

**Oliver Stewart**  
**Senior Executive, RAIB Relationship and**  
**Recommendation Handling**

Telephone 020 7282 3864

E-mail [oliver.stewart@orr.gsi.gov.uk](mailto:oliver.stewart@orr.gsi.gov.uk)

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

Dear Andrew,

**Fatal collision between a tram and pedestrian at Woodbourn Road, Sheffield,  
22 December 2016**

I write to report<sup>1</sup> on the consideration given and action taken in respect of the two recommendations addressed to ORR in the above report, published on 27 September 2017.

The annex to this letter provides details in respect of each recommendation. The status of both recommendations is '**implemented**'.

We do not propose to take any further action in respect of the recommendations, unless we become aware that any of the information provided becomes inaccurate, in which case I will write to you again.

We will publish this response on the ORR website on 24 August 2018.

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

## Initial consideration by ORR

1. Both recommendations were addressed to ORR when the report was published on 27 September 2017.
2. After considering the recommendations ORR passed recommendation 1 to Stagecoach Supertram and recommendation 2 to UK Tram asking them to consider and where appropriate act upon them and advise ORR of their conclusions. The consideration given to each recommendation is included below.
3. ORR also brought recommendation 1 and the three learning points in the report to the attention of all tram operators operating in the UK, as it was concluded that there are equally important lessons for them. ORR did not ask these organisations to provide a reply.

## Recommendation 1

*The intent of this recommendation is that all tram drivers drive to the same set of requirements, irrespective of when they were initially trained.*

Stagecoach Supertram should continue and complete its work to review the requirements in operational standards against its current training material to identify any inconsistencies, use the review findings to update its operational standards and training material as necessary so that there is a consistent set of requirements for drivers to comply with, and update its drivers on the changes made

## ORR decision

4. Stagecoach Supertram carried out a review of their operational standards which identified a number of improvements to documentation of change management and how that information is communicated to new and existing drivers.
5. The necessary changes have been made and Stagecoach Supertram have confirmed they are completing their programme of 1:1 briefings with tram drivers on the changes to the operational standards manual. This should ensure that all tram drivers drive to the same set of requirements, irrespective of when they were initially trained.
6. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Stagecoach Supertram has:
  - taken the recommendation into consideration; and
  - taken action to implement it

**Status: Implemented**

**Information in support of ORR decision**

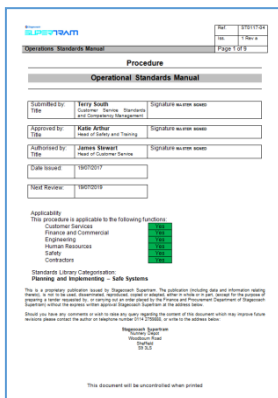
7. On 16 January 2018 Stagecoach Supertram provided the following initial response:

*As requested please see below full details of the measures that we propose to take to implement the recommendation and the proposed timetable for securing implementation:*

*Immediately following the incident Stagecoach Supertram Ltd carried out an internal investigation which included a review of the way in which operational standards and the way in which changes to those standards are communicated and trained to drivers. To this end the following 4 areas of improvement were identified:*

- *Documentation of the Change Management process for Operational Standards*
- *Briefing of changes to Operational Standards*
- *Inclusion and reference to Operational standards in the initial Driver training program*
- *Inclusion and reference to Operational standards in the initial Driver training program*

**Documentation of the Change Management process for Operational Standards**



*Following the incident the Operational Standards Manual Procedure ST0117-04 content ensures that changes to the operational standards are reviewed and briefed to all those effected by the changes. A centralised reference of all the changes will be kept and a further update will be provided during the driver refresher training.*

*All changes to the operational standards manual summary spreadsheet and is used by the training team to ensure all content is included in all training material:*

Operational Standards section	Operational Standards Reference	Operational Standards Detail	Risk Assessment Reference	Driver Training Reference
Section B - Your Duty Requirements	B1.01	Rules, regulations and instructions apply to the task being carried out and to those carrying out the task, no matter what grade or job title they have. Unless you are being instructed by a competent person, you must be competent to correctly apply the rules, regulations and instructions to the tasks you are authorised to carry out. Safety must always be your first concern. If there is no rule that allows or prevents you doing something you believe must be done, you must do it in the safest way you know taking into account your training and experience. You must not operate mechanical or electrical plant or any other equipment unless you have been trained and are authorised to do so. If necessary, you must also hold a certificate of competency in operating the plant or equipment.	TBC	TBC

*This procedure is owned by the Customer Service Standards and competency Manager who has the responsibility to ensure that any changes to operational standards are made in line with Operational Standards Manual Procedure ST0117-04.*

## **Briefing of changes to Operational Standards**

All changes to operational standards are formally briefed and signed for by drivers, this is currently a manual process with drivers signing a centralised signature sheet as a record of understanding of the change. Whilst this method is fit for purpose, we will continue to explore the possibility of this being replaced with electronic recording via the company intranet system (“The Loop”).

