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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: Fatal accident at Piccadilly Gardens on 5 June 2011**

I write to provide an update<sup>1</sup> on the action taken in respect of recommendation 1 addressed to ORR in the above report, published on 30 May 2012.

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 1 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 black ink, appearing to read 'Oliver Stewart', written in a cursive style.

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 1

*The aim of this recommendation is to improve the detail of pedestrian injury data to better understand the role of tram front end design in minimising injury.*

UK tram operators should work together to improve the data collection on tram front end collisions with pedestrians. This is to include greater detail on the type and severity of any injury received as far as possible, and the likely points of contact with the tram.

### ORR decision

1. The recommendation has been addressed by the introduction of the Tram Accident and Incident Reporting database (TAIR). By using TAIR accidents and incidents should be identified and recorded consistently across the different tram networks.
2. Development of TAIR was initially started by UK Tram, on behalf of UK tram operators and was subsequently taken forward by the Light Rail Safety and Standards Board (LRSSB) once it became operational in 2019. We wanted to see evidence that TAIR had been adopted across all UK tram networks and had become properly embedded before we could consider that the recommendation had been implemented. Each tramway has now provided evidence through their latest responses that TAIR has been adopted and embedded in their safety management arrangements.
3. LRSSB has confirmed TAIR captures data on tram front end collisions with pedestrians, including the type and severity of any injury and the point(s) of contact with the tram.
4. LRSSB will continue to develop and refine TAIR but do consider the point has been reached where the national risk profile is sufficiently mature to identify precursors and emerging risks at a local and national level.
5. LRSSB use TAIR data to provide each tramway with an individual risk model with analysis delivering a set of ranked hazardous events based on the proportion of risk they contribute to within the overall risk profile. The LRSSB also produce an aggregated industry risk model output.
6. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, all UK tramway operators have:
  - taken the recommendation into consideration; and
  - have taken action to implement it

**Status: Implemented.**

### Previously reported to RAIB

7. On 12 February 2016 ORR reported the following:

ORR notes that work is underway to develop and trial a new database to capture accident information relating to Tram systems, and that it is expected that all tramways will be trained and using this database by April 2016.

### Update

8. On 23 July 2021 Blackpool Transport provided the following update:

*UKTram (LRSSB) can advise that the TAIR Database has been designed and developed in full consultation and collaboration with the Light Rail Sector. We consider that the introduction of TAIR meets with the criteria of recommendation 1 and has improved not only data collection pertinent to passenger collisions but all event type data.*

*Where practical, common standardised data indexes have been agreed and incorporated into the database in order to ensure uniformity and consistency of information.*

*The following are examples of where this standardisation has been applied that are significant to Recommendation 1:*

- *Industry event classifications that directly correlate with both individual network and sector risk models;*
- *event rating and event potential classification;*
- *type of Injury sustained classification;*
- *part of body where injury has been sustained classification;*
- *precursor / causation classification;*
- *precursor type classification.*

*In addition, TAIR also incorporates:*

- *ability to record comprehensive details of injury sustained and severity of injury*
- *fundamental causation recording;*
- *identification as to whether or not an event is reportable under (RIDDOR);*
- *catalogues of individual networks assets and vehicles;*
- *ability to attach electronic documentation to individual event reports examples of which may consist of data files, photographs, manuals, first aider reports etc.*

*TAIR also facilitates an integrated investigation module where more comprehensive information can be consolidated as it becomes available e.g., the findings of an investigation identify the point of contact with a vehicle.*

*The data capture and output provided by TAIR is utilised to populate both individual and industry risk models with analysis delivering a set of ranked hazardous events based on the proportion of risk they contribute to within the overall risk profile.*

*Hazardous events identified within the risk model are then 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.*

*The combination of all data capture and analytical process employed together with the application of RM3 criteria provides an effective and standardised risk management framework, ensuring that risks are effectively evaluated and managed at ALARP levels by the industry.*

