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

Dear Andrew,

RAIB Report: Occupied wheelchair contacting a passing train at Twyford station, 7 April 2016

I write to provide an update¹ on the action taken in respect of recommendations 1, 2 and 3 addressed to ORR in the above report, published on 19 January 2017.

The annex to this letter provides details of the action taken regarding the recommendation. The status of recommendations 1, 2 and 3 is now **'Implemented'**.

ORR will advise RAIB when further information is available regarding actions being taken to address recommendations 4 and 5.

We will publish this response on the ORR website on 22 October 2019.

Yours sincerely,

Oliver Stewart

¹ In accordance with Regulation 12(2)(b) of the Railways (Accident Investigation and Reporting) Regulations 2005

Recommendation 1

The intent of this recommendation is that in advance of the implementation of Recommendations 2 to 5 below, members of the public are made aware, as quickly as possible, by the railway industry, of the potential hazard from train slipstreams at railway stations and the need to keep hold of wheelchairs and pushchairs.

The Rail Delivery Group, in consultation with passenger groups, including those representing the interests of disabled persons, should seek to provide station users, in an expedient and appropriate way, with both advance information (such as published advice or leaflets) and real time information (such as announcements and customer information system displays) that:

- trains passing through platforms, particularly freight trains, can generate slipstreams which are strong enough to move wheelchairs and pushchairs, even if the brakes are on; and
- brakes should be applied to the maximum extent possible and carers should keep a firm hold on a wheelchair or pushchair when a train passes by (paragraph 74b).

ORR decision

1. We were satisfied with the work RDG did to help the railway industry improve the information provided to passengers at stations making them aware of the risk presented by the slipstream from non-stopping trains.

2. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, The Rail Delivery Group has:

- taken the recommendation into consideration; and
- has taken action to implement it.

Status: Implemented.

Previously reported to RAIB

3. On 17 January 2018 ORR reported that we were content with the approach RDG were taking to address the recommendation and the timescales were satisfactory. We would contact RDG in early 2018 to check they are on target to meet their deadline. We had clarified our views on a number of issues with RDG over the use of posters at termini stations rather than announcements

Update

4. On 3 August 2018 the Rail Delivery Group provided the following update:

Thank you for recently meeting to discuss the progress that Rail Delivery Group (RDG) has made to address Recommendation 1 of RAIB's investigation report into the Twyford incident, as seen below:

“The intent of this recommendation is that in advance of the implementation of Recommendations 2 to 5 below, members of the public are made aware, as quickly as possible, by the railway industry, of the potential hazard from train slipstreams at railway stations and the need to keep hold of wheelchairs and pushchairs.

The Rail Delivery Group, in consultation with passenger groups, including those representing the interests of disabled persons, should seek to provide station users, in an expedient and appropriate way, with both advance information (such as published advice or leaflets) and real time information (such as announcements and customer information system displays) that:

- trains passing through platforms, particularly freight trains, can generate slipstreams which are strong enough to move wheelchairs and pushchairs, even if the brakes are on; and*
- brakes should be applied to the maximum extent possible and carers should keep a firm hold on a wheelchair or pushchair when a train passes by (paragraph 74b).”*

RDG acted on this recommendation by widely engaging with relevant parties including the RDG Accessibility and Inclusion Team, members of our Train Operators Safety and Stations Fora’s and Network Rail’s BEAP (Built Environment Accessibility Panel) which comprises of representatives with reduced mobility and inclusion design experts. These groups worked with us to create the scope for an industry wide awareness campaign which would warn passengers that trains passing through platforms (particularly freight trains), can generate slipstreams which are strong enough to move wheelchairs and pushchairs, even if the brakes are on.

We highlighted this risk by devising three separate iconographic images featuring a wheelchair user, a pushchair user (including their carers stood next to them) and a passenger with wheeled luggage. These were all positioned behind the yellow line of a station platform which had a freight train passing through with a visible slip stream depicted.

The images bore the strap line “Stay back, Strap in (for pushchair users), Hold tight, Brakes fully on” in bold white, yellow and black lettering which matched the colour schemes of current station platform markings. This message was also used as a means to encourage wheelchair and pushchair users to ensure that their brakes should be applied to the maximum extent possible when on a station platform. Additionally, that carers should keep a firm hold of a wheelchair or pushchair when a train passes by. This equally applied to the passenger with wheeled luggage to keep hold of the handle on their case.

The groups involved in the consultation decided that the most optimal way to convey these messages would be to take a blended online approach, and during the consultation they quickly ruled out the use of leaflets in favour of other more modern media, however in some cases posters were adopted.

