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Mr Andrew Hall
Deputy Chief Inspector of Rail Accidents
Cullen House
Berkshire Copse Rd
Aldershot
Hampshire GU11 2HP

Dear Andrew,

RAIB Report: Collision between a train and a car at Jetty Avenue level crossing, Woodbridge, Suffolk on 14 July 2013

I write to provide an update¹ on the action taken in respect of recommendation 2 addressed to ORR in the above report, published on 15 December 2014.

The annex to this letter provides details of actions taken in response to the recommendation and the status decided by ORR. The status of recommendation 2 is '**Implemented**'.

We do not propose to take any further action in respect of the recommendation, unless we become aware that any of the information provided has become inaccurate, in which case I will write to you again.

We will publish this response on the ORR website on 21 August 2020.

Yours sincerely,



Oliver Stewart

¹ In accordance with Regulation 12(2)(b) of the Railways (Accident Investigation and Reporting) Regulations 2005

Recommendation 2

The intent of this recommendation is to identify measures which complement those achieved by Recommendation 1. It is intended to assist risk management until such time as all UWCs are equipped with technology capable of providing reliable advice to crossing users.

Network Rail should commission research into measures to improve the safety of UWCs where vehicular users are reliant on sight to detect the approach of trains (paragraph 103). This should utilise and, as necessary, extend existing research findings to include consideration of:

- the ways in which the behaviour of vehicle drivers can be influenced by the design of the crossing to use the crossing as intended including stopping and looking for trains at an appropriate location;
- use by different types of vehicle, including heavy commercial and agricultural vehicles;
- use of the crossing by persons other than those briefed by the authorised user (e.g. unexpected visitors or delivery vehicles);
- instructions and/or guidance given to users, including signs and road markings where appropriate; and
- instructions and guidance provided to those assessing, maintaining and modifying UWCs.

This research should take into account the safety of pedestrians (including vehicle occupants when opening gates), cyclists and equestrians who may use UWCs.

The findings of this research should be used by Network Rail to improve/ clarify existing standards related to the design (including gates, signage and road markings), management of user worked crossings, guidance provided to users and training/briefing to relevant staff. Network Rail should also identify the need for any modification to the legal requirements relating to level crossing signage requirements, and make suitable representations to government that this be done.

ORR decision

1. Network Rail submitted a closure statement in October 2017, however we were not satisfied they had implemented the recommendation at that time. We wanted to see the extent of Network Rail's commitment to improving safety at UWCs in its level crossing strategy. In addition, we wanted to Network Rail to implement the findings from the previous research before we accepted the closure statement.

2. Network Rail has now published its level crossing strategy² in March 2020, which outlines its commitment to install active warning technologies at more UWCs. It also commits Network Rail to implementing the outcomes of RSSB research projects T983 Signs at private level crossings, and T984 Research into the causes of pedestrian accidents at level crossings and potential solutions.

² <https://www.networkrail.co.uk/wp-content/uploads/2020/03/Enhancing-Level-Crossing-Safety-2019-2029.pdf>

3. Network Rail has completed its review of signage for UWCs, has created a new set of signs based on T983, and is creating a new signage standard for UWCs.

4. Network Rail is also working with the Department for Transport (DfT) to update The Private Crossings (Signs and Barriers) Regulations 1996. It has identified the need for updated regulations and has made representations to DfT. Therefore, Network Rail has done what was required by the recommendation.

5. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Network Rail has:

- taken the recommendation into consideration; and
- has taken action to implement it.

Status: Implemented.

Previously reported to RAIB

6. On 10 December 2015 ORR reported that we note Network Rail has discounted the viability of commissioning further research on the basis of excessive cost and the existence of significant research in this area. Network Rail will collate all available relevant existing research, review that research with support from consultants, particularly to identify any gaps around vehicle users in pedestrian mode. Network Rail will then hold a workshop to review those gaps and draft its report and look to develop a tool to address the findings. A consultation will be held prior to briefing the new process to the Level Crossing Manager community and crossing designers. The recommendation was due to be implemented by 31 August 2016.

Update

7. Following timescale extensions, Network Rail provided the following closure statement and supporting documents on 24 October 2017:



R727 Improving safety at user work



Jetty Avenue 2 -



Jetty Avenue 2 - CMO closure statement

8. Network Rail state the following:

Network Rail has reviewed existing research and is satisfied there would be limited industry benefit in commissioning new or extended research, which will likely yield limited intelligence. It supports this decision with its commitment to level crossing safety as denoted in Transforming Level Crossings 2015-2040, the company's long-term vision-led safety strategy.

