

Oliver Stewart
RAIB Recommendation Handling Manager



11 October 2022

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

Dear Andy,

RAIB Report: Incident at Llanbadarn Automatic Barrier Crossing (Locally Monitored), near Aberystwyth on 19 June 2011

I write to provide an update¹ on the action taken in respect of recommendation 1 addressed to ORR in the above report, published on 27 June 2012.

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 1 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 12 October 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 1

The intention of this recommendation is that high risk locally monitored automatic crossings in areas signalled by ERTMS should be provided with an engineered safeguard to reduce the risk of train driver error.

Network Rail should develop an engineered safeguard to reduce the risk of trains being operated under ERTMS passing over locally monitored automatic crossings (ie AOCL and ABCLs) when the crossings have not operated. This solution should then be applied at Llanbadarn ABCL crossing and, if appropriate, at higher risk crossings on the Cambrian lines and as part of future ERTMS installations. Assessments of risk should include an evaluation of human factors, previous history, including recorded incidents and accidents.

ORR decision

1. Network Rail had installed an engineered safeguard at Llanbardarn ABCL crossing to reduce the risk of trains operating under ERTMS passing over local monitored automatic crossings when the crossing has not operated. The solution, of switchable balise LEU TSR, has been considered for other applicable crossings. At this time, Network Rail considers that it would be grossly disproportionate to use this solution at these crossings.

2. The other AOCL/ABCL type crossings on the Cambrian line are due for renewal between estimated dates of 2024 to 2034. There is an opportunity to review the arrangements at these crossings again at that time. ORR will take the solution provided at Llanbardarn ABCL into account when looking at these arrangements, and when other areas with AOCLs/ABCLs are upgraded to ERTMS. ORR has also recruited a Digital Signalling specialist who will be involved in this process.

3. We first received Network Rail's rationale for not applying the solution to other crossings on the Cambrian line in 2017. We were sympathetic but not fully persuaded. We asked for more material. Due to changes in Network Rail personnel this took some time to assemble and provide. We are now content that the latest information gives a credible explanation for the solution being grossly disproportionate at a series of crossings which are due for renewal, refurb and/or upgrade in the relatively near future.

4. 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

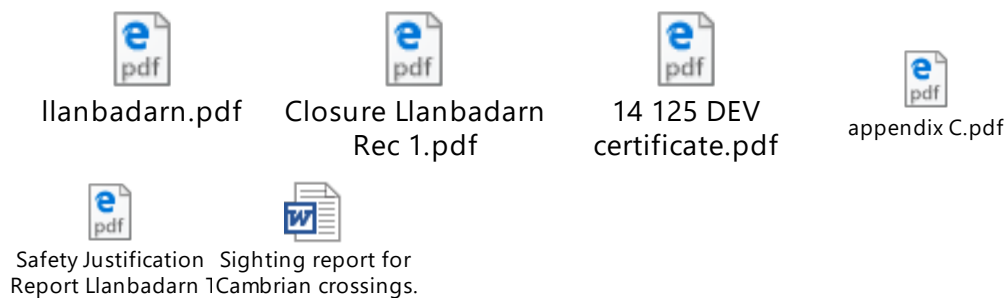
5. On 10 August 2015 ORR reported the following:

On 23 June 2015 Network Rail confirmed that the proposed engineering solution, of fitting an LEU which allows a balise to impose a temporary speed restriction when the crossing is open to road traffic, had been commissioned at Llanbadarn ABCL on 21 June 2015.

ORR considers that the commissioning of this engineering solution at Llanbadarn ABCL fulfils the requirement of the first part of this recommendation. ORR has written to Network Rail seeking confirmation of whether it considers that this solution should now be applied at other higher risk crossings on the Cambrian lines and as part of future ERTMS installations and, if so, when this work might be completed.

Update

6. Following timescale extensions Network Rail provided the following closure statement and supporting evidence on 5 July 2017.



7. Network Rail state in conclusion the following:

The unique operating arrangements and conditions at Llanbadarn Fawr ABCL, had a greater likelihood of causing a 'non-operation' of the crossing due to the VoR AOCL crossing being seized, or has experienced a potential timeout of the 'seize control.

- *Thus the 'seize control' circuitry has been amended to remove the timeout control.*
- *A 'switchable balise LEU TSR' system has been fitted on both approaches to the crossing to control the train speed in the event that the DCI is flashing red and the driver has not responded appropriately.*

Other conditions where a DCI will remain at red include 'main power failures'. However in this event the Level crossing will work as designed but the DCI will remain 'flashing red'. This condition is appropriate for the driver to advise the signaller of a potential fault or power failure within the crossing area.

The general control arrangements of the AOCL(+B)/ABCL's on the Cambrian do not reflect those of Llanbadarn Fawr. However there are, other factors which can be identified as unique or require additional 'human factor' involvement.

The vast majority of 'Level crossing failures' derive from 'main power failures' and 'adverse weather conditions. Thus the potential for train to encounter a 'red DCI'!

From the initial investigation there has been no 'standout' level crossing identified to be fitted with the Switchable Balise LEU TSR. Although there is a potential safety benefit in the fitting of this system to the AOCL(+B)/ABCL's on the Cambrian line.

Therefore consideration of the fitting of this system will be taken into account when the targeted renewal of these level crossings occurs.

The first of these crossings to be renewed and considered is Talwrn Bach AOCL (converted to ABCL in 2017).

8. On 1 February 2022 Network Rail forwarded the following documents to ORR:



Previously reported to RAIB

Recommendation 1

The intention of this recommendation is that high risk locally monitored automatic crossings in areas signalled by ERTMS [European Rail Traffic Management System] should be provided with an engineered safeguard to reduce the risk of train driver error.

Network Rail should develop an engineered safeguard to reduce the risk of trains being operated under ERTMS passing over locally monitored automatic crossings (i.e. AOCL [Automatic Open level, locally monitored] and ABCLs [Automatic barrier crossings, locally monitored]) when the crossings have not operated.

This solution should then be applied at Llanbadarn ABCL crossing and, if appropriate, at higher risk crossings on the Cambrian lines and as part of future ERTMS installations.

Assessments of risk should include an evaluation of human factors, previous history, including recorded incidents and accidents.

Brief Summary on what was previously reported to RAIB on 30 January 2014:

1. On 30 January 2014 ORR reported to RAIB that it was receiving regular updates from the Wales Route Asset Manager (S&T) which showed that implementation of the engineering solution was in progress. Final commissioning was planned for June 2014, although it was noted that this was reliant upon the equipment supplier, Ansaldo, delivering the Lineside Encoder Unit (LEU) in May 2014.
2. ORR provided a further update on 29 August 2014 which reported Network Rail's view that the engineering solution was more complex than originally understood. There had also been a delay in issuing the contract to Ansaldo for undertaking of the works required.

Update

3. On 23 June 2015 Network Rail confirmed that the proposed engineering solution, of fitting an LEU which allows a balise to impose a temporary speed restriction when the crossing is open to road traffic, had been commissioned at Llanbadarn ABCL on 21 June 2015.

ORR Decision

4. ORR considers that the commissioning of this engineering solution at Llanbadarn ABCL fulfils the requirement of the first part of this recommendation. ORR has written to Network Rail seeking confirmation of whether it considers that this solution should now be applied at other higher risk crossings on the Cambrian lines and as part of future ERTMS installations and, if so, when this work might be completed.

Annex 6842358

5. After reviewing all the information received from Network Rail, ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Network Rail has:

- taken the recommendation into consideration; and
- is taking action to implement it. Status: Implementation on-going. ORR will advise RAIB when further information is available regarding actions being taken to address this recommendation.

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