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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: Derailment of a freight train near Langworth, Lincolnshire, 30 June 2016

I write to report¹ on the consideration given and action taken in respect of the three recommendations addressed to ORR in the above report, published on 24 June 2016.

The annex to this letter provides details in respect of each recommendation. The status of recommendations 1 and 2 is '**implementation on-going**'; and the status of recommendations 3 and 4 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 4 recommendations were addressed to ORR when the report was published on 24 June 2016.
2. After considering the recommendations ORR passed all four of them 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 recommendations 1 and 2 and both the learning points in the report to the attention of other infrastructure managers (HS1, TfL, Nexus and the HRA) 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 for Network Rail to improve the reliability and accuracy of the stress free temperatures recorded in its database of rail stresses as a key element of its strategy for the prevention of track buckles.

Network Rail should:

- a. review its guidance to maintainers on the circumstances in which:
 - a re-measurement of stress free temperature; or
 - the re-stressing of rails to a stress free temperature of 27°C, is considered appropriate.

The review should include an assessment of whether sufficient account is taken of factors not explicitly covered by the standard currently, such as the difficulty of maintaining stress in short sections of plain line between abutting switch toes or the nature of any maintenance work carried out, which can affect the buckling resistance of vulnerable track; and

- b. develop a programme to deliver any actions arising from the review, including amendments to standards and early rebriefing of track maintenance staff, to meet the intent of the recommendation

ORR decision

4. Network Rail's initial response refers to a review of materials covering hot weather preparation and a review of the use of RailStress to manage records of Stress Free Temperature (SFT). These two pieces of work were due to be completed by 30 September 2016 and 30 November 2016 respectively, but Network Rail have not yet confirmed this.
5. As well as confirmation that both of the reviews have been completed and the outcomes, we've asked Network Rail to confirm if the update included publishing and briefing modified documents.

6. 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, subject to completion of their time-bound plan.

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

Information in support of ORR decision

7. On 2 November 2016 Network Rail provided the following initial response:

To satisfy this recommendation Network Rail will review all current hot weather management controls and guidance to identify any gaps in requirements. Where gaps are identified the existing controls will be revised and changes re-briefed.

The recommendation will be addressed through the following stages:

1. *Review materials covering hot weather preparation, including specific assessment of the content covering re-measurement of stress free temperature (SFT), re-stressing and factors which increase the difficulty of maintaining the required rail stress. Materials to be reviewed will include:*
 - a. *Network Rail standards (NR/L2/TRK/2102, NR/L2/TRK/001, NR/L2/TRK/3011, NR/L3/TRK/3011, NR/L3/TRK/3012)*
 - b. *Business Critical Rules controls (Track Buckle Bow Tie, Means of Control)*
 - c. *Track Work Information sheets:
NR/GN/TRK/7001/TWI2G002, 2G017, 2P013
NR/GN/TRK/7001/TWI3G026, 3G031, 3P013, 3P017*
 - d. *TME training course*
 - e. *Other guidance material, e.g. Hot Weather Blue Book (ref 8000/1)*

Target completion date: 30 Sept 2016

2. *Review the use of the RailStress to manage records of SFT and identify opportunities to improve the reliability and accuracy of these records.*

Target completion date: 30 Nov 2016

3. *If necessary based on the findings from step 1 and 2, update, publish and brief modified documents to all those carrying out hot weather management.*

Target completion date: 30 Sept 2017

The action plan is to include a period after completion of step 3 for production, review and sign-off of the closure statement.

Overall target completion date: 30 November 2017

Recommendation 2

The intent of this recommendation is to reduce the risk of track buckles by enabling the consistent application of Network Rail's procedure for the calculation of critical rail temperatures, with sufficient account taken of all relevant factors.

Network Rail should:

- a. assess whether the descriptors of ballast shortage conditions in its current standards and guidance require further clarification to enable consistent calculation of critical rail temperatures. The review should also include an evaluation of whether additional allowances should be made for combinations of conditions, such as localised ballast shortage in switches and crossings (particularly around point motor bearers), sub-intervention level misalignments and any maintenance that could have affected the stress free temperature; and
- b. develop a programme to deliver any actions arising from the review, including amendments to standards and rebriefing of track maintenance staff, to meet the intent of the recommendation.

ORR decision

8. As per recommendation 1, we asked Network Rail to confirm that the review of materials covering hot weather preparation referred to in their response has been completed and timescales for any further work identified. Network Rail have not yet done this.

