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3 December 2013

Ms Carolyn Griffiths
Chief Inspector of Accidents
Cullen House
Berkshire Copse Road
Aldershot
Hampshire GU11 2HP

Dear Carolyn

RAIB report: Person trapped in a train door and dragged at Jarrow station, Tyne and Wear Metro

I write to report on the consideration given and actions taken in respect of the recommendations addressed to ORR in the above report published on 3 December 2012.

The annex to this letter provides details of the consideration and actions where recommendations 1, 2 and 3 are reported as 'implementation on-going', recommendation 4 is reported as 'in progress' and recommendation 5 is reported as 'implemented'.

We will confirm when all outstanding actions in relation to recommendations 1, 2 and 3 have been completed and we will update you on progress with recommendation 4 by 31 May 2014. We do not intend to take any further action in relation to recommendation 5 unless we become aware of an inaccuracy in which case we will write to you again.

Yours Sincerely

Chris O'Doherty



Introduction

1. All five recommendations were addressed to ORR when the report was published on 3 December 2012.
2. After considering the recommendations ORR passed recommendations 1 – 4 to DB Regio Tyne and Wear and recommendation 5 to RSSB asking them to consider and where appropriate act upon them and advise ORR of its conclusions. The consideration given to each recommendation is included below.

Recommendation 1

The purpose of this recommendation is to reduce the number of deliberate door obstructions on the Tyne and Wear Metro network, by raising passenger awareness, thereby reducing the risk from future trap and drag incidents.

DB Region Tyne and Wear should:

- a. develop its current actions, reported at paragraph 77 (included at Annex B), to reduce the frequency of door obstruction by passengers into an on-going long term strategy and implement this; and
- b. introduce a system of monitoring the frequency of door obstructions on its network, in order to check the efficacy of the measures implemented in (a) and to optimise the strategy where appropriate.

Actions taken or being taken to address the recommendation.

3. DB Regio Tyne and Wear provided the information below on 22 February 2013.

Part a

An action plan has been developed. This will be converted into a long term strategy by 31 March 2013, with key actions part of the annual safety plan. Key elements continue to be:

- *Passenger and driver awareness campaigns to reduce the number of door obstructions;*
- *Yellow lining/stopping zone marking;*
- *Reviews of driver viewing aid functionality, sighting and lighting, in liaison with Nexus, to inform a replacement and renewal strategy where necessary;*
- *Door switch cleaning and other engineering initiatives to assure the integrity of the interlocking and minimise the risk of obstruction and subsequent dragging incidents;*
- *Removal of vehicles for testing following door obstruction incidents;*
- *Technical and station specific risk assessments;*
- *A cost benefit and technical analysis of the scope for door modifications so that the doors do not open completely in the event of a detected obstruction.*

Action	Timescale	Comment
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<i>Train crew briefing for OTR 4</i>	<i>On-going</i>	
<i>Yellow lines, stopping zones plan</i>	<i>Completion by December 2014</i>	<i>Programme has started at the high risk stations.</i>
<i>Publicity plan including:- CCTV Media PA/PID Driver PA script Sticker around PEB</i>	<i>On-going</i>	
<i>Pursue prosecutions of passenger obstructing doors</i>	<i>On-going</i>	<i>We are prosecuting individuals for holding doors. BTP has recently successfully prosecuted an individual for this. We are also in the process of preparing a case for prosecution of another individual for putting her foot into the doors to prevent them from closing.</i>
<i>Staff briefings re door obstructions</i>	<i>On-going</i>	

Part b

Door obstruction frequency and trends are monitored in the period and annual safety reports.

Action	Timescale	Comment
<i>Check Control Room Procedures for trapping and dragging incidents</i>	<i>Complete</i>	<i>Door entrapments procedures in aide memoire and briefing went out to controllers in November 2012.</i>
<i>Check data for PA/PID usage in Compass</i>	<i>Complete</i>	
<i>2hrs' monitoring of door obstructions at stations per week</i>	<i>On-going</i>	<i>Door monitoring carried out at stations in 30 minute blocks.</i>

ORR decision

4. DB Regio Tyne and Wear have developed a long term strategy (see Annex C) which develops the actions that it had reported it was undertaking at the time of publication of the report (Annex B). The strategy also confirms that monitoring is taking place to measure the efficacy of the actions being undertaken. A number of the actions have been introduced and are on-going. The completion date for

introducing yellow lines and stopping zones is December 2014. Therefore, ORR has concluded that in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, it has

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

5. The outstanding action is the fitment of the yellow lines and stop zones, now due for completion in December 2014.

Status: Implementation on-going. Completion date December 2014

Recommendation 2

The intent of this recommendation is that the reliability of the door control circuits on the TWM trains is increased in order to minimise the risk of a similar malfunction to that which occurred in this incident.

