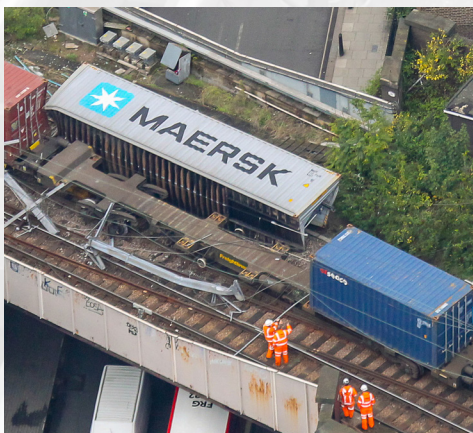




Rail Accident Investigation Branch



Annual Report 2014

Section 2:

Reported Status of RAIB's Recommendations 2014

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- the Railways and Transport Safety Act 2003; and
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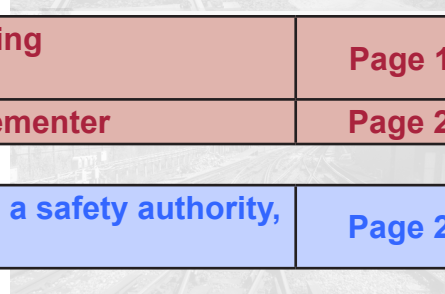
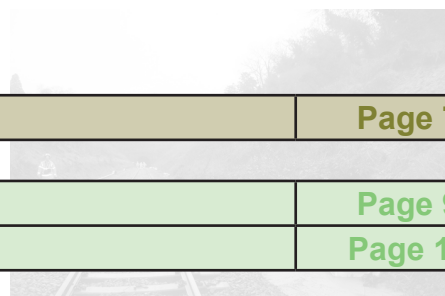
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**Annual Report 2014 Section 2:
Reported Status of RAIB's
Recommendations 2014**



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Index of investigations included in this report

National Networks			
Place	Date	Accident / Incident	Page No
Class investigation - Autumn Adhesion incidents as Esher and Lewes Pt3 incidents as Esher and Lewes Pt3	25-Nov-05 & 30-Nov-05	Review of adhesion-related incidents	26
King Edward Bridge, Newcastle	10-May-07	Derailment of a freight train	27
Limavady	02-Aug-07	Level crossing fatality	27
Croxton Level Crossing	12-Sep-06	Passenger train derailment	27
Didcot North Junction	22-Aug-07	SPAD and subsequent near miss	27
Santon near Foreign Ore Branch Junction, Scunthorpe	25-Jan-08	Derailment of a freight train	28
Investigation into safety at user worked crossings	13-Jun-08	Class investigation	29
Bridge GE19 near London Liverpool Street	28-May-08	Collision with an obstacle	29
Halkirk, Caithness	29-Sep-09	Level crossing fatality	30
Bridge RDG1 48 (River Crane) between Whitton & Feltham	15-Nov-09	Infrastructure failure	30
Washwood Heath	06-Mar-10	Collision with an obstacle	30
Moreton-on-Lugg	16-Jan-10	Level crossing fatality	31
Ashburys	05-May-10	Runaway incident	31
Cruachan, Argyll	06-Jun-10	Collision with an obstacle	32
Investigation into safety of automatic open level crossings	02-Feb-10	Class Investigation	32
Oxshott Station	05-Nov-10	Collision with an obstacle	33
Sewage Works Lane near Sudbury, Suffolk	17-Aug-10	Level crossing injury	33
Shap and Tebay, Cumbria	17-Aug-10	Runaway incident	34
Summit Tunnel, near Todmorden, West Yorkshire	28-Dec-10	Collision with an obstacle	34
Brentwood station	28-Jan-11	Train movement accident involving passengers/pedestrians	36
East Langton, Leicestershire	20-Feb-10	Passenger train derailment	36
King's Cross Station	10-Oct-11	Train movement accident involving passengers/pedestrians	37
Mexico footpath crossing (near Penzance)	03-Oct-11	Level crossing fatality	37
Llanbadarn near Aberyswyth	19-Jun-11	Level crossing near miss	38
Durham Station	10-Apr-11	Train defects	38
Haslemere Surrey	10-Sep-11	Runaway incident	39
Gipsy Lane Footpath Crossing, Needham Market, Suffolk	24-Aug-11	Level crossing fatality	40
Stoats Nest Junction	12-Jun-11	Staff hit by train (Injury/near miss)	41
Althorpe Park, Northamptonshire	18-Jul-11	Out of gauge train collision	42
Princes Street Gardens, Edinburgh	27-Jul-11	Passenger train derailment	43
Bordesley Junction, Birmingham	26-Aug-11	Derailment of a freight train	45
Llanboidy West Carmarthenshire, Wales	19-Dec-11	Level crossing injury	46
James Street Station, Liverpool	22-Oct-11	Train movement accident involving passengers/pedestrians	48
Stowmarket Road, Old Newton, Suffolk	30-Nov-11	Collision with an obstacle	49
Johnson's Footpath Crossing near Bishop's Stortford, Herts	28-Jan-12	Level crossing fatality	50
Ufton AHB crossing, Berkshire	04-Sep-11	Level crossing near miss	52
Kings Mill No.1 level crossing, Mansfield	02-May-12	Level crossing fatality	53
Reading West Junction	28-Jan-12	Freight train derailment	54
Accident involving pantograph and the overhead line near Littleport	17-Jan-12	Infrastructure failure	57
Roydon station	16-Jul-12	Staff hit by train (near miss)	58
Shrewsbury station	07-Jul-12	Derailment of a freight train	58
Bradford Interchange station	25-Mar-12	Runaway incident	60
Lindridge Farm User Worked Crossing near Bagworth, Leicestershire	22-Mar-12	Level crossing near miss	62
Arley	10-Aug-12	Collision with other train	65
Balcombe Tunnel, West Sussex	23-Sep-11	Infrastructure failure	67
Knockmore NI	28-Jun-12	Infrastructure failure	69
Blatchbridge Junction near Frome	19-Mar-12	Train defects	69
Signal passed at danger, Stafford	26-Apr-12	SPAD	72
Bulwell, Nottingham	06-Aug-12	Staff hit by train (Injury)	76
Saxilby	04-Dec-12	Staff hit by train (Fatality)	78
Barrow-upon-Soar, Leicestershire	27-Dec-12	Freight train derailment	79
Motts Lane level crossing	24-Jan-13	Level crossing fatality	80 & 86

Index of Reports

National Networks			
Place	Date	Accident / Incident	Page No
Castle Donington, Leicestershire	21-Jan-13	Freight train derailment	81 & 87
Old street and Essex Road, London	08-Mar-13	Infrastructure failure	82 & 87
Buttington Hall user worked crossing, Welshpool	16-Jul-13	Level crossing injury	82 & 93
Ballymoney NI	31-May-13	Level crossing near miss	83 & 99
Athelney	21-Mar-13	Level crossing fatality	89
Ordsall Lane Junction, Salford	23-Jan-13	Passenger train derailment	93
Landslips affecting Network Rail infrastructure	28-Jun-12	Class Investigation	95
Norwich	21-Jul-13	Collision with other train	97
Llandoverly	06-Jun-13	Level crossing near miss	100
Butterswood, North Lincolnshire	25-Jun-13	Level crossing near miss	102
Aspatria	26-Oct-13	Near miss (non level crossing)	105
Queens Street tunnel, Glasgow	21-Apr-13	Runaway incident	106
Southend Central & Whyteleafe	28-Aug-13	Near miss (non level crossing)	110
Newcastle	05-Jun-13	Train movement accident involving passengers/pedestrians	112
Gloucester	15-Oct-13	Freight train derailment	115
Primrose Hill/Camden Road	15-Oct-14	Freight train derailment	118
Denmark Hill station	01-Aug-13	Infrastructure failure	119
East Coast Main Line	14-Sep-12	Class Investigation	120
Bridgeway	16-Jan-14	Collision with an obstacle	121
Chester station	20-Nov-13	Collision with an obstacle	123
Liverpool Street, London	23-Jan-13	Passenger train derailment	124
Jetty Avenue, Woodbridge	14-July-13	Level crossing accident	124
Greenford	20-Mar-14	SPAD	127

Light Rail			
Place	Date	Accident / Incident	Page No
Jewellery Quarter Tram Stop	20-Apr-11	Collision with an obstacle	47
Pedestrian struck by a tram at Sandilands tram stop, Croydon	16-May-12	Level crossing injury	54
Derailment of a tram at East Croydon	17-Feb-12	Passenger train derailment	57
Bayles and Wylies Footpath Crossing, Bestwood, Nottingham	28-Nov-12	Level crossing fatality	75
London Tramlink, Croydon	13-Apr-13	Train movement accident involving passengers/pedestrians	90

Metro			
Place	Date	Accident / Incident	Page No
Warren Street, Victoria Line, London	11-Jul-11	Train movement accident involving passengers/pedestrians	39
Jarrow station, Tyne & Wear Metro	12-Apr-12	Train movement accident involving passengers/pedestrians	50
South Gosforth	08-Jan-13	Fire on rolling stock	74
Holland Park station, London	25-Aug-13	Train defect	108
Holborn station, London	03-Feb-14	Train movement accident involving passengers/pedestrians	119

Heritage			
Place	Date	Accident / Incident	Page No
Collision on the Great Orme Tramway	15-Sep-09	Collision with other tram	29
Kirklees Light Railway	03-Jul-11	Train defect	36
Locomotive failure near Winchfield	23-Nov-13	Train defect	104

Section 5: Channel Tunnel			
Place	Date	Accident / Incident	Page No

Introduction

For details about the role of the Rail Accident Investigation Branch (RAIB), see [Section 1 of the Annual Report](#) and the RAIB website at: www.gov.uk/raib.

Details of the process of how recommendations are followed through and resulting actions reported to the RAIB are in Section 1 under Recommendations.

This part (Section 2) 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 2014. Further progress may have been made since January 2015, if so this will be included in the RAIB Annual Report for 2015.

The RAIB does not have a formal role in the follow up of its recommendations except where the response to an earlier recommendation is causal to another accident/incident.

Where the RAIB has material concerns, based on risk, over the way that an organisation has responded to the recommendation the RAIB raises the concern to the relevant Safety Authority and reflects any outstanding concerns in the Annual Report.

Note: From 1 April 2015 'The Office of Rail Regulation' became 'The Office of Rail and Road'.

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.

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

- ▲ The red triangle shows recommendations where the RAIB has 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 2014. 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.

Details of the recommendation process are in Section 1 under Recommendations.

The RAIB only follows up its recommendations when a previous response is causal to an accident/incident.

Table 1 - List of investigation reports by year, showing status of recommendations as at 31 December 2014

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 Tunnel	16				16
21	Wagon derailment at York station	4				4
22	Derailment near Moy, Inverness-shire	9	1			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 of a freight train	6				6
	Totals	124	1	8	0	133
	Percentage	93%	1%	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	17		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
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

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
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	277	0	15	0	292
	Percentage	95%	0%	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

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
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
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	2	2	5	0	181
	Percentage	92%	3%	1%	1%	3%	0%	100%

Report year 2009		Status Category						Total recommendations from report
		1	2	3	4	5	6	
No	Investigation Title	Implemented	Implemented by alternative means	Implementation ongoing	In-progress	Non-implementation	Awaiting response	
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	7			1	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	1			1			2
15	Collision between passenger train & 2 grinding machines Acton West	6			2			8
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

Report year 2009 (continued)		Status Category						Total recommendations from report
		1	2	3	4	5	6	
No	Investigation Title	Implemented	Implemented by alternative means	Implementation ongoing	In-progress	Non-implementation	Awaiting response	
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	178	1	2	6	8	1	196
	Percentage	91%	1%	1%	3%	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	1			1			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	6						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	91	3	2	1	1	0	98
	Percentage	93%	3%	2%	1%	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	4						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	6						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	2		2	1			5
14	Collision lorry & train Sewage Works Lane, near Sudbury, Suffolk	5			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	5						5
20	Train passed over Lydney level crossing with crossing barriers raised	2			1			3
	Totals	73	1	9	9	1	0	93
	Percentage	78%	1%	10%	10%	1%	0%	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 Station				1			1
10	Fatal accident at Mexico footpath crossing (near Penzance)	2			3			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	4						4
14	Incident involving runaway track maintenance trolley nr Haslemere	5			1			6
15	Fatal accident Gipsy Lane Footpath Crossing, Needham Market, Suffolk	2	1		1			4
16	Track worker struck by a train at Stoats Nest Junction			1				1
17	Container train accident near Althorpe Park, Northamptonshire	2			2			4
18	Derailment at Princes Street Gardens, Edinburgh	1			4			5
19	Derailment at Bordesley junction, Birmingham	1			3			4
20	Collision between a train and lorry on Llanboidy AHB level crossing	4	1			1		6
21	Collapse of the OHL near to Jewellery Quarter Tram Stop, Midland Metro	6	1					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	4			9
26	Person trapped in train door at Jarrow station	2		2	1			5
27	Fatality at Johnson's Footpath Crossing near Bishop's Stortford	1		2				3
28	Fatality at Ufton AHBC level crossing		1	3	3			7
	Totals	52	9	18	30	1	0	110
	Percentage	47%	8%	16%	27%	1%	0%	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	1			4			5
3	Pedestrian struck by a tram at Sandilands tram stop, Croydon	5						5
4	Derailment of a tram at East Croydon	1			2			3
6	Accident involving a pantograph and the overhead line near Littleport			2				2
7	Dangerous occurrence involving track workers near Roydon station, Essex			1	1			2
8	Derailment of a freight train at Shrewsbury station	2		2				4
9	Collision of a RRV with a buffer stop at Bradford Interchange station	4		1				5
11	Dangerous occurrence at Lindridge Farm UWC near Bagworth, Leics.	1			4			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			5	4			9
14	Train ran onto a washed-out embankment near Knockmore, NI						5	5
15	Dangerous occurrence at Blatchbridge Jn, nr Frome	1		4	2			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			2	1			3
19	Fatal accident at Bayles and Wylies FPC, Bestwood, Nottingham	1			3			4
20	Track worker struck by a train at Bulwell, Nottingham	1			4			5
21	Fatal accident involving a track worker at Saxilby	1		2	1			4
22	Derailment of a freight train at Barrow-upon-Soar, Leicestershire	2			1			3
	Totals	21	0	19	34	0	10	84
	Percentage	25%	0%	25%	38%	0%	12%	100%

Report year 2014		3Status 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 Motts Lane level crossing			4				4
2	Derailment at Castle Donington, Leicestershire			1	1			2
3	Penetration and obstruction of a tunnel between Old St and Essex Rd London			1	4			5
4	Fatal accident at Athelney level crossing, near Taunton, Somerset						4	4
5	Tram running with doors open on London Tramlink, Croydon						8	8
6	Collision at Buttington Hall user worked crossing, Welshpool			3				3
7	Locomotive derailment at Ordsall Lane Junction, Salford						3	3
8	Class investigation into landslips affecting NR infrastructure						5	5
9	Passenger train collision at Norwich						5	5
10	Accident at Balnamore level crossing, Ballymoney, Northern Ireland				1		2	3
11	Near-miss at Llandovery level crossing						6	6
12	Near-miss at Butterswood level crossing, North Lincolnshire						4	4
13	Locomotive failure near Winchfield						4	4
14	Road vehicle incursion onto the railway at Aspatria, Cumbria				1		1	2
15	Runaway of RRV and resulting collision in Queen Street tunnel, Glasgow						4	4
16	Uncontrolled evacuation of a train at Holland Park station						6	6
17	Accidents involving a wheelchair rolling onto the track at Southend Central, 28 August 2013; and a pushchair rolling onto the track at Whyteleafe, 18 September 2013				4			4
18	Fatal accident at Barratt's Lane No.2 footpath crossing, Attenborough, Nottingham							0
19	Passenger trapped in train door at Newcastle Central station				2		4	6
20	Freight train derailment near Gloucester				1		6	7

Report year 2014 (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
21	Derailment at Primrose Hill/Camden Road West Junction				1		2	3
22	Passenger dragged a short distance by a train at Holborn station						1	1
23	Debris falling from overbridge, Denmark Hill station						1	1
24	Class Investigation into Rail Breaks on the East Coast Main Line						5	5
25	Passenger train collision with trolley at Bridgeway User Worked Crossing, near Shrewsbury						3	3
26	Buffer stop collision at Chester station						3	3
27	Derailment at Liverpool Street station, London						3	3
28	Collision between a train and a car at Jetty Avenue level crossing, Woodbridge, Suffolk						5	5
29	Unauthorized entry of a train onto a single line at Greenford						3	3
	Totals	0	0	9	15	0	88	112
	Percentage	0%	0%	8%	13%	0%	79%	100%


Table 2 - Recommendations made in 2014 to end implementer

End Implementer	Number
Department for Transport (DfT)	2
Freight, Train Operating Company (FOC)	2
Heritage Railway Association	3
Infrastructure Companies (Underground Only)	3
Light Rail Tram (LTR) Operating Company (TOC)	7
London Underground Ltd	7
Mainline Infrastructure Owners	3
Manufacturers	3
Metro, Train Operating Company (TOC)	1
Network Rail	56
Northern Ireland Railway	3
Other Public Bodies	4
Passenger, Train Operating Company (TOC)	17
Rail Safety and Standards Board	13
The Office of Rail Regulation (ORR)	3
Total	127
* Note: a number of Safety Recommendations are made to more than one implementer	

