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Ms Carolyn Griffiths
Chief Inspector of Rail Accidents
Rail Accident Investigation Branch
Cullen House
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Aldershot
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Dear Carolyn

RAIB report: Fatal accident at Piccadilly Gardens

I write to report¹ on the consideration given and action taken in respect of the recommendations addressed to ORR in the above report, published on 30 May 2012.

The annex to this letter provides details of the consideration given/action taken in respect of the recommendations where recommendation 1 is being implemented and recommendation 2 is in progress.

We do not intend to take any further action in respect of recommendation 1 unless we become aware of an inaccuracy in which case we will write to you again. We are intending to arrange a meeting with the RAIB investigation manager to discuss issues associated with EU research relating to recommendation 2.

Yours Sincerely

Chris O'Doherty

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

Initial consideration by ORR

1. Recommendations 1 and 2 were addressed to ORR when the report was published on 30 May 2012.
2. After considering the report / recommendations, on 14 June 2012, ORR passed recommendations 1 and 2 to all UK tram operators and suggested that they work with the Confederation of Passenger Transport to provide a coordinated response to recommendation 1. CPT has provided a response on behalf of all operators and we have also received responses from individual operators. Details of consideration given and any action taken, in respect of these recommendations are provided below.

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.

Summary

3. Evidence has been provided that UK tram operators are working together to improve data collection, however so far there is no definitive outcome. The Confederation of Passenger Transport (CPT) was in the lead coordinator role. However, organisational changes in the industry such as leadership on technical issues are transferring from the control of CPT to UK Tram. It is inevitably taking some time to put in place new reporting lines and common procedures.

Details of steps taken or being taken to implement the recommendation

Confederation of Passenger Transport (CPT)

4. A response was received from CPT on 31 July 2012 stating:

CPT has been working with the operators to formulate a process that will allow them to report all incidents of this nature in a standard format. This will obviously clarify the information in the event of the need to report to statutory bodies and will ensure that when the HMRI when checking compliance can be assured that the information is common across the industry.

Sheffield Supertram

5. A response was received from Sheffield Supertram on 13 November 2012 stating:

The Light Rail Operations committee decided in August to coordinate information regarding front end collisions with pedestrians through this group and its representatives. One nominated individual will be responsible for collating and updating the information and this will be reviewed at each meeting on a quarterly basis. I will also action this at the next LROC to ensure that this is a standing agenda item. In terms of Supertram this will be included in the safety recommendations tracker and addressed in the business safety meeting structure.

Metrolink RATP Dev UK (MRDL) (Manchester Metrolink)

6. A response from MRDL was received on 28 September 2012 stating:

CPT Fixed Track Section is currently working with tram operators to formulate a process which will ensure that all incidents of this nature are reported in a standard format. This will be based on a scheme used by Midland Metro and a trial period of up to 12 months will be analysed to ascertain if the required information is being collated by each operator successfully and as per standard.

MRDL is reviewing our accident/incident report form to ensure that it captures all necessary information. This will include:

- *A sketch of the accident location; and*
- *Details of the incident including where tram/vehicle impact occurred.*

If involving a pedestrian:

- *Whether they were trapped under the tram;*
- *Whether they were under the tram but were not trapped;*
- *If the impact pushed them away from the tram onto road or pavement;*
- *Details of any injuries known at the time of the incident.*

Once the review is complete, staff briefing will commence to ensure that all staff fully complete the form and record the required information. The adequacy of reporting will be tracked via the MRDL 2013 Safety Plan.

First Tram Operations (Croydon)

7. A response was from First Tram Operations was received on 20 July 2012 stating:

Tram Operations Limited is very willing to share with other operators the details it collects relating to pedestrian injuries arising from front end tram collisions and to improve that data, where necessary, to capture the detail relating to type and severity of injury and the likely points of contact with the tram.

There is however no central administrative structure at present for collating such data from the operators concerned and so it was that this matter was discussed at the Fixed Track Section of the CPT at its most recent meeting. More discussion will be required between the several operators and CPT in order to agree an appropriate approach.