DB Regio Tyne and Wear should identify ways to improve the reliability of the door obstruction detection and traction interlock systems, including consideration of improvements in:

- design of the control circuitry;
- ingress protection of the micro switches;
- switch cleaning method;
- replacement procedures; and
- implement identified improvements.

Actions taken or being taken to address the recommendation

6. In its response of 22 February 2013, DB Regio Tyne and Wear explained:

Technical risk assessments have been carried out and the programme for improvements is on-going, as outlined in the engineering action plan (below), and in accordance with our saloon door refurbishment and door switch modification instructions.

Area	Action	Target date
<i>Maintenance checks</i>	<ul style="list-style-type: none"> • <i>Immediate changes to the way doors are checked re: integrity circuitry. Email to Fleet duty managers to instruct staff.</i> 	<i>Complete</i>
	<ul style="list-style-type: none"> • <i>Notice to staff regarding maintenance requirements of Schaltbau S804B switches as recommended by Schaltbau Investigation Report S804 20120702.</i> 	<i>Complete</i>
	<ul style="list-style-type: none"> • <i>Changes to Work Instructions for A and B examinations to reflect both above points.</i> 	<i>Complete</i>
<i>Risk Assessment</i>	<i>Risk Assessment reviewing Jarrow Schaltbau switch failure, South Gosforth failure, door</i>	<i>Complete</i>

Area	Action	Target date
	<i>integrity and door nosing hardness.</i>	
<i>Schaltbau Switch</i>	<ul style="list-style-type: none"> • <i>Identify possible replacements in relation to stronger rated spring for general replacements (S804b40 plunger type snap action switch /S800e40 roller type snap action switch sourced).</i> • <i>Engineering change for stronger rated spring switch use on the fleet as a replacement component.</i> • <i>Alteration of technical procurement description for current Schaltbau switch for future deliveries.</i> • <i>Replacement of Schaltbau switch, on phased maintenance /and also heavy door refurbishment as required.</i> • <i>Sample checks on the fleet of Schaltbau switches for possible contamination.</i> 	<p><i>Complete</i></p> <p><i>Complete</i></p> <p><i>Complete</i></p> <p><i>31 December 2015</i></p> <p><i>Complete</i></p>
<i>Grease shield</i>	<ul style="list-style-type: none"> • <i>A grease shield to be developed for the right hand fully closed switch.</i> • <i>A grease shield to prototype, review and then engineering change with sign off prior to commencement.</i> • <i>Manufacture (procurement) and installation to right hand fully closed switch on the fleet as undertaken on Metro car B examinations.</i> 	<p><i>Complete</i></p> <p><i>Complete</i></p> <p><i>31 March 2013</i></p>
<i>Door nosing rubber</i>	<ul style="list-style-type: none"> • <i>Determine solution for hardening current door nosing rubbers using the current nosing design</i> • <i>Trials tests with firmer door nosing rubber installations and tests in accordance with GM/RT2473. Undertake comparisons and formulate assessment based upon results found.</i> 	<p><i>Complete</i></p> <p><i>Complete</i></p>
<i>Door header</i>	<ul style="list-style-type: none"> • <i>Door header exhaust manifold engineering change directing actuator exhaust down to door side pillars.</i> • <i>Cleaning of door header fabrication cover as per B examination. Continuation of Traincare regime</i> • <i>Cleaning of microswitches by technicians with soft cloths on B examinations.</i> 	<p><i>Complete</i></p> <p><i>Complete</i></p> <p><i>15 February 2013</i></p>
<i>Door refurbishment</i>	<ul style="list-style-type: none"> • <i>Overhaul of passenger doors in accordance with ¼ Life Refurbishment specification</i> 	<i>31 December 2015</i>

As of February 2013, 20 metro cars out of 90 have still to have all remedial actions identified in the above action plan. 70 cars have had all the micro switches cleaned

and the door exhaust modification where applicable. We are monitoring a single vehicle currently fitted out with the grease shields on the fully closed switch to ensure it is not going to cause problems through obstructing/snagging the micro switch it is meant to be protecting.