Recommendations that were the subject of a report by a safety authority, or other public body during 2014

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 / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>15 30/11/2005 25/2006 pt3</p> <p>Class investigation - Autumn Adhesion incidents at Esher and Lewes Pt3</p> <p>Status: Non-implementation</p>	<p>RSSB to establish a project to: 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). 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)</p>	<p>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 or 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.</p>
<p>16 30/11/2005 25/2006 pt3</p> <p>Class investigation - Autumn Adhesion incidents at Esher and Lewes Pt3</p> <p>Status: Non-implementation</p>	<p>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: Changing WSP control algorithms for the level of slip permitted from the current value of 17-20%. 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.</p>	<p>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. 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.</p>
<p>19 30/11/2005 25/2006 pt3</p> <p>Class investigation - Autumn Adhesion incidents at Esher and Lewes Pt3</p> <p>Status: Implemented </p>	<p>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).</p>	<p>ORR has reported to RAIB that the recommendation has been implemented. However, the RAIB has noted that the ERTMS program is still developing requirements and the anticipated Railway Group Standard designed to cover braking performance for ERTMS fitted vehicles has yet to be issued. The RAIB is seeking further information on the actions to be taken to implement this important recommendation. Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate. \$b</p>


Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
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 reports that NR is in the process of installing new equipment for measuring wheel loads at 30 locations on the National Network. This new system known as GOTCHA will feature an alarm and database software, it is intended that this will provide functionality to alert an alarm on offset wheel loading. This covers side-to-side, end-to-end, diagonal and combination offset loads. The various limits that have been established as part of the [Freight Technical Committee] FTC sub group.
5 02/08/2007 10/2008 Collision btw train and tractor on LX nr Limavady Jnc,Northern Ireland Status: Implementation ongoing	NIR should work with DRDNI to add a template to the Private Crossings (Signs and Barriers) Regulations (Northern Ireland) 2007 that is appropriate to the circumstances at crossing XL202 and includes a permitted variant to allow the telephone number of the crossing operator to be added (paragraph 144).	The Department for Regional Development Northern Ireland (DRDNI) has reported to the RAIB that this recommendation has been addressed by the issue of updated Private Crossings (signs and barriers) Regulations (Northern Ireland) 2014. These came into force in October 2014. The RAIB is awaiting confirmation that the signs at the crossing in question have been modified.
1 12/09/2006 11/2008 Derailment of a train at Croxton Level Crossing Status: Implemented	Network Rail should assess the sleeper spacings and panel length of all HoldFast crossings until the rate of shrinkage is understood, and take such steps as are necessary so that no panel end is left unsupported by a sleeper. At the same time they should ensure that legged base plates are installed as specified by HoldFast Level Crossings Ltd (paragraphs 415a, 415b and 419).	After reviewing all the information received ORR has concluded that Network Rail has evaluated panel lengths of selected HoldFast crossings in areas considered to be at risk and has concluded that: shrinkage is within the design limits set within the Level Crossing Surface System standards. Manufacturer's tolerances additionally support the findings of this analysis. The Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.
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: <ul style="list-style-type: none"> • 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 reported that it has implemented a new risk assessment tool, the Signal Overrun Risk Assessment Tool (SORAT). This calculates the reduction of risk provided by TPWS within the main body of the risk assessment process. To perform this task SORAT has a database of all the trains and their capabilities currently being operated on the GB rail infrastructure. Information within this database includes but is not limited to: <ul style="list-style-type: none"> • Emergency braking rates (%g) • TPWS activation time (freewheel time) • Brake build up time • Accident consequence modelling • Maximum unit speed • Unit length • Train protection fitment (TPWS, ATP, ERTMS, Train stop) This information is provided for 97 types of stock that Network Rail currently have knowledge of, which operates on the GB network. As new rolling stock is brought into service this

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Safety Recommendation

Summary of current status (based on ORR's report to
RAIB)

4 25/01/2008 10/2009 Derailment at Santon near Foreign Ore Branch Junction, Scunthorpe Status: Implemented	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.	information is updated into SORAT to accurately reflect usage and braking capabilities of rolling stock operating on the GB network. RAIB is awaiting confirmation from ORR that implementation is complete.
5 25/01/2008 10/2009 Derailment at Santon near Foreign Ore Branch Junction, Scunthorpe Status: Implemented	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 Network Rail has developed and are now implementing the Linear Asset Decision Support (LADS) tool, which is a track asset information service for decision support: - It calculates, consolidates, and geographically aligns key data from source systems - Current and historic track asset data is graphically presented, compared and analysed - Data sources include geographical, condition (track geometry recording, rail breaks/defects) and intervention history and planning - Deployed for desktop PCs and mobile devices. Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.
6 25/01/2008 10/2009 Derailment at Santon near Foreign Ore Branch Junction, Scunthorpe Status: Implemented	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 Network Rail has addressed this Recommendation by implementation of a linear asset decision support (LADS) tool - see Rec 4. Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>7 25/01/2008 10/2009</p> <p>Derailment at Santon near Foreign Ore Branch Junction, Scunthorpe</p> <p>Status: In-progress </p>	<p>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.</p>	<p>ORR has informed the RAIB that it continues to monitor NR's management of repeat track geometry faults at HQ and Route level, to verify the adequacy of the arrangements to manage risk, focusing on the highest risk areas. \$w</p>
<p>6 13/06/2008 13/2009</p> <p>Investigation into safety at user worked crossings</p> <p>Status: Implementation ongoing</p>	<p>Northern Ireland Railways should take note of the findings of this report and review their risk assessment and crossing management arrangements accordingly.</p>	<p>DRD NI has reported that Northern Ireland Railways has outlined the actions to be taken in response to this recommendation.</p>
<p>6 28/05/2008 22/2009</p> <p>Collision with debris from bridge GE19 near London Liverpool Street</p> <p>Status: In-progress</p>	<p>The Health and Safety Executive should:</p> <p>a. draw the attention of the Standing Committee on Structural Safety (SCOSS) to the issues identified in this report regarding the safe use of PTFE in construction to ensure a wider promulgation amongst the civil engineering community (paragraph 311c); and</p> <p>b. approach companies known to be involved in moving large loads using PTFE to check they have appropriate guidance and internal procedures to address the safe use of PTFE (paragraph 328).</p>	<p>HSE have reported that work is ongoing to check that there is appropriate guidance and internal procedures to address the safe use of PTFE. Update due July 2014.</p>
<p>1 15/09/2009 13/2010</p> <p>Collision on the Great Orme Tramway</p> <p>Status: Implemented</p>	<p>The purpose of this recommendation is to identify and mitigate risks associated with the design, operation and maintenance of points installations.</p> <p>Conwy County Borough Council should conduct a competent technical evaluation of the points and crossings on the Great Orme Tramway. This should include an analysis of the failure modes and their effects. Risks identified should be documented and control measures incorporated in the safety management system and procedures. Control measures should include, but not be limited to, checks, measurements and inspections and their periodicity, limits on track geometry and other components which affect the operation of the points and actions to be taken on reaching those limits.</p>	<p>Conwy County Borough Council has reported that it has taken actions in response to this recommendation.</p>

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
2 15/09/2009 13/2010 Collision on the Great Orme Tramway Status: In-progress	The purpose of this recommendation is to promote effective monitoring of the condition of equipment, operations and maintenance of the Tramway. Conwy County Borough Council should ensure that comprehensive and competent audits are carried out to identify any deficiencies associated with the operation and maintenance of the Tramway. The audits should include checks of the condition of tramway equipment and surveillance of safety critical work activities.	The RAIB is seeking further information to assess the adequacy of the audit arrangements.
6 29/09/2009 16/2010 Fatal accident at Halkirk level crossing, Caithness Status: Implementation ongoing	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).	ORR reports that NR have developed a new design of long hood and is awaiting approval from the Highways Agency. Target date 31/03/15.
5 15/11/2009 17/2010 Failure of Bridge RDG1 48 (River Crane) between Whitton & Feltham Status: Implemented	The purpose of recommendation 5 is to give infrastructure managers the opportunity to respond to scour risk where identified by an EA inspection. The Environment Agency should, in conjunction with railway infrastructure owners, introduce processes to allow the immediate reporting of obstructions in watercourses where these occur adjacent to railway structures such as bridge piers or abutments, and regardless of whether there is an associated flooding risk (paragraph 105c).	The Environment Agency has informed RAIB that it has entered into a MoU with Network Rail. This commits local management teams in the Environment Agency and Network Rail to share intelligence of risk resulting from asset inspection, surveys and assessments.
4 06/03/2010 01/2011 Passenger train struck by object at Washwood Heath Status: Implemented	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 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.

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>2 16/01/2010 04/2011</p> <p>Fatal accident at Moreton-on-Lugg, near Hereford</p> <p>Status: In-progress</p>	<p>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.</p> <p>Network Rail should enhance its level crossing risk management process to include identification, assessment and management of the risk associated with:</p> <ul style="list-style-type: none"> • 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 • maintenance and inspection arrangements, particularly where these are used to identify and remedy any equipment functional and performance deficiency. <p>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).</p>	<p>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 Level Crossing Managers (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.</p> <p>ORR are seeking further information.</p>
<p>3 16/01/2010 04/2011</p> <p>Fatal accident at Moreton-on-Lugg, near Hereford</p> <p>Status: In-progress</p>	<p>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.</p> <p>Network Rail should develop and implement (paragraph 176a):</p> <ul style="list-style-type: none"> • 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. 	<p>ORR reports that Network Rail has issued a briefing note which reiterates the need to consider work that can be done to achieve best practice in design early in the project timescale. ORR are seeking further information on how Network Rail intend to define their policy related to upgrade of equipment, and what constitutes a reasonable opportunity to do so. Network Rail has indicated that it planned to conclude its work in this area by April 2014 with publication in September.</p>
<p>1 04/05/2010 07/2011</p> <p>Runaway and derailment of wagons at Ashburys</p> <p>Status: Non-implementation</p>	<p>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.</p> <p>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).</p>	<p>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</p>

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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

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.

2 06/06/2010 11/2011

Accident at Falls of Cruachan, Argyll

Status: Implemented

The intention of this recommendation is that where a cutting comprises mixed ground of soil and rock, all parts of the slope should be examined and reported.

In respect of all cuttings equal to, or greater than, three metres high through mixed ground of soil and rock, Network Rail should implement arrangements so that (paragraphs 137b and 139b):

in accordance with NR/L3/CIV/065, examination results are reported for both the soil and rock materials; and

both the soil slope hazard index and the rock slope hazard index are reported.

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 02/02/2010 12/2011

Investigation into safety of AOCLs on Network Rail's infrastructure

Status: Implemented

In parallel with, but not delaying Recommendation 1, the intention of this recommendation is to improve the risk assessment of level crossings by the correct identification of specific human factors issues and other local factors, and the implementation of appropriate mitigation measures:

Network Rail should review, and as necessary update, its

ORR reports that Network Rail has reviewed and updated its processes, guidance and training to staff as part of its wider National Level Crossing Programme which has focused on identification, assessment and management of risk. It has also recruited 100 Level Crossing Managers (LVM's) who will be responsible for identifying, assessing and managing risk at level crossings. They will develop good knowledge of their zone of

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processes, guidance, training and briefing of its staff, on how to identify and assess the specific human and local factors at level crossings, so that it can establish whether further mitigation measures should be implemented (paragraph 169).

crossings and undertake risk assessments, asset inspections, faulting and limited maintenance. The training programme mandatory to LCMs includes detailed guidance on how to identify and assess the specific human and local factors at level crossings including distraction and impatience. The National Level Crossing Team will track the LCM's training progress using a training qualifications framework. The qualifications framework supports the mentoring framework a key element to the improved regime. The National Level Crossings team has identified that training is the first step in improved level crossing risk assessments but will really come into fruition when LCMs are competent and confident in their role. The training modules are available so any future staff undertaking risk assessments will also be trained in identifying human factors. Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.

<p>1 05/11/2010 13/2011</p> <p>Bridge strike & RV incursion onto roof of passing train nr Oxshott Stn</p> <p>Status: In-progress</p>	<p>The purpose of Recommendation 1 is to promote the checking of visibility markings associated with road bridges over railways as part of the existing highway safety inspection regime.</p> <p>Surrey County Council should reinforce the requirement for regular checks to be made (for example, as part of safety inspections carried out by staff on the condition of highways) of the ends of parapets on bridges over railways to ensure that, where provided, markers or markings are maintained in good condition and free from obstruction by vegetation or other material. Any signs of damage should be reported to the risk owner for appropriate action (paragraph 98a).</p>	<p>Surrey County Council have informed the RAIB that regular checks of the newly installed measures to protect the parapet of the bridge at Oxshott are carried out as part of the routine cyclical highway inspection and maintenance programmes for the A244. RAIB has written to Surrey County Council and asked whether it has taken steps to reinforce the requirement for regular checks of the ends of the parapets on bridges over railways (as was the intent of the recommendation).</p>
<p>5 05/11/2010 13/2011</p> <p>Bridge strike & RV incursion onto roof of passing train nr Oxshott Stn</p> <p>Status: Implemented</p>	<p>The purpose of recommendation 5 is for Surrey County Council to provide and maintain protection at Bridge 11 (Warren Lane, Oxshott).</p> <p>Surrey County Council, in consultation with Network Rail, should review the optimum means of protecting or marking the parapet ends at Bridge 11 (Warren Lane, Oxshott), and apply and maintain the chosen method (paragraph 101).</p>	<p>Surrey County Council has reported that it has taken actions in response to this recommendation.</p>
<p>2 17/08/2010 14/2011</p> <p>Collision tanker & train Sewage Works Lane, near Sudbury, Suffolk</p> <p>Status: In-progress</p>	<p>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.</p> <p>Network Rail should consider ways of managing the risk at user</p>	<p>Network Rail is developing a range of technological solutions to this problem, solutions under investigation include:</p> <ul style="list-style-type: none"> • a train activated warning system based on the use of global positioning system transmitters; • the use of axle counters to detect the train's proximity; • various low cost options.

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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).

Product acceptance for the technical solution is now ongoing and a strategy for implementation is being developed and some of the technologies are already being trialled at various sites.

5 17/08/2010 14/2011
Collision tanker & train Sewage Works Lane,
near Sudbury, Suffolk
Status: Implemented

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.

ORR reports that Network Rail has appointed more than 106 Level Crossing Managers. All have undertaken training on data gathering, ALCRM assessments and inspection of level crossings. Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.

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).

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.

RSSB has reported to ORR that a sample of railway incidents has been analysed using the new cross-industry Incident Factor Classification System (IFCS), which is a module within SMIS. The database captures fatigue issues that are identified in investigation reports. A Special Topic Report will use this data to identify the frequency with which fatigue is identified as a factor in the sample of railway incidents. It will also provide supporting information on the types of fatigue issue which occur and for what parts of the industry. ORR are seeking further information.

1 28/12/2010 16/2011
Derailment in Summit tunnel, near
Todmorden, West Yorkshire
Status: In-progress

The intent of this recommendation is to reduce the amount of ice forming in Summit tunnel's ventilation shafts by improving the arrangements for managing the water seeping through the shaft's lining, eg by changing the drainage arrangements. These changes should also stop the water from falling directly onto the tracks below.

ORR reports that Network Rail has reviewed the arrangements for managing water and ice within Summit tunnel. It has also taken action to implement the findings of this review:

- Ring-dams and downpipes have been cleaned out and, where necessary, renewed;
- A temporary cowl has been installed on shaft No.10. Another is to be installed on shaft No.11 by 31 October 2014; and
- Permanent cowls are to be installed by 31st March 2016.

Network Rail should review how the arrangements for managing water within Summit tunnel can be improved, decide what actions it is reasonably practicable to take, and implement them. The review should specifically consider what can be done to manage the water seeping through the ventilation shaft linings and reduce the amount of ice forming during periods of freezing temperatures (paragraphs 149a, 149b and 152a).