The Think Safe, Stay Safe Campaign went live on 28th March 2018 featuring the pictographs and straplines on the National Rail Enquires (NRE) website, posts on NRE's Facebook page and Twitter accounts and a link from NRE and Railcard holder emails to the campaign. This was seen to be a holistic approach which would target passengers both prior to and during their journeys.

CCTV footage was also utilised which featured an incident which had occurred at Nuneaton Station where an empty pushchair had been caught in the slipstream of a freight passing train through the platform. This resulted in the pushchair striking the train and being severely damaged and graphically demonstrated the risks that the campaign had been designed to raise awareness of. We also added in a subtitle narrative to the social media posts featuring this video. This was found to be highly effective in getting people's attention and catered for a wide cross section of people.

We had great engagement with the public on this approach with 85% of social media users watching the whole video, which was 6% over the Facebook average. Furthermore, the footage also featured across several news outlets across the globe and served to reach out to a far wider audience than we had initially anticipated.

Following the campaign our marketing team analysed the results of this and found we had experienced the following uptake:

<i>NRE Website</i>	<i>3.7k visits to the NRE page/2000 carousel clicks</i>
<i>NRE and RC email</i>	<i>1.9m customers reached / average</i>
<i>Twitter</i>	<i>140 000 reached</i>
<i>Facebook</i>	<i>610 000 reached / 331 reactions / 187 shares / 17 000 video views</i>

Moreover, going forward RDG will be considering recommendations made from RSSB's recently published T1098 project report (Identifying mitigations for the risk of unplanned movement of wheelchairs and pushchairs on station platforms). Findings from the report will be reviewed during a forthcoming revision of RDG Guidance Note GN022 (- Safe Management of Pushchairs and Wheelchairs on Station Platforms).

RDG will engage with its members and endeavours will be made to identify any good practice examples of real time information such as announcements and customer information system messages which warn of trains passing through platforms. Consideration will be taken to incorporate any examples regarded as good practice in the subsequent publication of the revised guidance note.

I trust that the above provides sufficient assurance that RDG has fully recognised and responded to Recommendation 1 of the RAIB Twyford report.

5. On 18 October 2019 RDG notified us that GN022 Guidance Note has been reviewed and amended to incorporate RSSB 2387-T1098-02 Recommendations. The guidance note was signed off by the RDG Safety Forum and is in the process of being issued.

Recommendation 2

The intent of this recommendation is that operators of stations where trains pass through at speed have a consistent set of measures they can take to ensure the safety of wheelchairs and pushchairs from train slipstreams, following appropriate risk assessment in accordance with Railway Group standards.

RSSB, in consultation with the railway industry, should investigate and identify mitigation measures which can be applied by station operators to inform station users about what they should do to prevent wheelchairs and pushchairs from being moved by trains passing through stations at speed. Suitable and specific guidance should then be issued to the railway industry to be used in conjunction with the revised standard for risk assessment (see Recommendation 3)

ORR decision

6. RSSB have published guidance on the interface between station platforms, track, trains and buffer (RIS-7016-INS). The document includes guidance on measures to mitigate the risk of a wheelchair or pushchair being moved by the aerodynamic conditions created on a platform by a passing freight train.

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

- taken the recommendation into consideration; and
- has taken action to implement it.

Status: Implemented.

Previously reported to RAIB

8. On 17 January 2018 ORR reported that we were content that by reissuing the Railway Group Standard GIRT7016 (Interface between station platforms, track and trains) as industry guidance (RIS-7016-RNS), RSSB were taking appropriate action to address the recommendation. Once the guidance was published, it would be the responsibility of station operators to use it to help manage the risk of wheelchairs and pushchairs being moved by the aerodynamic effect of trains passing through stations at speed.

Update

9. On 20 June 2018 RSSB provided the following update for Recs 2 & 3:

As described in our previous updates on progress against these recommendations, it was decided – and agreed with industry – to make relevant changes to RIS-7016-INS (Interface between station platforms, track, trains and buffer stops). Industry consultation on this document closed on 8 November 2017, after which responses to consultation comments were drafted with a view to post-consultation visits to standards committees in March and April 2018. This achieved, [RIS-7016-TOM was published in June 2018](#).

In essence, section 10 deals with the issue of passing freight trains, and in line with our new standards features a section on requirements, rationale and guidance:

10.1 Requirements for aerodynamic effects of passing trains on the platform

10.1.1 At a station platform, where the permissible or enhanced permissible speed on the adjacent line is greater than 125 mph (200 km/h), people shall be prevented from gaining access to the platform.

