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4 March 2022

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

Dear Andrew,

**RAIB Report: Fatal accident at Bayles and Wylies footpath crossing,
Bestwood, Nottingham on 28 November 2012**

I write to provide an update¹ on the action taken in respect of recommendation 4 addressed to ORR in the above report, published on 26 September 2013.

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 4 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 7 March 2022.

Yours sincerely,

A handwritten signature in black 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 4

The intent of this recommendation is for Network Rail and tram operators to issue guidance to their staff and contractors on the best way to illuminate pedestrian crossings while minimising any visual impairment of pedestrians when looking out for approaching trains/trams.

Network Rail and tram operators should provide guidance to their staff or other third party on the best means to illuminate pedestrian crossings, when necessary, taking into account the following factors:

- Sufficient illumination of the crossing surface to enable pedestrians to see it;
- The possible impact on the visual capabilities of pedestrians using the crossing, in particular with respect to glare affecting their ability to detect approaching trains/trams; and
- Relevant findings from RSSB research project T984.

ORR decision

1. Network Rail has issued updated guidance on assessing lighting at pedestrian level crossings in August 2016. In August 2021 LRSSB issued Non-Motorised Tramway Crossing Guidance to tramway operators, which covers lighting in section 13. Both guidance documents refer to crossings being sufficient illuminated that they can be seen by pedestrians and the potential impact of glare.

2. Once the LRSSB guidance had been published, we asked each network to confirm they had issued their own guidance to staff based on that produced by LRSSB. All networks have reported that action has been taken, so we consider the recommendation to be implemented.

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

- taken the recommendation into consideration; and
- have taken action to implement

Status: Implemented.

Previously reported to RAIB

3. ORR reported the following on 21 April 2016:

On 18 September 2014 ORR reported to RAIB that all Tram Operators were 'In Progress' with the exception of Network Rail ('Implementation ongoing'), Blackpool Transport Services Ltd ('Implemented') and (National Express Midland Metro (not applicable)).

The recommendation requires guidance to be issued to tram operator staff on the best means to illuminate pedestrian crossings. Whilst Network Rail has confirmed that it will produce guidance for use by its staff, UK Tram confirmed on 16 March

2016 that its working group WG3a is reforming after reviewing all tramway pedestrian crossings and will produce overarching guidance for the industry on pedestrian crossings (including lighting standards) which all Tram Operators will be able to use.

Update

4. On 7 October 2016 Network Rail provided the following closure statement and supporting evidence:



Bayles & Wylies Rec
4 signed closure.pdf



Bayles & Wylies Rec
close-out form Rev



Lighting at Railway
Pedestrian Crossing



Lighting at Railway
Pedestrian Crossing



LCG 16 Assessing
lighting at pedestri



OC-0450 - Summary
Report.pdf

5. LRSSB have issued guidance for tram operators on non-motorised tramway crossings, which includes lighting:



LRG-2.0-Non-Motor
ised-Tramway-Cross

6. On 16 September 2020 Edinburgh Trams provided the following update:

Following the publication of the Non-Motorising User Crossing (NMUC) guidance from the LRSSB on 1 September 2019, we undertook a review of all of our NMUCs in accordance with that guidance. That includes a review of lighting (in terms of lux levels, where we complete an annual survey) but also in relation to transitions from light to dark and also other sources of light that could become a distraction (see items 11 and 12 in the attached risk assessment as an example).

Over and above the planned preventive maintenance inspections undertaken by maintainers on the NMUCs, we (the operator) undertake monthly checks on NMUCs using the attached procedure ET.EM.018 – Pedestrian crossing inspection, which is briefed to staff as part of our Safety Management System. I have also attached our work instruction for those checks for completeness.

The original design of our lighting for our system complies with BS5489, and our average lux levels are 25 at tramstops and 20 at all NMUCs and, as noted above, these are checked annually as part of the risk assessment process.

As with all lighting, we have seen localised degradation in lux levels over time (most of which are not perceptible to the human eye), but we have identified those locations to the City of Edinburgh Council and they are currently in the process of undertaking localised lamp replacements.

Over and above that, the City of Edinburgh Council, which is the Roads Authority under the Roads (Scotland) Act and lighting maintainers for our system, are also in the process of a bulk lamp replacement programme city wide to change the lighting system to smart LEDs, where each lamp on the network can be individual monitored and controlled via a central computer system managed by them. Whilst they have partially completed the city, they have chosen to complete the tram route as a discrete project and it is envisaged that this will be completed by April 2021.

With regard to RSSB research project T984, we have introduced yellow hazard zone markings, anti-pedestrian paving (where appropriate) and signage to indicate a transition to high risk/danger zone area at all of our NMUC in 2019 as part of risk based approach. Examples of these are show on the attached risk assessment.

Attachments to response as follows:



7. On 24 September 2020 Keolis Amey Metrolink and Transport for Greater Manchester provided the following update:

Thank you for your email dated 27th August 2020 requesting an update on the actions taken to address recommendation 4 of the RAIB report into the fatal accident at Bayles and Wylies footpath crossing, 28th of November 2012. We are writing to you jointly as our teams are working together to address this.