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<p>2 28/12/2010 16/2011</p> <p>Derailment in Summit tunnel, near Todmorden, West Yorkshire</p> <p>Status: Implementation ongoing</p>	<p>The intent of this recommendation is to prevent the first train, after a cessation of traffic due to extreme weather, from passing at the line's maximum permitted speed through or over an unsafe structure. By identifying which structures on a route are at risk of becoming unsafe due to extreme weather, Network Rail can then check their state prior to reopening the route, eg by using the first service train to examine the route, a route proving train or staff on foot.</p> <p>Network Rail should identify the structures (as defined in NR/L3/CIV/006/1C) where passengers or staff might be put at risk when train services are resumed following an extended cessation of traffic during, or following, periods of extreme weather (as defined in NR/L2/OPS/021). Network Rail should then put in place procedures that result in checks that it is safe for trains to operate at the permitted line speed over or through these structures before resuming the train service (paragraphs 149e, 151c and 152c).</p>	<p>ORR reports that Network Rail has identified the structures where passengers or staff might be put at risk when train services are resumed following an extended cessation of traffic during, or following, periods of extreme weather. Network Rail has also enhanced its Extreme Weather Action Team (EWAT) meeting agenda. The enhanced agenda requires that checks are made to ensure that it is safe for trains to operate at the permitted line speed over or through these structures before resuming the train service. ORR will continue to monitor implementation of this recommendation.</p>
<p>3 28/12/2010 16/2011</p> <p>Derailment in Summit tunnel, near Todmorden, West Yorkshire</p> <p>Status: Implementation ongoing</p>	<p>The intent of this recommendation is to ensure that the hazards of ice formation on structures and the subsequent hazards during thaw conditions (eg ice falls onto the track) are included throughout Network Rail's weather management processes, so that they can be risk assessed and mitigated. For example, extreme cold weather events are not specifically included within NR/L3/TRK/1010 and EWAT conferences do not consider the hazards that might be present when operating trains once extreme cold weather conditions end and a thaw sets in.</p> <p>Network Rail should review and implement changes to its weather management processes to take into account the potential hazards created by extreme cold weather events and subsequent thaw conditions (paragraphs 150a and 151d).</p>	<p>ORR has reported that Network Rail has outlined the actions to be taken in response to the recommendation. ORR is seeking further information.</p>
<p>4 28/12/2010 16/2011</p> <p>Derailment in Summit tunnel, near Todmorden, West Yorkshire</p> <p>Status: Implementation ongoing</p>	<p>The intent of this recommendation is to give Network Rail staff the skills and knowledge to carry out additional inspections to look for ice on structures during periods of extreme cold weather, as Network Rail infrastructure maintenance's routine inspection regime may be too infrequent. Staff need to know what they need to do, where and when they should be doing it and the actions they should take once ice is found. This will support the implementation of NR/L3/TRK/1010 and the extreme weather plan, which require these additional inspections to take place. The staff undertaking these inspections should also know what potential hazards may be present and understand how to do the inspections while maintaining their own safety.</p>	<p>ORR has reported that Network Rail has outlined the actions to be taken in response to the recommendation. ORR is seeking further information.</p>

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Network Rail should provide training and information to its staff on carrying out the inspections of those structures which are at risk from ice in extreme cold weather. The training and information should include guidance on managing the hazards to staff while carrying out these inspections (paragraphs 149c and 149d).

1 28/01/2011 19/2011
Passenger accident at Brentwood station
Status: Implemented

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.

ORR has reported that NR 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.

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).

3 20/02/2010 01/2012
Passenger train derailment near East
Langton, Leicestershire
Status: Implemented

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.

ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.

1 03/07/2011 04/2012
Boiler incident on the Kirklees Light Railway
Status: Implemented

The purpose of this recommendation is to complete the Kirklees Light Railway Safety Management System and implement it by a defined date. This may also be applicable to other heritage railways.

Kirklees Light Railway should, within a timescale agreed with the Office of Rail Regulation, complete and fully implement a safety management system that is comparable with good practice in the heritage sector, and relevant standards and guidance. This should include the identification of risks, determination of safety critical elements of competence and the training and assessment to deliver it (paragraph 94). The Kirklees Light

In response to RMS ORR update from John Parsonage dated 15/4/15:

Kirklees Light 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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Railway should confirm that the recently-introduced training syllabus and competency arrangements (paragraph 98) are consistent with this.

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
- 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).

Eversholt Rail UK (Ltd) has outlined the actions to be taken in response to the recommendation.
ORR are seeking further information.

5 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 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

ORR reports that Network Rail is developing alternative methods of providing visual and / or audible warnings at crossings. It has also reviewed circa 1600 crossings fitted with whistle boards to identify candidate sites for;

- installation of new visual and / or audible aids of warning;
- optimising positions of existing whistle boards i.e. moving them;
- it will also identify sites where no action is required due to there being no business case or when the position of whistle boards is already optimised.

Work is ongoing and an update is awaited.

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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).

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<p>1 19/06/2011 11/2012</p> <p>Incident at Llanbadarn Automatic Barrier Crossing (LM) nr Aberystwyth</p> <p>Status: Implementation ongoing</p>	<p>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.</p> <p>Network Rail should develop an engineered safeguard to reduce the risk of trains being operated under ERTMS passing over locally monitored automatic crossings (ie AOCL and ABCLs) when the crossings have not operated. This solution should then be applied at Llanbadarn ABCL crossing and, if appropriate, at higher risk crossings on the Cambrian lines and as part of future ERTMS installations. Assessments of risk should include an evaluation of human factors, previous history, including recorded incidents and accidents (paragraph 179).</p>	<p>ORR reports that Network Rail is developing an engineered safeguard. Final commissioning at Llanbadarn was scheduled for October 2014. This is regarded as a trial installation for a more general application on lines fitted with ERTMS. RAIB is awaiting confirmation from ORR that implementation is complete. Update 19/12/14.</p>
<p>1 10/04/2011 12/2012</p> <p>Detachment of a cardan shaft at Durham station</p> <p>Status: Implemented</p>	<p>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).</p> <p>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:</p> <ul style="list-style-type: none">• 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). <p>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).</p>	<p>The owners of class 14x vehicles, in consultation with suppliers of overhaul services 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.</p>

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<p>3 11/07/2011 13/2012</p> <p>Train departed with doors open, Warren Street, Victoria Line, London</p> <p>Status: Implemented</p>	<p>The intention of the recommendation is that LUL's competence management arrangements for train operators should:</p> <p>a) identify those who are unable to reliably and correctly respond to out-of-course events (including faults and failures); and</p> <p>b) incorporate arrangements designed to eliminate or resolve the competence deficiencies identified.</p> <p>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:</p> <ul style="list-style-type: none"> • how the evidence from train operators' performance in practical training and instruction is captured and dealt with by the competence management system; • how the evidence from train operators' performance in incidents in service is captured and dealt with by the competence management system (paragraph 124); and • how LUL acts on any deficiencies identified from the above, relating to a train operator's ability to recognise and correctly 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. <p>LUL should implement any necessary changes to the competence management system (paragraph 131d.iii).</p>	<p>London Underground Ltd has reported that it has taken actions in response to this recommendation.</p> <p>Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>5 10/09/2011 14/2012</p> <p>Incident involving runaway track maintenance trolley nr Haslemere</p> <p>Status: Implemented</p>	<p>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.</p> <p>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):</p> <ul style="list-style-type: none"> a. compliance with rules and procedures; b. reporting of safety-related incidents; and c. management of defective equipment. 	<p>Network Rail has outlined the actions to be taken in response to the recommendation.</p> <p>Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>

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<p>6 10/09/2011 14/2012</p> <p>Incident involving runaway track maintenance trolley nr Haslemere</p> <p>Status: In-progress</p>	<p>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.</p> <p>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).</p>	<p>Network Rail has reported to ORR that it has already mapped into the Hazard Directory a procedure for staff to use in preparing SSOWs for track work identifying all areas nationally where it is known that mobile phones do not work according to the network operator. They have also reiterated the need for all track workers to check the effective use of their mobiles initially when out on site if it is required as a means of communication. Network Rail has also advised that it is committed to developing the provision and the procedures for the use of GSMR handsets as an alternative to mobile phones for staff working on the track.</p>
<p>1 24/08/2011 15/2012</p> <p>Fatal accident Gipsy Lane Footpath Crossing, Needham Market, Suffolk</p> <p>Status: In-progress</p>	<p>The intent of this recommendation is for Network Rail to improve the safety of pedestrians at Gipsy Lane crossing.</p> <p>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).</p>	<p>ORR reports that Network Rail is seeking a means of closing the crossing by means of a footbridge or subway. ORR is seeking further information.</p>
<p>2 24/08/2011 15/2012</p> <p>Fatal accident Gipsy Lane Footpath Crossing, Needham Market, Suffolk</p> <p>Status: Implemented</p>	<p>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.</p> <p>Network Rail should have effective systems in place for accurate information gathering during data collection visits at 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:</p> <ul style="list-style-type: none"> • the number of crossing users where the quick census is undertaken; • the use of whistle board protected crossings during the night-time quiet period; • use of the crossing by vulnerable users; • location of whistle boards; • crossing length; • traverse distance; and • distance from each crossing gate and decision point to the nearest rail. 	<p>ORR reports that Network Rail have implemented a wide range of measures to improve the accuracy of data collection, these include the appointment of Level Crossing Managers (LCM's), improved training on data collections at level crossings and a wide range of technological advances to improve the accuracy of data including new apps. ORR also reports the development of the ALCRM Assessment History Report to allow users of ALCRM to compare key info available and to compare the data from previous ALCRM assessment with the one being completed.</p> <p>Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>

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<p>3 24/08/2011 15/2012</p> <p>Fatal accident Gypsy Lane Footpath Crossing, Needham Market, Suffolk</p> <p>Status: Implemented</p>	<p>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).</p> <p>Network Rail should develop its guidance for use by level crossing teams to include:</p> <ul style="list-style-type: none"> • a clear definition of what constitutes a 'higher than usual' number of vulnerable users; • implementing risk-reduction measures at crossings that have deficient sighting or warning times; and • 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. 	<p>Network Rail has reported that it has taken actions in response to this recommendation.</p> <p>Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>4 24/08/2011 15/2012</p> <p>Fatal accident Gypsy Lane Footpath Crossing, Needham Market, Suffolk</p> <p>Status: Implemented by alternative means</p>	<p>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.</p> <p>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).</p>	<p>ORR reports that Network Rail has developed a single cost benefit analysis which sits outside of ALCRM which is now being used by level crossing managers. This addresses the recommendation by alternative means.</p> <p>Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>1 12/06/2011 16/2012</p> <p>Track worker struck by a train at Stoats Nest Junction</p> <p>Status: Implementation ongoing</p>	<p>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.</p> <p>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:</p> <ol style="list-style-type: none"> a. track maintenance staff; and b. their managers. <p>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.</p>	<p>Network Rail has reported to ORR that it has implemented a major programme for developing leadership skills in the population of staff who act as COSS. They have also launched a programme designed to improve the safe planning and delivery of work on or near the line. As part of this the role of COSS will be replaced by the Safe Work Leader who will also be accountable for the delivery of the task. This will reduce the potential on site for conflict of interest and authority between team leaders for the work and the COSS, as was seen at Stoats Nest.</p> <p>Other initiatives include:</p> <ul style="list-style-type: none"> - introduction and dissemination of life saving rules and, linked to these a fair culture consequences model in promoting compliance and acting when breaches are reported. - training to managers at all levels on holding good safety conversations with staff. - an interactive programme to promote active safety management has been introduced since June 2014. This will cover staff in all front-line leadership roles. <p>RAIB is awaiting confirmation from ORR that implementation is complete.</p>

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>1 18/07/2011 17/2012</p> <p>Container train accident near Althorpe Park, Northamptonshire</p> <p>Status: Implemented</p>	<p>The intention of this recommendation is to make other companies, which design, modify or repair freight containers, aware of the criticality of bolted joints so that full consideration is given to ensuring that their integrity is sufficient for foreseeable in-service loads.</p> <p>The Health and Safety Executive should issue a safety bulletin to make manufacturers and users of converted freight containers aware of the need for a competent assessment of the adequacy of bolted joints, which are used to secure exterior attachments, when designing, modifying or repairing containers. It should also ask the organisations authorised to approve containers to cascade this information to their clients (paragraphs 102a and 102b).</p>	<p>HSE has reported to the RAIB that it has issued a safety advice note and that this has been placed on their website. Additionally, the note will be included in e-mail newsletters the HSE sends to over 65,000 plus interested parties who subscribe to the service covering the industrial sectors of transport, logistics and ports.</p>
<p>2 18/07/2011 17/2012</p> <p>Container train accident near Althorpe Park, Northamptonshire</p> <p>Status: In-progress</p>	<p>The intention of this recommendation is to ensure that, in the short term, CSC approval gives assurance that a competent organisation has considered the detachment hazards highlighted by this accident and judged that the associated risks are acceptable.</p> <p>The Health and Safety Executive should request that the International Maritime Organization issue a safety brief to all bodies authorised to approve freight containers in accordance with the International Convention for Safe Containers. This should advise them of the need to consider the integrity of all exterior attachments, and their fixings, against all foreseeable in-service loads when approving new, modified or repaired containers (paragraphs 38, 39, 41, 102c and 104).</p>	<p>The HSE have raised the issue with the Marine Coastguard Agency, the UK lead contact, to advise IMO of the recommendations made by RAIB. The IMO has indicated to HSE that an international campaign was planned which would cover container safety (including structural modifications) and loading. It also reported that new guidance documents have been produced.</p>
<p>3 18/07/2011 17/2012</p> <p>Container train accident near Althorpe Park, Northamptonshire</p> <p>Status: In-progress</p>	<p>The intention of this recommendation is to ensure that, in the longer term, CSC approval gives assurance that the risk of a structure detaching from a freight container is acceptably low during handling and for all modes of surface transportation.</p> <p>The Health and Safety Executive should request that the International Maritime Organization reviews international reports of structural detachment from freight containers and evaluates the risk to human life during transportation and handling. If appropriate, it should update the International Convention for Safe Containers to include requirements for the integrity of all exterior attachments, and their fixings, against all foreseeable in-service loads (paragraphs 38, 39, 41, 102c and 104).</p>	<p>The HSE raised the issue with the Marine Coastguard Agency, the UK lead contact, to advise IMO of the recommendations made by RAIB. Feedback said an international campaign was planned which would cover container safety (including structural modifications) and loading. Currently new guidance documents have been produced and in the UK safety 'road shows' are being carried out at key locations and will be completed during the next 12</p>

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>1 27/07/2011 18/2012</p> <p>Derailment at Princes Street Gardens, Edinburgh</p> <p>Status: In-progress</p>	<p>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.</p> <p>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).</p>	<p>ORR has reported that NR has undertaken a number of actions in response to this recommendation, these include: In-depth studies of past derailment reports and relevant British Rail Research reports, supplemented by vehicle dynamics modelling have been carried out to determine suitable intervention limits for switch wear.</p> <ul style="list-style-type: none"> • Review of manufacturing tolerances; • to allow for the planning of timely maintenance, revised intervention limits have been set; • create and maintain a register of high risk switches.
<p>2 27/07/2011 18/2012</p> <p>Derailment at Princes Street Gardens, Edinburgh</p> <p>Status: In-progress</p>	<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> • the risk of derailment from worn wheels on a switch rail that is compliant with the TGP8 gauge (paragraphs 172 and 179a); • the practicability of achieving a 1:600 gradient when blending-out a grinding repair of switch rail damage, or for removing a derailment hazard 1 (paragraphs 173); and • the potential risk of a ramp being created by the introduction of a switch rail that is failing gauge 2 in the first metre, between a sideworn stock rail and wheel flange, particularly where the wheel flange is in flange contact with the stock rail (paragraph 172). <p>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).</p>	<p>ORR has reported that NR has undertaken a number of actions in response to this recommendation, these include:</p> <ul style="list-style-type: none"> • a detailed review to check that the fundamental requirements of standard NR/L3/TRK/0053 are technically correct; • adjustment of 053 to allow for worn wheels on a switch rail; • adjustment of the requirements for gradient blending out of grinding repairs; • analysis for the process to ensure correct switch rail profile after repairs; • briefing to staff on the types of switch most prone to wear.