Nottingham Trams

8. A response was received from Nottingham Trams on 27 July stating:

CPT has on behalf of the industry held meetings and circulated proposals to discuss the way forward with the various operators. The purpose of this action was to formulate a process that will allow us to report incidents of this nature (front end collisions with pedestrians), in a standard format. This will obviously clarify the information in the event of the need to report to statutory bodies and will ensure that the HMRI when checking compliance can be assured that the information is common across the industry.

Blackpool Transport

9. A response was received from Blackpool Transport on 19 July 2012 stating:

As a member of CPT we have already raised the matter at the various committees (including Fixed Track and LROC) and have discussed how data collection can be improved. Blackpool Transport is happy to supply data and understand that CPT is responding more fully on a consolidated response and action plan.

ORR Decision

10. ORR is satisfied that CPT is working with UK tram operators to formulate a process that will allow them to report all incidents of this nature in a standard format.

ORR in reviewing the response and considering the documents provided by UK tram operators has concluded that in accordance with the Railway (Accident Investigation and Reporting) Regulations 2005, they have:

- taken the recommendation into consideration; and
- are taking action to implement it

We do not intend to take any further action unless we become aware of an inaccuracy in which case we will write to RAIB again.

Status: *UK tram operators are taking action to implement the recommendation.*

Recommendation 2

The aim of this recommendation is to better understand the design of tram front ends and their potential for injuring pedestrians in collisions.

UK tram operators in conjunction with UKTram (as a representative body of UK light rail operators), and in consultation with tram owners, should undertake research into the potential for the reduction of injuries to pedestrians involved in front end collisions with trams. Operators should understand the likely ways in which pedestrians can come into contact with the fronts of trams, and the severity of any consequential injuries. Should this research show that it is appropriate to implement design changes, either to existing trams or emerging new designs, these should be done.

Summary

11. UK Tram has indicated it is involved in on-going discussion of EU wide standards and that through these means will participate in any discussion of regulatory aspects leading to future EN standards for new vehicles. Some tram operators have indicated they would be willing to participate in research, however UK Tram has indicated that it does not intend to carry out any specific research.

Details of steps taken or being taken to address the recommendation

UKTram

12. We received a response from UKTram on 30 July 2012 stating:

UKTram is represented within the on-going discussion of EU wide standards for non-interoperable classes of rail vehicle through CEN/CENELEC and UITP, and we are also taking out associate membership of VDV (the German Federation of Public Transport Undertakings) in order to be better informed on a wide range of issues relating to tram and light rail operation. By these means UKTram will participate in any discussion of regulatory aspects leading to future EN standards for new vehicles.

13. Having discussed the response from UK Tram we felt further clarification was necessary and wrote requesting information on;

- Any research completed with details of outcomes such as proposed design changes; or
- Plans with timescales for research to be completed on the specific issue of injuries to pedestrians involved in front end collisions: or
- Reasons why they do not believe research is appropriate

On 11 December 2012 UK Tram provided the additional information below:

No research on the issue referred to in the report into the 5 June 2011 accident in Manchester has been undertaken by UK Tram and there are no plans to carry out any such research. I have no doubt that the regulations now in existence and the ORR Guidance and Standards documentation will have taken into account the question of pedestrian injury accidents (which you will be aware are at a very low level on UK tram and light rail systems) and I therefore see no need to initiate any new study at this stage.

CPT

14. A response was received from CPT on 31 July 2012 stating:

The design of vehicles is something very firmly in the hands of manufacturers, but CPT can make representations to sponsors and vehicle manufacturers through the industry body UKTram. Operators will continue to work with their sponsors to procure trams that are designed to meet the safety criteria recommended through the European legislation.

In the context of this recommendation, following initiatives taken by the UK delegates on the recent URBAN rail Standards Group, the EU will be working to produce an EN for the front end design and under run protection on trams which will mean for the first time that tram procurement agencies will be able to specify against a Euro norm. Operators will of course continue to maintain their rigorous operating regimes so that the occurrence of such incidents remains at its current low level.

Sheffield SuperTram

15. A response was received from Sheffield Supertram on 13 November 2012 stating:

The design of vehicles is not a direct issue for the operator of the Sheffield SuperTram system; however it will influence any future vehicle design with the purchasers and designers of vehicles in line with any data, recommendations and published papers that should arise from reports and its involvement within the Light Rail Operators Group and UKTram

Metrolink RATP Dev UK (MRDL)

16. A response was received from MRDL on 28 September 2012 stating:

TfGM are the procurement body for new vehicles from manufacturers, MRDL in our capacity as operator and duty holder will continue to support TfGM with procurement, testing and commissioning to ensure vehicles meet safety criteria as set out by European legislation.