We have reviewed the actions taken by Metrolink RATP Dev Ltd (the Metrolink operator at the time RAIB report was issued) in relation to the provision of guidance to staff and contractors on the best ways to illuminate pedestrian crossings as per recommendation 4. To date we have found limited evidence to support that the recommendation was fully addressed.

Keolis Amey Metrolink Ltd (KAM) superseded Metrolink RATP Dev Ltd as the operator and maintainer of the Metrolink network in July 2017 and during this time the light rail industry has seen the formation of the Light Rail Safety Standards Board (LRSSB). The newly formed LRSSB are responsible for the development of industry safety standards and guidance.

In September 2019, following an accident at Saughton pedestrian crossing in Edinburgh, the LRSSB issued guidance on Non-Motorised Tramway Crossings. This guidance states that lighting should conform to BS 5489 Part 1: Code of practice for the design of road lighting. Lighting of roads and public amenity areas.

Following the RAIB's findings from the investigation into the Saughton level crossing accident and the subsequent issue of the LRSSB Non-Motorised Crossing guidance, KAM and TfGM initiated a project to assess non-motorised user crossing across the network in compliance with the LRSSB guidance. This project commenced in January 2020 and is progressing well with completion scheduled by the end of the year.

As part of the Metrolink assurance process all significant infrastructure changes must be ratified by the joint TfGM and KAM Safety Review Committee (SRC). As part of this review and approval process, designers are challenged by the panel as to whether proposed changes having taken into account significant RAIB recommendations, including those arising from the Bayles and Wylies and Saughton investigations.

The finding of both investigations, along with the new LRSSB guidance, have been taken into account and followed for the construction of the Trafford Park line and the conversion of Hagside level crossing to a none barriered crossing.

For completeness KAM and TfGM will formally issue the LRSSB Guidance on Non-Motorised Crossings and the relevant British Standard as specified by the guidance to relevant staff and contractors, along with a briefing note to provide context in relation to the Bayles and Wylies accident in our next information cascade

8. On 24 September 2020 Nottingham Trams provided the following update:

Following the B&W accident and the subsequent RAIB report, NET Line 1 NMU's were reviewed and risk assessed by a rail consultant (QSS). This included lighting provision. The one remaining NMU (the B&W crossing was subsequently replaced by a bridge) meets the illumination requirements using high level lighting which illuminates the crossing and avoids direct glare for users and tram drivers.

Phase 2 (NET Lines 2 & 3) was under construction at the time of the report and the Phase 2 D&C contractors were required to incorporate the RAIB Recommendations in the final construction. The Phase 2 crossings were designed by MML in accordance with the then guidance for NMUs. The MML NET Phase 2 document "Evaluation of Sighting Distances for Non-Motorised Users Beeston and Clifton Lines" details the design parameters and these align with those in the new LRSSB Non-Motorised Tramway Crossings Guidance (LRSSB-LRG-2.0)

All Phase 2 NMU crossings are provided with lighting commensurate with the associated footpaths and cycle ways. This ensures that the NMUs are suitably lit without any associated glare.

NTL staff have been involved in the draughting and review of the new LRSSB NMU guidance. The crossing assessment template from the LRSSB Guidance document now forms the basis for NMU crossing risk assessments.

Routine track walks and NMU crossing reviews assess the overall condition of the crossings, the signage, maintenance of sighting distances (including vegetation growth). These are also undertaken during the hours of darkness. Any incidents, emergency brakes or reports from drivers, staff or MoP trigger reviews.

9. On 25 September 2020 Stagecoach Supertram provided the following update:

Supertram's Non-Motorised User crossings (NMUs) have been reassessed in line with the LRSSB's recently published guidance for non-motorized crossings, and

lighting considerations have been taken into account as part of this assessment. This most recent assessment predominantly took place in daylight conditions but we have also previously recorded light readings at sampled NMU crossings in dark conditions which has formed part of the review.

Where lighting improvements are identified as a suitable control measure we will ensure that our Infrastructure Team are aware (and make Contractors aware including 3rd party works e.g. by Sheffield City Council) of the issues raised by Recommendation 4 and that this is factored in when installing further lighting to an NMU crossing.

10. On 27 August 2020 Tram Operations Ltd provided the following update:

TOL provides drivers with detailed route hazard information during initial training and as part of their ongoing safety briefing arrangements. TOL's Route Hazard Assessments were reviewed following issue of the Bayles and Wylies investigation report by RAIB, and all footpath crossings were accurately identified.

The Duty Holder responsible for provision of physical controls at footpath crossings on the Croydon Tramlink is London Trams. The sufficiency of these controls are checked by London Trams Infrastructure Management Team at planned intervals and any shortfalls communicated to TOL Control for onward briefing to drivers. Shortfalls observed by drivers outside of these checks are reported by TOL Control to the London Trams Infrastructure Management Team and recorded in the Control Log.