## **Inclusion and reference to Operational Standards in the initial Driver training program**

All Training material continues to be updated to ensure that all sections where applicable have an associated operational standard reference with an expected completion date of April 2018. The operational standards manual summary spreadsheet is being updated to ensure each operational standard has a training material reference. Additionally any gaps identified have prompted a further review to establish if an associated Operational Standard is required. With the requirement being reviewed, implemented and formally briefed following the process laid out in the Operational Standards Manual Procedure ST0117.

- It may be necessary to open the cab door **Siemens vehicle** and attempt to clean the mirrors, if a driver still can't see through a mirror after cleaning, a driver may need to view the platform from the cab door and only when safe to do so close the doors  
*Do not close the saloon doors if you are not sure it is safe to do so*
- Drivers must always report defective/dirty mirrors if they are unable to see through them  
*If a driver on the system is unable to see clearly through the external mirrors due to damage to a mirror or dirt, they must report this to OCC immediately and act on instructions*

**E3 Operation of Trains**

**E3.03** No tram may be permitted to enter service if unsafe to travel. A defective tram may only be permitted to work back to depot or to a terminus stabling overrun, under the authority of OCC after confirmation from Rolling Stock that it is safe for the tram to travel.

- The external mirror/ camera pod heater should be operated to clear moisture or misting if the mirror view is impaired  
Once the mirrors are clear on the Siemens vehicle drivers must ensure they do not leave the heated mirror switch on because dirt and grime can become baked onto the reflective film causing pitting of the reflective surface and damaging the mirror
- If a driver can't see through an external mirror Siemens vehicle, for example at a tram stop, due to sunshine or baked on dirt, they **must move to a position in the driving seat or stand up so that they can see**  
Citylink rear view monitors if you can't see through the lead monitor you should be able to view the platform from the rear view monitor

## **Inclusion and reference to Operational standards in the initial Driver training program**

In addition to the formal briefing of changes to operational standards, these will also be included in the driver refresher training, due to be delivered in Summer 2018 to all drivers. The Driver CMS requires all drivers to receive formal refresher training every 2 years, which includes a refresh of any changes to the operational standards within the 2 years as a compliment to the formal briefing issued at the time of the change; this will help to reinforce the message and ensure that the changes have been understood, implemented and adhered to.

Delivery of the Driver Refresher training in Summer 2018 will ensure that all tram drivers drive to the same set of requirements, irrespective of when they were initially trained.

8. On 25 April 2018 Stagecoach Supertram provided the following updated response:

*Following the incident Stagecoach Supertram identified four improvement areas in relation to Recommendation 1:*

### ***Documentation of the Change Management process for Operational Standards***

*As referred to in the previous response, Supertram procedure ST0117-04 Operational Standards Manual was issued to define the process by which Operational Standards Manual content is managed, including briefing.*

*A review of the Operational Standards Manual was carried out on 5th February 2018. Some changes made are in relation to driving on Network Rail infrastructure, this has followed the ST0117-04 procedure. Printed copies of the Manual have been ordered and will be given to all staff with a driver competency as a minimum.*

### ***Briefing of changes to Operational Standards***

*We have looked at the potential of replacing manual briefing sheets with electronic recording via the company's intranet system (The Loop), it has been decided this is not a suitable system to ensure messages have been received at this time. Instead we intend to brief the upcoming changes to Operational Standards via a cover sheet (highlighting changes) to the manual that will be discussed at Driver '1:1' sessions which give Driver/Duty Managers the opportunity to ensure changes are briefed and understood. Rolling Stock Maintenance staff with driver competencies will be briefed in groups determined by their team/shift. These processes will be captured by signature sheet.*

*Alongside these briefings we intend to communicate the changes on staff noticeboards and TV information screens in our staff mess rooms over the coming months and on the Loop intranet site. This was also done for recent changes whilst awaiting the printed copies of the Operational Standards Manual and was also placed in Late Notice Cases for Driver's attention.*

### ***Inclusion and reference to Operational Standards in the initial Driver training program***

*I can confirm that the Operational Standards Manual is part of the Driver Training Program for all new drivers.*

*Furthermore form ST0117-05, Operational Standards Manual Summary sheet has been introduced to track changes to Operational Standards which includes referencing which area of the driver training programme is affected.*

***Inclusion and reference to Operational standards in the Driver refresher training program***

*In addition to the formal issue and briefing of the printed Operational Standards Manual, it will also be included in the driver refresher training, which is has been moved to Autumn 2018 to cope with the resource demands on the training team for the Tram Train project due to begin system testing in the coming month. Delivery of the Driver Refresher training in Autumn 2018 will ensure that all tram drivers drive to the same set of requirements, irrespective of when they were initially trained.*

