RAIB

Rail Accident Investigation Branch

Annual Report 2013 Section 2:

Reported Status of RAIB's Recommendations 2013

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Annual Report 2013 Section 2: Reported Status of RAIB's Recommendations 2013

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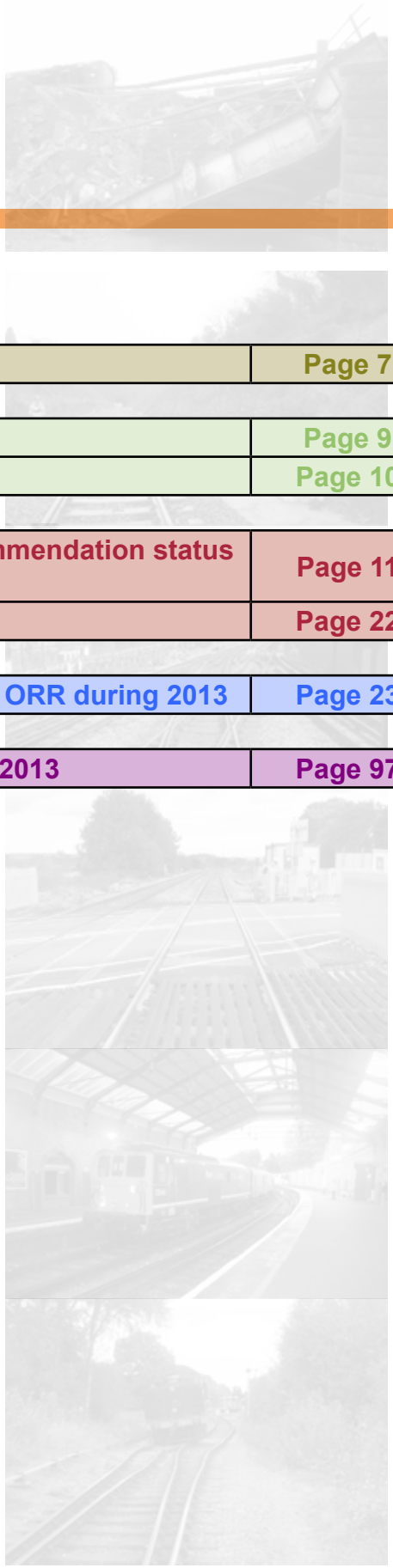

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Introduction

For details about the role of the Rail Accident Investigation Branch (RAIB), see part 1 of the Annual Report titled 'The role of the Rail Accident Investigation Branch'; this includes hyperlinks to the RAIB website that give a full explanation of the various organisation duties.

This part of the report gives details of feedback to the RAIB from Safety Authorities, the response and detail of actions taken is very important to provide a clear view of the process, and enables everyone to have a view of the safety improvements arising from the RAIB's investigations. Please note the status quoted against each recommendation relates to the position recorded as at 31 December 2013. Further progress may have been made since January 2014, if so this will be included in the RAIB Report for 2014.

The RAIB plans to publish details on the progress of its recommendations on the Branch website; the recommendation report will be accessed via an icon placed on the same web page as the investigation report.

The Recommendation Progress Report

The Recommendation Progress Report

This status report is based on a consolidation of information provided to the RAIB by the Office of Rail Regulation (ORR) and other public bodies.

The status of implementation of the RAIB's recommendations, as reported by the safety authority or public body, has been divided into six categories:

Key to Recommendation Status

Implemented:	All associated 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:	ORR 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 ORR on the status of the recommendation.

▲ The red triangle shows recommendations where the RAIB has particular 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 to be taken, 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 2013. In the case of 12 of those recommendations ORR has since reported to the RAIB that the status has changed. In such cases a note has been added to the text associated with that particular recommendation. In some other cases the end implementer has already sent information to ORR about the actions it has taken, or proposes to take and ORR is considering whether it is satisfied that those actions and the associated timescales are acceptable.

List of investigation reports by year, showing status of recommendations as at 31 December 2013

Report year 2006		Status Category				
		1	2	3	4	5
No	Investigation Title	Implemented	In-progress	Non-implementation	Awaiting response	Total recommendations from report
1	Tram, Pedestrian Collision at Staniforth Road, Sheffield	3				3
2	Derailment at Watford Junction Yard	4				4
3	Passenger train collision with a road vehicle at Swainsthorpe level crossing, Norfolk					0
4	Derailment at Phipps Bridge, Croydon Tramlink	4				4
5	Runway incidents on Blackpool Transport Services Tramway	4				4
7	Collision of loco with carriages at GCR Loughborough Central Station	4				4
8	Freight train derailment at Hatherley, near Cheltenham Spa	5				5
9	Near miss two track pax by a tram on Manchester Metrolink, Radcliffe	9				9
10	Station over-run at Haywards Heath	2				2
11	Collision at New Addington on Croydon Tramlink	4				4
12	Collision at Black Horse Drove Crossing, nr Littleport, Cambridgeshire	3		1		4
14	Derailment near Liverpool Central underground station	7		1		8
15	Cutting of rail still open to traffic, Thirsk station, East Coast ML	7		1		8
16	Trackworker fatality at Trafford Park	8		1		9
17	Derailment of a Ballast Plough Brake Van at Carlisle	6				6
18	Derailment at Blackpool Pleasure Beach	2				2
19	Derailment at Oubeck North near Lancaster	3		3		6
20	Report on runway trolley between Larkhall and Barncluith Tunnell	16				16
21	Wagon derailment at York station	4				4
22	Derailment near Moy, Inverness-shire	10				10
23	Investigation into pedestrian crossings initiated by Elsenham fatality	9		1		10
24	Derailment at Archway	3				3
26	Collision between train and buffer stops at Sudbury	2				2
27	Broken rails at Urchfront & Kennington following passage freight trn	6				6
	Totals	**125**	**0**	**8**	**0**	**133**
	Percentage	94%	0%	6%	0%	100%

Report year 2007		Status Category				
		1	2	3	4	5
No	Investigation Title	Implemented	In-progress	Non-implementation	Awaiting response	Total recommendations from report
25 pt1	Autumn Adhesion Investigation Pt1 Signals WK338 / WK336 at Esher	3				3
25 pt2	Near Miss at Lewes station due to SPAD	3				3
25 pt3	Class investigation - Autumn Adhesion incidents as Esher and Lewes	16	1	2		19
1	Derailment of a freight train at Brentingby Junction nr Melton Mowbray	8		2		10
2	Derailment of a freight train at Cricklewood Curve	5		1		6
3	Unauthorised train movement & derailment at Haymarket, Edinburgh	3				3
4	The blowback of a locomotive fire at Grosmont on the NYMR	8		1		9
5	Derailment near Waterside, East Ayrshire	7				7
6	Dispatch of a train with an unsecured load, Basford Hall Yard, Crewe	5				5
7	Ravenglass & Eskdale derailment of passenger coach at Spouthouse Curve	8				8
8	Derailment at Long Millgate, Manchester	4				4
9	Train collision with RV at Bratts Blackhouse User LX Sizewell, Suffolk	6		2		8
10	Traction control failure causing signal passed at danger, Camden Road	9				9
11	Huntingdon train door incident	6				6
12	Runaway permanent way trolley at Notting Hill Gate	9				9
13	Locomotive runaway near East Didsbury	8				8
14	Fatal accident involving a train driver, Deal	8		1		9
15	Derailment at Starr Gate, Blackpool	2				2
16	Near misses at Crofton Old station No.1 LX, near Wakefield W Yorks	6				6
17	Tram collision at Soho Benson Road, Midland Metro	3				3
18	Collision between tram and RV at New Swan Lane LX on Midland Metro	2				2
19	Unauthorised train movement at High Street Kensington	14				14
20	Derailment at Ropley (Mid Hants Railway)	6				6
21	Derailment of a tram on the Seaton Tramway	2				2
22	Fatal accident at Bronwydd Arms station, Gwili Railway	9				9
23	Fatal accident to Shunter, Dagenham Dock	7				7
24	Derailment of a freight train at Maltby North	2		2		4
25	Derailment at Trooperslane near Carrickfergus, Northern Ireland	7		1		8
26	Possession irregularity near Manor Park	3				3

Report year 2007 (continued)		Status Category				
		1	2	3	4	5
No	Investigation Title	Implemented	In-progress	Non-implementation	Awaiting response	Total recommendations from report
27	Signal T172 passed at danger at Purley station, Surrey	5				5
28	Derailment at Phipps Bridge on Croydon Tramlink	2				2
29	Collision at Pickering Station NYMR	2				2
30	Collision at Badminton	3		1		4
31	Passenger door open on a moving train near Desborough	9				9
32	Passenger train derailment near Fisherground - Ravenglass/Eskdale RW	2				2
33	Fatal collision between a Super Voyager train and car Copmanthorpe	2				2
34	Derailment at Epsom	3				3
35	Collision at Swanage station	5				5
36	Collision between a train and a RV, M20 overline bridge, Aylesford	6				6
37	Fire on HGV shuttle in the Channel Tunnel	14		2		16
38	Derailment at Birmingham Snow Hill, Midland Metro	4				4
39	The derailment of a freight train at Washwood Heath	4				4
40	Incident at Wellesley Road on Croydon Tramlink					0
41	Fire on prototype tram 611 at Blackpool	2				2
42	Derailment at Cromore, Northern Ireland	7				7
43	Near miss involving a track worker at Tinsley Green Junction	8				8
44	Derailment at Waterloo South sidings 1565 points	14				14
45	Train / vehicle collision on the Leighton Buzzard Narrow Gauge Railway	3				3
46	Train and RV collision on Leighton Buzzard Narrow Gauge Railway	2				2
	Totals	**276**	**1**	**15**	**0**	**292**
	Percentage	94.7%	0.3%	5%	0%	100%

Report year 2008		Status Category						
		1	2	3	4	5	6	7
No	Investigation Title	Implemented	Implemented by alternative means	Implementation ongoing	In-progress	Non-implementation	Awaiting response	Total recommendations from report
1	Collision near Burton on Trent	4						4
2	The derailment of a freight train at King Edward Bridge, Newcastle	3		1				4
3	Derailment of a London Underground Central Line train near Mile End	5						5
4	Track worker fatality at Ruscombe Junction	7						7
5	Derailment in Hooley Cutting, near Merstham, Surrey	9						9
6	Tube Train driven in wrong direction, Camden Town, Northern Line	4						4
7	Derailment of a passenger train near Kemble	2						2
8	Runaway and collision at Armathwaite	3						3
9	Derailment of a tram at Pomona, Manchester	5						5
10	Collision btw train and tractor on LX nr Limavady Jn, Northern Ireland	5			1			6
11	Derailment of a train at Croxton Level Crossing	10	1					11
12	Runaway of two wagons from Camden Road Tunnel	8						8
13	Two trains in the same section at Aylesbury	4						4
14	Collision with the gates at Lydney Town level crossing	10						10
15	Child fell from train on the Nene Valley Railway	1						1
16	Derailment at Duddeston Junction, Birmingham	7				1		8
17	Passenger trapped in train door, Tooting Broadway, Northern Line.	1						1
18	Collision of a train with a demolished footbridge, Barrow upon Soar	3				1		4
19	Accident at Leatherhead	6						6
20	Derailment at Grayrigg	28			1			29
21	Fatal accident to a trackworker east of Reading Station	3	1			1		5
22	Train overspeeding through an emergency speed restriction at Ty Mawr	6	1					7
23	SPAD and subsequent near miss at Didcot North Junction	5	2		1	1		9
24	Mnr collision engineering unit & 2 manual trolleys nr St. John's Wood	14						14
25	Network Rail's Management of Existing Earthworks	6						6

Report year 2008 (continued)		Status Category						
		1	2	3	4	5	6	7
No	Investigation Title	Implemented	Implemented by alternative means	Implementation ongoing	In-progress	Non-implementation	Awaiting response	Total recommendations from report
26	Near miss nr Bishops Stortford and Stanstead Mountfitchet, Essex	4				1		5
27	Fatal accident at Moor Lane footpath crossing, Staines	4						4
	Totals	**167**	**5**	**1**	**3**	**5**	**0**	**181**
	Percentage	92%	2.5%	1%	2%	2.5%	0%	100%

Report year 2009		Status Category						
		1	2	3	4	5	6	7
No	Investigation Title	Implemented	Implemented by alternative means	Implementation ongoing	In-progress	Non-implementation	Awaiting response	Total recommendations from report
1	Fatal accident at West Lodge crossing, Haltwhistle	4						4
2	Derailment at Ely Dock Junction	16						16
3	Derailment of a rail vehicle at Terryhoogan, near Scarva, NI	4						4
4	Derailment near Exhibition Centre station, Glasgow	3				1		4
5	Runaway of a road rail vehicle at Glen Garry	7						7
6	Fatal accident at Morden Hall Park footpath crossing	1						1
7	Derailment of a freight train near Moor Street station, Birmingham	3						3
8	Uncontrolled movement RV Channel Tunnel passenger trn UK-France	3						3
9	Fatal accident at Tackley station level crossing, Oxfordshire	5				1		6
10	Derailment at Santon near Foreign Ore Branch Junction,Scunthorpe	4			4	1		9
11	RRV runaway incidents at Brentwood, Essex and at Birmingham Snow Hill	6						6
12	Detachment of containers from wagons near Cheddington & Hardendale	10						10
13	Investigation into safety at user worked crossings	4			1	2	1	8
14	Near miss at Poplar Farm level crossing, Attleborough, Norfolk	2						2
15	Collision between passenger train & 2 grinding machines Acton West	5			3			8

Report year 2009 (continued)		Status Category						
		1	2	3	4	5	6	7
No	Investigation Title	Implemented	Implemented by alternative means	Implementation ongoing	In-progress	Non-implementation	Awaiting response	Total recommendations from report
16	Derailment of a DLR train near Deptford Bridge station, London	11						11
17	Collision near New Southgate	5						5
18	Derailment of a passenger train at Gysgfa, Ffestiniog Railway	5						5
19	Track worker struck by train Grosvenor Bridge, London Victoria	6	1	1		1		9
20	Near miss at Llanbadarn ABC (Locally monitored), near Aberystwyth	8						8
21	Incident involving a container train at Basingstoke station	3						3
22	Collision with debris from bridge GE19 near London Liverpool Street	5			1	1		7
23	Trackworker struck by train, Stevenage	6						6
24	Freight train collision at Leigh-on-Sea	6				1		7
25	Derailment at St Peter's Square, Manchester	5						5
26	Fatal accident at Wraysholme crossing, Flookburgh, Cumbria	5						5
27	Investigation into runaways of RRV & their trailers on NR	3						3
28	Derailment of two locomotives at East Somerset Junction	11						11
29	Serious injury sustained by a signal technician, Kennington Junction	3						3
30	Accident at Dalston Junction	3						3
31	Container doors hit pax trains, Penrith & Eden Valley Loop, Cumbria	3						3
32	Double fatality at Bayles & Wylies FPC, Bestwood, Nottingham	7		1				8
33	Collision & derailment at North Rode btw Macclesfield & Congleton	3						3
	Totals	**175**	**1**	**2**	**9**	**8**	**1**	**196**
	Percentage	89%	1%	2%	5%	4%	1%	100%

Report year 2010		Status Category						
		1	2	3	4	5	6	7
No	Investigation Title	Implemented	Implemented by alternative means	Implementation ongoing	In-progress	Non-implementation	Awaiting response	Total recommendations from report
1	Derailment of a freight train at Marks Tey, Essex	5	2					7
2	Derailment of a freight train near Stewarton, Ayrshire	12						12
3	Derailment of a DLR train near West India Quay station, London	7						7
4	Incident at Greenhill Upper Junction, near Falkirk	6						6
5	Near-miss at Hanger Lane junction	6						6
6	Derailment of a passenger train near Cummersdale, Cumbria	5						5
7	Derailment at Hampton Loade, Severn Valley Railway	5						5
8	Fatal accident at Fairfield crossing, Bedwyn	3						3
9	Fatal accident at Norbreck, Blackpool	2						2
10	Collision at Exeter St Davids station	1						1
11	Derailment at Windsor & Eton Riverside station	2	1					3
12	Overhead line failure, St Pancras International	7						7
13	Collision on the Great Orme Tramway				2			2
14	Derailment at Wigan North Western station	4						4
15	Fatal accident at Whitehall West junction, Leeds	1		1				2
16	Fatal accident at Halkirk level crossing, Caithness	5			1			6
17	Failure of Bridge RDG1 48 (River Crane) between Whitton & Feltham	5			1			6
18	Near-miss on Victory level crossing, near Taunton, Somerset	3				1		4
19	Derailment near Gillingham tunnel, Dorset	5						5
20	Incident at Romford Station	5						5
	Totals	**89**	**3**	**1**	**4**	**1**	**0**	**98**
	Percentage	91%	3%	1%	4%	1%	0%	100%

Report year 2011		Status Category						
		1	2	3	4	5	6	7
No	Investigation Title	Implemented	Implemented by alternative means	Implementation ongoing	In-progress	Non-implementation	Awaiting response	Total recommendations from report
1	Passenger train struck by object at Washwood Heath	3			1			4
2	Near miss - freight train & two passenger trains, Carstairs	3						3
3	Derailment of freight train at Carrbridge, Badenoch & Strathspey	4						4
4	Fatal accident at Moreton-on-Lugg, near Hereford			2	2			4
5	Derailment engineering train between Gloucester Rd & Earls Ct LU	9						9
6	Track worker struck by a train at Cheshunt Junction	1	1					2
7	Runaway and derailment of wagons at Ashburys	5				1		6
8	Collision between train IC84 and a tree at Lavington, Wiltshire	4						4
9	Runaway of an engineering train from Highgate	7						7
10	Runaway and collision of RRV near Raigmore, Inverness	4						4
11	Accident at Falls of Cruachan, Argyll	5			1			6
12	Investigation into safety of AOCLs on Network Rail's infrastructure	2		1	1			4
13	Bridge strike & RV incursion onto roof of passing train nr Oxshott Stn	1					4	5
14	Collision lorry & train Sewage Works Lane, near Sudbury, Suffolk	4		1	1			6
15	Uncontrolled freight train runback between Shap and Tebay, Cumbria	1			3			4
16	Derailment in Summit tunnel, near Todmorden, West Yorkshire	1		4				5
17	Derailment of a passenger train near Dryclough Jcn, Halifax	5						5
18	Station overrun at Stonegate, East Sussex	3						3
19	Passenger accident at Brentwood station	4		1				5
20	Train passed over Lydney level crossing with crossing barriers raised	2			1			3
	Totals	**68**	**1**	**9**	**10**	**1**	**4**	**93**
	Percentage	73%	1%	11%	11%	1%	3%	100%

Report year 2012		Status Category						
		1	2	3	4	5	6	7
No	Investigation Title	Implemented	Implemented by alternative means	Implementation ongoing	In-progress	Non-implementation	Awaiting response	Total recommendations from report
1	Passenger train derailment near East Langton, Leicestershire	3		1				4
2	Tamper driver struck by a train at Torworth level crossing	1						1
3	Two incidents involving track workers btw Clapham Jcn & Earlsfield	1		2	2			5
4	Boiler incident on the Kirklees Light Railway	1		1				2
5	Partial failure of Bridge 94, near Bromsgrove			3				3
6	Collision between a train and tractor at White House Farm user worked crossing							0
7	Safety incident between Dock Junction and Kentish Town	3						3
8	Fatal accident at Piccadilly Gardens, Manchester				2			2
9	Person trapped in doors and pulled along platform at King's Cross Stn				1			1
10	Fatal accident at Mexico footpath crossing (near Penzance)	2		1	2			5
11	Incident at Llanbadarn Automatic Barrier Crossing (LM) nr Aberystwyth	2	3		1			6
12	Detachment of a cardan shaft at Durham station	6						6
13	Train departed with doors open, Warren Street, Victoria Line, London	3		1				4
14	Incident involving runaway track maintenance trolley nr Haslemere	4		1	1			6
15	Fatal accident Gipsy Lane Footpath Crossing, Needham Market, Suffolk		1	2	1			4
16	Track worker struck by a train at Stoats Nest Junction			1				1
17	Container train accident near Althorpe Park, Northamptonshire	1					3	4
18	Derailment at Princes Street Gardens, Edinburgh				5			5
19	Derailment at Bordesley junction, Birmingham	1			3			4
20	Collision between a train and lorry on Llanboidy AHB level crossing	3	1		1	1		6
21	Collapse of the OHL near to Jewellery Quarter Tram Stop, Midland Metro	3		4				7

Report year 2012 (continued)		Status Category						
		1	2	3	4	5	6	7
No	Investigation Title	Implemented	Implemented by alternative means	Implementation ongoing	In-progress	Non-implementation	Awaiting response	Total recommendations from report
22	Fatal accident at James Street station, Liverpool	1			2			3
23	Fatal accident at Grosmont, North Yorkshire Moors Railway			1				1
24	Derailment at Bletchley Junction, Bletchley	2			1			3
25	Road vehicle incursion and collision with train at Stowmarket Road	2		3	3		1	9
26	Jarrow station	1		3	1			5
27	Fatality at Johnson's Footpath Crossing near Bishop's Stortford			2	1			3
28	Ufton AHBC level crossing		1	1	5			7
	Totals	**40**	**6**	**27**	**32**	**1**	**4**	**110**
	Percentage	36%	5%	25%	29%	1%	4%	100%

Report year 2013		Status Category						
		1	2	3	4	5	6	7
No	Investigation Title	Implemented	Implemented by alternative means	Implementation ongoing	In-progress	Non-implementation	Awaiting response	Total recommendations from report
1	Fatal accident at Kings Mill No.1 level crossing, Mansfield						1	1
2	Freight train derailment at Reading West Junction				4		1	5
3	Pedestrian struck by a tram at Sandilands tram stop, Croydon						5	5
4	Derailment of a tram at East Croydon						3	3
6	Accident involving a pantograph and the overhead line near Littleport						2	2
7	Dangerous occurrence involving track workers near Roydon station, Essex				2			2
8	Derailment of a freight train at Shrewsbury station						4	4
9	Collision of a RRV with a buffer stop at Bradford Interchange station						5	5
11	Dangerous occurrence at Lindridge Farm UWC near Bagworth, Leics.						5	5
12	Collision between a stoneblower and ballast regulator near Arley						3	3

Report year 2013 (continued)		Status Category						
		1	2	3	4	5	6	7
No	Investigation Title	Implemented	Implemented by alternative means	Implementation ongoing	In-progress	Non-implementation	Awaiting response	Total recommendations from report
13	Partial failure of a structure inside Balcombe Tunnel, West Sussex						9	9
14	Train ran onto a washed-out embankment near Knockmore, NI						5	5
15	Dangerous occurrence at Blatchbridge Jn, nr Frome						7	7
16	Signal passed at danger at Stafford						5	5
17	Collision between a train and a car at Beech Hill LC, near Finningley						4	4
18	Train fire at South Gosforth						3	3
19	Fatal accident at Bayles and Wylies FPC, Bestwood, Nottingham						4	4
20	Track worker struck by a train at Bulwell, Nottingham						5	5
21	Fatal accident involving a track worker at Saxilby						4	4
22	Derailment of a freight train at Barrow-upon-Soar, Leicestershire						3	3
	Totals	**0**	**0**	**0**	**6**	**0**	**78**	**84**
	Percentage	0%	0%	0%	7%	0%	93%	100%

Recommendations made in 2013 to end implementer

End Implementer	Number
Freight, Train Operating Company (FOC)	5
Light Rail Tram (LTR) Infrastructure	6
Light Rail Tram (LTR) Operating Company (TOC)	7
Metro, Train Operating Company (TOC)	3
Network Rail	48
Northern Ireland Railways	5
Other Public Bodies	3
Rail Safety and Standards Board	2
Railway Contractors	6
The Office of Rail Regulation (ORR)	4
Total * Note: a number of Safety Recommendations are made to more than one implementer	89

Recommendations that were the subject of a report by a safety authority, or other public body during 2013

Full details of ORR's reports to RAIB can be found at:
http://orr.gov.uk/what-and-how-we-regulate/health-and-safety/investigating-health-and-safety-incidents/handling-raib-recommendations

Number/ Date/ Report No/ Inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
15 15/12/2006 25/2006 pt3 Class investigation - Autumn Adhesion incidents as Esher and Lewes Pt3 Status: Non-implementation	RSSB to establish a project to: l Measure the accuracy of existing WSP simulation rigs that could be used to support rolling stock approvals. This validation should include reference to records obtained from train data recorders following actual incidents and full-scale testing as appropriate. The latter should include a direct comparison between UIC detergent test data and a simulation of the same (paragraph 259). l Examine the feasibility of extending the capability of an existing WSP simulation tool in order to predict more accurately the behaviour of an entire train in low adhesion conditions (e.g. allowing for rail head conditioning, the effect of sanding and more than one vehicle) (paragraph 259). The results from the project should be used to inform the developing Euronorm on WSP equipment testing (paragraph 259)	RSSB facilitated a steering group to assess the actions taken to address RAIB recommendations; this group considered that the project proposal in the recommendation was not reasonably practicable. This was based on a lack of confidence that any safety benefit would ultimately be achieved as a result of implementing the recommendations that the research would ultimately result in the implementation of any new or revised control measures. Given the industry's reliance on effective WSP systems, the RAIB continues to believe that further work in this area is necessary. However, the RAIB also acknowledges that progress made in recent years to better understand and predict low adhesion, and major improvements to the extent and quality of sanding systems on trains, are likely to have contributed to a reduction in the overall risk.
16 15/12/2006 25/2006 pt3 Class investigation - Autumn Adhesion incidents as Esher and Lewes Pt3 Status: Non-implementation	Subject to the successful development of the simulation tool described in Recommendation 15, RSSB to undertake a programme of modelling to evaluate the impact of different control strategies for minimising stopping distances under various low adhesion conditions. The simulation should specifically address potential alternative strategies for extreme circumstances including: l changing WSP control algorithms for the level of slip permitted from the current value of 17-20%; l permitting different levels of slip on wheels on the same train to optimise overall braking during low adhesion conditions. All the simulations should be designed to evaluate the effect of different strategies on braking performance and rail head conditioning and should include simulations with sanding operative (paragraph 257). The results from the programme should be shared with those responsible for drafting relevant highspeed and conventional TSIs for possible inclusion in new or revised versions of those documents.	RSSB facilitated a steering group to assess the actions taken to address RAIB recommendations; this group considered that the project proposal in the recommendation was not reasonably practicable. Lack of confidence that any safety benefit would ultimately be achieved as a result of implementing the recommendations and a lack of belief that the research would ultimately result in the implementation of any new or revised control measures.
19 15/12/2006 25/2006 pt3 Class investigation - Autumn Adhesion incidents as Esher and Lewes Pt3 Status: In-progress	Network Rail to review ERTMS low adhesion assumptions in the light of the findings of this report and consider whether any changes are needed to ERTMS design or operating parameters in the light of the review (paragraph 263).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information. Note: In January 2014 ORR informed the RAIB that this recommendation is now considered to have been implemented, and that ORR proposes no further actions.
1 27/08/2006 13/2007 Locomotive runaway near East Didsbury Status: Implemented	Operators of locomotives that require the manual operation of a cock to allow such locomotives to be safely dead-hauled in single piped trains, should investigate possible design changes to mitigate the risks associated with the cock not being correctly operated. Design changes should be implemented so far as is reasonably practicable (paragraph 95 fifth bullet refers).	Operators of locomotives have reported that they have taken actions in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.

