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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: Collision between a train and a fallen bridge parapet at Froxfield, Wiltshire on 22 February 2015**

I write to provide an update<sup>1</sup> on the action taken in respect of recommendation 3 addressed to ORR in the above report, published on 20 January 2016.

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 3 is **'Implemented'**.

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 on 5 April 2022.

Yours sincerely,



Oliver Stewart

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

### Recommendation 3

*The intent of this recommendation is that Network Rail's RVI assessment procedures take into consideration the risk of a large vehicle on an overline bridge knocking over a parapet onto the tracks below.*

Network Rail should:

- a) include a requirement (aligned with any revised DfT guidance arising from recommendation 3) in its RVI assessment procedures for overline bridges, to specifically assess the risk of road vehicles damaging a bridge parapet and knocking over debris onto the track below so that proportionate mitigation (eg road signage) can be considered by its RVI assessors; and
- b) brief its RVI assessors accordingly

### ORR decision

1. As well as Network Rail, we addressed the recommendation to Transport for London (TfL), Nexus and the Heritage Railway Association (HRA). DfT has reissued its RVI assessment guidance in line with recommendation 2 from the Froxfield report. Network Rail has updated its own RVI assessment procedures for overline bridges, based on the DfT guidance and have briefed its RVI assessors on the changes.
2. TfL carries out RVI assessment using its own methodology, which follows the same principles as the DfT guidance, but with a different scoring system that takes more account of heavily developed urban areas.
3. Nexus has shared the recommendation with local authority highways departments with responsibility for over bridges, prompting a review of RVI assessment.
4. The HRA reissued guidance note HGR-A0321 (Rail Vehicle Incursions) in June 2021 to take account of the updated DfT guidance. We have written to the 50 largest heritage railways (by number of passengers) to bring the guidance to their attention.
5. 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: Implemented.**

### Previously reported to RAIB

6. On 31 January 2017 ORR reported that implementation of recommendation 3 by Network Rail was dependent on DfT revising their guidance for assessing RVI risk

to include a method for assessing the risk of a bridge parapet being displaced onto the railway by a road vehicle. Network Rail had produced a time bound plan to review their processes against the revised DfT guidance.

## Update

7. On 9 November 2020 Network Rail provided the following closure statement and associated evidence:



8. Network Rail state the following:

*The RVI Technical Working Group set up a standard working group chaired by the National RVI Lead (an Engineer in the Technical Authority) to review this and other outstanding recommendations related to RVI issues. The RVI Technical Working Group is made up of the Route RVI Champions, the National RVI Lead and is chaired by the Lead Route Asset Manager (RAM) for RVI. A revised version of NR/L3/CIV/00012 “Road vehicle incursions: risk assessment of public and non-public bridge and neighbouring sites” (successor to RT/LS/G/00012) was published in September 2020*

*The National RVI Lead worked closely with the Department for Transport on Recommendation 2 so had visibility of the changes to DfT guidance before they were published. This enabled the DfT changes and the revised NR/L3/CIV/00012 to run in parallel*

*The DfT Guidance takes the form of Transport Advisory Leaflet (TAL 06/03) “Managing the accidental obstruction of the railway by road vehicles” which was first published in 2003 and has been subsequently revised in 2017 and 2020. This document covers Public RVI sites – i.e. those roads that are public highways. NR/L3/CIV/00012 covers both Public and Non-Public sites Each site is scored using several factors with the scores added to give a risk score.*

*For Public sites the DfT document TAL 06/03 and NR/L3/CIV/00012 covers the same ground and one key change with the revised standard NR/L3/CIV/00012 is to actually reference TAL 06/03 and in Section 1 it now states “For public sites this standard should be used in conjunction with the Department for Transport Traffic Advisory Leaflet 06/03 (TAL 06/03) “Managing the accidental obstruction of the railway by road vehicles””. In future this enables any changes to the DfT document to be briefed out to RVI Assessors without having to re-issuing NR/L3/CIV/00012*

*The changes made to TAL 06/03 (published September 2020) as part of the DfT response to Froxfield RAIB Recommendation 2 covered the suitability of a road for HGVs, identification of hazards and absent or inadequate signage. Improved clarity was given on what scores should be used for such factors OFFICIAL*

