

## TRANSPORT FOR LONDON

### WRITTEN REPORT TO LB CROYDON SCRUTINY PANEL ON TRAM SAFETY INITIATIVES

#### 1 Purpose

- 1.1 To update the London Borough of Croydon's Scrutiny Panel on work underway in response to the recommendations of the RAIB's investigation and a progress update on matters related to the Sandilands tragedy.
- 1.2 The second anniversary of the tragic tram overturning incident at Sandilands Junction, Croydon is on 9 November 2018. TfL's thoughts remain with those affected by the tragic event. We remain focused on doing everything we can to offer support to all those affected and are continuing to deal with any further requests for support quickly.

#### 2 Background

- 2.1 On Wednesday 9 November 2016, London Trams tram number 2551 travelling from New Addington towards East Croydon overturned on the approach to Sandilands tram stop on a curved track which has a permanent speed restriction of 20km/h. The tram was travelling at approximately 73km/h. Of the 70 people on board, seven lost their lives and 62 people were injured, 19 seriously.
- 2.2 Following the accident, the RAIB made 15 recommendations to improve safety on UK trams. These relate to action in five main areas:
  - (a) The use of modern technology to intervene when trams approach hazardous features too fast, or when drivers lose awareness of the driving task.
  - (b) Tramways need to promote better awareness and management of the risk associated with tramway operations.
  - (c) Work needs to be done to reduce the extent of injuries caused to passengers in serious tram accidents, and to make it easier for them to escape.
  - (d) There needs to be improvements to safety management systems, particularly encouraging a culture in which everyone feels able to report their own mistakes.
  - (e) Greater collaboration is needed across the tramway industry on matters relating to safety.

#### 3 Current Status

- 3.1 A summary of the recommendations and progress we are making against them is shown in Appendix I.
- 3.2 Many of the actions are joint actions for the UK Tram industry. We are a key representative on the UK Trams Sandilands Sub-Committee, established to specifically consider RAIB's findings, coordinate a response, and take action, on behalf of the UK



Tram Industry. Where we have developed our own solutions to the recommendations, we have shared these with the wider industry and will continue to do so. To facilitate this we established a dedicated project team in Croydon, shortly after the tragic incident, whose sole focus is on delivering these improvements. We will also continue to engage with the UK Tram Industry to input to and adopt the outcomes of the wider recommendations/actions.

- 3.3 The Office of Rail and Road (ORR), who is our regulator, ensures RAIB recommendations are duly considered and where appropriate acted upon. They assess the action proposed and subsequently taken to decide if it addresses the recommendations or whether further action is required. The ORR report back to RAIB details any implementation measures or the reasons why no implementation measures are being taken. In this capacity the ORR have written to us and other UK Tram operators and owners seeking a progress update on RAIB recommendations. Specifically we have been asked for our actions on recommendations 1 to 8 and separately on recommendations 14-15. We have replied to the ORR who, at the time of this update, is currently considering our responses, along with responses from others in the UK tram sector.
- 3.4 Since the incident, a number of safety measures have been introduced to the tram and more are in the process of being introduced. We have installed chevrons and speed-activated warning signs at significant bends, lowered the maximum speed limit across the network, and completed investigative works into solutions to improve the protection that tram windows and doors provide passengers. We have also rolled out a Driver Protection Device that detects the attention state of our drivers and intervenes should this fail. This is the first time such a device has been used in the rail industry in the UK and has been commended by the ORR.
- 3.5 TfL has also commenced an extensive search for a suitable automated braking system for retrospective fitment to the London tram fleet. We have engaged a specialised consultancy and conducted a global search into appropriate proven technologies. This research has enabled us to prepare a Technical Specification for a suitable automatic braking product, and a competitive OJEU procurement competition is underway. We are working toward a contract award by the end of 2018.

## **4 Summary**

- 4.1 TfL remains committed to making sure that such an incident does not happen again. Should the committee require regular updates on progress towards implementing the initiatives detailed in this briefing note, we would be happy to provide those.