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3 31/10/2006 30/2007 Collision at Badminton Status: Non-implementation	RSSB should make a proposal, in accordance with the Railway Group Standards Code, to amend Module T11 of the Rule Book to require that on-track machines are operated in tandem/multiple within possessions and work sites where it is practicable to do so (paragraph 71).	This recommendation was initially rejected by RSSB who suggested that the recommendation was addressed to OTM and RRV operators. Subsequently ORR wrote to Network Rail asking them to consider the requirement for tamden/multiple operations where practicable to do so. Network Rail have since rejected the recommendation on the basis that it creates other risks. The RAIB notes Network Rails position but continues to be concerned about managing the risk of collision in long work sites. This concern was reinforced following the collision at Arley in August 2012. Subsequently the RAIB has made further recommendations about control of machines in long work sites.
2 10/05/2007 02/2008 The derailment of a freight train at King Edward Bridge, Newcastle Status: In-progress	Network Rail should investigate the capability for Wheelchex data to be used to identify out-of-balance lateral wheel loading on vehicles and if practicable to instigate a warning system using Wheelchex to minimise the risk to the network (paragraph 147).	ORR reopened this recommendation as a result of the findings of the RAIB investigation into the incident at Bordesley (19/2012). Network Rail has outlined a plan to install new wheel load detectors in response to the recommendation. ORR are seeking further information.
1 23/02/2007 20/2008 Derailment at Grayrigg Status: In-progress	1. The intention of this recommendation is that Network Rail should modify the design of the non-adjustable stretcher bar assembly, including its joints, so that it can withstand normal operational loads (and credible faults) with a safety margin and without excessive reliance on human intervention. Network Rail should review its S&C non-adjustable stretcher bar assembly design, so as to understand the relationships between the design, loading, usage, and the inspection and maintenance regimes, and implement any appropriate modifications to the design or the regimes. The following elements (A to G) should be considered to achieve this: A. Define the system level functional and safety requirements for S&C with non-adjustable stretcher bars. B. Determine all of the functions that the non-adjustable stretcher bar assembly is required to deliver for the functional and safety performance of the S&C system, including from traffic, fastenings and operating/motor forces. C. Determine a set of load cases for the non-adjustable stretcher bar assembly, including its rail fastening arrangement. This should include forces which it experiences during both normal and reasonably foreseeable fault conditions. All foreseeable combinations of normal and fault conditions that could exist within the stretcher bar assembly itself, other	Following detailed design review and prototype testing, pilot installations of the new stretcher bar design were complete by January 2014. Network Rail has contracts in place with three suppliers to provide the new stretcher bar, supported by appropriate quality assurance arrangements. Network Rail expects to have sufficient numbers available to allow the installation programme to commence in May 2014. Full production capacity was expected to run from September 2014. In the interim, Network Rail's Workforce Development Specialists have developed training course material, and practical courses focusing initially on Network Rail maintenance personnel. These commence in January 2014 at Network Rail training centres across GB. The course will include a practical assessment element. Workplace support is being provided, including a software app available on technician's handheld equipment. The maintenance instruction has been updated to include a test plan for the installation of the new stretcher bar. The final risk based roll out strategy over three years has been finalised, and prioritises point ends by phase using a specified criteria. Network Rail Technical Services has identified some 4,300 point ends (using the S&C asset database contained within Ellipse); approximately 9,500 stretcher bars. In the interim, risk continues to be managed through the 'yellow' spring steel stretcher bar, improved set up and maintenance and better understanding at a technical level as to how S&C works through

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	components and the S&C system, should be considered. This should include, but not be limited to: a. configurations of S&C on which it is fitted; b. traffic usage patterns and track geometries; c. manufacturing and installation variations. The load cases should be established and validated by field measurements, supported by appropriate other testing, modelling and/or calculation. D. Assess the performance of the current non-adjustable stretcher bar assembly against the forces that arise from the load cases. E. If justified by the outcomes of the previous work, modify the current design of the non-adjustable stretcher bar assembly to include an appropriate factor of safety. The revised design should be risk assessed, taking into account the quality and reliability of human intervention in inspection and maintenance (refer also to Recommendation 13). Should measures such as component redundancy or other defence barriers be necessary to achieve the required integrity, the reliability of each redundant element and defence barrier should itself be assessed using the above process. F. Modify the current installation, inspection and maintenance regimes against the requirements determined in E so that they are appropriately risk based for the new design (refer also to recommendation 13). G. Introduce processes to implement the modified design and modified inspection and maintenance regimes and any associated mitigation measures where justified.	training, standards and work instructions. The new stretcher bar training course also includes refresher training on supplementary drive set up, and general inspection and maintenance of the S&C flangeway (NR/L3/TRK/1202). Network Rail's work on the S&C asset register also helps to identify trends, poor assets and repeat failures.
10 23/02/2007 20/2008 Derailment at Grayrigg Status: Implemented	The intention of this recommendation is that Network Rail should improve the quality of the existing basic visual inspections. Longer term issues concerning track inspection are dealt with under Recommendation 19. Network Rail should review and amend its processes for basic visual track inspection so that the issues identified in this report are addressed. To achieve this Network Rail should consider issuing modified instructions to define: a. the contents of task instructions issued to staff undertaking basic visual inspections; b. the nature of defects that can occur and how to detect those that are difficult to readily observe; c. job cards to advise the start and finish locations and the direction of the inspection for every occasion;	ORR has reported that Network Rail has taken appropriate action to develop and implement their basic visual inspection regime, informed by our inspection findings, and continue to target their assurance regime to improve compliance. They have time bound action plans to make further improvements by introducing technological solutions to support the process and reduce reliance on paperwork, and have in place plans to manage deficiencies identified from their own assurance regime. ORR has concluded that although Network Rail has not yet been able to demonstrate consistent implementation of (c). job cards to advise the start and finish locations and the direction of the inspection for every occasion; (d). the information supplied to a patroller before an inspection in terms of clearly-presented intelligence on previously-reported defects; (h). the analysis and supervision that should be undertaken to confirm that inspections are being conscientiously completed; and (i). a suitable level of continuity that can be achieved by

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	d. the information supplied to a patroller before an inspection in terms of clearly-presented intelligence on previously-reported defects; e. the scope of information that is to be recorded during an inspection (including definition of the need to record or comment on previouslyreported defects); Recommendations: Matters observed in the investigation: f. the requirement to make positive statements about areas of the inspection where no defects have been found; g. the checks for completeness that should be made within the track section manager's office, including verification that every inspection has been carried out; h. the analysis and supervision that should be undertaken to confirm that inspections are being conscientiously completed; and i. a suitable level of continuity that can be achieved by identifying individual patrollers with individual sections.	identifying individual patrollers with individual sections. They have developed an assurance regime that is capable of identifying and correcting deficiencies and are monitoring its application to achieve continued improvement. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate. However, ORR continues to monitor Network Rail performance and local non-compliances at route level.
4 29/11/2007 21/2008 Fatal accident to a trackworker east of Reading Station Status: Implemented by alternative means	Network Rail should introduce a structured approach to the monitoring of compliance with Network Rail's standard maintenance procedure NR/PRC/MTC/0117 'Planned general safety inspections' (paragraph 164),and incorporate in this the means to assess the workload of those tasked with undertaking these inspections.	ORR has reported that Network Rail has addressed this recommendation by revising its planned general inspection procedures. Steps have also been taken to assess and reduce the workload for local general managers by the assessment in line process. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
5 29/11/2007 21/2008 Fatal accident to a trackworker east of Reading Station Status: Non-implementation △	Network Rail should, at those locations where T3 protection is regularly placed, introduce a system to physically mark the location of possession limit boards on the track to assist staff in positioning and checking the position of equipment (paragraph 169), or consider installing a semi-permanent possession limit board system.	Network Rail has carried out a review in response to this recommendation and proposes no further action. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate. Network Rail currently marks location of possession limit boards at specific locations (following an assessment of the risk). The RAIB remains concerned about the number of incidents during which protection is wrongly placed. $w

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2 22/08/2007 23/2008 SPAD and subsequent near miss at Didcot North Junction Status: Implementation ongoing	Network Rail should, in consultation with train operators, review its existing risk assessments for all existing junction signals in order to verify that: the actual braking performance of trains signalled by that route has been correctly taken into account; and proper consideration has been given to any reasonably practicable measures identified. (paragraphs 234b and 236) When addressing this recommendation Network Rail should ensure that risk assessors are competent and have access to accurate input data (paragraph 230).	Network Rail has outlined the actions to be taken in response to the recommendation. These include improvements to the tool used for risk assessments at junctions and the development of a database covering the braking performance of most types of train operating on the UK network. ORR are seeking further information.
3 22/08/2007 23/2008 SPAD and subsequent near miss at Didcot North Junction Status: Implemented by alternative means	In support of Network Rail's assessment of risk at junction signals (see Recommendation 2), RSSB should make a 'proposal', in accordance with the Railway Group Standards Code, to amend Railway Group Standards to require train operators, in consultation with rolling stock owners, to publish and disseminate to Network Rail any detailed data they may possess relating to the actual braking performance of the trains they operate on the national network (for a range of typical train formations). This should include the distance to stop from a range of speeds (or the duration of any freewheel time and the subsequent rate of deceleration) (paragraphs 242 and 243).	RSSB have carried out a review of this recommendation and concluded that no change to Railway Group Standards is justified since the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS) (22 Duty of Co-operation) obliges every transport operator to cooperate. While noting the obligation imposed by the guidelines, the RAIB is concerned that braking performance data for older rolling stock is not readily available. This was confirmed by Network Rail in their response to response to recommendation 9. However, the RAIB has recently noted that Network Rail has now developed a comprehensive database of train braking performance. The RAIB therefore considers that this recommendation has been implemented by alternative means.
4 22/08/2007 23/2008 SPAD and subsequent near miss at Didcot North Junction Status: Implemented by alternative means	RSSB, in consultation with industry stakeholders, should review the practicability of enhancing the minimum emergency braking performance mandated for new passenger trains in Railway Group Standards. The objective of any such enhancement shall be to improve consistency between the minimum braking performance of new passenger trains and the design of train protection systems in use on the network. If shown to be reasonably practicable, RSSB should make a 'proposal', in accordance with the Railway Group Standards Code, to amend Railway Group Standards accordingly (paragraph 212).	The intent of this recommendation is now addressed by the TSI that came into force at the end of 2011. This mandates that trains braking should be consistent with the signalling system. Since TPWS forms a part of the signalling system this should ensure that future passenger trains will have braking that is consistent with TPWS installations.
5 22/08/2007 23/2008 SPAD and subsequent near miss at Didcot North Junction Status: Implemented	Network Rail should review its management processes with the objective of ensuring that: the findings of signal and layout risk assessments (using tools such as SAT) are translated into reasonably practicable measures to address the risk identified (paragraph 236); and relevant risk assessments are properly considered when reviewing the actions to be taken in response to	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.

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	recommendations made following investigations (paragraph 237).	
9 22/08/2007 23/2008 SPAD and subsequent near miss at Didcot North Junction Status: Implemented	Network Rail should ensure that its methodology and computer systems for assessing the risk associated with signal overruns correctly take into account the actual braking performance of all trains scheduled to pass a signal. This should allow for freewheel time and the subsequent average deceleration (paragraph 242).	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.
4 25/01/2008 10/2009 Derailment at Santon near Foreign Ore Branch Junction,Scunthorpe Status: In-progress	Network Rail should develop appropriate tools to analyse trends in track geometry recording systems in order to identify rapid deterioration in track geometry, with the information output from these tools provided to the local maintenance teams.	ORR reports that this recommendation is being addressed by the introduction of a new tool to support decision making concerning the maintenance of the track asset (linear asset decision support tool). ORR will confirm when this has been implemented. Note: In March 2014 ORR informed the RAIB that this recommendation is now considered to have been implemented, and that ORR proposes no further actions.
5 25/01/2008 10/2009 Derailment at Santon near Foreign Ore Branch Junction,Scunthorpe Status: In-progress	Network Rail should provide their inspection and maintenance staff with a single source of information that allows the identification of localised areas where track quality is poor, and is repeatedly deteriorating, due to discrete track geometry faults. In particular, information about the detection, measurement, repair and post-repair inspection of discrete track geometry faults should be recorded, together with references to related work orders that are recorded on Ellipse.	ORR reports that this recommendation is being addressed by the introduction of a new tool to support decision making concerning the maintenance of the track asset (linear asset decision support tool). ORR will confirm when this has been implemented. Note: In March 2014 ORR informed the RAIB that this recommendation is now considered to have been implemented, and that ORR proposes no further actions.
6 25/01/2008 10/2009 Derailment at Santon near Foreign Ore Branch Junction,Scunthorpe Status: In-progress	Network Rail should take measures to improve the accuracy of location information for track geometry faults recorded by all track geometry recording runs and inspection staff, and provide maintenance staff with the ability to use this information to precisely locate the identified faults.	ORR reports that this recommendation is being addressed by the installation of GPS equipment on track measurement trains to provide a greatly improved identification of location. Track maintenance staff have also been issued with new mobile technology to enable them to accurately locate GPS co ordinates. ORR will confirm when this has been implemented. Note: In March 2014 ORR informed the RAIB that this recommendation is now considered to have been implemented, and that ORR proposes no further actions.
7 25/01/2008 10/2009 Derailment at Santon near Foreign Ore Branch Junction,Scunthorpe Status: In-progress	Network Rail should implement processes to investigate and monitor the effectiveness of repairs to repetitive track geometry faults, so that when a track geometry fault recurs, the reason for it coming back can be established, an appropriate repair method can be chosen and monitoring can be carried out to determine whether the second attempt to repair it has been successful.	ORR reports that this recommendation is being addressed by the introduction of a new tool to support decision making concerning the maintenance of the track asset (linear asset decision support tool). ORR will confirm when this has been implemented.

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10 01/03/2008 12/2009 Detachment of containers from wagons near Cheddington & Hardendale Status: Implemented	Freight Operating Companies running FEA-B wagons, should review the status of compliance of these wagons against the whole vehicle overturning requirement of Railway Group Standard GM/RT2142 for all relevant container sizes and, if necessary, take appropriate steps to change their operations with these wagons in windy conditions.	Research undertaken by the RSSB (T961) derived data based on the low turbulence wind tunnel testing of freight wagons and has thus enabled calculations to take place in order to revise GM/RT2142 freight wagon roll-over wind speed limits. According to the new version of the standard all FEA(B) wagons will now be compliant. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
1 27/07/2008 17/2009 Collision near New Southgate Status: Implemented	HST owners, National Express East Coast and other HST operators should re-examine the set-up and maintenance requirements for HST luggage van doors to promote safer operation. They should include consideration of previous incidents, original design drawings and maintenance experience. As a result they should amend their procedures as necessary, paying particular attention to: inspection of the centre trolleys, pins and rollers; set-up and attachment of cam blocks; checking main lock spring rates; and correct set-up of main lock engagement with the striker plate.	HST owners, National Express East Coast and other HST operators have reported that they have 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 13/11/2007 19/2009 Track worker struck by train Grosvenor Bridge, London Victoria Status: Implemented	In order to reduce the risk to track workers, Network Rail should review their programme for provision of automatic warning systems for red zone track inspections and if practicable should implement a programme to accelerate the introduction of appropriate systems for multi track areas.	ORR reports that Network Rail has, through the new Track Worker Safety Group, recently carried out a wide review of automatic warning systems and has accelerated its programme to introduce new innovative technology for the use of track workers. In particular, Network Rail has now extended the use of automatic warning systems to include Automatic Train Warning System equipment in certain identified locations and has accelerated the introduction of other automated warning systems such as Signal Controlled Working (SCW) for red zone work. Further technology is being considered and developed through a specific £10 million investment during CP5 [2014-2019]. Although the RAIB has been concerned by the time taken to fully address this recommendation it notes the improvement initiatives reported by Network Rail. ORR proposes to take no further action.
4 13/11/2007 19/2009 Track worker struck by train Grosvenor Bridge, London Victoria Status: Implemented	In order to verify their effectiveness, Network Rail should monitor recently introduced processes that will show whether an individual's on-the-job performance routinely achieves the prescribed level with regard to safety. If necessary these processes should be enhanced.	ORR reports that this recommendation has been met primarily by enhancements to plan for the general inspection of site surveillance activity. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.

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5 13/11/2007 19/2009 Track worker struck by train Grosvenor Bridge, London Victoria Status: Implemented by alternative means	In order to reduce the risk to track inspection staff, Network Rail should propose a change to the Rule Book and the COSS Handbook, in accordance with the Group Standards code, that amends the procedures for red zone working with lookout protection in a multi-track area to: Clearly define an approaching train. Clarify the criteria for setting up a safe system of work, including the circumstances that require pre-planning. Consideration should include: a) the practical capabilities of lookouts; b) the possibilities for human error and its consequences; c) the ability to identify the track a particular train is using; d) the likelihood of multiple train movements; e) the complexity of track layout; f) the nature of the work being undertaken; and g) the size and disposition of the work group for continued observation by the lookout	RAIB notes that the Rule book handbook 7 now mandates criteria for deciding what is an approaching train. ORR also reports that changes to Network Rail Standards addressed the intent of the recommendation.
6 13/11/2007 19/2009 Track worker struck by train Grosvenor Bridge, London Victoria Status: Implementation ongoing	In advance of any change to the Rule Book and COSS Handbook under Recommendation 5 and to provide clear and unambiguous safety instructions and/or guidance, Network Rail should either eliminate the current practices used in relation to staff not moving to a position of safety but remaining in a location where they do not believe they are in danger from a train moving towards their site of work, or should introduce formally risk assessed alternatives for setting up a safe system of work in a multi-track area. The risk assessment should consider the topics listed in Recommendation 5.	ORR report that Network Rail have confirmed that its policy is to eliminate the practice of track workers not moving to a position of safety but remaining in a location where they do not believe they are in danger from a train moving towards their site of work. This is an absolute requirement. However, Network Rail recognises that there is still some inconsistency and complacency in the application of the policy and is taking further action to address this concern. ORR will update the RAIB on progress made by 31 August 2014.
7 13/11/2007 19/2009 Track worker struck by train Grosvenor Bridge, London Victoria Status: Implemented	Network Rail should validate the process and systems used to provide safety information for the COSS pack to show that its output is correct and complete.	ORR report that this recommendation has been addressed by an update of the safe system of work planning system. In addition a new control of work system is being developed. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
2 03/11/2008 26/2009 Fatal accident at Wraysholme crossing, Flookburgh, Cumbria Status: Implemented	The intention of this recommendation is to ensure that Network Rail complies with industry standards, recommendations and its own processes and procedures for level crossing inspection and assessment, so far as is reasonably practicable (paragraph 143). Network Rail should review and revise its management systems to confirm that it carries out its level crossing inspections and assessments correctly and completely. It should pay particular attention to making certain that it: a. issues its staff with the appropriate versions of the standards,	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.

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	documents and procedures they require; b. upgrades crossings when required to do so, and considers upgrade or closure when the opportunity arises; c. identifies high risk crossings where the required site visits have not taken place; d. carries out the site visits arising from 2(c) to identify and assess measures to reduce risk; and e. implements those measures that are approved, improving the crossings presenting the highest risk ahead of those of lower risk.	
4 03/11/2008 26/2009 Fatal accident at Wraysholme crossing, Flookburgh, Cumbria Status: Implemented	The intention of this recommendation is to ensure that northbound road users of Wraysholme crossing are made aware of the approach of another train in all foreseeable conditions (paragraph 145). Network Rail should replace the south facing 'ANOTHER TRAIN COMING' signal at Wraysholme crossing with an improved signal or other method that is discernible by users in all foreseeable conditions.	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.
5 03/11/2008 26/2009 Fatal accident at Wraysholme crossing, Flookburgh, Cumbria Status: Implemented	The intention of this recommendation is to ensure that train speed is appropriate for foreseeable road vehicle use at automatic open locally monitored level crossings (paragraph 146). The Office of Rail Regulation should revise its guidance on automatic open locally monitored level crossings to: a. recognise that local and seasonal events may result in temporarily increased road vehicle use; and b. advise on how any such increased road vehicle use should be considered when calculating maximum train speed.	The Office of Rail Regulation 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.
1 23/05/2008 27/2009 Investigation into runaways of RRV & their trailers on NR Status: Implemented	The intention of this recommendation is that Network Rail should manage the specification, design, operation and maintenance of RRVs acquired after the issue of this report using a systems engineering process, incorporating formal safety analysis methods. Network Rail should implement a process that manages the specification, design, operation and maintenance of RRVs on its network throughout their system lifecycle (paragraph 201). The process should include the following elements: a) a high level requirements specification of the task; b) a safety requirement specification, including the application of safety analysis techniques such as Hazops, FMEA and FTA; c) specifications relating to the plant, the relevant personnel and	ORR has reported that Network Rail has provided evidence that it now has a process that manages the specification, design, operation and maintenance of RRVs on its network throughout their system lifecycle which includes the specific points from the recommendation. The RAIB notes that Network Rail has sought to address this recommendation for third party suppliers by strengthening RIS-1530-PLT.

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	the applicable procedures; d) RRV configuration management systems; e) verification and validation requirements; f) site inspections and audits of the arrangements; and g) a change control process.	
2 23/05/2008 27/2009 Investigation into runaways of RRV & their trailers on NR Status: Implemented 	Network Rail should assess the operation of existing RRVs and trailers to satisfy itself, on the basis of a process of structured safety analysis, that there are adequate technical and operational controls to prevent RRVs running away. The assessment should take account of the factors listed below and consider the reliability of the primary controls identified. It should identify any realistically possible failures of the primary controls, and where these are identified, what emergency control measures (which may be implemented through operator training) should be put in place. Network Rail should amend their processes as appropriate to implement any improved controls identified. The factors for consideration should include: a) the use of trailers that are not fitted with service brakes; b) for each type of RRV, a specific procedure covering the method of on- and off-tracking; c) the operation of RRVs without braked rail wheels; d) the operation of RRVs which rely on an interface between rubber and steel for traction and braking giving rise to extended and unknown braking distances in wet/contaminated conditions and on gradients; e) the content of operator and machine controller training courses as they relate to: driving on wet and/or contaminated railway lines; the use of the emergency stop button; the awareness of any gradient hazard and its effect on machine operation; the recovery from runaway events; and the measures required to ensure that travel movements are carried out safely. f) the adequacy of maintenance documentation in relation to the maintenance of the rubber and steel interface, including tyre condition, tyre pressure and the correct adjustment of the rail gear; g) whether brake lights would reduce the likelihood of collision when RRVs undertake multiple transits in a work site; h) the location of RRAPs, the arrangements for possessions and work sites and their effect on RRV travel distances; i) the adequacy and the practicality of the system of pre-use checks of RRVs and trailers; j) the adequacy of planning processes which should assess the	ORR reports that Network Rail has committed to rail wheel brakes to a significant proportion of its RRV fleet. In addition Network Rail has undertaken a safety analysis of RRVs and developed an RRV safety improvement programme. Measures that have been implemented include: service braking for trailers; improved on/off tracking procedure; improved training; improved pre use checks of RRVs; special operating restrictions and gradient information. ORR has reported that since June 2013 non-direct rail wheel braked high ride excavators have been banned from use on Network Rail's infrastructure. It is also planned that the use of non-direct rail wheel braked high ride RRVs, (of any type) be prohibited by September 2014. ORR has also informed RAIB of an ongoing RRV programme focused on design safety issues. This is intended to specifically address design standards/ specifications and the approvals process. While recognising the significant safety improvements achieved by the railway industry in recent years, the RAIB remains concerned about the quality of RRV design processes following its investigation into RRV runaways at Bradford (report no 09/2013) and Glasgow Queens Street in May 2013 (report no 15/2014) $w.

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	risk of RRV operation on wet and/or contaminated rails, as well as gradients, and include specifically notifying its contractors and suppliers of the possible effect on machine operation and the specific mitigation measures that may be required; k) the briefing of machine controllers so that they can brief operators about the gradients that RRVs will be working on, the likely effect on machine operation and any required mitigation measures; and l) the absence of signage at RRAPs and inclusion of information in the sectional appendix stating the gradient of the railway.	
3 23/05/2008 27/2009 Investigation into runaways of RRV & their trailers on NR Status: Implemented	The intention of this recommendation is that Network Rail should reduce the amount of under-reporting of accidents and incidents involving RRVs and their trailers. Network Rail should review the system of reporting accidents and incidents involving RRVs and trailers, and make any changes that would reduce the amount of under-reporting.	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.
1 10/11/2008 28/2009 Derailment of two locomotives at East Somerset Junction Status: Implemented	The purpose of this recommendation is for Network Rail to introduce a 'self-checking' procedure for staff working on their own, to be used when they are required to implement procedures to deal with specified types of equipment failure: Network Rail should consider how signallers working on their own can affirm that they have taken the correct actions when implementing procedures to cope with equipment failures that result in a degraded level of safety, and issue requirements to the routes on this subject. The guidance should identify whether there are any circumstances under which it will be mandatory for signallers to obtain verification of their actions by a second competent person, taking into account risk associated with speeds, frequency of movements and traffic type and include consideration of human factors (paragraph 200b).	Network Rail have carried out a review in response to this recommendation. Network Rail propose no further action. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
3 10/11/2008 28/2009 Derailment of two locomotives at East Somerset Junction Status: Implemented	The purpose of this recommendation is for Network Rail to extend the use of the Fatigue and Risk Index or apply other suitable assessment tools to proposed or amended rosters for signallers and other safety-critical staff: Network Rail should develop criteria to determine the circumstances under which proposed or amended rosters to be worked by signallers and other safety-critical staff should be evaluated using the Fatigue and Risk Index or other suitable assessment tools (with the aim of ensuring that defined thresholds are not exceeded) and provide guidance to the routes on this subject.	Network Rail has provided guidance for when short-term roster changes are to be made; this is principally a checklist of good practice items to be considered. The RAIB is concerned that use of a fatigue modelling tool is only recommended when the roster is seriously disturbed, typically by the long term (4 + weeks) absence of an individual. ORR proposes to take no further action $b.

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4 10/11/2008 28/2009 Derailment of two locomotives at East Somerset Junction Status: Implemented 	The purpose of this recommendation is for Network Rail to enhance company standard NR/SP/ERG/003 by widening its focus to incorporate an extended set of limits on working time: Network Rail should amend its company standard NR/SP/ERG/003 to include an extended set of limits on working time for safety-critical staff, considering the scope and range of parameters applied to air traffic controllers, the guidance contained in the ROGS regulations, use of both the fatigue and risk elements of the Fatigue and Risk Index and advice from their human factors department.	Network Rail has carried out a detailed review of the recommendation and has issued a new standard. The RAIB is concerned that it appears Network Rail has yet to fully address the staff fatigue risks identified in the East Somerset Junction and Grayrigg (20/2008) investigations and that there is still a need to establish clear thresholds on hours worked (in the context of an overall fatigue management system). RAIB is concerned to note that despite discussions with ORR, Network Rail has not reduced its current threshold for hours worked from its current level of 72 hrs. Consequently it is still possible for managers to roster safety critical staff for excessive hours to cover for shortages (although the impact of doing so should be assessed). Although the absence of a clear threshold continues to be a concern, the ORR has informed the RAIB that Network Rail has stated an intention to eliminate working more than 60 hours (and the number of cases of working in excess of 60 hours is said to be very rare). ORR proposes to take no further action $b.
7 10/11/2008 28/2009 Derailment of two locomotives at East Somerset Junction Status: Implemented	The purpose of this recommendation is for Network Rail to improve its processes for monitoring causes of previous accidents and incidents and for reviewing the effectiveness of recommendations previously made: Network Rail should develop and implement a monitoring system that will enable its Recommendations Review Panels to identify recurring causes in all investigations into accidents and incidents on, or relevant to, its network and to enable them to identify whether previous responses to relevant recommendation have been effective.	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.
8 10/11/2008 28/2009 Derailment of two locomotives at East Somerset Junction Status: Implemented	The purpose of this recommendation is for Network Rail, Western Route to make greater use of simulators to help signallers to maintain their competence: Network Rail, Western Route should arrange for signallers to practise a range of infrequently encountered situations (such as the introduction of pilot working) on a simulator at regular intervals within the three-year competence cycle.	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.
6 22/11/2008 32/2009 Double fatality at Bayles & Wylies FPC, Bestwood, Nottingham Status: Implemented	The purpose of this recommendation is to prevent different sighting distances or other key dimensions being recorded for the same level crossing. Network Rail should revise its management processes for inspecting and assessing level crossings to compare previous inspections and assessments, and identify and resolve any substantial variations in the data presented.	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.

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7 22/11/2008 32/2009 Double fatality at Bayles & Wylies FPC, Bestwood, Nottingham Status: Implematatiuon ongoing	The purpose of this recommendation is to establish consistent and adequate levels of luminous intensity from night-time headlights of trains using the Network Rail system. The Rail Safety and Standards Board should evaluate the risk from the operation of trains with less luminous intensity from night-time headlights than that required from current railway group standards. If the risk is considered unacceptable the RSSB should propose, in accordance with the group standards code, changes to railway group standards to require all trains operating on the Network Rail system to be brought up to, and maintained at, an acceptable standard of luminous intensity within a defined timescale.	RSSB advise that a new Railway Industry Standard will be produced. The new RIS will include requirements applicable to headlamps and could also include guidance on the circumstances for modifying existing trains and fitting them with a headlamp that meets current (TSI) standards. The format of that guidance is currently being developed. The Office of Rail Regulation proposes to take no further action unless they become aware that the information provided becomes inaccurate.
8 22/11/2008 32/2009 Double fatality at Bayles & Wylies FPC, Bestwood, Nottingham Status: Implemented	The purpose of this recommendation is to apply the lessons of this accident to other similar crossings. Nexus and Network Rail should review the pedestrian level crossings at South Drive and Benton Square jointly and apply any relevant learning points from this investigation to them.	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.
1 12/06/2008 01/2010 Derailment of a freight train at Marks Tey, Essex Status: Implemented	The intention of this recommendation is to reduce the risk of derailment of FSA/FTA wagons (paragraphs 258a, 258b, 258c, 258d, 260a and 263). Freightliner should examine if appropriate mitigation action can be taken that will reduce the risk of derailment of FSA/FTA wagons when travelling over the track vertical alignment profiles which could reasonably be encountered in service. This should take into account the full range of load conditions and train speeds permitted for the wagons. Freightliner should implement any appropriate mitigation found during this examination.	Freightliner has carried out a review in response to this recommendation and proposes no further action. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
2 12/06/2008 01/2010 Derailment of a freight train at Marks Tey, Essex Status: Implemented	The intention of this recommendation is to address omissions in inspections identified within the Colchester Maintenance Delivery Unit (paragraphs 258b, 259a, 259b, 259e, 259f, 265f and 265h). Network Rail should carry out a review to assure itself that staff at Colchester Maintenance Delivery Unit are correctly undertaking the following tasks: supervisor's visual inspections, particularly the inspection of drainage, and the reporting of drainage defects; and the inspection of the line following the completion of work and	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.