All micro switches were regularly being changed out per month up until late December 2012 to inspect for contamination. All these switches have been retained for inspection and none have experienced decontamination within the internal mechanism.

We can confirm the previous practice of lubricating the switches has ceased. The switches have all been cleaned and those units requiring the exhaust modification have been dealt with. We estimate the work required on the remaining 20 cars will be completed by April 2013. Within this time, the performance of the grease shield will be further determined and then rolled out to the fleet or reviewed in its entirety if fitting the shield will actually be counterproductive.

Overhaul of the saloon doors will resume in December 2013 in accordance with the above requirements. Door header rewiring is taking place as part of a separate renewal programme.

Area	Action	Target date
<i>Door switches cleaning</i>	<i>Complete</i>	
<i>Failure mode analysis to determine improvements</i>	<i>Complete</i>	

7. An update was provided by DB Regio Tyne and Wear on 29 August 2013:

In our initial response, we indicated that the grease shields had initially been scheduled for fitting by December 2012 and had been rescheduled for replacement by the end of March 2013. As previously advised, some design and manufacturing problems were encountered, as a result of which further additional testing of a modified design was required. Unfortunately, the new design was unsuccessful, causing potentially serious door irregularities and we suspended fitment in May 2013. However we are replacing the micro switches with switches of a more robust design, completion is now scheduled for December 2015.

ORR decision

8. Having considered the engineering plan provided by DB Regio Tyne and Wear, ORR has concluded it has identified and implemented ways of improving the reliability of the door obstruction detection and traction interlock systems. Therefore, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, it has

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

9. The outstanding action is the replacement of Schaltbau switch on phased maintenance and heavy door refurbishment as required, now due for completion in December 2015.

Status: Implementation on-going. Completion date December 2015

Recommendation 3

The intent of this recommendation is that the visibility of the platform/ train interface at stations on the TWM is as clear as reasonably practicable and consistent with the dispatch arrangements for each station.

DB Regio Tyne and Wear should:

- a. review the visibility of trapped passengers from driving cabs at stations on its network, including consideration of how lighting, shadows at different times of the day, colour of passenger's clothing and train paint schemes may adversely affect that visibility; and
- b. implement identified improvements, to include consideration of realignment of platform mirrors and provision of additional CCTV monitors.

Actions taken or being taken to address the recommendation

10. In its response of 22 February 2013 DB Regio Tyne and Wear explained:

This is being addressed by the reviews of driver viewing aid functionality, sighting and lighting, in liaison with Nexus, to inform a replacement and renewal strategy where necessary. Implementation of improvements is being progressed on a programmed basis during the current and coming financial year 2013/2014. Funds are being allocated by Nexus and DBTW to achieve this programme. Whilst noting the recommendation, it is not envisaged that the livery of the refurbished trains will be altered.

11. On 28 August 2013 DB Regio Tyne and Wear provided further information below:

Recommendation 3a – The standards used during our review included Nexus' standard NENG.TMPH.HD.12233 Inspection and Maintenance of Equipment Used for Dispatch of trains from platforms, and the RSSB publication RIS-3703-TOM Rail Industry Standard for Passenger Train Dispatch and Platform Safety and referenced in Group Standards.