9. On 2 July 2021 Edinburgh Trams provided the following update:

*Edinburgh Trams can advise that we have worked closely with tram operators and LRSSB and that the TAIR Database has been designed and developed in full consultation and collaboration with the Light Rail Sector. We consider that the introduction of TAIR delivers the criteria and spirit of recommendation 1 and has improved not only data collection pertinent to passenger collisions but all event type data.*

*Where practical, common standardised data indexes have been agreed and incorporated into the database, these ensure uniformity and consistency of information.*

*The following are examples of where this standardisation has been applied that are significant to Recommendation 1:*

- *industry event classifications that directly correlate with both individual network and sector risk models;*
- *event rating and event potential classification;*
- *type of Injury sustained classification;*
- *part of body where injury has been sustained classification;*
- *precursor / causation classification;*
- *Hazardous event type classification.*

*In addition TAIR also incorporates:*

- *ability to record comprehensive details of injury sustained and severity of injury*
- *Ability to record comprehensive details of the fundamental cause;*
- *Ability to record whether the event is reportable under RIDDOR ;*
- *Catalogues of individual network assets, locations and vehicles;*

- *ability to attach electronic documentation to individual event reports examples of which may consist of data files, photographs, manuals , first aider reports etc.*

*TAIR also facilitates an integrated investigation module where more comprehensive information can be consolidated as it becomes available e.g. the findings of an investigation will identify the point of contact with a vehicle.*

*The data capture and output provided by TAIR is being developed to populate both individual and industry risk models with analysis delivering a set of ranked hazardous events based on the proportion of risk they contribute to the overall risk profile.*

*Hazardous events identified within the risk model are then 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, to manage risk and develop best practice from within the overall sector.*

*The combination of all data capture and analytical process employed, together with the application of RM3 criteria, provides an effective and standardised risk management framework, ensuring that risks are effectively evaluated and managed at practicable levels by the industry.*

10. On 17 June 2021 Keolis Amey Metrolink provided the following update:

*Keolis Amey Metrolink can advise that the TAIR Database has been designed and developed in full consultation and collaboration with the Light Rail Sector. We consider that the introduction of TAIR meets with the criteria of recommendation 1 and has improved not only data collection pertinent to passenger collisions but all event type data.*

*Where practical, common standardised data indexes have been agreed and incorporated into the database in order to ensure uniformity and consistency of information.*

*The following are examples of where this standardisation has been applied that are significant to Recommendation 1:*

- *industry event classifications that directly correlate with both individual network and sector risk models.*
- *event rating and event potential classification.*
- *type of Injury sustained classification.*
- *part of body where injury has been sustained classification.*
- *precursor / causation classification.*
- *precursor type classification.*

*In addition TAIR also incorporates:*

- *ability to record comprehensive details of injury sustained and severity of injury fundamental causation recording.*
- *identification as to whether or not an event is reportable under (RIDDOR).*

- catalogues of individual networks assets and vehicles.
- ability to attach electronic documentation to individual event reports examples of which may consist of data files, photographs, manuals , first aider reports etc.

*TAIR also facilitates an integrated investigation module where more comprehensive information can be consolidated as it becomes available e.g. the findings of an investigation identifies the point of contact with a vehicle.*

*The data capture and output provided by TAIR is utilised to populate both individual and industry risk models with analysis delivering a set of ranked hazardous events based on the proportion of risk they contribute to within the overall risk profile.*

*Hazardous events identified within the risk model are then 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.*

*The combination of all data capture and analytical process employed together with the application of RM3 criteria provides an effective and standardised risk management framework, ensuring that risks are effectively evaluated and managed at ALARP levels by the industry.*

11. On 22 July 2021 Nottingham Trams provided the following update:

*NTL can advise that the TAIR Database has been designed and developed in full consultation and collaboration with the Light Rail Sector. We consider that the introduction of TAIR, which we are actively using meets with the criteria of recommendation 1 and has improved not only data collection pertinent to passenger collisions but all event type data.*