*I trust that these updates provide assurance that Stagecoach Supertram is taking action on the RAIB recommendation.*

**Recommendation 2**

*The intent of this recommendation is to reduce the risk of a collision between a tram and a pedestrian in the event that a driver has a loss of attention.*

UK tram operators, in conjunction with UK Tram Limited, should set up a working group to monitor the development and application of pedestrian detection technology for trams, with a view to future fitment on new build trams and retro-fitment to existing tram fleets where practicable, as and when a practical and reliable application of such technology becomes available

**ORR decision**

The response provided by UKTram was positive, but it was agreed we should request sight of the remit or Terms of Reference for working group 15, to see if it covers the recommendation.

9. UK Tram have established a working group consisting of representatives from across the industry, to review tram and pedestrian interfaces.

10. The working group are carrying out case studies to review existing pedestrian detection products, as well as those under development, before then considering the practicability of fitment to existing and future tram fleets.

11. 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

- taken action to implement it

**Status: Implemented**

**Information in support of ORR decision**

12. On 10 April 2018 UK Tram provided the following initial response:

*I can confirm Working Group 15 – Tram and pedestrian interfaces, has been formed and after reviewing technology from Bombardier are in the process of setting up a meeting with Bosch to view their version of technology that they have in development.*

*Working Group 15 contains key representatives from the UKTram operators and is being led by one of the UKTram team, the work of this group is fed into the UKTram Executive for wider industry information. If you require any further information then please do not hesitate to contact us.*

13. On 12 July 2018, UK Tram provided the Terms of Reference for Working Group 15:

*Introduction*

*Working group 15 has been established to review the interaction between pedestrians and tramways. This Working Group (WG) will review two areas:*

- i) The technologies available or in development for pedestrian detection on trams*
- ii) The installation and retro-fitting of technologies to trams*

*The aim is to get to an Industry/UKTram position on the technologies available to assist drivers in pedestrian detection on trams and monitor the ongoing development of these systems.*

*The second area of consideration is the installation and application of any pedestrian detection technologies for trams, with a view to future fitment on new build trams and retro-fitment to existing tram fleets where practicable, as and when a practical and reliable application of such becomes technology available and assessing the impact of any such systems.*

*Objectives To review and identify commercially available technologies for pedestrian detection on trams with respect to*

- i) Aiding the tram drivers response to pedestrian hazards*
- ii) Integrating systems with existing technologies and practices*

*In order to provide:*

- i. A UKTram position on the technologies available and their suitability and level of development*
- ii. Documented best practice guidelines for the use of promoters, designers, contractors and operator/maintainers with the aim of improving and implementing devices to enhance the safety risks*

*management of pedestrian collision and reducing associated commercial risks to tramway operations.*

*Work plan stages*

*Step 1: Identify and analyse available technologies and those in development*

*UKTram to contact manufactures and developers of such technologies using industry contacts and data base and ascertain:*

- a) Level of development*
- b) Are these systems in use or under test*
- c) Witness use or testing of systems, either through visits or setting up demonstrations.*

*Output: a series of brief case studies for each available system to be produced and made available to UKTram members detailing the current level of development of systems.*

*Step 2: Development, Installation and retro fitting of technologies*

*Following the preparation of the case studies the working group will review the evidence obtained in stage 1 to set out the development of any suitable systems and the suitability of retro fitting systems and installation of technologies on new fleets in collaboration with manufacturers and suppliers. The working group will produce a guidance note which clearly details the reasoning behind the options and industry position taken.*

*Step 3: Consultation The papers developed by the working group submitted to the UKTram guidance and standards committee for consultation with the wider industry and regulator. The results of the consultation to be provided to the working group for consideration and incorporation into the draft documents*

*Step 4: revision The draft documents to be reviewed and updated by the working group and resubmitted to the Guidance and Standards committee.*

*Step 5: approval Once accepted by the guidance and standards committee the revised documents will be issued to the board of UKTram for approval and publication.*

*Timescales*

*Step 1: April 2018 to October 2018*

*Step2: October 2018 to March 2019*

*Step 3: March 2019 to June 2019*

*Step 4: June 2019 Step 5: July 2019*

*Resources*

*Steps 1and 2 will be undertaken using working group members resources from within UKTram membership (members assigned to WG). UKTram will be supporting the chair of WG15 with resource and expenses for investigation*



*works and will feed in relevant projects and developments from other work streams (notably Driver aiding/assistance technologies from Subcommittee 1 (Sandilands) work. With the pace of development of technologies the timeline and resources will be periodically reviewed between the WG Chair and Managing Director of UKTram.*