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30 November 2021

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

Dear Andrew,

RAIB Report: Tram collision with pedestrian near Market Street tram stop, Manchester on 12 May 2015

I write to provide an update¹ on the action taken in respect of recommendation 3 addressed to ORR in the above report, published on 12 April 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 1 December 2021.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Oliver Stewart', written in a cursive style.

Oliver Stewart

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

Recommendation 3

The intent of this recommendation is for guidance on tramways explicitly to promote measures to evaluate and manage the risk to pedestrians arising from the operation of trams through pedestrianised areas such as Piccadilly Gardens.

UK Tram should, as part of revising guidance for the design and operation of urban tramways, make explicit provision for the management of risk in areas where trams and pedestrians/cyclists share the same space. This should include:

- guidance on the collection and collation of data on accidents and incidents;
- the types of hazards to be considered;
- methods of risk assessment; and
- examples of design and operational measures for mitigating the risk.

ORR decision

1. The recommendation was originally addressed to UK Tram, but the development of guidance for the design and operation of tramways is now carried out by the Light Rail Safety and Standards Board (LRSSB) since it was established in 2018.
2. The recommendation has been addressed by a number of different work streams, covering the collection of an analysis of data and the issuing of a number of guidance documents covering tramway crossings, signage and the interface between tramways and other road users (including cyclists).
3. The recording of accident and incident data is now largely centralised across all UK tram networks using the Tram Accident and Incident Reporting database (TAIR) and hazard identification is undertaken using a variety of risk assessment tools including bowtie analysis of top 10 hazardous events as identified through LRSSB risk model outputs.
4. LRSSB guidance on crossings and signing and marking of tramways and highway interfaces, along with the publication of Tramway Principles and Guidance (TPG) by LRSSB deal with the issue of trams around pedestrians and cyclists. ORR has had input to all three documents. Both the crossings and signage/road marking documents refer to the signs and road markings that should be used as well as discussing speed limits, which addresses the ‘examples’ criterion in the recommendation.
5. Appendix E of TPG specifically refers to “pedestrian issues”. This, taken with other guidance documents mentioned above creates a framework of general principles which are capable of providing guidance on managing risk in shared pedestrian/tram spaces. ORR will consider the effectiveness of the implementation of this guidance by all tramways as a separate proactive inspection workstream under business as usual.
6. In addition, we asked the LRSSB to clarify how the point in the recommendation around methods of risk assessment had been taken into

consideration. The September 2021 update identifies where this point is addressed in each of the guidance documents.

7. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, LRSSB has:

- taken the recommendation into consideration; and
- has taken action to implement it.

Status: Implemented.

Previously reported to RAIB

8. On 13 April 2017 ORR reported the following:

UK Tram are revising guidance on the design and operation of urban trams as part of the revision of RSP2 and associated guidance documents. UK Tram aim to complete this work by spring 2018, although have not yet provided a detailed time-bound plan. ORR has been invited to attend the UK Tram Guidance, Safety, Standards and Assurance (GSSA) group, which will enable us to monitor progress of the revision of RSP2 and associated guidance.

Update

9. On 18 September 2020 UK Tram and LRSSB provided the following update:

Following on from the RAIB Sandilands report and identified recommendations, LRSSB fully rewrote and updated the main Tramway Principles and Guidance document (TPG) of which Appendix F of the updated document focuses on specific pedestrian issues with further references made to pedestrian issues throughout the main body of the document.

The current Tramway Principles and Guidance document (TPG) is currently under scheduled review and update as of September 2020. Any further enhancements to guidance associated to pedestrian issues will be made during the review process as required.

Additionally LRSSB has developed the following separate supplemental guidance documents that have particular bearing associated to both pedestrian and cyclist safety;

- *LRG - 2.0 Non-Motorist Tramway Crossings Guidance (Issued)*
- *LRG - 4.0 Signing and Marking of Tramways and Highway Interface Guidance (Issued)*
- *LRG -18.0 Cycle Tramway Interface Guidance*

(Anticipated December 2020)

LRSSB can advise that following the recent completion and issue of individual system risk models a sector risk profile is now being developed with the integration of data derived from all networks. Moving forward the new TAIR database will record and collate all industry event data under a standardised set of event descriptors allowing for accurate data capture and trend analysis.

In order to supplement and enhance standardisation of industry risk assessment possess LRSSB has procured and is delivering to networks a new risk assessment software platform (Bowtie XP). It is envisaged that the new software will integrate the output from the sector risk profile and facilitate the development of generic industry risk assessments incorporating all hazards, controls and best practice identified from the collective knowledge of the sector.

Both LRSSB and UKTram consider that the updated TPG document in conjunction with supplemental guidance, industry risk model, TAIR database and Bowtie XP platform deliver the requirements of recommendation 3.

On behalf of both LRSSB and UKTram we trust the above meets with your requirements and we will ensure you are kept updated on any further developments.

10. On 17 September 2021, LRSSB provided the following update:

In respect of the methods of risk assessment employed associated to pedestrianised areas we can confirm that this that this is covered within the following:

- Localised and sector risk models where pedestrian collision is assessed as an individual hazardous event;*
- Guidance contained within LRG 2.0 Non-Motorised Tramway Crossing Guidance which includes a dedicated risk assessment template (attached for reference);*
- Hazardous events identified within the risk model are transposed into bowtie assessments of which both sector global and localised network assessments are produced associated to individual hazardous events. This in turn provides an in depth collective overview allowing networks to reference and adopt controls and best practice from within the overall sector. and apply them to their individual route risk assessments;*
- Furthermore the new LRSSB guidance document LRG 19.0 Cycle and Tramway Interface Guidance, advises of the importance Safety by Design and early liaison with the relevant Highway Authority at the start of the development of any scheme to ensure that, where applicable, the individual Highway Authority specify any policies they may have and can provide any guidance or information including any relevant stakeholder groups, review or development of sufficient risk assessments which may include Hazid and Hazop studies where information can be integrated into route risk assessments.*

Reference is also made to the various guidance that already exists both nationally and at regional transport level with regards to the design of cycle provision within a tramway scheme. In addition the guidance also emphasises that early design should

aim to segregate cycles from trams as far as practicable to minimise interfaces between tramways and cycles.

Previously reported to RAIB

Recommendation 3

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ORR decision

1. UK Tram are revising guidance on the design and operation of urban trams as part of the revision of RSP2 and associated guidance documents. UK Tram aim to complete this work by spring 2018, although have not yet provided a detailed time-bound plan. ORR has been invited to attend the UK Tram Guidance, Safety, Standards and Assurance (GSSA) group, which will enable us to monitor progress of the revision of RSP2 and associated guidance.

2. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, UK Tram has:

- taken the recommendation into consideration; and
- is taking action to implement it by Spring 2018.

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

3. On 27 April 2016 UK Tram provided the following initial response:

UKTram has reviewed recommendation 3 from the RAIB report detailed above and we can confirm that as part of it revision of RSP2 and associated Guidance Documents we will include the revision of guidance on the design and operation of urban tramways. The revision will make explicit provision for the management of risk in areas where trams and pedestrians/cyclists share the same space. This will include:

- *guidance on the collection and collation of data on accidents and incidents via UKTrams TAIR reporting database;*
- *the types of hazards to be considered;*
- *methods of risk assessment; and*

- *examples of design and operational measures for mitigating the risk.*

The proposed timescale of the guidance note revisions detailed above should see these completed by Spring 2018.