

Safety at Level Crossings: PACTS' submission to the Transport Select Committee, September 2013

Summary

- Level crossings are the largest single risk of catastrophic train accidents in the UK;
- Level crossing risk is reasonably well controlled in the UK compared to other countries;
- Continued effort is needed to maintain, and where appropriate improve, UK safety performance;
- Network Rail has increased its focus and spend on level crossing safety;
- There should be a continued focus on eliminating level crossings where reasonable alternatives exist. This requires effective co-operation between Network Rail, highways authorities and local communities. An updated legislative structure would help.
- There are different types of level crossings and a variety of measures may be appropriate to improve safety;
- Whilst the rail sector has the main responsibility and budgets for level crossing safety, other bodies, including local authorities have important roles to play;
- Rail is already considerably safer than road transport and Government should consider the cost-effectiveness of safety measures across the modes.

Introduction

The Parliamentary Advisory Council for Transport Safety ([PACTS](#)) is a registered charity and an Associate Parliamentary Group. Its charitable objective is "To protect human life through the promotion of transport safety for the public benefit". Its aim is to advise and inform members of the House of Commons and of the House of Lords on air, rail and road safety issues. It brings together safety professionals and legislators to identify research-based solutions to transport safety problems having regard to cost, effectiveness, achievability and acceptability.

PACTS believes the issue of safety at level crossings to be important and topical and welcomes the Committee's inquiry. With some 7,500 to 8,000 level crossings in Great Britain, level crossings represent the largest single risk of catastrophic train accident on Britain's rail network. In addition, despite a generally good rail safety record, there are around nine people killed in level crossing accidents each year, mainly pedestrians and vehicle users.

The inquiry is also important because safety at level crossings is a complex matter and requires coordinated action from Network Rail, RSSB, ORR, TOCs, the highway authorities, the local police, British Transport Police and other agencies. The law governing level crossings is seen as outdated and the Law Commission is considering reform.¹ Scrutiny by the Committee may help to ensure that all parties contribute and in a timely fashion.

¹ http://lawcommission.justice.gov.uk/docs/cp194_Level_Crossings_Consultation.pdf

This submission follows the questions listed in the Committee’s inquiry terms of reference²

Are current safety measures at level crossings adequate? How should they be improved?

Accident data suggest that, by international standards safety, risk at level crossings is relatively well controlled in the UK. The Rail Safety and Standards Board (RSSB) reports³ that there were four pedestrian fatalities and five road vehicle occupant fatalities on Great Britain’s mainline railway in 2012/13. There were ten collisions between trains and road vehicles, rather fewer than the 10-year average of 13. The European Railway Agency reports⁵ that the UK has the lowest fatality risk at level crossings in the EU (19 deaths per billion train kilometres). The worst performing country in the EU had a fatality risk more than 28 times higher. The UK has a slightly lower density of level crossings than the EU average (41 crossing per 100 kilometres of track, compared to the EU average of 50)⁴

Table 1 presents aggregated data on level crossing fatalities and all road fatalities in the European Union.⁵ Level crossing fatalities account for just over 1% of all road user fatalities in the EU.

Fatalities by type	Year				
	2007	2008	2009	2010	2011
Level crossing fatalities	504	380	405	359	294
All other road fatalities	42,000	38,550	34,400	30,500	30,200
Percentage of level crossing fatalities	1.2	0.9	1.2	1.2	1.0

Table 1: Level crossing accident fatalities compared to all other types of road accidents in the EU

In Great Britain in 2012, level crossing fatalities accounted for around 0.5% of the 1,754 road accident fatalities. In recent years, particularly since 2007, road accident fatalities have fallen sharply in Great Britain. This raises expectations about improvements in safety for other modes.

The Office of Rail Regulation reports⁶ that Network Rail is on-target to meet its 25% reduction in level crossing risk between 2009 and 2014, as measured by its own model. Our understanding is that this has been achieved by a programme involving both level crossing closures and improved risk mitigation measures. ORR noted, however, that some of Network Rail’s level crossing risk assessments were poor and did not identify the best risk controls.

Though the contribution made by level crossings to overall pedestrian, cyclist, horse-rider and motor vehicle user safety risk is very small, it is striking that media/public interest in level crossing accidents is sometimes very much greater than in equivalent incidents not involving the railways.

