

Oliver Stewart
RAIB Recommendation Handling Manager



1 August 2024

Mr Andy Lewis
Deputy Chief Inspector of Rail Accidents

Dear Andy,

RAIB Report: Landslips affecting Network Rail infrastructure between June 2012 and February 2013

I write to provide an update¹ on the action taken in respect of recommendation 4 addressed to ORR in the above report, published on 2 April 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 4 is **'Closed'**.

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.

Yours sincerely,

Oliver Stewart

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

Recommendation 4

The intent of this recommendation is for Network Rail to formalise the processes already being developed and introduced with the intent of improving management of earthworks during adverse weather, and for these processes to include timely updating of the 'at risk' register.

Network Rail should complete initial development of its modified adverse weather earthwork management system. It should then alter its standards and, if necessary, other formal documentation to reflect the modified system. The updated documentation should include a process for the rapid updating of the 'at risk' register when significant risks become apparent

ORR decision

1. Network Rail originally submitted a closure statement in 2018 setting out action taken to improve the management of earthworks during adverse weather. We concluded Network Rail had not addressed the final point in the recommendation concerning a mechanism for the rapid updating of the 'at risk' register when significant risks become apparent.

2. Network Rail have recently published an updated version of NR/L2/CIV/086 Module 9 (Earthworks Adverse/Extreme Weather Risk Assessment) to include a process for rapidly updating the at-risk register in the event of the emergence of significant risks, instead of just on an annual basis. The Standard now states, at Clause 5.1:

The A/EWP shall be updated outside of the annual review cycle and rapidly updated where the emergence of significant risks (such as accelerated asset deterioration or partial failure) require inclusion for mitigation as the asset can no longer be managed within Level 1 management controls (see CIV/086).

3. On the basis of this update, we conclude Network Rail has taken appropriate action to close the recommendation.

4. 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: Closed.

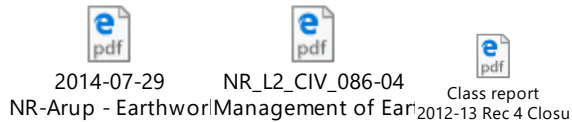
Previously reported to RAIB

5. On 31 March 2015 ORR reported that it was not satisfied that the last part of the recommendation had been adequately addressed by Network Rail; the updated documentation should include a process for the rapid updating of the 'at risk' register

when significant risks become apparent. ORR continued to engage with Network Rail to resolve this concern. See full response to RAIB at Annex B.

Update

6. On 18 December 2018 Network Rail provided the following closure statement and supporting evidence:



7. Network Rail state in summary the following:

Please note: action plans for this recommendation set were accepted for which Action 3 was agreed to address real-time weather intelligence, Action 4 Adverse/Extreme Weather Risk Assessment, and Action 5 Adverse/Extreme Weather Dynamic Response.

Action 4:

The first generation Adverse/Extreme Weather Risk Assessment methodology plotted Track 5 Chains on an "Adverse/Extreme Weather Matrix", which was reviewed in terms of its x-axis (likelihood of failure, based on SSHI/RSHI), y-axis (consequence of failure, biased towards local infrastructure features), and regions of risk (same for all asset types). At this time the "Policy Matrix" plotting Asset 5 Chains on axes of SSHI/RSHI versus modified-EPM (biased towards route train/timetabling features) was also under review. Reviews were carried out with "Panels of Experts" assembled from Routes as well as specialist consultants, and the Regulator was consulted throughout.

To address observed inadequacies, the result of the reviews was development and implementation of:

- new Hazard Indices (SEHI and SCHI) for soil slopes that are a five-times better predictor of failure than the SSHI algorithms they replace*
- the Common Consequence Tool (CCT) for Earthworks that integrates both route train/timetabling features and local infrastructure features but is dominated by neither*
- a new combined Earthworks Safety Risk Matrix plotting Earthwork Assets (formerly known as Asset 5 Chains) on axes of HI vs. CCT replacing the Policy and Adverse/Extreme Weather Matrices*
- overlays for each asset type that guide where Renew/Refurb/Maintain Interventions reducing likelihood of failure (i.e. HI) may be carried out*
- overlays for each asset type that guide where Mitigations including inclusion in Adverse/Extreme Weather Plans reducing consequence of failure (i.e. CCT) should be directed*
- Issue 4 of Company Standard NR/L2/CIV/086 Management of Earthworks on 5 September 2014 mandating the above*