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<p>3 27/07/2011 18/2012</p> <p>Derailment at Princes Street Gardens, Edinburgh</p> <p>Status: In-progress</p>	<p>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.</p> <p>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).</p> <p>Network Rail should then take steps to implement any improvements identified, or introduce any alternative assessment method, and train/brief staff as necessary.</p>	<p>ORR has reported that NR has undertaken a number of actions in response to this recommendation, these include:</p> <ul style="list-style-type: none"> • ergonomic assessment of TGP8 gauge undertaken; • changes made to TGP8 gauge & requirements of using gauge briefed as part of LOI/284; • process developed for use of protractor gauge by welders and grinding operatives and briefed as part of LOI/284; • improvements to protractor gauge specified and developed; • initial assessment of laser based profile measurement systems completed; • plan produced for further development working with manufacturers. Investment paper produced to obtain funding.
<p>4 27/07/2011 18/2012</p> <p>Derailment at Princes Street Gardens, Edinburgh</p> <p>Status: In-progress</p>	<p>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.</p> <p>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).</p>	<p>Network Rail have outlined the actions to be taken in response to the recommendation.</p> <p>ORR are seeking further information.</p>
<p>5 27/07/2011 18/2012</p> <p>Derailment at Princes Street Gardens, Edinburgh</p> <p>Status: Implemented</p>	<p>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.</p> <p>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).</p>	<p>ORR reports that NR carried out a study to assess whether more thorough implementation of the recommendation following the derailment at London Waterloo could have prevented subsequent derailment at Princes Street. The study observes that an immense amount of work was undertaken post Lambrigg and dealt with standards, handbooks, guides and training and that it is not possible to conclude with absolute certainty that Princes Street Gardens would not have occurred had the Waterloo recommendations have been more effectively applied given there was evidence that the capability and competence of the Grinding Supervisor at Princes Street Gardens was a key factor.</p> <p>This study suggested:</p> <ul style="list-style-type: none"> • all RAIB recommendations are to be reviewed at a senior level within NR; • improve liaison with the RAIB to understand the intent of the recommendation;

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>1 26/08/2011 19/2012</p> <p>Derailment at Bordesley junction, Birmingham</p> <p>Status: In-progress</p>	<p>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.</p> <p>Network Rail through its Network Certification Body 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:</p> <ul style="list-style-type: none"> • assessing the risk of continued operations and identifying the need for any immediate measures that need to be taken to control the risk; • identifying the long term measures that need to be taken to resolve the fleet wide problem; and • assigning responsibilities, priorities and timescales for implementing and managing both the immediate and long term measures. <p>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).</p>	<ul style="list-style-type: none"> • an additional check by the Support Investigation Manager to recommendations being accepted as closed. <p>NR have also undertaken a corporate audit of the actions taken in response to S&C. It was found that 14 of the 90 closed recommendations reviewed had been closed where there was insufficient evidence in the recommendation tracking spread-sheet(s) to demonstrate full closure. In a number of cases recommendations had been closed on the basis of work proposed to be undertaken that had, at the time, not been fully delivered. In all but one of these the audit team assessed that the work that had been subsequently undertaken and satisfied the intent of the recommendation but the S&SD Action Tracking Team had not been advised nor had the tracking spread-sheet been updated to reflect this. In one case the assessment identified that the action taken was not adequate to satisfy the intent of the recommendation and as a result the audit team recommend that the recommendation should be re-opened. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p> <p>Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.</p>

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<p>2 26/08/2011 19/2012</p> <p>Derailment at Bordesley junction, Birmingham</p> <p>Status: In-progress</p>	<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> • look at how the suspension works as a whole and understand the role that each individual component performs; and • 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. <p>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).</p>	<p>Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.</p>
<p>3 26/08/2011 19/2012</p> <p>Derailment at Bordesley junction, Birmingham</p> <p>Status: In-progress</p>	<p>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.</p> <p>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).</p>	<p>ORR reports that Lafarge is currently converting all 110 PHA wagons in its fleet. RAIB awaits confirmation that this programme is complete.</p>
<p>3 19/12/2011 20/2012</p> <p>Collision between a train and lorry on Llanboidy AHB level crossing</p> <p>Status: Implemented</p>	<p>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.</p> <p>Network Rail should revise its risk management process for level crossings to take account of risks arising from the</p>	<p>Network Rail 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</p>

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>2 20/04/2011 21/2012</p> <p>Collapse of the OHL near to Jewellery Quarter Tram Stop, Midland Metro</p> <p>Status: Implemented</p>	<p>misalignment of the road over the crossing relative to the rest of the road.</p> <hr/> <p>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.</p> <p>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).</p>	<p>National Express Midland Metro 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.</p>
<p>3 20/04/2011 21/2012</p> <p>Collapse of the OHL near to Jewellery Quarter Tram Stop, Midland Metro</p> <p>Status: Implemented by alternative means</p>	<p>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.</p> <p>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).</p>	<p>ORR reports that National Express Midland Metro had initially commissioned Brecknell Willis to carry out an assessment of loadings of the arrangement. However, a more fundamental approach was adopted to redesign the tension lengths and to replace the overlap at pole 18512 with a mid-point anchor to remove the high radial loading incurred as a result of the alignment of the 'run-in' and 'run-out' cables. This modification would serve to minimise deformation of cantilever arms. On February 2014, National Express Midland Metro confirmed that the tension lengths at pole 18512 had been redesigned and the overlap has been replaced with a mid-point anchor.</p>
<p>6 20/04/2011 21/2012</p> <p>Collapse of the OHL near to Jewellery Quarter Tram Stop, Midland Metro</p> <p>Status: Implemented</p>	<p>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.</p> <p>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).</p>	<p>ORR reports that National Express Midland Metro has:</p> <ul style="list-style-type: none"> - Introduced training and management for the 'Primary member of staff at the scene'; - Revised the procedure for dealing with incidents, to include the above. - Issued instructions regarding the carrying of necessary equipment at all times whilst on board a tram. <p>ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>

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<p>7 20/04/2011 21/2012</p> <p>Collapse of the OHL near to Jewellery Quarter Tram Stop, Midland Metro</p> <p>Status: Implemented</p>	<p>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.</p> <p>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).</p>	<p>National Express Midland Metro 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.</p>
<p>1 22/10/2011 22/2012</p> <p>Fatal accident at James Street station, Liverpool</p> <p>Status: In-progress</p>	<p>The objective of this recommendation is to reduce train dispatch accident risk by improving the way in which trains are operated.</p> <p>Merseyrail should evaluate equipment and operational arrangements that allow the person responsible for train dispatch to:</p> <ul style="list-style-type: none"> 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. <p>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.</p>	<p>ORR reports that Merseyrail have commissioned a study to use as a basis for addressing this recommendation. RAIB is awaiting further information.</p>
<p>2 22/10/2011 22/2012</p> <p>Fatal accident at James Street station, Liverpool</p> <p>Status: In-progress</p>	<p>The objective of this recommendation is to reduce the likelihood of falls through the platform edge gap.</p> <p>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.</p>	<p>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.</p>

**Number/ Date/ Report No/
Inv Title / Current Status**

Safety Recommendation

**Summary of current status (based on ORR's report to
RAIB)**

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):

- 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.
- Staff are trained and procedures in place for undertaking and reviewing risk assessments of road vehicle incursion locations.
- 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 incursion locations can be captured and identified for analysis and review.
- Processes are in place to ensure that information about road vehicle incursion incidents is shared between all interested parties.
- 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.

Suffolk County Council has reported taking actions in response to this recommendation and have provided RAIB with a copy of its Audit Report. The report included a 13-point prioritised action plan to address identified deficiencies. Suffolk County Council proposes to take no further action unless they become aware that the information provided becomes inaccurate.

2 30/11/2011 25/2012
Road vehicle incursion and collision with train
at Stowmarket Road
Status: Implemented

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:

- the exchange and management of information between different departments within Network Rail;
- the profile of RVI within relevant working groups including those involving external parties;
- the effectiveness of communications with bodies outside of Network Rail including arrangements for the reporting of all

ORR reports that Network Rail has issued instructions to clarify the process for managing the risks from vehicle incursions. These include the requirements for internal and external liaison and an escalation process for where highway authorities do not agree to improvement works. NR 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.

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**Summary of current status (based on ORR's report to
RAIB)**

incursion incidents to local highway authorities and police forces; and

- arrangements for managing the relationship with local highway authorities and the monitoring of actions taken following assessments of road vehicle incursion risk (paragraphs 139, 141d, 142a, 144 and 145).

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:

- a clear definition of the circumstances under which each party takes responsibility for enforcement; and
- 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.

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 Network 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 website 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 improvements 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 yet been addressed. However, DfT has expressed concern about the time taken for Network Rail to provide data on vehicle incursion sites. The RAIB is seeking an understanding of how Network Rail is addressing this concern.

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>3 12/04/2012 26/2012</p> <p>Person trapped in train door at Jarrow station, Tyne & Wear Metro</p> <p>Status: Implemented</p>	<p>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.</p> <p>DB Regio Tyne and Wear should:</p> <p>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</p> <p>b. implement identified improvements, to include consideration of realignment of platform mirrors and provision of additional CCTV monitors (paragraph 74).</p>	<p>ORR reports that DB Regio Tyne and Wear have reviewed the visibility of the platform train interface and has put in place a programme for improvements at a number of stations. Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>1 28/01/2012 27/2012</p> <p>Fatality at Johnson's Footpath Crossing near Bishop's Stortford, Herts</p> <p>Status: Implementation ongoing</p>	<p>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.</p> <p>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).</p>	<p>ORR has reported that Network Rail has identified 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 miniature stop light. As at 23 December 2014, the Level Crossing Risk Management Toolkit had been updated accordingly with additional mitigation measures.</p>
<p>2 28/01/2012 27/2012</p> <p>Fatality at Johnson's Footpath Crossing near Bishop's Stortford, Herts</p> <p>Status: Implemented</p>	<p>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.</p> <p>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</p>	<p>ORR reports that Network Rail carried out a case study based on Johnson's Footpath Crossing and subsequently have prepared briefing packs for Level Crossing Managers (LCM's) on how they should consider the users last opportunity to be aware of the approach of the train and the need to remove unnecessary obstructions to sighting. This will be incorporated into the level crossing risk management tool kit by February 2015. Office of Rail Regulation (ORR) proposes to take no further</p>

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>3 28/01/2012 27/2012</p> <p>Fatality at Johnson's Footpath Crossing near Bishop's Stortford, Herts</p> <p>Status: Implementation ongoing</p>	<p>equipment may obscure the view of the line (paragraph 74a).</p> <p>The intent of this recommendation is to make a comprehensive set of risk reduction measures available to level crossing managers.</p> <p>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.</p>	<p>action unless they become aware that the information provided becomes inaccurate.</p> <p>ORR reports that Network Rail has reviewed research report T730 and identified potential options for inclusion in the risk management level crossing toolkit by the first quarter 2015. RAIB is awaiting confirmation from ORR that implementation is complete.</p>
<p>2 04/09/2011 28/2012</p> <p>Near miss incident at Ufton AHB crossing, Berkshire</p> <p>Status: In-progress</p>	<p>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.</p> <p>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).</p>	<p>ORR reports that Network Rail has decided that for future installations of the Traffic Management System a function will be provided to prompt the signaller to provide confirmation before allowing route to be set over a level crossing in failed state/local mode. ORR are monitoring the way that this is to be implemented.</p>

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<p>4 04/09/2011 28/2012</p> <p>Near miss incident at Ufton AHB crossing, Berkshire</p> <p>Status: In-progress</p>	<p>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.</p> <p>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).</p>	<p>ORR has reported that NR has outlined the actions to be taken in response to the recommendation. ORR is not content with duty-holder response, further engagement ongoing / proposed.</p>
<p>5 04/09/2011 28/2012</p> <p>Near miss incident at Ufton AHB crossing, Berkshire</p> <p>Status: In-progress</p>	<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> • reminder appliance override; • signaller's selection of VDU view; and • the view used when controls are operated using a VDU view. <p>Where practical, the system should incorporate a playback feature (paragraph 158).</p>	<p>ORR reports that NR has assessed the options for logging IECC data. This assessment recommended the inclusion of full playback facilities in future systems. Network Rail has still to explain how it is to modify appropriate standards and specifications so that future IECC installations include a system to fully record signaller's actions.</p>
<p>1 02/05/2012 01/2013</p> <p>Fatal accident at Kings Mill No.1 level crossing, Mansfield</p> <p>Status: Implemented</p>	<p>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.</p> <p>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).</p>	<p>The Health & Safety Executive and the Office of Rail Regulation have reported that they have 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.</p>

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>1 28/01/2012 02/2013</p> <p>Freight train derailment at Reading West Junction</p> <p>Status: Implemented</p>	<p>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.</p> <p>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.</p> <p>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).</p>	<p>HSE has reported to the RAIB that they have issued a safety advice note that has been placed on their website. Additionally, the note will be included in e-mail newsletters the HSE sends to over 65,000 plus interested parties who subscribe to the service covering the industrial sectors of transport, logistics and Ports. HSE proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>5 28/01/2012 02/2013</p> <p>Freight train derailment at Reading West Junction</p> <p>Status: Implemented</p>	<p>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.</p> <p>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).</p>	<p>ORR has reported that Network Rail has reported that it has taken actions in response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>1 16/05/2012 03/2013</p> <p>Pedestrian struck by a tram at Sandilands tram stop, Croydon</p> <p>Status: Implemented</p>	<p>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.</p> <p>London Tramlink, in conjunction with Tram Operations Ltd, should continue to develop its process for periodically assessing</p>	<p>ORR has reported that London Tramlink, in conjunction with London Trams Ltd, has reviewed and updated its risk assessment process for foot crossings. Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>

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risk at all foot crossings, taking into account the findings from this report in relation to factors that could affect all aspects of 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
Pedestrian struck by a tram at Sandilands
tram stop, Croydon
Status: Implemented

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:

London Tramlink 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.

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).

3 16/05/2012 03/2013
Pedestrian struck by a tram at Sandilands
tram stop, Croydon
Status: Implemented



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

ORR has stated that it considers the guidance relating to parts A and B of the recommendation to be sufficient, the RAIB is still of the view that providers of tram infrastructure are in need of more detailed guidance in this area. The ORR is proposing to take no action in response to part C of the recommendation on the basis that a recess would be difficult to construct on a low level platform. The RAIB considers that

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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.

more work is needed in this area since the presence of a recess on a low level platform proved effective in minimising injuries in the Sandilands accident. Furthermore, there are some systems such as Manchester, which in any case have high platforms. The ORR has made no reference to the lack of paving which was also a key factor in mitigating the consequences of the Sandilands accident and deserves consideration. \$b

4 16/05/2012 03/2013
Pedestrian struck by a tram at Sandilands
tram stop, Croydon
Status: Implemented

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 have reported that they have 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.

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).

5 16/05/2012 03/2013
Pedestrian struck by a tram at Sandilands
tram stop, Croydon
Status: Implemented

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 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.

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).

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<p>1 17/02/2012 04/2013</p> <p>Derailment of a tram at East Croydon</p> <p>Status: In-progress</p>	<p>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:</p> <ul style="list-style-type: none"> • 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). 	<p>London Tramlink has outlined the actions to be taken in response to the recommendation. ORR are seeking further information. 30/11/14</p>
<p>2 17/02/2012 04/2013</p> <p>Derailment of a tram at East Croydon</p> <p>Status: In-progress</p>	<p>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.</p> <p>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).</p>	<p>London Tramlink has outlined the actions to be taken in response to the recommendation. ORR are seeking further information. Update 30/11/14.</p>
<p>3 17/02/2012 04/2013</p> <p>Derailment of a tram at East Croydon</p> <p>Status: Implemented</p>	<p>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.</p> <p>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).</p>	<p>London Tramlink 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.</p>
<p>1 05/01/2012 06/2013</p> <p>Accident involving a pantograph and the overhead line near Littleport</p> <p>Status: Implementation ongoing</p>	<p>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.</p> <p>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</p>	<p>ORR has reported that NR is in the process of issuing a new process covering deviations from its standards. ORR are seeking further information. Target date December 2014.</p>

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
2 05/01/2012 06/2013 Accident involving a pantograph and the overhead line near Littleport Status: Implementation ongoing	mitigated (paragraphs 170b and 170d). 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: <ul style="list-style-type: none"> • providing maintenance staff with information allowing them to determine the acceptable range of contact wire positions at every support; and • 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). 	ORR has reported that NR has undertaken a review of its standards for management of overtime arrangement and will be introducing a new methodology for height and stagger analysis to be based on static OLE geometry. This will provide a less complex method of assessment and will allow maintenance staff to clearly identify when intervention is required. Detail of this will be contained within a new company standard, before being migrated into the business critical rule framework in the future. ORR are seeking further information. Target date April 2015.
1 16/07/2012 07/2013 Dangerous occurrence involving track workers near Roydon station Status: Implementation ongoing	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: <ul style="list-style-type: none"> • 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); • identification of recommended methods of assessing sighting distance when on site (including the use of special equipment); and • the adequacy of existing training and assessments of competence related to the assessment of sighting (paragraph 93a). 	ORR has reported that NR has provided training to COSSs on methods of assessing sighting distance and that this was implemented by means of an E learning package. However, NR is still considering options of the re-instatement of line side marker posts. ORR are seeking further information.
1 07/07/2012 08/2013 Derailment of a freight train at Shrewsbury station Status: Implementation ongoing	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	Network Rail has reported to ORR that it is briefing the requirements of the current standard, clarifying the need to identify the risk category of switches, and mandating the maintenance of a register of high risk switches. ORR are seeking further information. TD December 2014.

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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).

2 07/07/2012 08/2013
Derailment of a freight train at Shrewsbury station
Status: Implementation ongoing

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:

- remove inconsistency between them (eg TRK/053 and TEF/3029) (paragraph 85b);
- 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);
- make clear that a routine measurement (currently using a TGP8 gauge) to identify wear is mandatory (paragraph 84b.iii); and
- mandate that the routine measurement should be repeated for points in both normal and reverse positions (paragraph 84b.ii).

Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information. TD December 2014.

3 07/07/2012 08/2013
Derailment of a freight train at Shrewsbury station
Status: Implemented

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).

Network Rail have reported to ORR that this recommendation, including the requirement to remove grease before undertaking switch inspections, has been addressed as part of its fundamental review of its application for the standard for switch inspections. Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.

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<p>4 07/07/2012 08/2013</p> <p>Derailment of a freight train at Shrewsbury station</p> <p>Status: Implemented</p>	<p>The purpose of this recommendation is to ensure that Freightliner assesses the risks of continued operation when deficiencies in its maintenance practices have been identified.</p> <p>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).</p>	<p>Freightliner has reported to the ORR that a review of the procedure on managing change has been carried out and that they are confident that, when applied, the procedure will ensure that the risks associated with any identified deficiency in maintenance practices will be adequately assessed and managed.</p>
<p>1 25/03/2012 09/2013</p> <p>Collision of a RRV with a buffer stop at Bradford Interchange station</p> <p>Status: Implemented</p>	<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> 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. 	<p>Quattro have reported to ORR that it has reviewed its procedures covering the management of modifications to on-track plant.</p> <p>ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>

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2 25/03/2012 09/2013

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

Status: Implemented

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:

- 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;

- controls are in place to ensure that only competent persons are able to override safety critical systems;

- depot staff and operators have access to information for the installation, test, inspection and maintenance tasks they are undertaking on safety critical systems; and

- 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:

- enhanced surveillance and regular audits; and

- checks that staff are familiar with, and have access to, documentation that is relevant to the safety critical tasks they are undertaking.