² <http://www.parliament.uk/business/committees/committees-a-z/commons-select/transport-committee/inquiries/parliament-2010/safety-at-level-crossings/>

³ RSSB Annual Safety Performance Report 2012/13

(http://www.rssb.co.uk/SPR/REPORTS/Documents/ASPR_2012-13_FullReport.pdf)

⁴ http://www.era.europa.eu/Document-Register/Documents/Level_crossing_safety_EU_2012.pdf

⁵ European Railway Agency “Intermediate report on the development of railway safety in the European Union”

(<http://www.era.europa.eu/Document-Register/Documents/SPR%202013%20Final%20for%20web.pdf>)

⁶ <http://www.rail-reg.gov.uk/upload/pdf/health-safety-report-2013.pdf>

Level crossings also present a risk to the safety of rail passengers and on-board rail staff, as the incident at Ufton Nervet in 2004 demonstrated: the train driver and five rail passengers died. Despite this, rail travel is around 500 times safer than cycling or walking, and 30 times safer than using a car, when measured in terms of fatalities per million kilometres travelled. It is important to consider relative safety levels across the transport modes and the overall cost-effectiveness of measures when deciding on safety investments.

In PACTS' view, there is no room for complacency about safety at level crossings. New equipment, improved management techniques and investment make higher safety standards possible. And expectations of greater safety on the part of the public demand further improvements. The challenge for the railway is to deliver these at an acceptable price, both in terms of the capital costs involved and (often) reduced railway efficiency and convenience for road users.

In addition to bridges and underpasses what other cost-effective measures can be introduced to replace or improve safety at level crossings?

Replacing level crossings with road bridges/underpasses has economic benefits for both local communities and the railway, but the predominant benefit is on the non-railway side. Uninterrupted road-traffic flows and reduced delays are the principal benefits on the "road" side. Reduced maintenance and staff costs and (marginally) increased railway capacity (by eliminating train-speed restrictions necessitated by level crossings) are the principal benefits to the railways. One of the challenges we face in improving level crossing safety is ensuring that those who benefit make an appropriate contribution to the costs of improvements.

The option of simply eliminating level crossings – particularly where there are already convenient alternative routes over/under the railway – is frequently cost-effective but can be controversial. An example was reported recently:

The Aristotle Lane footpath level crossing in Oxford has been the subject of a determined resistance to the closure of the level crossing on safety grounds. Despite an alternative route via a nearby over-bridge, closure of the crossing was not secured through the public inquiry into the upgrading of the Oxford-Bicester railway. Now, because Network Rail and Chiltern Railways (the principal beneficiary of the upgrade) continue to maintain that closure is necessary on safety grounds, one of those opposed to closure has submitted a planning application for an additional track across Aristotle Lane level crossing. This is to force the planners to face up to his point of view that planning permission is required for the works proposed by Chiltern Railways and Network Rail. (Source: LXInfo.org 2 September 2013)

Despite such challenges, Network Rail is reported⁷ to have closed 700 level crossings since 2009, with 117 crossings closed in 2012/13.

PACTS believes that the established rights and reasonable needs of the public and business should be properly considered when closure of a level crossing is contemplated. Closure should not be seen

⁷ http://www.rssb.co.uk/SPR/REPORTS/Documents/ASPR_2012-13_FullReport.pdf page 183

as an easy option. On the whole, however, the procedures currently seem to make closure a difficult and protracted option and local authorities which would tend to err on the side of safety with respect to roads, may oppose closure of level crossings.

Level crossings vary in type and the risks associated with each location may also vary. As such, a variety of methods will be required to improve safety across the network. Annex 1 details the various types of level crossing in use.

Safety risk can be reduced by “upgrading” the crossing type from, for example, an automatic open crossing to an automatic half-barrier crossing. But “upgrading” is not necessarily cost-effective. It can be expensive, and the expense disproportionate to the risk reduction achieved. Reducing the costs associated with upgrading by, for example, greater standardisation and improved project management, would be helpful.

The Rail Accident Investigation Branch suggests that at some locations there may be comparatively inexpensive measures which could improve level crossing safety. Its 2012 Annual Report⁸ identified a range of local factors that might influence (i.e. have the potential to improve) the behaviour of crossing users. These include:

- local obstructions to the sighting of trains;
- environmental conditions such as traffic noise and visibility at night;
- gates left open at user-worked crossings;
- anxiety to cross the line to catch a train (station crossings);
- visibility of road traffic signals (e.g. impact of glare from sunlight); and
- the audibility of train horns.

Knowing the specific local conditions, circumstances and user behaviour can be important. In this respect the appointment by Network Rail of dedicated level crossing managers is a welcome development.

How should expenditure on improving safety at level crossings be prioritised in relation to other demands on the rail budget?

Network Rail controls a very large budget – almost £30bn for CP5. However, it is under considerable pressure from the Government, ORR and others to deliver the requirements of Railway Investment Plan while also improving efficiency. Some £67m has been allocated some for level crossing safety.⁹ Within the context of the CP5 settlement, given the number of fatalities each year and the potential for catastrophic failure, PACTS feels this level of investment in level crossing safety is about right.

