

TRANSPORT AND WORKS ACT 1992

**TRANSPORT AND WORKS (INQUIRIES
PROCEDURE) RULES 2004**

**THE NETWORK RAIL
(ESSEX AND OTHERS
LEVEL CROSSING REDUCTION)
ORDER**

MARK BRUNNEN

**REBUTTAL OF
PROOF OF EVIDENCE**

-OF-

MS SUE DOBSON & MS KATHERINE EVANS

Document Reference	NR27/4/2
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I have reviewed the Proofs of Evidence of Ms Sue Dobson (ELAF) and Ms Katherine Evans (ELAF) submitted on 20 September 2017. I have the following comments on the evidence as presented.

1. Network Rail Statistics

- 1.1. In Section 2 of her Proof of Evidence (page 2), Ms Dobson implies that Network Rail's statistics relating to the number of level crossings on the Anglia Route are confused.
- 1.2. To clarify: there are 774 level crossings on the Anglia Route and not 858.
- 1.3. ALCRM contains 858 separate entries relating to level crossings on the Route. The difference stems from the way that level crossings are modelled within ALCRM. As paragraph 15 (NR26) explains, some level crossings comprise of more than one pair of gates or stiles. This allows for different types of access over the level crossing, separating vehicular and pedestrian usage. Both elements import their own unique risks. Each pair of gates and/or stiles (and the crossing between them) is risk assessed independently and each has its own entry in ALCRM. For this reason, the 774 level crossings on the Anglia Route generate 858 entries in ALCRM.

2. RSSB's Safety Risk Model

- 2.1. In Section 2 of her Proof, Ms Dobson questions the factors contributing to total railway system risk and the extent to which level crossing risk is significant within this.
- 2.2. Network Rail's level crossing safety strategy (NR17: Transforming Level Crossings, 2015-2040) refers to the Rail Safety and Standards Board (RSSB)'s Safety Risk Model (SRM) v8.1, details of which are publically available on RSSB's website.¹
- 2.3. RSSB's "Safety Risk Model: Risk Profile Bulletin, version 8.1" states:

"2.1 Objectives

The primary objectives of the SRM are:

- *To provide an estimate of the extent of the current risk on the railway.*
- *To provide risk information and risk profiles relating to the railway."*

"2.2 Overview

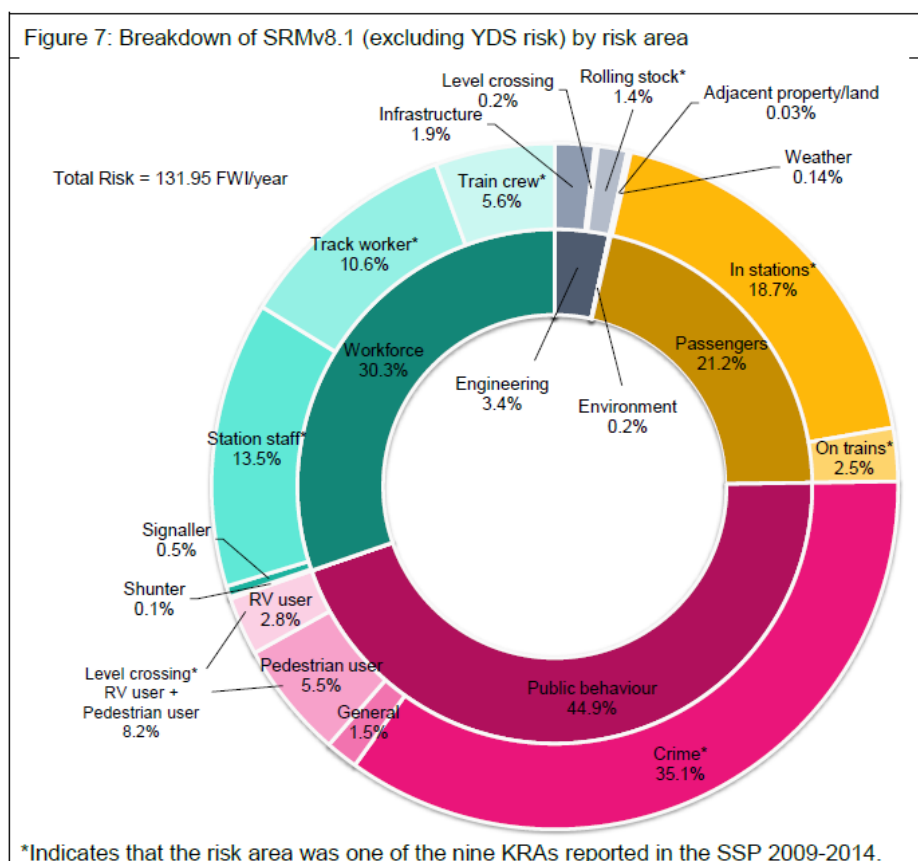
The SRM includes the safety risk from incidents which could occur during the operation and maintenance of the railway. For SRMv8.1 the scope has been extended to include risk within yards, depots and sidings, previously covered by the separate Yards, Depots and Sidings (YDS) Risk Profile Report."