10.1.2 At a station platform, where the permissible or enhanced permissible speed on the adjacent line is greater than 100 mph (160 km/h), a yellow line shall be provided on the platform, together with warning signs. The yellow line shall be positioned so that people standing immediately behind the line are at least 1500 mm away from the platform edge.

Rationale

G 10.1.3 Slipstream velocities to which passengers and staff on stations are exposed by passing trains have to be limited for comfort and safety.

G 10.1.4 The key factors influencing slipstream strengths are the train speed; the distance from the side of the train; the type, shape and finish of the surface of the train; and the ambient wind speed and direction.

Guidance

G 10.1.5 The PRM TSI does not give fixed dimensions either for required platform width or for the 'danger area' at the platform edge. The ERA Guide for the Application of the PRM TSI (ref ERA/GUI/02-2013/INT) states that 'the limits of the danger area are defined in National Rules'. The current document is the relevant National Rule for the GB mainline system.

G 10.1.6 Descriptions of train slipstream effects are given in EN 14067-2:2003 'Railway applications - Aerodynamics - Part 2: Aerodynamics on open track' and in RSSB Research Project [T248 final report Review of train slipstream effects on platforms](#). More background on aerodynamic effects in platforms is given in Appendix B.1 of this document.

G 10.1.7 At a station platform, where freight trains (including container traffic but excluding those trains with the same aerodynamic profile as passenger trains, such as mail trains) pass, or are proposed to pass, on the adjacent line at speeds greater than 45 mph (75 km/h), it is good practice to take action to reduce the risk from the aerodynamic effects of passing trains to lightweight objects and vulnerable

passengers on station platforms (for example, pushchairs, the elderly or frail). See Appendix B.

G 10.1.8 In terms of the safety of people and wheeled items in stations, the risk from slipstream effects can be mitigated by frequent passenger warning announcements, increased yellow line clearances from the platform edge or even segregated safe zones on the platform. It may not be possible in certain station configurations to ensure complete safety from the slipstreams of passing high-speed trains and thus through-operations might have to be prevented or passengers prevented from being on the platform during such passings.

G 10.1.9 GIRT7033 sets out requirements for the design of a warning sign for aerodynamic effects on station platforms.

G 10.1.10 Where an IM or RU makes any changes to the existing situation, either through improvement works which result in a line speed upgrade, or where the speed of passing trains is increased, it is a legal requirement for the party making the change to consult with all affected parties, which will include the IM (Stations) so that any risk assessments and mitigation measures can be amended.

With specific regard to Recommendation 2, the production of the RIS allowed mitigation measures that can be applied by station operators to be provided in sections B.2.1-B.2.5 (in addition to the points made in the extract above). With specific regard to Recommendation 3, the key requirement outlined in the RIS is that the industry needs to think about doing a risk assessment for any passing freight at speeds over 45 mph (see section G10.1.7, reproduced above); the risk assessment tool in Appendix B should be used to help formulate any action plan.

Given the above, RSSB now considers Recommendations 2 and 3 of the Twyford report to be implemented.

Recommendation 3

The intent of this recommendation is that RSSB review the current Railway Group standard requirement for station aerodynamic risk assessments.

RSSB, in consultation with the railway industry, should review the minimum freight train passing speed for which station aerodynamic risk assessments are required. This review should be carried out with reference to previous research such as RSSB project T248 and the findings of this investigation. Following this review, the appropriate Railway Group standard should be updated to document the revised requirements.

ORR decision

10. RSSB have issued updated guidance on the interface between station platforms, track, trains and buffer (RIS-7016-INS), as per recommendation 2. The document includes guidance and templates for carrying out an aerodynamic risk

assessment, which have been updated to take account of the findings of RSSB research project T248: Review of train slipstream effects on platforms.

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

- taken the recommendation into consideration; and
- has taken action to implement it.

Status: *Implemented.*

Previously reported to RAIB

12. On 17 January 2018 ORR reported that RSSB had addressed the recommendation by reviewing the existing RGS covering aerodynamic risk assessment (GIRT7016, part 9) and reissuing it as industry guidance in March 2018. Once the guidance had been published, it would be the responsibility of station operators to use the guidance to review the minimum freight train passing speed for which station aerodynamic risk assessments are required. This may be done in conjunction with RSSB.