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	the re-opening of the line to traffic.	
3 12/06/2008 01/2010 Derailment of a freight train at Marks Tey, Essex Status: Implemented	The intention of this recommendation is to ensure the correct management of repeated defects from track recording train outputs within Colchester Maintenance Delivery Unit (paragraphs 259f, 261a, 261b, 264a and 265c). Network Rail should review the arrangements by which Colchester Maintenance Delivery Unit manages: repeated track geometry defects; repeated eighth-mile sections where the track geometry exceeds maximum and target standard deviation values; and implement any necessary improvements.	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.
4 12/06/2008 01/2010 Derailment of a freight train at Marks Tey, Essex Status: Implemented	The intention of this recommendation is to ensure that there is sufficient provision of access to the line within the area managed by Colchester Maintenance Delivery Unit to carry out all required inspections of the track (paragraphs 261a, 261b and 265c). Network Rail should: review the arrangements within Colchester Maintenance Delivery Unit that allow staff to undertake inspections of the line within areas; identify where there are difficulties of access, such as red-zone prohibited areas; and implement any necessary improvements.	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.
5 12/06/2008 01/2010 Derailment of a freight train at Marks Tey, Essex Status: Implemented by alternative means	The intention of this recommendation is that preventative maintenance tasks are appropriately planned and briefed (paragraphs 258b, 262a, 265a and 265b). Network Rail should revise 'Track Maintenance Handbook' NR/L3/TRK/002 Issue 4 to add a requirement to undertake appropriate formal planning and briefing of staff prior to undertaking preventative maintenance tasks within its remit.	Network Rail has reported that it has addressed the recommendation by means alternative to those recommended, in particular the use of a new forum which will have the effect of driving the process of planning inspections monitoring and rectification work.

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6 12/06/2008 01/2010 Derailment of a freight train at Marks Tey, Essex Status: Implemented	The intention of this recommendation is that actions intended to prevent the reoccurrence of broken rails are identified and undertaken (paragraph 262b). Network Rail should revise its procedures relating to the reporting of broken rails to require: the production of formal action plans which will identify the actions proposed to prevent reoccurrence; a formal approval process for such action plans; and formal periodic review of progress against the action plans by an appropriate competent person.	Network Rail has reported that its track hazard report process and has concluded that track failures and the follow- up actions are reviewed at appropriate levels in the organisation, in line with the severity of the failure and that there is a process for generating and approving action plans which includes appropriate review. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
7 12/06/2008 01/2010 Derailment of a freight train at Marks Tey, Essex Status: Implemented by alternative means △	The intention of this recommendation is that timber bearer replacements are subjected to post-installation inspection to confirm adequate consolidation (paragraphs 259a, 259b and 265d). Network Rail should revise work instruction NR/L3/TRK/002/G06 Issue 2.0 relating to the replacement of timber bearers, in order to add a requirement for an appropriate post-installation check of the work-site for ballast consolidation.	ORR has reported to the RAIB that Network Rail has incorporated the control of risk that may arise from the replacement of timber bearings into its training of the type of staff involved. Although this is encouraging, the RAIB remains concerned that there should be a documented requirement to check worksites for the consolidation of ballast following replacement of timber bearers. The ORR has informed the RAIB that it expects that a formal process document will emerge from an ongoing initiative to review railway standards. The RAIB awaits the outcome of this work as confirmation. ORR proposes to take no further action. $w
1 11/10/2009 11/2010 Derailment at Windsor & Eton Riverside station Status: Implemented	The purpose of this recommendation is to improve the skills of all staff involved in track inspection (including managers and supervisors) in identifying excessive dynamic gauge widening. Taken in conjunction with their existing competence in identifying chair shuffle the enhanced skills should increase the ability and confidence of staff in deciding if a dynamic derailment risk is evident. Network Rail should revise its current competency training programme for all staff involved in track inspection to include reference to the visual identification of abnormal running band and its relationship with chair shuffle and wide gauge as an indication of dynamic gauge problems and potential risk of derailment.	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 11/10/2009 11/2010 Derailment at Windsor & Eton Riverside station Status: Implemented by alternative means ▲	The purpose of this recommendation is for Network Rail to consider how potentially vulnerable parts of the network that are not covered by track recording vehicles can be subject to dynamic gauge measurement. Network Rail should develop a proposal for the periodic	ORR reports that Network Rail has considered how potentially vulnerable parts of the network that are not covered by Track Recording Vehicles (TRV) can be subject to diagnostic gauge measurement. Network Rail has delivered additional training to track maintenance engineers and is evaluating the feasibility of direct measurement of dynamic gauge at slower speed at potentially vulnerable locations not covered by a track recording vehicle.

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	measurement of dynamic gauge at potentially vulnerable locations not covered by a track recording vehicle, and implement the identified measures, as appropriate.	Although the RAIB acknowledges the work undertaken it observes that Network Rail has still to develop a comprehensive solution. The RAIB is concerned to note that the on-going investigation into the derailment at Liverpool Street (which occurred on 23 Jauuary 2013) has also identified an issue with the detection of gauge widening in locations not covered by TRV measurements. $b
3 11/10/2009 11/2010 Derailment at Windsor & Eton Riverside station Status: Implemented	The purpose of this recommendation is to ensure that Network Rail auditors are aware of findings from previous relevant audits to determine whether appropriate action has been taken and to enable them to understand the reasons why issues have recurred after they had been reported as closed. Network Rail should ensure that its procedures for planning audits are amended to include a requirement for those undertaking audits of infrastructure maintenance activities to include as an input to the development of the audit plan a review of the findings from previous relevant audits and action taken, irrespective of whether the associated action is open or closed.	ORR reports that the underlying standards have not been changed, due to the current freeze on standards change as a consequence of the move to Business Critical Rules. However, ORR is satisfied that Network Rail's working level instructions to its auditors have been changed and are being followed. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
2 25/08/2009 14/2010 Derailment at Wigan North Western station Status: Implemented	The purpose of this recommendation is to identify and rectify other sites where design or construction is not in accordance with the track construction standard. Network Rail should check, on a risk basis, other sites where WCRM S&C Alliance has installed track to verify that it has been designed and installed correctly and should implement corrective action where necessary.	ORR has reported that Network Rail has taken actions to address the absence of a check rail on a tight radius curve at Wigan and elsewhere. ORR proposes to take no further action.
3 25/08/2009 14/2010 Derailment at Wigan North Western station Status: Implemented	The purpose of this recommendation is to prevent the situation arising where the maintainer does not recognise that incorrect components are fitted and so does not rectify the situation. Network Rail should update its processes for track management to include checks that the rail fastening components are of the correct type for the particular rail and sleeper combination.	ORR have reported that Network Rail had sought to understand whether the derailment in Wigan is an isolated issue or is indicative of a more fundamental track management deficiency. The conclusion reached as part of the response to Recommendation 2 indicated that this incident was an isolated issue and that there is no evidence of a more fundamental track management deficiency. It was therefore considered that there is no requirement to challenge current training and competence provision for component recognition during maintenance. In addition Network Rail has introduced a new process for checking that new installations of track conform to relevant standards. ORR proposes to take no further action.

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4 25/08/2009 14/2010 Derailment at Wigan North Western station Status: Implemented	The purpose of this recommendation is to provide advice on dealing with gauge variation, which is given limits in the inspection standard but is not routinely monitored. Network Rail should update its track recording information handling process to deal with gauge variation and should issue guidance to staff on minimum actions to be taken at each alarm level.	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.
1 29/09/2009 16/2010 Fatal accident at Halkirk level crossing, Caithness Status: Implemented	The intention of this recommendation is that Network Rail should maintain the backboards fitted to road traffic light signals at level crossings so as to maximise the contrast between the lit red light unit and the backboard. Network Rail should enhance the maintenance and inspection instructions relating to road traffic light signals, and brief staff accordingly, with the objective of ensuring that the backboards to level crossing road traffic light signals are maintained to provide the best possible contrast between a lit red light unit and its backboard (paragraph 135b).	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.
6 29/09/2009 16/2010 Fatal accident at Halkirk level crossing, Caithness Status: In-progress	The intention of this recommendation is to cause Network Rail to change the design of long hoods so that they are more effective and to give its staff guidance on the criteria under which they should be fitted. Network Rail should review the design of long hoods that can be fitted at level crossings and implement any necessary changes identified to make them more effective. Guidance should also be issued to its staff on the specific circumstances of site orientation and prevailing lighting so that their use is optimal (paragraph 137b).	Network Rail have reviewed the design of long hoods and conducted trials at eleven sites. ORR is is awaiting information to confirm the actions taken and the provision of guidance to staff.
1 15/11/2009 17/2010 Failure of Bridge RDG1 48 (River Crane) between Whitton & Feltham Status: Implemented	The purpose of recommendation 1 is to establish a sustainable process for the routine inspection of bridges spanning watercourses and avoid the risk associated with structures not receiving frequent checks for obvious signs of hazards. Network Rail should positively identify which structures require checking for obstructions against upstream faces, and how frequently. Such checks should be mandatory and the process for delivering them should be enhanced such that those who perform the task have the time, competence and information available to do the job effectively (paragraph 103a).	Network Rail has reported that it has taken actions in response to this recommendation. Office of Rail Regulation proposes to take no further action unless they become aware that the information provided becomes inaccurate.

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2 15/11/2009 17/2010 Failure of Bridge RDG1 48 (River Crane) between Whitton & Feltham Status: Implemented	The purpose of recommendation 2 is to increase the probability of debris being reported and removed prior to structural damage occurring. Network Rail should provide means by which members of the public can report obstructions or other defects, particularly at locations where public access exists. This could include the provision of bridge identification plates giving a telephone number similar to those provided at low headroom highway bridges, together with a location description, map reference and structure number (paragraph 104a).	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.
3 15/11/2009 17/2010 Failure of Bridge RDG1 48 (River Crane) between Whitton & Feltham Status: Implemented	The purpose of recommendation 3 is to reinforce the role of the examining engineer so that the review of examination reports can add value to the examination process, particularly in cases where no action is proposed. Network Rail should re-consider the purpose of the role currently performed by the examining engineer and then identify the information and resources (including time) that are required to undertake the task effectively (paragraph 105a). This may include: a. requiring bridge examiners positively to confirm that particular requirements for different types of bridge have been considered during an examination, for example by means of a checklist within the examination report (paragraph 65); b. requiring bridge examiners to submit elevation photographs of bridges spanning watercourses, which show the surface of the water at each pier and abutment, and direction of flow for the purpose of identifying obstructions (paragraph 64); and c. requiring bridge examiners to submit supplementary photographs in support of a visual examination report to enhance the level of information available to the examining engineer (paragraph 68).	Network Rail have reported increasing resources to enable examining engineers to carry out adequate examinations and has developed a new management information system to support their work. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
4 15/11/2009 17/2010 Failure of Bridge RDG1 48 (River Crane) between Whitton & Feltham Status: Implemented	The purpose of recommendation 4 is to improve the assessment of scour risk. Network Rail should review its underwater examination task lists nationwide to check for further omissions, and require that underwater examinations are normally undertaken in advance of scour assessments to enable a fuller picture of a structure's condition to be realised (paragraph 105b).	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.

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6 15/11/2009 17/2010 Failure of Bridge RDG1 48 (River Crane) between Whitton & Feltham Status: Implemented	The purpose of recommendation 6 is to reduce the risk of a secondary incident occurring following the failure of a structure. Network Rail should review the guidance provided for non-specialist staff who may be required to assess the failure of track support in the vicinity of a structure, and determine whether it is safe for trains to run over that structure (paragraph 106).	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.
1 28/11/2009 19/2010 Derailment near Gillingham tunnel, Dorset Status: Implemented	This recommendation is intended to reduce the risk which may be created by off track drainage overflowing. Network Rail should instigate a process to: l Identify all locations where unsatisfactory operation of off track drainage is a significant risk to railway safety. Identifying these locations should be assisted by use of information being collected as part of Network Rail's on-going drainage asset surveys, knowledge already required for adverse weather planning and data being obtained from on-going studies to identify locations where ground topography concentrates water flows. l For all such locations establish a programme to: o Determine for each location the site specific parameters which are sufficient to ensure satisfactory off track drainage performance. These parameters should include ditch sizes and the extent to which roots may remain in place. The parameters shall be verified by a drainage professional. o Maintain off track drainage to comply with these parameters.	Network Rail has reported that in accordance with the recommendation, the location of drains is being recorded and a time bound plan is provided for implementing maintenance. The ORR has concluded that Network Rail is taking a broad approach to implement the intent of the recommendation as part of a wider plan to improve drainage management. ORR has also reported that it has two projects in 2013/14 to check the implementation of Network Rails improved process. The RAIB is concerned that there is no reference to establishing the size to which drains should be maintained and no mention of how roots should be dealt with. This implies a continuation of the existing practice which limits clearance to that material which is obviously debris and no guidance concerning tree roots. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
4 06/03/2010 01/2011 Passenger train struck by object at Washwood Heath Status: In-progress	The purpose of this recommendation is to ensure the adequacy of checks with the requirements of the rule book within possessions (including protection of adjacent open lines). Network Rail should review the adequacy of its arrangements for the routine checking of compliance with the rule book within possessions, including checks on compliance with rule book module OTP in respect of adjacent lines open to traffic. The review should consider the frequency of such checks and the competency of those involved. Any improvements identified as part of this review should be implemented.	Network Rail have outlined the actions to be taken in response to the recommendation. ORR are seeking further information. Note: In January 2014 ORR informed the RAIB that this recommendation is now considered to have been implemented, and that ORR proposes no further actions.

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2 04/01/2010 03/2011 Derailment of freight train at Carrbridge, Badenoch & Strathspey Status: Implemented	The purpose of this recommendation is to ensure that risks to safety on steep gradients during periods of falling or disturbed snow are assessed and that appropriate control measures are considered in advance of adverse weather. It is also intended to extend the current use of line-side snow signs to other sites assessed as requiring such additional risk control measures. Network Rail, in consultation with train operators, should assess any lines which include steep gradients in order to establish if additional risk control measures (such as bringing trains to a stand prior to descending from summits) may be required during periods when snow is falling or being disturbed by the passage of trains. Any steep gradients assessed as requiring additional risk control measures in these conditions should be designated in the appropriate sectional appendix and marked by the use of lineside snow signs (paragraphs 211a, 211b, 212c and 216a).	ORR reports that Network Rail and Freight Operators have issued an approved code of practice. This identified six high risk falling gradients where drivers must take special actions to avoid icing up of brakes. Network Rail has identified a further 668 falling gradients of concern and shared this information with Freight Operators at OPSRAM meetings. ORR proposes to take no further action.
3 04/01/2010 03/2011 Derailment of freight train at Carrbridge, Badenoch & Strathspey Status: Implemented	The purpose of this recommendation is to ensure that the potential risks involved in the prolonged use of stock equipped with miniature snow ploughs to clear snow from lines are understood and that Network Rail staff involved in the management of extreme weather are made aware of any risk control measures identified. Network Rail, in consultation with train operators, should assess the risks of an accumulation of snow being left on or close to the line as a result of the prolonged use of miniature snow ploughs to clear lines of snow. Any appropriate risk control measures (such as additional instructions within route winter working arrangements) that are identified should be implemented (paragraphs 213a, 214a and 217a).	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.
4 04/01/2010 03/2011 Derailment of freight train at Carrbridge, Badenoch & Strathspey Status: Implemented	The purpose of this recommendation is to ensure that the risk of an overrun of signal AC336 is reviewed in line with existing industry requirements to ensure that it is acceptably low. It is also intended to ensure that the secondary risk introduced by trap points at other similar locations is considered. Network Rail should consider if there are additional measures which could reduce the overrun risk at signal AC336 and implement those measures found to be reasonably practicable to introduce. This consideration should include the undertaking of a detailed assessment as required by Network Rail standard NR/L2/SIG/14201. Network Rail should have regard to the	ORR reports that, after consideration of various options, Network Rail has removed the catch points at Carrbridge. This in conjunction with the new rules relating to the application of brakes on the summit prior to signal AC336, is considered to provide sufficient mitigation to the risk of overrun at signal AC336.

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	guidance and requirements regarding trap points within Railway Group Guidance Note GI/GN 7606 and Railway Group Standard GK/RT 0064 and should specifically consider the risks to the public of an overrun at this signal. Network Rail should also review where trap points have been used to control overrun risk at similar locations in order to establish that any secondary risks introduced by their use have been adequately assessed and mitigated (paragraph 219).	
1 16/01/2010 04/2011 Fatal accident at Moreton-on-Lugg, near Hereford Status: Implementation ongoing 	The intention of this recommendation is, where necessary, to implement engineered safeguards at level crossings similar to Moreton-on-Lugg. The objective is to reduce the risk of signallers opening the crossing to road users when a train is approaching, particularly as a result of interruptions or other out-of-course events. Network Rail should identify level crossings operated by railway staff where a single human error could result in the road being opened to the railway when a train is approaching. At each such crossing, Network Rail should consider and, where appropriate, implement engineered safeguards. Safeguards for consideration should include additional reminder appliances, alarms to warn of the approach of trains, approach locking, locking of the route, run-by controls, and local interlocking of train detection and signalling systems with level crossing controls (paragraphs 175 and 178).	ORR reports that Network Rail had planned to complete 97 level crossings by January 2014. However, the RAIB is concerned that to date Network Rail has only addressed level crossings that are protected by a signal. This issue was raised in a RAIB Bulletin published in 2013 (B01/2013 Near miss at Four Lane Ends level crossing, near Burscough Bridge, Lancashire). ORR reports that Network Rail is still working to identify all crossings where a single human error could result in the road being open to the railway when a train is approaching. $b
2 16/01/2010 04/2011 Fatal accident at Moreton-on-Lugg, near Hereford Status: In-progress	The intention of this recommendation is that implementation of Network Rail's level crossing risk management process will identify and assess the risks from all aspects of the design, operation and maintenance of equipment and systems, including signalling, so that mitigation measures can be identified and implemented. Network Rail should enhance its level crossing risk management process to include identification, assessment and management of the risk associated with: human error by signallers and crossing keepers; operational arrangements, in particular with regard to the ability of operators to cope with interruptions, such as telephone calls, and other out-of-course events; equipment design, in particular where it is not compliant with latest design standards; and	ORR reports that Network Rail has recognised that the historic risk assessment process did not capture equipment design, therefore a cross-functional workshop was held to assess issues relating to equipment design within level crossing types and the impact that they can have on the risk profile, including how they can influence (or be influenced by) irregular working. The newly introduced training for the Level Crossing Managers (LCMs), as part of the wider National Level Crossing Improvement Programme, includes a section on types of irregular working events, how they happen and what can be done to further reduce the risk of occurrence. This detail provides the LCMs with a greater understanding of some of the risks that may be associated with certain type of crossings. These irregular working examples are broken down into types involving Signallers, Drivers, and Level Crossing Attendants. ORR are seeking further information.

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	maintenance and inspection arrangements, particularly where these are used to identify and remedy any equipment functional and performance deficiency. The process should allow for sufficient liaison between the relevant engineering and operational departments. When addressing risks identified by the implementation of the revised process, Network Rail should prioritise the implementation of required mitigation measures to level crossings where consequences of operator error are severe and not protected by engineered safeguards (paragraphs 171, 172a, 172b, 173, 174a, 174b, 176b and 177).	
3 16/01/2010 04/2011 Fatal accident at Moreton-on-Lugg, near Hereford Status: In-progress	The intention of this recommendation is to ensure that whenever signalling renewal or major maintenance work is planned, those responsible understand when it is necessary to formally evaluate the opportunity to improve compliance with the latest engineering standards. Network Rail should develop and implement (paragraph 176a): criteria for when it is necessary to formally assess the need to bring existing signalling and level crossing assets in line with latest design standards; and a process to record the findings of such assessments.	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.
4 16/01/2010 04/2011 Fatal accident at Moreton-on-Lugg, near Hereford Status: Implementation ongoing	The intention of this recommendation is for Network Rail to understand the risk posed by the use of non-critical information systems in signal boxes and implement practical mitigation measures. Network Rail should assess the risk associated with the use of TRUST, and similar information systems, by signallers when undertaking safety critical activities, and implement appropriate mitigation measures. This assessment should include a review of the extent to which signallers may be distracted or misled, and the influence of factors such as the location and orientation of any associated equipment (paragraphs 171 and 172b).	ORR reports that Network Rail have a programme of work to assess the risk associated with TRUST, and similar information systems. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.

Number/ Date/ Report No/ Inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
2 30/03/2010 06/2011 Track worker struck by a train at Cheshunt Junction Status: Implemented by alternative means	The intention of this recommendation is to address the concern that extended sighting times, and consequent early warnings from lookouts, can cause staff to react with less urgency to initial warnings or to adopt unauthorised systems of work. Network Rail should evaluate the behaviour of staff working on the track at locations with extended sighting times. The objective of this evaluation shall be: a. to understand the methods adopted by track workers at such locations; b. to assess the risk introduced by extended warning times; c. to assess the risk introduced by any alternative working practices that may be identified by staff; and d. to consider the need for additional guidance to the COSS and other safety critical staff. Based on its understanding of current behaviour gained from this evaluation, Network Rail should establish a safe system of work to cover activities at locations with extended sighting times (paragraph 136).	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.
1 04/05/2010 07/2011 Runaway and derailment of wagons at Ashburys Status: Non-implementation	The purpose of this recommendation is to make a 'pull test' with the power brake released a requirement when leaving wagons on their handbrake regardless of whether the driver is on his own or is working with a shunter. Freight operators should ensure that their operating instructions include a 'pull test' when wagons are to be left to rely on their handbrakes for a time (DB Schenker reports that it has already taken this action).	Freight operators have considered the recommendation and informed the ORR that they do not consider it practicable to implement. Instead it is proposed that greater reliance should be placed on the use of scotches rather than handbrakes. It is also suggested that the process under which Entities in Charge of Maintenance work will help to ensure better maintenance of handbrakes. The RAIB has written to ORR to express its concern and pointed out that it is only meant to apply to those cases where wagons are reliant on their handbrakes. For this reason the RAIB considers that actions should be taken in response to this recommendation unless it can be shown that one or all of the following statements apply: • freight operators have totally overcome the need to rely on handbrakes; or • freight operators are able to demonstrate that their handbrakes are adjusted and maintained such that a high level reliability is achieved. $r Note: However, on 22 January 2014 ORR reported that this recommendation will not be implemented by the freight operators concerned, and that the ORR proposes no further action.

6	04/05/2010	07/2011	The purpose of this recommendation is to investigate whether wagons with single disc brakes pose a risk when operating on long gradients and arrange to have any operating restrictions found necessary to be published in the operating instructions, in accordance with Group Standard GE/RT8270 ‘Assessment of Compatibility of Rolling Stock and Infrastructure’. DB Schenker should confirm whether the operating restriction on wagons with only one brake disc per axle is still required and, if so, arrange for the restriction to be published.	DB Schenker 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.

Runaway and derailment of wagons at Ashburys

Status: Implemented

Number/ Date/ Report No/ Inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
3 20/07/2010 10/2011 Runaway and collision of RRV near Raigmore, Inverness Status: Implemented	The intention of this recommendation is that an appropriate safety integrity level (SIL) for the control systems of RRV machines should be established and implemented on future builds. Network Rail should undertake a review of the safety requirements that it specifies for RRVs, with the objective of determining an appropriate safety integrity level (SIL) for any safety functions that are required within the control systems of the machine, and implementing verification and approval arrangements that are appropriate for this SIL. This should, among other things, provide assurance that potential failure modes of interlocks, and similar safety systems, have been identified and suitably mitigated (with reference to actions taken following the RAIB's RRV Class Investigation recommendations 1 & 2) (paragraph 206).	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.
1 06/06/2010 11/2011 Accident at Falls of Cruachan, Argyll Status: Implemented	The intention of this recommendation is to ensure that for earthworks in Scotland sufficient vegetation clearance is undertaken to allow adequate examination and evaluation of slopes to determine their condition. In respect of earthworks in Scotland, Network Rail should review its existing arrangements for the clearance of vegetation to enable examinations and evaluations of earthworks to be carried out. If this review indicates that the current arrangements do not enable a sufficient understanding of their condition of earthworks to be obtained, and if there is no alternative means of assessing the risks associated with such slopes, Network Rail should define the extent of vegetation clearance that is required to enable examinations and evaluations to be carried out, and then implement a strategy for achieving it (paragraph 137a).	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.
4 02/02/2010 12/2011 Investigation into safety of AOCLs on Network Rail's infrastructure Status: Implementation ongoing	The intention of this recommendation is to make sure that the development of digital red light enforcement equipment is not delayed unnecessarily and that it is installed at selected AOCLs with a high incidence of violations: In collaboration with the police, Network Rail should, without unnecessary delay, complete the development of digital red light enforcement equipment and install it at selected AOCLs which have high levels of violations (paragraph 161).	Network Rail has reported that it has taken actions in response to this recommendation. RAIB has requested information on which of the proposed sites for red light enforcement equipment are at AOCLs.

Number/ Date/ Report No/ Inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
2 17/08/2010 14/2011 Collision tanker & train Sewage Works Lane, near Sudbury, Suffolk Status: Implementation ongoing	The intent of Recommendation 2 is for Network Rail 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. 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 (paragraph 195a).	ORR reports that Network Rail are trialling a number of solutions designed to address the risks of such long waiting times at some crossing. These include utilisation of GPS technology to inform the signaller of the trains position and the examination of alternative means of detecting trains in long sections. Two hundred sites are currently under examination for possible installation.
5 17/08/2010 14/2011 Collision tanker & train Sewage Works Lane, near Sudbury, Suffolk Status: Implementation ongoing	The intent of Recommendation 5 is for Network Rail to review the costs and benefits of combining the data gathering, processing and assessment roles for level crossing risk assessment, taking account of the possible benefit of one person or a dedicated team having all the necessary knowledge to make an accurate assessment of the risk. Network Rail should review its level crossing management processes to establish the costs and benefits of making data gathering, processing and risk assessment of a level crossing the responsibility of a single person or a dedicated team with a comprehensive understanding of the operating environment at that crossing, and make changes to those processes as appropriate in the light of the outcome from the review (paragraphs 195e, 195f and 195g).	Network Rail has reported to the ORR that it has completed the introduction of Level Crossing Managers on all routes.
1 17/08/2010 15/2011 Uncontrolled freight train runback between Shap and Tebay, Cumbria Status: In-progress	The intention of this recommendation is for DB Schenker to reduce the number of shifts that cause fatigue. This recommendation may apply to other freight train operating companies. DB Schenker should, in consultation with its drivers: a. identify the shifts on which their drivers experience high levels of fatigue26, and give particular consideration to the impact on drivers working the first in a series of night shifts; b. improve the identified shifts, for example by changing the transition to them, their duration and the duties carried out on them, with shifts of the highest risk improved ahead of those of lower risk; c. assess the findings of drivers on the changed shifts to confirm that those shifts are improved; and d. share its findings with the Office of Rail Regulation	ORR reports that DB Schenker continues to progress development of a comprehensive Risk Management System, this is intended to address parts A, B and C of this recommendation.

