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OFFICE OF RAIL AND ROAD

6 October 2017

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

Dear Andrew,

RAIB Report: Structural failure caused by scour at Lamington Viaduct, South Lanarkshire, 31 December 2015

I write to report[1] on the consideration given and action taken in respect of the three recommendations addressed to ORR in the above report, published on 14 November 2016.

The annex to this letter provides details in respect of each recommendation.

The status of all three recommendations is **'progressing'.**

ORR will advise RAIB when further information is available regarding actions being taken to address these recommendations.

We will publish this response on the ORR website on 6 October 2017.

Yours sincerely,

Oliver Stewart

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

Initial consideration by ORR

1. All 3 recommendations were addressed to ORR when the report was published on 14 November 2016.

2. After considering the recommendations ORR passed all three recommendations to Network Rail asking them to consider and where appropriate act upon them and advise ORR of its conclusions. The consideration given to each recommendation is included below.

3. ORR also brought the learning points in the report to the attention of other infrastructure managers as it was concluded that that there are equally important lessons for them. ORR did not ask these organisations to provide a reply.

Recommendation 1

The intent of this recommendation is to improve the management of scour risk and increase the quality of information available to staff responsible for making decisions about the safety of structures.

Network Rail should review and improve the management of scour risk by Scotland Route. The review should encompass formal procedures, the way in which they are implemented and the competencies of staff. Any lessons learnt should be applied to other Routes where appropriate. The improved measures for the management of scour risk should provide for:

a. Prompt holistic evaluations of all relevant existing information (including poor structure condition, shallow foundation depth, possible future changes in river bed level and scour assessments) whenever new information is received about a structure at risk of scour damage, followed by timely:

- implementation of necessary remedial work; or
- effective risk assessment (including any necessary investigations) for any decision to defer or omit remedial work recommended by the examination regime or other specialists; and
- implementation of any temporary mitigation found necessary by these risk assessments.

b. Circumstances where water level monitoring is not a reliable measure of risk from scour or water action.

c. Circumstances where structure degradation, climate change and other factors mean that historic behaviour of a structure and the surrounding environment is not a good indicator of future behaviour.

d. Enhanced measures for automatic monitoring of parameters such as water level, flow rate, bed level (ie direct measure of scour) and structure movement.

ORR decision

4. ORR is content that the information provided so far by Network Rail is broadly acceptable although nothing is mentioned specifically about the Scotland Route, which is identified in the recommendation.

5. The response indicates Network Rail rely heavily on water level markers, the reliability of which is questioned in the RAIB report. Subsequent discussion with Network Rail indicates a more nuanced position, that they consider water level markers can be effective when used correctly and in the right circumstances.

6. We will continue to monitor delivery Network Rail's delivery against the milestones in the report and any subsequent changes that need to be made to guidance following completion of the research.

7. 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
- is taking action to implement it, but ORR has yet to be provided with a fully scoped and time-bound plan for implementation.

Status: Progressing. **ORR will advise RAIB when further information is available regarding actions being taken to address this recommendation.**

Information in support of ORR decision

8. On 11 July 2017 Network Rail provided the following initial response:

Following the Lamington incident, Network Rail carried out a 'National review of scour, flooding and associated extreme weather processes'. All routes were visited and the following procedures were covered:

- *Use of scour database*
- *Scour assessments*
- *Extreme weather processes*
- *Underwater exams*
- *Remediation*
- *Remote monitoring*
- *Research and Development*

Section 11.1 of the report details Network Rail's programme for improvement, the implementation of which will addresses RAIB's recommendation 1 findings as detailed below:

a) Network Rail will address part a) within a new Standard for scour management due for publication by September 2017.

b) Consistent with current industry best-practice and the latest CIRIA guidance issued in 2015 Network Rail believe that for early warning, analogues for scour such as water level are currently the most reliable measure. The challenge is to ensure that where water level markers are used, they are accurate. Network Rail will therefore re-confirm the accuracy of water level markers (where used to manage higher risk structures during extreme weather) using robust hydraulic assessment and adjust accordingly.

Water level markers to be assessed and adjusted as necessary by December 2018.

A simple periodic report will monitor water level marker assessment progress and marking of bridges on site.

c) The new scour management standard will require the scour assessment and structure examination processes to be better integrated. Following scour assessment, ongoing scour risk will be managed by monitoring change in condition during exam evaluations.

d) Network Rail will review all currently installed water level and flow rate monitoring and provide a report on the success of these installations. A best practice guide will be produced for the monitoring of scour sites using latest available technology. The report will be completed by October 2017.

Additionally, Network Rail will provide a report detailing research that it is supporting into monitoring of bed level (i.e. direct measure of scour) and structure movement by July 2017.

Following the completion of the research, Network Rail will review its application and update the best practice guide as necessary.