Update

13. See RSSB update above for Recs 2 & 3 on 20 June 2018.

Previously reported to RAIB

Initial consideration by ORR

1. All 5 recommendations were addressed to ORR when the report was published on 19 January 2017.
2. After considering the recommendations ORR passed recommendation 1 to RDG; recommendations 2 and 3 to RSSB; and recommendations 4 and 5 to GWR, asking them to consider and where appropriate act upon them and advise ORR of their conclusions.
3. When the report was published, ORR also brought recommendations 4 and 5 to the attention of TOCs as it was concluded that that there are equally important lessons for them as station operators. ORR did not ask these organisations to provide a reply.
4. This annex identifies the correspondence with end implementers on which ORR's decision has been based.

Recommendation 1

The intent of this recommendation is that in advance of the implementation of Recommendations 2 to 5 below, members of the public are made aware, as quickly as possible, by the railway industry, of the potential hazard from train slipstreams at railway stations and the need to keep hold of wheelchairs and pushchairs.

The Rail Delivery Group, in consultation with passenger groups, including those representing the interests of disabled persons, should seek to provide station users, in an expedient and appropriate way, with both advance information (such as published advice or leaflets) and real time information (such as announcements and customer information system displays) that:

- trains passing through platforms, particularly freight trains, can generate slipstreams which are strong enough to move wheelchairs and pushchairs, even if the brakes are on; and
- brakes should be applied to the maximum extent possible and carers should keep a firm hold on a wheelchair or pushchair when a train passes by (paragraph 74b).

ORR decision

5. We are content with the approach RDG are taking to address the recommendation and the timescales are satisfactory. We will contact RDG in early 2018 to check they are on target to meet their deadline.
6. We have clarified our views on a number of issues with RDG over the use of posters at termini stations rather than announcements

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

- taken the recommendation into consideration; and
- is taking action to implement it by 31 March 2018.

Status: Implementation ongoing. ORR will advise RAIB when actions to address this recommendation have been completed.

Information in support of ORR decision

8. On 12 May 2017 the Rail Delivery Group provided the following initial response:

Our progress to date comprises:

- 1. Shortly after publication of the RAIB report on 19 January, RDG provided a summary of the report, its findings and recommendations in the January edition of our Operations Scheme Brief (issued monthly and targeted primarily at the senior operations, operational standards and safety contacts within our member organisations).*
- 2. Wide engagement with relevant parties has taken place and is continuing, with the aim of planning and implementing RDG's response to the recommendation. This has included meetings with RDG's Accessibility and Inclusion Team, RDG Train Operators Safety Forum, RDG Stations Forum and Network Rail's BEAP (Built Environment Accessibility Panel), which is made up of disabled people and inclusive design experts.*

The main conclusions to date from those meetings are summarised below:

- i. All station users should be considered as potentially affected, not just those with mobility impairment or pushchairs.*
- ii. Several media of communicating this were considered however, use of station posters was rejected as the experience of our members is that these are largely ineffective for informing station users.*
- iii. Members of the RDG Train Operators Safety Forum noted the close link to RSSB research project T1098 (Identifying mitigations for the risk of unplanned movement of wheelchairs and pushchairs on station platforms), which is currently under way and which relates to the Southend and Whyteleafe incidents in which respectively a wheelchair and pushchair rolled onto the track because of platform gradient. The Forum agreed that the RSSB should be asked to expand the scope of this to cover slipstream effects and the RSSB have since confirmed that mitigating the effects of causal factors such as air turbulence and*

vibration are already in scope.

- iv. Current platform audible warnings should be tweaked to become more effective (i.e. through interchangeable use of colloquial accents and/or variety of voices), those should be played for all passing trains in an appropriate and efficient manner.*
- v. The message needs to be regular, this to avoid creating panic.*
- vi. It is suggested that a raising awareness campaign is the most effective method of informing people of the risks prior to travel.*

Considering the information gathered from the consultation meetings (as above), RDG proposes the below measures to implement the recommendation, including the proposed timetable for securing that implementation:

- 1. In terms of advance information, RDG proposes to run a campaign to raise awareness of the risks. The intention is to focus on how the risk from slipstreams generated by passing trains can be mitigated by station users directly. We plan to publish this information through channels such as the National Rail Enquiries website and engagement emails to our customers (e.g. Family and Friends Railcard holders, Disabled Persons Railcard holders, Senior Railcard holders). We aim to have this finalised and live by Quarter 1 calendar year of 2018, this timetable is subject to the relevant RDG board agreement.*
- 2. In terms of real time information, RDG will be engaging with Train Operating Companies regarding current announcement and customer information systems (CIS) deliver warnings for passing trains. Any good practices identified will then be promoted by means of a Guidance Note on optimising the accuracy, timeliness and effectiveness of such warnings so that stations users are made aware of passing trains appropriately and are able to take precautions if necessary. We aim to have this finalised and live by Quarter 1 calendar year of 2018, this is subject to consultation and the relevant RDG board agreement.*

Recommendation 2

The intent of this recommendation is that operators of stations where trains pass through at speed have a consistent set of measures they can take to ensure the safety of wheelchairs and pushchairs from train slipstreams, following appropriate risk assessment in accordance with Railway Group standards.