*Where practical, common standardised data indexes have been agreed and incorporated into the database to ensure uniformity and consistency of information.*

*The following are examples of where this standardisation has been applied that are significant to Recommendation 1:*

- *industry event classifications that directly correlate with both individual network and sector risk models;*
- *event rating and event potential classification;*
- *type of Injury sustained classification;*
- *part of body where injury has been sustained classification;*
- *precursor / causation classification;*
- *precursor type classification.*

*In addition, TAIR also incorporates:*

- *ability to record comprehensive details of injury sustained and severity of injury*
- *fundamental causation recording;*
- *identification as to whether or not an event is reportable under (RIDDOR);*
- *catalogues of individual networks assets and vehicles;*
- *ability to attach electronic documentation to individual event reports examples of which may consist of data files, photographs, manuals, first aider reports etc.*

*TAIR also facilitates an integrated investigation module where more comprehensive information can be consolidated as it becomes available e.g. the findings of an investigation identifies the point of contact with a vehicle.*

*The data capture and output provided by TAIR is utilised to populate both individual and industry risk models with analysis delivering a set of ranked hazardous events based on the proportion of risk they contribute to within the overall risk profile.*

*Hazardous events identified within the risk model are then 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.*

*The combination of all data capture and analytical process employed together with the application of RM3 criteria provides an effective and standardised risk management framework, ensuring that risks are effectively evaluated and managed at ALARP levels by the industry.*

12. On 2 July 2021 Stagecoach Supertram provided the following update:

*The TAIR database is now being populated with data from across the Light Rail Sector, which allows a single point data repository that can be used to analyse a wide range of statistics and factors. Stagecoach Supertram, along with the wider industry, continue to update TAIR so that an increasing volume of emerging data is available for any purpose, be it reviewing risk models, analysing emerging trends or drilling into specific event types.*

*We consider that the introduction of TAIR meets with the criteria of recommendation 1 and has improved not only data collection pertinent to passenger collisions but all event type data. Where practical, common standardised data indexes have been agreed and incorporated into the database in order to ensure uniformity and consistency of information.*

*The data capture and output provided by TAIR is utilised to populate both individual and industry risk models with analysis, delivering a set of ranked hazardous events based on the proportion of risk they contribute to the overall risk profile.*

13. On 28 June 2021 Tram Operations Ltd provided the following update:

### System Design

*TAIR was designed and developed in full consultation and collaboration with the Light Rail Sector. The introduction of TAIR has improved collection of event data in the Light Rail Sector, including that specifically relating to passenger collisions. As such, TOL believe that Recommendation 1 of the report has been satisfied.*

*The system uses common, standardised data indexes to promote uniformity and consistency of information. Examples relevant to Recommendation 1, are as follows:*

- *Industry event classifications that directly correlate to individual network and sector risk models*
- *Event rating and potential classification*
- *Type of injury sustained classification*
- *Part of body where injury has been sustained classification*
- *Precursor classification*
- *Precursor type classification.*

*TAIR's integrated investigation module also provides:*

- *Functionality to record comprehensive injury details*
- *A means to record event causation*
- *Identification of statutory reportable events*
- *Details of network assets and vehicles*
- *A repository to consolidate evidence*

### Use of Data Outputs

*TAIR data outputs are used to populate the Industry Risk Model, and the subsidiary models specific to each individual network. This supports detailed analysis and ranking of hazardous events, based on their contribution to the overall risk profile. The top-level hazardous events identified within the model are used as a basis to develop bow-tie risk assessments that provide a means of recording the barriers used to protect against realisation of precursors.*

*Effectiveness of these controls is assessed proactively through audit of our Safety Management System; and reactively by rigorous investigation, should any safety incident occur. Where shortfalls are identified, robust arrangements exist that ensure timely and effective corrective action, managed to completion at the most appropriate level within the organisation.*

*I trust my explanation clarifies TOL's position however if you require any further information, please don't hesitate to contact me.*