Number/ Date/ Report No/ Inv Title / Status	Safety Recommendation	Summary of status (based on reports to) RAIB up to 31 December 2013)
3 17/08/2010 15/2011 Uncontrolled freight train runback between Shap and Tebay, Cumbria Status: In-progress	The intention of this recommendation is to provide the rail industry with information on the accuracy of mathematical models used to predict fatigue. The Office of Rail Regulation should arrange for a programme of work to analyse and compare existing mathematical models used to predict fatigue, including the Fatigue and Risk Index, and then provide information to the rail industry on the accuracy of those models.	ORR reports that RSSB has been commissioned to undertake research needed to address this recommendation, work is planned to start in March 2014. RAIB awaits with interest information about the approach to be adopted.
4 17/08/2010 15/2011 Uncontrolled freight train runback between Shap and Tebay, Cumbria Status: In-progress	The intention of this recommendation is to improve rail industry information on fatigue-related accidents and incidents. RSSB should implement measures to improve the quality and quantity of available data relating to fatigue-related railway accidents and incidents. Options for consideration should include an enhancement of the Safety Management Information System to provide more accurate reporting of fatigue-related events.	The RAIB is aware that the RSSB intends to address this recommendation by developing a tool for capturing human factors relevant to incidents and accidents, including fatigue. This system IFCS is currently being populated by RSSB and Network Rail.
5 28/12/2010 16/2011 Derailment in Summit tunnel, near Todmorden, West Yorkshire Status: Implemented	The intent of this recommendation is for safety actions and safety related information originating from Network Rail's buildings and civils – asset management function to be managed to an appropriate conclusion when it is passed to other parts of Network Rail's organisation. Network Rail should put in place processes for the management and distribution of safety actions and safety related information originating from Network Rail's buildings and civils – asset management function. This should include a process for systematically reviewing the resolution of necessary safety actions and a process for passing safety related information to other parts of Network Rail's organisation, including confirmation that it has been received, understood and acted upon (paragraphs 151a and 151b).	ORR reports that the creation of a Director of Route Asset Management (DRAM), who is singularly accountable for all aspects of Asset Management, Maintenance and Operations. It expects there to be better communications between the civils asset management function and the maintenance and operations functions. ORR has accepted this and the recommendation is now reported by the ORR as implemented.
1 05/02/2011 17/2011 Derailment of a passenger train near Dryclough Jcn, Halifax Status: Implemented	The purpose of this recommendation is to improve control of minor civil engineering works schemes to ensure that changes to the design made during the implementation phase do not compromise the effectiveness of the works. Network Rail should review its arrangements for controlling the implementation of minor civil engineering works. This should include consideration of how deviations from the design are identified, assessed and accepted, and by whom, so that the original intent of the civil engineering work is not compromised.	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.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to) RAIB up to 31 December 2013)
	Any necessary improvements should be implemented.	
2 05/02/2011 17/2011 Derailment of a passenger train near Dryclough Jcn, Halifax Status: Implemented	The purpose of this recommendation is to provide Network Rail staff with a means to identify structures whose examination has been missed or has not been loaded into CARRS and define how they should deal with the risks this may pose. The system should also assist in preventing examinations from being missed. Network Rail should implement a process that: identifies and highlights structures examinations that are overdue, or whose examination report has not been effectively transferred to Network Rail's computer system; defines what action is to be taken regarding these missing examination reports; and identifies and highlights structures whose examination due date is imminent but no examination has been scheduled.	ORR reports that Network Rail has produced a system accessible by all routes called 'The Bridge'. This system identifies compliance dates for all structure examinations across the network and prompts for a risk assessment to be carried out for all examinations which are delayed beyond the requirements of Network Rail's standards. ORR has reported that it is satisfied that the recent introduction of the 'The Bridge' system meets the requirements of the recommendation.
3 05/02/2011 17/2011 Derailment of a passenger train near Dryclough Jcn, Halifax Status: Implemented	The purpose of this recommendation is to increase the likelihood of long running or significant defects in a structure being identified by the engineers responsible for its management. In conjunction with its examination contractor, Amey, Network Rail should review the effectiveness of the existing structures examination regime and implement any changes found necessary. The review should include, as a minimum: consideration of why examiners do not always report persistent defects; and a consideration of whether the examination system should be enhanced to require supervisors and/or engineers to periodically inspect structures.	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.
5 05/02/2011 17/2011 Derailment of a passenger train near Dryclough Jcn, Halifax Status: Implemented	The purpose of this recommendation is to check whether there are any other earthworks missing from Network Rail LNE Route's earthworks database, and hence are not being examined. Network Rail LNE Route should check whether there are any earthworks missing from their examinations database. Any such earthworks found to be missing should be inserted into the	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.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to) RAIB up to 31 December 2013)
	database and arrangements made to examine them.	
1 28/01/2011 19/2011 Passenger accident at Brentwood station Status: Implementation ongoing	The purpose of recommendation 1 is for Network Rail, in partnership with relevant train operating companies, to make improvements to the assessment of DOO train dispatch arrangements at unstaffed platforms. The assessment should consider the equipment provided and the way in which it is used. The involvement of both infrastructure owner and train operator is necessary in order to obtain the maximum benefit from such an exercise. Network Rail should arrange, execute and accurately record, in partnership with relevant train operating companies, periodic assessments of the DOO equipment provided at unstaffed platforms with particular reference to the quality of the interface between the equipment provided and the way in which it is used (paragraphs 135c, 136d, and 137b).	ORR reports that Network Rail are to undertake periodic assessments of Driver Operated Only (DOO) equipment. From the information provided, the extent to which Network Rail will work in partnership with the relevant TOC is not clear to the RAIB. However, the RAIB notes that all TOCs have indicated that they have processes in place to ensure that the periodic assessments take place. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
2 28/01/2011 19/2011 Passenger accident at Brentwood station Status: Implemented	The purpose of recommendation 2 is to reduce the likelihood of a train departing from a platform with a passenger in an unsafe position relative to the train. The Rail Safety and Standards Board should, in consultation with train operators, consider the inclusion of guidance in Rail Industry Standard RIS-3703-TOM that those responsible for train dispatch (including the drivers of DOO trains) should, so far as is reasonably practicable, observe the closing of the train's doors and be alert for any dangerous occurrence while this is taking place (paragraph 136a).	The Rail Safety and Standards Board 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.
3 28/01/2011 19/2011 Passenger accident at Brentwood station Status: Implemented	The purpose of recommendation 3 is for National Express East Anglia to make improvements to its train driver training and assessment processes to promote effective management of the risk associated with DOO train working, and in particular, the dispatch of DOO trains from unstaffed platforms. National Express East Anglia should complete a systematic review and updating of its train driving task analysis relating to the dispatch of Driver Only Operated (DOO) trains from unstaffed platforms to assure that hazards are identified and the risk properly addressed. The results of this review should be incorporated into the train driver training programme, train driver competence management system and ongoing safety briefing processes to facilitate the changes necessary to adequately address the risk from DOO train dispatch, particularly from unstaffed platforms (paragraphs 136b and 136d, 137a, 137c	ORR reports that the train operator involved (now Abellio Greater Anglia Ltd) has completed the high level risk assessment for train dispatch, updated its Safety Manual document and updated its Competence Management System documentation. ORR proposes to take no further action.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to) RAIB up to 31 December 2013)
	and 137d).	
4 28/01/2011 19/2011 Passenger accident at Brentwood station Status: Implemented	The purpose of recommendation 4 is for National Express East Anglia to take steps to improve the availability of data from the on-train CCTV systems fitted to its trains. National Express East Anglia should take the necessary steps to ensure that the on-train CCTV systems (including forward and rear facing CCTV equipment) fitted to its trains achieve a high level of availability (paragraph 138a).	National Express East Anglia (now Abellio Greater Anglia Ltd) 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.
5 28/01/2011 19/2011 Passenger accident at Brentwood station Status: Implemented	The purpose of recommendation 5 is for National Express East Anglia to make improvements to its monitoring processes to ensure periodic reviews, such as risk assessment reviews, are undertaken at the specified frequencies. National Express East Anglia should review and update as necessary its monitoring systems so that where periodic safety reviews are required they are undertaken at the necessary frequencies (paragraph 138c).	ORR reports that the train operator involved (now Abellio Greater Anglia Ltd) has detailed in a Safety Management System document how it will review risk assessments and how it will check that these reviews are carried out at the required periodicity. However, it is not clear to the RAIB whether these are specific to train dispatch or applicable to all periodic reviews as intended in the recommendation.
2 23/03/2011 20/2011 Train passed over Lydney level crossing with crossing barriers raised Status: Implemented	The intent of this recommendation is that, when accepting documentary evidence that an individual (such as a crossing keeper) has dealt with particular situations in a competent manner, a sample of these situations should be reviewed to ensure that the individual actually acted appropriately. Network Rail should review and, if necessary, amend and/or augment existing processes so that, when documentary evidence is used to verify safety-critical competencies of operations staff, appropriate evidence (such as voice recordings) is examined for at least a proportion of the events covered by these documents (paragraphs 145d, 147a, and 147c).	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.
1 20/02/2010 01/2012 Passenger train derailment near East Langton, Leicestershire Status: Implemented	The purpose of this recommendation is to reduce the risk of recurrence of a similar final drive gearbox failure on the Meridian and similar fleets. Bombardier Transportation, in conjunction with Voith, should undertake a design review of the final drive gearboxes and axles used on the Meridian and Voyager fleets (Class 220, 221 and 222) and, where appropriate, implement design and maintenance improvements, including verification of the over-temperature detection, to reduce the risk from loss of output bearing interference fits on the axles (paragraphs 189, 191a).	Bombardier Transportation, in conjunction with Voith have reported that they have taken actions 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 / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
2 20/02/2010 01/2012 Passenger train derailment near East Langton, Leicestershire Status: Implemented	The purpose of this recommendation is that safety lessons from the East Langton investigation, in particular that a final drive output bearing failure can lead to axle failure, are captured in procedures for the design and assembly of final drive gearboxes at new build and overhaul, to maintain adequate bearing interference fits. ROSCOs and other Contracting Entities (purchasers of rolling stock), and Entities in Charge of Maintenance (responsible for overhaul of rolling stock) should review, and where appropriate improve, the design, manufacture and overhaul procedures used for final drive gearboxes in their current and future fleets, in particular those featuring hollow axles, by checking that they adequately address the following factors: l reduction in the size of output bearing seats due to shrinkage arising from other nearby interference fits and/or wear during service; l bearing bore growth during the service life of the bearing (eg obtained by measuring a sample of bearings); l bearing seats being made undersize; and l detection of overheating output bearings. (paragraph 189). Note for information relating to Recommendation 2: In conjunction with the publication of this report, the RAIB has written to the European Rail Agency (ERA) to request their assistance with the dissemination of the identified issues to national safety authorities and national investigation bodies in other member states of the European Union, for their information and action as appropriate to their circumstances.	ROSCOs and other Contracting Entities have reported that they have taken actions in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
3 20/02/2010 01/2012 Passenger train derailment near East Langton, Leicestershire Status: Implementation ongoing	The purpose of this recommendation is to improve the failure detection capability of oil sampling regimes for final drive gearboxes to reduce the risk of future axle failure. Bombardier Transportation should review the final drive oil sampling regime on the Meridian and similar fleets (including consideration of sampling frequency and consistency, action levels, oil colour and use of cumulative trending) and, where necessary, make changes to maximise effectiveness in detecting impending failures (paragraph 189e).	Bombardier Transportation has carried out a review in response to this recommendation and has developed a plan to improve its arrangements for the sampling of oil. The RAIB is awaiting an update by the ORR.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
4 20/02/2010 01/2012 Passenger train derailment near East Langton, Leicestershire Status: Implemented	The purpose of this recommendation is that train crew are familiar with, and practised in, on-board alarm handling procedures so that correct and timely action is taken to minimise adverse consequences of an out-of-course incident. East Midlands Trains should provide practical, rolling stock specific, initial and refresher training, that includes the simulation of on-board emergency and out-of-course situations. This should enable drivers and train crew to maintain their understanding of, and familiarity with, correct alarm handling in various scenarios (paragraphs 190 and 191c).	East Midlands Trains has reported that it has taken actions in response to this recommendation. Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.
1 08/01/2011 02/2012 Tamper driver struck by a train at Torworth level crossing Status: Implemented	The purpose of Recommendation 1 is to bring about a sustainable change to how engineering train drivers, ground staff and on-track machine crews access work sites by implementing measures to support industry processes for providing them with a safety briefing. Network Rail and its contractors who operate trains in engineering possessions should jointly review the means by which engineering train drivers and on-track machine crews (and associated ground staff) can best be provided with sufficient information relating to both railway and construction risk before walking to, or entering, a work site. This review should address: l the validation, and incorporation in a suitable safety standard, of arrangements agreed between Network Rail and its haulage suppliers and contractors operating on-track machines, relating to the provision of a safety briefing before entering a work site; l the preparation of explanatory briefing material and additional training on the procedures to be followed to obtain safety briefings; l explicit consideration of the risks associated with access to site, including safety briefing issues, at an appropriate stage in the planning process for engineering activities; and l the need for clarification or amendment of the relevant rules and procedures relating to walking to trains and on-track machines when these are in possessions and work sites. The outcome of this review, and any appropriate additional measures identified, should then be implemented by Network Rail and a procedure put in place to monitor their effectiveness (paragraphs 133a, 133b, 133d, 134a to 134c, 136a and 136b).	A new process chart has been developed by a working group with the objective of ensuring that all ground staff and train crew receive a briefing for accessing a worksite. This process has been widely briefed and discussed with the track safety working group. The recently formed Engineering Worksites sub group is also now critically reviewing the planning and management of possessions including safe access/egress and briefing of all staff with the express purpose of devising a new more robust process for all. The RAIB notes the progress that has been made but is concerned that full implementation may not be achieved until the new Control of Work / Permit to Work regime is in place.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
1 08/03/2011 03/2012 Two incidents involving track workers between Clapham Jcn & Earlsfield Status: Implementation ongoing △	The purpose of this recommendation is to reduce the potential for unsafe actions to be taken by a COSS when required to carry out unplanned work in unfamiliar and complex situations. Network Rail should review and, if necessary, revise the arrangements for unplanned / emergency work (paragraphs 123a and 123b) to reduce the potential for: a. confusion when attempting to apply the rules for working in a possession but outside a work site (paragraph 125a); and b. confusion when sharing line blockages (paragraph 126a). Options for consideration should include: l simplification of the rules, and / or improved COSS training, relating to working in a possession but outside a work site; l means to control the risk associated with a COSS planning the system of work in unfamiliar and complex situations (such as restricting the definition of an 'emergency situation' or by introducing additional checks on the proposed system of work); l a review of the risk of shared line blockages for unplanned works and the identification of alternative approaches; and l adoption of situational risk assessments to inform decision making in unfamiliar and complex situations (such as the 'Take Time' process being trialled by the Wessex Route).	Network Rail has carried out a review in response to this recommendation and has reported that it intends to generate further information about sharing line blockages in emergencies for inclusion in new training material. In addition Network Rail is implementing a programme to enhance COSS competence. At this stage it is not proposing to clarify and simplify the rules for working in a possession. However, all such rules are to be assessed as part of a review of track worker safety linked to the introduction of the new Safe Work Leader role. While recognising the changes that are planned, the RAIB continues to urge Network Rail to consider the clarity of the rules that will apply when working inside a possession but outside an individual work site. $w
2 08/03/2011 03/2012 Two incidents involving track workers between Clapham Jcn & Earlsfield Status: Implementation ongoing	The purpose of this recommendation is to reduce the pressure on an engineering supervisor and / or COSS when there is an unplanned interruption to the normal passage of trains, due to a possession overrun or the need for emergency engineering access. Network Rail should develop a set of proposals for managing the pressures related to train performance on those responsible for setting up protection arrangements for access to the railway in unplanned and / or emergency situations (paragraph 124a). This might include (but should not be limited to): a. improving the mutual understanding of the challenges faced by shift leaders in maintenance delivery units and incident controllers at route control centres, for example by providing regular experience of working in each others' environments;	Network Rail has informed the ORR that it is intending to address recommendation 2 by enhancing COSS non technical skills, leadership conversations and training in site safety.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
	b. a suitable briefing to remind trackside staff, as well as route controllers, that trackside staff themselves should decide the most appropriate protection arrangements for carrying out emergency work; and c. the provision of clear protocols on communication and co-ordination arrangements in situations where pressure may arise particularly where performance may conflict with safety.	
3 08/03/2011 03/2012 Two incidents involving track workers between Clapham Jcn & Earlsfield Status: In-progress	The purpose of this recommendation is to determine whether, following the proposed changes to Assessment in the Line, the workload of Track Section Managers is reasonable. If necessary, the role should be restructured to strengthen the supervision of staff competence. Network Rail should review the workload of Track Section Managers, to determine whether it is reasonable, taking account of the changes which are due to be introduced in 2012 as part of the 'Assessment in the Line review project'. This review should include the requirement to manage technical, managerial and administrative tasks; specific attention should be given to the work associated with the management of staff competence and on-site surveillance. If this review identifies that the workload of the role is unreasonable following the proposed changes, practical steps should be taken to restructure responsibilities to improve the delivery of safety-related activities (paragraph 125b).	Network Rail has reported that it is reviewing the workload of Track Section Managers as part of a post implementation review of recent re-organisation and has identified issues with the Track Section Managers workload. Network Rail is now considering the staffing implications of this review. In addition Network Rail has indicated that its proposed actions will reduce the time spent by Track Section Managers in assessment of the time competence reviews by 75%. ORR will update the RAIB by 30 July 2014.
4 08/03/2011 03/2012 Two incidents involving track workers between Clapham Jcn & Earlsfield Status: In-progress	The purpose of this recommendation is to improve the competence of track maintenance staff in safety-critical roles, particularly when exposed to situations with which they are unfamiliar. Network Rail should review the adequacy of training and assessment of track maintenance staff to deliver practical competence, particularly in skills or situations which are encountered infrequently (paragraph 125b). Where necessary, improvements should be made to enhance current processes. Consideration should be given to: a. the extent to which it is appropriate to have detailed and complex rules for responding to infrequently-encountered situations; b. methods of providing experience in situations which an individual may encounter infrequently; c. identifying methods of assessment for situations which it is	Network Rail has carried out a review of training and competence arrangements. It is proposing to address the underlying issue of maintaining staff competence in rarely-experienced situations (which this recommendation addressed) by placing more emphasis on the general competence of the individuals rather than by assuming that training alone is enough to equip any individual with the necessary skills. RAIB is currently awaiting an update by ORR.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
	unlikely a line manager would normally be able to observe; d. reassessing safety-critical competences when there are significant changes in an individual's work pattern, eg changing from day patrolling to planned maintenance work on permanent night shifts; and e. reinforcing the need for regular face-to-face reviews of staff performance and competence by line managers.	
5 08/03/2011 03/2012 Two incidents involving track workers between Clapham Jcn & Earlsfield Status: Implemented	The purpose of this recommendation is to increase the likelihood that a signaller will be correctly informed that an ESR has been implemented by an appropriate person. Network Rail should amend its company standards to clarify who is responsible for informing the signaller that the equipment for an emergency speed restriction has been set up, and that it is no longer necessary to caution trains (paragraph 126b).	Network Rail has reported that it has taken actions to address this recommendation by updating its standard NR/L3/SIG/MGO110. The RAIB has noted improvements in the control of the relevant standard that clarifies the responsibilities of the person initiating an emergency speed restriction. ORR proposes to take no further action.
1 06/04/2011 05/2012 Partial failure of Bridge 94, near Bromsgrove Status: Implementation ongoing	The purpose of this recommendation is to promote the improvement of asset knowledge and to assist asset maintainers and railway staff in identifying the location of structures on site. Network Rail should introduce a programme of marking the position of all track-supporting structures which are not apparent from the surface, so that their presence can be taken into account by those responsible for managing incidents, maintaining the railway, and designing and upgrading infrastructure (paragraphs 109, 112 and 114).	Network Rail have outlined the actions to be taken in response to the recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
2 06/04/2011 05/2012 Partial failure of Bridge 94, near Bromsgrove Status: Implementation ongoing	The purpose of this recommendation is to address the risk arising from visual examinations being incomplete as a result of access constraints. Network Rail should review the ways in which it visually examines those structures which cannot be seen from a safe observation location and where access is constrained. This review should consider the ways in which effective examinations can be carried out, and where this cannot be achieved, alternative measures to manage the risk. Any necessary improvements to the examinations regime identified in the review should be implemented (paragraph 110a).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
3 06/04/2011 05/2012 Partial failure of Bridge 94, near Bromsgrove Status: Implementation ongoing	The purpose of this recommendation is to enhance the information available to staff reviewing examination reports. Network Rail should improve reference information available to those responsible for reviewing structures examination reports, to enhance the accuracy and effectiveness of the report review and evaluation processes (paragraph 111).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.
1 26/05/2011 07/2012 Safety incident between Dock Junction and Kentish Town Status: Implemented	The intent of this recommendation is to improve the way in which incidents involving stranded trains are currently handled across the network with a view to implementing good practice and with the objective of train operators reviewing existing protocols, or jointly developing and agreeing with Network Rail new protocols, that can be applied to the management of all such events. Train operating companies and Network Rail routes over which they operate, should review existing protocols, or jointly develop a new protocol, for stranded trains in accordance with the contents of ATOC / Network Rail Good Practice Guide GPD SP01 'Meeting the needs of passengers when trains are stranded'. The protocols should also consider: l the key findings from this investigation; l the different arrangements in place for the interface between Network Rail and train operators' control functions; l the different approaches to managing incidents and good practice applied in different parts of the main-line and other railway networks; l the need to identify who will take the lead role in managing the incident and how key decisions will be recorded and shared between the affected organisations; l the need to provide on site support to the traincrew of such trains in managing passengers' needs; l the need to provide technical support to the train crew of stranded trains, with a particular focus on means of communicating and the need for coordinating the technical and operational response to such incidents; l the need to recognise when minor operational occurrences have the potential to develop into major incidents unless decisions are taken in a timely and decisive manner;	Train operating companies and Network Rail have reported that they have taken actions 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 / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
	l the views of passenger interest groups and emergency services: and l the positive and negative role that can be played by social networking sites in the management of such incidents	
2 26/05/2011 07/2012 Safety incident between Dock Junction and Kentish Town Status: Implemented	The intent of this recommendation is to ensure that First Capital Connect safety related processes in relation to emergency preparedness are managed effectively. First Capital Connect should carry out a review of its management processes referred to in this report to examine why it did not identify and address deficiencies in emergency preparedness prior to the incident. The lessons learnt from this review should lead to changes in management systems to provide confidence that all such deficiencies will be identified in the future (paragraphs 190h, 192a, 192c, 192f and 196f).	First Capital Connect 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.
3 26/05/2011 07/2012 Safety incident between Dock Junction and Kentish Town Status: Implemented	The intent of this recommendation is for safety related lessons learnt during Significant Performance Incident Reviews and other incident review processes to be effectively tracked, implemented and shared with other railway operators, as appropriate. Network Rail and the train operators should amend their processes so that safety lessons identified during Significant Performance Incident Reviews and other incident review processes can be effectively monitored through to closure, and actions taken as appropriate. The process should also include a mechanism for advising other railway operators of safety lessons that may be relevant to them (paragraph 192e).	ORR has informed the RAIB that most Train Operating Companies have reported the process they have in place to ensure that safety related lessons are identified from Significant Performance Incident Reviews. The RAIB is concerned the process should also include a mechanism for advising other railway operators of safety lessons. ORR advise that this is done by means of the industry's Safety Management Information System, operational safety meetings and notices.
1 05/06/2011 08/2012 Fatal accident at Piccadilly Gardens, Manchester Status: In-progress	The aim of this recommendation is to improve the detail of pedestrian injury data to better understand the role of tram front end design in minimising injury. UK tram operators should work together to improve the data collection on tram front end collisions with pedestrians. This is to include greater detail on the type and severity of any injury received as far as possible, and the likely points of contact with the tram (paragraph 82).	UK tram operators has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.

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2 05/06/2011 08/2012 Fatal accident at Piccadilly Gardens, Manchester Status: In-progress	The aim of this recommendation is to better understand the design of tram front ends and their potential for injuring pedestrians in collisions. UK tram operators in conjunction with UKTram (as a representative body of UK light rail operators), and in consultation with tram owners, should undertake research into the potential for the reduction of injuries to pedestrians involved in front end collisions with trams. Operators should understand the likely ways in which pedestrians can come into contact with the fronts of trams, and the severity of any consequential injuries. Should this research show that it is appropriate to implement design changes, either to existing trams or emerging new designs, these should be done (paragraph 88b).	UK Tram has indicated it is involved in on-going discussion of EU wide standards and that through these means will participate in any discussion of regulatory aspects leading to future EN standards for new vehicles. Some tram operators have indicated they would be willing to participate in research, however UK Tram has indicated that it does not intend to carry out any specific research. ORR will explore further with a view to forming a common understanding. RAIB is concerned that the route by which this recommendation will be addressed remains unclear.
1 10/10/2011 09/2012 Person trapped in doors and pulled along platform at King's Cross Stn Status: In-progress	The intent of this recommendation is that the practicability of providing a modified door seal arrangement on Class 365 trains, when the existing seals are replaced during the major overhaul due between 2013 and 2015, should be assessed. If such modifications are practicable for Class 365 trains, consideration should be given to: modifying any similar doors on other classes of trains; and using modified seals if these are available when seal replacement is undertaken before the next major overhaul (eg following damage). As some trains with similar doors are owned by other organisations, the owner of Class 365 trains should make available to these organisations the information needed for them to determine whether they should consider modifying doors on any of their trains. Eversholt Rail UK (Ltd) should determine whether the next planned replacement of Class 365 door seals provides an opportunity to modify the seal arrangements to reduce the risk associated with trapping of objects and people to be as low as reasonably practicable. If such modification is found to be reasonably practicable, Eversholt Rail UK (Ltd) should: determine whether a similar modification is appropriate for other classes of train owned by the Eversholt Rail Group; determine whether such modifications should be applied if seals require replacement before the scheduled date; and	Eversholt Rail UK (Ltd) has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
	make available to other train owners suitable and sufficient information for these owners to establish whether a similar approach should be considered for any of their train doors (paragraph 48).	
1 03/10/2011 10/2012 Fatal accident at Mexico footpath crossing (near Penzance) Status: Implemented	The intent of this recommendation is for Network Rail to improve safety for all users at Mexico footpath crossing by considering whether improvements can be made to sighting for pedestrians at the crossing and also by considering whether it is possible to move the whistle boards closer to the crossing, taking account of factors that affect audibility (such as local topography) and any other effects that might arise from changing the location of the whistle boards. Taking account of the deficiency in sighting time for vulnerable users, Network Rail should: a. Consider whether improvements can be made to sighting towards the east for pedestrians on the south side of Mexico footpath crossing (paragraph 128a). b. Determine the optimum position of the whistle boards at Mexico footpath crossing and make any required adjustments. The assessment should identify a better location for the boards that will improve the audibility of train horns at the crossing, taking account of the need to provide adequate warning for all users and including consideration of any local factors which may have a bearing on the decision (paragraphs 129a, 129b and 129c)	Network Rail have carried out a review in response to this recommendation and has concluded that it is not practical to move sighting or whistle boards. However Network Rail are proposing to close the crossing therefore mitigating the risk.
2 03/10/2011 10/2012 Fatal accident at Mexico footpath crossing (near Penzance) Status: In-progress	The intent of this recommendation is for RSSB to consider what additional data needs to be captured within SMIS to allow a full evaluation of risk at level crossings and to use it, together with any other relevant data, to enhance its current processes for reviewing the effect of the change made in April 2007 to sounding only the low tone of the train horn for passive crossings between 07:00 hrs and 23:00 hrs. RSSB should: a. identify any additional data that should be captured within SMIS from accidents and near-miss incidents to inform future safety decision-making about level crossings and make the necessary arrangements for that data to be collected by duty holders; and b. using the data obtained from implementing part a of this	RSSB has outlined the actions to be taken in response to the recommendation. ORR reports that RSSB and Network Rail are implementing a project to enable much clearer linkages to be made between ALCRM and SMIS in respect of level crossings. It will enable the features of a specific crossing (such as it being equipped with whistle boards) to be recorded so that it will be possible in future to analyse the effect of changes in operation at crossings (such as the low-tone only rule) to be evaluated as to their effect on the occurrence of incidents. ORR are seeking further information.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
	recommendation and any further intelligence contained within SMIS or other sources, enhance its current approach to reviewing the impact of the change to sounding only the low tone of the warning horn for whistle boards at level crossings between 07:00 hrs and 23:00 hrs and take actions, if appropriate (paragraph 129b).	
3 03/10/2011 10/2012 Fatal accident at Mexico footpath crossing (near Penzance) Status: In-progress	The intent of this recommendation is for Network Rail to undertake a project to develop and implement a national approach to the location and marking of decision points and the measuring of sighting distances at level crossings. This work should be expedited and undertaken as a discrete exercise rather than as part of the three-yearly crossing risk assessment cycle and take account of the emerging findings from RSSB research project T-984 'Research into the causes of pedestrian accidents at level crossings and potential solutions' where relevant. Network Rail, in conjunction with RSSB where appropriate, should undertake a project to develop a standard national approach to: l identifying the optimum decision point at each footpath and user worked crossing used by pedestrians; l marking and signing the optimum decision point at each crossing; l using that decision point in estimates of sighting distance at footpath and other crossings; and l briefing staff involved in crossing risk assessment with regard to the approach. When addressing issues in relation to the marking of decision points, Network Rail should liaise with RSSB on emerging findings from research project T984 'Research into the causes of pedestrian accidents at level crossings and potential solutions', and give consideration to the need to draw upon relevant elements of that research project to inform the development of the national approach. In this context RSSB should prioritise those elements of research project T984 that deal specifically with the marking of decision points, so that they are completed at an early stage in the programme. Once the approach has been developed, Network Rail should implement a programme to review and modify crossings accordingly (paragraphs 130a and 130b).	The ORR reports that the RSSB continues its research into the concept and principles of decision points to inform future planning and guidance standards. An initial report, focused on ways of influencing users to look for approaching trains, was issued in December 2013. This provides useful findings relating to the behaviour of crossing users and design features which may encourage them to look for approaching trains.