The mainline railway uses sophisticated models to understand the risks it manages and to prioritise risk reduction. We would urge the Government to bear in mind the relative levels of risk across the modes in determining policy and investment levels.

⁸ http://www.raib.gov.uk/cms_resources.cfm?file=/121213_AR2011_Section_1.pdf

⁹ An additional £10m is allocated for Scotland.

Because most accidents at level crossings result from user behaviour (such as misjudgements, errors and wilful misuse) rather than technical or engineering failures, it is not self-evident that major expenditure on technical improvements will significantly reduce risk.

Getting a better understanding of the reasons for user behaviour is essential. The Rail Accident Investigation Branch's (RAIB's) continuing investigations into level crossing accidents provide a good basis for action. RAIB's Chief Inspector has observed¹⁰ that the RAIB has "made repeated recommendations concerning realistic and rigorous assessment of the risks at individual crossings; understanding the local and human factors that may influence the risk to the users, and the implementation of improvements identified during risk assessments and inspections. Not all our recommendations require a long lead time or significant resource. I urge both Network Rail and RSSB, who are carrying out related research on crossings, to review the resources committed to this work and wherever possible ensure that the individual elements of their programmes that will address these risks are completed at the very earliest opportunity."

The RSSB has a significant research programme, funded by the Department for Transport, into these issues. Research published in 2011 investigated the signs, signals, markings and other road design elements that best convey the information road users need when approaching public road level crossings. The second phase of this research will be published in May 2014. Current research projects include one addressing the signage provided at private level crossings and another addressing the causes of pedestrian accidents at level crossings and potential solutions.

We believe it important that this research is expedited and translated into practical action as soon as practicable.

Is Network Rail giving sufficient priority to improving safety at level crossings?

Network Rail is reported to be on course to deliver a 25% reduction level crossing risk between 2009 and 2014. We understand that the company is committed to achieving further risk reductions after 2014.

It is apparent that Network Rail has increased its management focus on this issue and has allocated increased resources accordingly. With so many level crossings and the inherent risks associated with many of them, the test will be whether Network Rail can sustain its focus and effective management.

Level crossing risk is not only a matter for Network Rail and the communities near level crossings on the national network. There are level crossings on heritage and light railways that require a similarly robust approach to risk management.

¹⁰ RAIB Annual Report 2012 http://www.raib.gov.uk/cms_resources.cfm?file=/121213_AR2011_Section_1.pdf

Is Government policy and regulatory action by the Office of Rail Regulation (ORR) in relation to safety at level crossings adequate? What more should the Government and ORR do?

We have already drawn attention, in our response to question 1, to what the ORR's annual health and safety report says about Network Rail's management of level crossing risk. The report includes few details of the means by which the Regulator reached its views, and it is therefore difficult to draw conclusions about either the extent or effectiveness of its regulatory actions.

The ORR's policy in respect of level crossings is set out in its Railway Safety Publication 7¹¹. The policy says that ORR seeks to influence duty holders and others to reduce risk at Britain's level crossings through means ranging from advice to formal enforcement action. ORR checks that preventive and protective measures are implemented. The ORR says that risk control should, where practicable, be achieved through eliminating level crossings in favour of bridges, underpasses or diversions. Where elimination is not possible, ORR aims to ensure that duty holders reduce risk so far as is reasonably practicable¹².

The ORR acknowledges its role in providing clear advice and enforcing relevant legislation – including that which relates to level crossings. The ORR exercises the powers of the Secretary of State for Transport in making level crossing orders under the Level Crossings Act 1983.

The ORR takes the view that it is neither effective nor efficient for rail companies alone to be responsible for managing safety at level crossings. It says that decisions about level crossings should involve rail companies, traffic authorities and other relevant organisations as early on as possible. Relevant authorities should recognise the wider benefits that safety improvements at level crossings (for example, replacing them with bridges) can bring about, particularly for road users. If wider benefits can be achieved, the appropriate funding bodies should agree on how the costs of making safety improvements will be met.

The ORR is also committed to helping people understand the importance of the safe use of level crossings. The guidance 'Using Level Crossings Safely' is available on ORR's website.

We are unaware of any specific recent statement of Government policy in respect of level crossing safety. It is not mentioned, for example, in the March 2013 Command Paper "Reforming our Railways". We note that the Government's high-level output specification (HLOS) for 2014-19 allocates £67m for level crossing improvements and closures. Though little in the context of overall Government expenditure on railways, we believe it significant that level crossings have been singled out for investment.

