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RAIB Relationship and Recommendation
Handling

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3 March 2016



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 at Stoke Lane Level Crossing, near Nottingham.

I write to report¹ on the consideration given and action taken in respect of recommendations 2, 3 and 4 addressed to ORR in the above report, published on 2 April 2015.

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

Recommendation 1 was addressed to HSE, so the status is '**Other public body**'.

The status of recommendation 2 and 4 is '**Implementation ongoing**'. ORR will advise RAIB when further information is available regarding actions being taken to address these recommendations.

Network Rail have not provided a response to recommendation 3 so the status is '**insufficient response**'.

We will publish this response on the ORR website on 4 March 2016.

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. Recommendation 1 was addressed to HSE and recommendations 2, 3 and 4 to ORR when the report was published on 2 April 2015.
2. After considering the recommendations ORR passed recommendations 2, 3 and 4 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.

Recommendation 1

The intent of this recommendation is that the HSE, as the investigatory and regulatory authority for the construction of UTXs, disseminates the key learning points from this accident to the UK tunnelling industry. It is intended that the tunnelling companies then review their methods of working and make any necessary changes to prevent similar future accidents or incidents.

The Health and Safety Executive (HSE) should:

- a) disseminate the key lessons from this accident (paragraph 109 refers), to UK organisations representing tunnelling companies (e.g. The Pipejacking Association, British Tunnelling Society, UK Society for Trenchless Tunnelling), and request them to further disseminate the learning points to their members, so that individual companies can review and improve their working practices as necessary.
- b) assess the need to carry out monitoring checks at UTX construction sites, as part of its audit programmes, to verify that the procedures being followed on site are in line with industry good practice and lessons learned from this investigation.

ORR decision

3. HSE provided RAIB with a response to this recommendation on 30 November 2015.

Status: Other public body or authority

Recommendation 2

The intent of this recommendation is that there is one consistently applied Network Rail standard for UTXs, applicable to both outside parties and Network Rail, so that in future there is clarity about Network Rail's complete requirements and expectations and the checks its engineers should undertake.

Network Rail should review how its current processes related to the construction and approval of UTX works are being applied, and consider the most effective way of merging its national standard and local route guidance documents into a unified set of requirements for UTXs. These requirements should:

a) include improvements to cover lessons learned from this accident as detailed at paragraph 109, and be included in a process of periodic review to check that they remain up to date;

b) list the main sources of risk to its infrastructure from the construction of UTXs (eg ground settlement, heave or voiding) and how it expects those risks to be mitigated;

c) provide clarity on roles and responsibilities within Network Rail, and its expectations of outside parties, particularly with respect to assessing and managing risk and communication for matters affecting safety of the railway; and

d) seek to use a risk based approach which leads users to additional control measures for higher risk UTXs, such as those at level crossings.

Once developed, the requirements should be the subject of appropriate briefing and training to relevant Network Rail staff and made available to outside parties installing UTXs. Compliance with the requirements should also be subject to a system of periodic internal audit.

ORR decision

4. Having reviewed the information provided by Network Rail in writing and subsequent meetings, we are content they are taking appropriate action to implement the recommendation. However Network Rail will need to provide appropriate evidence to support the actions in their work plan.

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

- taken the recommendation into consideration; and
- is taking action to implement it by 3 October 2016

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

Information in support of ORR's decision

6. In its response of 12 November 2015 Network Rail provided the following information:

The national standard for UTX is NR/SP/CIV/044. A route guidance document has been produced by LNE and EM routes, which may be being adopted by other routes. These documents will be reviewed and merged to ensure the requirements are coherent and comprehensive in relation to undertrack crossing design and

construction. Consultation will take place with industry experts and Network Rail Engineers to ensure best practices are reflected.

A working group has been formed, aimed to address the requirements of the recommendation. The working group comprises technical expertise in tunnelling, structures and geotechnical disciplines. It also includes a representative from the senior asset protection engineers (SAPE), relative to outside/ third party projects, and a representative from Infrastructure Projects (IP), relative to Network Rail internally driven projects. The intention is to engage the Pipe Jacking Association (PJA) and the United Kingdom Society of Trenchless Technology (UKSTT) to ensure the provided guidance represents industry best practices. An undertrack crossing consultant will be procured to ensure the requirements detailed in the revised standard are practical and safe to implement.

Briefing and progress updates with SAPE and IP teams have been, and will continue, to take place throughout the project.

An interim revised NR/SP/CIV/044 standard will be published as a safety mitigation measure partway through the programme. It will address safety critical elements of NR/SP/CIV/044 which are considered to be non-complimentary and contradictory to industry best practice. It will also list potential risks associated with trenchless installation piping methods, which will require consideration throughout the project. A pre-construction checklist will be included to assist in the safe planning of UTX projects. Method-specific checklists will be provided to administer daily inspections and deliver the required quality of construction.

