will introduce actions intended to reduce the incidence of assaults on staff on Railtrack PLC controlled infrastructure and stations by 10% by March 2004.

There has been a significant increase in reported assaults over the last 12 months. The reasons for this are not clear but it may be due to one or more of the following:

- An actual increase in the number of assaults, possibly due to service disruption since the accident at Hatfield in October 2000.
- Improved staff awareness of the need to report assaults.
- An increase in the number of verbal assaults.

The rate of assaults on staff at the end of period 6 2001/02 is 11% worse than the average for 2000/01. A 19% improvement is required to meet the 2004 target. However, because of the larger than expected increase in reported assaults, objective 5c in the 2002/03 Railway Group Safety Plan has been amended to use the 2001/02 rate as the base measure.

### Workforce assaults

2004 target = 119/period  
2001/02 AMA = 148/period

11% worse than 2000/01

19% improvement required to meet target