Records of reported concerns are formally discussed at joint Crossing Review Panel meetings that take place on a quarterly basis. Shortfalls of the physical controls in place at footpath crossings (lighting, warning signage and vegetation management) are dealt with on an as required basis using appropriate operational controls; this would normally involve trams running at half line-speed until safely clear of the affected portion of track.

11. On 8 September 2020 West Midlands Metro provided the following update:

There are currently no pedestrian crossings on the metro system of the style and nature of the one involved in the incident at Bayles and Wylies.

There are a number of non-motorized pedestrian crossings on the segregated section of the metro system, none of which are lit, and all of these have been recently assessed against the published LRSSB guidance for non-motorized crossings.

MML will pay attention and cognizance to Recommendation 4 when assessing any future lighting that affects a non – motorized tram crossing point before implementation.

12. On 22 October 2021 West Midlands Metro provided a further update:

A full risk assessment and audit has been undertaken of all Non Motor User Crossing points on our network, this assessment has followed the LRSSB guidance LRG 2.0 and the findings have shown that ambient lighting sufficiently covers our crossings to ensure they are visible to the user, this source mainly is achieved from adjacent tram stops or environmental sources.

MML have also considered the issues should a crossing be specifically illuminated in that this may reduce the pedestrians visibility of an oncoming tram headlights and also reduce the visibility of the tram driver looking through the illuminated crossing, essentially this could create a wall of light preventing or reducing driver visibility after the crossing.

Previously reported to RAIB

Recommendation 4

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ORR decision

4. On 18 September 2014 ORR reported to RAIB that all Tram Operators were 'In Progress' with the exception of Network Rail ('Implementation ongoing'), Blackpool Transport Services Ltd ('Implemented') and (National Express Midland Metro (not applicable).

5. The recommendation requires guidance to be issued to tram operator staff on the best means to illuminate pedestrian crossings. Whilst Network Rail has confirmed that it will produce guidance for use by its staff, UK Tram confirmed on 16 March 2016 that its working group WG3a is reforming after reviewing all tramway pedestrian crossings and will produce overarching guidance for the industry on pedestrian crossings (including lighting standards) which all Tram Operators will be able to use.

6. ORR, in reviewing the information received from Network Rail, Tram Operators and UK Tram, has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005:

- the recommendation is being taken into consideration; and
- action is being taken to deliver it, although no timebound plan has yet been provided by UK Tram to deliver the tram industry guidance.

Overall Status: Progressing. ORR will provide a further update to RAIB when the status of this recommendation changes.

Network Rail

Previously reported to RAIB

7. On 18 September 2014 ORR reported to RAIB that Network Rail had engaged specialist consultants to prepare a proposal which would address the requirements of this recommendation.

Update

8. On 5 June 2015 Network Rail provided the following update:

In order to address RAIB recommendation 4 from the investigation into the Bayles & Wylies accident, specialist optical consultants were engaged to undertake research into the best means to illuminate pedestrian level crossings. This includes developing guidance for use by Network Rail staff in determining the best means of providing lighting at pedestrian level crossings. It might also result in updates or inclusions to RSSB's Level Crossing Risk Management Toolkit (LXRMTK).

The programme of research work consists of the following stages:

- providing guidance on obtaining sufficient illumination of the crossing surface to enable pedestrians to see it*
- assessing the possible impact on the visual capabilities of pedestrians using a crossing, in particular with respect to glare affecting their ability to detect approaching trains/trams*
- developing a 'Guidance Document' / 'Toolkit Element' (for LXRMTK) comprising best practice for effective lighting at Level Crossings (this includes review and analysis of the applicable findings of the RSSB T984 research project report)*

The research is progressing to the agreed timescale and is due to be completed by the end of June 2015.

This extension [to 30 September 2015] is requested so that the guidance for determining the best means of providing lighting at pedestrian level crossings can be briefed to Level Crossing Managers (LCMs) and the wider level crossing community. This will enable the guidance to be embedded within the organisation.

9. On 15 December 2015 Network Rail provided the following notification of an extension to the September 2015 completion date:

This recommendation requires Network Rail to produce guidance on the best means to illuminate pedestrian crossings.

Optical Specialists 'OptiConsulting' were commissioned to carry out this work. It should be noted that OptiConsulting have also conducted the research to address Beech Hill RAIB recommendation 2 which was given a higher priority.

A draft report has been produced as well as briefing material covering the most salient points and a method of incorporating key elements within the LXRMTK.

This extension is requested to give the Central Level Crossings Team time to:

- review the content of the latest Report*
- brief the key learning points out to the LCM Community*
- incorporate the key learning points into the LXRMTK*

I have also attached a copy of the latest draft Report together with a document summarising the key points from the draft report and a document outlining a suggested way for the recommendations from the report to be implemented in the LXRMTK etc.

Therefore on this basis an extension is requested until 29 February 2016.

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