



***HMRI's Risk Profile Topic Strategy for Route Crime***  
***2008-09 to 2009-10***

## **Executive summary**

Route crime is the cause of most deaths to members of the public on Britain's railways; while the majority are suicides, a significant number are accidental deaths due to trespass. Although vandalism makes a much smaller contribution to overall route crime risk than trespass, these incidents are of concern because of their potential to cause catastrophic derailment as a result of vandals placing obstructions on the track.

Available intelligence indicates a marked reduction in both trespass and vandalism risk in recent years, and the operational and economic implications of route crime should act to motivate the industry to continue to address this issue. However, the inherent difficulties in influencing public behaviour, combined with the predicted increases in rail traffic and passenger numbers, are likely to present a challenge to the industry in maintaining recent improvements, and support continued HM Railway Inspectorate's (HMRI) activity in this area.

The long term aim of this strategy is to seek to influence the industry to maintain a sustained and cost effective reduction in route crime risk, by more responsive, intelligence-led targeting, and better evaluation of risk mitigation measures, particularly in areas of increasing risk, such as trespass and suicides via stations. HMRI priorities in working towards this aim will focus on:

- the risk of children and young people obtaining unauthorised access to the lineside; and
- the catastrophic risk to passengers and railway staff from vandals placing obstructions on the line.

## **1. Introduction**

This document summarises HMRI's overall policy and strategy for securing adequate control of risk arising from route crime on the rail network in Great Britain. Rail industry dutyholders have a legal duty under Section 3 of the Health and Safety at Work etc Act 1974 to reduce risks to the general public, so far as is reasonably practicable; this duty extends to the prevention of trespass and vandalism on the railway. Although this strategy focuses on the mainline network controlled by Network Rail, where the majority (over 80%) of the route crime risk occurs, the principles described are also relevant to infrastructure outside the mainline network, including London Underground Limited, light rail and heritage operators. It is relevant to infrastructure controllers, including those involved in design, operation, inspection and maintenance, and also to station and train operators, and to contractors involved in enhancements and renewals work.

HMRI's route crime strategy covers risks arising from railway trespass (including suicide) and vandalism, mainly on the line of route but also including on-station and on-train trespass and vandalism where this endangers safety. It includes, for example, unauthorised access to the lineside via stations, but excludes graffiti and other anti-social behaviour which, in itself, does not create a health and safety risk. Although prevention of suicide has been considered, the risk of ill-health in railway workers involved with railway fatalities is covered separately under HMRI's occupational health strategy<sup>1</sup>.

This strategy is informed by intelligence gathered from accident and incident data, and investigation reports (both internal and external to HMRI); feedback from HMRI inspection activity; and discussions with industry stakeholders and within Office of Rail Regulation (ORR). Detailed descriptions of the scope of the strategy and background information, including the risk profile for route crime, are set out in a supporting document<sup>2</sup>. This strategy is one of a number of topic areas that have been treated in a similar way. The full context is described in an introductory document on HMRI's topic strategies<sup>3</sup>.

---

<sup>1</sup> HMRI's risk profile topic strategy for occupational health 2009-10

<sup>2</sup> Please contact the ORR correspondence team for further information.

<sup>3</sup> Introductory document to HMRI's risk profile topic strategies.

## **2. Extent of the risk**

Route crime is the cause of most deaths to members of the public on Britain's railways; while the majority are suicides, a significant number are accidental deaths due to trespass. The Railway Safety and Standards Board (RSSB) safety risk model (SRM)<sup>4</sup> estimates the risk from trespass (excluding suicide) at 42.6 fatalities and weighted injuries (FWI) per year. This represents the largest single source of risk on the mainline railway, accounting for over 30% of the total. Adult trespassers being struck/crushed by a train was the main risk group, accounting for 60% of the total trespass risk; electric shock from conductor rails and overhead line equipment accounted for 17% of the overall trespass risk. The SRM estimates an additional 222.5 FWIs per year from suicides/attempted suicides.

