



Railways: safety

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This note looks at the statutory framework for rail safety that was introduced under the *Railways Act 2005* and the regime which it replaced. It also provides information on various train protection systems.

For information on railways accidents, please see Library Standard Note [SN/BT/3114](#); and for information on level crossings, see [SN/BT/3255](#). Other [rail briefings](#) are available on the Parliament website.

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1 Overview

The [Office of Rail Regulation \(ORR\)](#) is the independent health and safety regulator for the railway industry, including metros, light rail and heritage, following the *Railways Act 2005*. It covers the safety of the travelling public as well as workers on the railways. As the independent economic and safety regulator, ORR can take enforcement action to ensure that those who have duties under the law are held to account for failures to safeguard health and safety.

ORR's health and safety strategy is to secure the proper control by duty holders of risks to the health and safety of employees, passengers and others who might be affected by the operation of Britain's railways. HM Railway Inspectorate (HMRI) sits within the ORR and they have Inspectors and policy advisors who work together to develop and deliver the strategy.

The term 'duty holders' means railway operators such as [Network Rail](#), the [freight and train operating companies](#) and contractors who have responsibilities under health and safety law. The organisations which manage the business of the railways have the direct responsibility for health and safety but HMRI aims to work with the rail industry to help them in identifying common problems and to agree actions and priorities.

The *Railways Act 1993* brought all railway safety legislation within the framework created by the *Health and Safety at Work Act 1974*, as amended, and confirmed the [Health and Safety Commission \(HSC\)](#) as the principal provider of policy advice to Ministers on railway safety issues. The duties of the ORR with respect to railway safety for the most part replicate those of the HSC as set out in sections 11 and 50 of the 1974 Act. A Memorandum of Understanding exists between the HSE and ORR in order to ensure effective coordination and cooperation between these organisations in relation to the regulation of health and safety, including policy matters and the enforcement of health and safety law, on railways, tramways and other guided transport systems in Great Britain.

HMRI carries out inspections and audits to check that the rail industry has management systems in place and that they are effective in controlling the health and safety risks as set out in the safety cases. HMRI also targets risk areas of particular concern under what is called mandatory inspection programmes.

HMRI is responsible for the investigation of breaches of criminal law and health and safety legislation on the railways while the ORR and the [Rail Accident Investigation Branch \(RAIB\)](#), investigate accidents on the railways. RAIB carries out investigations into the most serious rail accidents and incidents without apportioning blame or liability with a view to enabling lessons to be learned, improving safety on railways and preventing similar accidents and incidents. HMRI is responsible for implementing any recommendation made by RAIB following the completion of their investigations.

2 Post-privatisation, 1994-2000

The railways were [privatised by the previous Conservative Government](#) under the *Railways Act 1993*, which came into force on 1 April 1994. The 1993 Act brought all railway safety legislation within the framework created by the *Health and Safety at Work Act 1974*, as amended, and confirmed the HSC as the principal provider of policy advice to Ministers on railway safety issues. A Memorandum of Understanding was signed by HSC and the then Departments of Transport and Environment on 10 October 1996. This Memorandum replaced the Agency Agreement which had existed between HSC and the Secretary of State

for Transport, when HMRI was transferred from the Department of Transport to the HSE on 1 December 1990.

It was feared that the entry of new operators into the railway industry, and the division of control between different companies, created the potential for introducing new and inadequately controlled risks onto the system. The HSC, advised in turn by the Railway Industry Advisory Committee (RIAC) was therefore asked to carry out a study of the health and safety implications of the changes and to make recommendations. It published a report in January 1993 and the Government accepted in full their recommendations on how best to secure safety under the privatisation proposals.¹ The report's detailed recommendations were implemented by four new sets of regulations made under the 1974 Act.² These were designed to formalise controls over the management of safety, the competence of staff performing safety critical work and the carriage of dangerous goods, all of which had previously been covered by British Rail's internal policy and procedures.

One of the key recommendations of the 1993 report was that there should be a validation procedure for railway operators whereby infrastructure controllers and train service operators were required to produce a Railway Safety Case stating how they would meet all the safety requirements. The Safety Case demonstrated that an operator had the systems in place to manage operations safely and meet required safety standards. In effect this meant that the immediate responsibility for ensuring safety in the restructured railways rested with the party in control of the activity (i.e. usually a train company). However, [Railtrack](#), as the 'infrastructure controller', was responsible for the integration of the system itself and was able to impose conditions on access and to monitor an operator's performance to ensure compliance with these conditions. To facilitate this overall responsibility, the safety professionals at British Rail were among those transferred to Railtrack on 1 April 1994. Regulations and access agreements required that operators complied with the reasonable directions of the infrastructure controller and comply with specified safety requirements.

