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6 December 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: Collision between an articulated tanker and a passenger train at Sewage Works Lane user worked crossing, near Sudbury, Suffolk on 17 August 2010

I write to provide an update¹ on the action taken in respect of recommendation 2 addressed to ORR in the above report, published on 11 August 2011.

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 2 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 December 2021.

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 2

The intent of Recommendation 2 is for Network Rail to consider ways of managing the predictable risk that arises at user worked crossings equipped with telephones, where long waiting times are frequently experienced by road users.

Network Rail should consider ways of managing the risk at user worked crossings equipped with telephones where long waiting times can arise as a result of the signaller having no means of knowing where trains are located, and implement any reasonably practicable measures identified.

ORR decision

1. Network Rail has taken a number of measures aimed at managing the risk from long waiting times at user worked crossings (UWC) with telephones.
2. Network Rail has developed overlay Miniature Stop Lights (MSL) as an active warning to improve safety at locations in long signal sections, and these are now available and used on the network. Network Rail's Level Crossing strategy highlights that UWCs in long signal sections are a priority area.
3. The standard for Provision and Risk Management of Level Crossings (NR/L2/XNG/001) highlights signaller workload/long signal sections as an element to be considered in risk assessing level crossings.
4. On the basis of these work streams ORR consider that Network Rail has implemented the recommendation.
5. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Network Rail has:
 - taken the recommendation into consideration; and
 - has taken action to implement it

Status: Implemented.

Previously reported to RAIB

6. On 1 August 2014 ORR reported the following:

ORR is working with Network Rail to make sure it produces a Passive Crossing Strategy which will identify when and where new technologies will be used to manage risks at UWCs where long waiting times can arise where the signaller has no means of knowing where trains are located.

Once the strategy has been developed and adopted the recommendation will be considered as implemented.

Update

7. On 20 September 2021 Network Rail provided the following closure statement:



Sewage Works
Lane Rec 2 Closure 5

8. Network Rail state in summary the following:

In addressing the intent of this recommendation, Network Rail undertook direct action to improve safety on the Marks Tey to Sudbury line of route with the introduction of a pioneering GPS based train activated warning system. Over the years that have followed, Network Rail has invested heavily in technology to increase its capability to improve the safety of passive level crossings, enhancing the cost, efficiency and deployment of miniature stop light solutions. Our ten-year level crossing safety strategy underpins our commitment to risk-based prioritisation of technology, citing user worked level crossings within long signal sections amongst our priorities. Our combined focus, and our continued commitments to user worked level crossings are reducing the waiting times for users, and removing or reducing Signaller involvement, where reasonably practicable.

Previously reported to RAIB

Recommendation 2

The intent of Recommendation 2 is for Network Rail to consider ways of managing the predictable risk that arises at user worked crossings equipped with telephones, where long waiting times are frequently experienced by road users.

Network Rail should consider ways of managing the risk at user worked crossings equipped with telephones where long waiting times can arise as a result of the signaller having no means of knowing where trains are located, and implement any reasonably practicable measures identified.

Brief Summary on what was previously reported to RAIB on 31 May 2013

1. Five Suppliers had been selected from the OJEU to provide technical solutions for train detection at level crossings and the project had progressed to Stage-Gate 3 and was due to start GRIP 4 [Governance for Railway Investment Projects / 4 Single option development], with investment being sourced in October 2013 to progress to trials.
2. All on-board equipment had been installed (14 trains operational) for the GPS Train Activated Warning System (TAWs) trials on the Sudbury branch. However, it was not possible to operate the equipment permanently in the IECC using the current 3G system so a separate ADSL line was being installed.

Update

3. On 27 January 2014 Network Rail provided a copy of its action plan to address this recommendation:

Phase 1 – technology development

Sudbury TAWs

The Sudbury TAWs project was set up following an Office of Rail Regulation (ORR) improvement notice after the accident at Sewage Works Lane UWC in 2010. Phase 1a and phase 1b has met the requirement stipulated, to consider ways of managing the predictable risk that arises at user worked crossing equipped with telephones where long waiting times are frequently experienced by road users.