The SRM estimates the risk from vandalism affecting trains at 0.56 FWI per year or 0.4% total risk on the mainline railway. Although vandalism makes a much smaller contribution to overall risk than trespass, these incidents are of concern because they can lead to damage, injury, or catastrophic derailment as a result of obstructions being placed on the track, with the potential for multiple passenger fatalities. The SRM estimates that obstruction of the line by vandals accounts for over half of the total vandalism risk (excluding damage to fencing); train derailment caused by lineside obstruction accounts for 42%, with train collisions due to vandals placing obstructions on the line a further 12% of overall vandalism risk. Injuries to train crew (29%) and to passengers (11%) due to missiles thrown through windows account for 40% of total vandalism risk.

### **Trends in trespass and suicide incidents**

#### **Trespass trends**

The available intelligence indicates an overall reduction in trespass risk in recent years, however historic data on accidental trespass does need to be treated with caution. Determining the balance between trespass and suicide deaths is complicated by differences in how accidental trespass and suicide fatalities are classified between the RIDDOR (Reporting of Injuries, Diseases, and Dangerous Occurrences Regulations 1995) and RSSB datasets, and also

---

<sup>4</sup> RSSB Risk Profile Bulletin Version 5.5 August 2008.

by possible inconsistencies in the way that historic fatalities have been classified within industry data<sup>5</sup>.

Although industry figures from 2007 onwards are likely to be a more reliable indicator, historic industry data does show an overall downward trend in trespass deaths since 2000, with 2007 figures just below the 10 year average of 45.6<sup>5</sup>. This overall downturn in trespass deaths is also reflected in the RIDDOR data if suspected suicides are removed from the trespass figures.

Fortunately, the picture on child trespass deaths is clearer, with a continuing decline over the past five years. No children under 16 years old have been killed while trespassing on the railway since 2006; this is a major step forward from the position in the mid 1980-90s, when on average 6 children a year died while trespassing<sup>6</sup>.

Industry data shows that about 30% trespass and suicide deaths have occurred at/from stations in recent years. Data for 2007<sup>5</sup> shows a marked increase, with 24 of the 43 trespass deaths occurring at stations, the highest proportion in the last 10 years. SRM data indicates that trespass at stations accounts for over 12% of all station risk, with the majority of this risk being to adult trespassers crossing the tracks at stations (3.4 FWI per year).

Trends in reported trespass incidents have also remained relatively static in recent years (at about 12,000 a year). Industry figures for 2007 and emerging data for the first half of 2008, however, show encouraging signs of a downturn in reported trespass incidents<sup>5,7</sup>.

It is recognised that trespass incidence data is less reliable than fatalities data. A recent RSSB research project<sup>8</sup> indicated that RSSB data may only capture about two thirds of reported trespass incidents (the remainder being reported into the British Transport Police (BTP) dataset only), and that combined with failures to report such non-injury incidents at all, the current industry figures on the extent of trespass are likely to be a significant underestimate.

---

<sup>5</sup> RSSB Annual Safety Performance Report 2007 April 2008

<sup>6</sup> ORR 2007 Railway Safety Statistical Report

<sup>7</sup> RSSB half year performance report Jan-June 08, September 2008

<sup>8</sup> RSSB research T723 Making the most of railway crime data, due for publication October 2008

## **Suicide trends**

In recent years suspected and confirmed railway suicides have fluctuated around the 10 year average (of 200 each year), but against a background of falling national suicide rates. As with trespass, clear trends in railway suicide rates are difficult to determine because of the different ways in which suspected suicides are treated in the accident data. RIDDOR data, based on **confirmed** suicide verdicts, would appear to indicate a recent decline in railway suicides. However, when suspected suicides are also included, the RIDDOR data reflects the upturn seen in the industry data, with 2006 the worst year for a decade (about 250 suspected/confirmed suicides). Industry figures do, however, show a return to more typical levels of suicide (around 200/year) in 2007<sup>5</sup>, with data for the first half of 2008 mirroring this trend<sup>7</sup>.

## **Trends in vandalism incidents**

Acts of vandalism, including placing objects on the line, throwing objects through windows, and train fires, account for just over a third of all train incidents reported under RIDDOR<sup>6</sup>. Available intelligence indicates an improving position with a marked reduction in vandalism risk in recent years. Train incidents involving vandalism reported under RIDDOR fell steadily between 2000 and 2005, with a 62% reduction in the numbers of trains running into serious obstructions over this five year period<sup>5, 6</sup>. Since then the downward trend has levelled off, but emerging industry data for the first half of 2008 is encouraging, indicating a further reduction in line of route vandalism compared with the previous year<sup>7</sup>.