14. On 17 September 2021, LRSSB provided the following information:

*LRSSB can advise that the TAIR Database has been designed and developed in full consultation and collaboration with the Light Rail Sector. We consider that the introduction of TAIR meets with the criteria of recommendation 1 and has improved not only data collection pertinent to passenger collisions but all event type data.*

*Where practical, common standardised data indexes have been agreed and incorporated into the database in order to ensure uniformity and consistency of information.*

*The following are examples of where this standardisation has been applied that are significant to Recommendation 1:*

- industry event classifications that directly correlate with both individual network and sector risk models;*
- event rating and event potential classification;*
- type of Injury sustained classification;*
- severity of injury sustained classification;*
- part of body where injury has been sustained classification;*
- precursor / causation classification;*
- precursor type classification.*

*In addition TAIR also incorporates:*

- ability to record comprehensive details of injury sustained and severity of injury*
- fundamental causation recording;*
- identification as to whether or not an event is reportable under (RIDDOR);*
- catalogues of individual networks assets and vehicles;*
- ability to attach electronic documentation to individual event reports examples of which may consist of data files, photographs, manuals, first aider reports etc.*

*TAIR also facilitates an integrated investigation module where more comprehensive information can be consolidated as it becomes available e.g. the findings of an investigation identifies the point of contact with a vehicle.*

*The data capture and output provided by TAIR is utilised to populate both individual and industry risk models with analysis delivering a set of ranked hazardous events based on the proportion of risk they contribute to within the overall risk profile.*

## Previously reported to RAIB

### Recommendation 1

*The aim of this recommendation is to improve the detail of pedestrian injury data to better understand the role of tram front end design in minimising injury.*

UK tram operators should work together to improve the data collection on tram front end collisions with pedestrians. This is to include greater detail on the type and severity of any injury received as far as possible, and the likely points of contact with the tram.

### ORR Decision

1. ORR notes that work is underway to develop and trial a new database to capture accident information relating to Tram systems, and that it is expected that all tramways will be trained and using this database by April 2016.
2. After reviewing the information received ORR has concluded that UK Tram operators, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, have:
  - taken the recommendation into consideration; and
  - are taking action to implement it by April 2016.

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

### Brief Summary on what was previously reported to RAIB

3. On 4 June 2013 ORR reported to RAIB that evidence had been provided that UK tram operators were working together to improve data collection, but at the time there was no definitive outcome. CPT had been working with tram operators to formulate a process that would allow them to report all incidents of this nature in a standard format.

### Update

4. On 27 October 2015 UK Tram provided the following update:

*In response to Recommendation 1, UK Tram has developed a Tram Accident & Incident Reporting Database (T.A.I.R) to collate all accident information of UK Tram systems. This web based system is in the final throws of development and will be trialled by three of the current UK systems ahead of full implementation in 2016. This has had the input from all the UK operators and ORR.*

5. In response to a request from ORR for further information on the details of TAIR UK Tram provided the following update on 11 November 2015:

*UK Tram provided two TAIR database presentations; one gives a general overview of how the database came about and how its development was planned and the second is more of a 'how it will work'.*



UK Tram TAIR



151013 TAIR

Workshop 1 Document Overview Update.pdf

*You will see that on the timeline, UK Tram is due to be training the three operators who are trialling the system, which are Stagecoach Supertram Sheffield, Edinburgh Trams and Nottingham Trams. UK Tram is awaiting the launch of the new UK Tram website which will be linked to the database for members, so training cannot start until this is live, but should still be on target for December to enable the trial to start in January 2016. As you will see the aim is for a three month trial ahead of all Tramways using the database by April 2016 and the first feedback session and data in the following September.*

*The details in the drop down sections of the database will allow for incident type, location etc to be searched and collated and reviewed, therefore satisfying Rec 1.*

6. ORR has asked UK Tram to confirm that the new database will record points of contact with the tram as required by the recommendation.