How should the legislation governing level crossings be updated?

This issue has been investigated jointly by the Law Commission and the Scottish Law Commission. They published a consultation paper, containing proposals for law reform, in July 2010.

¹¹ Level Crossings: A guide for managers, designers and operators (http://www.rail-reg.gov.uk/upload/pdf/level_crossings_guidance.pdf)

¹² This is a legal ruling that, broadly, requires action to reduce safety risk until the point is reached where the cost of further action would be grossly disproportionate to the value of the safety improvement achieved.

The provisional proposals put forward in the consultation paper represented the Commissions' initial view about how the law should be reformed. The two Commissions then approved the instruction of Parliamentary Counsel to prepare a draft Bill and Regulations under the Health and Safety at Work etc Act 1974, to give effect to their proposals.

According to the Law Commission's website, Parliamentary Counsel have drafted a Bill and Regulations, and the Commissions are in the final stages of drafting a report which contains detailed recommendations, together with explanatory notes for the Bill and Regulations, an analysis of the consultation responses received and an economic impact assessment.

Our expectation is that the Law Commissions' report will recommend sweeping away and/or updating much, if not all, of the existing legislation governing level crossings. We hope that the revised legislative approach will encourage greater collaboration between rail and road authorities in managing level crossing risk. We are, though, concerned at the time that has elapsed since the Law Commissions' consultation exercise, and trust that their final report will emerge very soon.

How should public awareness of safety at level crossings be improved?

Network Rail has done much to publicise the risks associated with level crossings. In addition to television advertisements, they have provided educational resources for use in both primary and secondary schools, and are currently running a campaign aimed at young people.

We understand that analysis of Network Rail's television campaigns showed that they were successful in increasing public awareness of the issue. Assessing the effectiveness of such campaigns is much harder. We know of no clear evidence on the extent to which increased public awareness of a safety issue results in changed behaviour or improved safety.

We suggest that the Network Rail work with the road safety professionals in DfT, including the THINK! team, in local authorities, the emergency services and elsewhere, who have experience of road user safety campaigns. Many of the messages and techniques relevant to level crossing safety will be applicable to road safety. These other authorities must share the responsibility for level crossing safety, even if the expenditure comes from Network Rail.

The mechanisms by which Network Rail, and other railway operators, become aware of land-use changes in the vicinity of level crossings need to be robust. Planning authorities need to recognise circumstances where new developments might increase pedestrian, cycle or road vehicle use of level crossings, and take steps to alert the railway companies involved.

Annex 1

Level crossing categories¹³

Level crossings take many forms depending on whether they are on a public or private road, or for vehicle, horse and/or pedestrian use. There are two broad groups:

- Active crossings: the road vehicle or pedestrian is warned of the approach of a train through closure of gates or barriers and/or by warning lights and/or alarms.
- Passive crossings: no warning of a train's approach is given other than by the train driver who may use the train horn. The onus is on the road user or pedestrian to determine whether or not it is safe to cross the line. Instructions for proper use must be provided at each location, along with other appropriate signage.

		Crossing type	Number ¹⁴	
Passive		User-worked crossing with telephone	UWC-T	1648
		User-worked crossing	UWC	679
		Open crossing	OC	50
		Footpath crossing	FP	2547
Active	Manual	Manual controlled gate	MCG	181
		Manually controlled barrier	MCB	211
		Manually controlled barrier with obstacle detection	MCB-OD	7
		Manually controlled barrier with closed-circuit television	MCB-CCTV	410
		Automatic half-barrier	AHB	450
	Automatic	Automatic barrier locally monitored	ABCL	53
		Automatic open crossing locally monitored with barrier	ABCL-B	5
		Automatic open crossing locally or remotely monitored	AOCL	105
		User-worked crossing with miniature warning lights	UWC-MWL	101
		TOTAL		

- Generally, automatic barrier and manually controlled crossings (including those monitored by CCTV) are installed on public roads with high levels of traffic.
- Automatic half-barrier crossings, which cause less disruption to road traffic for each train traverse, also tend to be heavily used and, compared with manually controlled crossings, have a relatively high average risk per crossing. Automatic open crossings, which have lights but no barriers, have a higher average risk from collisions with road vehicles.
- Passive crossings for road vehicles are generally used in rural areas. These crossings tend to be either on private roads, for example to provide access between a farm and fields, or on roads that provide access to a farm. In general, user worked crossings tend to be comparatively high risk relative to the volume of traffic passing over them.

¹³ Adapted from http://www.rsb.co.uk/SPR/REPORTS/Documents/ASPR_2012-13_FullReport.pdf (page 181)

¹⁴ On Network Rail controlled infrastructure