The downturn in the reported incidence of lineside obstruction is reflected in the downward trend in vandalism as a train accident precursor in the RSSB precursor indicator model (PIM). The catastrophic risk posed by objects on the line due to vandalism, as modelled by the PIM, had fallen by more than three quarters from its March 2002 baseline level by June 2008, and at a faster rate than the decline in the overall PIM value. By 2006, vandalism contributed only a third of the total PIM risk from obstruction of the line, compared with a half previously<sup>7</sup>. In 2007, however, there was a marginal increase in the PIM contribution from objects on the line due to vandalism.

Although vandalism involving stone throwing, arson, and obstruction of the line have reduced considerably, cable theft, fuelled by rising world copper prices, has emerged as a major challenge for the industry in tackling unauthorised access and vandalism, both on the line of route and in depots.

More detail on the extent of and trends in route crime risk can be found in the supporting document to this strategy<sup>2</sup>.

### **3. The current picture and future influences**

In recent years there has been a high level of co-ordinated effort by rail industry dutyholders, the RSSB, and British Transport Police (BTP), together with HMRI, to tackle route crime risk. Efforts have focused on enhancement and better maintenance of lineside security; reducing the availability of materials for vandalism; deterrent and complementary policing; and public awareness, education, and diversionary initiatives. HMRI has been actively engaged in partnership working with the industry at both national and local level, and has carried out inspection work to monitor management of lineside security and lineside materials on Network Rail managed infrastructure, and with train operators on mitigating trespass risk at stations.

Addressing community safety risks, which include trespass, vandalism, and suicide, is a key economic and reputational issue for the rail industry. The operational delays and associated costs of route crime; its effects on public confidence in rail travel; and the potential for catastrophic risk to passengers in the event of a derailment caused by vandalism, should act as powerful drivers for the industry to continue to address this issue. Recent increases in cable theft are also acting to drive forward industry efforts to reduce unauthorised access to the infrastructure. Infrastructure enhancement projects planned for the next five years should provide the opportunity to reduce route crime risks at the design stage, for example, improved risk controls to deter station trespass (platform end barriers, CCTV, improved lighting and signage) during major station refurbishment projects.

Industry figures estimate that trespass and vandalism incidents alone resulted in over 1.3 million train delay minutes in 2006, with an estimated delay cost of £60 million.<sup>9</sup> Industry estimates in 2004<sup>10</sup> put total costs from trespass and suicide combined at £484 million annually, with suicides accounting for well over half of this (compared with total costs from objects on the line of £79 million).

HMRI and the industry recognise, however, that recent reductions in route crime may be fragile, due to the inherent difficulties in influencing public behaviour. Looking forward, there is potential for route crime risk to increase in line with expected increases in both traffic levels and passenger numbers.

---

<sup>9</sup> RSSB Public behaviour research topic plan June 2008

<sup>10</sup> RSSB research project T063 Trespass and Vandalism cost modelling – project report March 2004

With the predicted increase in passengers on Britain's railways, trespass (particularly via stations) could rise further, and increased and higher speed traffic levels are likely to present an increased challenge to infrastructure controllers in accessing the lineside in order to clear potential ammunition available for use by vandals and maintain damaged fencing. A continuation of the current economic downturn is also likely to have an adverse impact on route crime risk, with potential increases in unauthorised access onto the lineside in connection with theft and suicide attempts. These broader societal factors reinforce the need for the industry to continue to focus effort on route crime, and support continued HMRI activity in this area.

How rail industry dutyholders manage route crime risk in the medium term will also be influenced by a number of current and emerging issues, which will also inform HMRI's future strategic approach:

- the 2007 Department for Transport (DfT) Rail White Paper<sup>11</sup> acknowledged that delivering improvement in safety risks to third parties is a challenge, given the essentially open nature of the network. However, it also recognised the legal duty of care on the rail industry towards trespassers, and advocated use of robust cost-benefit analysis of preventative measures balanced by vigorous prosecution of offenders;
- infrastructure enhancements already planned for the next five years will need to consider reasonably practicable means of reducing trespass and vandalism risk at the design stage;
- industry responses to the RSSB's safety decisions programme<sup>12</sup> considering how the test of reasonable practicability should be applied for risks outside its direct control, where individuals may willingly accept the risk. In the past the industry has argued for reduction in the value of preventing a fatality (VPF), differentiating between VPFs for a child trespasser, adult trespasser, and suicides. ORR has made clear that it expects all fatalities and injuries to be treated the same in any cost benefit analysis and decision making on reasonable practicability, and will continue to engage with the industry on this;
- the inclusion of quantitative trajectories in future industry strategic safety planning, and outputs of the national strategic community safety steering group as well as the local tactical community safety partnership groups;