9. We have also asked for conformation that the Hot Weather Briefing has been completed and briefed to staff, as the response indicated this would be done by 8 December 2016.

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; and
- is taking action to implement it, subject to completion of their time-bound plan.

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

Information in support of ORR decision

11. On 2 November 2016 Network Rail provided the following initial response:

To satisfy this recommendation Network Rail will review all current hot weather management controls and guidance to identify any gaps in requirements. Where gaps are identified the existing controls will be revised and changes re-briefed.

The recommendation will be addressed through the following stages:

- 1. Review materials covering hot weather preparation, including specific assessment of the content covering ballast shortage descriptors and combinations of high buckle risk conditions. Materials to be reviewed will include:
 - a. Network Rail standards (NR/L2/TRK/001)*
 - b. Business Critical Rules controls (Track Buckle Bow Tie, Means of Control)*
 - c. Track Work Information sheets
NR/GN/TRK/7001/TWI2G002, 2G017, 2P013
NR/GN/TRK/7001/TWI3G026, 3G031, 3P013, 3P017*
 - d. TME training course*
 - e. Other guidance material, e.g. Hot Weather Blue Book (ref 8000/1)**

Target completion date: 30 Sept 2016

- 2. Prepare a Hot Weather Briefing, to be delivered annually to all TMEs, Section Managers [Track] and Section Supervisors by mid-January each year. The briefing will reiterate the importance of stress reinstatement, in particular around S&C components (to address Rec 1) and will clarify current descriptors for ballast shortage and combinations of track conditions that affect buckle risk / SFT.*

Target completion date: 30 Nov 2016

- 3. Deliver briefing at December Track Quarterly Standards Briefing for onward cascade by RAM[T]s.*

Target completion date: 8 Dec 2016

- 4. If necessary based on the findings from step 1, update, publish and brief modified documents to all those carrying out hot weather management*

Target completion date: 30 Sept 2017

The action plan is to include a period after completion of step 4 for production, review and sign-off of the closure statement.

Overall target completion date: 30 November 2017

Recommendation 3

The intent of this recommendation is to ensure that there are sufficient resources available to Lincoln depot to manage the risks from track buckling.

Network Rail should review the Ellipse track maintenance workbank for the area covered by its Lincoln depot to ascertain the adequacy of resources to prepare the track for hot weather, taking account of the overall workload and the level of resources assessed as required in its 'Phase 2BC' reorganisation, and then implement a plan to manage any shortfall

ORR decision

12. We considered Network Rail's initial response to recommendation 3 to be insufficient, as it did not address the key question posed by the recommendation, which was to review the adequacy of resources and to produce a plan to address any shortfall. We wrote to Network Rail on 8 December 2016 requesting they resubmit their response, taking the following actions to answer the recommendation fully:

- I. Define all of the activities the Track Maintenance function has to manage & deliver. This should be presented in the form as list of activities e.g. Inspections, reactive work orders, etc.
- II. Each of these defined activities will be quantified with respect to work hours, equipment, resources (e.g. funding, manpower, capability etc.). The principle is to define the total work commitment for each of activity.
- III. Complete a 'Gap Analysis' between demand and capability to identify shortfalls.
- IV. Produce a robust plan to manage these shortfalls, ensuring that risks are appropriately controlled.
- V. Put in place a means for monitoring the effectiveness of the management of Track Maintenance activities.

13. Network Rail provided a more detailed work plan to address update response to recommendations 3 and 4 on 7 March 2017, which were due to be completed by the end of March 2017. We have asked Network Rail to confirm completion.

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;
- but has not yet confirmed completion of the actions associated with the recommendation

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 2 November 2016 Network Rail provided the following initial response:

Recommendations 3 and 4 will be addressed by the following action plan:

Network Rail will undertake a review of the Ellipse track maintenance workbank for the area covered by the Lincoln depot, specifically considering items of work that have been cancelled or re-prioritised around switches and crossings, and particularly those which have an impact on hot weather resilience i.e. painting of rails around switches and crossings, boxing in ballast, ballast drops, etc.

A selection of sites will be chosen, sites which have undergone recent intervention, such as tamping, lifting and packing etc. and a thorough check will be carried out to see that the SFT post work has been assessed and applied correctly.