RSSB, in consultation with the railway industry, should investigate and identify mitigation measures which can be applied by station operators to inform station users about what they should do to prevent wheelchairs and pushchairs from being moved by trains passing through stations at speed. Suitable and specific guidance should then be issued to the railway industry to be used in conjunction with the revised standard for risk assessment (see Recommendation 3)

ORR decision

9. We are content that by reissuing the Railway Group Standard GIRT7016 (Interface between station platforms, track and trains) as industry guidance (RIS-7016-RNS), RSSB are taking appropriate action to address the recommendation. Once the guidance has been published, it will be the responsibility of station operators to use it to help manage the risk of wheelchairs and pushchairs being moved by the aerodynamic effect of trains passing through stations at speed.

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

- taken the recommendation into consideration; and
- is taking action to address it by producing updated guidance for industry. Once this has been completed, we would consider the recommendation implemented.

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

Information in support of ORR decision

11. On 3 May 2017 RSSB provided the following initial response:

Regarding Recommendations 2 and 3, it is proposed that GIRT7016 (Interface between station platforms, track and trains) be updated accordingly. The consultation period is currently scheduled to end on 30 June 2017, with a view to publication in March 2018.

12. On 18 September 2017 RSSB provided an update, which was then followed by a meeting on 19 October 2017. The update stated:

Within ROGS, the requirement is on the IM (Stations) to conduct a suitable and appropriate risk assessment covering the station platform. An IM Stations may be Network Rail (they are responsible for 18 large stations in the country) but the remainder are managed by the local Train Operating Company.

The information which is included within GIRT7016 (soon to be RIS-7016-INS) clarifies some of the issues that an IM Stations should be aware of in the carrying out of this risk assessment. There is information detailing research associated with passing Freight trains, and there is a risk assessment which may be used to assess the risk in this difficult area.

However, the output from this risk assessment will be a series of actions which the IM Stations is responsible for implementing.

At this present time, there is nothing available which presents a unified series of solutions which deal with common issues which may be found. These may include the risks associated with platform surfacing falling towards the track, passing freight trains, wind effects associated with the station (say in an exposed location), local gradient issues surrounding assets such as lifts and stairs to name but a few.

Solutions may include station announcements and signage, but there is little hard evidence of what is deemed to be adequate to address particular problems. There is little in the way of valuable risk validation, instead measures are “deemed acceptable” but there is little evidence that they are categorically good enough.

The responsibility for developing the understanding of mitigation measures which can be applied by station operators does not really sit with RSSB. The responsibility does sit with TOCs and Network Rail, and as a body this may best sit with RDG.

We would anticipate however that this would be a prime candidate for further research work and it may be that this best sits with RSSB, however this should be mandated through the normal process driven by RDG. Finally, the output could then be incorporated into a RIS document, and it may be that this sits best within RIS 7016.

We therefore recommend that the recommendation be readdressed to RDG.

Recommendation 3

The intent of this recommendation is that RSSB review the current Railway Group standard requirement for station aerodynamic risk assessments.

RSSB, in consultation with the railway industry, should review the minimum freight train passing speed for which station aerodynamic risk assessments are required. This review should be carried out with reference to previous research such as RSSB project T248 and the findings of this investigation. Following this review, the appropriate Railway Group standard should be updated to document the revised requirements.

ORR decision

13. RSSB have addressed the recommendation by reviewing the existing RGS covering aerodynamic risk assessment (GIRT7016, part 9) and reissuing it as industry guidance in March 2018. Once the guidance has been published, it will be the responsibility of station operators to use the guidance to review the minimum freight train passing speed for which station aerodynamic risk assessments are required. This may be done in conjunction with RSSB.

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

- taken the recommendation into consideration; and
- is taking action to address it by producing updated guidance for industry. Once this has been completed, we would consider the recommendation implemented.

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

Information in support of ORR decision

15. On 3 May 2017 RSSB provided the following initial response:

Regarding Recommendations 2 and 3, it is proposed that GIRT7016 (Interface between station platforms, track and trains) be updated accordingly. The consultation period is currently scheduled to end on 30 June 2017, with a view to publication in March 2018.