## **5 Appendices**

- 5.1 **Appendix A:** Summary of RAIB Recommendations and TfL progress against them



## Appendix I Summary of RAIB Recommendations and TfL progress against them

<p><u>RAIB 1</u>          ORR should work with the UK tram industry to develop a new body to enable more effective UK-wide cooperation on matters related to safety, and the development of common standards and good practice guidance.</p>	<p>A Steering Group has been established under the direction of UKTram to develop a proposal to the ORR by late 2018 for a Safety Standards Board for the UK tram industry. This will provide regulation and consistent of safety standards across the industry. We are members of this Steering Group.</p>
<p><u>RAIB 2</u>          UK tram operators, owners and infrastructure managers should jointly conduct a systematic review of operational risks and control measures associated with the design, maintenance and operation of tramways.</p>	<p>We are represented on the UK Tram Industry Sandilands Sub Committee, established to consider the RAIB findings and take action on behalf of the UK tram industry. This recommendation is a priority of the sub committee.</p> <p>Our approach and joint review with TOL of our route risk assessments and our network risk model has been shared with the wider UK tram industry, through this sub committee. The industry is reviewing all risk assessments within the industry to agree a standard approach. Our risk assessments will be further reviewed and revised in line with this approach. Work is expected to be embedded by the end of 2018/19.</p>
<p><u>RAIB 3</u>          UK tram operators, owners and infrastructure managers should work together to review, develop and install suitable measures to automatically reduce tram speeds if they approach higher risk locations at speeds which could result in derailment or overturning.</p>	<p>A wide ranging search of options for over speed control has been undertaken since the overturning occurred. This search is ensuring a balance between system reliability and managing the risk of driver distraction is achieved. We have an agreed scope which is now out to the market with contract award by the end of this year. This is a swift programme by rail signalling changes of this magnitude.</p>
<p><u>RAIB 4</u>          UK tram operators, owners and infrastructure managers should work together to research and evaluate systems capable of reliably detecting driver attention state and initiating appropriate automatic responses if a low level of alertness is identified.</p>	<p>We have completed the installation of the Guardian Driver Protection Device on all of our Trams.</p> <p>This device that detects the attention state of the drivers and this is the first time such a device has been used in the rail industry in the UK and has been commended by the Office of Rail and Road, who are supportive of its use more widely in the industry.</p>
<p><u>RAIB 5 (in part)</u>          UK tram operators, owners and infrastructure managers, in consultation with the DfT, should work together to review signage, lighting and other visual information cues available on segregated and off-track areas based on an understanding of the information required by drivers on the approach to high risk locations such as tight curves.</p>	<p>Various speed initiatives have been completed.</p> <p>The installation of iTram, a variation of the iBus system commenced in June 2018 for testing. (this system provides audible in cab over speed alerts, it is an enhancement on the Guardian system which can only alert drivers if they exceed the maximum speed limit)</p> <p>Post the Sandilands incident we installed additional temporary lighting on the approach to the Sandilands tunnel. We are currently working with road tunnel lighting experts within TfL to redesign the lighting system. The new design will adopt best practice from the automotive industry to reduce the impact of glare on driver's eyes both when entering and exiting the tunnel. Work is expected to be complete on the improved tunnel lighting in 2019.</p>



