

Level crossings

2. Our view of the risk

What the risk is and who it affects

Level crossings are locations where the railway intersects with public routes and where members of the public, road users and railway operations interact directly. Their use gives rise to significant potential for injury and harm, particularly to non-railway users. While Britain's mainline railway is among the safest in Europe, level crossings remain one of the greatest sources of risk to public and passenger safety on the rail network.

Responsibility for controlling level crossing risk rests primarily with railway infrastructure managers (such as Network Rail), working with train operators, local authorities, highways authorities and users of the crossing. Effective cooperation and collaboration between these parties is critical, as each plays a role in managing risk and the contribution of each varies depending on the type and context of the crossing.

The majority of risk at level crossings is borne by members of the public using them, with pedestrians and occupants of road vehicles most frequently involved in incidents. Level crossing incidents also have the potential to affect train occupants and railway operations, particularly where collisions or near misses occur.

How harm can occur at level crossings

At level crossings, users are assisted to cross safely by the layout of the crossing and by equipment such as gates, barriers, warning lights, alarms and signs. The level of protection provided varies significantly between crossing types. Some crossings rely on active warnings and

physical barriers, while others rely more heavily on users making their own judgement about whether it is safe to cross.

Risk increases where users misjudge the approach of a train, ignore or misunderstand warnings, or deliberately misuse the crossing. Behavioural factors are therefore a significant contributor to risk, particularly at crossings that rely on users' vigilance or compliance.

Factors influencing level crossing risk

Risk at level crossings is not static and can change over time. It is influenced by a range of factors, including:

- changes in train frequency, speed and quietness;
- increases in road traffic volumes;
- changes in pedestrian behaviour, including distraction from electronic devices;
- larger and quieter farm machinery;
- changes in the local environment, such as new housing or schools; and
- the mix and volume of users at the crossing.

Level crossings also operate within a wider system beyond the railway. For example, barrier down-time on public road crossings can affect traffic flow and influence user behaviour, with potential safety and economic consequences.

Differences in risk by crossing type and sector

Different types of level crossing present different risk profiles. On the mainline railway, the level of protection afforded to users varies between passive, user-worked, manually controlled and automatic crossings. Crossings that rely more heavily on user judgement generally present higher risk than those with active warnings or barriers.

Evidence from the RSSB Safety Risk Model, and incident data shows that:

- the risk of collisions between trains and road vehicles is greatest at automatic half-barrier (AHB) crossings and variations of user-worked crossings (UWC), user-worked crossings with telephone (UWC-T) and user-worked crossings with miniature stop lights (UWC-MSL);
- the greatest proportion of the risk to pedestrians is at footpath crossings rather than

from pedestrian use of any other type of crossing.

Given the relative risks to users at different types of level crossings on the mainline railway, ORR will target its efforts on promoting improved risk control at footpath crossings, user-worked crossings and automatic half-barrier crossings.

Risk profiles also vary between sectors:



Refer to the Appendix for a detailed sector breakdown.

Why risk must be actively reviewed

Since risk at level crossings can change over time, regular reassessment is essential.

Reassessment should consider whether existing controls remain effective and whether changes are needed, including closure, alternative crossings arrangements or enhanced protection.

Technological developments continue to expand the range of options available to manage risk, making ongoing review a critical part of effective level crossing management.

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