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Ms Carolyn Griffiths
Chief Inspector of Accidents
Cullen House
Berkshire Copse Road
Aldershot
Hampshire GU11 2HP

Dear Carolyn

RAIB report: Fatal accident at Moreton-on-Lugg near Hereford

I write to provide an update on the consideration given and actions taken in respect of the recommendations addressed to ORR in the above report published on 28 February 2011.

The annex to this letter provides detail of the consideration and actions where recommendation 1 is reported as 'implementation on-going' recommendations 2, 3 and 4 are reported as 'in progress'.

We expect to update you on progress with recommendations 2, 3 and 4 by 31 March 2014 and we will confirm to you when actions in relation to recommendation 1 have been completed.

Yours Sincerely

Chris O'Doherty



Recommendation 1

The intention of this recommendation is, where necessary, to implement engineered safeguards at level crossings similar to Moreton-on-Lugg. The objective is to reduce the risk of signallers opening the crossing to road users when a train is approaching, particularly as a result of interruptions or other out-of-course events.

Network Rail should identify level crossings operated by railway staff where a single human error could result in the road being opened to the railway when a train is approaching. At each such crossing, Network Rail should consider and, where appropriate, implement engineered safeguards. Safeguards for consideration should include additional reminder appliances, alarms to warn of the approach of trains, approach locking, locking of the route, run-by controls, and local interlocking of train detection and signalling systems with level crossing controls.

Previously reported on 23 February 2012

1. In February 2012, we reported that implementation of an approach locking retrofit programme to install signalling controls at all level crossings, was to be delivered in a 2 phase rollout. The phase 1 rollout programme had been authorised on 18 April 2011 for delivery of the 44 high priority sites, including Moreton-on-Lugg. We reported that Network Rail was behind in its original schedule and had expected phase 1 to be complete by 12 July 2012. The phase 2 programme was due to be complete by 31 March 2013.

Update

2. In May 2013, Network Rail advised that phase 1 had been completed. Network Rail also informed ORR:

There are currently 37 planned sites for phase 2 (additional 15 have been de-scoped). The first planned commissioning date is 23 June and the last planned commissioning date being 15 January 2014. To ascertain the potential scope for identifying further sites, Network Rail has agreed to appoint a technical lead to agree the hierarchy of questions that will need to be answered by the routes. The programme will be built once the number of sites is known and funding has been secured. We will be in a position w/c 10 June 2013 to provide a plan to identify the scope of the next phase of works.

3. In July 2013, ORR became aware that the phase 1 programme reported as completed, had not taken account of those sites that were the subject of proposed resignalling schemes e.g. Shrewsbury. These sites remain unprotected and Network Rail omitted them from the list because it thought the sites would be addressed when the resignalling schemes were commissioned. We raised our concerns with Network Rail, and on 2 September 2013 were advised that all sites were now in scope including those that had been de-scoped because of planned projects such as re-signalling. The outstanding crossings are St James Deeping, Stow Park and Barton Road. Network Rail has advised that all three would be completed in the first year of CP5. Phase two of this work is underway with all work planned for completion by March 2013. Phase three work to identify additional sites where a single error could result in an incident is still underway. The original SIN sent to the Routes did not adequately identify the issues to be included. The SIN will be reissued giving Routes

three months to collect the data and once all sites have been identified funding will be secured for the work required and timescales will be agreed.

ORR decision

4. ORR, having considered the information provided, has concluded that, in accordance with the Railway (Accident Investigation and Reporting) Regulations 2005, Network Rail has:

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

Status: Implementation on-going. Target completion date is 31 March 2015

Recommendation 2

The intention of this recommendation is that implementation of Network Rail's level crossing risk management process will identify and assess the risks from all aspects of the design, operation and maintenance of equipment and systems, including signalling, so that mitigation measures can be identified and implemented.

Network Rail should enhance its level crossing risk management process to include identification, assessment and management of the risk associated with:

- human error by signallers and crossing keepers;
- operational arrangements, in particular with regard to the ability of operators to cope with interruptions, such as telephone calls, and other out-of-course events;
- equipment design, in particular where it is not compliant with latest design standards; and
- maintenance and inspection arrangements, particularly where these are used to identify and remedy any equipment functional and performance deficiency.

The process should allow for sufficient liaison between the relevant engineering and operational departments.