<p><u>RAIB 6 (in part)</u> UK tram operators and owners should, in consultation with appropriate tram manufacturers and other European tramways, review existing research and, if necessary, undertake further research to identify means of improving the passenger containment provided by tram windows and doors.</p>	<p>We are currently assessing the options available to strengthen the type of glazing fitted on the tram fleet, with a final decision due shortly.</p>
<p><u>RAIB 7</u> UK tram operators and owners should install (or modify existing) emergency lighting so that the lighting cannot be unintentionally switched off or disconnected during an emergency</p>	<p>In conjunction with industry experts, we have determined a retrofit solution to install additional emergency lighting to our trams. This will operate independently of the trams battery system in the event of an emergency. We are aiming to award a contract for this before the end of this year.</p>
<p><u>RAIB 8 (in part)</u> UK tram operators and owners should review options for enabling the rapid evacuation of a tram which is lying on its side after an accident</p>	<p>This recommendation is being led by UKTram with our support.</p>
<p><u>RAIB 9</u> The ORR should carry out a review of the regulatory framework for tramways and its long-term strategy for supervision of the sector this should be informed by a new assessment of the risk associated with tramway operations (allowing for low frequency /high consequence events of the type witnessed at Sandilands junction) and consideration of the most effective means by which supervision can contribute to continuous improvement in passenger safety.</p>	<p>This is being addressed by ORR with our support.</p>
<p><u>RAIB 10 (in part)</u> Tram Operations Limited and London Trams should commission an independent review of its process for assessing risk associated with the operation of trams (eg collision, derailment and overturning of trams).</p>	<p>Route risk assessments and risk model have been reviewed and updated. These have been shared with the wider UK tram industry.</p> <p>The industry is reviewing all risk assessments within the industry to agree a standard approach. Our risk assessments will be further reviewed and revised in line with this approach</p>
<p><u>RAIB 11</u> TOL, drawing on expertise from elsewhere in the FirstGroup organisation, should review and, where necessary, improve the management of fatigue risk affecting its tram drivers with reference to the ORR's good practice guidance.</p>	<p>TOL has engaged a specialist consultancy, Clockwork, to advise on the issue of fatigue management. Phase 1 is approaching completion which will contain a set of recommendation for TOL to consider.</p>
<p><u>RAIB 12 (in part)</u> Tram Operations Limited should commission an external expert or organisation to review, the way that it learns from operational experience. This recommendation is intended to encourage an organisational culture in which tram drivers feel able and willing to report safety incidents, and in which TOL takes suitable actions in response to information from both staff and the</p>	<p>TOL have introduced a 'Just Culture' programme within the organisation. This is a long term project involving significant culture change.</p> <p>'Just culture' is an RAIB term for a culture of trust, learning and accountability in which people are not punished for their actions, omissions or decisions taken by them which are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not</p>



public.	tolerated.
<u>RAIB 13 (in part)</u> Tram Operations Limited and London Trams should, in conjunction with TfL, improve processes, and where necessary, equipment used for following up both public and employee comments which indicate a possible safety risk.	<p>We have realised that customer complaints are a key source of emerging safety indicators.</p> <p>We have changed the process so all complaints are made to TfL in the first instance. This ensures any safety issue raised by a customer is dealt with efficiently and thoroughly across the TfL network. This is one of the key changes to the way we ensure the feedback loop works more deeply both within TfL and into our contractor base.</p>
<u>RAIB 14</u> Tram Operations Limited and London Trams should review, and where necessary, improve their processes for inspection and maintaining on-tram CCTV equipment to greatly reduce the likelihood of recorded images being unavailable for accident and incident investigation. This recommendation may apply to other UK tram operators.	<p>We have completed the upgrade of the CCTV recording equipment of the Bombardier trams and we are about to launch a procurement exercise for a technical upgrade for the Stadler fleet.</p>
<u>RAIB 15</u> London Trams and Tram Operations Limited should: <ul style="list-style-type: none"> <li>- review and, where necessary, revise existing tram maintenance and testing documentation to take account of experience gained, and modifications made, since the trams were brought into service; and</li> <li>- review and, where necessary, revise the processes for ensuring that these documents are kept-up-to-date in future.</li> </ul>	<p>An overhaul of maintenance standards is underway and will be completed in 2019.</p>



**To recommend to Transport for London (TfL) that they review their funding criteria for major projects as the current regime means that significant tram expansion will never be funded.**

Many of TfL's proposed projects compete for investment funding and we prioritise according to a set of rigorous criteria. Our priority is to deliver our core business needs with an affordable Business Plan that can stand up in the face of a challenging economic environment as we have lost an average £700m operational grant from central Government. Both TfL and its delivery partners are looking at new and innovative ways of funding improvement schemes – for example, land value capture mechanisms and retention of local tax revenue such as through Croydon's Growth Zone Fund. As a mode of transport, the tram network does not cover its operating costs from the operating revenue. Therefore, when considering capital investment into the tram network, funding also needs to be secured for the associated operating deficit.

**To recommend to Transport for London (TfL) that a briefing on Capital Gains including figures to be provided to the Committee.**

*[This recommendation lacks clarity and the relevant Croydon officer is aware of it]*

New investment into the tram network, which is in addition to any necessary renewals, requires a multi-faceted approach to funding. More emphasis needs to be placed on securing funding from a variety of sources. The Mayor's Transport Strategy talks about the need to seek additional taxes and financial powers to ensure that the desired level of transport investment can be sustained. The Mayor has already called for greater fiscal devolution to London. However, funding priority would be given to safety-critical and already committed capital investment programmes.