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).

Quattro 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.

3 25/03/2012 09/2013

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

Status: Implementation ongoing

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

ORR reports that NR has now prohibited the use of all type 9b (hi ride) RRVs on its infrastructure, consequently all machines of this type must be fitted with direct rail wheel braking.

ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.

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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).

4 25/03/2012 09/2013

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

Status: Implemented

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).

ORR reports that NR has reviewed its audit regime and introduced improved arrangements for checking compliances of engineering safety management processes. NR requires that its audits of manufacturers and converters of on track plant include the actual inspection of RRV assets. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.

5 25/03/2012 09/2013

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

Status: Implementation ongoing

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

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).

ORR has reported that NR is working with RSSB to address this recommendation, this will include:

- review of the standard governing the design of RRVs;
- review of the requirements for vehicle acceptance bodies;
- industry briefing on the scope of the engineering acceptance process and the importance of submitting accurate, vehicle-specific information and clarification on the extent to which reliance on 'first-of-class' approval is appropriate when modifications are made to a number of different vehicles;
- the development of a new product acceptance process (aligned with statutory legislation).

Target date 1/9/15

1 22/03/2012 11/2013

Dangerous occurrence at Lindridge Farm UWC near Bagworth, Leics.

Status: In-progress

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

Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.


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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).

<p>2 22/03/2012 11/2013</p> <p>Dangerous occurrence at Lindridge Farm UWC near Bagworth, Leics.</p> <p>Status: In-progress</p>	<p>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).</p> <p>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).</p>	<p>Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information.</p>
<p>3 22/03/2012 11/2013</p> <p>Dangerous occurrence at Lindridge Farm UWC near Bagworth, Leics.</p> <p>Status: In-progress</p> 	<p>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.</p> <p>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</p>	<p>ORR reports that Network Rail considers that the actions taken in response to recommendation 5 overcome the need to implement recommendation 3. The RAIB believes otherwise and has written to ORR to express its concern. \$b</p>

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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).

4 22/03/2012 11/2013
Dangerous occurrence at Lindridge Farm
UWC near Bagworth, Leics.
Status: Implemented

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:

- 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
- 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).

ORR reports that the testing handbook was amended and updated. The update requires a final review of all test logs by the tester-in-charge, which included considering the quantity and severity of the items raised on the test logs prior to entry into operational service.
This final review is required to confirm that all Test Logs comply with one of the following categories:

- 1) Retested to the satisfaction of a suitably competent Tester and closed
- 2) Endorsed and closed
- 3) Deferred (providing the test log item is not unsafe or cannot be mitigated against)
- 4) The Deferred Test Log Closure Plan has been signed.

Any deferred test logs require an agreed action plan (noted as 4 above). The action plan requires a test log owner, the timescale for closure, the impact assessment and mitigation details, and the rectification action details, which shall include naming the rectification action owner.

5 22/03/2012 11/2013
Dangerous occurrence at Lindridge Farm
UWC near Bagworth, Leics.
Status: In-progress

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).

Network Rail has outlined the actions to be taken in response to the recommendation.
ORR are seeking further information.

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1 10/08/2012 12/2013

Collision between a stoneblower and ballast
regulator near Arley

Status: In-progress

Safety Recommendation

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).

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).

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Network Rail has outlined the actions to be taken in response to the recommendation.
ORR are seeking further information. Update 30/11/14.

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The 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: In-progress

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).

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.

Network Rail has outlined the actions to be taken in response to the recommendation.
ORR are seeking further information. Update 30/11/14.

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<p>3 10/08/2012 12/2013</p> <p>Collision between a stoneblower and ballast regulator near Arley</p> <p>Status: In-progress</p>	<p>The purpose of this recommendation is to gain assurance from Network Rail that it understands why the managerial arrangements in place at Sattley 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.</p> <p>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 Sattley 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).</p>	<p>Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information. Update 30/11/14.</p>
<p>1 23/09/2011 13/2013</p> <p>Partial failure of a structure inside Balcombe Tunnel, West Sussex</p> <p>Status: In-progress</p>	<p>The intention of this recommendation is to identify fixings at risk of failure based on current knowledge.</p> <p>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).</p>	<p>ORR has reported that Network Rail has outlined the actions to be taken in response to the recommendation. ORR is not content with duty-holder response, further engagement ongoing / proposed.</p>
<p>2 23/09/2011 13/2013</p> <p>Partial failure of a structure inside Balcombe Tunnel, West Sussex</p> <p>Status: Implementation ongoing</p>	<p>The purpose of this recommendation is to prevent the further use of polyester resin anchors where their long-term performance may compromise safety.</p> <p>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).</p>	<p>ORR have reported that NR have outlined the actions to be taken in response to the recommendation. ORR are seeking further information. Target date 31/08/14</p>
<p>4 23/09/2011 13/2013</p> <p>Partial failure of a structure inside Balcombe Tunnel, West Sussex</p> <p>Status: Implementation ongoing</p>	<p>The intention of this recommendation is to provide an effective asset management response when structure defects (or suspected defects) are reported.</p> <p>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</p>	<p>ORR reports that NR has conducted a review of its management responses when structure defects have been reported. The review highlighted that further improvements of the process is required to justify the time period between acceptance of the defect report and implementation of remedial works, and that any risks in the interim are controlled accordingly. In response to this recommendation, Network Rail will produce guidance which will form part of a briefing, to be completed by 31 May 2014. The RAIB notes the actions being taken in this area. However,</p>



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indication of a wider problem (paragraph 129b).

the RAIBs concerns have been highlighted by similar delays in implementing remedial actions that were identified in the investigation into the collapse of part of the structure at Denmark Hill in 2013. \$w

5	23/09/2011	13/2013	<p>The intention of this recommendation is to improve the quality of decision making in the management of structures.</p> <p>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).</p>	<p>ORR have reported that NR have outlined the actions to be taken in response to the recommendation. ORR are seeking further information.</p>
<hr/>				
6	23/09/2011	13/2013	<p>The intention of this recommendation is to improve the effectiveness of Network Rail's investigations when abnormal events are reported.</p> <p>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).</p>	<p>ORR have reported that NR have outlined the actions to be taken in response to the recommendation. ORR are seeking further information.</p>
<hr/>				
7	23/09/2011	13/2013	<p>The intention of this recommendation is to provide adequate opportunities for examination and maintenance activities.</p> <p>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).</p>	<p>ORR have reported that NR have outlined the actions to be taken in response to the recommendation. ORR are seeking further information.</p>
<hr/>				
8	23/09/2011	13/2013	<p>The intention of this recommendation is to improve the effectiveness of Network Rail's examinations regime for structures within tunnels.</p> <p>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).</p>	<p>ORR have reported that NR have outlined the actions to be taken in response to the recommendation. ORR are seeking further information.</p>

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<p>9 23/09/2011 13/2013</p> <p>Partial failure of a structure inside Balcombe Tunnel, West Sussex</p> <p>Status: Implementation ongoing</p>	<p>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.</p> <p>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).</p>	<p>ORR have reported that NR have outlined the actions to be taken in response to the recommendation. ORR are seeking further information.</p>
<p>1 28/06/2012 14/2013</p> <p>Train ran onto a washed-out embankment near Knockmore, NI</p> <p>Status: Implementation ongoing</p>	<p>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.</p> <p>NIR, with the assistance of the Rivers Agency, should:</p> <p>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.</p> <p>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.</p>	<p>DRDNI has reported that NIR have appointed consultants to take forward a series of actions linked to this recommendation, in particular maps have been prepared of all locations susceptible to flood risk. This work is to be facilitated by a MOU with the Rivers Agency.</p>
<p>1 19/03/2012 15/2013</p> <p>Dangerous occurrence at Blatchbridge Jn, nr Frome</p> <p>Status: Implementation ongoing</p>	<p>The intent of this recommendation is to reduce the risk of items of attached equipment falling from on-track machines onto the track.</p> <p>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:</p> <p>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</p>	<p>Network Rail has outlined the actions to be taken in response to the recommendation. ORR are seeking further information. TD Nov 2014</p>

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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

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: Implementation ongoing

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).

Network Rail has outlined the actions to be taken in response to the recommendation.
ORR are seeking further information. TD 31 Dec 2014

3 19/03/2012 15/2013
Dangerous occurrence at Blatchbridge Jn, nr
Frome
Status: Implementation ongoing

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).


Network Rail has outlined the actions to be taken in response to the recommendation.
ORR are seeking further information. TD 31 Dec 2014

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<p>4 19/03/2012 15/2013</p> <p>Dangerous occurrence at Blatchbridge Jn, nr Frome</p> <p>Status: In-progress</p>	<p>The intent of this recommendation is for Matisa to provide clear instructions so that the necessary maintenance tasks are carried out.</p> <p>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:</p> <p>a) describe maintenance activities with sufficient technical detail;</p> <p>b) define the meaning of key terms that are otherwise open to interpretation such as 'check the integrity';</p> <p>c) identify which fastenings could pose a risk to safety should they fail;</p> <p>d) include key values, such as torque settings, at those points within maintenance instructions where the maintainer is required to use them; and</p> <p>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).</p>	<p>Matisa (UK) Ltd has outlined the actions to be taken in response to the recommendation.</p> <p>ORR are seeking further information. TD Nov 2014</p>
<p>5 19/03/2012 15/2013</p> <p>Dangerous occurrence at Blatchbridge Jn, nr Frome</p> <p>Status: Implementation ongoing</p>	<p>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.</p> <p>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).</p>	<p>Network Rail has outlined the actions to be taken in response to the recommendation.</p> <p>ORR are seeking further information. TD Nov 2014</p>

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<p>6 19/03/2012 15/2013</p> <p>Dangerous occurrence at Blatchbridge Jn, nr Frome</p> <p>Status: In-progress</p>	<p>The intent of this recommendation is for Matisa to consider all working modes of a machine when designing component mounting arrangements.</p> <p>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).</p>	<p>Matisa (UK) Ltd has outlined the actions to be taken in response to the recommendation.</p> <p>ORR not content with duty-holder response, further engagement ongoing / proposed. Update on 30 Jan 2015.</p>
<p>7 19/03/2012 15/2013</p> <p>Dangerous occurrence at Blatchbridge Jn, nr Frome</p> <p>Status: Implemented</p>	<p>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.</p> <p>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).</p>	<p>Matisa (UK) Ltd has reported that it has taken actions in response to this recommendation.</p> <p>Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>1 26/04/2012 16/2013</p> <p>Signal passed at danger at Stafford</p> <p>Status: Implemented</p>	<p>The intent of this recommendation is to ensure the competence of Devon & Cornwall Railway's staff undertaking safety-critical work.</p> <p>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.</p>	<p>ORR has reported that Devon & Cornwall Railways has reported that it has taken actions in response to this recommendation.</p> <p>ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>2 26/04/2012 16/2013</p> <p>Signal passed at danger at Stafford</p> <p>Status: Implemented</p>	<p>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.</p> <p>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</p>	<p>ORR has reported that Devon & Cornwall Railways has reported that it has taken actions in response to this recommendation.</p> <p>ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
3 26/04/2012 16/2013 Signal passed at danger at Stafford Status: Implemented	90a). 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.	ORR 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 26/04/2012 16/2013 Signal passed at danger at Stafford Status: Implemented	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).	ORR 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 26/04/2012 16/2013 Signal passed at danger at Stafford Status: Implementation ongoing	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.	ORR has reported that RSSB has outlined the actions to be taken in response to the recommendation. ORR will advise RAIB when actions to address this recommendation have been completed. TD 31 Jan 15.

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
1 08/01/2013 18/2013 Train fire at South Gosforth Status: Implementation ongoing	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: <ul style="list-style-type: none"> • identification of actual and potential failure mechanisms and an estimate of their likely frequency; • 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 • 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).	Nexus, supported by DBTW has outlined the actions to be taken in response to the recommendation. ORR will continue to monitor implementation of this recommendation.
2 08/01/2013 18/2013 Train fire at South Gosforth Status: Implementation ongoing	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. <p>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 emergency with the risk of undesired door releases (paragraph 106a).</p>	Nexus, supported by DBTW has outlined the actions to be taken in response to the recommendation. ORR will continue to monitor implementation of this recommendation.
3 08/01/2013 18/2013 Train fire at South Gosforth Status: In-progress	The objective of this recommendation is to improve the reliability of the radio communication system used on the Metro network. <p>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).</p>	ORR reports that Nexus is in the process of purchasing a new radio system which is scheduled to be introduced in mid 2015. ORR will continue to monitor implementation of this recommendation.

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>1 28/11/2012 19/2013</p> <p>Fatal accident at Bayles and Wylies FPC, Bestwood, Nottingham</p> <p>Status: In-progress</p>	<p>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.</p> <p>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).</p>	<p>ORR reports that a number of tram operators have carried out a review recommended by the RAIB, two operators have still to satisfy the ORR that the recommendation has been addressed. The four others are judged to have implemented the recommendation. Of these, three have re-briefed their drivers on the circumstances when it will be appropriate to use a series of short blasts as a warning. The fourth (Sheffield Supertram) considers its existing arrangements are sufficient. In this case the RAIB is concerned that inadequate justification has been provided.</p>
<p>2 28/11/2012 19/2013</p> <p>Fatal accident at Bayles and Wylies FPC, Bestwood, Nottingham</p> <p>Status: In-progress</p>	<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> • indicating that a pedestrian is entering into a higher risk area; and • prompting pedestrians to look for approaching trams. <p>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 (paragraph 96).</p>	<p>ORR reports that all operators have, or will, carry out a review of all segregated crossings in line with the recommendation, in all cases operators are awaiting sight of the report following RSSB T984 research into pedestrian safety at crossings.</p>
<p>3 28/11/2012 19/2013</p> <p>Fatal accident at Bayles and Wylies FPC, Bestwood, Nottingham</p> <p>Status: Implemented </p>	<p>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:</p> <ul style="list-style-type: none"> • the means of indicating that a pedestrian is entering into an area of higher risk; and • the means of prompting pedestrians to look for approaching trams (paragraph 96). 	<p>ORR reports that it has reviewed existing guidance and concluded that the existing text along with the separate supporting guidance note on 'Pedestrian Safety' does already provide adequate guidance. ORR also reports that it has tentative agreement to transfer the management of RSP2 and the related guidance notes the industry body UK Tram. We currently await the restructuring of that body before handing over the documents. Once this occurs we expect there to be a review of the content to update it and bring it in line with current best practice, which will include reviewing RAIB findings. The RAIB disagrees that there is no scope to improve the existing guidance on design of level crossings it is clear that there is potential to improve safety by more clearly indicating the area of higher risk. The RAIB is urging that the ORR review its conclusions in light of the recently published research (RSSB</p>

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T984). \$b

<p>4 28/11/2012 19/2013</p> <p>Fatal accident at Bayles and Wylies FPC, Bestwood, Nottingham</p> <p>Status: In-progress</p>	<p>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.</p> <p>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:</p> <ul style="list-style-type: none">• sufficient illumination of the crossing surface to enable pedestrians to see it;• 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• relevant findings from RSSB research project T984 (paragraph 98).	<p>ORR has reported that NR is to introduce work to determine the best means of illuminating pedestrian crossings. Some tram operators have reviewed their lighting arrangement and one is piloting the use of LEDs. All operators are awaiting sight of industry guidance in this area.</p>
<p>1 06/08/2012 20/2013</p> <p>Track worker struck by a train at Bulwell, Nottingham</p> <p>Status: In-progress</p>	<p>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.</p> <p>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:</p> <ul style="list-style-type: none">• takes account of variations such as different types of work, resource levels, times of day and environmental conditions;• is periodically validated and maintained; and• is easily accessible to those responsible for the planning of safe systems of work.	<p>ORR reports that Network Rail is undertaking a review of the suitability of the current hazard directory classifications of Red Zone prohibited and restricted. In addition, a review will be held with the ORBIS project team who are undertaking electronic mapping of the railway to explore the feasibility of using the technology to identify locations where sighting distances are likely to be deficient.</p> <p>Network Rail are currently developing and testing a revised control of work process that fundamentally changes the process of planning, risk assessing, permitting, controlling and handing back all work undertaken on NR infrastructure. New processes and roles will be implemented through use of new technology (e-permitting, integrated risk assessment and interactive mapping) that is widely used across other high risk industries and will result in provision of more suitable and user-oriented information at the point of work.</p> <p>ORR will continue to monitor implementation of this recommendation.</p>
<p>2 06/08/2012 20/2013</p> <p>Track worker struck by a train at Bulwell, Nottingham</p> <p>Status: In-progress</p>	<p>The intent of this recommendation is to ensure that the use of Red and Green Zone safe systems of work is being effectively monitored.</p> <p>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</p>	<p>ORR reports that Network Rail has informed them that it has processes in place to monitor the types of protection being utilised for track workers. ORR are awaiting the outcome of a Network Rail Special Topic Audit that should verify the effectiveness of these arrangements.</p>

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to be effective (paragraphs 164c (iii) and 166).