Recommendation 3b

Status Report – DOO – Update 29/08/13

Station	Work to be carried out	Change Form	Estimated Timescale	Next Phase	Cost	Other
<i>APT</i>	<i>Replacement of complete system</i>	<i>Done</i>	<i>1 – In-process 2 - 5 days 3 - 7 days</i>	<i>1. Contractor employed to assist with Form A, Form B and design 2. Sign off of plans by principle engineer needed 3. Contractor to be appointed to install.</i>	<i>£20K</i>	<i>Sign off of plans by principle engineer needed.</i>
<i>BTN</i>	<i>Mirror to be replaced</i>	<i>Done</i>	<i>1 – In process 2 – In process 3 - 7 days</i>	<i>1. Contractor employed to assist with Form A, Form B and design 2. Sign off of plans by principle engineer needed 3. Contractor to be appointed to install.</i>	<i>£6k</i>	<i>Sign off of plans by principle engineer needed.</i>
<i>FLE</i>	<i>Replacement of Monitors</i>	<i>Done</i>	<i>1 – In process 2 - 5 days 3 - 7 days</i>	<i>1. Contractor employed to assist with Form A, Form B and design 2. Sign off of plans by principle engineer needed 3. Contractor to be appointed to install.</i>	<i>£10k</i>	<i>Sign off of plans by principle engineer needed.</i>
<i>JES</i>	<i>Movement of camera</i>	<i>Done</i>	<i>1 – In process 2 - 5 days 3 - 7 days</i>	<i>1. Contractor employed to assist with Form A, Form B and design 2. Sign off of plans by principle engineer needed 3. Contractor to be appointed to install.</i>	<i>£4k</i>	<i>Sign off of plans by principle engineer needed.</i>
<i>NSH</i>	<i>System to be commissioned and old mirror to be removed</i>	<i>Not needed</i>	<i>Done</i>	<i>Old mirror removed, monitors and cameras now in operation</i>	<i>Costs covered by ARP</i>	<i>Done</i>
<i>TYN</i>	<i>Investigation of DOO system</i>	<i>Unknown at this time</i>			<i>Unknown at this time</i>	<i>Manpower and dates to be arranged.</i>
<i>Islands</i>	<i>Provide power to the mirrors</i>	<i>Unknown at this time</i>			<i>Unknown at this time</i>	<i>Manpower and dates to be</i>

						arranged.
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ORR decision

12. Having considered the response from DB Regio Tyne and Wear and having examined the material 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
- is taking action to implement identified improvements.

13. Reviews have taken place as per part A of the recommendation and an improvements programme is underway with an expected completion date of March 2014.

Status: Implementation on-going. Completion date is 31 March 2014

Recommendation 4

The intent of this recommendation is that the test method used for checking the door obstacle extraction forces is aligned with those specified in the relevant industry standards.

DB Regio Tyne and Wear should change the test method it uses for checking compliance of its train doors against the obstacle extraction forces specified in Railway Group Standard GM/RT2473, so that it is also aligned with the requirements specified in BS EN 14752:2005.

Steps taken or being taken to address the recommendation

14. In its response of 22 February 2013 DB Regio Tyne and Wear explained:

New door gauges have been provided and the work instruction for their use has been written. However, problems have been experienced with ensuring full compliance with Railway Group Standard GM/RT2473; the standard requires 150N for pull tests and tests are consistently achieving around 180N. This work will be concluded by June 2013.

15. ORR and DB Regio Tyne and Wear have discussed the issues associated with adjusting the doors to conform to the Railway Group Standard 150N requirement for 'pull out' tests. Further information was provided by DB Regio Tyne and Wear on 29 August:

Testing to the Group Standard we achieve no more than 180N on a consistent basis and, on some occasions, achieve the required 150N. While we can consistently achieve the 150N if we adjust the doors, subject to assessment of engineering risks, we have concerns that this will reduce the sensitivity of the doors in detecting small hands; a hard edge provides greater sensitivity than a soft one. While we intend to

use the Group Standard we do not intend to modify the doors at this stage. We will apply to RSSB for a derogation should this be necessary.

ORR decision

16. We continue to have concerns about DB Regio's reasons for not modifying the doors and its intention to apply for derogation if that is necessary. We continue to engage and will update RAIB by 31 May 2014.

Status: In progress – We will update RAIB by 31 May 2014

Recommendation 5

The intent of this recommendation is to clarify the test method used to measure the obstacle extraction force specified in Railway Group Standard GM/RT2473.

RSSB should clarify the section in Railway Group Standard GM/RT2473 relating to the obstacle extraction force (section B6.3b) with respect to the geometry and material of the test obstacle and the direction of pull, and/or cross reference BS EN 14752.