A selection of switches and crossings in the Lincoln area will be inspected to validate that on-site conditions, specifically around ballast profiles, match the local teams understanding of its SFT and hot weather risk.

Additionally, the review will establish what briefing and learning has been undertaken on the Lincoln TME area and on East Midlands as a whole following this incident, including how the teams are now checking the effectiveness of the holding arrangements of clamp plates in breather switches.

The outcome of the review will be evaluated and will determine any further actions.

16. Network Rail provided a further update on 7 March 2017:

The RAM team undertook an independent review of Hot Weather Management on TME Lincoln area in August 2016.

Recommendations arising from that review have been progressed by the local team and I can advise that:

- *There is a strong correlation between the CRT register and hot weather critical items in Ellipse. There was a discrepancy of only 4 noted on 7th February. The TME is addressing the delta.*
- *The RA21 (ellipse hot weather) code is now widely used by the TME Lincoln team. This has been independently validated by the Route OTME.*
- *A local RACI guide has been created by the acting IME to confirm accountabilities in the section teams.*
- *In addition to the MST driven inspections in Ellipse, the TME is carrying out additional site based adjustment switch assurance. So far, 18 out of 78 have been completed, with the remainder committed to prior to the end of March.*

In addition

- *RA21 coding has been adopted across the EM Area and its use is being independently validated by the RAM team.*
- *All TME's on EM have confirmed that they plan to complete their hot weather prep before 1/5/17. Any remaining items will be recorded on the CRT register.*

Next steps

- *An off line validation of the adjustment switch register will be undertaken using track recording data, specifically reviewing the CWR / jointed rail interface on Lincoln TME area. This will then be cross checked with ellipse.*
- *A sample 'end to end' validation check will be undertaken by the RAM team on Lincoln TME area. This will validate on site conditions to those reported in the TEF and ultimately ellipse.*
- *All track inspectors on East Mids will receive a hot weather management brief.*
- *All TME's will undertake a 10% verification of their adjustment switches.*

Unless stated otherwise, these actions will be complete by 31/3/17.

Also, the RAM team have produced a graphical report which considers the key track quality indicators on Lincoln TME area over the last 42 months, which is attached to this email. It shows that in terms of management of these key outputs:

Wrong Side Failures

L2 twists

L2 cyclic top

Repeat L2 twists

Repeat L2 cyclic top faults

GTG and PTG

Broken rail and serious defects.

In summary PTG and GTG are no cause for concern (and are both better than the EM average), although have slightly deteriorated recently. This is attributed to the GNGE route 'bedding in' following its recent enhancement works. Serious rail defects are much lower than in previous years. CAT I, A and B instances (and repeats) remain in single figures. Backlog on Lincoln TME currently stands at 29. EM Area is on target for being removed from the ORR Escalator for L2 fault management.

I remain on plan to provide a full response to the recommendations by 31st March. I have a further review scheduled for next week with the IMDM, IME and RAM. I will advise following that review, if I need to request an extension.

Recommendation 4

The intent of this recommendation is to ensure that there is a robust process in place at Lincoln depot for reprioritising work orders relating to hot weather preparation so that the mitigation of any associated risks is appropriately managed.

Network Rail should examine the process of managerial oversight of the reprioritisation and cancellation of work orders at its Lincoln depot assure itself that these are being undertaken in accordance with company procedures, that the decision-making processes are technically sound and risk based and, where necessary, any interim mitigation measures are put in place (paragraph 101b).

This recommendation may have wider application within Network Rail's maintenance functions.

ORR decision

17. ORR notified Network Rail that we considered their initial response to be insufficient, as it set out a review of work done on the ground, rather than addressing management oversight, which we consider to be the key theme of the recommendation.

18. We made clear to Network Rail we would expect the response to include an independent review of the management systems and a review of the evidence on Network Rail's systems that support (or not) the decisions to reprioritise work in accordance with their own procedures. The recommendation refers to reprioritisation and cancellation in the widest sense, not just the management of hot weather precautions.

19. Network Rail provided a more detailed work plan to address update response to recommendations 3 and 4 on 7 March 2017, which were due to be completed by the end of March 2017. We have asked Network Rail to confirm completion. If addressed as described, the action taken would satisfactorily address both recommendation 3 and 4.

20. 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
- but has not yet confirmed completion of the actions associated with the recommendation

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

21. See paras 15 and 16 for Network Rail response to both recommendations.