3 06/08/2012 20/2013
Track worker struck by a train at Bulwell,
Nottingham
Status: In-progress

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 Rail where staff are required to work on or near the line.

ORR reports that Network Rail is carrying out a review of the resources necessary to safely manage its delivery units. Additionally, Network Rail are currently developing and testing a revised control of work process that fundamentally changes the process of planning, risk assessing, permitting, controlling and handing back all work undertaken on Network Rail infrastructure. New processes and roles will be implemented through use of new technology (e-permitting, integrated risk assessment and interactive mapping) that is widely used across other high risk industries and will result in provision of more suitable and user-oriented information at the point of work. ORR will continue to monitor implementation of this recommendation.

4 06/08/2012 20/2013
Track worker struck by a train at Bulwell,
Nottingham
Status: In-progress

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:

- how the requirement was promulgated throughout its organisation;
- the briefing and training of responsible managers; and
- other barriers to implementation.

It should develop a plan to implement any appropriate changes identified (paragraph 168).

ORR reports that Network Rail is currently developing and testing a revised control of work process that fundamentally changes the process of planning, risk assessing, permitting, controlling and handing back all work undertaken on Network Rail infrastructure. This process will require that all work (whether cyclic or not) is undertaken with a suitable and approved permit. ORR will continue to monitor the extent to which this process will address the intent of this recommendation.

5 06/08/2012 20/2013
Track worker struck by a train at Bulwell,
Nottingham
Status: Implemented

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).

ORR reports that, following a review by Network Rail, the Rule Book was amended in direct response to this recommendation. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>1 04/12/2012 21/2013</p> <p>Fatal accident involving a track worker at Saxilby</p> <p>Status: Implementation ongoing</p>	<p>The intent of this recommendation is for Network Rail to control the risk arising from the use of agency staff in safety leadership roles.</p> <p>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).</p>	<p>ORR has reported that NR has taken a number of actions in response to this recommendation:</p> <ul style="list-style-type: none"> • New rules under the Sentinel scheme have established the requirement for a single accountable Primary Sponsor for every trackside worker. Through a contract of sponsorship, the rules clarify the responsibility for competence management (and for investigation and remedial action following safety incidents) regardless of employment status; • NR will reduce its dependence on agency staff by requiring that site safety leadership is always provided by an employee of NR or a principal contractor. <p>These requirements should be fully implemented with the introduction of the planning and delivery of the safe work programme in June 2015.</p> <p>ORR are seeking further information.</p>
<p>2 04/12/2012 21/2013</p> <p>Fatal accident involving a track worker at Saxilby</p> <p>Status: Implementation ongoing</p>	<p>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.</p> <p>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:</p> <ol style="list-style-type: none"> 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). 	<p>ORR reports that NR is introducing new contingent labour contracts and has agreed a code of contract with all agency suppliers to demonstrate they have effective competence and behavioural management processes in place.</p> <p>ORR are seeking further information. Target date April 2015</p>

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>3 04/12/2012 21/2013</p> <p>Fatal accident involving a track worker at Saxilby</p> <p>Status: Implemented</p>	<p>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.</p> <p>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).</p>	<p>ORR has reported that Carillion engaged Deloitte LLP to undertake this review, this concluded that: The Carillion project team has driven progress against each of the RAIB actions included within the RAIB report. In some cases, Deloitte LLP work indicated that Carillion has completed the design and implementation of a RAIB action and that the new process has been operating effectively for a period of at least three months. In other cases, Deloitte LLP work indicated that while progress had been made against a RAIB action, further progress or evidence was required in order to demonstrate the changes had been fully embedded into the organisation and to demonstrate their operating effectiveness. Carillion is reviewing the outcome of this review and is addressing the outcomes raised. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>4 04/12/2012 21/2013</p> <p>Fatal accident involving a track worker at Saxilby</p> <p>Status: In-progress</p>	<p>The intent of this recommendation is to enhance the welfare of witnesses attending industry investigations into serious incidents and accidents.</p> <p>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).</p>	<p>Network Rail have outlined the actions to be taken in response to the recommendation. ORR are seeking further information.</p>
<p>1 27/12/2012 22/2013</p> <p>Derailment of a freight train at Barrow-upon-Soar, Leicestershire</p> <p>Status: In-progress</p>	<p>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.</p> <p>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).</p>	<p>Network Rail has carried out a review in response to this recommendation and had proposed no further action. After consulting RAIB, the ORR informed Network Rail that it was not content with the response and is seeking further information.</p>

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>2 27/12/2012 22/2013</p> <p>Derailment of a freight train at Barrow-upon-Soar, Leicestershire</p> <p>Status: Implemented</p>	<p>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.</p> <p>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).</p>	<p>ORR reports that Network Rail will address this recommendation with the following action plan:</p> <p>1) Undertake risk assessments and identify earthworks subject to special risk of flood action.</p> <p>2) Develop and implement process for managing risk of flooding and to build this into a database or other appropriate tool.</p> <p>ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate. An update is planned for July 2015.</p>
<p>3 27/12/2012 22/2013</p> <p>Derailment of a freight train at Barrow-upon-Soar, Leicestershire</p> <p>Status: Implemented</p>	<p>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.</p> <p>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).</p>	<p>ORR has reported that Network Rail 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.</p>
<p>1 24/01/2013 01/2014</p> <p>Fatal accident at Motts Lane level crossing</p> <p>Status: Implementation ongoing</p>	<p>The intention of this recommendation is to reduce the risk created by long waiting times by taking action at other locations where this situation may exist.</p> <p>Network Rail should, as soon as possible, review all automatic level crossings (including AHB, ABCL, AOCL and MS� crossings) to identify locations where complex track and signalling layouts, nearby stations and/or railway operations may lead to the red road/pedestrian lights showing for an excessively long time. At each location that is identified, Network Rail should assess the risk from extended closure times, and take action to manage this risk as necessary (paragraph 116a).</p>	<p>ORR reports that Network Rail have implemented a project to identify all automatic level crossings that have excessive sequence times and, for those found to be excessive, the reasons for this. In each such case Network Rail proposes to implement an action plan to manage the risk. ORR will advise RAIB when actions to address this recommendation have been complemented.</p>

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
2 24/01/2013 01/2014 Fatal accident at Motts Lane level crossing Status: Implementation ongoing	The intention of this recommendation is to reduce the risk that local signalling practices may lead to unnecessarily long waiting times at level crossings. Network Rail should determine, in the light of the risk that arose from the indiscriminate use of the non-stopping setting at Liverpool Street IECC, whether there are any other locations where local instructions/practices may be at risk of introducing unnecessarily long waiting times at automatic crossings, and take appropriate action to correct the situation (paragraph 116b).	ORR reports that Network Rail have implemented a project to identify all automatic level crossings that have excessive sequence times and, for those found to be excessive, the reasons for this. In each such case Network Rail proposes to implement an action plan to manage the risk. ORR will advise RAIB when actions to address this recommendation have been complemented.
3 24/01/2013 01/2014 Fatal accident at Motts Lane level crossing Status: Implementation ongoing	The intention of this recommendation is to reduce the risk that may be created by the interaction of ARS with the controls for level crossings, by reviewing the principles which define the design of such systems. Network Rail should review its processes for designing and implementing ARS where it interacts with level crossing controls, and amend or enhance them as necessary to produce assurance that the design will result in the crossing operating in accordance with relevant standards and guidance (paragraph 116c).	ORR reports that Network Rail will review its processes for designing and implementing ARS where it interacts with level crossing controls. Where the review does not provide assurance that following the process will result in the crossing operating in accordance with the relevant requirements and guidance, it will propose change. ORR will advise RAIB when actions to address this recommendation have been completed.
4 24/01/2013 01/2014 Fatal accident at Motts Lane level crossing Status: Implementation ongoing	The intention of this recommendation is to improve the control of risk by establishing appropriate maximum times that red lights should show for, and taking the red light times into account at regular reviews of the safety of level crossings. Network Rail should establish, by carrying out research or otherwise, appropriate maximum time(s) for red lights to be designed to be shown at MSL crossings, and acceptable levels of variability for this time (taking into account factors such as the types of train, and stopping patterns), in view of the risk that users may become intolerant of extended waiting times. Taking account of the results of this work, it should modify its risk management processes for MSL crossings to include consideration of the length of time that the red lights show (paragraph 116c).	ORR reports that Network Rail has carried out initial research in response to this recommendation and is currently seeking funding to extend this research to consider: . the validity of a 90 second maximum waiting time limit; . the impact of variable criteria; and . assessing the differences in pedestrian and motorist behaviour. This research is due to be concluded in September 2015. The RAIB awaits its findings with interest.
1 21/01/2013 02/2014 Derailment at Castle Donington, Leicestershire Status: In-progress	The intent of this recommendation is to reduce the risk of derailment if a stoneblower is unable to complete its planned work in the time available. Network Rail should review, and if necessary improve, the planning of stoneblowing so that: • there is sufficient time allocated within the duration of a possession to complete the work planned to be carried out; and	ORR has reported that Network Rail has outlined the actions to be taken in response to the recommendation. ORR is not content with duty-holder response, further engagement ongoing / proposed.

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RAIB)**

•if the duration of the possession is reduced after the work has first been planned, the implications for the completion of the work are examined, and the work re-planned so that the highest priority locations may be completed in the reduced time available (paragraph 122iii).

2 21/01/2013 02/2014
Derailment at Castle Donington, Leicestershire

Status: Implementation ongoing

The intent of the recommendation is to reduce the risk of trains colliding with a derailed vehicle.

RSSB, in conjunction with the rail industry, should undertake a review of the Rule Book requirements relating to the action to be taken following an abnormal brake application on a freight train and make any changes found to be necessary to reduce the risk of collision with a derailed vehicle. Such a review should consider under what circumstances and how quickly the signaller should be contacted and the actions to be taken, such as cautioning the first train to pass on the adjacent line (paragraph 124).

ORR reports that RSSB had undertaken a review of the rule book, and that it has since been agreed that changes should be made to address the risk identified by the RAIB. This change was planned to be presented to the relevant standards committee in December 2014. ORR will advise RAIB when actions to address this recommendation have been completed.

1 16/07/2013 06/2014
Collision at Buttington Hall user worked crossing, Welshpool

Status: Implementation ongoing

The intent of this recommendation is that main line railway infrastructure managers understand the true risk at times of intensive use of user worked crossings.

Network Rail and Northern Ireland Railways should review and improve their processes for assessing the risk at user worked crossings so that the increased risk during periods of intensive use (eg during harvest) is properly taken into account.

This recommendation may also be applicable to other infrastructure managers.

DRDNI has reported that NIR have are reviewing the assessment of risk methodology at private or accommodation crossings. This will include consideration of the management of risk at times of intensive use, such as harvesting.

2 16/07/2013 06/2014
Collision at Buttington Hall user worked crossing, Welshpool

Status: Implementation ongoing

The intent of this recommendation is to reduce the risk at user worked crossings during periods of intensive use.

Network Rail and Northern Ireland Railways should define one or more safe and practical methods of working that may be adopted at user worked crossings during periods of intensive use; and provide clear information to their staff and authorised users on how and when they should be applied. They should also ensure that any such methods of working are suitably reflected in instructions and training given to railway staff.

This recommendation may also be applicable to other infrastructure managers.

DRDNI has reported that NIR have are reviewing the assessment of risk methodology at private or accommodation crossings. This will include consideration of the management of risk at times of intensive use, such as harvesting.

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>3 16/07/2013 06/2014</p> <p>Collision at Buttington Hall user worked crossing, Welshpool</p> <p>Status: Implementation ongoing</p>	<p>The intent of this recommendation is that the revised method of working devised in response to recommendation 2 is included in the level crossing risk management toolkit as a potential mitigation measure.</p> <p>RSSB should review, and improve where appropriate, measures in the level crossing risk management toolkit that are designed to mitigate the risk at user worked crossings at times of intensive use.</p>	<p>ORR report that RSSB is planning to incorporate risk mitigations at times of intensive use into its upgrade of the Risk Management Level Crossing Tool Kit. ORR will advise RAIB when actions to address this recommendation have been completed.</p>
<p>1 31/05/2013 10/2014</p> <p>Accident at Balnamore level crossing, Ballymoney, Northern Ireland</p> <p>Status: In-progress</p>	<p>The intent of this recommendation is for Northern Ireland Railways to ensure that any activities undertaken at level crossings within possessions are subjected to effective risk controls.</p> <p>Northern Ireland Railways should review (in conjunction, as necessary, with Iarnród Éireann) the requirements of the NIR/IE Rule Book, NIR Rule Book Appendix and NIR Signalmen's General Instructions which relate to activities at level crossings within pre-planned possessions. This review should consider whether:</p> <ul style="list-style-type: none"> I all of the level crossing types present on the infrastructure managed by Northern Ireland Railways are covered by the existing rules and instructions; I the risks of such activities are being adequately mitigated; and I existing risk controls are adequately resourced and comply with any relevant industry best practice, legislation, regulations, codes of practice and guidance. <p>Northern Ireland Railways (in conjunction with Iarnród Éireann as necessary) should implement any changes identified as a result of this review. Northern Ireland Railways should ensure that suitable briefing and training accompanies any changes which are implemented (paragraphs 111c, 111e and 116).</p>	<p>DRD NI has reported that Northern Ireland Railways has outlined the actions to be taken in response to this recommendation.</p>
<p>2 31/05/2013 10/2014</p> <p>Accident at Balnamore level crossing, Ballymoney, Northern Ireland</p> <p>Status: In-progress</p>	<p>The intent of this recommendation is for Northern Ireland Railways to ensure that any method statements relating to track engineering are supported by risk assessments.</p> <p>Northern Ireland Railways should review any method statements currently being used by its track department in order to ensure that they are supported by risk assessments, in accordance with relevant requirements of the infrastructure division's safety management system (paragraph 115).</p>	<p>DRD NI has reported that Northern Ireland Railways has outlined the actions to be taken in response to this recommendation.</p>

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RAIB)**

3 31/05/2013 10/2014

Accident at Balnamore level crossing,
Ballymoney, Northern Ireland

Status: In-progress

The intent of this recommendation is to increase the opportunity for the types of non-compliance identified by this investigation to be detected and corrected.

Northern Ireland Railways should implement the planned restructuring of the infrastructure division safety, quality and environment team. The team should have the resources and tools necessary to facilitate the identification of non-compliances to the NIR/IE Rule Book, NIR Rule Book Appendix and NIR Signalmen's General Instructions, similar to those identified by this investigation. This should be supported by ongoing monitoring arrangements by Northern Ireland Railways of the performance of its framework contractors (paragraphs 110, 111a, 111b, 111d, 112, 113, 114, 119 and 120).

DRD NI has reported that Northern Ireland Railways has outlined the actions to be taken in response to this recommendation.