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4 03/10/2011 10/2012 Fatal accident at Mexico footpath crossing (near Penzance) Status: Implemented	The intent of this recommendation is for First Great Western to propose changes to Railway Group Standards so that an objective train horn testing regime is mandated after a train has been involved in certain types of accident or incident. First Great Western should make a proposal to RSSB to modify relevant Railway Group Standards to mandate the requirement to test train horns in an objective manner when a train has been involved in any accident or incident involving circumstances where the sounding of the train horn was either required by the rule book or employed by the driver during the event (paragraph 130d).	ORR has reported that First Great Western has made a proposal for a standards change in response to the recommendation. Revised standard GM/RT2273 (issued in June 2014) now includes a requirement for measuring the audibility of train horns where evidence from initial investigations indicates that the sounding of the warning horn could be a factor. ORR proposes to take no further action.
5 03/10/2011 10/2012 Fatal accident at Mexico footpath crossing (near Penzance) Status: Implementation ongoing	The intent of this recommendation is for Network Rail to conduct a network-wide project to optimise warnings for pedestrians at level crossings equipped with whistle boards, taking account of emerging technology and the ability to generate local warnings audibly or visually. Network Rail should conduct a review of the arrangements for providing warnings for pedestrians at level crossings currently equipped with whistle boards. The review should address: a. the costs and benefits at each crossing of providing audible or visual warnings at the crossing itself rather than by approaching trains (taking account of the possibility of the significantly reduced costs of visual warnings referred to in paragraph 120); and b. at crossings where whistle boards will remain, whether the position of the board at each crossing has been optimised taking account of all relevant local factors including (but not limited to) prevailing wind, local topography, sources of noise and the traverse time for crossing users and the positive and negative effects on railway neighbours (paragraph 130e).	Network Rail have outlined the actions to be taken in response to the recommendation. ORR are seeking further information.
1 19/06/2011 11/2012 Incident at Llanbadarn Automatic Barrier Crossing (LM) nr Aberystwyth Status: In-progress	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	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
	ERTMS installations. Assessments of risk should include an evaluation of human factors, previous history, including recorded incidents and accidents (paragraph 179).	
2 19/06/2011 11/2012 Incident at Llanbadarn Automatic Barrier Crossing (LM) nr Aberystwyth Status: Implemented by alternative means	The intention of this recommendation is to provide automatic protection at Llanbadarn crossing (similar to that provided at manned barrier crossings) and to remove the plunger at Aberystwyth station. Network Rail should change the design of circuitry at Llanbadarn ABCL to remove the need for a train driver on Network Rail to operate the plunger before departing Aberystwyth station, but still retain an interface between Network Rail and Vale of Rheidol Railway at the crossing to avoid 'blocking back' of road vehicles (paragraphs 178 and 180).	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.
3 19/06/2011 11/2012 Incident at Llanbadarn Automatic Barrier Crossing (LM) nr Aberystwyth Status: Implemented by alternative means	The intention of this recommendation is that the train operating company undertake a study into drivers workload when departing Aberystwyth station. Arriva Trains Wales should carry out a human factors analysis and risk assessment of the workload of drivers when departing Aberystwyth station under different ERTMS modes and implement any findings (paragraph 178).	Arriva Trains Wales 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.
4 19/06/2011 11/2012 Incident at Llanbadarn Automatic Barrier Crossing (LM) nr Aberystwyth Status: Implemented by alternative means	The intention of this recommendation is to improve the style of driving. Arriva Trains Wales should review the way in which drivers interact with ERTMS and DMIs and develop new training and on-going competence checks to encourage a move away from the 'head down' style of driving undertaken by some drivers under ERTMS (paragraphs 118 and 178).	Arriva Trains Wales 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.
5 19/06/2011 11/2012 Incident at Llanbadarn Automatic Barrier Crossing (LM) nr Aberystwyth Status: Implemented	The intention of this recommendation is to clarify the type and quality of documents being submitted as part of a deviation (including a derogation) from Railway Group Standards. Network Rail should review its processes for seeking deviation (including derogation) from Railway Group Standards and Technical Specifications for Interoperability. The review should include consideration of the extent and nature of the risk assessments that should be carried out, and the supporting information provided, for each deviation request (paragraph 179).	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.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
6 19/06/2011 11/2012 Incident at Llanbadarn Automatic Barrier Crossing (LM) nr Aberystwyth Status: Implemented	The intention of this recommendation is to ensure that location specific risks are considered when standards committees approve, and RSSB authorise, deviations (including derogations). The outcome of these considerations should be recorded. RSSB should review and, if necessary, amend the processes and guidance applicable to Standards Committees and RSSB when taking decisions about applications to deviate from Railway Group Standards. This should include: l considering the provision of guidance for Standards Committees on how to make the necessary judgement about whether the risk assessment and supporting analysis is suitable and sufficient and the extent to which location specific risks should be taken into account; and l guidance on how the basis of the Standards Committee's decisions should be recorded. (paragraphs 179 and 180.)	The RAIB is aware that the RSSB and the Industry Standards Co-ordination Committee have reviewed the recommendation and has produced some guidance on applications for deviations from Railway Group Standards and this has been published on the RSSB website. This guidance encourages applicants to use the method for risk management set out in the Common Safety Method. In addition the Railway Group Standards code has been re-issued and the decision taking principles of deviations from Railway Group Standards have been clarified and briefed to Standards Committees, guidance has also been produced on recording decisions of Standards Committees.
1 10/04/2011 12/2012 Detachment of a cardan shaft at Durham station Status: Implemented	The objective of this recommendation is to ensure that the industry completes the work that has already started on reviewing the end float and alignment requirements, as well as the bearing fit as soon as possible and incorporates the relevant changes in a revised overhaul procedure. This recommendation also includes the need for the industry to review the performance of the oil pump particularly in light of the more recent incident at Plawsworth (paragraph 151). The owners of class 14x vehicles, in consultation with suppliers of overhaul services, should review the final drive design, design tolerances and the maintenance processes in respect of: * end float setting (paragraphs 154a and 154b); * input and pinion shafts alignment (paragraph 154c); * fit of the bearings in the housing bore (paragraph 155a); and * oil pump performance (paragraph 155d). Any required changes identified by the review should be suitably documented and incorporated in overhaul procedures. This recommendation applies to the modified design of the final drive (paragraph 159b).	The owners of 14x class vehicles have reported that they have taken action in response to the recommendation. The RAIB notes that most aspects of the recommendation have been addressed. In particular, a method for checking the oil pump wear has been devised and incorporated in the overhaul process. The rotor material has also been changed to make it more wear resistant. ORR proposes to take no further action.

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2 10/04/2011 12/2012 Detachment of a cardan shaft at Durham station Status: Implemented	The objective of this recommendation is to ensure that designers of railway equipment validate any changes to the design of safety critical components. The owners of class 14x vehicles should review the adequacy of their existing arrangements for ensuring that the suppliers of their equipment validate changes to the design of safety critical components (paragraphs 158c and 159b).	The owners of class 14x vehicles have reported that they have taken actions in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
3 10/04/2011 12/2012 Detachment of a cardan shaft at Durham station Status: Implemented	The objective of this recommendation is to ensure that Northern Rail has in place risk control measures to detect impending final drive failures before they occur. Northern Rail, in consultation with the owners of class 14x vehicles, should develop, validate and implement measure(s) to identify and prevent the onset of failure of a recently overhauled final drive so as to prevent complete failure where practicable (paragraphs 156 and 166). Note: the measure(s) implemented to address this recommendation may be appropriate to all class 14x final drives.	Northern 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.
4 10/04/2011 12/2012 Detachment of a cardan shaft at Durham station Status: Implemented	The objective of this recommendation is to ensure that key design information is made available to companies undertaking work on class 14x final drives. For class 14x vehicles, vehicle owners in consultation with operators should review whether the necessary technical information for the maintenance and overhaul information of the class 14x final drives is still available and if it is, they should arrange for it to be sourced. This information should be kept by the vehicle owners and made available to all existing and future operators, maintainers and overhaulers as relevant (paragraphs 158a and 158b). Note: the principle outlined in this recommendation may also apply to other traction and rolling stock equipment and other fleets of train.	Duty holders have reported that they were unable to source the original information for the final drives. However, the original equipment manufacturer provided guidance on the critical tolerances. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
5 10/04/2011 12/2012 Detachment of a cardan shaft at Durham station Status: Implemented	The objective of this recommendation is to ensure that the final drives are tested in conditions representative of their operational duty before being released to the operator. The owners of class 14x vehicles should review the testing of the final drives after overhaul to confirm that it is done in conditions sufficiently representative of their operational duty	The duty holders have responded that they have revised the arrangements for testing final drives after overhaul, this includes increasing the operating speed from 1455 to 2000 rpm. However, after consideration the industry has concluded that the testing conditions do not need to include the loading on the shafts or other external environmental factors, the reasons for this have been explained.

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	and where appropriate amend the testing requirements accordingly. The following areas should be considered: l operational speed; l loading on the shafts; and l external environmental conditions (paragraph 155c).	ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
6 10/04/2011 12/2012 Detachment of a cardan shaft at Durham station Status: Implemented	The objective of this recommendation is to ensure that Northern Rail's plans for dealing with accidents and incidents are adequate. Northern Rail should complete the review of its procedures governing post-accident actions and implement any necessary changes to ensure that the risks to personnel and the environment from movement of damaged trains and trains with defective equipment is appropriately managed (paragraphs 159a and 167).	Northern 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.
1 11/07/2011 13/2012 Train departed with doors open, Warren Street, Victoria Line, London Status: Implemented	The intention of the recommendation is that train operators should be issued with clear instructions on the action that they should take in the event of an activation of the sensitive edge system and should be briefed on their content. In the light of the Warren Street incident, LUL should review the current instructions on the action that train operators should take in the event of the sensitive edge system being activated. This should include, in particular: l the options available to train operators for dealing with activations of the sensitive edge system and which option should be used first in specific circumstances; l under what circumstances the sensitive edge override should be used; and l the information provided by the TCMS to see whether there is suitable and sufficient information to train operators about using the override. Any necessary changes to the instructions should be implemented, and train operators briefed and/or trained, as appropriate, on the changes made (paragraph 131c)	London Underground Ltd 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.

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2 11/07/2011 13/2012 Train departed with doors open, Warren Street, Victoria Line, London Status: Implemented	The intention of the recommendation is to identify why LUL did not follow good practice for the introduction of the sensitive edge override modification and why this was not detected. In relation to the sensitive edge override modification, LUL should review how its process for managing engineering change and the associated management controls was not followed, and why it did not adequately identify the risks associated with the design modification. The review should include: l why good and established practice in engineering change management was not followed during the design and introduction of the sensitive edge override modification with particular reference to the specification of requirements and the risk assessment of the proposed changes; and l why the management system and controls did not identify or correct the design deficiencies relating to the sensitive edge override modification. LUL should implement any necessary changes to its process for managing engineering change and associated management controls (paragraph 131d.ii).	LUL has outlined the actions to be taken in response to the recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
3 11/07/2011 13/2012 Train departed with doors open, Warren Street, Victoria Line, London Status: Implementation ongoing	The intention of the recommendation is that LUL's competence management arrangements for train operators should: a) identify those who are unable to reliably and correctly respond to out-of-course events (including faults and failures); and b) incorporate arrangements designed to eliminate or resolve the competence deficiencies identified. In the light of the findings of this investigation, LUL should review those elements of its competence management system that relate to the ability of train operators to respond to out-of-course events, faults and failures. This should take into account: l how the evidence from train operators' performance in practical training and instruction is captured and dealt with by the competence management system; l how the evidence from train operators' performance in incidents in service is captured and dealt with by the competence management system (paragraph 124); and l how LUL acts on any deficiencies identified from the above, relating to a train operator's ability to recognise and correctly	LUL has outlined the actions to be taken in response to the recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
	respond to an out-of-course event, with the aim of eliminating any competence deficiencies identified, including how corrective action plans are developed, implemented and monitored to successful conclusion. LUL should implement any necessary changes to the competence management system (paragraph 131d.iii).	
4 11/07/2011 13/2012 Train departed with doors open, Warren Street, Victoria Line, London Status: Implemented	The intention of the recommendation is that train operators should be aware that operational or technical advice is available when required and they should know how to obtain it so that they can effectively resolve faults and failures and avoid mistakes which could reduce safety. LUL should review how and in what circumstances train operators should request assistance following defects in service and implement any changes found necessary. This should include the adequacy of the competence management system and competence assessment of train operators in requesting assistance when needed. In addition: l train operators should be reminded of the availability of operational and technical advice when they are unable to resolve train defects and how they can obtain it; and l service controllers should be reminded that they should challenge train operators if they believe them to be acting outside LUL's mandatory instructions (paragraph 131d.vi).	LUL 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.
1 10/09/2011 14/2012 Incident involving runaway track maintenance trolley nr Haslemere Status: Implemented	The purpose of this recommendation is to improve the effectiveness of the pre-use checks on a trolley and to raise the awareness of hand trolley controllers of the importance of the automatic function of trolley brakes. Network Rail should review and revise the material used for training and assessing the competence of hand trolley controllers, such that the required pre-use checks for all trolleys are clearly and concisely stated in a form which is readily accessible to hand trolley controllers. These checks should be consistent with the requirements of Handbook 10 of the Rule Book, and should include a functional brake test using the brake handle to test automatic operation of the brake. The revised material should also incorporate suitable references to the risk arising from the use of trolleys on gradients (paragraphs 98 and 99).	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.

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2 10/09/2011 14/2012 Incident involving runaway track maintenance trolley nr Haslemere Status: Implemented	The purpose of this recommendation is to provide assurance that the risk associated with the design of a new product has been assessed and mitigated before it is approved for use by Network Rail. Network Rail should clarify the responsibilities for the specification, assessment, approval and introduction to use of each new item of plant that has the capability to import risk to the operational railway. These responsibilities should include confirming that: a. a design risk assessment has been carried out, taking account of realistic and potential failure modes, the way the equipment is used and the effects of wear and tear (paragraph 101); b. the supplier has produced operational and maintenance instructions which provide appropriate mitigation for the risks (paragraph 103a); and c. Network Rail has incorporated the manufacturer's instructions into its own work instructions or assessed the risk of adopting an alternative approach (paragraph 103b).	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.
3 10/09/2011 14/2012 Incident involving runaway track maintenance trolley nr Haslemere Status: Implemented	The purpose of this recommendation is for Torrent Trackside to improve the competence of its staff to maintain plant. Torrent Trackside should improve its processes for providing suitable maintenance information, documents and training to its personnel for all of the plant which they may be required to service. The information provided to its staff should be sufficient to enable them to discharge their responsibilities competently and safely (paragraph 102).	Torrent Trackside 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.
4 10/09/2011 14/2012 Incident involving runaway track maintenance trolley nr Haslemere Status: Implemented	The purpose of this recommendation is for Network Rail to enhance its process for taking action on RAIB recommendations applicable to other areas, or which are relevant to its own operations but have been addressed to other operators. Network Rail should review and, if necessary, revise its processes for taking action on RAIB recommendations, so that suitable actions can be identified, implemented and tracked through to closure. These may have been made for a different system, for example road-rail vehicles instead of trolleys, or may be relevant to its own operations but addressed to other operators (paragraph 103c).	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.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
5 10/09/2011 14/2012 Incident involving runaway track maintenance trolley nr Haslemere Status: Implementation ongoing	The purpose of this recommendation is for Network Rail to determine whether further action is required to improve the culture at Havant track maintenance depot, pending implementation of its national safety culture initiatives. Network Rail should review the actions it has taken at Havant depot since the incident, taking account of the issues identified in this report. If appropriate, it should prepare and implement an action plan for any additional actions necessary to provide an adequate level of safety (paragraph 104a). The review should include (but not necessarily be limited to): a. compliance with rules and procedures; b. reporting of safety-related incidents; and c. management of defective equipment.	Network Rail has outlined the actions to be taken in response to the recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
6 10/09/2011 14/2012 Incident involving runaway track maintenance trolley nr Haslemere Status: In-progress	The purpose of this recommendation is for Network Rail to take account of known areas of poor mobile phone reception when planning infrastructure work with the potential to affect the safety of the line. Network Rail should collate information on known areas of poor mobile phone reception on its infrastructure and, where necessary, make arrangements for alternative means of communication between front-line staff with safety responsibilities (paragraph 104b).	Network Rail has reported that it proposes to take no action in response to the recommendation. ORR not content with duty-holder response, further engagement is proposed.
1 24/08/2011 15/2012 Fatal accident Gipsy Lane Footpath Crossing, Needham Market, Suffolk Status: Implementation ongoing	The intent of this recommendation is for Network Rail to improve the safety of pedestrians at Gipsy Lane crossing. Network Rail should arrange for the closure of Gipsy Lane footpath crossing. If Network Rail is not granted permission by the local council to close Gipsy Lane footpath crossing, it should take appropriate risk-reduction measures so that pedestrians have sufficient time to cross safely, and are adequately warned of approaching trains (paragraphs 117a and 117b).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate (Target date for implementation March 2014).
2 24/08/2011 15/2012 Fatal accident Gipsy Lane Footpath Crossing, Needham Market, Suffolk Status: In-progress	The intent of this recommendation is for Network Rail to improve the accuracy and consistency of data collected at level crossings during site visits and make certain that any changes to previous data are fully understood. Network Rail should have effective systems in place for accurate information gathering during data collection visits at	Network Rail has reported that it is addressing this recommendation through one project remit to improve safety at passive crossings. This project includes the collection of data relating to the seven points listed in the recommendation. ORR continues to monitor progress. Note: In June 2014 ORR informed the RAIB that this recommendation is now considered to have been implemented, and that ORR proposes no further actions.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
	level crossings. Any changes from previous data collected should be clearly understood and feedback given to the relevant person where data is incorrect (paragraphs 117c, 117d, 117e, 117f and 119a). This includes data relating to: l the number of crossing users where the quick census is undertaken; l the use of whistle board protected crossings during the night-time quiet period; l use of the crossing by vulnerable users; l location of whistle boards; l crossing length; l traverse distance; and l distance from each crossing gate and decision point to the nearest rail.	
3 24/08/2011 15/2012 Fatal accident Gipsy Lane Footpath Crossing, Needham Market, Suffolk Status: In-progress	The intent of this recommendation is for Network Rail to develop guidance for use by the level crossing teams on the circumstances under which short-term mitigation measures are to be implemented at level crossings that have insufficient sighting or warning of approaching trains (paragraphs 117d, 117f, 118 and 119d). Network Rail should develop its guidance for use by level crossing teams to include: l a clear definition of what constitutes a ‘higher than usual’ number of vulnerable users; l implementing risk-reduction measures at crossings that have deficient sighting or warning times; and l when speed restrictions must be imposed, what type of speed restriction is to be used (emergency, temporary or permanent) and the timescales for imposing speed restrictions.	Network Rail has reported that it has produced guidance on managiing interim risks at level crossingsand support briefing material. ORR not content with duty-holder response, further engagement ongoing / proposed. Note: In June 2014 ORR informed the RAIB that this recommendation is now considered to have been implemented, and that ORR proposes no further actions.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
4 24/08/2011 15/2012 Fatal accident Gipsy Lane Footpath Crossing, Needham Market, Suffolk Status: Implemented by alternative means	The intent of this recommendation is for Network Rail to enhance the cost-benefit analysis function within the ALCRM so that all benefits are properly considered. Network Rail should combine within the ALCRM the two different cost-benefit analysis tools currently used by the level crossing risk management teams so that all benefits are properly considered as part of the cost-benefit analysis of risk reduction measures (paragraph 119b).	Network Rail has reported that it plans to implement a new tool for assessing the costs and benefits of new safety measures at level crossings, this meets the intention of the recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
1 12/06/2011 16/2012 Track worker struck by a train at Stoats Nest Junction Status: Implementation ongoing	The intent of this recommendation is to achieve, as soon as reasonably practicable, full implementation of processes intended to ensure that managers do not undermine the safety related responsibilities of controllers of site safety. Network Rail should develop a time based programme which expedites the implementation of its existing activities designed to improve safety culture and qualities of safety leadership for: a. track maintenance staff; and b. their managers. Activities covered by this programme should include steps to enhance the quality of safety leadership provided by the COSS, and to address the behaviour of managers when working on site such that this role of the COSS is not undermined.	ORR has outlined the action that Network Rail is taking in response to this recommendation. Three programmes have been developed: COSS non-technical skills program; Safety (leadership) Conversations Programme; and Managing Site Safety Programme. These programmes are designed to improve safety culture and behaviours, these are underpinned by the Network Rail Life Saving Rules Programme.
4 18/07/2011 17/2012 Container train accident near Althorpe Park, Northamptonshire Status: Implemented	The intention of this recommendation is that rail freight operators have arrangements in place sufficient to manage the risk associated with the structural integrity of freight containers carried on the railway. These management arrangements should not be solely reliant on visual checks, because structural defects may be hidden. Management of the risk could be achieved through: l demonstration of compliance to safety requirements (eg of the CSC), and, where necessary, additional actions to address risks not covered; or l structural assessments by a suitable qualified and experienced person. Implementation of the above could be through setting specific contractual requirements or by checking that there is evidence when accepting the container onto the railway.	ORR reports that Freightliner has revised its operational procedures with the intent of controlling the risk of the carriage of freight containers with panels fitted to the exterior. ORR proposes to take no further action.

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	Note: once Recommendation 2 (International Maritime Organization to issue a safety brief) or Recommendation 3 (updating of the CSC) has been implemented, compliance with the CSC would be sufficient in its own right. Freightliner should review its current operating procedures and conditions of acceptance for freight containers. It should confirm that the arrangements in place to ensure that containers (including any externally attached structures) have been assessed as having sufficient structural integrity are sufficient for the risk posed (paragraph 103a). This recommendation may also be applicable to other train operators that carry freight containers.	
1 27/07/2011 18/2012 Derailment at Princes Street Gardens, Edinburgh Status: In-progress	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).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.
2 27/07/2011 18/2012 Derailment at Princes Street Gardens, Edinburgh Status: In-progress	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: l the risk of derailment from worn wheels on a switch rail that is compliant with the TGP8 gauge (paragraphs 172 and 179a); l 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	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
	l 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).	
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.	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.
4 27/07/2011 18/2012 Derailment at Princes Street Gardens, Edinburgh Status: In-progress	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).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
5 27/07/2011 18/2012 Derailment at Princes Street Gardens, Edinburgh Status: In-progress	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).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information. Note: In July 2014 ORR informed the RAIB that this recommendation is now considered to have been implemented, and that ORR proposes no further actions.
1 26/08/2011 19/2012 Derailment at Bordesley junction, Birmingham Status: In-progress	The intent of this recommendation is to reduce the risk of operating a privately owned wagon over the national network once a fleet wide problem has been identified. It aims to improve the likelihood that the Network Rail Network Certification Body (previously known as the PWRAMG), in conjunction with private wagon owners, will implement short term measures, such as additional maintenance checks, to manage the risk in advance of a longer term solution. Network Rail through its Network Certification Body11 should review its own processes to make sure that the risks of continuing to operate a fleet of wagons are managed once a fleet wide problem is discovered. The review should consider including processes for: l assessing the risk of continued operations and identifying the need for any immediate measures that need to be taken to control the risk; l identifying the long term measures that need to be taken to resolve the fleet wide problem; and l assigning responsibilities, priorities and timescales for implementing and managing both the immediate and long term measures. Once the review has identified what reasonable improvements can be made to the processes, the Network Certification Body should implement them (paragraphs 138a, 138c, 138cii and 140a).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.

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2 26/08/2011 19/2012 Derailment at Bordesley junction, Birmingham Status: In-progress	The intent of this recommendation is to prevent a PHA wagon from entering into service with worn suspension components, which can increase the likelihood of the suspension locking-up, increasing the risk of a derailment. This can be achieved through a detailed review, from first principles, of how the suspension components on a PHA wagon wear. The maintenance plan should then be revised as necessary. The review should also address the current anomaly in the PPM & VIBT maintenance plans which calls for certain components to be examined when they cannot be seen if the wheelset is in place. Network Rail through its Network Certification Body, and in conjunction with Lafarge Aggregates Ltd and Wabtec Rail Limited, should lead a fundamental review of how the suspension of the PHA wagon is maintained. The review should call upon relevant technical expertise to: l look at how the suspension works as a whole and understand the role that each individual component performs; and l use this knowledge to document the actions for maintaining a fully functioning suspension, which may include monitoring, measuring and setting limits for the permitted overall amount of wear in the suspension and also individual component wear, including specific actions and limits set to account for those components that are not fully visible when the wheelset is in place. Once the review has decided what actions it is reasonable to take, they should be implemented in the maintenance plans for the PHA wagon fleet (paragraphs 138a, 138b, 138c and 138ciii).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.
3 26/08/2011 19/2012 Derailment at Bordesley junction, Birmingham Status: In-progress	The intent of this recommendation is to reduce the risk of operating the PHA wagon fleet by implementing modifications that have been tested and shown to reduce the number and duration of suspension lock-ups on these wagons. It will also require Lafarge to set a timescale for rolling out the modifications to all of its PHA wagons. Lafarge Aggregates Ltd should, with reference to POCL 651, implement suspension modifications to its fleet of PHA wagons as soon as practicable to reduce the likelihood of suspension lock-ups (paragraphs 138a, 138c and 138ci).	ORR reports that Lafarge is currently converting all 110 PHA wagons in its fleet. RAIB awaits confirmation that this programme is complete.

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4 26/08/2011 19/2012 Derailment at Bordesley junction, Birmingham Status: Implemented	At present, Network Rail track quality supervisors will only be told the lines and mileages to be worked on during a shift, although sometimes they may be asked to give priority to part of the planned mileage. If their brief included information on what the work was aiming to achieve (eg to improve the general track quality, address a number of discrete track geometry faults, etc), Network Rail's track quality supervisors could make better informed decisions on what work to prioritise if the planned work needs to be changed at short notice (eg time is reduced due to a late start). Network Rail should review and implement changes to its processes for briefing staff responsible for controlling the work carried out by on-track machines, so that their briefings will include information on whether any part of the work should be given priority over another and the reasons for such prioritisation (paragraph 138g).	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.
1 19/12/2011 20/2012 Collision between a train and lorry on Llanboidy AHB level crossing Status: Implemented by alternative means	The purpose of this recommendation is to make the crossing, as viewed by a road user, more closely parallel to the rest of the road and hence provide a clear exit if the user is on the crossing when the barriers start to lower. Network Rail should develop an alternative arrangement for Llanboidy level crossing to reduce the apparent misalignment of the road over the crossing relative to the approaches and to bring the road markings and positioning of equipment including road traffic signals into compliance with current traffic signs regulations. Having developed a suitable design, Network Rail should propose to the ORR a revision of the Llanboidy level crossing order accordingly.	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 19/12/2011 20/2012 Collision between a train and lorry on Llanboidy AHB level crossing Status: Non-implementation	The purpose of this recommendation is to give guidance on how to deal with crossings where site constraints force the road over the crossing to not be parallel with its approaches and to ask crossing designers to consider the escape route beyond the crossing rather than just the gap at the barrier line (chapter 2, paragraph 245 of the ORR guide). ORR should revise Railway Safety Publication 7 'Level crossings: A guide for managers, designers and operators' to provide: l guidance on how to assess the misalignment between the centreline of the road over the crossing and the road approaches and how to mitigate its effects; and	ORR has discussed the recommendation with RAIB and explained its view that producing specific guidance on road misalignment and mitigations does not fit with ORR's position that site specific risk assessment is key to the managment of safety at level crossings. However, ORR indicated that it was willing to publish goal setting advice in future guidance. ORR has also informed RAIB that road misalignment issues need to be progressed in conjunction with the Highways Authority. Although disappointed that ORR guidance is not to be reviewed at this stage, the RAIB notes the ORR's willingness to issue goal setting advice in future.