*It should be noted that there was already explicit reference in the DfT documentation (and NR/L3/CIV/00012) to vehicle and/or debris on the track*

*Part b) of the Recommendation was addressed in full by a Technical Briefing of both the revised standard NR/L3/CIV/00012 and the 2020 revised issue of DfT document TAL 06/03 which was given to the RVI Assessors (who attend the RVI Technical Working Group) on 22/09/20*

9. On 22 July 2021 Nexus provided the following update:

*We have contacted the highway departments of our local authority partners and have brought the issue to their attention and they have reviewed their processes for road vehicle incursion.*

*For completeness we can confirm that the local authorities contacted were, Newcastle City Council, Gateshead Council, North Tyneside Council and South Tyneside Council. Metro does run through the Sunderland City Council area but runs on Network Rail infrastructure not our own. Therefore we have not approached Sunderland highways department as we assume they will have been working with Network Rail on this issue.*

10. On 20 July 2021 Transport for London provided the following update:

*You asked how we have taken account of the Department for Transport's guidance in our Road Vehicle Incursion (RVI) assessment procedures.*

*I have outlined our approach below:*

*a) Within London Underground, this risk is handled by the Infrastructure Protection Team in TfL Engineering. RVI assessments are mandated under clause 3.8.1.1 of LU Standard S1023 "Infrastructure Protection" (attached to this email). Although these assessments follow the principles of the DfT guidelines, the DfT guidelines are currently not specifically referenced. Pending the next standard review, this will be addressed through the attachment of a Written Notice mandating use of the latest edition of the document and guidance. This will be done by the end of July 2021.*



S1023  
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*b) All RVI assessments for LU, Trams and Rail for London Infrastructure are undertaken by, or under the control of, a single TfL engineer who has managed this process for several years and, in the event, that any assessments are carried out by others, this engineer ensures that the latest requirements are adhered to. DLR and RfL have previously used consultants for assessments. No new assessments have been conducted since the revised guidelines were issued. When any assessments are required, the scope of our standard will specifically require adherence to the revised guidelines and our assessor(s) will work to this standard.*

*Some other points which might be of interest:*

- *On receipt of the September 2020 revision of the DfT Guidance, TfL Engineering reviewed the changes and concluded that the changes did not warrant a programme of completely revisiting the existing RVI assessments. All new RVI assessments required as a result of proposed changes to the highway, the bridge environment or the bridge itself will fully comply with the DfT Guidance current at the time of the RVI assessment.*
- *All LU road-rail interfaces have been assessed and the highest risk sites have had mitigation measures implemented or designed for implementation.*
- *At the time of the DfT consultation leading to the 2017 changes, LU submitted proposals in the light of our experience of using the 2003 scoring where we believed that scheme underscored certain locations found in heavily developed areas. Our proposals were not incorporated in the issued document. However, we continue to use our refined scoring system in such locations and this is generally accepted by the representatives of the road element.*
- *The TfL Infrastructure Protection Team review Planning Applications on behalf of the railway Infrastructure Managers and increasingly are having to seek modifications where RVI (or Bridge Strike) risks are increased through the proposal. Some Planning Authorities (and in some cases the Highway Authority representative involved) are unaware of the RVI risk and need or process for assessing it. If the ORR has the opportunity to do so, we would support a communication campaign to increase awareness of this issue within Planning (and Highway) authorities*

## Previously reported to RAIB

### Recommendation 3

*The intent of this recommendation is that Network Rail's RVI assessment procedures take into consideration the risk of a large vehicle on an overline bridge knocking over a parapet onto the tracks below.*

Network Rail should:

- a) include a requirement (aligned with any revised DfT guidance arising from recommendation 3) in its RVI assessment procedures for overline bridges, to specifically assess the risk of road vehicles damaging a bridge parapet and knocking over debris onto the track below so that proportionate mitigation (eg road signage) can be considered by its RVI assessors; and
- b) brief its RVI assessors accordingly

## ORR decision and supporting information

### Network Rail

1. On 3 May 2016, Network Rail provided the following initial response:

*DfT to complete the works required to address Recommendation No 2, culminating in the republication of the Guidance Note 'Managing the accidental obstruction of the railway by road vehicles' first published in 2003 – by 30 September 2016. (Milestone estimated to allow for follow on actions below to be time bound)*