Recommendations made in RAIB reports published in 2014

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 / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>1 24/01/2013 01/2014</p> <p>Fatal accident at Motts Lane level crossing</p> <p>Status: Implementation ongoing</p>	<p>The intention of this recommendation is to reduce the risk created by long waiting times by taking action at other locations where this situation may exist.</p> <p>Network Rail should, as soon as possible, review all automatic level crossings (including AHB, ABCL, AOCL and MSL crossings) to identify locations where complex track and signalling layouts, nearby stations and/or railway operations may lead to the red road/pedestrian lights showing for an excessively long time. At each location that is identified, Network Rail should assess the risk from extended closure times, and take action to manage this risk as necessary (paragraph 116a).</p>	<p>ORR reports that Network Rail have implemented a project to identify all automatic level crossings that have excessive sequence times and, for those found to be excessive, the reasons for this. In each such case Network Rail proposes to implement an action plan to manage the risk. ORR will advise RAIB when actions to address this recommendation have been complemented.</p>
<p>2 24/01/2013 01/2014</p> <p>Fatal accident at Motts Lane level crossing</p> <p>Status: Implementation ongoing</p>	<p>The intention of this recommendation is to reduce the risk that local signalling practices may lead to unnecessarily long waiting times at level crossings.</p> <p>Network Rail should determine, in the light of the risk that arose from the indiscriminate use of the non-stopping setting at Liverpool Street IECC, whether there are any other locations where local instructions/practices may be at risk of introducing unnecessarily long waiting times at automatic crossings, and take appropriate action to correct the situation (paragraph 116b).</p>	<p>ORR reports that Network Rail have implemented a project to identify all automatic level crossings that have excessive sequence times and, for those found to be excessive, the reasons for this. In each such case Network Rail proposes to implement an action plan to manage the risk. ORR will advise RAIB when actions to address this recommendation have been complemented.</p>
<p>3 24/01/2013 01/2014</p> <p>Fatal accident at Motts Lane level crossing</p> <p>Status: Implementation ongoing</p>	<p>The intention of this recommendation is to reduce the risk that may be created by the interaction of ARS with the controls for level crossings, by reviewing the principles which define the design of such systems.</p> <p>Network Rail should review its processes for designing and implementing ARS where it interacts with level crossing controls, and amend or enhance them as necessary to produce assurance that the design will result in the crossing operating in accordance with relevant standards and guidance (paragraph 116c).</p>	<p>ORR reports that Network Rail will review its processes for designing and implementing ARS where it interacts with level crossing controls. Where the review does not provide assurance that following the process will result in the crossing operating in accordance with the relevant requirements and guidance, it will propose change. ORR will advise RAIB when actions to address this recommendation have been completed.</p>
<p>4 24/01/2013 01/2014</p> <p>Fatal accident at Motts Lane level crossing</p> <p>Status: Implementation ongoing</p>	<p>The intention of this recommendation is to improve the control of risk by establishing appropriate maximum times that red lights should show for, and taking the red light times into account at regular reviews of the safety of level crossings.</p> <p>Network Rail should establish, by carrying out research or otherwise, appropriate maximum time(s) for red lights to be designed to be shown at MSL crossings, and acceptable levels of variability for this time (taking into account factors such as the types of train, and stopping patterns), in view of the risk that</p>	<p>ORR reports that Network Rail has carried out initial research in response to this recommendation and is currently seeking funding to extend this research to consider:</p> <ul style="list-style-type: none"> . the validity of a 90 second maximum waiting time limit; . the impact of variable criteria; and . assessing the differences in pedestrian and motorist behaviour. <p>RAIB has informed the ORR that it is concerned about the delay the continuation of this important research. ORR will advise RAIB when actions to address this recommendation have been completed. \$b</p>

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1 21/01/2013 02/2014 Derailment at Castle Donington, Leicestershire Status: In-progress	<p>users may become intolerant of extended waiting times. Taking account of the results of this work, it should modify its risk management processes for MSL crossings to include consideration of the length of time that the red lights show (paragraph 116c).</p> <hr/> <p>The intent of this recommendation is to reduce the risk of derailment if a stoneblower is unable to complete its planned work in the time available. Network Rail should review, and if necessary improve, the planning of stoneblowing so that:</p> <ul style="list-style-type: none"> • there is sufficient time allocated within the duration of a possession to complete the work planned to be carried out; and • If the duration of the possession is reduced after the work has first been planned, the implications for the completion of the work are examined, and the work re-planned so that the highest priority locations may be completed in the reduced time available (paragraph 122iii). 	<p>ORR has reported that Network Rail has outlined the actions to be taken in response to the recommendation. ORR is not content with duty-holder response, further engagement ongoing / proposed.</p>
2 21/01/2013 02/2014 Derailment at Castle Donington, Leicestershire Status: Implementation ongoing	<p>The intent of the recommendation is to reduce the risk of trains colliding with a derailed vehicle.</p> <p>RSSB, in conjunction with the rail industry, should undertake a review of the Rule Book requirements relating to the action to be taken following an abnormal brake application on a freight train and make any changes found to be necessary to reduce the risk of collision with a derailed vehicle. Such a review should consider under what circumstances and how quickly the signaller should be contacted and the actions to be taken, such as cautioning the first train to pass on the adjacent line (paragraph 124).</p>	<p>ORR reports that RSSB had undertaken a review of the rule book, and that it has since been agreed that changes should be made to address the risk identified by the RAIB. This change was planned to be presented to the relevant standards committee in December 2014. ORR will advise RAIB when actions to address this recommendation have been completed.</p>
1 08/03/2013 03/2014 Penetration and obstruction of a tunnel btw Old St and Essex Rd London	<p>The intent of this recommendation is to include Railway Infrastructure Managers in property-related searches, and to provide information for developers to reduce the risk presented to existing railway infrastructure where widely available mapping does not show tunnel alignments, or shows them incorrectly. Publication of accurate alignments is not required if implementers prefer alternative approaches (eg publishing maps showing bands of land encompassing tunnel alignments together with advice that the railway company should be contacted in respect of all proposed developments in these bands).</p> <p>Railway Infrastructure Managers with tunnels and associated subterranean structures which are under urban areas and not</p>	

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RAIB)**

shown on Ordnance Survey mapping should implement a process to publish information concerning those areas of land that are in reasonable proximity to this infrastructure. They should then take all reasonable steps to publicise this information, and to ensure that it is available to those providing the legal and ground engineering professions with significant numbers of searches relating to property in Great Britain (paragraphs 97b and 99).

2 08/03/2013 03/2014
Penetration and obstruction of a tunnel btw
Old St and Essex Rd London

The intent of this recommendation is to inform Local Planning Authorities so that the planning approval process can reduce the risk to railway tunnels due to construction activities in close proximity.

Railway Infrastructure Managers with tunnels and associated subterranean structures which are under urban areas and not shown on Ordnance Survey mapping should provide Local Planning Authorities with the information needed for these authorities to identify when a planning application has the potential to affect this infrastructure (paragraphs 97e and 97f).

3 08/03/2013 03/2014
Penetration and obstruction of a tunnel btw
Old St and Essex Rd London

The intent of this recommendation is to encourage Railway Infrastructure Managers to undertake pro-active measures to identify works which could affect the railway.

Railway Infrastructure Managers should review, and where appropriate, revise existing arrangements for identifying infrastructure development which could affect tunnels and associated subterranean structures in urban areas. Where not already done, this should include pro-actively searching for planning applications and undertaking visual inspections of the ground surface above tunnels (paragraph 98).

4 08/03/2013 03/2014
Penetration and obstruction of a tunnel btw
Old St and Essex Rd London

The intent of this recommendation is for the British Standards Institution to amend British Standard 5930:1999+A2:2010 to clarify that some railway tunnels are not shown on Ordnance Survey mapping.

The British Standards Institution should amend British Standard 5930:1999+A2:2010 'Code of practice for site investigations' to make clear (paragraph 100):

a. that tunnels used by underground railways and associated subterranean structures may not be shown on Ordnance Survey mapping; and

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>5 08/03/2013 03/2014</p> <p>Penetration and obstruction of a tunnel btw Old St and Essex Rd London</p> <p>Status: In-progress</p>	<p>b. that rail infrastructure owners should be contacted during desk studies and utility searches where appropriate.</p> <hr/> <p>The intent of this recommendation is to ensure that the planning approval process reduces the risk to railway infrastructure due to adjacent developments.</p> <p>The Department for Communities and Local Government should introduce a process to ensure that Railway Infrastructure Managers are made aware of all planning applications in the vicinity of railway infrastructure. This process should at least meet the intent of the statutory consultation process (paragraphs 97f and 101).</p>	<p>The DCLG has reported that it is developing detailed proposals with London Transport, Network Rail and DfT. These will be subject to public consultation in 2014.</p>
<p>1 21/03/2013 04/2014</p> <p>Fatal accident at Athelney level crossing, near Taunton, Somerset</p>	<p>The intent of this recommendation is to reduce the risk resulting from extended waiting times at automatic level crossings, due to delays caused by the controls being 'out of synchronisation', which may encourage motorists to violate warnings.</p> <p>Network Rail should introduce measures to reduce the risk from extended operating times of automatic crossings caused by operation of a strike-in treadle by a train travelling away from the level crossing. This might include issuing suitable operating instructions to signallers for those crossings that might be affected or the installation of directional treadles. An engineered solution should be installed where reasonably practicable (paragraph 85a).</p>	
<p>2 21/03/2013 04/2014</p> <p>Fatal accident at Athelney level crossing, near Taunton, Somerset</p>	<p>The intent of this recommendation is to identify how to improve public awareness of the availability of telephones to contact the signaller in non-emergency situations.</p> <p>Network Rail in conjunction with RSSB should review past and current research into level crossing signage and emergency communication with signallers and consider means of improving the presentation of public emergency telephones for non-emergency use at automatic level crossings (paragraph 85c). This might include changes to signage or to the location of telephones, and should take account of Rule 34 of the Highway Code.</p>	

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
3 21/03/2013 04/2014 Fatal accident at Athelney level crossing, near Taunton, Somerset	<p>The intent of this recommendation is to improve public awareness of the availability of level crossing telephones for contacting the signaller in non-emergency situations.</p> <p>If the RSSB research into improving the presentation of public emergency telephones for non-emergency use at automatic level crossings (Recommendation 2) identifies that reasonably practicable improvements can be made, the Office of Rail Regulation should incorporate these into the level crossing guidance it publishes.</p>	
4 21/03/2013 04/2014 Fatal accident at Athelney level crossing, near Taunton, Somerset	<p>The intent of this recommendation is to improve public awareness of the availability of the level crossing telephones at Athelney level crossing.</p> <p>Network Rail Western Route should modify the location of the pedestrian stop lines at Athelney level crossing as required to make these conform to the current guidance published by the Office of Rail Regulation (paragraphs 85c and 86a).</p>	
1 13/04/2013 05/2014 Tram running with doors open on London Tramlink, Croydon	<p>The intention of this recommendation is to minimise driver distraction from communicating or attempting to resolve faults while on the move, and to improve safety-critical communications in abnormal working conditions.</p> <p>Tram Operations Ltd should revise its policy on verbal communications to:</p> <ul style="list-style-type: none"> • reinforce rules on the avoidance of communicating with drivers by mobile phone while trams are moving (paragraph 104); • minimise, where possible, communication by radio while trams are moving particularly for complex issues (such as the resolution of faults) (paragraph 101a); and • enhance the use of readbacks for safety-critical communications in abnormal, degraded and emergency scenarios (paragraph 101f). 	
2 13/04/2013 05/2014 Tram running with doors open on London Tramlink, Croydon	<p>The intention of this recommendation is to improve the fault handling responses of drivers and controllers by providing them with a better understanding of fault modes, overrides, and resolution options.</p> <p>Tram Operations Ltd should revise its training modules and procedures on fault handling to achieve:</p>	

- improved awareness amongst drivers and controllers of critical fault modes, the effects of operating override switches (including the fault override and the driver's emergency door release) and how to respond to faults, including guidance on co-operation between drivers and controllers (paragraphs 101b, 101c, 101f, and 102c); and
- clarification of the procedure for handling critical faults such as Alpha faults, including explicit guidance for defined circumstances (such as how many attempts should be made to rectify a fault and when the tram should be taken out of service) (paragraph 101g).

3 13/04/2013 05/2014
Tram running with doors open on London
Tramlink, Croydon

The intention of this recommendation is for improvements to be made to the driver's cab displays and labelling to minimise the chance of the driver not noticing that the doors are open and of misunderstanding the operation of override switches.

London Tramlink, in conjunction with Tram Operations Ltd, should improve cab displays and labelling in all of its trams. This should include, but not be limited to:

- a prominent indication of the status of the doors (for example, by changes to the cab panel indicator light, or by introducing an audible warning) (paragraph 102a); and
- information provided to the driver about the fault override function and other safety-critical overrides (such as the emergency door release), including the switch label and the associated alert on the message display, to clarify its purpose and effects of its operation (paragraph 101d).

4 13/04/2013 05/2014
Tram running with doors open on London
Tramlink, Croydon

The intention of this recommendation is to minimise the risk of incidents involving accidental operation of safety override devices occurring elsewhere on UK tram networks.

UK tram operators should conduct an assessment of controls in driving cabs in their current and future fleets to identify those which override safety systems, the risk of drivers inadvertently operating those controls and, where reasonably practicable, design and implement solutions to minimise such risk based on the lessons from this investigation (paragraph 101d).

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5 13/04/2013 05/2014 Tram running with doors open on London Tramlink, Croydon	<p>The intention of this recommendation is to ensure that appropriate guidance on ergonomics principles for cab interface design is constantly available to tram operators, particularly in terms of protecting safety-related controls from accidental operation.</p> <p>The Office of Rail Regulation should ensure that UK tram operators publish suitable guidance on ergonomics principles for cab interface design (with reference to appropriate tramway, railway and European standards), and identify where such guidance is to be found in the long term. This shall include guidance on protecting safety-related controls from accidental operation (paragraph 101d).</p>	
6 13/04/2013 05/2014 Tram running with doors open on London Tramlink, Croydon	<p>The intention of this recommendation is to improve the design of passenger controls and displays (emergency alarms, intercoms etc.), through shape, colour, symbols and/or signage, so as to make their operation more obvious and intuitive to the user in the event of an emergency.</p> <p>Tram Operations Ltd should take steps to improve the clarity and consistency of passenger controls and displays on its trams, taking into account the findings of RSSB project T052c as appropriate (paragraph 101e).</p>	
7 13/04/2013 05/2014 Tram running with doors open on London Tramlink, Croydon	<p>The intention of this recommendation is to minimise the potential for miscommunications on London Tramlink by enhancing the quality of the radio system.</p> <p>London Tramlink should develop and implement a programme to prioritise and expedite the planned upgrade of the radio system, to achieve an improvement in signal coverage and strength across the whole network (including tunnels) and reliable operation in adverse weather conditions (paragraph 102b).</p>	
8 13/04/2013 05/2014 Tram running with doors open on London Tramlink, Croydon	<p>The intention of this recommendation is to enhance fault reporting between the operator, the infrastructure manager and the maintainer so that reported faults that could impact on safe running of the network are recorded properly and followed up within appropriate timescales.</p> <p>Tram Operations Ltd should improve its fault reporting processes to ensure that faults are properly logged and tracked to resolution (paragraph 102b).</p>	

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>1 16/07/2013 06/2014</p> <p>Collision at Buttington Hall user worked crossing, Welshpool</p> <p>Status: Implementation ongoing</p>	<p>The intent of this recommendation is that main line railway infrastructure managers understand the true risk at times of intensive use of user worked crossings.</p> <p>Network Rail and Northern Ireland Railways should review and improve their processes for assessing the risk at user worked crossings so that the increased risk during periods of intensive use (eg during harvest) is properly taken into account.</p> <p>This recommendation may also be applicable to other infrastructure managers.</p>	<p>ORR reports that Network Rail is developing a methodology to identify level crossings that are likely to be subject to intensive use, the likely impact of that use and the identification of appropriate risk controls.</p> <p>ORR will advise RAIB when actions to address this recommendation have been completed.</p> <p>Awaiting response from DRD NI.</p>
<p>2 16/07/2013 06/2014</p> <p>Collision at Buttington Hall user worked crossing, Welshpool</p> <p>Status: Implementation ongoing</p>	<p>The intent of this recommendation is to reduce the risk at user worked crossings during periods of intensive use.</p> <p>Network Rail and Northern Ireland Railways should define one or more safe and practical methods of working that may be adopted at user worked crossings during periods of intensive use; and provide clear information to their staff and authorised users on how and when they should be applied. They should also ensure that any such methods of working are suitably reflected in instructions and training given to railway staff.</p> <p>This recommendation may also be applicable to other infrastructure managers.</p>	<p>ORR reports that Network Rail will work with a selection of Route teams, external key stakeholders, and with the support of Network Operations, to develop good practice guidance for use during periods of intensive use of level crossings. This will include associated generic safe methods of working templates which cater for different scenarios and provide guidance for deployment.</p> <p>ORR will advise RAIB when actions to address this recommendation have been completed.</p>
<p>3 16/07/2013 06/2014</p> <p>Collision at Buttington Hall user worked crossing, Welshpool</p> <p>Status: Implementation ongoing</p>	<p>The intent of this recommendation is that the revised method of working devised in response to recommendation 2 is included in the level crossing risk management toolkit as a potential mitigation measure.</p> <p>RSSB should review, and improve where appropriate, measures in the level crossing risk management toolkit that are designed to mitigate the risk at user worked crossings at times of intensive use.</p>	<p>ORR report that RSSB is planning to incorporate risk mitigations at times of intensive use into its upgrade of the Risk Management Level Crossing Tool Kit.</p> <p>ORR will advise RAIB when actions to address this recommendation have been completed.</p>
<p>1 23/01/2013 07/2014</p> <p>Locomotive derailment at Ordsall Lane Junction, Salford</p>	<p>The intent of this recommendation is to reduce the risk of derailment on small radius curves by ensuring that non-compliances with currently prescribed requirements for check rails are identified and mitigated.</p> <p>Network Rail should identify all curves that are non-compliant with Railway Group standard GC/RT5021 and Network Rail standard NR/L2/TRK/2102 in respect of the need to fit a check rail. For each identified curve, Network Rail should implement measures to adequately mitigate the risk of derailment. These</p>	

may include one or both of the following methods, although other means of mitigation may also be appropriate (paragraph 110a, 111a and 111b):

- installing a check rail on the curve; and
- managing rail lubrication on the curve to a suitable level of availability.

Implementation of this recommendation may require Network Rail to review curvature information recorded on track geometry measurement train runs (paragraph 79).

2 23/01/2013 07/2014
Locomotive derailment at Ordsall Lane
Junction, Salford

The intent of this recommendation is that Network Rail should understand any changes that it has introduced to infrastructure management processes that have had a detrimental effect on their ability to control derailment risk on small radius curves (paragraphs 63, 64 and 80 - 89) and take actions to reduce the risk so far as is reasonably practicable.

Network Rail should review its approach to managing changes that may affect the friction on small radius curves to understand whether any alterations to infrastructure and/or management arrangements, have resulted in higher levels of friction.

At locations where it is considered that the rail friction is greater than that which applied previously, actions should be taken to reduce the corresponding increase in derailment risk so far as is reasonably practicable. These actions may include (paragraph 110a, 111a, 111b and 112a):

- improvements to the rail lubrication equipment that is provided and/or the associated management processes; and/or
- the provision of a check rail.