- *Issue 1 of Guidance Note NR/GN/CIV/207 Definition of Adverse/Extreme Rainfall Prioritisation Procedure*
- *Civils Adjustment Mechanism (CAM) work planning tools ("Powerpacks") with the above built-in (i.e. including a national second generation Adverse/Extreme Weather Risk Assessment)*

7. On 14 June 2024 Network Rail provided the attached confirmation of publication of 086 Module 9 in support of closure:



EXTERNAL Landslips
Rec 4.msg

Previously reported to RAIB

Recommendation 4

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Steps taken or being taken to address the recommendation

1. On 20 June 2014, Network Rail provided the following information:

The developments around adverse weather management made in response to Improvement Notice I/ENF-NOT-57/JPMcG from ORR will be written into the NR/L2/CIV/086 Management of Earthworks Company Standard. This will mandate each Route to:

- *Risk assess and prioritise earthworks that require operational control measures during adverse rainfall when pre-set triggers are reached;*
- *Set suitable rainfall triggers;*
- *Assure itself that Network Operations (Control/Maintenance) have:*
 - *An appropriate documented baseline response plan agreed, signed-off and operational;*
 - *A weather warning system in place that initiates the baseline response plan when the pre-set triggers are reached;*
- *Revisit the risk assessment, trigger values, weather warning system and baseline response plan annually and update where appropriate.*

Timescale: 31 October 2014

2. On 5 August 2014, ORR wrote to Network Rail asking it to explicitly explain how it addressed the last part of the recommendation. On 26 August 2014 Network Rail provided the following information:

Company Standard NR/L2/CIV/086 (Issue 4) is programmed for publication on 5 September 2014. The updated Standard mandates each Route to create and maintain an Adverse / Extreme Weather Plan (for Earthworks), and to review this on at least an annual basis. The fitness for purpose of the baseline plan is considered at the time of the EWAT. A review of the EWAT process is currently being undertaken as part of Network Rail's Weather Resilience & Climate Change Programme's (WRCC) National Weather Event Response (NWER) Sub-programme. This Sub-programme will also address Recommendations 1, 3 and 5.

3. On 5 November 2014, Network Rail provided a copy of its 'Closure Statement':

The first generation Adverse/Extreme Weather Risk Assessment methodology plotted Track 5 Chains on an "Adverse/Extreme Weather Matrix", which was reviewed in terms of its x-axis (likelihood of failure, based on SSHIRSHI), y-axis

(consequence of failure, biased towards local infrastructure features) ,and regions of risk (same for all asset types). At this time the "Policy Matrix" plotting Asset 5 Chains on axes of SSHI/RSHI versus modified-EPM (biased towards route train/timetabling features) was also under review. Reviews were carried out with "Panels of Experts" assembled from Routes as well as specialist consultants, and the Regulator was consulted throughout.

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- the Common Consequence Tool (CCT) for Earthworks that Integrates both route train/timetabling features and local infrastructure features but is dominated by neither;
- a new combined Earthworks Safety Risk Matrix plotting Earthwork Assets (formerly known as Asset 5 Chains) on axes of HI vs. CCT replacing the Policy and Adverse/Extreme Weather Matrices;
- overlays for each asset type that guide where Renew/Refurb/Maintain Interventions reducing likelihood of failure (i.e. HI) may be carried out;
- overlays for each asset type that guide where mitigations including inclusion in Adverse/Extreme Weather Plans reducing consequence of failure (i.e. CCT) should be directed;
- Issue 4 of Company Standard NRIL2JCIV/086 Management of Earthworks on 5 September 2014 mandating the above;
- Issue 1 of Guidance Note NRIGNICIVI207 Definition of Adverse/Extreme Rainfall Prioritisation Procedure; and
- Civils Adjustment Mechanism (CAM) work planning tools ("Powerpacks ") with the above built in (i.e. including a national second generation Adverse/Extreme Weather Risk Assessment).

ORR decision

4. ORR is not satisfied that the last part of the recommendation has been adequately addressed; *The updated documentation should include a process for the rapid updating of the 'at risk' register when significant risks become apparent.* ORR continues to engage with Network Rail to resolve this concern.

Status: In-progress. ORR will update RAIB by 28 August 2015.