- 2.4. The SRM breaks risk down into the following headline categories:
 - a) Engineering
 - b) Environment

¹ <https://www.rssb.co.uk/safety-risk-model/safety-risk-model>

- c) Passengers
- d) Public behaviour
- e) Workforce

2.5. The graph below, extracted from page 24 of the “Safety Risk Model: Risk Profile Bulletin, version 8.1” illustrates the distribution of risk between these categories. It shows that level crossings present 8.2% of the total system risk, thereby representing a significant public safety risk on the railway.

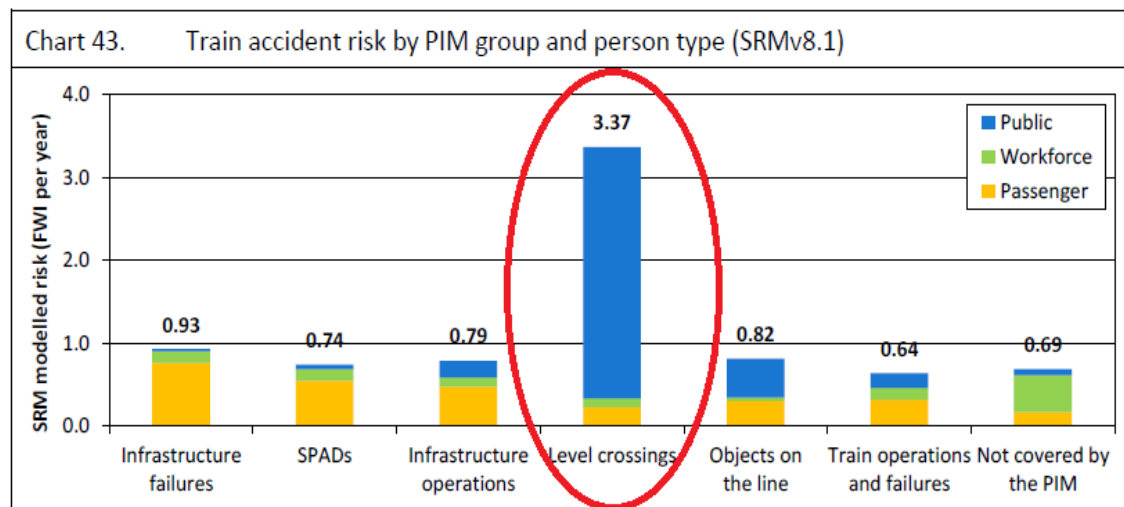


- 2.6. Catastrophic risk, as referred to in Network Rail’s Statement of Case (NR26), is a specific concept that is recognised by both Network Rail and the ORR. Based on figures and statistics as reported by the RSSB, catastrophic risk is one of the fundamental drivers for managing risk reduction at level crossings.
- 2.7. The RSSB recognise that level crossings singularly generate the greatest likelihood of risk potential to the public, and particularly a level crossing user, than risk from any other train accident. If consideration is given to train accident risk alone, RSSB confirm that level crossings are the biggest component of train accident risk, rather than the integrity of the train or any other structural failure, when considering the following breakdown:

Train Accident component	FWI/yr
Train collision	1.19
Train striking object	0.54
Train striking buffer stop	0.14
Level crossing	3.63

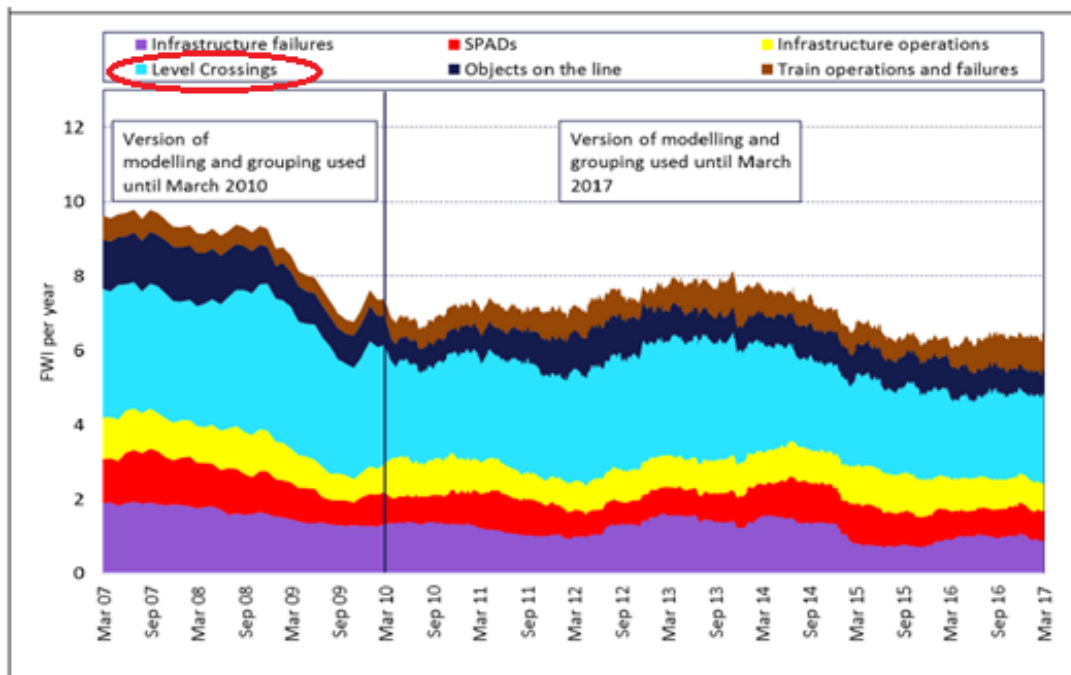
Derailment	2.15
Fire	0.09
Structural collapse	0.06
Explosion	0.15
Division	0.00
Collision	0.01
Total	7.97