*Upon publication of revised DfT guidance, Network Rail will review current processes against the revised guidance and issue draft revised standards/BCRP process documents for stakeholder consultation – by 31 March 2017. (i.e. Publication of DfT Guidance + 6 months) ##*

*Upon completion of stakeholder consultation, formally issue revised standards /process documents and associated guidance to implement revisions to the processes used to manage vehicle incursions – by 30 June 2017. (i.e. Publication of DfT Guidance + 9 months) ##*

*## Closure of this recommendation will be sought on publication of revised standards (and associated guidance) mandating the requirements of a revised RVI process in line with new DfT guidance, and the briefing of its revised requirements to Network Rail's RVI assessors.*

*Management of the revised RVI process will follow publication of standards and the formal closure of this recommendation as business as usual.*

2. Implementation of recommendation 3 by Network Rail is dependent on DfT revising their guidance for assessing RVI risk to include a method for assessing the risk of a bridge parapet being displaced onto the railway by a road vehicle. Network

Rail has produced a time bound plan to review their processes against the revised DfT guidance.

3. 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 a plan in place to implement it, subject to the publication of revised DfT guidance on assessing the risk of a bridge parapet being displaced onto the railway by a road vehicle.

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

### Transport for London

4. On 12 April 2016 TfL wrote to ORR providing separate responses for London Underground, Docklands Light Railway, London Overground, Crossrail and London Trams.

### London Underground

*Following publication of the Department for Transport (DfT) document in February 2003 entitled 'Managing the accidental obstruction of the railway by road vehicles' London Underground complied with the guidance through:*

- a) *Comprehensive review of the system to identify potential Road Vehicle Incursion (RVI) sites whether or not these are owned by LU. The present list numbers 662 sites.*
- b) *Application of the relevant form from the DfT guidance (form 1a - single carriageway road passing over a railway on an overbridge; form 1b - dual carriageway road passing over a railway on an overbridge; form 2 - neighbouring (or parallel) site) to identified sites to generate a risk rating score.*

*The above work was completed to ensure compliance and consistency with DfT guidance. This work has been subject to ongoing review and update. However, from an early stage LU acknowledged certain features of the DfT method considered to be approximations in application to RVI sites on the LU system, specifically:*

- (i) *The method does not explicitly evaluate likelihood or impact; although particular factors in the rating scheme do relate in a general sense to either or both of these parameters.*
- (ii) *The method does not include consideration of human behaviour of road users. Evidence from incidents (lorry incursion at near Oxshott station; parapet demolition at Froxfield) and near misses show human behaviour to be a significant, possibly dominant, contributor to RVI likelihood.*

- (iii) *Certain parameters in the method are bounding from the perspective of the LU railway; specifically the f12 (Permissible Speed and Track Alignment), f13 (Type of Rail Traffic) and f14 (Volume of Rail Traffic) which always score at the highest scale point when applied to LU.*

*LU operates a safety and performance risk assessment method to Civil Engineering assets (STRATA). This is based on each asset being assigned a status of 'Strategic Risk Assessment' (SRA - fully compliant with standards; no specific issues that give rise to a need for detailed risk assessment) or 'Tactical Risk Assessment' (TRA - issues such as condition, location or environment indicate that site specific risk assessment will support management of the asset and/or environment). SRA assets are assessed on a whole line basis and the likelihood apportioned across compliant sites; TRA assets are subject to specific site risk assessment.*

*STRATA defines risk as arising through a number of asset behaviours. This is on the basis that Civil Engineering assets present risk only through potential to behave outside their stable state. The behaviour relevant to RVI sites is Partial Collapse (PC) which is interpreted in this context as the potential for any item or body (road vehicle, debris from structural damage) to come to rest on or near to the railway.*

*LU considers that to fully understand the safety and performance risk presented at RVI sites (due to RVI and due to other asset factors) it is necessary to complete a numerical evaluation of risk consistent with that for all Civil Engineering assets. To achieve this LU have:*