When addressing risks identified by the implementation of the revised process, Network Rail should prioritise the implementation of required mitigation measures to level crossings where consequences of operator error are severe and not protected by engineered safeguards

Previously reported

5. In February 2012, we reported that Network Rail had identified signaller/crossing keeper error issues specifically associated with level crossings and that those elements would be covered in the new signaller competency process. There was also a risk management improvement programme which was working to improve level crossing risk management, as Network Rail had recognised that the scope of the then risk management process was too narrow, the process was to be expanded to cover local and bespoke factors specific to the environment, type and functionality of the crossing. Network Rail was also to hold a cross functional

workshop to assess issues relating to equipment design within level crossings. The proposed completion date was 31 May 2012. At that time we were content with the Network Rail planned actions.

Update

6. ORR have been informed that Network Rail has enhanced its level crossing risk management process which has included identification, assessment and management of risk. The National Level Crossing Improvement Programme has enhanced risk management at level crossings in a number of ways. The introduction of Level Crossing Managers (LCMs) will see a dedicated resource being implemented along with a new operating regime for level crossings. The LCMs will be responsible for identifying, assessing and managing risk at level crossings. They will develop good knowledge of their zone of crossings and undertake risk assessments, asset inspections, faulting and limited maintenance. They will also be responsible for stakeholder engagement and consultation in their local area.

7. Ergonomists have been consulted to provide guidance and information on human error by signallers. A new "Attention and Awareness" tool has been developed by a Senior Ergonomist and is available for use.

8. A new Signaller Competency Process has been developed. Part of the new signaller competency process has recently included modules on all level crossing types, their operation under normal working circumstances and degraded mode working. Elements of this also included the attention and awareness toolkit.

9. This provides information to support human error by signallers (non-technical skills assessment). The "irregular working" working group has analysed irregular working events and precursors. They have provided additional information to support the signaller competency process in the form of an e learning module "Attention and Awareness toolkit". Error analysis identified the main error types: attention awareness scanning, granting authority to use a crossing when inappropriate to do so and attendant during degraded working. Further information on suitable and sufficient risk assessment guidance including engineering has also been given. Briefing took place at the operations safety briefing 10th May 2012.

10. Network Rail recognised that the historic risk assessment process did not capture equipment design, therefore a cross-functional workshop was held to assess issues relating to equipment design within level crossing types and the impact that they can have on the risk profile, including how they can influence (or be influenced by) irregular working. The newly introduced training for the LCMs, as part of the wider National Level Crossing Improvement Programme, includes a section on types of irregular working events, how they happen and what can be done to further reduce the risk of occurrence. This detail provides the LCMs with a greater understanding of some of the risks that may be associated with certain type of crossings. These irregular working examples are broken down into types involving Signallers, Drivers, and Level Crossing Attendants.

11. A number of Level Crossing sites were identified by the Route Asset Managers as having equipment similar in design to that installed at Moreton-on-Lugg where a human error could result in the road being opened to the railway when a

train is approaching. Three sites in Leicestershire were de-scoped from the initial crossings identified.

12. The Network Rail ergonomics team visited a number of sites and identified that additional protection arrangements were in place. At 30% of the sites visited, it was not possible to re-create the situation through one human interaction. For this reason, additional mitigations would have limited effect.

ORR decision

13. We are aware that Network Rail is continuing to develop an enhanced level crossing risk management process which we monitor progress of at regular bi monthly liaison meetings and through inspection and audit of the competence management system of level crossing managers which includes their management of risk. It is not clear however how the 4 bullet points have been addressed within their processes. We wrote to Network Rail on 12 November 2013 asking for confirmation as to how these 4 points had been addressed this will also be followed up at the next regular liaison meeting with Network Rail's Level Crossings Team. We expect to be able to update RAIB by 31 March 2014.

Status: In progress - RAIB to be updated by 31 March 2014

Recommendation 3

The intention of this recommendation is to ensure that whenever signalling renewal or major maintenance work is planned, those responsible understand when it is necessary to formally evaluate the opportunity to improve compliance with the latest engineering standards.

Network Rail should develop and implement (paragraph 175a):

- criteria for when it is necessary to formally assess the need to bring existing signalling and level crossing assets in line with latest design standards; and
- a process to record the findings of such assessments

Previously reported

14. In February 2012, we reported that Network Rail had informed ORR that it was intending to undertake a review of its signalling policy as well as industry and company standards. The review was to consider the existing criteria in place at that time with respect to bringing signalling and level crossing assets into compliance with the latest design standards. The output of the review was to be used to inform proposed changes to the standards where there was an additional requirement to bring an asset in line with the latest design standards and the implications for CP4 and CP5.