Network Rail approached the Rail Safety & Standards Board in April 2017 to seek support for the commissioning of new or extended research into user worked

crossing safety as proposed in this recommendation. This formal application generated research proposal R727 Improving safety at user worked level crossings. The R727 ideas paper was discussed at length during a dedicated session represented by key human factors and risk specialists from RSSB and attended by Network Rail's paper proposer; Level Crossing Asset Strategy and Planning Manager (national).

RSSB concluded that whilst it would be possible to undertake new or extended research, the challenges and likelihood of bettering existing intelligence were considered prohibitive. It was agreed that further research targeted toward deeper human factors psychology amongst users, would unlikely add significant value beyond that of existing research. It was further concluded that user participation would be challenging to secure, yielding to a small return and limited findings.

RSSB consider that four existing papers, notably the bolded paper shown below, are of particular relevance to the recommendation and user worked crossing safety:

- **T983 Research into signs and signals at private road level crossings**
- T984 Research into the causes of pedestrian accidents at level crossings and potential solutions
- T756 Research into traffic signs and signals at public road level crossings
- T650 Improving safety and accessibility at public road level crossings for disabled pedestrians

Research **T983**, which focused on the needs of road vehicle users of private road level crossings, is the paper which most aligns with the intent of the 'Jetty Avenue 2' recommendation. The research completed by Transport Research Laboratory [TRL] consisted of on-site assessments and observations, interviews, simulations using computer modelling of scenarios incorporating existing and redesigned signage and layout, including accounting for research and recommendations such as T984, to make recommendations of its own to reduce user error.

Twelve recommendations are proposed, centring on signage, miniature stop lights and road markings, as opportunities to improve safety further. Several of these recommendations are already progressing as part of existing business process and/or strategic planning. These include:

- **Use a universal stop look listen sign at all UWCs which applies to all users** – Universal stop, look, listen signage is being explored as part of joint working between ORR and Network Rail within the holistic signage review project.
- **Clearly convey the necessity to use the telephone at UWCTs, possibly by using a universal stop and telephone sign which applies to all road users** – As above, forms part of the signage review project. In addition, Network Rail has set out its long term vision-led strategy for level crossings which places emphasis on telephones not being the primary measure of

control at user worked crossings by 2025, where long signalling sections exist, and by 2030 across the network.

- **Provide simple, well understood instructions which are clearly related to the intended road user groups** – Is a key element of the signage review project and has also been well executed as part of Overlay MSL and Power Operated Gate Openings (POGO) HAZID recommendations.
- **Reduce sign clutter by removing unnecessary information and appropriately locating all information** – Effectively instructed in Level Crossing Manager Guidance, LCG 17 Provision and positioning of signage at user worked, bridleway and footpath level crossings, which forms part of good practice risk management protocols. Specifically incorporated as part of Overlay MSL and Power Operated Gate Openings (POGO) HAZID recommendations.
- **Use ground markers, such as projected or fixed warnings on the pavement on the users approach, to aid pedestrians (recommended by T984, Research into the causes of pedestrian accidents at level crossings and potential solutions)** – Stop markers and defining stopping positions are adopted by Level Crossing Managers for marking of decision points, where considered to offer site-specific safety benefits. Moreover, demarcation of the danger zone, the confines of the level crossing, forms part of long-term strategic goals to improve passive crossing safety. CP6 level crossing safety submissions encompass dedicated costing for yellow decking.
- **Supplement MSLs with an audible warning that was designed during T756-02, Research into signs and signals at public road level crossings** – Network Rail recognises the benefits associated with spoken warnings. Such technology, as used at footpath and user worked crossings, is a prerequisite of overlay MSL equipment. Both Ebigate and VAMOS overlay MSL systems, product approved for use on the network, use this technology. Spoken warnings have also been fitted at a selection of automatic half barrier crossings on public roads with further rollout part of business as usual activity.
- **Standardise information and location of information** – Level Crossing Manager Guidance, LCG 17 Provision and positioning of signage at user worked, bridleway and footpath level crossings, recognises that all crossings are unique in layout and approach, but provides good practice guidance on the principles of generic sign positioning.