Phase 1a of the project delivered a portable Global Positioning System (GPS) transmitter which was carried onto each service by the driver. The system works by sending the train location details to a monitor in Liverpool Street IECC. The system uses four Global System for Mobile Communications radios (GSM) for communications redundancy, and has now been in operation for almost two years during which there have been no wrong side failures. Availability of the Phase 1a system has been 99.21%.

Phase 1b is to make the system permanent by installing the GPS equipment on the rolling stock, removing the requirement for drivers to carry the GPS transmitter with them into the cab. This is expected to improve the system availability as it will no longer rely on human interaction on the train. All rolling stock running on the Sudbury Branch has now been fitted.

Commissioning is still outstanding until a permanent ADSL is installed in Liverpool

Street IECC and is currently using 3G. The ADSL is to be installed mid February 2014.

It is proposed that the project will be developed into Phase 2, providing an automatic user interface at the site of each crossing which removes the signaller interface. However, it is considered that on completion of Phase 1b, the project will have met the ORR requirements.

TAWS is currently limited to captured fleets. Phase 2 investment will depend on investigation work to determine its viability for use on other lines/routes. This will be completed by January 2014.

Systems that provide a visual warning to users

The TAWS system currently being trialled on the Sudbury to Marks Tey branch line is an innovative and bespoke solution. It requires a signaller to interface and does not provide an indication directly to the user.

This project aims to identify, develop and implement new technologies which detect trains approaching level crossings and which provides level crossing users with warning signs indicating when it is safe to cross. This scheme is necessary as current costs of visual warning technology at level crossings would generate very few positive safety cases for implementation due to the high costs of implementation. The new solutions are more appropriate in terms of safety, specification and cost.

Suppliers of new technology within the European market have expressed an interest to provide solutions that are able to solve our key business problem. A number of suppliers have been selected. The objective is to achieve product approval within control period 4 [2009-2014] to provide the routes with a suite of solutions to use at appropriate locations. Acceptance criteria have been clearly defined combined with minimum expectations for the systems.

Progress of each system in terms of the product acceptance process

1. WaveTrain

WaveTrain (WTS) is a solution that is undergoing trials in Anglia Route. The system is a warning system for level crossings based upon the principle of detecting sound waves created by the train's wheels in contact with the rails. A number of sensor devices attached to the rails detect incoming trains by measuring and comparing sound waves created by trains against pre-sampled sound profiles of train detection. This is done within a control unit.

In Phase 1 the project proved that the system was able to detect all types of train.

Phase 2a is currently underway to product accept the system on single lines. It has been running in shadow trial for several months and has been approved for live trial in January 2014. There are 47 sites installed under Phase 2a.

Phase 2b is to 'product accept' the technology on double track lines with 'another train coming' warning or where another train arrives? The trial site is currently being selected and will begin shadow trial in January 2014.

The technology is more limited than originally expected and is therefore constrained.

2. Schweizer – Vamos system

This solution uses product approved Frauscher axle counters to detect train

proximity and has been especially designed for the special requirements of Enhanced User Worked Crossings (E-UWC). It has high safety levels, a just in time warning, is maintenance free, has no signaller interface, is independent from signalling systems, is modular and low cost. This system is already being used in Europe.

A product approval strategy and acceptance criteria have been agreed. The 'common safety method' assessment has begun along with the safety case development.

Contract has been issued to the supplier with the target of meeting the Network Rail safety and technical requirements to achieve product approval by May 2014.

The trial site has been selected and installation will be in early February 2014. The product acceptance is being fast track as we are able to use comparative data from existing train detection system at the trial location.

3. Eric Wright – Safe Zone

Eric Wright's system is a low cost radar based train detection system that requires no cabling. Communication between modules is via low power radio frequencies. The equipment sits 3 metres from the track and is advantageous as it does not require possessions for installation.

Its product acceptance is at the same stage as the Schweizer Vamos system and is intended to be an alternative technology.

Very low cost audible warning system

4. Covtec

Covtec provides a visual and audible warning of a train approaching with warning times configurable for all types of crossings.