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	l guidance supplementing the existing requirement for a 3 m minimum gap between barrier tip and road edge to ensure consideration of the actual vehicle exit path taking into account the largest vehicle permitted to use the crossing without telephoning the signaller.	
3 19/12/2011 20/2012 Collision between a train and lorry on Llanboidy AHB level crossing Status: In-progress	The purpose of this recommendation is to ensure that the effect of misalignment of the road is taken account of in the Network Rail level crossing risk management process. Network Rail should revise its risk management process for level crossings to take account of risks arising from the misalignment of the road over the crossing relative to the rest of the road.	ORR is monitoring the development of Network Rail guidance in this area and will update RAIB by 28/2/14. Note: In March 2014 ORR informed the RAIB that this recommendation is now considered to have been implemented, and that ORR proposes no further actions.
4 19/12/2011 20/2012 Collision between a train and lorry on Llanboidy AHB level crossing Status: Implemented	The purpose of this recommendation is to prevent parked staff vehicles causing traffic to block back onto a level crossing, in particular vehicles of maximum legal dimensions. Network Rail should provide guidance to its staff and contractors on where to park their vehicles when working on or around level crossings where there is potential for such vehicles to block the access and egress from the crossing.	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.
5 19/12/2011 20/2012 Collision between a train and lorry on Llanboidy AHB level crossing Status: Implemented	The purpose of this recommendation is to find a means of mitigating the risk to the driver from detachment of the cab GRP structure during a collision. Angel Trains should investigate and, where appropriate implement, means of mitigating the risk to cab occupants from detachment of the cab GRP panels in class 175 units during a collision.	Angel Trains has carried out a review in response to this recommendation and proposes no further action. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate. The RAIB notes that Angel Trains conducted an emergency assessment and concluded that there is an effective way to mitigate a future detachment in similar circumstances. However, Angel Trains has concluded that implementation of these measures would not be cost effective. The RAIB is seeking confirmation as to whether alternative lower cost solutions were considered to mitigate the risk of invasion of survival space.
6 19/12/2011 20/2012 Collision between a train and lorry on Llanboidy AHB level crossing Status: Implemented	The purpose of this recommendation is to reassess the risks associated with coupler bump stop mounting and retention arrangement. Alstom and Angel Trains should assess the safety risks of the existing design of the coupler lateral bump stop mounting. Where it is reasonably practicable to reduce the risk of a bump stop detaching and derailing the train, then these improvements	Alstom and Angel Trains have reported that they have taken actions 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 / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
	should be implemented.	
1 20/04/2011 21/2012 Collapse of the OHL near to Jewellery Quarter Tram Stop, Midland Metro Status: Implemented	The purpose of this recommendation is to prevent damage to tensioned components within the Midland Metro OLE system which may result in their failure. National Express Midland Metro should determine the minimum mechanical clearance necessary around tensioned components within the OLE system to prevent contact that may damage them. It should introduce controls to prevent smaller clearances than this minimum from either being introduced into the system or developing during operational service and not being detected (paragraphs 128b, 129d, 130c and 130d).	National Express Midland Metro 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 20/04/2011 21/2012 Collapse of the OHL near to Jewellery Quarter Tram Stop, Midland Metro Status: Implementation ongoing	The purpose of this recommendation is to ensure that persons holding responsibility for directing work on the OLE on the Midland Metro and/or for passing it as being fit for service have access to up-to-date and relevant information regarding its correct installation and configuration. National Express Midland Metro should ensure that staff within its organisation that hold responsibility for supervising work on the OLE and/or for passing it as being fit for service have access to the information needed for them to confirm its correct installation and configuration. This information should be up-to-date and accurate and would typically include items such as manuals, drawings or other supporting documents. This information should be made available to any third-parties undertaking similar duties (paragraph 130a).	National Express Midland Metro has outlined the actions to be taken in response to the recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
3 20/04/2011 21/2012 Collapse of the OHL near to Jewellery Quarter Tram Stop, Midland Metro Status: Implementation ongoing	The purpose of this recommendation is to ensure that the mechanism(s) by which operating loads are able to deform the twin track bracket arm assembly at 18512 pole are identified and addressed. National Express Midland Metro should determine how the operating loads within the OLE are able to cause the type of deformation observed in the twin track bracket arm assembly at 18512 pole in July 2011. It should identify and implement appropriate measures to remove the causes of this deformation (paragraphs 128c and 129c).	National Express Midland Metro has outlined the actions to be taken in response to the recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
4 20/04/2011 21/2012 Collapse of the OHL near to Jewellery Quarter Tram Stop, Midland Metro Status: Implemented	The purpose of this recommendation is to ensure that the ability of bracket foot assemblies to rotate freely is not restricted by contact between pole bracket clevises and clevis covers. National Express Midland Metro should inspect the tensioned section of the OLE to ensure that there is clearance between the clevises of OLE pole brackets and the clevis covers of bracket foot assemblies sufficient to allow these assemblies to rotate freely around pole bracket pins. Any inadequate clearances identified should be rectified (paragraph 129a).	National Express Midland Metro 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.
5 20/04/2011 21/2012 Collapse of the OHL near to Jewellery Quarter Tram Stop, Midland Metro Status: Implemented	The purpose of this recommendation is to ensure that National Express Midland Metro identifies OLE components that may affect the safe operation of the tramway and controls any changes made to them. National Express Midland Metro should identify those OLE components which may affect the safe operation of the tramway. It should review the current processes and practices intended to control changes to these components and implement any actions required to ensure that effective change control is exercised in the future (paragraphs 129a and 131a).	National Express Midland Metro 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.
6 20/04/2011 21/2012 Collapse of the OHL near to Jewellery Quarter Tram Stop, Midland Metro Status: Implementation ongoing	The purpose of this recommendation is to ensure that any risks created by a driver becoming incapacitated during an incident are assessed and that appropriate mitigation measures are adopted by National Express Midland Metro. National Express Midland Metro should assess what, if any, risks would be created by a driver becoming incapacitated during an incident. It should identify and implement appropriate measures to manage any identified risks, such as additional training for CSRs (paragraph 131b).	National Express Midland Metro has outlined the actions to be taken in response to the recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
7 20/04/2011 21/2012 Collapse of the OHL near to Jewellery Quarter Tram Stop, Midland Metro Status: Implementation ongoing	The purpose of this recommendation is to ensure that the mandatory competencies of drivers and CSRs are assessed and that those found critical to the safe operation of the Midland Metro are subject to a competence management system that ensures they are achieved and maintained. National Express Midland Metro should review the current mandatory competences held by drivers and CSRs in order to identify those which are essential to the safe operation of the Midland Metro. It should identify and implement appropriate measures to ensure that all such competences are maintained (paragraph 131d).	National Express Midland Metro has outlined the actions to be taken in response to the recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
1 22/10/2011 22/2012 Fatal accident at James Street station, Liverpool Status: In-progress	The objective of this recommendation is to reduce train dispatch accident risk by improving the way in which trains are operated. Merseyrail should evaluate equipment and operational arrangements that allow the person responsible for train dispatch to: a. observe the platform and train without interruption for as long as possible, ideally until the train has left the platform; and b. stop the train directly and quickly in an emergency. Equipment and operational arrangements should be evaluated for existing trains and platforms, and for planned changes and upgrades. The outcome of the evaluation should be a plan to implement appropriate measures to improve safety at the platform/train interface.	ORR reports that Merseyrail have commissioned a study to use as a basis for addressing this recommendation. RAIB is awaiting further information.
2 22/10/2011 22/2012 Fatal accident at James Street station, Liverpool Status: In-progress	The objective of this recommendation is to reduce the likelihood of falls through the platform edge gap. Merseyrail, in consultation with Merseytravel, Network Rail and other relevant industry bodies, should evaluate equipment and methods that reduce the likelihood of a person falling through the platform edge gap. Platform edge gap fillers and vehicle body side panels should be included in the evaluation, the outcome of which should be a plan to implement measures when appropriate to do so, for example when trains or the infrastructure are changed, improved or replaced.	ORR reports that Merseyrail intends to implement a number of quick win solutions identified as part of Merseyrail risk assessments of its stations. In addition Merseyrail intends to review the outcome of RSSB research to be undertaken in response to recommendation 3.
3 22/10/2011 22/2012 Fatal accident at James Street station, Liverpool Status: In-progress	The objective of this recommendation is for the rail industry to be provided with guidance on reducing risk at the platform/train interface. The Office of Rail Regulation should, in conjunction with railway industry parties, ensure that the findings of this report are taken into account in published guidance on the types of measures that promote the safe movement of trains from platforms through the adequate control of risk. The areas that should be the subject of particular consideration in such guidance are: a. equipment and methods which enable the person responsible for dispatch to observe the platform/train interface without interruption for as long as possible, ideally until the train has left the platform; b. equipment and methods which enable the person responsible	ORR reports that it organised a workshop in conjunction with RSSB. This resulted in a proposal that RSSB carry out detailed research into Platform Train Interface issues (including such items as platform heights and the gap between the platform and the train) and that a rail industry wide strategy be produced. This research was endorsed by the RSSB board and is ongoing.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
	for dispatch to stop a train quickly in an emergency; and c. adaptation of trains and infrastructure to reduce the size of the platform edge gap when this is possible and appropriate, for example in connection with investment in new trains and infrastructure.	
1 21/05/2012 23/2012 Fatal accident at Grosmont, North Yorkshire Moors Railway Status: Implementation ongoing	The intention of the recommendation is that the North Yorkshire Moors Railway should review and improve its safety management arrangements relating to shunting. In particular, it is important that the rules covering shunting represent best practice and that training ensures, and assessment tests, a correct understanding of the dangers inherent in shunting and the control measures in place to allow shunting to be carried out safely. As a minimum, it is intended that the review includes consideration of: • updating the North Yorkshire Moors Railway's rule book to include relevant rules covering shunting contained in the national network rule book that may reflect learning from accidents that have occurred; • improving the method of training so that it is more formalised and reflects a specific syllabus appropriate to the necessary competence to be achieved; • how assessment and re-assessment should cover all the necessary areas of competence relating to shunting and how the outcomes of assessments should be documented; and • the system of management checks and how they should be documented. The North Yorkshire Moors Railway should review its safety management arrangements with regard to shunting. The review should particularly take into account the adequacy of, and best practice in, the following: • the rules covering shunting; • the method of training staff to undertake shunting duties; • the method of assessment of staff, which should include elements of both practical and written assessment, being passed out for shunting duties for the first time and on subsequent occasions; and	North Yorkshire Moors Railway 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.

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	• the system of management checks confirming that safe methods are being applied. The North Yorkshire Moors Railway should implement any necessary changes and should document the revised safety management arrangements (paragraphs 69a and 69b). Note that the principles outlined in this recommendation may apply to other heritage railway operators.	
1 03/02/2012 24/2012 Derailment at Bletchley Junction, Bletchley Status: Implemented	The intention of this recommendation is that Virgin Trains' drivers have sufficient competence in route knowledge and that this knowledge is regularly reinforced by practical application. Virgin Trains should review, and amend as necessary, its route knowledge training and assessment process so that the risk from drivers exceeding permissible speeds at diverging junctions is adequately controlled. The review should consider the need to reinforce the knowledge by driving over the routes concerned, cab simulation, video based scenario training, or other suitable techniques, and the required frequency of each (paragraph 115a(i)). Note that the principle applied by this recommendation may apply to other train operators.	Virgin Trains 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 03/02/2012 24/2012 Derailment at Bletchley Junction, Bletchley Status: In-progress	The intention of this recommendation is that, at potentially high risk diverging junctions, such as those where the approach speed is 60 mph (96 km/h) or greater and requiring a reduction in speed of a third or more, the risk from a train overspeeding on a diverging route following the clearance of the junction signal under approach control conditions is reduced. Different or additional mitigation may be justified depending on the level of risk identified; this may include replacement by position light junction indicators; replacement of junction indicator by one in modern equivalent form; alteration to signalling controls etc. Network Rail, in conjunction with train operators, should assess the risk from overspeeding at potentially high risk diverging junctions with approach control following the clearance of the junction signal. As a minimum, the scope should include consideration of: l junctions where the speed of the diverging route is significantly lower than the approach speed; l junction signals fitted with standard alphanumeric route	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.

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	indicators; and l the type of traction using the junction and its ability to accelerate following the clearance of the junction signal from red. The outcome of the risk assessments should be used to determine whether different/additional mitigation is required (paragraph 115a(iii))	
3 03/02/2012 24/2012 Derailment at Bletchley Junction, Bletchley Status: Implemented	The intention of this recommendation is to clarify the safety significance of the Weekly Operating Notice with respect to the information that drivers need to know and the best way to present and distribute this information. Network Rail, in conjunction with train operating companies, should review and where necessary modify the Weekly Operating Notice to identify the information that drivers need to assure safety and how this content is presented so that it can be readily assimilated (paragraph 116a).	Network Rail has carried out a review in response to this recommendation and proposes no further action. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate. Network Rail does not intend to revise the weekly operating notice at this stage. However, it is encouraged that the industry has identified the introduction of electronic publications as a future opportunity to consider format change in collaboration with industry partners.
1 30/11/2011 25/2012 Road vehicle incursion and collision with train at Stowmarket Road Status: Implemented	The purpose of this recommendation is for Suffolk County Council to validate, and where necessary improve, the way it manages all risk from road vehicle incursions. Suffolk County Council (SCC) should commission an independent review of the actions it has taken following the accident in order to assess their completeness and effectiveness. In particular this should address the following areas (paragraph 141c): l The processes that are in place to ensure all road vehicle incursion locations are identified, assessed (possibly making use of recent internet tools (such as Google Earth / Street View)), acted upon (including consideration of low-cost mitigation measures as well as more expensive options), monitored and periodically reviewed. If actions are identified, SCC should develop and implement a time-bound programme that will be shared with DfT and Network Rail and progress reported to those bodies. This process should be documented and supervised by senior SCC management. l Staff are trained and procedures in place for undertaking and reviewing risk assessments of road vehicle incursion locations. l Data management systems (Accsmap and SCC Indexing system) and associated documents are in place to ensure that all data relating to injury and non-injury accidents at road vehicle	Suffolk County Council have reported taking actions in response to this recommendation and has provided RAIB with a copy of its Audit Report. The report included a 13-point prioritised action plan to address identified deficiencies with a completion date of 30 September 2013.

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	incursion locations can be captured and identified for analysis and review. l Processes are in place to ensure that information about road vehicle incursion incidents is shared between all interested parties. l Processes are in place to ensure that staff are aware of the Department for Transport guidance on the road vehicle incursion and risk assessment process. Any areas for further improvement should be implemented. Progress with the implementation of identified risk mitigation measures should be reported to DfT and notified to Network Rail.	
2 30/11/2011 25/2012 Road vehicle incursion and collision with train at Stowmarket Road Status: Implementation ongoing	The purpose of this recommendation is for Network Rail to improve the way in which it manages the risk from road vehicle incursions. Network Rail should review, and take actions to improve, the effectiveness of its processes for managing the risk from road vehicle incursions. Factors for consideration should include: l the exchange and management of information between different departments within Network Rail; l the profile of RVI within relevant working groups including those involving external parties; l the effectiveness of communications with bodies outside of Network Rail including arrangements for the reporting of all incursion incidents to local highway authorities and police forces; and l arrangements for managing the relationship with local highway authorities and the monitoring of actions taken following assessments of road vehicle incursion risk (paragraphs139, 141d, 142a, 144 and 145).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.
3 30/11/2011 25/2012 Road vehicle incursion and collision with train at Stowmarket Road Status: Implementation ongoing	The purpose of this recommendation is for Network Rail to validate its existing list of locations with significant RVI risk. Network Rail should review its current data on road vehicle incursion sites, possibly making use of recent internet tools (eg Google Earth / Street View), to determine whether its knowledge of all current road vehicle incursion locations is complete and to assess any that had not previously been considered (paragraph	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
	142a and 144).	
4 30/11/2011 25/2012 Road vehicle incursion and collision with train at Stowmarket Road Status: Implemented	The purpose of this recommendation is to improve the flow of information to key parties in the county of Suffolk. Suffolk County Council should brief parish and district councils, and Suffolk Constabulary on possible vehicle incursion locations to encourage the reporting of road traffic concerns at or near such places. The way in which this information is managed should be captured within a SCC procedure (paragraph 141c).	Suffolk County Council have reported taking actions in response to this recommendation and has provided RAIB with a copy of its Audit Report dated 18/1/13.
5 30/11/2011 25/2012 Road vehicle incursion and collision with train at Stowmarket Road Status: In-progress	The purpose of this recommendation is to clarify which body has regulatory and enforcement responsibility concerning highway authorities' implementation of measures to reduce road vehicle incursion risk. Any changes to the existing arrangements will need to be reflected in amendments to the Memorandum of Understanding and will take into account relevant findings in the final report of the Law Commissions on level crossings and any subsequent changes to legislation. The Office of Rail Regulation and the Health and Safety Executive should jointly review their current Memorandum of Understanding and amend it as necessary to define clearly the responsibilities of each party in relation to enforcing actions to mitigate the risk arising from road vehicle incursions onto the railway. The revised Memorandum of Understanding should take into account the findings of the Law Commissions on level crossings, when published, and include: l a clear definition of the circumstances under which each party takes responsibility for enforcement; and l a mechanism for resolving disputes over enforcement responsibility. The Health and Safety Executive and the Office of Rail Regulation should jointly define a time-bound programme for the development and implementation of the review and consider actions that should be taken in the interim period if an amendment to current legislation is required to achieve the desired outcome (paragraph 142d).	ORR reports that the HSE and ORR aim to finalise an MoU between them by December 2014 which will clarify their respective scope of authority for road related matters. In the meantime and whilst the HSE and ORR work together to resolve related legal issues, the ORR has reported it has been in contact with Local Authorities who have generally responded positively in implementing the outstanding actions required of them relating to the risk of road vehicle incursion.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
6 30/11/2011 25/2012 Road vehicle incursion and collision with train at Stowmarket Road Status: Implementation ongoing	The purpose of this recommendation is for the DfT to improve its intelligence on the number and status of road vehicle incursion sites. DfT should undertake a review of all outstanding road vehicle incursion sites and establish a regime to continuously monitor progress with the implementation of the required risk mitigation measures (paragraphs 142b and 142c).	The DfT has notified RAIB that it has established a regime with Networok Rail and ORR for monitoring progress with the implementation of risk mitigation measures at road vehicle incursion sites - progress on sites is to be published on DfT's web site and updated quarterly. The DfT has agreed with Network Rail and ORR that they will send a letter to highway authorities to reinforce the importance of improvments to address the risk of road vehicle incursions - DfT is also discussing with ORR the actions to be taken at high risk sites that have not been addressed.
7 30/11/2011 25/2012 Road vehicle incursion and collision with train at Stowmarket Road Status: In-progress	The purpose of this recommendation is for the lessons learnt from this investigation to be disseminated to local highway authorities. DfT should implement a programme and forum to disseminate the key findings of this report to all local highway authorities. In particular, highway authorities should be reminded of the need to: l ensure that time-bound programmes of action are taken to mitigate risk at known high risk road vehicle incursion locations; l reliably capture all data on all road accidents that have occurred near the railway boundary; l engage with Network Rail, British Transport Police and local police road safety units to ensure that there are processes in place to share intelligence relating to known or new road vehicle incursion locations; and l ensure that all current and new staff are aware of the procedures relating to the risk from road vehicle incursion sites (paragraphs 142b and 142c).	The DfT has informed the RAIB that the lessons learnt in the Stowmarket Road investigation are now being disseminated by means of existingforums, including the UK Roads Liaision Group.
8 30/11/2011 25/2012 Road vehicle incursion and collision with train at Stowmarket Road Status: In-progress	The purpose of this recommendation is to achieve better co-ordination between databases so that relevant intelligence is shared. DfT should, in consultation with ACPO, undertake a review of existing data systems (eg Accsmap/Crash system/National Resilience Extranet) to improve the ways in which data relevant to the risk of vehicle incursions can be exchanged and shared with interested parties such as Network Rail, highways authorities and the police (paragraphs 142b,142c and 144).	The DfT has informed the RAIB that the lessons learnt in the Stowmarket Road investigation are now being disseminated by means of existingforums, including the UK Roads Liaision Group.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
9 30/11/2011 25/2012 Road vehicle incursion and collision with train at Stowmarket Road Status: Awaiting response	The purpose of this recommendation is to achieve better exchange of data between Local Resilience forum 'responders' so that relevant intelligence on outstanding high risk locations is shared. The DfT should, in consultation with the Civil Contingencies Secretariat (Resilience, Capabilities and Risks) and Local Resilience Forums incorporate into the local risk assessment guidance the need to consider the potential for serious accidents at high-risk road vehicle incursion locations (particularly those where mitigation measures have yet to be implemented) (paragraph 143).	DfT has informed the RAIB that it has presented the findings of the investigation to workshops at a nimber of Local Resilience Forums and has provided a written summary to Local Resilience Forums of the key actions recommended following the Stowmarket Road investigation.
1 12/04/2012 26/2012 Person trapped in train door at Jarrow station, Tyne & Wear Metro Status: Implementation ongoing	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 Regio Tyne and Wear should: a. develop its current actions, reported at paragraph 77, to reduce the frequency of door obstruction by passengers into an ongoing 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 (paragraphs 71 and 75).	ORR reports that DB Regio Tyne and Wear has developed and is implementing a detailed action plan to address this recommendation, this included: •□Passenger and driver awareness campaigns; •□Yellow lining/stopping zone marking; •□Reviews of driver viewing aid functionalityy; •□Other engineering initiatives to assure the integrity of the interlocking; •□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. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
2 12/04/2012 26/2012 Person trapped in train door at Jarrow station, Tyne & Wear Metro Status: Implementation ongoing	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: l design of the control circuitry; l ingress protection of the microswitches; l switch cleaning method; l replacement procedures;	ORR reports that DB Regio Tyne and Wear have implemented an engineering plan to address door reliability and has now implemented ways of improving the reliability of the door obstruction detection and traction interlock systems. There is still an outstanding action for the replacement of detection switches during phased maintenance and heavy door refurbishment. This is due for completion in December 2015. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
	and implement identified improvements (paragraph 72).	
3 12/04/2012 26/2012 Person trapped in train door at Jarrow station, Tyne & Wear Metro Status: Implementation ongoing	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 (paragraph 74).	ORR reports that DB Regio Tyne and Wear have reviewed the visibility of the platform train interface and has put in place a program for improvements at a number of stations. This is due for completion in March 2014. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
4 12/04/2012 26/2012 Person trapped in train door at Jarrow station, Tyne & Wear Metro Status: In-progress	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 (paragraph 76).	ORR reports that DB Regio Tyne and Wear have provided new door gauges and that the work instruction for their use has been written, the RAIB therefore considers the that the intent of the recommendation has been met. However, the RAIB notes that the ORR is currently discussing with DB Regio the measured pull out forces and the need for modifying the doors accordingly. ORR not content with duty-holder response, further engagement ongoing / proposed.
5 12/04/2012 26/2012 Person trapped in train door at Jarrow station, Tyne & Wear Metro Status: Implemented	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 (paragraph 76).	RSSB 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.
1 28/01/2012 27/2012 Fatality at Johnson's Footpath Crossing near Bishop's Stortford, Herts Status: In-progress	The intent of this recommendation is to identify reasonably practicable ways of improving the conspicuity of miniature stop light indications at pedestrian crossings, in order to reduce the potential for a level crossing user to be unaware of a red light. This is increasingly important where pedestrians may be distracted by personal music devices and smartphones.	Network Rail has outlined the actions to be taken in response to the recommendation. Network Rail are proposing to trial the installation of back to back lights at two sites and to observe passenger behaviour. ORR are seeking further information.

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	Network Rail should investigate ways to make cost-effective improvements to the conspicuity of visual warnings of approaching trains, taking account of the findings of relevant RSSB research projects. Such improvements might include moving existing miniature stop light indications to the near side of the railway, or the provision of 'back-to-back' or 'side-to-back' indications. The results of this investigation should be used to determine the optimum configurations for new installations, as well as the situations in which it would be reasonably practicable to enhance existing installations. If appropriate, Network Rail should then arrange for the Level Crossing Risk Management Toolkit to be updated accordingly (paragraph 74a).	
2 28/01/2012 27/2012 Fatality at Johnson's Footpath Crossing near Bishop's Stortford, Herts Status: Implementation ongoing	The intent of this recommendation is to prevent signage from obscuring approaching trains at crossings which are equipped with miniature stop lights, thus providing users with an additional warning of an approaching train. Network Rail should amend its guidance on risk mitigations to take account of possible improvements in the visibility of approaching trains at level crossings equipped with miniature stop lights, particularly where signage or other level crossing equipment may obscure the view of the line (paragraph 74a).	Network Rail has outlined the actions to be taken in response to the recommendation. The National Level Crossing Team will review and amend as necessary the guidance on risk mitigations to take account of possible improvements in the visibility of approaching trains at level crossings equipped with miniture stop lights, particularly where signage or other level crossing equipment may obscure the view of the line. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.
3 28/01/2012 27/2012 Fatality at Johnson's Footpath Crossing near Bishop's Stortford, Herts Status: Implementation ongoing	The intent of this recommendation is to make a comprehensive set of risk reduction measures available to level crossing managers. Network Rail, in consultation with RSSB, should review the thirteen level crossing risk reduction options identified in RSSB research report T730, to determine whether or not each option should be included as a mitigation available to those responsible for managing the risk at level crossings (paragraph 75b). Network Rail should embed the findings of this review in its management of level crossing risks, and communicate these changes to all relevant staff. Guidance should be provided to the relevant staff on potential costs and benefits, as well as the specific circumstances in which each measure might be effective.	Network Rail has outlined the actions to be taken in response to the recommendation. The National Level Crossing Team, in conjunction with RSSB, will review the thirteen level crossing risk reduction options identified in the RSSB report T730 and determine whether or not each option should be included as a mitigation available to Level Crossing Managers (LCMs). ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
1 04/09/2011 28/2012 Near miss incident at Ufton AHB crossing, Berkshire Status: In-progress	The intent of this recommendation is to ensure that signallers can see appropriate information on the VDU screen when considering whether to remove reminders from signals and points using controls on IECC workstation VDUs. These include reminders on signals that are used to protect an automatic crossing under local control. Network Rail should identify, and provide a time bound plan to eliminate, all IECC VDU controls which permit a signal or point reminder to be removed in situations where the signaller cannot see sufficient on-screen messages and indications to inform the decision whether to remove the reminder (paragraph 155).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.
2 04/09/2011 28/2012 Near miss incident at Ufton AHB crossing, Berkshire Status: In-progress	The intent of this recommendation is to provide an interface which reduces the likelihood of IECC signallers setting a route over an automatic half barrier level crossing under local control without advising the level crossing attendant and cautioning the train driver. The intent will be satisfied if a similar message is displayed in other crossing failure conditions and/or if the interface is provided within IECC software in a manner which provides a lower safety integrity level than required for some other signalling applications. In respect of automatic half barrier level crossings supervised from IECC installations, Network Rail should consider interfacing information about level crossing status with signal controls to reduce the risk of signallers permitting a train to pass over the crossing without applying the rules applicable to local control. Network Rail should include consideration of a warning or reminder which must be acknowledged on each occasion that a signaller attempts to set a route over a level crossing under local control. If found practical, Network Rail should modify standards and specifications to require this feature in future IECC upgrades and new installations (paragraph 158).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.
3 04/09/2011 28/2012 Near miss incident at Ufton AHB crossing, Berkshire Status: In-progress	The intent of this recommendation is to ensure that, when automatic half barrier level crossings are under local control, IECC displays provide conspicuous warnings compatible with Network Rail's IECC control and indication specification. Network Rail should review the local control indications displayed in respect of automatic half barrier level crossings on the Thames Valley Signalling Centre (TVSC) VDUs to identify any inconsistencies with the associated Network Rail specification requirements. If any of these inconsistencies have the potential to have a significant adverse effect on safety, Network Rail should amend the indications displayed at TVSC	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.

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	and/or the Network Rail IECC control and indication specification so that appropriately positioned conspicuous indications are displayed on all IECC VDUs (paragraph 156).	
4 04/09/2011 28/2012 Near miss incident at Ufton AHB crossing, Berkshire Status: In-progress	The intent of this recommendation is to ensure that the planned arrangements for setting up, alteration and handing back of possessions, and any planned signalling input to associated activities, does not cause an excessive workload for any signaller. Network Rail should examine and implement ways in which the workload of signallers can be kept within reasonable levels during engineering possessions, particularly those involving multiple changes to possession limits. This work should aim to avoid, where practical, situations in which signallers must delay engineering work or train services in order to avoid excessive workload (paragraphs 155 and 157).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.
5 04/09/2011 28/2012 Near miss incident at Ufton AHB crossing, Berkshire Status: In-progress	The intent of this recommendation is to assist incident investigation and competence management of signallers by recording, and facilitating playback of, all signallers' actions during their work at workstations included in future IECC projects. Network Rail should modify appropriate standards and specifications so that future IECC installations include a system to fully record signaller's actions. Information recorded should include: l reminder appliance override; l signaller's selection of VDU view; and l the view used when controls are operated using a VDU view. Where practical, the system should incorporate a playback feature (paragraph 158).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.
6 04/09/2011 28/2012 Near miss incident at Ufton AHB crossing, Berkshire Status: Implemented by alternative means	The intent of this recommendation is to provide consistent and appropriate instructions to level crossing attendants about the positioning of red lamps and flags used when level crossings are under local control. Network Rail should review the existing requirements concerning the number of red flags or lights to be placed on each side of a level crossing under local control. Network Rail, if	Network Rail has reported to ORR that it has amended the training material for crossing attendants and the associated keypoint card, to clarify the way in which the requirements of the Rule Book should be applied.

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	necessary in co-operation with the RSSB, should then take appropriate action to ensure that the correct, clear and consistent information is included in training, instructions and rules applicable to level crossing attendants (paragraph 158).	
7 04/09/2011 28/2012 Near miss incident at Ufton AHB crossing, Berkshire Status: Implementation ongoing	The intent of this recommendation is to correct a misunderstanding among some engineering supervisors concerning the requirement for red lights or flags to be displayed at level crossings at all times when they are under local control unless the barriers are lowered. Network Rail should re-brief staff that level crossing attendants' red lamps/ flags must never be removed when level crossings are under local control and the barriers are raised or the gates are open (paragraph 158).	Network Rail has reported to ORR the actions it proposes to take in response to this recommendation. This includes a re-breifing of the rules that apply to the local control of level crossings.