Update

15. On 8 July 2013, Network Rail provided ORR with a project proposal to address this recommendation (Annex B attached for information). This will accompany the action plan to amend the compliance date to close the

recommendation. The following additional information was provided by Network Rail:

The work will:

- *require hazard analysis and risk assessment for existing level crossings where the signaller workload or other circumstances that alter crossing usage are seen to change*
- *specify a means of recording the results and recommendations from hazard analysis and risk assessment*
- *specify the appropriate level crossing solutions to mitigate specific risks and hazards of level crossing sites.*

This project proposal will accompany the form to outline action plan and timescales for closing Moreton-on-Lugg recommendation 3.

Further work is on-going to identify level crossings that require work to provide the level of protection afforded by current signalling standards, including provision of approach locking, where these are currently not provided. This work extends the scope of the original project to assess and fit approach locking to mechanical signal boxes of similar configuration to Moreton-on-Lugg signal box, a project that is nearing completion.

Network Rail has issued Notice Board NB123 which reiterates the need to consider work is done to achieve best practice in design early in the project timescale. The attached paper will lead to work that will specify how this is to be done with respect to level crossings.

16. Network Rail has provided ORR with 2 documents:

- PAN/E/SE/PRO/0041 issued August 2013 titled 'Layout Risk and Interlocking Complexity Profiles: Taking the Reasonable Opportunity. This document is aimed at interlocking renewals rather than level crossing renewals but does include a specific example at Section 8.5.1 which describes assessment of level crossings to ensure that modern standards are applied.
- NB123 titled 'Signalling alterations/renewals: Taking reasonable opportunity'. This document reminds project managers of their obligation to take reasonable opportunities to make improvements to the control of risks. It includes the following sentence 'It is no longer acceptable to perpetuate situations where known weaknesses rely on procedural mitigations rather than an engineered solution'.

17. The above two documents clearly show that Network Rail are progressing but, do not in themselves, demonstrate that it has addressed the recommendation. Network Rail have a further document, currently in draft, ENG/LX/PPF/KB/13049 titled 'Level Crossings – Risk Assessment and Good Design Practice' which is intended to specifically address this recommendation.

18. On 14 November 2013, we requested an update from Network Rail on progress with ENG/LX/PPF/KB/13049 and received the following response from the Senior Engineer, Signalling and Controls:

The spirit of the document is very much still a work in progress. As a piece of work, closing out the Rec 3 will probably be dealt with in the “Means of Control” exercise that is scheduled to start in about May 2014, and will include all the elements laid out in the paper. I was able to influence the “Bow Tie” diagrams to lay the seeds for these elements, and the diagrams themselves are going out to peer review as I write.

As there will be a gap before the new documentation is published, we are intending to plug this time gap with issue of a Noticeboard, thereby drawing attention to the characteristics that delivery shall avoid and if followed will mean earlier compliance with the actions to close out Rec 3.

ORR decision

19. ORR, having considered the information provided, has concluded that, in accordance with the Railway (Accident Investigation and Reporting) Regulations 2005, Network Rail has:

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

20. We have requested an updated action plan from Network Rail and a date for when the Noticeboard will be issued.

Status: In progress, RAIB to be updated by 31 July 2014.

Recommendation 4

The intention of this recommendation is for Network Rail to understand the risk posed by the use of non-critical information systems in signal boxes and implement practical mitigation measures.

Network Rail should assess the risk associated with the use of TRUST, and similar information systems, by signallers when undertaking safety critical activities, and implement appropriate mitigation measures. This assessment should include a review of the extent to which signallers may be distracted or misled, and the influence of factors such as the location and orientation of any associated equipment.

Previously reported

21. In February 2012, we reported that Network Rail were addressing this recommendation in 3 distinct phases - data collection, risk assessment using the data collected and mitigation measures. The data collection and risk assessment phase was due to be completed by September 2011, with the mitigation measures arising from the risk assessment due to be completed by March 2012. At that time we reported that we were content with the Network Rail planned actions.

Update

22. We have since requested confirmation from Network Rail that it had completed its actions. On 9 July 2013, Network Rail provided further information on mitigation measures, these are below:

- *Data collection phase made 3 recommendations;*
 - *Develop guidelines to help inform decisions about the location of TRUST*
 - *Training in coping with distractions and interruptions*
 - *Training in how to use TRUST*
- *Recommendations from risk assessment;*
 - *Consider practicability of having auto refresh functionality*
 - *List of do's and don'ts for TRUST*

ORR decision

23. Having considered the latest information from Network Rail, we felt that we did not have sufficient information to come to a decision on implementation. We wrote to Network Rail on 12 November requesting sight of the reports from the data collection phase and the risk assessment and confirmation that the actions above had been completed. We expect to update RAIB by 31 March 2013.

Status: In progress- RAIB to be updated by 31 March 2014