Railtrack's Safety Case was accepted in March 1994. It discharged its duty to control safety in the railway industry through a system of 'cascaded' Safety Cases and technical requirements codified into Railway Group Standards; safety performance was set, monitored and enforced through a Railway Group Safety Plan and a series of safety audits. Railtrack published annual Railway Group Safety Plans which set strategic safety objectives for members of the Railway Group (which included Railtrack and the duty holders of Railway Safety Cases accepted by Railtrack) and set the standards which governed Safety Cases.³

The main strategy employed by HMRI to regulate safety within what became a geographically and managerially diverse industry was to closely monitor the performance of all the relevant players, using an increased core of field inspectors. The inspectors would check the actual performance and the effectiveness of the management regimes against the commitments and goals in the safety cases. The Chief Inspector of Railways was given extensive enforcement powers to ensure that effective controls were maintained.

¹ HSC, *Ensuring Safety on Britain's Railways*, January 1993

² *Railways (Safety Case) Regulations 1994 (SI 1994/237)*; *Carriage of Dangerous Goods by Rail Regulations 1996 (SI 1996/2089)*; *Railways and Other Transport Systems (Approval of Works, Plant and Equipment Regulations 1994 (SI 1994/157)*; and *Railways (Safety Critical Work) Regulations 1994 (SI 1994/299)*

³ these safety plans were succeeded by the [Railway Strategic Safety Plan](#) in 2005, produced by the Rail Safety & Standards Board

3 Safety management under Railtrack, 2000-02

Following the [accident at Ladbroke Grove](#) in October 1999 an inquiry was set up under Lord Cullen to consider the causes of the accident and wider questions of safety management and the appropriateness of the current safety regulatory regime. At the same time that the Cullen inquiry was set up, a working group was established by the then Department for the Environment, Transport and the Regions (DETR) to consider the functions of Railtrack's Safety and Standards Directorate (S&SD) and whether there were any improvements which should be made pending the conclusions of the Cullen inquiry. The rail safety policy review reported in February 2000.⁴ On 22 February the then Deputy Prime Minister and Secretary of State for Transport, John Prescott, announced that the S&SD would be converted into a separate company, Railway Safety, and appointed Sir David Davies Chairman designate of the new company.⁵

The *Railways (Safety Case) Regulations 2000* (SI 2000/2688) came into force on 31 December 2000 and made the following changes to the safety case regime:

- Transferred the duty for accepting train and station operators' safety cases and safety case revisions to the HSE;
- Required Railtrack to procure an independent assessment of both its own Safety Case (and subsequent revisions) and the Safety Cases of operators on its infrastructure, before they could be formally considered by the HSE;
- Required Railtrack to secure an independent annual audit of its own safety management systems, and those of station or train operators using its infrastructure;
- Gave the HSE powers to require revisions to safety cases;
- Placed a clearer obligation on Railtrack to ensure that operators complied with their Safety Cases and with Railtrack's 'reasonable safety requests' and a duty to notify HSE of any non-compliance and actions they proposed to take as a result;
- Made changes to the content of Safety Cases; and
- Required Railtrack and operators with existing Safety Cases to submit revisions to the HSE.

In October 2000, the Rail Regulator announced his intention to modify Railtrack's network licence in order that Railtrack should transfer its safety activities from S&SD to a new, wholly-owned subsidiary, Railway Safety Ltd, established on 31 December 2000.⁶ From its establishment until 3 October 2002, Railway Safety was a subsidiary of Railtrack Group plc.

On 7 October 2001, the then Secretary of State for Transport, Stephen Byers, petitioned a High Court judge to [put Railtrack plc into administration](#) under section 60 of the *Railways Act 1993*. It came out of administration on 3 October 2002 when Network Rail took over many of

⁴ DETR, *Railtrack's Safety and Standards Directorate: Review of main functions and their location*, February 2000 [also known as the Rowlands Report]

⁵ DETR press notice, "[Sir David Davies appointed as chairman designate of Railway Safety](#)", 22 May 2000

⁶ ORR press notice, "[Regulator proposes that Railtrack establish a separate safety company](#)", 31 October 2000

its responsibilities. It also acquired Railway Safety. This required minor modifications to Railtrack plc's network licence.⁷