---

<sup>11</sup> Department for Transport Rail White Paper 'Delivering a sustainable railway' 2007

<sup>12</sup> RSSB 'Taking safe decisions – how Britain's railways take decisions that affect safety' 2008



will affect how route crime risk is prioritised and managed within the community safety arena on the mainline network;

- industry focus on meeting the high level output specification (HLOS) safety metrics of 3% reduction in passenger and workforce risk between 2009 and 2014 will not make a significant contribution to further reductions in route crime risk. However, dutyholders still need to meet their legal obligations towards protection of the public, so far as is reasonably practicable;
- on-going developments specifically within Network Rail, including implementation of revised company standards, and changes in approach to infrastructure (including fencing) inspection, maintenance and enhancements (for example as a result of its efficient engineering access programme), are also likely to affect how route crime risk is managed on Network Rail Controlled Infrastructure;
- wider Government initiatives on community safety are likely to impact on and involve rail industry stakeholders. Further initiatives to tackle criminal and anti-social behaviour could impact on route crime risk, for example changes in policy on deterrent sentencing and restorative justice, or wider use of dispersal orders from town centres, which could increase trespass risk at stations. Other possible areas include expansion of and strengthening roles of local community disorder partnership groups (CDPG); and any further targets arising from the Government's national suicide prevention strategy, which aimed for a 20% reduction in suicides by 2010;
- the European agenda – the adoption of common safety indicators (CSIs) and common safety targets (CSTs) for trespass is likely to have limited impact over the next five years on how the domestic rail industry records and manages route crime risk. Only trespass deaths/serious injury involving being struck by a train are captured by CSIs; suicides and accidents caused by deliberate acts, including vandalism, are excluded. The setting of a CST for unauthorised persons on the infrastructure (excluding suicide) by 2010 is unlikely to be a major driver for further improvement, as Britain's performance currently compares favourably with that of most other member states. Reporting of CSIs and setting of CSTs should, however, help the industry in benchmarking its performance against the rest of Europe. However, the profile of route crime within the European Rail Agency (ERA) is set to increase, following recent

recognition of the significant contribution that public behaviour, and in particular suicides, has on rail accidents across member states. In its 2008 report<sup>13</sup> ERA has committed to take initiatives to stimulate further research, and exchange information on good practice on mitigation measures for trespass and suicide.

#### **4. ORR's regulatory strategy for 2009-10 and beyond**

From 2009-10, a number of key themes in ORR's draft corporate strategy for 2009-14<sup>14</sup> will guide our regulatory priorities as both the economic and safety regulator:

- better promoting the interests of customers of railway services;
- striving for ever better value year on year;
- promoting ever better long-run asset management (including people);
- promoting the development of effective partnerships within the industry; and
- investing in our relationships with stakeholders and improving our capability to carry out our roles effectively.

HMRI's strategic priorities on route crime reflect these key themes, particularly those on asset management and partnership working, and are driven by the core principles of seeking continuous improvement in health and safety performance so far as is reasonably practicable, and a risk based approach to safety regulation.

#### **5. HMRI's strategic priorities on route crime**

The long term aim of this strategy is to support and influence industry dutyholders to work together to become even more responsive to changes in route crime risk; to improve how they target and evaluate the effectiveness of existing and new risk reduction measures; and so achieve sustained and cost effective route crime risk reduction. Given that complete elimination of route crime will not be practical, particularly via legitimate access points onto the infrastructure (such as stations), we believe that better targeting and evaluation of risk control measures will be particularly important, to ensure that finite resource is deployed to best effect. We believe that the industry should, over the next five years, move forward in a number of key areas, in

---

<sup>13</sup> Railway Safety Performance in the European Union 2008 – A biennial report to the European Rail Agency

<sup>14</sup> ORR Regulating Britain's Railways in 2009-14: A consultation July 2008

order to gain a better understanding of what does and doesn't work in tackling route crime. These include:

- more reliable reporting of route crime incidents, particularly trespass incidents/near misses and better understanding of limitations in data quality, to underpin strategic planning and allocation of resources;
- more systematic sharing of intelligence between infrastructure controllers, BTP, train and station operators, and also with local communities (for example more consistent engagement with NHS suicide prevention groups); and
- building on the above improvements in information and intelligence, better targeting and evaluation of risk reduction measures, particularly in areas where there are indications of an increasing risk, such as trespass risk via stations, and suicides/attempted suicides.