Recommendation 2

The intent of this recommendation is to enhance response arrangements for operations staff dealing with structures over or adjacent to water, which can suffer damage (including scour damage) that is not immediately apparent.

Network Rail should review, and if necessary, enhance its processes for operations staff responding to defect reports (eg track faults) where these may relate to structures over, or adjacent to, water. The enhancements should provide responses which take account of the risk that the defect is a consequence of structural damage caused by water action (eg scour, impact from floating debris, debris blockage etc.).

ORR decision

9. ORR is content with the approach Network Rail are taking, although we have asked them to justify the focus on track faults as we consider the recommendation to have a wider application than this. The text of the recommendation asks Network Rail to 'review, and if necessary, enhance its processes for operations staff responding to defect reports', but the response only refers to a review of the current requirements for responding to track faults.

10. 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; but
- has not fully set out how it will be delivered.

Status: Progressing. **ORR will advise RAIB when further information is available regarding actions being taken to address this recommendation.**

Information in support of ORR decision

11. On 11 July 2017 Network Rail provided the following initial response:

Network Rail proposes to address the intent of this recommendation by reviewing the current requirements for responding to reports of track faults on structures over or adjacent to water. The review will consider the adequacy of current inspection arrangements, to determine whether current processes are sufficient to identify the root cause of track defects resulting from structural damage caused by water action and whether any further requirements and / or guidance should be implemented.

This will be carried out in two stages, as follows:

<u>Stage 1</u>

Network Rail will:

- *review current standards, controls and processes for responding to track geometry faults initiated from the Fault Management System (FMS);*
- *carry out cross engineering discipline consultation to ascertain current route business processes in place and any associated documentation; and*
- *determine any inadequacies and formulate an assessment of change required to the current controls as appropriate.*

<u>Stage 2</u>

If the review identifies enhancements required to current processes to fully meet the intent of the recommendation, Network Rail will:

- *identify the work required to address inadequacies and prepare a resourced programme to amend and implement the relevant standards, controls, processes and / or guidance; and*
- *submit a request for an extension to the recommendation timescale to undertake the programme of works and implement the changes.*

The response to this recommendation will be led by the Professional Head of Track but will require cross disciplinary input to deliver any changes identified.

Recommendation 3

The intent of this recommendation is to ensure that the latest version of all relevant documentation and processes are being used by control room staff. The documentation and other processes should be updated and checked periodically to ensure that they remain fit for purpose.

Network Rail should review and improve the management and assurance systems for all control centre processes relating to the safety of railway infrastructure used by Scotland Route. The review should encompass both documented processes and the way they are implemented. It should include:

- procedures directly relevant to control room staff;
- inputs required from other parts of Network Rail;
- inputs required from external organisations; and
- arrangements for prompt updating and periodic verification of processes.

Any lessons learnt should be applied to other Routes as necessary

ORR decision

12. The text of the recommendation asks Network Rail to ‘review and improve the management and assurance systems for all control centre processes’, but the response only refers to EWAT. We have asked Network Rail the justification for this.

13. We have also asked Network Rail to explain what assurance processes they have in place, or are planning to put in place, to ensure operational staff have the most up to date documentation to inform decisions regarding control measures to be put in place following the reporting of defects.

14. 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
- is taking action to implement it, but ORR has yet to be provided with a timebound plan.

Status: Progressing. **ORR will advise RAIB when further information is available regarding actions being taken to address this recommendation.**

Information in support of ORR decision

15. On 11 July 2017 Network Rail provided the following initial response:

Route Controls continuously review the weather model to determine the level of action required for local weather management, in conjunction with the current National Control Instructions (NCI), Instruction: 7-1, Issue: 5 (NR/L3/OCS/043/7.1), and, Instruction: 7-2, Issue: 5 (NR/L3/OCS/043/7.2). NB; The NCI is being developed and updated and re-issued as a National Operations Procedure (NOP) as part of an ongoing project to align the current 3 modules for the Operations, Control and Station staff. Scotland Route Control have newly developed weather management plans, which covers all types of extreme weather events and aligns with the EWAT conferences. These EWAT now involve more of a focus on infrastructure and structural issues which delivers a strong balance between the need to operate a train service and the safety impact of extreme weather events.

Network Rail's National Control Manager will review the current Route EWAT processes to ensure that structural considerations form part of this process by all Routes in the event of extreme weather events. Routes will submit their current local EWAT management plans to the National Control Manager and they will check that consideration is being given to provide mitigation at high risk structures where necessary. Where this is not being carried out a recommendation will be made for those routes to have this included in their strategy for weather management. This will occur through the re-issue of NR/L2/OPS/021.

Action to be carried out through National Control Manager by National Weather Specialist and / or Planning and Resilience Manager - Weather.