Taking account of the professional counsel from RSSB against the undertaking of further research, recognising Network Rail's approach to embedding existing research and taking due cognisance of the company's vision-led strategic aims, Network Rail does not intend to do further work on this recommendation and considers it closed.

Previously reported to RAIB

Recommendation 2

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This research should take into account the safety of pedestrians (including vehicle occupants when opening gates), cyclists and equestrians who may use UWCs.

The findings of this research should be used by Network Rail to improve/ clarify existing standards related to the design (including gates, signage and road markings), management of user worked crossings, guidance provided to users and training/briefing to relevant staff. Network Rail should also identify the need for any modification to the legal requirements relating to level crossing signage requirements, and make suitable representations to government that this be done.

ORR decision

1. ORR notes that Network Rail has discounted the viability of commissioning further research on the basis of excessive cost and the existence of significant research in this area. Network Rail will collate all available relevant existing research, review that research with support from consultants, particularly to identify any gaps around vehicle users in pedestrian mode. Network Rail will then hold a workshop to review those gaps and draft its report and look to develop a tool to address the findings. A consultation will be held prior to briefing the new process to the Level Crossing Manager community and crossing designers.

2. After reviewing information received ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Network Rail has:

- taken the recommendation into consideration and
- is taking action to implement it by 31 August 2016.

Status: Implementation ongoing. ORR will advise RAIB when actions to address this recommendation have been completed.

Information in support of ORR decision

3. On 24 February 2015, Network Rail provided the following information:

General summary

A significant amount of research relating to level crossings has been undertaken in recent years, much of it delivered through RSSB led projects. Consequently, Network Rail is not seeking to initiate new RSSB research. Human factors experts will be commissioned to review and consolidate the output from existing research. If identified, additional work might be required to take account of issues specific to User Worked Crossings (UWCs) where safe use for vehicular users relies on the sighting of approaching trains.

Review

The review phase will consist of research into measures to improve safety at UWCs. This will take the approach of using existing research and extending it where needed to cover:

- *Behaviour of road vehicle drivers and the influence of crossing design*
- *Crossing use by un-briefed members of the public*
- *Different road vehicle types*
- *Instructions and guidance given (to users) including signs and guidance*
- *Other user groups such as pedestrians / cyclists / horse riders as appropriate*
- *Instructions and guidance given to LCMs*

The review phase will conclude with the production of a draft report.

If the draft report identifies that currently available research does not encompass all aspects of vehicular usage at UWCs, we will utilise the expertise of the Human Factors experts to supplement the existing findings as needed.

It is anticipated that the review phase will complete on 30 September 2015.

Solution

The draft report from the review phase will be used to decide if changes need to be made to Network Rail processes, standards, training and guidance.

Indicative timescale – 31 January 2016

Plan implementation

Indicative timescale – 31 March 2016

Implement

Indicative timescale – 31 March 2017

4. On 5 August 2015 Network Rail confirmed that it had engaged Human Factors Consultants ERM to consider how to take this recommendation forward.

5. On 19 November 2015 Network Rail provided the following update:

Network Rail has engaged with ERM to discuss how best to carry out the research. It is possible that Network Rail will be looking to do this internally with a small amount of support from ERM. The approach would be to;

- *Collate the available/relevant research*
- *Review the research with support from ERM*
- *Identify any gaps around vehicle users in pedestrian mode*
- *Hold a workshop*
- *Draft report*
- *Consultation stage – with ERM review*

This recommendation will need to be extended and is likely to take until 30 June 2016 to complete.

6. On 30 November 2015 Network Rail provided the following update:

Network Rail has initially engaged with Human Factors Consultants [ERM] to consider carrying out new research to address this recommendation. However the Central LC Team believe that there are research papers already in existence that cover a lot of the learning points required by the RAIB Recommendation. Rather than commission wholly new research in this area the revised action plan is as follows:

- *Collate the available/relevant existing research - 31/01/16*
- *Review the research with support from ERM - 28/02/16*
- *Identify any gaps around vehicle users in pedestrian mode - 28/02/16*
- *Hold a workshop to review the existing gaps - 31/03/16*
- *Draft report & implementation tool e.g., decision tree - 31/05/16*
- *Consultation stage- with ERM review - 31/06/16*
- *Briefing new process out to LCM Community/Crossing designers - 31/08/16*