Actions taken or being taken to address the recommendation

17. In its response dated 19 February 2013 RSSB stated:

At its January 2013 meeting, RSSB presented a paper to the Rolling Stock Standards Committee, which proposed incorporating the recommendation the current revision of GM/RT2473.

The current published issue of GM/RT2473 states;

'B6 Operating forces for power operated doors

b) When an obstacle, in the form of a smooth bar, with maximum dimensions of 10x50 mm is trapped with its long edge vertically between the leading door edge and the frame or between two door panels, it shall be capable of being withdrawn with a force not higher than 150N measured perpendicular to the door surface'.

Whereas, the text in BS EN14752:2005 states:

'5.2.1.4.3 Obstacle removal force

An obstacle with maximum dimensions of 10x50mm trapped with its long edge vertically between the leading door edge and the frame or between two door panels shall be withdrawn slowly in outward direction with a force not higher than 150 N, measured perpendicularly to the door surface. Alternatively, the door shall not be indicated closed and locked. The requirements shall be verified at the middle position only of the door.'

The amendment to GM/RT2473 would be to revise B6.3b) by removing the existing text and replacing it with the following text.

'An obstacle with dimensions of 10x50mm trapped with its long edge vertically between the leading door edge and the frame or between two door panels, shall be withdrawn slowly in outward direction with a force not higher than 150 N, measured

perpendicularly to the door surface. Alternatively, the door shall not be indicated closed and locked. The requirements shall be verified at the middle position only of the door'.

The removal of the word 'maximum' in line 1 was agreed by the Rolling Stock Standards Committee, as it was felt that the word indicated that a size smaller was equally suitable, this is not the case. Although it would make testing more challenging, the Committee decided that the Standard should specify a required size of bar. The change will be proposed for amendment in a future edition of BS EN14752, when the opportunity arises. This should fulfil the RAIB recommendation.

The Rolling Stock Standards Committee approved the inclusion of the proposed wording to section B6.3b) of GM/RT2473. This change is expected to be incorporated into the revised version of the standard, due for publication in June 2013.

18. On 2 July 2013 RSSB confirmed that the above change was incorporated into the revised version of the standard which was published in June 2013 and is now in the Railway Group Standards catalogue.

ORR decision

Having considered the response and from RSSB and receiving confirmation that the revised standard has been published, ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, RSSB has

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

We do not intend to take any further action on this recommendation unless we become aware of an inaccuracy in what we have reported, in which case we will write to you again.

Status: *Implemented*

DB Regio Tyne and Wear current actions when RAIB report was published in December 2012 (recommendation 1)

Passenger education, awareness and enforcement action

- Since 26 April 2012, a programme of automated public announcements has been running across the TWM network which states every 6 minutes: “please do not attempt to board the train once the warning tones have sounded and for your own safety stand well back from the platform edge”.
- Also since 26 April 2012, passenger information boards on the platforms now carry a rolling safety message which reads: “Do not board the train after the warning tone”.
- Advertisements were placed on 15 and 20 March 2012 in the Newcastle Metro newspaper, giving customer safety advice, which included a warning against trying to get on or off the train once the door tones have sounded. DBTW has advised the RAIB that further advertisements are planned.
- New door stickers are being fitted to refurbished vehicles which read: “! Do not obstruct the doors, Maximum fine £1000”. A prosecution has been initiated against a person for deliberately holding train doors open and TWM are considering taking a much firmer line on this issue.
- Yellow lines are being introduced on station platforms to mark the safe position for passengers to stand behind during the approach and departure of trains.

Train crew re-briefing

- An operating notice was issued to train crew on 1 May 2012, about safe train dispatch, stressing the importance of paying special attention to the final check between the doors closing and departing from the station, and making sure they have a clear view of the platform-train interface.
- All drivers received a re-briefing during April and May 2012 about performing station duties and the importance of performing a final check of the platform, after the doors have closed, to check for anyone who may have become trapped. A programme for carrying out monitoring checks by train crew inspectors to check that drivers are correctly performing their dispatch duties has been put in place.
- Prior to these post incident briefings, DBTW report that between April and October 2011, it had shown a safety video to its crews, to raise awareness of the importance of vigilance when performing station dispatch duties. The safety video, which was facilitated by RSSB on behalf of the UK rail industry, featured a reconstruction of a trap and drag event, and was issued to the industry in October 2010.