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Recommendations made in RAIB reports published in 2013

Full details of ORR's reports to RAIB can be found at:
http://orr.gov.uk/what-and-how-we-regulate/health-and-safety/investigating-health-and-safety-incidents/handling-raib-recommendations

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013)
1 02/05/2012 01/2013 Fatal accident at Kings Mill No.1 level crossing, Mansfield Status: Awaiting response	The intent of this recommendation is to raise the awareness of local authorities in relation to the risk associated with new schemes that involve level crossings. The Health & Safety Executive and the Office of Rail Regulation should draw the attention of local authorities to the need to consider the effects and possible risk associated with developments, such as the promotion of multi-user trails, which are likely to result in an increase in the number and type of users of routes passing over level crossings, with particular reference to the needs of vulnerable groups such as the elderly, users of mobility scooters and people with small children (paragraph 122d).	Awaiting response
1 28/01/2012 02/2013 Freight train derailment at Reading West Junction Status: Awaiting response	The intention of this recommendation is to make shippers and freight forwarders aware of published guidelines for the safe packing of freight containers. Following these guidelines ensures that the cargo within a sealed container remains evenly loaded and secure. Recent research indicates that the UK freight industry is not fully aware of the guidelines. The Heath and Safety Executive should identify and use the most appropriate means to make shippers and freight forwarders aware of the need to pack freight containers in accordance with the 'Guidelines for packing of cargo transport units', published by the International Maritime Organization, or an equivalent document. By the same means, it should also remind organisations of the need to have operational procedures, resources, equipment and training in place to ensure that cargo is evenly loaded and secure. The Heath and Safety Executive should also make other national and international safety regulators aware of the findings of this investigation and highlight the need to follow the guidelines (paragraphs 108a and 108a.i).	Awaiting response
2 28/01/2012 02/2013 Freight train derailment at Reading West Junction Status: In-progress	The intention of this recommendation is that rail freight and inter-modal freight terminal operators have arrangements in place to manage the risk associated with allowing poorly packed freight containers on the railway. Recognising that many of the indications of poor packing are hidden, operators should require that their customers give assurance that containers are packed in accordance with recognised good practice (eg the IMO/ILO/UNECE guidelines) and carry out appropriate audits to verify this. Where there is no assurance, operators should make	ORR reports that Freightliner has reviewed its procedures and concluded that they manage the risk of poorly loaded containers as far as is reasonably practicable. Freightliner considers it impracticable to require certification that a container has been packed in accordance with current standards and that Unilateral implementation of such a requirement would potentially disadvantage Freightliner by adding cost and additional bureaucracy and result in loss of business to other transport modes or competitors and therefore have no safety benefit. It

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	physical checks to confirm the evenness of the load. Freightliner should review its operating procedures and conditions of carriage for freight containers. It should then implement any changes necessary to require that (paragraphs 108a, 108a.ii and 108a.iii): l senders provide certification sourced from the relevant party, or have equivalent procedural arrangements in place, which confirm that freight containers offered for transit have been packed in accordance with the 'Guidelines for packing cargo transport units', published by the International Maritime Organization, or an equivalent document; l the effectiveness of such certification or procedural arrangements are periodically audited, with remedial action taken as needed; and that where such arrangements are not in place: l alternative action is taken to confirm that the cargo in a container is both evenly and securely stowed. This recommendation may also be applicable to other operators of rail freight services and inter-modal freight terminals.	also believes that it is impracticable to check that a cargo is evenly and securely stowed as this would require the container to be opened. ORR are seeking further information.
3 28/01/2012 02/2013 Freight train derailment at Reading West Junction Status: In-progress	The intention of this recommendation is for inter-modal freight terminal operators to develop requirements and investigate introducing a suitable monitoring system, for use during routine container and train handling, to prevent freight container wagons entering traffic with a side-to-side wheel load imbalance. The system could be based on the measurement of individual or side-to-side wheel loads prior to the train entering traffic or the identification of freight container load offsets during lifting. Freightliner should develop requirements for a system to monitor and prevent load offsets from containers resulting in wagons with a side-to-side wheel load imbalance entering traffic from its terminals. The system should be considered when terminal equipment is planned to be installed or upgraded, and where practicable the system should be implemented (paragraphs 108a, 108a.ii and 108a.iii). This recommendation may also be applicable to other operators of inter-modal freight terminals.	ORR has reported that the rail freight sector is currently examining the feasability of using Network Rail's GOTCHA Wheel Load Detection Equipment to identify wagons with side to side wheel load imbalance. A two stage approach is proposed. The first stage, which has started is to understand what GOTCHA does and how it works so that alarm limits can be determined. The second stage is to consider how this information can be used operationally to mitigate the risks. ORR are seeking further information.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
4 28/01/2012 02/2013 Freight train derailment at Reading West Junction Status: In-progress	The intention of this recommendation is to prevent track geometry faults being undetected after mechanised track maintenance work is completed. The need for a TQS to inspect and measure the track during and after this work is an important opportunity to identify faults that have formed, or existed beforehand. Recognising that current inspection arrangements may not result in reliable detection, Network Rail should assess and implement practical improvements. These could include consideration of the continuous recording of track geometry using approved manual methods (with allowance made for track deflection due to vehicle loading) and taking full advantage of the track measurement capabilities of tamping machines and similar track maintenance plant. Network Rail should review and, where necessary, improve its processes for the detection of track geometry faults after mechanised track maintenance work to reduce the likelihood of such faults going undetected before the railway is handed back into service (paragraphs 108b.ii and 109).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.
5 28/01/2012 02/2013 Freight train derailment at Reading West Junction Status: In-progress	The intention of this recommendation is for Network Rail to review its current processes for mechanised track maintenance, and develop and make available best practice guidelines that minimise the formation of geometry faults on crossovers and similar sections of track. Network Rail should establish best practice guidelines for mechanised track maintenance work in areas of switches and crossings that minimise the risk of track twist and other geometry faults forming, and remaining on, crossovers and similar sections of track. It should make its track maintenance teams aware of these and the importance of following them, wherever practicable (paragraph 110).	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.
1 16/05/2012 03/2013 Pedestrian struck by a tram at Sandilands tram stop, Croydon Status: Awaiting response	The intent of this recommendation is for London Tramlink to improve its approach to foot crossing risk assessment in order that it can clearly identify those locations where risk is highest and also identify the factors that need to be considered to reduce risk. The revised approach should consider, but not necessarily be limited to, all of the factors identified in the 2011 risk assessment and be extended to all foot crossings on the system. London Tramlink, in conjunction with Tram Operations Ltd, should continue to develop its process for periodically assessing risk at all foot crossings, taking into account the findings from this report in relation to factors that could affect all aspects of	Awaiting response

Number/ Date/ Report No/ inv Title / Status			Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
			the safety of crossing users. The process should include the requirement to use the findings from the periodic risk assessment to identify those crossings where there are reasonably practicable measures that can be taken to reduce the risk and to produce and update a prioritised programme for safety improvements. The process should include a reference to a range of possible safety improvement measures, which should take account of good practice from elsewhere in the rail and tram industry and good practice in highway design (paragraphs 114b, 114c, 115b, 117 and 120c).	
2	16/05/2012	03/2013	The intent of this recommendation is for London Tramlink to consider the need for removing the obstruction to pedestrians' view of approaching trams at Sandilands tram stop, to identify and take action as appropriate to deal with similar obstructions at other tram stops and to implement a process to prevent the installation of equipment in locations which are detrimental to pedestrian safety in the future. London Tramlink should: a. taking into account the improvements made to the configuration of the approach to the foot crossing at the west end of Sandilands, consider whether further action is desirable to improve pedestrians' view of approaching trams as they walk from the bus stop towards the entrance to the west end of Sandilands tram stop, and implement any changes that they deem to be reasonably practicable; b. conduct a review of the approaches to all other foot crossings on the system from all credible directions to determine whether similar obstructions exist elsewhere, and if so, whether they can be removed; and c. embed within its processes for new works in and around the tramway the requirement to consider pedestrian sight lines from all credible approaches to the crossing before approving the positioning of equipment and other infrastructure (paragraph 116a).	Awaiting response
Pedestrian struck by a tram at Sandilands tram stop, Croydon Status: Awaiting response				
3	16/05/2012	03/2013	The intent of this recommendation is for ORR to re-evaluate its guidance to tram operators on optimising sight lines for pedestrians and tram drivers in the vicinity of foot crossings, physically guiding pedestrians as they approach foot crossings so that they are encouraged to look for approaching trams and the need or otherwise for recesses under tram stop platform and paving up to rail level through tram stops. The guidance should	Awaiting response
Pedestrian struck by a tram at Sandilands tram stop, Croydon Status: Awaiting response				

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
	be amended in accordance with ORR's findings. ORR should re-evaluate and revise its guidance to tramway operators on: a. the need for operators to take into account pedestrian and tram driver sight lines from all credible approaches to foot crossings when planning new works on tramways (paragraph 116a); b. the optimum angle of approach for pedestrians at crossings over the tramway (paragraph 120b); and c. the need for a recess under tram stop platforms and the desirability of paving up to rail level between the platform-side rail and the platform face (paragraph 119b). Pending the re-issuing of guidance, ORR should consider how modified advice should be provided to tram operators.	
4 16/05/2012 03/2013 Pedestrian struck by a tram at Sandilands tram stop, Croydon Status: Awaiting response	The intent of this recommendation is for London Tramlink and Tram Operations Ltd to conduct joint investigations into defined accidents and incidents on the Croydon tram network so that infrastructure issues as well as those associated with tram operations are identified. London Tramlink and Tram Operations Ltd should jointly review and amend their procedures and/or practices for investigating accidents and incidents on the Croydon tram system so that joint investigations are always carried out if there is any possibility that the infrastructure might have contributed to the circumstances of the accident. Joint investigations should be mandatory for all significant incidents involving pedestrians being struck by trams (paragraph 117).	Awaiting response
5 16/05/2012 03/2013 Pedestrian struck by a tram at Sandilands tram stop, Croydon Status: Awaiting response	The intent of this recommendation is for London Tramlink to take measures that will secure a high quality of safety decision-making within the organisation. London Tramlink should conduct a review of its arrangements for taking and prioritising safety decisions and take any necessary steps to secure for the organisation sufficient competence in safety and risk management techniques so that key personnel have a clear understanding of the factors that affect risk, the constituent elements of a competent risk assessment and how to use the results to prioritise actions (paragraph 118).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
1 17/02/2012 04/2013 Derailment of a tram at East Croydon Status: Awaiting response	The intention of this recommendation is to promote a review of the signalling and operational arrangements at East Croydon and to take any action needed to make them fit for purpose. London Tramlink should review the operational and signalling arrangements at East Croydon to consider whether undue reliance is being placed on the correct operation of track circuits. If found necessary: additional measures to alert tram drivers to the stopping position in platforms should be provided (paragraph 69); and/or the signalling and/or point control arrangements should be modified (paragraph 71).	Awaiting response
2 17/02/2012 04/2013 Derailment of a tram at East Croydon Status: Awaiting response	The intention of this recommendation is to reduce the risk of rail head contamination affecting the correct operation of track circuits. This should include inspections immediately after events which could lead to accumulation of silt. London Tramlink should identify areas of paved track where silt collects and instigate an improved inspection and cleaning regime where such silt may affect the safe operation of the tramway system (paragraph 70b).	Awaiting response
3 17/02/2012 04/2013 Derailment of a tram at East Croydon Status: Awaiting response	The intention of this recommendation is to establish boundary values for tram wheel tyre to wheel tyre resistances and introduce requirements to take appropriate measurements during planned maintenance. London Tramlink should conduct a fundamental review of track circuit settings and wheel tyre to wheel tyre resistances and then put in place a system of maintenance that ensures the signalling equipment and trams are maintained to mutually compatible standards, which include due allowance for reasonably foreseeable levels of contamination at the wheel/rail interface (paragraphs 70c and 72).	Awaiting response
1 05/01/2012 06/2013 Accident involving a pantograph and the overhead line near Littleport Status: Awaiting response	The intention of this recommendation is to ensure that the risks associated with the authorisation of Temporary Non-Compliance certificates are properly assessed, and that appropriate mitigation is implemented.	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
	Network Rail should review the manner in which Temporary Non-Compliance certificates (TNCs) are being used in relation to overhead line equipment, and take corrective action if they are being issued without risks being adequately assessed and mitigated (paragraphs 170b and 170d).	
2 05/01/2012 06/2013 Accident involving a pantograph and the overhead line near Littleport Status: Awaiting response	The intent of this recommendation is to provide maintenance personnel who are required to check alignment of the overhead line equipment with information that is in a format that can be easily used, and is appropriate for their level of competence. Network Rail should review the standards and procedures for the management of overhead line alignment in order to provide maintenance staff with a simple means of relating measurements that are recorded at site to required alignment criteria. The review should include, at least, consideration of: l providing maintenance staff with information allowing them to determine the acceptable range of contact wire positions at every support; and l removing the need for maintenance staff to make their own assessment of pantograph movements when determining if adjustments to the overhead line are required (paragraphs 170a, 170c and 171).	Awaiting response
1 16/07/2012 07/2013 Dangerous occurrence involving track workers near Roydon station,Essex Status: In-progress	The intent of this recommendation is to improve the means by which controllers of site safety assess both the required and available sighting distance at sites of work. Network Rail should review, and then improve as appropriate, the methods by which controllers of site safety assess both the required and the available sighting distance when at sites of work. The review should include: l the accuracy, availability and presentation of information concerning the available sighting distances at sites of work (particularly in those areas where sighting is limited, or too short to permit a sufficient warning from one or more lookouts); l identification of recommended methods of assessing sighting distance when on site (including the use of special equipment); and l the adequacy of existing training and assessments of	Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
	competence related to the assessment of sighting. (paragraph 93a)	
2 16/07/2012 07/2013 Dangerous occurrence involving track workers near Roydon station,Essex Status: In-progress	The intent of this recommendation is to improve the planning of work on lines that are still open to traffic ('Red Zone working') such that the controller of site safety is provided with an adequate safe system of work pack. Network Rail should review, and then improve as appropriate, the methods by which planners assess the suitability of 'Red Zone working' when selecting an appropriate safe system of work. The review should include: l the availability and presentation of information on sighting distances and warning times; l an assessment of when and how the available information is generally used by planners and any barriers to its use; l the means by which planners establish locations at which multiple lookouts or special equipment are needed in order to provide sufficient warning; and l the means by which planners are informed of locations at which it is impossible for lookout(s) to provide sufficient warning without the use of special equipment. (paragraph 93c)	ORR has reported that Network Rail has undertaken a comprehensive review of the planning of work on the railway infrastructure. The result is a new Control of Work system, based around a permit to work for high risk tasks being introduced from December 2013 and this will fundamentally change the role of the person currently assigned as planner. The person carrying out the work, known as the "Performing Authority" will now be responsible for the planning of the work and will be required to have both task and local knowledge. the Control of Work project will; (1) Provide scalable diagrams, which will include asset locations, etc., so the information available during the planning phase will be of better quality; (2) move away from an office planner – the person doing the work should now specify the plan and the necessary resources required to deliver this plan; (3) require a site visit when the person doing the work does not have recent local knowledge – so this will be the time to plan and identify sighting distances. The System is currently under design/development and will be live in one Delivery Unit by Christmas 2013. The intent is to have the full systems designed and ready for rollout nationally and across the contractor workforce by September 2014.
1 07/07/2012 08/2013 Derailment of a freight train at Shrewsbury station Status: Awaiting response	The purpose of this recommendation is for Network Rail to ensure that the risk-based approach to inspection of points to reduce the risk of derailment, as intended by TRK/053 and as mandated by TRK/001, is correctly implemented by all of its maintenance delivery units. Network Rail should identify the maintenance delivery units which have not correctly adopted the risk-based approach to inspection of points intended by TRK/053 and mandated by TRK/001. It should then re-brief these maintenance delivery units on the requirement in TRK/001 and undertake follow up compliance monitoring activities to confirm that each maintenance delivery unit has adopted an appropriate regime, that all points have been the subject of a risk assessment and that all high-risk points are the subject of regular periodic TRK/053 detailed inspections (paragraph 84a).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
2 07/07/2012 08/2013 Derailment of a freight train at Shrewsbury station Status: Awaiting response	The purpose of this recommendation is to ensure that Network Rail's update of TRK/053 in response to Recommendation 2 of the RAIB report (18/2012) regarding the Princes Street Gardens' derailment also includes the findings of this investigation that have not already been addressed by other actions. Network Rail should rewrite TRK/053, its supporting Track Engineering Form and associated training and competence assessment material to: l remove inconsistency between them (eg TRK/053 and TEF/3029) (paragraph 85b); l align the competence requirements for supervisors in TRK/053 and TRK/001 and define how supervisors must gain and retain this competence in areas where all detailed inspections are undertaken by others (paragraph 84b.iii); l make clear that a routine measurement (currently using a TGP8 gauge) to identify wear is mandatory (paragraph 84b.iii); and l mandate that the routine measurement should be repeated for points in both normal and reverse positions (paragraph 84b.ii).	Awaiting response
3 07/07/2012 08/2013 Derailment of a freight train at Shrewsbury station Status: Awaiting response	The purpose of this recommendation is for Network Rail to consider whether it needs to mandate the removal and re-application of the grease during supervisor's visual inspections of points. Network Rail should determine if it is possible for supervisors to properly and reliably identify wear and damage and to use the TGP8 gauge without removing the grease and accumulated residue. Network Rail should also consider the risks associated with removing and re-applying the grease against the risks associated with a lack of detection of wear or damage. Depending on the outcome of this study, Network Rail should incorporate the findings into a future rewrite of TRK/053 (paragraphs 84b.i and 84b.iv).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
4 07/07/2012 08/2013 Derailment of a freight train at Shrewsbury station Status: Awaiting response	The purpose of this recommendation is to ensure that Freightliner assesses the risks of continued operation when deficiencies in itsmaintenance practices have been identified. Freightliner should confirm that, where disparities are identified between working practices and the requirements of the maintenance instructions, it has arrangements in place to ensure that risks are adequately managed in the interim until the discrepancy is resolved (paragraph 85c).	Awaiting response
1 25/03/2012 09/2013 Collision of a RRV with a buffer stop at Bradford Interchange station Status: Awaiting response	The intention of this recommendation is for Quattro Plant Limited to better control the design and modification of safety critical equipment by using appropriate measures of engineering safety management. Quattro should review, and amend, its procedure for the management of modifications to on-track plant, such that any future modifications which could affect the safety of RRVs follow the principles of engineering change management (paragraph 124), whether the work is done by third parties or in-house (paragraph 162a). As a minimum the review should identify, and action, the changes required to existing procedures to ensure that: a. modifications that have the potential to affect the safety of operation are risk assessed, and any residual risk or newly introduced risk is suitably mitigated by design measures or inclusion within inspection, testing and maintenance procedures; b. safety critical design work on RRVs is checked and subject to independent verification; c. safety critical design work on RRVs is fully and accurately documented; d. systems that are critical to safe operation are formally tested to a documented specification during the initial commissioning, or subsequent modification, to verify that they are operating correctly in all modes of operation, including checking the protection against all credible faults; and e. the access to safety critical systems, such as the rail axle interlocking circuit and its override, are reviewed and suitable restrictions are applied.	Awaiting response

Number/ Date/ Report No/ inv Title / Status			Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
2	25/03/2012	09/2013	The intention of this recommendation is for Quattro Plant Limited to better manage the competence of its personnel and the provision of information to them. Quattro should review and improve its existing systems for the management of staff that are engaged in the maintenance, inspection and operation of road-rail vehicles (paragraphs 160a, 160b, 160c and 162b). As a minimum the review should identify the most effective means of: a. creating sufficient working documents for installation, test, inspection, maintenance and operation of safety critical systems on Quattro's RRVs; b. providing appropriate warning labels informing staff of the precautions to take when overriding safety critical systems on RRVs; c. improving management systems to ensure that: l all technical staff and machine operators are fully trained in the specific operations of safety critical systems on each type of RRV that they inspect, maintain and/or operate, and the safety measures to take when it is necessary to override them; l controls are in place to ensure that only competent persons are able to override safety critical systems; l depot staff and operators have access to information for the installation, test, inspection and maintenance tasks they are undertaking on safety critical systems; and l any unexpected behaviour of an RRV is reported and results in an investigation by a person competent to do so to fully discover the cause of the fault and that it is rectified appropriately before use. d. establishing monitoring systems to check that staff are correctly applying the inspection and maintenance procedures, and are competent to do so, including: l enhanced surveillance and regular audits; and l checks that staff are familiar with, and have access to, documentation that is relevant to the safety critical tasks they are undertaking.	

Collision of a RRV with a buffer stop at Bradford Interchange station

Status: Awaiting response

Awaiting response

Number/ Date/ Report No/ inv Title / Status			Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
			e. checking that the RRVs supplied for use on rail are fully operational and compliant with Quattro's own maintenance documents (these should include physical equipment checks at their depots and on worksites).	
3	25/03/2012	09/2013	The intention of this recommendation is that Network Rail and its rail plant suppliers should minimise the risk of runaways of RRVs that rely upon procedures for their safe operation. Network Rail should review the adequacy of existing measures to prevent RRV runaways of RRVs that are not yet fitted with direct rail wheel braking and implement necessary improvements. This review should consider reinforcing procedures, briefing and training associated with the safe operation of RRVs. Priority should be the prevention of RRV runaways, but consideration should also be given to the means of regaining control should a runaway occur (paragraph 160d).	Awaiting response
Collision of a RRV with a buffer stop at Bradford Interchange station Status: Awaiting response				
4	25/03/2012	09/2013	The intention of this recommendation is that Network Rail should review the scope of the compliance monitoring and assurance activities conducted upon, and by, its rail plant suppliers, and ensure that audits are more comprehensive. Network Rail should review the processes for audits of engineering safety management systems and the competence of technical staff that it conducts, or requires others to conduct, on rail plant suppliers. The objective of the review is to identify ways of improving the focus on engineering safety management and the quality of the end products. The findings of this review should be implemented and documented in revised management processes. In addition, Network Rail should take steps to improve the extent to which plant suppliers' own audits are directed in a similar manner (paragraph 162c).	Awaiting response
Collision of a RRV with a buffer stop at Bradford Interchange station Status: Awaiting response				
5	25/03/2012	09/2013	The intention of this recommendation is that the vehicle acceptance process applicable to modifications to RRVs should be more widely understood. Network Rail should: a. brief all suppliers of RRVs on the scope of the engineering acceptance process, and the importance of submitting accurate, vehicle-specific information to VABs when seeking acceptance of modifications to RRVs (paragraph 163); and	Awaiting response
Collision of a RRV with a buffer stop at Bradford Interchange station Status: Awaiting response				