4 Creation of the Rail Safety and Standards Board (RSSB), 2003

Lord Cullen's inquiry into the Ladbroke Grove accident in October 1999 recommended the creation of a new rail industry safety body. The Regulator published a consultation document on the proposal in December 2001⁸ and [responses](#) indicated strong support for the creation of such a body from a wide range of stakeholders in the railway. The Regulator held two industry conferences and chaired a cross-industry development group to work up and refine proposals. The Regulator's provisional conclusions on how the new body, the [Rail Safety and Standards Board \(RSSB\)](#), should be established and what form it should take were published in October 2002.⁹ The new body was established on 1 April 2003.

RSSB acts in ten key areas:

- Managing the production of [Railway Group Standards \(RGS\)](#);
- Measuring [safety performance and risk](#) for the industry;
- Leading [research and development](#);
- Facilitating [national programmes](#);
- Accrediting [vehicle acceptance bodies](#);
- Developing [safety strategies and the Strategic Safety Plan](#);
- [Learning from accidents](#);
- Coordinating industry input to [European requirements](#);
- Supporting [systems integration](#); and
- Providing [expertise](#) to the industry

RSSB [receives](#) approximately £15 million per annum from its members and £11 million per annum from the Department for Transport.

5 Transfer of safety regulation to the Regulator, 2004-06

In the [2004 rail White Paper](#) the Government announced its intention to transfer safety responsibility to the Office of Rail Regulation (ORR).¹⁰ This was legislated for in the *Railways Act 2005*. The ORR became both the economic and safety regulator for the rail industry on 1 April 2006 when it took over the safety regulation responsibilities of the HSE. These include the power to authorise a person to investigate and make a special report on a major incident, though it may not direct an inquiry and the Secretary of State retains their prerogative powers to call an inquiry should they see fit to do so.

⁷ there were some critics of this approach, such as the Association of Train Operating Companies, who called for a through reform of safety regulation, see: ATOC press notice, "ATOC calls for independent safety regulator", 31 October 2000

⁸ ORR, [Establishment of a rail industry safety body: a consultation document](#), December 2001

⁹ ORR, [Establishment of a rail industry safety body: provisional conclusions](#), October 2002

¹⁰ DfT, [The future of rail](#), Cm 6233, July 2004

The transfer of safety responsibility to the ORR was welcomed by some commentators as spending decisions on safety have to be made within the context of what is affordable¹¹ but condemned by Brendan Barber, the TUC General Secretary, who had “grave reservations” about the transfer of responsibility for safety from the HSE to the ORR.¹² The HSC and HSE were disappointed at the decision. Quoting from earlier correspondence with the Secretary of State, the HSE chairman said:

I assume the reasons for the change are specific to the mainline railway industry which, although improving since the days of Railtrack, still needs to improve its safety culture along with other aspects of performance. The problems were highlighted by the Cullen report. It is vital that HSE’s work in the rest of industry is not affected adversely by this decision. We need your help to ensure that HSE’s reputation is not damaged by its dealings with an industry that has often preferred recalcitrance to implementation of what is no more than good practice in other industries. The industry also needs to do much better to demonstrate safety leadership. Despite the efforts of Denis Tunnicliffe and Len Porter, RSSB has not achieved that. Indeed the industry responses to your review demonstrated that there is still no unity of purpose here. Although your decision overturns one of Cullen’s recommendations it is essential that the wider Cullen agenda is maintained.¹³

6 Implementation of the EU Railway Safety Directive, 2006

The [Second European Railway package](#) was agreed in April 2003. One of the Directives that formed part of the Package was [Directive 2004/49/EC](#) on defining common safety objectives for the entire EU railway. It creates a clear procedure for issuing safety certificates all rail companies have to acquire before being able to operate on the European network. The text does not preclude stricter rules but establishes a notification procedure that should prevent the misuse of higher standards to surreptitiously discriminate between rail companies.

