Recommendation(s) Status: Derailment at Princes Street Gardens, Edinburgh, 27 July 2011

This report is based on information provided to the RAIB by the relevant safety authority or public body.

The status of implementation of the recommendations, as reported to us, has been divided into six categories:

Key to Recommendation Status

Implemented:	All actions to deliver the recommendation have been completed.
Implemented by alternative means:	The intent of the recommendation has been satisfied in a way that was not identified by the RAIB during the investigation.
Implementation ongoing:	Work to deliver the intent of the recommendation has been agreed and is in the process of being delivered.
In-progress:	The relevant safety authority has yet to be satisfied that an appropriate plan, with timescales, is in place to implement the recommendation; and work is in progress to provide this.
Non-implementation:	Regulation 12(2)(b)(iii) = recommendation considered and no implementation action to be taken.
Awaiting response:	Awaiting initial report from the relevant safety authority or public body on the status of the recommendation.

RAIB concerns on actions taken by organisations in response to recommendations are reflected in this report and are indicated by one of the following.

▲ The red triangle shows recommendations where the RAIB has concerns that no actions have been taken in response to a recommendation.

▲ The blue triangle shows recommendations where the RAIB has concerns that the actions taken, or proposed, are inappropriate or insufficient to address the risk identified during the investigation.

△ The white triangle shows recommendations where the RAIB notes substantive actions have been reported, but the RAIB still has concerns.

Note: The tables which follow, report the status of recommendations on 31 December 2015. In some other cases the end implementer has already sent information to the relevant safety authority about the actions it has taken, or proposes to take and the safety authority is considering whether it is satisfied that those actions and the associated timescales are accepted.

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
1 27/07/2011 18/2012 Derailment at Princes Street Gardens, Edinburgh Status: Implemented	The purpose of Recommendation 1 is to achieve a standardised procedure for monitoring and recording the degradation of switches at risk of causing derailment and the planning of timely maintenance intervention or renewal of worn components before the limits in the 053 standard are exceeded. This is particularly necessary for switches in high risk areas such as the approaches to busy stations which are exposed to high levels of wear, where access for inspection and maintenance is limited and where their availability for service is critical. Network Rail should provide guidance on maintenance intervention limits and their application to manage wear on switch rails as part of its asset management strategy to reduce the likelihood of switches failing the 053 standard and the risk of derailment (paragraph 176).	ORR has reported that Network Rail has reported that it has taken actions in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
2 27/07/2011 18/2012 Derailment at Princes Street Gardens, Edinburgh Status: Implemented	The purpose of Recommendation 2 is to gain assurance that the mechanisms of derailment are fully understood, that these are fully addressed by the inspection procedures in the 053 standard and that the inspection procedures are uniformly applied as intended. a. Network Rail should carry out a thorough technical review of the 053 standard to satisfy itself that it has a full understanding of how the standard addresses the following: • the risk of derailment from worn wheels on a switch rail that is compliant with the TGP8 gauge (paragraphs 172 and 179a); • the practicability of achieving a 1:600 gradient when blending-out a grinding repair of switch rail damage, or for removing a derailment hazard 1 (paragraphs 173); and • the potential risk of a ramp being created by the introduction of a switch rail that is failing gauge 2 in the first metre, between a sideworn stock rail and wheel flange, particularly where the wheel flange is in flange contact with the stock rail (paragraph 172). b. In the short term, Network Rail should also review the scope for misinterpretation and inconsistent application of the standard's requirements and take any necessary action, for example, through briefing and its competence management system, to ensure that there is a common understanding and application of the standard's procedures for inspection and repair (paragraph 179b).	ORR has reported that Network Rail has reported that it has completed actions taken in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
3 27/07/2011 18/2012 Derailment at Princes Street Gardens, Edinburgh Status: In-progress	The purpose of Recommendation 3 is to achieve a means for gauging the flange contact angle of switch rails which reduces the reported difficulties of use of the current TGP8 gauge and which engenders greater confidence in the readings obtained. Network Rail should investigate potential improvements to the TGP8 gauge for conducting detailed inspections to the 053 standard, or develop an alternative means for assessing the flange contact angle of switch rails. The aim should be to provide a more accurate and objective method for determining a non-compliant flange contact angle on a switch rail and which is more ergonomically suited to on-track conditions of use (paragraph 179c). Network Rail should then take steps to implement any improvements identified, or introduce any alternative assessment method, and train/brief staff as necessary.	ORR has reported that NR has undertaken a number of actions in response to this recommendation, these include: • ergonomic assessment of TGP8 gauge undertaken; • changes made to TGP8 gauge & requirements of using gauge briefed as part of LOI/284; • process developed for use of protractor gauge by welders and grinding operatives and briefed as part of LOI/284; • improvements to protractor gauge specified and developed; • initial assessment of laser based profile measurement systems completed; • plan produced for further development working with manufacturers. Investment paper produced to obtain funding.
4 27/07/2011 18/2012 Derailment at Princes Street Gardens, Edinburgh Status: Implemented	The purpose of Recommendation 4 is to extend the criteria for fitting automatic lubricators to high risk switches which may not qualify for automatic lubrication under current standards. Network Rail should consider whether the criteria specified in NR/L3/TRK/3510/A01 for the installation of automatic lubricators on switches should be extended to include the high rails of switches subject to sidewear in areas, such as the approaches to busy stations, where access for maintenance is limited, and where automatic lubrication could slow the development of sidewear and mitigate the risk of derailment (paragraph 175b).	ORR has reported that Network Rail has reported that it has completed actions taken in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
5 27/07/2011 18/2012 Derailment at Princes Street Gardens, Edinburgh Status: Implemented	The purpose of Recommendation 5 is to address factors which were also found in the RAIB's investigation of similar derailments at London Waterloo and Exhibition Centre, Glasgow. Network Rail should review the actions taken in response to the recommendations in the RAIB report 44/2007 to identify why these were insufficient to prevent the recurrence of issues they were intended to address. The review should include an assessment of how operational expectations of availability for service influence the implementation the 053 standard and consider the need for a reappraisal of how derailment risks at switches are managed to prevent their recurrence in future (paragraphs 173, 174a to 174c, 175a, 176, 177, 179f and 180 to 185).	ORR reports that NR carried out a study to assess whether more thorough implementation of the recommendation following the derailment at London Waterloo could have prevented subsequent derailment at Princes Street. The study observes that an immense amount of work was undertaken post Lambrigg and dealt with standards, handbooks, guides and training and that it is not possible to conclude with absolute certainty that Princes Street Gardens would not have occurred had the Waterloo recommendations have been more effectively applied given there was evidence that the capability and competence of the Grinding Supervisor at Princes Street Gardens was a key factor. This study suggested: • all RAIB recommendations are to be reviewed at a senior level within NR; • improve liaison with the RAIB to understand the intent of the recommendation;

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		• an additional check by the Support Investigation Manager to recommendations being accepted as closed. NR have also undertaken a corporate audit of the actions taken in response to S&C. It was found that 14 of the 90 closed recommendations reviewed had been closed where there was insufficient evidence in the recommendation tracking spread-sheet(s) to demonstrate full closure. In a number of cases recommendations had been closed on the basis of work proposed to be undertaken that had, at the time, not been fully delivered. In all but one of these the audit team assessed that the work that had been subsequently undertaken and satisfied the intent of the recommendation but the S&SD Action Tracking Team had not been advised nor had the tracking spread-sheet been updated to reflect this. In one case the assessment identified that the action taken was not adequate to satisfy the intent of the recommendation and as a result the audit team recommend that the recommendation should be re-opened. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.