

## The Network Rail (Cambridgeshire Level Crossing Reduction) Order

### Network Rail Note 14

This note summarises the information requested by Cambridgeshire County Council at Public Inquiry for the Network Rail (Cambridgeshire Level Crossing Reduction) Order, together with Network Rail's responses.

All queries and paragraph references, as set out in red below, relate to Mark Brunnen's Proof of Evidence (NR27/1).

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**7.1.** *There are approximately 6,000 level crossings in operation across Network Rail's infrastructure and, of these, approximately 1,500 are on public vehicular roads. The remainder are where public footpaths, bridleways and private roads/track cross the railway.*

**Question:** How many of these crossings are private vs public?

**Answer:** Nationally, the split between private and public level crossings is as follows:

- c2400 private LCs
- c3600 public LCs

Within Anglia this breaks down as follows:

- c270 private LCs
- c500 public LCs

NB: A number of level crossings carry both private and public rights of way, for example: public footpath plus private vehicular access. For this reason, some crossings are duplicated in ALCRM, allowing the different components of risk to be modelled separately. An extensive exercise would be required to filter this information definitively. For this reason, the numbers shown above are approximations, intended to fairly represent the split between private and public without the need for considerable further work.

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**7.4** *Active crossings are typically more suitable than passive crossings for use by those who are less able to detect the approach of a train audibly or visually. Crossings with full barriers across the road provide a physical block to those who may not be able to detect warnings. However, there remain several factors that can cause accessibility problems at active level crossings:*

- 1. It is not possible to have a kerb that segregates the footway from the carriageway. Only a white line is possible.*
- 2. If the visual and audible warning starts, users may panic.*
- 3. On curves, the outer rail is raised above the inner rail, to account for the differential between the rail wheels. This means that a level crossing cannot be flat if it is located on a significant curve, resulting in a potential tripping hazard.*
- 4. Pedestrians may be struck by descending barriers, especially if they have not heard or seen the warning of their descent.*

## The Network Rail (Cambridgeshire Level Crossing Reduction) Order

### Network Rail Note 14

5. *At half-barrier crossings, pedestrians might approach the railway on the right-hand side of the road where there is no barrier, although they would still have the benefit of visual and audible warnings.*
6. *Some pedestrians move too slowly to reach the other side of the level crossing before the barrier has descended. If warning times at level crossings are extended to accommodate slower-moving users, misuse by other users may increase by reason of their impatience, (see Paragraphs 9.6 and 9.7).*
7. *It is not generally possible to grit level crossings of their approaches to combat snow or ice, even if the surrounding highway network is gritted. This is because of the likelihood of track signalling systems failing, and the corrosion that can result to rails.*

**Question:** How many crossing within the Order are subject to each of the numbered points above?

**Answers:**

1) A level crossing deck – (that is to say, the level surface laid down for the passage of vehicles and/or pedestrians over the railway) – must accommodate all forms of traffic, including trains travelling in a direction that dissects the footway or carriageway. As such, it is not possible to accommodate a raised curb separating one from another. The Cambridgeshire Order does not propose to close any active level crossings. It does propose to divert pedestrians over active level crossings in the following instances:

- C11: Furlong Drove – diverting over Third Drove level crossing
- C12: Silt Drove – diverting over Badgeney Road level crossing (Vehicles only)
- C14: Eastrea Cross Drove and C15 Brickyard Drove – diverting over Eastrea Level crossing
- C20: Leonards – diverting over Mill Drove level crossing
- C25: Clayway – diverting over Sandhill level
- C26: Poplar Drove and C27 Willow Row/Willow Road – diverting over Littleport bypass (vehicles only)
- C29: Cassells – Diverting over Brinkley Road
- C30: Westley Road – Diverting over Brinkley Road (vehicles only)
- C31: Littleport – underpass vehicular users diverting over Littleport level crossing (vehicles only)
- C35: Ballast Pit (private) – diverting over Banolds level crossing

2) There are no records of “user panic” at any of the crossings in this Order.

It should be noted that all of the crossings proposed for closure by the Order are passive crossings and therefore none feature barriers. There are three crossings (C28: Black Horse Drove / C30: Westley Road / C31: Littleport Station Barrow) that have been fitted with MSLs providing users with audible & visual alarms.

Audible alarms and flashing lights at active crossings have been seen to startle users at active crossings across the network. A recent example occurred at Claxby Gatehouse AHB (near Market

## The Network Rail (Cambridgeshire Level Crossing Reduction) Order

### Network Rail Note 14

Rasen, LNE) when a bridle user was traversing the railway on horseback. Upon hearing the crossing's audible alarms the horse froze and refused to move. The user and horse eventually managed to clear the crossing just a few seconds before the train passed.