The system operates completely independent of the railway infrastructure with the detector on a 12v battery and the indicators running indefinitely if required on solar energy.

A Passive detection system is placed on the approach to the crossing on each line, and a detector is placed beyond the crossing on each line. These are self-contained units that will send a signal back to the crossing, which will activate a red light and audible warning to alert users of a train approaching. Once the train has passed the light system will revert to an amber indication with a sign stating cross with caution.

The trial of Convtec is being led by East Midlands Route who are currently reviewing the acceptance criteria, evidence and other safety documentation. The trial sites will be in LNE, EM and Kent Routes and aims for product acceptance by the end of March 2014. If successful, this innovation would be an excellent replacement for whistle-boards that are ineffective.

Phase 2

De-scoping national CP4 delivery project

A site suitability assessment was undertaken at 200 level crossings nationally for technology that is currently undergoing trials and technology that is already product approved; the intention was to implement these technologies within CP4.

Unfortunately, as a result of delays to the product approval of these technologies, the decision has been made to concentrate solely on achieving product approval for a suite of solutions.

Next steps

Timescales for product acceptance for each technology solutions has been provided above. Once the systems are product approved, they will become part of a suite of products for the routes to use. At this point the routes will be responsible for developing business cases for individual sites and delivering those where it is reasonably practicable.

4. On 20 March 2014, ORR wrote to Network Rail asking it for a strategy on how it proposes to implement improvements to passive crossings? On 5 June 2014 Network Rail stated that:

ORR and Network Rail have discussed this recommendation [along with recommendation 3 of the RAIB report of a fatal accident at Mexico footpath crossing]. The outcome of the discussion is for Network Rail to provide ORR with a strategy on implementing improvements to passive level crossings.

Completion of the strategy will involve long term activity, relating to several recommendations, and will aim to rectify legacy issues at passive level crossings. Potentially, works that take place under the strategy will not be completed until later control periods.

Discussions have taken place with the ORR concerning our joint long term aspirations to address legacy issues at passive level crossings. The ORR has raised the need for Network Rail to have a joined up long term strategy for these issues. Network Rail has committed to develop the strategy. Once it has been consulted and agreed, the ORR has indicated that they will be willing to accept closure of this and other related recommendations. Network Rail will then report progress on implementing the strategy which will be tracked via regular liaison with ORR. An extension has already been sought to Mexico recommendation 5 until 30 November 2014 to allow time for the development of and consultation on the strategy. The strategy also links to recommendations Sewage Works Lane recommendation 2 and Mexico recommendation 3. Therefore, it is anticipated that updates on these recommendations will also be available at the end of November 2014.

5. We met with Network Rail on 10 June 2014 where it was explained that the Eric Wright and Rhomberg Rail systems had not met product acceptance requirements. The Sudbury TAWS GPS system is operational but will not be rolled out to any other location because the use of alternative technologies for making passive crossings active is more viable; no need to maintain equipment on trains, no need for contractual agreements with operators/train leasing companies, removal of reliance on telephone use by crossing users, removal of risk of human error in signaller's interpretation and communications.

6. The Schweiser Vamos System (treadle operated) had a trial certificate issued on 25 April 2014. A site is currently being identified for operational trial in Kent. This will be installed in the last week of October 2014. Network rail are confident that the Schweiser Vamos system will be product accepted with all associated

documentation and training to achieve full national acceptance completed by 14 July 2014. A decision on roll out will be made after the Kent trial.

7. Additionally, there is the separate installation of the Bombardier Ebigate system for UWCs and FPXs-MSLs and spoken warnings: 16 sites are being installed by 23 November 2014, 3 of which are now in place. Full implementation of these sites is expected by 31 December 2014.

ORR Decision

8. ORR is working with Network Rail to make sure it produces a Passive Crossing Strategy which will identify when and where new technologies will be used to manage risks at UWCs where long waiting times can arise where the signaller has no means of knowing where trains are located.

9. Once the strategy has been developed and adopted the recommendation will be considered as implemented.

Status: *In-progress. ORR expects to update RAIB by 30 January 2015.*