Train doors

DBTW has reported that it is carrying out an engineering review of how the integrity of the door switches can be improved to improve their reliability.

Procedures for handling door incidents

On 31 July 2012, DBTW issued two new procedures, which set out actions, roles and responsibilities in the event of a trapping and (separately) a trap and drag

incident. Both procedures require that the train is withdrawn from service and returned to depot for testing.

DB Regio Tyne and Wear Long Term Platform Train Interface Strategy

Policy

Our policy is to fully understand and manage the risks associated with the platform train interface: door obstructions, door obstruction and subsequent dragging, and falls from platforms. Various initiatives have been implemented following the Jarrow incident in April 2012, (also taking into account transferable lessons from the RAIB report on the Merseyrail incident), to reduce the current high number of platform train interface incidents. This strategy provides a framework for continuous improvement and monitoring of the effectiveness of these initiatives.

High Level Goals

Our high level goals are:-

- Development and review of action plans on an ongoing basis. The current action plans form appendices to this strategy.
- A focus on platform train interface risks in staff learning and development activities and in the annual safety plan.
- Implementation of engineering and operational solutions to reduce the relatively high number of incidents and/or their consequences.
- Encouragement of incident reporting, with zero tolerance of deliberate non-reporting.
- In partnership with RSSB and local academic institutions, research into the underlying causes of door obstruction by passengers and possible solutions
- Continuous development of engineering and operational standards.

Organisation

We co-ordinate delivery of initiatives by engineering, operations, marketing and colleagues in Nexus via DBTW's Head of Safety & Compliance. Organisation for success is achieved through various forums. These comprise:-

- DOO steering group with Nexus
- Operations safety risk management group with Nexus
- Nexus and DBTW safety meeting
- Nexus and DBTW marketing meeting
- Driver learning and development steering and working groups
- Executive safety meeting
- Staff safety committees

Planning

Action plans have been developed, supported by this long-term strategy, with key actions part of the annual safety plan. Key elements continue to be:-

- Passenger and driver awareness campaigns to reduce the number of door obstructions
- Yellow lining/stopping zone marking
- Reviews of driver viewing aid functionality, sighting and lighting, in liaison with Nexus, to inform a replacement and renewal strategy where necessary.
- Door switch cleaning and other engineering initiatives to assure the integrity of the interlocking and minimise the risk of obstruction and subsequent dragging incidents.
- Removal of vehicles for testing following door obstruction incidents
- Technical and station specific risk assessments
- A cost benefit and technical analysis of the scope for door modifications so that the doors do not open completely in the event of a detected obstruction

The plans are updated on a periodic basis. Highlights are:-

- A marketing campaign to discourage door obstruction, developed as part of the action plan to meet the recommendations of the RAIB investigation into the Jarrow incident. This involves the use of animated cartoons on social media sites, posters and information cards.
- Allocation of funds by Nexus and DBTW, in accordance with contractual responsibilities, to improve driver viewing aids at priority locations following a process of risk assessment. These include mirror heating, provision of CCTV instead of mirrors at some locations, lighting improvements and trials of improved CCTV views. This work has commenced and will be completed during the current financial year.
- The training module for new drivers is currently being substantially revised, and as part of this revision, more focus will be given on the platform train interface risks through practical assessments and simulations.

Monitoring

Monitoring of incident trends, causes and consequences, and observation of passenger behaviour are used to develop the action plans and monitor the effectiveness of this strategy in reducing risks. It is anticipated that for a period, reported incidents will increase. This is believed to be tolerable so long as the risks of persons being trapped and dragged and/or falling between a platform and moving train are reduced to the lowest level reasonably practicable.

Incidents involving doors

Period	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
2011/12	2	2	0	1	7	15	6	9	12	2	14	2	5	77
2012/13	3	6	5	3	3	7	5	5	10	0	11	9	31	98

Incidents at platform train interface

Period	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
2011/12	4	4	4	2	1	0	2	2	1	0	3	0	0	23
2012/13	4	1	2	4	3	0	0	1	5	3	2	4	5	34

Audit and Review

Platform train interface risks and the effectiveness of this strategy are measured at periodic management review meetings and through audit.