The interim standard NR/SP/CIV/044 revision will encompass the following changes:

- Requirements to ensure the required skills, knowledge and experience, and if applicable organisational capabilities, are assign to project. (PART C)
- Requirements to ensure roles, responsibilities and functions are clarified. (PART C)
- Define role of Geotechnical Specialist assigned to geotechnical risks. (PART C)
- Items listed for consideration in developing contingency and monitoring plan. (PART A)
- Deterring UTX beneath level crossings. (PART A)
- Depth of cover requirements to consider method of installation, existing ground condition (founded on Eurocodes standards) and affected assets; in addition to minimum requirements. (PART A)
- List of risks to be mitigated in planning design and construction phase. (PART B)
- Guidance on information required to support Approval in Principal. (PART B)
- External references to ensure industry best practice guidance applied. (PART A, B, C)
- Checklists to ensure that all the requirements of the UTX adequately considered and that the risks associated with undertrack crossings are addressed during the site works (including the appropriate use of additives such as bentonite and monitoring of excavated spoil). (PART A, B, C)

- Requirements for keeping records, with associated guidance. (PART A, B, C)

The final revision of the standard will address the full requirements of the recommendation and will resolve the following items:

- Align NR standard details NR/CIV/SD/610 & SD/350 with NR/SP/CIV/044. (PART A)
- Align standard NR/SP/SIG/19812 with NR/SP/CIV/044. (PART A)
- Create organigram and communication visualisation chart. (PART C)
- Establish a risk based approach to manage the associated risks with individual UTX projects to apply appropriate mitigation measures. (PART D)
- Review product acceptance – restrictions to ensure suitability for design. (PART A)
- Consider requirements for structural capacity of pipe. (PART A)
- Establish NR CDM role and responsibilities when project proposed by outside / third party. (PART C)
- Defining the NR/SP/CIV/044 scope and application. (PART A)
- Establish appropriate category design check applied, based on risk and complexity (PART D)
- Requirements for CSM application. (PART C)

Once developed, the requirements will be the subject of appropriate briefing and training to relevant Network Rail staff, via stakeholder consultation, presentations to key stakeholders and guidance documents. The standard will be made available to outside parties through the standards portal on the formal standards publication date provided below.

Compliance with the requirements will be audited through the periodic Engineering Verification programme in accordance with NR/L2/RSE/070.

Action details	Action completion date
Literature Review	Completed
Review UTX Standards and Guidance	Completed
Form working group	Completed
Brief and update progress to key stakeholders	Periodically throughout project
Produce interim standard NR/SP/CIV/044 remit	Completed
Draft interim NR/SP/CIV/044	31 st October 2015
Stakeholder Consultation	14 th November 2015
Revise and finalise interim NR/SP/CIV/044	11 th December 2015
Make interim NR/SP/CIV/044 available for use on standards intranet	11th December 2015

<i>Formal Publication of interim NR/SP/CIV/044</i>	<i>5th March 2016</i>
<i>Produce standard NR/SP/CIV/044 final version remit</i>	<i>1st May 2016</i>
<i>Complete draft version of final NR/SP/CIV/044 revision</i>	<i>15th May 2016</i>
<i>Stakeholder consultation</i>	<i>29th May 2016</i>
<i>Revise and finalise NR/SP/CIV/044</i>	<i>29th July 2016</i>
<i>Make NR/SP/CIV/044 available for use on standards intranet</i>	<i>29th July 2016</i>
<i>Set requirements for engineering verification requirements and incorporate into annual programme.</i>	<i>29th July 2016</i>
<i>Briefing and training requirements developed.</i>	<i>29th July 2016</i>
<i>Handover to business critical rules programme.</i>	<i>29th July 2016</i>
<i>Standard publication to make available to outside parties</i>	<i>5th September 2016</i>
<i>Following completion of above action plan, draft closure document and seek review and approval by TS.</i>	<i>19th September 2016</i>
<i>Submit closure form to SSD and allow for review and formal closure</i>	<i>3rd October 2016</i>
<i>Formal closure of recommendation</i>	<i>3rd October 2016</i>

Recommendation 3

The intent of this recommendation is that Network Rail's asset protection engineers have sufficient knowledge about UTXs, and the time to properly assess and manage the associated risks to its infrastructure.

Network Rail should:

- a) review the working knowledge of its asset protection engineers with respect to UTXs and where necessary provide appropriate training, which should include information on types of UTX, methods of construction, best practice, failure modes, seeking specialist assistance; and
- b) review the resourcing in its asset protection teams to check that engineers have sufficient time allocated to carry out their duties and access to specialist technical assistance when required, and where necessary, make any appropriate changes.