Within this long term aim, our key strategic priorities on route crime are:

- to direct our work activities so that they effectively contribute to maintenance of, and where reasonably practicable, further sustained reductions in route crime risk with a particular focus on;
  - catastrophic risk to passengers in the event of a derailment arising from deliberate obstruction of the line by vandals; and
  - the risk of children and young people obtaining unauthorised access to the lineside;
- to ensure that our work activities complement but also add value to those carried out by other industry stakeholders; and
- to continue to be in an informed position and engaged with industry dutyholders at the appropriate levels, so as to most effectively influence industry priorities and work plans on route crime, and monitor their implementation.

## **6. Delivery of HMRI's route crime strategy**

### **Where will we focus our effort?**

Reducing the potential for catastrophic (high consequence, low frequency) incidents will continue to be a key driver in HMRI's work in 2009-10. This fits with ORR's draft corporate strategy and with the industry focus on prevention of major accidents in its strategic safety plans, in support of the requirements of the Rail Safety Directive.

However, the relative contribution that route crime makes to total catastrophic risk on the mainline network, as measured by the RSSB PIM, is small (objects on the line due to vandalism contributed only 3.6% to the overall PIM value for catastrophic risk on the mainline network by June 2008), and accordingly HMRI's efforts in this area need to be proportionate.

HMRI's work on route crime will continue to focus on monitoring progress by the industry in managing the risks, with particular focus on the risks to children and also derailment risks arising from obstructions placed on the line.

Continuation of effective partnership working with key industry stakeholders on addressing route crime risk, at both national and local level, will be key in delivering our strategic objectives. ORR will also pursue these strategic priorities with stakeholders beyond the rail industry, for example in discussions with the Home Office on sentencing and penalty reviews, and in legislative consultations.

Both the railway industry and HMRI recognise that adult trespassers are, in most cases, aware of a risk from unauthorised access to the railway. We also recognise the societal expectation that more protection should be afforded to vulnerable groups, particularly children but also those most at risk of suicide (for example patients at mental health units close to the railway), as well as to passengers and railway staff. Delivery of HMRI's route crime strategy will reflect these considerations.

### **How will we deliver our strategic priorities?**

A number of broad principles will guide how we will deliver our strategic priorities on route crime in 2009-10. We will:

- devise risk and evidence based interventions with dutyholders, to ensure that effective strategies are in place to control route crime risk, in particular action to reduce, so far as is reasonably practicable, the risk to children, and risk to passengers from train derailment arising from vandalism;
- seek best available information and intelligence on route crime risk, and ensure that it is used effectively to inform targeted programmes of work where HMRI can add value and make a difference to risk reduction;
- ensure recommendations relating to the management of relevant risks from investigations of recent major incidents; from Rail Accident Investigation Branch (RAIB) investigations, as well as other HMRI and industry investigations are satisfactorily addressed;

- work proactively with and support railway industry dutyholders and stakeholders (e.g. employee representatives, BTP, judiciary) in initiatives to tackle route crime risk, including on community and education initiatives, and on stronger deterrence;
- support and monitor industry research into improving reliability of route crime data and intelligence, and the development of new approaches to, and evaluation of, route crime risk reduction measures; and promote the use of appropriate research findings to inform future work by industry and by HMRI;
- promote transparency and consistency in HMRI's operational work and regulatory approach to route crime by production of clear guidance on current standards and enforcement issues where needed;
- undertake proportionate enforcement action on route crime in accordance with ORR's enforcement policy statement; and
- be an Inspectorate capable of delivering the strategy with sufficient expertise, competence, resourcing and management arrangements to do so.

The relative priority and resources allocated to specific work streams to deliver our strategic priorities is determined each year as part of HMRI's overall business planning process.