MRDL will liaise with CPT who will make representations to sponsors and tram manufacturers through the industry body UK Tram, regarding the design of vehicles. This was outlined in the letter to RAIB from CPT Fixed Track dated 31 July 2012.

MRDL will fully support UK Tram with any research undertaken regarding pedestrian collisions and under-run protection on Metrolink vehicles. In conjunction with TfGM and the vehicle manufacturer, we will fully consider any findings or recommendations that may improve vehicle safety.

MRDL will continue to thoroughly investigate any incidents of this nature and implement control measures to mitigate risk.

First Tram Operations

17. London Tramlink (tram owners of the Croydon system) commissioned an independent review (in which Tram Operations Ltd) was a full participant) of tram crossing collision risks at tramstop crossings on ballasted sections of track. The report has recently been issued. Recommendations for the vehicles (Bombardier CR4000s) relate to the inspection and maintenance of the under run protection flap fitted to this vehicle type.

Coincidentally, London Tramlink has procured six new trams supplied by Stadler, the design of which did not originally incorporate under run protection. Accordingly,

following advice from London Tramlink, Stadler designed a protective skirt between the tram body and the road surface at the front of the cab (there being little survival space, or none, under a 100% low floor vehicle) The design was successfully tested (using London Fire Brigade provided dummies) prior to the vehicle entering service.

Comparison of the relative performance of the under run protection on these two vehicle types will obviously form part of the output for recommendation 1 and will also provide information to assist an evaluation of the potential for the reduction of injuries to pedestrians involved in front end collisions with trams

Tram operators will be pleased to share this information with other tram operators and to benefit from information from others (perhaps by way of UKTram as the recommendations proposes). Such exchanges of information should be helpful in understanding the likely ways in which pedestrians can come into contact with the fronts of the tram and the severity of any consequential injuries.

The recommendation implies that further independent research may be needed. In which case there will be funding issues to be addressed by the parties concerned; as also for any implementation of design changes to existing or emerging new designs. This is mentioned only in order to note that 'line operators' such as Tram Operations are not typically the tram owners or procurers of trams.

Nottingham Trams

18. We received a response from Nottingham Trams on 27 July 2012 stating:

The design of vehicles is something very firmly in the hands of the manufacturers, but CPT can make representations to sponsors and vehicle manufacturers through the industry body UKTram. Operators will continue to work with their sponsors to procure trams that are designed to meet the safety criteria recommended through European legislation.

In the context of this particular recommendation, following initiatives taken by the UK delegates on the recent Urban Rail Standards Group, the EU will be working to produce an EN for the front end design and under run protection on trams which will mean for the first time that tram procurement agencies will be able to specify against a Euro norm.

Operators will of course continue to maintain their rigorous operating regimes so that the occurrence of such incidents remains at its current low level.

Blackpool Transport

19. We received a response from Blackpool Transport on 19 July 2012 stating:

Blackpool Transport have raised the issue with Blackpool Council who own the new Bombardier trams and are willing individually or collectively through CPT or UKTram to participate in research into the design of tram front ends.

ORR decision

20. ORR is aware of an EU work stream to produce a European standard for the front end design and life guard arrangements for tramcars. UKTram is involved at European level in the production of such standards and it would be inappropriate for the UK to commission its own research on tramcar design. The UK does not currently manufacture tramcars and majority of the data that will feed into research is held by mainland European tramway operators.

21. ORR agrees that research should be undertaken under the auspices of the EU and this work is an on-going undertaking, which ORR monitors.

22. Note: The type T68 tramcar involved in the pedestrian collision at Piccadilly Gardens is being removed from service and all cars of that type will be replaced by Bombardier M5000 cars. Unlike the T68 the new cars have more pedestrian friendly front ends together with efficient life guard arrangements that have been developed by the manufacturer following extensive testing.

Status: In progress, ORR is intending to meet with RAIB to discuss the issues of on-going research in the EU.