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
	b. clarify with all suppliers of RRVs, and vehicle acceptance bodies, the extent to which reliance on 'first-of-class' approval is appropriate when modifications are made to a number of different vehicles that fulfil the same functional requirement but are significantly different in their design (paragraph 164).	
1 22/03/2012 11/2013 Dangerous occurrence at Lindridge Farm UWC near Bagworth, Leics. Status: Awaiting response	The intent of this recommendation is to require signalling re-control projects to establish what signalling source records exist for the area being re-controlled, how up-to-date they are and whether they are correlated. If signalling source records are not available, the project's scope should explicitly include activities at its start to produce them so they are available to designers and checkers for their design work, testers for testing the design prior to it being commissioned, and to the maintainers afterwards. Network Rail should revise its project management processes and company standards to require that signalling re-control projects (ie projects transferring the control of signalling from one location to another when the interlocking, trackside signalling equipment and infrastructure are unchanged) identify the signalling source records that are needed for the design, checking and testing of these works. These projects should then be required to include activities within their scope of work to obtain these signalling source records, including correlating, updating or producing records as necessary (paragraphs 144a, 144c and 145).	Awaiting response
2 22/03/2012 11/2013 Dangerous occurrence at Lindridge Farm UWC near Bagworth, Leics. Status: Awaiting response	The intent of this recommendation is to provide Network Rail SDG designers and checkers with a way of working which will remove the possibility of incorrect track circuit names being drawn on a signalling or scheme plan during its production, and then missed during the checking process. This way of working could be implemented in the software used by designers or by procedure. It is equally applicable to conceptual work (such as new designs) and non-conceptual work (such as the redrawing of an existing design). Network Rail should, in consultation with its principal signalling contractors, review the ways of detecting and addressing incorrect track circuit names for all types of signalling or scheme plan production. The review should consider what manual or automatic methods can be used by designers and checkers. The findings of the review should then be implemented by means of a time bound programme for changes to the tools and mandated design processes that cover this activity (paragraphs 144b, 144b.i, 144b.ii, 144d, 144e and 144f).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
3 22/03/2012 11/2013 Dangerous occurrence at Lindridge Farm UWC near Bagworth, Leics. Status: Awaiting response	The intent of this recommendation is to mandate that the position of fixed infrastructure on any new signaller display is correlated to its position on the existing signaller display. By doing this any discrepancies can be identified and the reasons for them understood. Network Rail should revise its design processes so as to specifically require that the position of fixed infrastructure, shown on any new signaller's display being installed by a project, is correlated to its position as shown on the existing signaller's display that is being replaced. This work should be carried out by staff who are qualified as competent to do correlation, and when a discrepancy is found between the new and existing signaller displays, they should record it and investigate the reason for it. Such an investigation should include a check of the accuracy of associated records, such as signalling or scheme plans, and result in the necessary corrections being made to the design or to the records to resolve the discrepancy (paragraphs 144g, 144h and 146b).	Awaiting response
4 22/03/2012 11/2013 Dangerous occurrence at Lindridge Farm UWC near Bagworth, Leics. Status: Awaiting response	The intent of this recommendation is to improve the controls for deferring test logs before a signalling system is commissioned. It calls for the risk to safety, design and functionality to be assessed when deferring an issue raised by a tester on the test log. That way all of the implications of not addressing the test log are considered. Network Rail should revise the controls for managing deferred test logs so that: l the person calling for the deferral of a test log is required to assess the risk to the safety, design and functionality of the signalling system by not closing the test log, record the outcome of their assessment and state any mitigation measures that need to be put in place before the signalling system can be commissioned; and l the tester responsible for commissioning the signalling system is required to review the assessment, agree to the deferral of the test log and to check that the suggested mitigation measures are in place, before allowing the signalling system to be commissioned (paragraph 144i).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
5 22/03/2012 11/2013 Dangerous occurrence at Lindridge Farm UWC near Bagworth, Leics. Status: Awaiting response	The intent of this recommendation is to show a level crossing in the correct place on the signaller's display when telephones are fitted to it. It calls for Network Rail's standards to define who can make the changes to the signaller's display, what information is needed to make the changes and how the changes will be checked afterwards. This recommendation also calls for the change to the level crossing to be recorded in the signalling records, either by updating records such as the signalling plan, or by entering the change in the deficiency register. Network Rail should have procedures in place that require the signaller's display to be updated in a controlled manner when telephones are being fitted at a level crossing for the first time. The requirements should also include what steps must be taken to record the change to the level crossing in the signalling source records (paragraph 146a).	Awaiting response
1 10/08/2012 12/2013 Collision between a stoneblower and ballast regulator near Arley Status: In-progress Status: Awaiting response	The purpose of this recommendation is to point Network Rail to areas identified in this investigation for potential inclusion in its planned review of the management of engineering possessions and worksites and to encourage a fundamental assessment of the fitness for purpose of current arrangements. The recommendation is intended to achieve an improvement in the means for controlling the risk of collision between trains (and with plant) when travelling to and from their sites of work, and to gain assurance that arrangements for controlling the risks of collision are effectively planned and followed. Network Rail should: a. Review potential systems of work, and/or technical solutions, for reducing the risk of collision between trains when travelling to and from their sites of work. This review should include consideration of the following options: i. greater use of the signalling system during engineering work for controlling the movement of trains (paragraph 163); ii. means for detecting the position of trains when normal signalling is suspended; and iii. planning arrangements for engineering work that address the issue of simultaneous movements of trains travelling to and from their sites of work and which minimise the potential for such moves to bring trains in close proximity (paragraphs 162a and 163).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
	b. Review (in consultation with RSSB as appropriate) permitted train speeds applying to movements in sections of line that are closed to normal traffic for engineering work, taking account of human factors affecting a driver's ability to judge the distance they can see to be clear, the stopping distance that can be achieved by their train's braking performance, the limitations of headlight illumination in darkness and a driver's route knowledge (paragraphs 162a and 164a). c. Seek an understanding of the reasons for, and scale of, local unauthorised deviations from possession plans, the effectiveness of the planning process to avoid such changes, as well as the suitability of procedures and managerial arrangements for identifying, and subsequently reviewing, unauthorised changes (paragraph 162d). he measures identified to further reduce the risk of collisions during engineering work should then be implemented in accordance with a timebound programme.	
2 10/08/2012 12/2013 Collision between a stoneblower and ballast regulator near Arley Status: Awaiting response	The purpose of this recommendation is to achieve effective communications between those managing engineering possessions and train drivers (and others working in the possession) so that the potential for miscommunication is reduced to a minimum and that communications take place only when it is safe to do so. Network Rail should: a. Review the equipment and protocols used by those managing possessions for communicating with train drivers to ensure that: i. Drivers are provided with all the information they need to carry out movements safely. The review should consider the use of a standardised format so that any missing information can be readily identified and queried by the driver. In addition to information such as the authorised maximum speed of travel and the driver's treatment of signal aspects, the format could also include confirmation that there are no vehicles obstructing the line to the driver's authorised stopping point (paragraph 162b). ii. Communications with drivers are made in a manner which does not risk distracting the driver from the driving task (paragraphs 162c and 164c).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
	b. Network Rail should define when it may be necessary and appropriate to use competent persons as intermediaries when communicating instructions on vehicle movements to drivers. It should then further consider the formal competencies and non-technical skills required of a competent person and the means by which their competency and non-technical skills may be assured. Consideration should also be given to the practicalities of relaying instructions to drivers in ways that do not risk distracting drivers from their driving task (paragraphs 162b, 162c and 164c). Any resulting actions should be implemented as soon as possible.	
3 10/08/2012 12/2013 Collision between a stoneblower and ballast regulator near Arley Status: Awaiting response	The purpose of this recommendation is to gain assurance from Network Rail that it understands why the managerial arrangements in place at Saltley Infrastructure Maintenance Delivery Unit have not prevented a recurrence of non-compliant behaviour and to ensure that any measures put in place to address these issues will be effective in the long term. Network Rail should review why the measures taken to implement Recommendation 2 from RAIB report 01/2011 to achieve improved management surveillance and supervision at Saltley Infrastructure Maintenance Delivery Unit, did not detect or prevent unauthorised changes being made to a plan of work and instances of non-compliance with its company standards for possession management. It should then implement any measures identified to bring about a sustained behavioural change (paragraphs 162d and 164b).	Awaiting response
1 23/09/2011 13/2013 Partial failure of a structure inside Balcombe Tunnel, West Sussex Status: Awaiting response	The intention of this recommendation is to identify fixings at risk of failure based on current knowledge. Network Rail should, where failure could result in risk, identify where polyester resin anchors have been used to support structures (including overhead electrification and signalling equipment), and develop an appropriate regime to detect loose fixings including tactile testing where appropriate (paragraphs 129a and 132).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
2 23/09/2011 13/2013 Partial failure of a structure inside Balcombe Tunnel, West Sussex Status: Awaiting response	The purpose of this recommendation is to prevent the further use of polyester resin anchors where their long-term performance may compromise safety. Network Rail should implement procedures to prevent the use of polyester resin anchors in circumstances where dampness or shrinkage may affect the safe performance of an asset (paragraph 129a).	Awaiting response
3 23/09/2011 13/2013 Partial failure of a structure inside Balcombe Tunnel, West Sussex Status: Awaiting response	The purpose of this recommendation is to promote additional investigation prior to specifying materials where performance is critical. Network Rail should review, and if necessary amend its processes, such that designers of structures are required to positively confirm the compatibility of materials with their intended application and environment, including fixing metallic structures to masonry, if the application is safety critical (paragraph 130b).	Awaiting response
4 23/09/2011 13/2013 Partial failure of a structure inside Balcombe Tunnel, West Sussex Status: Awaiting response	The intention of this recommendation is to provide an effective asset management response when structure defects (or suspected defects) are reported. Network Rail should review and, if necessary, modify the management arrangements that are now in place to provide an appropriate engineering response when structure defects are reported. This should include assessing the risk in the period prior to rectification, the means to verify that work requested has been carried out, and whether the reported defect is an indication of a wider problem (paragraph 129b).	Awaiting response
5 23/09/2011 13/2013 Partial failure of a structure inside Balcombe Tunnel, West Sussex Status: Awaiting response	The intention of this recommendation is to improve the quality of decision making in the management of structures. Network Rail should undertake a comprehensive review and, if necessary, implement a time-bound plan to modify its levels of staffing and competency requirements so that all technical tasks associated with the management of structures are performed or checked in a timely manner by sufficiently qualified and experienced staff (paragraph 129c).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
6 23/09/2011 13/2013 Partial failure of a structure inside Balcombe Tunnel, West Sussex Status: Awaiting response	The intention of this recommendation is to improve the effectiveness of Network Rail's investigations when abnormal events are reported. Network Rail should revise its arrangements for the briefing of staff or contractors who are sent to investigate reported defects, so that all relevant available information is provided, and correct any deficiencies found in those arrangements (paragraph 129e).	Awaiting response
7 23/09/2011 13/2013 Partial failure of a structure inside Balcombe Tunnel, West Sussex Status: Awaiting response	The intention of this recommendation is to provide adequate opportunities for examination and maintenance activities. Network Rail should review, and if necessary amend, its processes to include adequate safeguards such that sufficient track access is provided for the examination needs of all structures in a manner commensurate with the risk they pose to railway safety (paragraph 131).	Awaiting response
8 23/09/2011 13/2013 Partial failure of a structure inside Balcombe Tunnel, West Sussex Status: Awaiting response	The intention of this recommendation is to improve the effectiveness of Network Rail's examinations regime for structures within tunnels. Network Rail should clarify arrangements, including its relationship with its contractors, for examining structures which are within tunnels, but are not fully encompassed by the normal tunnel management regime (paragraphs 132 and 133).	Awaiting response
9 23/09/2011 13/2013 Partial failure of a structure inside Balcombe Tunnel, West Sussex Status: Awaiting response	The intention of this recommendation is to improve the quality of information available to staff responsible for the management of structures including provision of information not required within the statutory Health and Safety File. Network Rail should review, and if necessary improve, arrangements for recording, storing and retrieving data so that all relevant information is readily available to staff undertaking the examination, evaluation and maintenance of structures (paragraph 134).	Awaiting response
1 28/06/2012 14/2013 Train ran onto a washed-out embankment near Knockmore, NI Status: Awaiting response	The intent of this recommendation is that in future, NIR will be fully aware of locations on its network which are vulnerable to heavy rainfall or flooding events and that NIR will know what actions it should take and when, to maintain the safety of the line. NIR, with the assistance of the Rivers Agency, should:	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
	a. complete the ongoing review of earthworks and structures on its infrastructure with respect to flood risk, including, where necessary, the assessment of the hydraulic capacity of relevant culverts, and identify and prioritise those sites which require mitigating action (eg enhanced monitoring, speed restrictions) in the event of heavy rain or flooding, and the trigger levels for those actions. b. develop and implement a formalised procedure for liaison with the Rivers Agency so that NIR is informed of any future developments or changes to watercourses which might adversely affect its infrastructure by an increased risk of flooding. (paragraphs 129b, 129c and 130a)	
2 28/06/2012 14/2013 Train ran onto a washed-out embankment near Knockmore, NI Status: Awaiting response	The intent of this recommendation is that NIR has plans in place for adverse weather events, including but not limited to, heavy rainfall and flooding, to maintain safety of the line during and following such events. NIR should develop its adverse weather procedures in order to address the risks to train operational safety and include the following: a. improved weather data collection and dissemination within NIR; b. action trigger levels for each type of weather event, the corresponding mitigating actions to be taken (eg enhanced weather monitoring, site patrolling, speed restrictions, line blockage) and the nominated person to make those decisions; c. identification of at-risk locations where special measures must be taken, and the methods and frequency of monitoring at these locations until cessation of the hazard; d. definition of what safety of line checks should be made before the line is opened at full line speed (eg by using the first service train to examine the route at caution, a route proving train or staff on foot); and e. any special measures for infrequently used lines, such as the Antrim branch line.	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
	(paragraphs 129d and 130b)	
3 28/06/2012 14/2013 Train ran onto a washed-out embankment near Knockmore, NI Status: Awaiting response	The intent of this recommendation is that the protocols for safety critical communications following incidents and accidents are clear and in accordance with the NIR rule book, and that the general standard of communications and the operational status of voice recording equipment is improved. NIR should: a. carry out checks to confirm whether drivers are correctly applying the rule book when first reporting incidents, and implement sufficient re-training of its staff as deemed necessary to address any identified areas of deficiency; b. review the actual quality of safety critical communications between train crew, signallers and controllers in practice, and implement sufficient re-training of its staff to address any identified areas of deficiency; c. review how it monitors and enforces good practice in communications, and implement any necessary changes to relevant practices and procedures; and d. implement a system for routinely checking the correct operation of its voice recording equipment. (paragraph 131b)	Awaiting response
4 28/06/2012 14/2013 Train ran onto a washed-out embankment near Knockmore, NI Status: Awaiting response	The intent of this recommendation is that there is adequate ongoing weed control of the Antrim branch line in the future, to enable the safety of the line to be maintained at all times. NIR should put in place a process for the ongoing monitoring and control of weeds on the Antrim branch line, including measures to mitigate the risk to train operations arising from any future missed or ineffective treatments, which result in excessive weed cover that could compromise track inspections, and brief this process out to relevant staff (paragraph 131c).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
5 28/06/2012 14/2013 Train ran onto a washed-out embankment near Knockmore, NI Status: Awaiting response	The intent of this recommendation is that there is improved clarity and consistency in the procedures for incident response, evidence preservation, and accident investigation throughout the company, and that there is appropriate senior management oversight of investigations so that opportunities to learn safety lessons are not compromised or missed. NIR should: a. review the effectiveness of its procedures for checking on the welfare of staff involved directly in an incident or accident and for arranging for their debriefing; b. develop an integrated accident investigation procedure with common types of investigation and clarity about roles and responsibilities for each type; c. arrange to have sufficient competent senior management oversight of its investigations so that the full scope of the event which occurred is recognised early, and to supervise the timely collection of relevant evidence (if the RAIB is not attending), set a thorough remit, and review progress; and d. implement its revised procedures and provide training to relevant staff. (paragraphs 131a and 131d)	Awaiting response
1 19/03/2012 15/2013 Dangerous occurrence at Blatchbridge Jn, nr Frome Status: Awaiting response	The intent of this recommendation is to reduce the risk of items of attached equipment falling from on-track machines onto the track. Network Rail should arrange for the maintainers and operators of its on-track machines to carry out a review of those machines and identify items of attached equipment that have the potential to be a threat to safety should the securing systems fail. For each item identified, the following steps should be taken: a) improve the design and/or maintenance arrangements to decrease the likelihood of the securing system failing; or fit secondary retention systems to prevent attached equipment falling onto the track should the securing system fail; b) consider the use of movement ‘tell tales’ to help identify bolts that are becoming loose; and	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
	c) describe the action that should be taken if attached equipment has been subjected to unusual loadings (such as impact or derailment forces) that may have affected the security of the fastening arrangements (for example, an assessment of the integrity of the fastening arrangements by a competent person) (paragraphs 112b, 112c, 113a, 113b and 114).	
2 19/03/2012 15/2013 Dangerous occurrence at Blatchbridge Jn, nr Frome Status: Awaiting response	The intent of this recommendation is to reduce the risk of staff misunderstanding the activities that need to be undertaken while maintaining on-track machines. Taking into account the output from implementing recommendation 1, Network Rail, in consultation with the maintainers and operators of its on-track machines, should review and improve the maintenance instructions for each machine. As a minimum, the review should include consideration of: a) the clarity of the description of activities to be performed and the sufficiency of the technical detail included; b) the provision of key information such as torque settings at those points within maintenance instructions where the maintainer is required to use them; c) the clarity with which technical terms are described; and d) mandating checks to confirm that maintenance technicians are referring to maintenance instructions and that, where prescribed in the manufacturers maintenance instructions, the correct torque values are being used (paragraphs 112c and 114).	Awaiting response
3 19/03/2012 15/2013 Dangerous occurrence at Blatchbridge Jn, nr Frome Status: Awaiting response	The intent of this recommendation is to extend the scope of recommendations 1 and 2 to include all on-track machines that may operate on Network Rail infrastructure. Network Rail should implement a process to require that the owners of all on-track machines that operate on its infrastructure implement measures consistent with the intent of Recommendations 1, 2 and 5 (paragraphs 112b, 112c, 113a, 113b and 114).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
4 19/03/2012 15/2013 Dangerous occurrence at Blatchbridge Jn, nr Frome Status: Awaiting response	The intent of this recommendation is for Matisa to provide clear instructions so that the necessary maintenance tasks are carried out. Matisa (UK) Ltd should, in consultation with its customers, improve the clarity of the maintenance instructions for its on-track machines. As a minimum, the following improvements should be made: a) describe maintenance activities with sufficient technical detail; b) define the meaning of key terms that are otherwise open to interpretation such as 'check the integrity'; c) identify which fastenings could pose a risk to safety should they fail; d) include key values, such as torque settings, at those points within maintenance instructions where the maintainer is required to use them; and e) describe the action that should be taken if attached equipment has been subjected to unusual loadings (such as impact or derailment forces) that may have affected the security of the fastening arrangements (for example, an assessment of the integrity of the fastening arrangements by a competent person) (paragraphs 112c, 113a, 113b and 114).	Awaiting response
5 19/03/2012 15/2013 Dangerous occurrence at Blatchbridge Jn, nr Frome Status: Awaiting response	The intent of this recommendation is to promote the early identification of corrosion on the bolts/fastenings of high-risk equipment so that corrective action can be taken. Network Rail, in consultation with the maintainers of its on-track machines, and taking into account the output from implementing recommendation 1, should enhance the inspection arrangements for its on-track machines by including a periodic cycle of visual inspections of high-risk fastenings (dismantling the mounting arrangement if necessary) to detect the presence of corrosion. Where corrosion of a bolt/fastening is identified, the source of the corrosion should be found and eliminated where possible. Where this is not possible, the relevant maintenance instructions should be enhanced to include the requirement for more frequent replacement of affected bolts/fastenings (paragraphs 112b and 112c).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
6 19/03/2012 15/2013 Dangerous occurrence at Blatchbridge Jn, nr Frome Status: Awaiting response	The intent of this recommendation is for Matisa to consider all working modes of a machine when designing component mounting arrangements. Matisa (UK) Ltd should modify its processes for designing on-track machines so that it includes the assessment of all modes of operation when designing component mounting arrangements. This includes the mounting arrangements on machines that can operate in a defined 'working mode' (ie at slow-speed) as well as travelling at higher speeds (ie being hauled) (paragraphs 112a and 114).	Awaiting response
7 19/03/2012 15/2013 Dangerous occurrence at Blatchbridge Jn, nr Frome Status: Awaiting response	The intent of this recommendation is to reduce the risk of the P3 cab of P95 machines outside the United Kingdom detaching due to fastening failure. Matisa (UK) Ltd should communicate the findings from this report to operators and maintainers of P95 machines outside the United Kingdom with advice on necessary measures to reduce the likelihood of the P3 cab becoming detached and falling onto the track due to the failure of the fastening system (paragraphs 112a, 112b, 112c, 113c, 113b and 114).	Awaiting response
1 26/04/2012 16/2013 Signal passed at danger at Stafford Status: Awaiting response	The intent of this recommendation is to ensure the competence of Devon & Cornwall Railway's staff undertaking safety-critical work. Devon & Cornwall Railways should implement formal competence management processes for all safety-critical staff, taking account of best practice in the industry. This should include operational, maintenance and managerial staff, whether permanent or contracted-in (paragraphs 86, 87b to 88 and 89). Particular attention should be given to the management of train drivers on 'zero hours' contracts and those who drive for more than one company. Devon & Cornwall Railways should subsequently commission an independent review of the arrangements, and audit, to confirm effective implementation.	Awaiting response
2 26/04/2012 16/2013 Signal passed at danger at Stafford Status: Awaiting response	The intent of this recommendation is to clarify the procedures for making sure that vehicles have been examined by competent persons in accordance with vehicle maintenance instructions. Devon & Cornwall Railways should implement processes to confirm that locomotives, whether owned or hired-in, have been examined by competent persons and assessed as fit to run before they are released for operational use (paragraphs 88 and	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
	90a).	
3 26/04/2012 16/2013 Signal passed at danger at Stafford Status: Awaiting response	The intent of this recommendation is to confirm that the Office of Rail Regulation's revised assessment and supervision process is effective in verifying that the risk from the commencement of operations by new train operators has been appropriately limited. The Office of Rail Regulation should establish a process for the periodic management review of its assessment of safety certificate applications and the resolution of outstanding issues through supervision (paragraph 91). This process should include an evaluation of the extent to which the assessments of applications from new operators are correctly identifying matters for urgent inspection or for refusal of certification. It should also evaluate the effectiveness of post-certification supervision in limiting the risk to the railway in cases requiring urgent inspection.	Awaiting response
4 26/04/2012 16/2013 Signal passed at danger at Stafford Status: Awaiting response	The intent of this recommendation is to ensure that the changes made to Devon & Cornwall Railways' safety management system have enabled its effective implementation. The Office of Rail Regulation should satisfy itself as soon as possible, through supervision, that Devon & Cornwall Railways' revised safety management system (paragraph 101) has established adequate controls regarding the competence of safety-critical staff, traction & rolling stock maintenance and safety culture (paragraphs 88, 89 and 90).	Awaiting response
5 26/04/2012 16/2013 Signal passed at danger at Stafford Status: Awaiting response	The intent of this recommendation is to minimise the risk that an individual's route knowledge will be inadequately assessed. RSSB should amend rail industry standard 'Management of route knowledge for drivers, train managers, guards and driver managers', Ref. RIS-3702-TOM, to require an assessment of the training needs of new staff. This should clarify how 'transferred-in' route and traction knowledge should be assessed by the new employer (paragraph 87c). Particular attention should be given to the management of train drivers on 'zero hours' contracts and those who drive for more than one company.	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
1 04/12/2012 17/2013 Collision between a train and a car at Beech Hill LC, near Finningley Status: Awaiting response	The purpose of this recommendation is to replace, with LED units, all remaining 36 W wig-wags at level crossings, with those having 'Bliss' lenses a priority. Network Rail issued Special Inspection Notice SIN121 on 9 May 2013 to locate all such crossings on its infrastructure. This inspection is to be completed by 27 September 2013. Infrastructure managers should determine which level crossings are fitted with 36 W road traffic light signal (wig-wag) units or with 'Bliss' lenses and draw up a time bound plan so that their replacement with LED units is done as soon as possible, those with 'Bliss' lenses being dealt with first.	Awaiting response
2 04/12/2012 17/2013 Collision between a train and a car at Beech Hill LC, near Finningley Status: Awaiting response	The purpose of this recommendation is to devise a method of assessing the risk of a bright background and glare preventing wig-wags, and other crossing equipment, from being seen and propose means of mitigating this (eg higher powered LED wig-wags, barrier skirts or other means of improving barrier conspicuity). Infrastructure managers should put in place a method of identifying those locations where there is a significant risk from sunlight impairing the visibility of level crossing wig-wags and barriers, propose suitable mitigation measures where appropriate and implement these measures. The method should be based on suitable research and include specific consideration of the possibility of glare, and the wig-wags being seen against a bright background and the barriers against a dark background, taking into account environmental factors and seasonal daytime variations. A programme of training and briefing of the staff carrying out the assessment should be implemented.	Awaiting response
3 04/12/2012 17/2013 Collision between a train and a car at Beech Hill LC, near Finningley Status: Awaiting response	The purpose of this recommendation is to introduce a new 'brighter' type of LED wig-wag for use at sites where sunlight glare has been identified as a factor. Infrastructure managers should, in conjunction with the other industry parties, develop a new type of wig-wag unit with higher luminous intensity than the existing LED units for use at crossings where high background luminance and sunlight glare is a particular problem, and install these units at the appropriate locations.	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
4 04/12/2012 17/2013 Collision between a train and a car at Beech Hill LC, near Finningley Status: Awaiting response	The purpose of this recommendation is to ensure the inspection and maintenance process confirms that wig-wag light units continue to meet their specification (types other than 36 W, which will have been dealt with in Recommendation 1). This may be achieved by means of testing/inspection or by replacing lamps at the end of a defined service life. Infrastructure managers should enhance the inspection and maintenance process for wig-wag lamps to provide assurance that they continue to meet their specified performance standard.	Awaiting response
1 08/01/2013 18/2013 Train fire at South Gosforth Status: Awaiting response	The objective of this recommendation is that Nexus, with support from DBTW, should identify and mitigate the risk associated with electrical breakdown in the train line breaker assemblies. Nexus, supported by DBTW, should carry out a detailed assessment of the risk associated with faults in the line breaker unit, which should include: l identification of actual and potential failure mechanisms and an estimate of their likely frequency; l consideration of the possible effects of line breaker faults, taking account of the configuration and reliability of the electrical protection systems currently provided on the Metro system; and l consideration of possible consequences, taking account of the potential for fire in high risk environments, such as tunnels. Appropriate actions to reduce the risk and potential consequences of failures should be defined and implemented following the review (paragraphs 104a, 104b and 104c).	Awaiting response
2 08/01/2013 18/2013 Train fire at South Gosforth Status: Awaiting response	The objective of this recommendation is to facilitate passenger evacuation from trains using the emergency handles to release doors by identifying a maximum level of force required to operate them and then periodically checking that handles comply with the identified maximum. DBTW, supported by Nexus, should establish the maximum level of force required to enable a diverse range (such as 5th percentile female to 95th percentile male) of passengers to easily operate the emergency door release handles on the Metro car fleet, and implement the necessary inspection and maintenance processes to achieve it in practice, taking account of the need to balance the ease of operation in	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
	emergency with the risk of undesired door releases (paragraph 106a).	
3 08/01/2013 18/2013 Train fire at South Gosforth Status: Awaiting response	The objective of this recommendation is to improve the reliability of the radio communication system used on the Metro network. Nexus should review the communication systems used on the Metro network, establish an appropriate level of reliability/availability for them, and implement, in a defined timescale, the introduction of suitable improvements (paragraph 106b).	Awaiting response
1 28/11/2012 19/2013 Fatal accident at Bayles and Wylies FPC, Bestwood, Nottingham Status: Awaiting response	The intent of this recommendation is that a review is carried out to determine the most effective means of warning persons who may be in the path of a tram. Where not currently the case, tram operators should review whether it is practicable and appropriate for a series of short, urgent, danger warnings, or other audible warning, to be sounded when there is a person on or close to the line who does not appear to be responding to a tram's approach. The review should take account of the human factors implications such as the method of operating the warning. Instructions to drivers should be updated accordingly and briefed as necessary (paragraph 95).	Awaiting response
2 28/11/2012 19/2013 Fatal accident at Bayles and Wylies FPC, Bestwood, Nottingham Status: Awaiting response	The intent of this recommendation is to improve the safety of pedestrian crossings crossed by tramways on segregated lines and where trams run at relatively high speed. Tram operators should review the marking of the boundary of pedestrian crossings crossed by segregated tramways where trams run at relatively high speeds. The review should assess the effectiveness of the means of demarcation in the following respects: l indicating that a pedestrian is entering into a higher risk area; and l prompting pedestrians to look for approaching trams. Where appropriate, the review, which should also take account of the emerging findings of RSSB's research project T984, should include identification of proposals to improve the effectiveness of the means of demarcation. Improvements that are appropriate and practicable should be implemented	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
	(paragraph 96).	
3 28/11/2012 19/2013 Fatal accident at Bayles and Wylies FPC, Bestwood, Nottingham Status: Awaiting response	The intent of this recommendation is that the ORR's guidance on tramways be amended so that it gives guidance to tramway operators on the design of pedestrian crossings crossed by segregated tramways where trams run at relatively high speeds. The Office of Rail Regulation should, in conjunction with the UK tramway industry, ensure that its current guidance to tram operators on pedestrian crossings crossed by segregated tramways where trams run at relatively high speeds is reviewed and amended as necessary. The review should include consideration of the following factors: l the means of indicating that a pedestrian is entering into an area of higher risk; and l the means of prompting pedestrians to look for approaching trams (paragraph 96).	Awaiting response
4 28/11/2012 19/2013 Fatal accident at Bayles and Wylies FPC, Bestwood, Nottingham Status: Awaiting response	The intent of this recommendation is for Network Rail and tram operators to issue guidance to their staff and contractors on the best way to illuminate pedestrian crossings while minimising any visual impairment of pedestrians when looking out for approaching trains/trams. Network Rail and tram operators should provide guidance to their staff or other third party on the best means to illuminate pedestrian crossings, when necessary, taking into account the following factors: l sufficient illumination of the crossing surface to enable pedestrians to see it; l the possible impact on the visual capabilities of pedestrians using the crossing, in particular with respect to glare affecting their ability to detect approaching trains/trams; and l relevant findings from RSSB research project T984 (paragraph 98).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
1 06/08/2012 20/2013 Track worker struck by a train at Bulwell, Nottingham Status: Awaiting response	The intent of this recommendation is that Network Rail provide information to those responsible for the planning, approval and verification of safe systems of work as to which safe systems of work it considers are appropriate for specific locations and circumstances. Network Rail should make information available to those responsible for the planning, approval and verification of safe systems of work about which safe systems of work it considers to be appropriate for a specified section of the line. This information should support the application of the principles of the hierarchy of safe systems of work. Network Rail should ensure that the information: l takes account of variations such as different types of work, resource levels, times of day and environmental conditions; l is periodically validated and maintained; and l is easily accessible to those responsible for the planning of safe systems of work.	Awaiting response
2 06/08/2012 20/2013 Track worker struck by a train at Bulwell, Nottingham Status: Awaiting response	The intent of this recommendation is to ensure that the use of Red and Green Zone safe systems of work is being effectively monitored. Network Rail should review the effectiveness of the current arrangements in place to monitor the usage of Red and Green Zone safe systems of work. It should identify and implement any appropriate measures identified as necessary for this monitoring to be effective (paragraphs 164c (iii) and 166).	Awaiting response
3 06/08/2012 20/2013 Track worker struck by a train at Bulwell, Nottingham Status: Awaiting response	The intent of this recommendation is for Network Rail to ensure that the resources required to plan and approve safe systems of work are adequate within off-track sections. Network Rail should determine what resources are necessary for the effective planning and approval of safe systems of work within off-track sections. It should take action to ensure that the required resources are available and that systems are put in place to ensure that they will remain so should additional tasks be assigned to these sections in the future (paragraphs 164b and 165). This recommendation may also apply to other parts of Network	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
	Rail where staff are required to work on or near the line.	
4 06/08/2012 20/2013 Track worker struck by a train at Bulwell, Nottingham Status: Awaiting response	The intent of this recommendation is for Network Rail to examine if the role of responsible manager has been effectively implemented within its organisation. Network Rail should establish if the requirement within NR/L2/OHS/019 issue 8 for non-cyclic safe systems of work to be approved by the responsible manager has been effectively implemented. In doing this it should specifically consider: l how the requirement was promulgated throughout its organisation; l the briefing and training of responsible managers; and l other barriers to implementation. It should develop a plan to implement any appropriate changes identified (paragraph 168).	Awaiting response
5 06/08/2012 20/2013 Track worker struck by a train at Bulwell, Nottingham Status: Awaiting response	The intent of this recommendation is to provide staff required to go on or near the line with clear and consistent information regarding the calculation of required warning times when working alone. Network Rail, in conjunction with RSSB, should review, and improve where necessary, the sections of the railway rule book and any standards, guidance and forms relevant to the patrolling, examining or inspecting of an open line when working alone. The review and any improvements made should aim to provide clear and consistent information regarding the calculation of required warning times (paragraph 169).	Awaiting response
1 04/12/2012 21/2013 Fatal accident involving a track worker at Saxilby Status: Awaiting response	The intent of this recommendation is for Network Rail to control the risk arising from the use of agency staff in safety leadership roles. Taking account of the findings of this investigation (particularly in respect of the actions of the COSS on site and the absence of any effective performance review applied to the COSS), Network Rail should identify and then implement, suitable controls to assure the adequate performance of agency staff in safety leadership roles and/or take steps to reduce its dependence on such staff (paragraph 111a).	Awaiting response Note: In October 2014 ORR informed the RAIB that implementation of this recommendation is ongoing.

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
2 04/12/2012 21/2013 Fatal accident involving a track worker at Saxilby Status: Awaiting response	The intent of this recommendation is to address the safety risk arising from the management of agency staff in all roles involving work on and around the track. Network Rail, in consultation with all Sentinel sponsor organisations, should develop and implement arrangements to more effectively manage the risk arising from the use of agency staff undertaking work on and around the track. In developing the arrangements, Network Rail should, as a minimum, define improvements in respect of the following issues: a. the requirement for the performance, attitudes and behaviour of agency staff to be regularly monitored; b. the actions to be taken when deficiencies are identified, in particular the possible mechanisms to remedy the deficiency, reasonable timescales within which the deficiencies should be addressed, and the interim measures that can be applied pending resolution; c. the process for temporary suspension of the relevant certification within the Sentinel system and for the prompt reinstatement (to include guidance to contractors and agencies on their responsibilities for updating the status of affected agency staff) on Sentinel; and d. the arrangements for employers to share information in respect of the individuals involved in multiple investigations (paragraphs 111b, 111d and 112a and 112d).	Awaiting response Note: In October 2014 ORR informed the RAIB that this recommendation is now considered to have been implemented, and that ORR proposes no further actions.
3 04/12/2012 21/2013 Fatal accident involving a track worker at Saxilby Status: Awaiting response	The intent of this recommendation is for Carillion, in conjunction with SkyBlue, to validate, and where necessary improve, the way it manages the performance of agency staff. Carillion in conjunction with Sky Blue should commission an independent review of the changes they have made to their safety management arrangements following this accident (referred to in paragraphs 143 and 145), with the aim of confirming that they have delivered the necessary improvements. The review should include specific consideration of whether the measures taken in respect of managing the performance of agency staff, and following-up accidents and incidents involving them, have been effective in controlling the risk identified in this report. The review should be completed by March 2014 (paragraphs 112a, 112d and 112e).	Awaiting response Awaiting response Note: In October 2014 ORR informed the RAIB that this recommendation is ongoing

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
4 04/12/2012 21/2013 Fatal accident involving a track worker at Saxilby Status: Awaiting response	The intent of this recommendation is to enhance the welfare of witnesses attending industry investigations into serious incidents and accidents. Network Rail, in consultation with other industry partners as appropriate, should review its processes and examine ways of improving their practices for interviewing witnesses who have been involved in serious incidents and accidents. Taking account of best practice from specialists in this area, it should develop guidance on planning for interviews and techniques for dealing with such witnesses. Training should be provided for individuals who are involved in industry investigation panels or conduct interviews as part of an investigation (paragraph 113).	Awaiting response Note: In October 2014 ORR informed the RAIB that it now considered the status of this recommendation to be 'In-progress'.
1 27/12/2012 22/2013 Derailment of a freight train at Barrow-upon-Soar, Leicestershire Status: Awaiting response	The intent of this recommendation is to reduce the risk of an embankment failure due to flooding by providing the Route geotechnical team with information that will trigger an earthwork evaluation. Network Rail should amend its company standards so that track maintenance staff are required to notify the Route geotechnical team if the foot of an embankment is saturated, flooded or has recently been flooded, and a track geometry defect or loss of ballast is found on top of the embankment (paragraphs 114b, 114c, 114d.i, 114d.ii, 114d.iii and 115b).	Awaiting response
2 27/12/2012 22/2013 Derailment of a freight train at Barrow-upon-Soar, Leicestershire Status: Awaiting response	The intent of this recommendation is to reduce the risk of an embankment failure by improving the process used by the Route geotechnical team to determine if an earthwork should be included in the flood warning database. Network Rail should amend its processes so that when assessing whether an embankment should be included in the flood warning database, the assessment should include additional factors which are relevant to its stability such as how the embankment was constructed (as far as can reasonably be determined) to understand the effect of water on any planes between different types of materials, and the history of flooding or ponding at the foot of the embankment (paragraph 115a).	Awaiting response

Number/ Date/ Report No/ inv Title / Status	Safety Recommendation	Summary of status (based on reports to RAIB up to 31 December 2013))
3 27/12/2012 22/2013 Derailment of a freight train at Barrow-upon-Soar, Leicestershire Status: Awaiting response	The intent of this recommendation is to reduce the risk of an embankment failure by improving the quality of the earthwork evaluation process used by the Route geotechnical team. Network Rail should amend its company standards so that when an earthwork evaluation is carried out on an embankment, the evaluation should consider how the geometry of the track on top of an embankment has changed over time, using data recorded by Network Rail's track geometry recording trains. If the evaluation has been triggered by a change in track quality, flooding or the ponding of water, and includes an assessment of the embankment's susceptibility to flooding or water action, the levels of recent rainfall onto the top of the embankment should be considered as part of the assessment (paragraphs 116a and 116b).	Awaiting response

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