ORR decision

7. Network Rail has failed to provide a response to this recommendation. ORR has approached the Network Rail contact for recommendations 2 and 4 to try and ascertain what action they are taking to implement this recommendation.

8. As Network Rail have not provided a response to this recommendation, ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, it has:

- not taken the recommendation into consideration; and
- has not provided a response setting out how it will be delivered.

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

Information in support of ORR's decision

9. Network Rail has not provided a response to recommendation 3. The original deadline for a response to all three recommendations directed to Network Rail was 19 June 2015. Responses to recommendations 2 and 4 were provided on 12 November 2015 with a promise to respond to recommendation 3 following a meeting on 8 December 2015.

Recommendation 4

The intent of this recommendation is that Network Rail has a procedure for monitoring settlement in the vicinity of UTXs and other civil engineering works adjacent to its infrastructure, which can be relied upon to accurately measure ground movements that could adversely affect the safety of the line.

Network Rail should:

- a) review the suitability and action limits of its standard for the monitoring of track movement over or adjacent to civil engineering works, including UTXs. This should take into account calculated predictions of settlement, rates of movement and the potential for the movements to be masked by existing structures, and not rely upon inappropriate track maintenance standards; and
- b) make any necessary changes to its procedures and brief these out to relevant staff.

ORR decision

10. Having reviewed the information provided by Network Rail in writing and subsequent meetings, we are content they are taking appropriate action to implement the

recommendation but further detail will be required. A further panel meeting will be held to discuss the further information we have requested from Network Rail.

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

- taken the recommendation into consideration; and
- is taking action to implement it by 3 October 2016.

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

Information in support of ORR's decision

12. In its response of 12 November 2015 Network Rail provided the following information:

NR/BS/LI/045 outlines the monitoring regime requirements for UTX works. A project specific monitoring regime is agreed to as part of the Asset Management Plan (AMP) process in accordance with NR/L3/MTC/089, meeting the requirements of NR/L2/MTC/088.

NR/BS/LI/045 Clause 14 will be reviewed to assess the suitability of trigger levels and associated actions to be used in the proposed project monitoring regime.

The content of NR/BS/LI/045 will be reviewed and modified where required. The existing NR/BS/LI/045 was published in 2008. A Letter of Instruction is intended to be a temporary measure to address deficiencies within NR's standards. Due to the age of NR/BS/LI/045, its revised content will be relocated within the NR standards.

The standards will stipulate a requirement for bespoke monitoring regime. The requirements shall cover the following:

- *Ground movement trigger levels shall be set for individual projects based on the outcome of a failure modes effect analysis, which considers the effects on adjacent infrastructure. The risk assessment shall include but not be limited to consideration of the calculated settlement, the predicted actual settlement, the ground conditions, rate of any movement, existing condition of the track and predicted failure modes. (PART A)*
- *The monitoring regime for each project shall include trigger levels, frequency of monitoring and associated actions with owners. This shall be agreed to as part of the Asset Management Plan (AMP) process in accordance with NR/MTC/089, which meets the requirements of NR/L2/MTC/088 process. (PART A)*
- *A baseline survey shall be undertaken in advance of works to identify any pre-existing conditions and any environmental fluctuations in track position. (PART A)*

Collaborative working will be required between Network Operations and STE Structures to agree on the withdrawal of the Lol and its incorporation into revised standard/s. (PART B)

Once developed, the requirements will be the subject of appropriate briefing, via stakeholder consultation, presentations to key stakeholders and guidance documents. The standard will be made available to outside parties through the standards portal on the formal standards publication date provided below. (PART B)

Action details	Action completion date
<i>Establish current standards interfaces</i>	<i>29th May 2015</i>
<i>Review the suitability and action limits of NR/BS/LI/045 and identify appropriate standards for placement of Lol content.</i>	<i>27th November 2015</i>
<i>Revise NR/BS/LI/045 content and embed into the NR specific standards.</i>	<i>1st May 2016</i>
<i>Include content for specific UTX monitoring requirements as part of addressing recommendation 2 in NR/SP/CIV/044.</i>	<i>1st May 2016</i>
<i>Stakeholder consultation</i>	<i>29th May 2016</i>
<i>Revise and finalise NR/SP/CIV/044</i>	<i>29th July 2016</i>
<i>Make NR/SP/CIV/044 available for use on standards intranet</i>	<i>29th July 2016</i>
<i>Handover to business critical rules programme.</i>	<i>29th July 2016</i>
<i>Standard publication to make available to outside parties</i>	<i>5th September 2016</i>
<i>Following completion of above action plan, draft closure document and seek review and approval by TS.</i>	<i>19th September 2016</i>
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