- 2.8. These figures are a breakdown of a chart in the RSSB Annual Safety Performance Report 2016/17 (ASPR)² in the train accident section (P61), where the total train accident risk is shown as 8 FWI. RSSB therefore report that level crossings contribute circa 46% of the train accident risk (These numbers are taken from the SRM v8.1).
- 2.9. Train accident risk is *any accident that could impact the integrity of a train* and therefore is not just limited to Potentially High Risk Train Accidents (PHRTA). PHRTAs are considered by the Precursor Indicator Model (PIM) (See pages 67-71 of ASPR), and level crossings are the greatest PIM contribution category.
- 2.10. The Chart below (p69) shows the modelled contribution to train accident risk for each separate PIM group, together with the risk from non-PHRTA categories of train accidents, which were not covered by PIMs. It can be clearly seen that Level Crossings carries the highest risk in FWI by far.



- 2.11. In her Proof, Sue Dobson also questions Network Rail's statement that "Level Crossings represent one of the biggest public safety risks on the railway" and although this statement in itself is not similar to later reference she makes to "catastrophic risk" the blue colour on the chart clearly demonstrates that the risk is primarily carried by the public at level crossings.
- 2.12. The chart below shows the 10 year trend in the overall PIN from March 07 to March 2017. From this, it can be seen that our level crossing risk reduction programme is managing to reduce the risk from level crossings but it still remains the highest risk of all the reportable categories.

² <https://www.rssb.co.uk/Library/risk-analysis-and-safety-reporting/2017-07-report-annual-safety-performance-report.pdf>



3. NR17: Transforming Level Crossings, 2015-2040

- 3.1. Network Rail's level crossing safety strategy (NR17: Transforming Level Crossings, 2015-2040) outlines our long-term strategy to improve level crossing safety in Great Britain.
- 3.2. In Section 2 of Ms Dobson's Proof, and in Sections A and E of Ms Evan's Proof, they lay down the challenge that Network Rail is failing to follow its own strategies and vision for passive level crossings by proposing this Order.
- 3.3. Network Rail's level crossing safety strategy is clear: eradicating the need to traverse the railway at grade will always be preferable to any other form of level crossing risk mitigation. Doing so is not only the most effective way of reducing risk at level crossings, but also the only way to eliminate the risk completely. This is consistent with the general principles of prevention (Management of Health and Safety at Work regulations 1999 Schedule 1) in European and UK law, as explained in paragraphs 5.6 and 7.9 of my Proof of Evidence.

Section 1 ("Executive summary") of the Level Crossing Safety Strategy "Transforming Level Crossings, 2015-2040" (NR17) notes (page 1):

"The strategy provides the details of the work Network Rail will undertake to improve level crossing safety for the benefit of crossing users, train crew and rail passengers alike.

Key elements of the Level Crossing Safety Strategy include:

- *Continued focus on targeted level crossing closures"*

Section 2 ("Background") states (page 3):

"Closing level crossings will always be the most preferable and best solution to manage safety. However, it is not possible to close all level crossings on the network.

A broad range of interventions and initiatives are needed to address long-term issues at crossings which remain open. The scale of work involved is significant and will take several control periods to complete."

Section 3 ("Our vision, objectives and approach") includes the following (page 7):

"Implementation of the Level Crossing Safety Strategy will deliver the following milestones:

We will work with local authorities, government and communities to sensitively close level crossings where there is an alternative and practicable diversionary route available"

Section 5 ("Passive level crossings") notes (page 11):

"Closure via bridging, underpass or diversion is the only viable option in managing risk holistically. Closures have been central to the CP4 and CP5 Level Crossing Risk Reduction Programmes and have significantly contributed to reducing risk and improving safety across the network. Closures will continue in CP6 and beyond as funded business-as-usual activity."

- 3.4. The Essex and Others Level Crossing Reduction Order is therefore entirely consistent with the approach outlined within Network Rail's Level Crossing Safety Strategy.

DECLARATIONS

I hereby declare as follows:

This proof of evidence includes all facts which I regard as being relevant to the professional opinion which I have expressed and I have drawn the inquiry's attention to any matter which would affect the validity of that opinion.

I believe the facts which I have stated in this proof of evidence are true and that the opinions are correct.



Mark Brunnen
Head of Level Crossings
3rd October 2017