Two sets of regulations were introduced in 2006 to implement the greater part of the Directive:

- The *Railways and Other Guided Systems (Safety) Regulations 2006* ([SI 2006/599](#))¹⁴ (ROGS) implemented requirements for railway operators and railway infrastructure managers on the mainline railway to maintain a Safety Management System (SMS); and to hold a safety certificate (or ‘authorisation’ for infrastructure managers) indicating that the SMS has been accepted by the safety authority, before being allowed to operate. ROGS consolidated existing national provisions for non-mainline railways to maintain an SMS and to ensure the safe design of new and altered vehicles and infrastructure. ROGS also implemented a number of recommendations from the Cullen report on the Ladbroke Grove accident on the control of safety critical work. Information on ROGS can be found on the [ORR website](#).
- The *Railways (Access to Training Services) Regulations 2006* ([SI 2006/598](#)) provided railway undertakings applying for a safety certificate, and infrastructure managers and relevant staff, with fair and non-discriminatory access to training services. This

¹¹ e.g., Christian Wolmer: “[Compromise that fails to confront desperate need for radical reform](#)”, *The Independent*, 16 July 2004

¹² TUC press notice, “[TUC has safety worries about rail changes](#)”, 15 July 2004

¹³ HSE press notice, “[The DfT Rail Review: HSE response](#)”, 15 July 2004

¹⁴ ROGS replaced and repealed the *Railway Safety Case Regulations 2000* ([SI 2000/2688](#)); *Railways and Other Transport Systems (Approval of Works, Plant and Equipment Regulations 1994* ([SI 1994/157](#)); and the *Railways (Safety Critical Work) Regulations 1994* ([SI 1994/299](#))

includes training for train drivers and staff accompanying the train, whenever such training is necessary for fulfillment of requirements to obtain the safety certificate; and for infrastructure manager staff who perform safety critical tasks. The training service regulations provide a right of appeal to the ORR if access to any of the conferred rights is denied.

In September 2009 the European Commission announced its intention to review rail safety rules and practices across the Union.¹⁵

7 Train protection systems

Summaries of the main train protection systems, including the [Automatic warning system \(AWS\)](#); the [Train Protection and Warning System \(TPWS\)](#); [Automatic train protection \(ATP\)](#); and the [European Rail Traffic Management System \(ERTMS\)](#) can be found on the ORR website.

The system most commonly talked about these days is ERTMS, which was initially recommended for use on the UK rail network by Professor Uff and Lord Cullen in their 2001 Joint Inquiry into Train Protection Systems which followed the Southall and Ladbroke Grove accidents, reported in March 2001.¹⁶ The HSC published a further report in February 2003 which recommended further work on ERTMS and a restructuring of responsibilities for the introduction of the system. It also recommended that TPWS+ should be installed at those signals where it could bring material safety benefit without material adverse effect on capacity, as soon as practicable. Finally, the report warned of the dangers of introducing a system in the UK that differed fundamentally from those in other EU countries.¹⁷

The Government accepted the advice to implement ERTMS along the lines recommended in the report.¹⁸ In 2003 the estimated cost of installing the new system (ERTMS level 2, system D) was £3.7 billion over 40 years, and that overall ERTMS would deliver an estimated £7.5 billion worth of benefits over that period, of which an estimated £347 million would come from safety benefits.¹⁹

In September 2007 the Government published a [national implementation plan for ERTMS](#) and in April 2009 it was confirmed that ERTMS Level 2 would be deployed on the Cambrian Line in Wales by the end of 2009.²⁰

8 Signals passed at danger (SPADs)

A signal passed at danger (SPAD), describes an incident when a train passes a stop signal without authority to do so. There are several hundred SPADs each year. Many of these have little or no potential to cause harm because they are the result of minor misjudgements of distance or braking capability, or they occur at low speed during shunting operations. In most cases the trains stop within the safety overlap provided at the signal. The overlap is a clear section of track beyond the signal, usually 200 yards, which provides protection against

¹⁵ EC press notice, "[Commission to promote rail safety rules and monitor their implementation](#)", 8 September 2009

¹⁶ HSE press notice, "[Joint Inquiry into Train Protection Systems](#)", 29 March 2001

¹⁷ HSC, [Train protection – Review of economic aspects of the work of the ERTMS programme team](#), 5 February 2003, p69

¹⁸ [HC Deb 5 February 2003, cc14-16WS](#)

¹⁹ [HL Deb 10 June 2003, c20WA](#)

²⁰ [HC Deb 22 April 2009, cc751-752W](#)

relatively minor overruns. The most serious incidents potentially are those when trains run past the overlap, and the line ahead is occupied by another train.

SPADs are only one of the precursors to catastrophic accidents on the railway, but they have been the cause of major accidents including, in recent years, at Southall in 1997 and Ladbroke Grove in 1999. Over time there has been a general improvement in the overall incidence of collisions and derailments. Quarterly figures and further information on SPADs can be found on the [ORR website](#).