- a) *Used the prioritisation from application of the DfT method as a coarse screen to shortlist the highest priority RVI sites.*
- b) *Assigned TRA status to the highest priority RVI sites hence triggering a site specific risk assessment. At present TRA status is applied to all RVI sites with a DfT rating score greater than or equal to 80. This encompasses 200 of the 662 total sites.*
- c) *Evaluated the safety and performance risk for each of the 80 sites. This is achieved through:*
  - *Assigning a specific Partial Collapse scenario to each shortlisted RVI site (as an analogy to a RVI event) so as to understand RVI risk specifically and in context with other risks that may be presented by the asset.*
  - *Estimating likelihood for the PC scenario. This is based on an overall estimate from historic events (including near misses) apportioned in accordance with DfT score.*
  - *Assigning safety impact depending on the potential outcomes (derived from the LU QRA and the chance that the safety outcome would be realised), and performance impact depending on the unit cost of service disruption and the associated duration.*



*The approach described above generates a numerical safety and performance risk profile for the highest priority RVI sites on LU (as determined from the DfT method). This allows safety risk tolerability and reasonable practicability assessment; and also informs asset management planning through support to business case evaluation of mitigation measures.*

*In response to recommendation 03 LU propose to:*

- a) Continue with the existing process of incorporation of RVI risk into the general Civil Engineering asset risk assessment framework.*
- b) Identify any of the current higher priority sites in terms of potential for debris to affect the railway; and to modify or update the TRA as necessary.*

*LU considers that the risk process it currently has in place for RVI sites identifies and is capable of evaluating the full range of railway obstruction outcomes from such an event.*

*LU would be pleased to actively participate in ongoing development of the DfT RVI method to ensure that the guidance is equally appropriate to our infrastructure and will fully adopt recommendations that emerge from such development. However to date LU has not received an invitation from the DfT to participate in the working group tasked with revising the current guidance for assessing RVI.*

### **Docklands Light Railway**

*There are 18 overline bridges on the DLR Network which are maintained by DLRL, London Borough of Newham and London Borough of Tower Hamlets. Out of these 18 bridges, the four located on the Stratford International Extension were risk assessed in accordance with the Department for Transport (DfT) 2003 document 'Managing the accidental obstruction of the railway by road vehicles'. These were deemed to not require any further remedial measures as they had a score of 70 or less. Of the remaining 14 bridges, a high-level RVI assessment has been carried out and the appropriate mitigation measures put in place in a number of locations. This includes signage and the installation of measures such as trief kerbs.*

*In addition to the above our intention is to initiate a programme of RVI assessments for the DLR Bridges in accordance with the revised DfT guidance arising from the above recommendation. The assessments will be complete by the end of December 2016.*

### **London Overground**

*Rail for London utilise the Railway Group standard or Network Rail Company Standards for bridge strikes so will await their update by RSSB or Network Rail and then adopt them.*

## Crossrail

*Crossrail does not yet exist as a Railway and has, as yet, no duties as an Infrastructure Manager under RoGS. The railway that does exist under the TfL Rail banner falls to Network Rail to consider who will respond in their own right.*

## London Trams

*London Trams are initiating a programme of RVI assessments. These will be carried out by our Civil Engineer who has been briefed on paragraph 103c. The assessments will take into consideration the risk of a large vehicle on an overline bridge knocking over a parapet onto the tracks below. The assessments will be complete by the end of September 2016.*

5. TfL have processes in place to identify and assess the risks associated with potential RVI sites based on the 2003 DfT guidance. TfL will respond to any revised guidance once it is published.
6. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, TfL has:
  - taken the recommendation into consideration; and
  - will take steps to implement it, subject to the publication of revised DfT guidance on assessing the risk of a bridge parapet being displaced onto the railway by a road vehicle.

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

## Nexus

7. On 4 August 2016 Nexus provided the following initial response:
 

*Amend RVI assessment to include any modified guidance issued by DfT: this recommendation was accepted, but at the time of writing we are unaware of any modified guidance having been issued by the DfT.*
8. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Nexus has:
  - taken the recommendation into consideration; and
  - will take steps to implement it, subject to the publication of revised DfT guidance on assessing the risk of a bridge parapet being displaced onto the railway by a road vehicle.

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