3) Six of the crossings featured within this Order are situated on a curve and, as a result, have an undulating deck due to the effects of track cant. These are:

- C12: Silt Drove,
- C22: Wells Engine,
- C25: Clayway,
- C28: Black Horse Drove,
- C29: Cassells,
- C30: Westley Road.

Network Rail's aim is always to provide as flat a surface as possible for both vehicles and pedestrians. Potential tripping hazards are factored into the Level Crossing Manager's Narrative Risk Assessment.

4) None of the crossings proposed for closure by the Order currently feature barriers.

5) None of the crossings proposed for closure by the Order currently feature barriers.

6) None of the crossings covered by the Order currently feature barriers. However, the concept of "willingness to wait" (i.e. user impatience leading to deliberate misuse) is equally relevant at crossings fitted with MSLs. Of the crossings covered by the Order, three have MSLs:

- C28: Black Horse Drove,
- C30: Westley Road,
- C31: Littleport Station Barrow.

7) All 25 level crossings within the Cambridgeshire Order are subject to this constraint.

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**7.5.** *Passive crossings for road vehicles are generally used in rural areas and are known as User Worked Crossings (UWCs). These crossings tend to be on private roads, for example to provide access to a farm, or between a farm and fields. In general, UWCs tend to be comparatively high risk relative to the volume of traffic passing over them.*

**Question:** How many passive crossings for road vehicles are public carriageways?

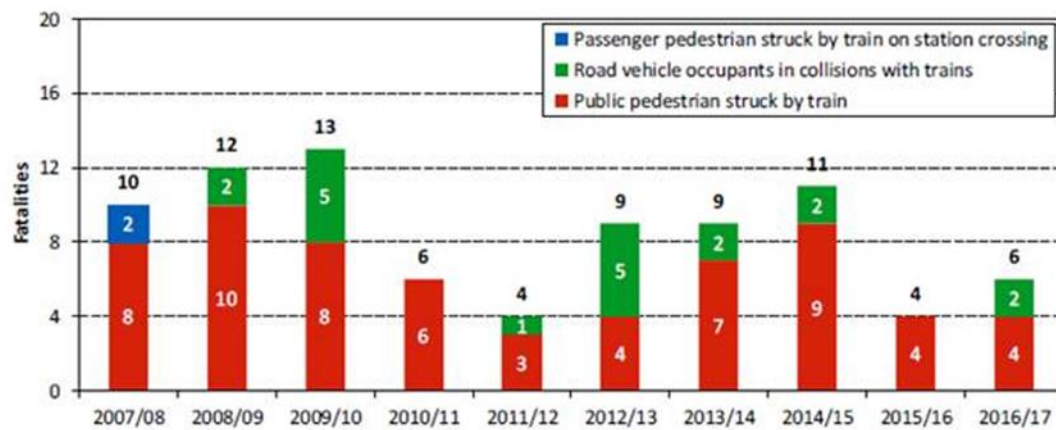
**Answer:** There are 69 instances nationally. 29 of these are in Anglia, including 3 within the Cambridgeshire Order.

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## The Network Rail (Cambridgeshire Level Crossing Reduction) Order

### Network Rail Note 14

**7.7.** Over the past 10 years Rail Standards Safety Board (RSSB) records that 77% of all accidental level crossing fatalities have involved pedestrian users, with the remaining 23% made up of vehicular users (drivers and passengers). The number of pedestrians and cyclists killed and injured at level crossings was as follows:



Source: Rail Safety and Standards Board, Annual Safety Performance Report – A railway guide to safety trends on GB railways 2016/17.

**Question:** What is the split between public highways and passive crossings?

**Answer:**

- Of the 84 accidental fatalities between April 2007 and March 2017 there were: 29 events (i.e. 34%) at public highway level crossings, and 55 events (i.e. 65%) at passive (footpath and user worked) crossings. The following table breaks these figures down by year:

Year	Fatalities (nationally inc. Anglia route)	Public Highway	Passive
2016/2017	6	1	5
2015/2016	4	1	3
2014/2015	11	3	8
2013/2014	9	2	7
2012/2013	9	4	5
2011/2012	4	1	3
2010/2011	6	2	4
2009/2010	13	7	6
2008/2009	12	5	7
2007/2008	10	3	7
	<b>84</b>	<b>29</b>	<b>55</b>

**7.8.** Over the past 5 years there has been an average of 253 near misses with non-vehicular users reported per year, (or 19.46 per 28-day period). This, of course, does not take account of those near misses that have not been reported. The number of near misses with non-



## The Network Rail (Cambridgeshire Level Crossing Reduction) Order

Network Rail Note 14

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**9.2.** *Research indicates, and incidents show, that people do not always look at signage or crossing equipment and can fail to look for trains before crossing.*

**Question:** Are any statistics available to show this at the crossings covered by this Order?

**Answer:** No research of this nature has been undertaken specifically at the crossings within the Order. However, several of the crossings do have a history of poor user behaviour that supports the research's findings. There are records of crossing gates being left open and/or of users failing to phone the Signaller before or after crossing the railway, thereby overlooking the instructions provided on site for users to follow. The incident at Nairns UWC(t) on 12<sup>th</sup> August 2016 is one such example.

