Consulting

Models & Tools to Manage Level Crossing Risk

Background

Level crossings provide a means for vehicles, pedestrians and animals to cross over railway lines. They exist in countries all over the world and in many different forms.There are around 7,000 level crossings in active use on Network Rail managed infrastructure; of these approximately 1,500 are on public vehicular roads and the remainder are where public footpaths, bridleways and private roads/tracks cross the railway.

The Road-Rail Interface Safety Group (R-RISG), which is facilitated by RSSB and chaired by Network Rail steers the work of the rail industry in increasing awareness of the hazards and risk at level crossings, bridge strikes and other incursions by motor vehicles onto the railway. It also examines public policy and makes recommendations to simplify and consolidate regulatory matters covering safety at level crossings, including road traffic and highway matters, planning guidelines for development and the effective prosecution of offenders in the interest of public safety.

The Challenge

Over 90 % of incidents in the previous five years on level crossings has been a result of user misuse in the form of error or abuse - the remainder being due to other causes such as equipment failure, reduced visibility or railway operator error.

Typical examples of user error include incorrect knowledge of operation, misjudging the time it takes the train to reach the crossing or making incorrect assumptions regarding who has priority of use, direction of travel or the presence of second train approaching usually from the opposite direction.

Typical examples of user abuse include users driving around half-barriers, users crossing when the crossing lights are red, users not requesting the signaller's authority to cross (where required) and leaving gates open after use.

How We Can Help

RSSB in partnership with Network Rail have developed the All Level Crossing Risk Model (ALCRM), which is responsible for managing level crossings on UK rail infrastructure.

The ALCRM is a web-based risk tool used by Network Rail, to support it in managing the risk to crossing users, passengers and rail staff by assessing the risks at each crossing and targeting those crossings with the highest risk for remedial measures.

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Key Outputs

The ALCRM is being used by Network Rail to assess the risk at their crossings and is a key part of its level crossing strategy.

The 'Enhanced Specification' has been used to facilitate a technical audit by the Office of Rail Regulation, and is regularly updated to reflect minor changes made to the model.

The ALCRM brings three distinct advantages to the rail industry:

- it supports the on-going collection and collation of site data to ensure that level crossings are actively and correctly managed
- it allows the industry, for the first time, to compare the risk at completely different types of crossings in a consistent way so that resources are used to best advantage
- it underpins the formulation and review of the industry's level crossing strategy

Lincoln Level Crossings

Lincoln city centre is divided by two level crossings. They are there to protect safety and most people use the crossings properly but often people are seen running around lowering barriers or even climbing over them. This is incredibly dangerous and the misuse at these crossings needed to be urgently addressed.

The Lincoln level crossings are already the highest-safety design available and it is impossible to close them without the proposed east-west road link. Therefore, Network Rail has developed designs for two new footbridges which will:

- reduce the risk of misuse by separating pedestrians and rail traffic
- reduce pedestrian congestion
- improve pedestrian flow around the city

Network Rail are being advised by the City of Lincoln Council, Lincolnshire County Council, University of Lincoln, Lincoln Business Improvement Group and the Brayford Trust.

Kirknewton Level Crossing

Kirknewton level crossing in West Lothian, Scotland is to be closed while Network Rail carry out a major upgrade to the site, consisting of installing a new double barrier system.

The new system will be CCTV monitored and will utilise object detection technology to reduce the risk of a collision should vehicles or pedestrians attempt to cross at danger.

The new level crossing will greatly enhance safety at Kirknewton and discourage abuse of the crossing.

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