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**9.12.** *Encumbered users include those with pushbikes (pushing them or riding), those who are carrying objects (for example, heavy bags or equipment) and those with dogs, either on or off the lead. It is notable that in 17% of train strikes, the pedestrian was walking a dog.*

**Question:** How many such incidents have occurred at crossings covered by the Order?

**Answer:** There are no records of a train striking a dog walker at any of the 25 crossings covered by this order. Of course, this does not diminish the risk of such an incident occurring in the future.

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**9.14.** *Many pedestrians also now wear vision-obscuring clothing (hoodies) and/or earphones, or are distracted using mobile phones whilst they cross, and just do not see or hear an approaching train until it is too late.*

**Question:** How many such incidents have there been by urban / rural split?

**Answer:** It is not possible to identify incidents involving vision obscuring clothing or distraction through the use of mobile phones expediently. To do so would be extremely labour intensive.

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**9.15.** *Studies undertaken by RSSB as part of their T984 research programme ('Research into the causes of pedestrian accidents at level crossings and potential solutions') used eye tracking devices to ascertain that a small but significant number of users (around 5%) fail to check for trains in either direction. A further 16% only looked in only one direction anywhere on the approach or traverse.*

**Question:** Is there any such data available for the crossings in this Order?

**Answer:** No, there is no such data available. Details of the RSSB's T984 research methodology are publically available on RSSB's website (as referenced on Page 19 of Mark Brunnen's Proof of Evidence).

## The Network Rail (Cambridgeshire Level Crossing Reduction) Order

### Network Rail Note 14

---

**9.16.** *These statistics confirm that over 20% of pedestrians crossing an operational railway line inadvertently place themselves in harm's way, presumably relying on peripheral vision, hearing or an expectation that no train is coming.*

**Question:** Can the data be split between Active and Passive crossings?

**Answer:** RSSB's research project ("T984: Research into the Causes of Pedestrian Accidents at Level Crossings") focused on passive crossing safety.

The techniques deployed included the use of observations, interviews and eye tracking equipment. The eye tracking process and observations are limited in that they are unable to identify the underlying motivations or justification behind a user's behaviour. They are also unable to distinguish between "user human error" and "deliberate misuse" with certainty.

Whilst the rail industry's introduction of the terms "user human error" and "deliberate misuse" post-dates RSSB's research project, the deliberate and accidental nature of crossing use was accounted for within the research.

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**9.17.** *When the causes of train strikes with pedestrians are examined (by both Network Rail and the Rail Accident Investigation Branch) a large proportion are attributed to 'fails to stop/look/listen', suggesting that no other cause could be found other than a failure of the user to take reasonable care.*

**Questions:** Does Network Rail hold any data for the crossings covered by this Order to illustrate this point? Can this data be broken down into Active and Passive level crossings?

**Answer:** Network Rail does not hold data to demonstrate this at the crossings covered by the Order.

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**9.24.** *Regular users were more likely than infrequent users to perceive crossing risk as low and could therefore be more likely to commit a violation of safe crossing procedure. This is supported by research investigating vehicle driver behaviour at crossings which revealed that 53% of red light runners (at a range of testing locations) used the crossing at least once a day\*.*

*\* HSE Contract Research Report No. 98/1996*

**Question:** Does Network Rail hold any data on the Public / Private split of the above findings?

**Answer:** No, this research was undertaken by HSE and reported in the HSE Contract Research Report No. 98/1996. As presented above, the research was undertaken at a range of testing locations - Network Rail is unable to confirm further details. However, it is perhaps helpful to note that, currently, very few private crossings are fitted with road traffic stop lights (wig wags or MSLs).

## The Network Rail (Cambridgeshire Level Crossing Reduction) Order

Network Rail Note 14

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**13.3.** *The Rail Accident Investigation Branch (RAIB) has investigated 17 fatal incidents involving pedestrians, and a further 13 involving motor vehicles, at level crossings on Britain's main line railways since it became operational in October 2005. Additionally, in the last five years there have been 42 serious incidents and fatalities at level crossings that have not been the subject of a RAIB investigation, (see: Appendices NR27/2 Tab 2).*

**Question:** Did any of these incidents occur at crossings covered by the Order?

**Answer:** A full breakdown of the data summarised in Para 13.3, including crossing names and their Network Rail Routes, can be viewed in the appendices to Mark Brunnen's Proof of Evidence (Appendices NR27/2, Tab2).