3 23/01/2013 07/2014
Locomotive derailment at Ordsall Lane
Junction, Salford

The intent of this recommendation is to improve compliance with current design standards when track renewal or major maintenance work is undertaken.

Network Rail should develop and implement (paragraph 110a):

- criteria for when it is necessary to formally assess the need to bring existing track assets in line with current design standards; and
 - a process to record the findings of such assessments.
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Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
1 28/06/2012 08/2014 Class investigation into landslips affecting NR infrastructure	<p>The intent of this recommendation is that Network Rail revises its processes for managing earthwork and drainage risk associated with neighbouring land so that the processes are accurately documented, proportionate, reflect practical limitations and take account of benefits offered by new technology such as aerial sensing and the use of computers to process large amounts of data.</p> <p>Network Rail should review and improve its processes for managing earthworks related risk arising from neighbouring land, including associated drainage issues. This should provide a documented process which takes account of the extent to which it is practical and proportionate for Network Rail to review and/or rely on land management activities undertaken by neighbours. The new process should, where reasonably practicable:</p> <ul style="list-style-type: none">• obtain relevant information from other sources where it cannot be collected by earthwork examiners (eg where examiners are unable to view areas due to access constraints, fences, etc);• take advantage of opportunities offered by current technology to assess areas at risk from ground movement and areas where ground movements are occurring;• provide a robust process for identifying, and responding appropriately, to activities on neighbouring land which have the potential to significantly increase risk to the railway between routine earthwork examinations; and• take advantage of opportunities offered by real-time rainfall monitoring to issue alerts identifying heavy rainfall when this has not been forecast.	
2 28/06/2012 08/2014 Class investigation into landslips affecting NR infrastructure	<p>The intent of this recommendation is to ensure that Network Rail takes account of all safety related information contained in reports for slopes that have been categorised as marginal or serviceable by the SSHI and RSHI algorithms (ie reports which, at present, are not necessarily reviewed by Network Rail's geotechnical staff).</p> <p>Network Rail should review and improve its processes so that due consideration is given to all safety related information provided by earthwork examiners and earthwork engineers, including safety</p>	

related information associated with slopes categorised as marginal or serviceable by the SSHI and RSHI algorithms.

3 28/06/2012 08/2014
Class investigation into landslips affecting NR
infrastructure

The intent of this recommendation is to increase the likelihood that appropriate Network Rail staff are aware of landslip risk due to adverse rainfall conditions which have not been forecast or detected by Network Rail's formal rainfall monitoring processes.

Network Rail should implement a process for real-time collection (and appropriate use of) intelligence about very unusual rainfall or flooding conditions. Development of this process should take into account the differing risk levels on different parts of the infrastructure and should consider using the following information sources:

- emergency service control centres;
- other organisations involved in the provision and management of rail and non-rail transport;
- reports (encouraged by appropriate railway industry publicity) from on-duty and off-duty railway industry staff including those employed by train operating and maintenance companies; and
- rain gauge and other types of weather sensor capable of providing data in real time.

4 28/06/2012 08/2014
Class investigation into landslips affecting NR
infrastructure

The intent of this recommendation is for Network Rail to formalise the processes already being developed and introduced with the intent of improving management of earthworks during adverse weather, and for these processes to include timely updating of the 'at risk' register.

Network Rail should complete initial development of its modified adverse weather earthwork management system. It should then alter its standards and, if necessary, other formal documentation to reflect the modified system. The updated documentation should include a process for the rapid updating of the 'at risk' register when significant risks become apparent.

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5 28/06/2012 08/2014
Class investigation into landslips affecting NR
infrastructure

The intent of this recommendation is for Network Rail to formalise the process for dealing with the rare circumstances when the mitigation normally provided in response to a red warning would be inadequate. This requires consideration of additional mitigation for locations on the 'at risk' register and consideration of mitigation for locations which are not normally considered to be at risk during extreme weather conditions.

Network Rail should formalise the process for implementing additional mitigation if very extreme rainfall conditions mean that the mitigation normally provided in response to a red warning is inadequate for earthworks on the 'at risk' register and/or there is a significant likelihood of landslips at locations not included on this register.

1 21/07/2013 09/2014
Passenger train collision at Norwich

The purpose of this recommendation is to improve the safety performance of Greater Anglia's drivers by developing their non-technical skills.

Greater Anglia should complete the update of its Competence Management System to include consideration of non-technical skills (paragraph 123b.i). The updated Competence Management System should include:

- the development and delivery of training on non-technical skills to Greater Anglia's drivers, driver managers and driver instructors by suitably qualified trainers (paragraph 128);
- the tools necessary to support its application, including those required to:
 - o identify substandard non-technical skills;
 - o alert a manager to a driver who is found not to be meeting the competence requirements on repeated occasions; and
 - o guide managers on the actions to be taken (paragraphs 123b.ii);
- a briefing of those who manage the implementation of the Competence Management System so that procedures are complied with (eg managers know when to refer drivers to safety review panel) (paragraph 123c.ii); and
- monitoring of the implementation of the updated Competence Management System to confirm that it delivers the expected improvement in the safety performance of its drivers (paragraph

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129).

2 21/07/2013 09/2014
Passenger train collision at Norwich

The purpose of this recommendation is to improve Greater Anglia's investigations of operational incidents by ensuring that they always consider non-technical skills.

Greater Anglia should:

- update its accident and incident investigation procedures to include consideration of non-technical skills in the causation of accidents; and
- train all its investigators to assess the role of non-technical skills in the causation of accidents (paragraph 123c.i).

3 21/07/2013 09/2014
Passenger train collision at Norwich

The purpose of this recommendation is to ensure that the implementation of Greater Anglia's internal auditing processes identify non-compliances with its procedures.

Greater Anglia should review and make any necessary changes to the application of the audit procedure, including any locally pre-defined question sets, to ensure that it allows for consideration of compliance with all safety related elements of the operational procedures (paragraph 123c.iii).

4 21/07/2013 09/2014
Passenger train collision at Norwich

The purpose of this recommendation is to improve the safety performance of Greater Anglia's drivers by reducing fatigue when driving.

Greater Anglia should complete the review of its fatigue risk management system to identify and implement improvements. Greater Anglia should continue to refer to the Office of Rail Regulation's guidance, dated January 2012 on 'Managing rail staff fatigue' as part of the review (paragraph 125c).

5 21/07/2013 09/2014
Passenger train collision at Norwich

The purpose of this recommendation is for Network Rail to ensure that the risk associated with permissive moves at Norwich station is acceptably low.

Network Rail should assess the risk associated with permissive working at Norwich station. Greater Anglia should support Network Rail by providing an understanding of the current constraints and processes for short-term alterations to platform allocations. Network Rail should take these into account when assessing the risk and determining any necessary risk control measures.

Network Rail and Greater Anglia should implement any required risk control measures and brief their staff accordingly (paragraph 125a).

1 31/05/2013 10/2014
Accident at Balnamore level crossing,
Ballymoney, Northern Ireland

The intent of this recommendation is for Northern Ireland Railways to ensure that any activities undertaken at level crossings within possessions are subjected to effective risk controls.

Northern Ireland Railways should review (in conjunction, as necessary, with Iarnród Éireann) the requirements of the NIR/IE Rule Book, NIR Rule Book Appendix and NIR Signalmen's General Instructions which relate to activities at level crossings within pre-planned possessions. This review should consider whether:

- all of the level crossing types present on the infrastructure managed by Northern Ireland Railways are covered by the existing rules and instructions;
- the risks of such activities are being adequately mitigated; and
- existing risk controls are adequately resourced and comply with any relevant industry best practice, legislation, regulations, codes of practice and guidance.

Northern Ireland Railways (in conjunction with Iarnród Éireann as necessary) should implement any changes identified as a result of this review. Northern Ireland Railways should ensure that suitable briefing and training accompanies any changes which are implemented (paragraphs 111c, 111e and 116).

2 31/05/2013 10/2014
Accident at Balnamore level crossing,
Ballymoney, Northern Ireland

The intent of this recommendation is for Northern Ireland Railways to ensure that any method statements relating to track engineering are supported by risk assessments.

Northern Ireland Railways should review any method statements currently being used by its track department in order to ensure that they are supported by risk assessments, in accordance with relevant requirements of the infrastructure division's safety management system (paragraph 115).

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3 31/05/2013 10/2014 Accident at Balnamore level crossing, Ballymoney, Northern Ireland	<p>The intent of this recommendation is to increase the opportunity for the types of non-compliance identified by this investigation to be detected and corrected.</p> <p>Northern Ireland Railways should implement the planned restructuring of the infrastructure division safety, quality and environment team. The team should have the resources and tools necessary to facilitate the identification of non-compliances to the NIR/IE Rule Book, NIR Rule Book Appendix and NIR Signalmen's General Instructions, similar to those identified by this investigation. This should be supported by ongoing monitoring arrangements by Northern Ireland Railways of the performance of its framework contractors (paragraphs 110, 111a, 111b, 111d, 112, 113, 114, 119 and 120).</p>	
1 06/06/2013 11/2014 Near-miss at Llandoverly level crossing	<p>The intent of this recommendation is to reduce the risk created by having no formal method of work where traincrew have duties to perform, such as token exchange, level crossing operation and train dispatch at unstaffed stations.</p> <p>Arriva Trains Wales should identify all locations where traincrew carry out operational activities such as token exchange and level crossing operation in addition to train dispatch, and develop risk assessed methods of work for each location. The methods of work should be briefed, and trained to all traincrew, incorporated in the performance monitoring systems and be subject to periodic review (paragraphs 106a, 106b and 108a).</p>	
2 06/06/2013 11/2014 Near-miss at Llandoverly level crossing	<p>The intent of this recommendation is to improve the arrangements at stations in respect of the positioning of equipment and signage used by traincrew.</p> <p>Arriva Trains Wales should lead a review of the positioning of platform equipment and signage used by traincrew at unmanned stations and, where practicable, arrange with Network Rail for improvements to be made. This should include (paragraphs 106a and 106b):</p> <ul style="list-style-type: none"> a. identification of the optimum stopping position for trains to enable the best achievable view of signals, stop boards and indicators; and b. an assessment of the positioning of control equipment operated by traincrew (such as level crossing controls). 	

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3 06/06/2013 11/2014
Near-miss at Llandoverly level crossing

The intent of this recommendation is for infrastructure upgrade and improvement projects to include explicit consideration of all reasonable opportunities to improve safety at those locations where work is taking place.

Network Rail should make improvements to its processes for the design of new and altered signalling, to require the active consideration of reasonable opportunities to make improvements (for example, the types of measures indicated in NB 130 (paragraph 75)) to the control of risk beyond the immediate scope of the proposed works, including identifying where operator errors, individual or collective, could lead to unsafe conditions (paragraph 106c).

4 06/06/2013 11/2014
Near-miss at Llandoverly level crossing

The intent of this recommendation is for ATW to review and improve its operational risk management arrangements.

Arriva Trains Wales should conduct a review of its operational risk management arrangements in the light of the findings from this investigation, and make improvements in accordance with the findings of the review (paragraphs 106a, 106b, 108a and 108b). The scope of the review should include:

- a. the process for assessing risk associated with station duties on all lines over which its traincrews operate (eg the application of route risk assessments);
- b. a prioritised plan for the assessment of dispatch risk at unmanned platforms;
- c. a prioritised plan to formulate, brief and train dispatch plans to traincrew;
- d. the effectiveness of its methods for checking compliance with its policies and procedures (eg the application of remote booking-on spot checks, out-of-hours checks, and remote monitoring of the use of safety-critical equipment (including the use of OTDR data));
- e. the guidance issued by ORR and RSSB about fatigue management, in particular sleep risk assessments when booking-on duty, and a culture of trust and openness in fatigue management; and
- f. the need for a revision of its training practices and materials for drivers, conductors and controllers to explain the rationale that underpins the rules and to emphasise the benefits of

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compliance (as well as describing the rules and the consequences of non-compliance).

5 06/06/2013 11/2014
Near-miss at Llandovery level crossing

The intent of this recommendation is to reduce the risk of error at traincrew operated level crossings by providing positive indications of the status of those crossings.

Network Rail should review the current arrangements for providing an indication to the train driver of the status of the crossing at Llandovery. This should include consideration of the practicability of providing an active indication when the crossing is still open to road traffic (eg a flashing red light). This review should then be extended to other traincrew operated level crossings of a similar design (paragraphs 106a, 106b and 107).

6 06/06/2013 11/2014
Near-miss at Llandovery level crossing

The intent of this recommendation is to control the risk created by traincrew continuing to operate trains in service where there is evidence that their actions contributed to a serious operational incident.

Arriva Trains Wales should review and improve the training and guidance given to its duty control managers on the steps to be taken when traincrew are involved in a serious operating incident where their actions directly contributed to it (paragraph 109).

1 25/06/2013 12/2014
Near-miss at Butterswood level crossing,
North Lincolnshire

The intent of this recommendation is to provide a positive indication to train drivers when automatic locally monitored level crossings have failed to operate for the approaching train.

Network Rail, in consultation with RSSB, should conduct a human factors and technical review of the indications displayed at driver's crossing indicators provided on the approach to automatic locally monitored level crossings, and evaluate alternative means (eg audible and visual) of indicating to train drivers that the level crossing has not operated as intended. A time-bound plan for improvements arising from the review should be developed using a risk-based approach (paragraph 101a).

2 25/06/2013 12/2014
Near-miss at Butterswood level crossing,
North Lincolnshire

The intent of this recommendation is to improve the reliability of all power supplies (including battery back-up arrangements) at automatic locally monitored level crossings.

Network Rail should review the arrangements in place at all types of automatic locally monitored level crossings, and make

improvements to the reliability of those crossings. The review, and associated improvements, should include (but not be limited to):

a. locations where parallel protective systems exist (such as multiple earthing systems combined with RCD protection) where their presence can lead to unnecessary loss of the main network power supply to the level crossing;

b. the plans in place to ensure that UPS systems maintain adequate performance throughout their life (including plans to replace UPS battery systems during the life of the UPS system); and

c. understanding the age of UPS systems in use, and the manufacturer's life expectancy of those assets (paragraphs 101b and 102b).

3 25/06/2013 12/2014
Near-miss at Butterswood level crossing,
North Lincolnshire

The intent of this recommendation is for Network Rail to be able to identify level crossings that have suffered a power supply failure so that prompt action can be taken to manage the consequences of the failure including consideration of the benefits of recent technological developments that allow remote condition monitoring at reasonable cost.

Network Rail should evaluate the practicality of remote condition monitoring of the power supply system, and key sub-systems whose failure can have the same effect as loss of power supply, at all locally monitored level crossings, so that prompt action can be taken to manage the failure (such as telling train drivers that the crossing has failed and arranging for technical staff to attend the level crossing to investigate the failure) (paragraph 101c).

4 25/06/2013 12/2014
Near-miss at Butterswood level crossing,
North Lincolnshire

The intent of this recommendation is for First TransPennine Express to identify and implement changes where necessary to its briefing methods in order to reduce the risk of drivers making errors at key locations such as locally monitored crossings.

First TransPennine Express should review and enhance its briefing techniques and guidance material for train drivers (paragraph 102c):

a. to explain the role of the driver at locally monitored crossings;

b. to ensure that it properly reflects the operation of key infrastructure assets such as level crossings (including revisions to its description of the arrangements at automatic locally

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monitored level crossings, beyond the level of detail described in the railway rule book);

c. to allow its train drivers to practise dealing with unannounced level crossing failures, including, for example, the use of its train driving simulator or video-based hazard perception exercises;

d. by using focused, risk-based, presentation material for briefing operational staff (paragraph 103b); and

e. by stating clearly the action drivers should take when passing the special speed restriction board of any locally monitored automatic level crossing, when a flashing red light is visible at the drivers crossing indicator (paragraph 103b).

Note: Recommendation 4 may also apply to other train operators.

1 23/11/2013 13/2014

Locomotive failure near Winchfield

The intent of this recommendation is that the design of the Bulleid small end should be reviewed to establish the benefit or otherwise of using a castellated nut.

West Coast Railways, in consultation with the Main Line Steam Locomotive Operators Association, the Bulleid Pacific Locomotive Association and the Heritage Railway Association, should review the design of the small end joint on the Bulleid pacific locomotive to establish the safety benefits, and risk, of using a castellated nut. The results of this review should be shared with other owners of these locomotives (paragraph 119a).

2 23/11/2013 13/2014

Locomotive failure near Winchfield

The intent of this recommendation is that the details of the design of cotters fitted to steam locomotives should be reviewed, to reduce the risk of failure arising from fatigue.

The Heritage Railway Association and the Main Line Steam Locomotive Operators Association should prepare guidance for their members on the design and manufacture of split cotters to encourage the use of best engineering practice. This may include considering:

I reference to the British Railways drawing SL-DN-K.569; or

I other methods of fabrication such as the use of folded strip, welded at the head, which is widely used in the industry.

(paragraph 119c)

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3 23/11/2013 13/2014 Locomotive failure near Winchfield	<p>The intent of this recommendation is that the maintenance arrangements for steam locomotives operated by West Coast Railway Company should be consistent and in accordance with the provisions of its safety management system.</p> <p>West Coast Railway Company should review and improve its safety management system to take account of the need for assurance that the standards of maintenance work carried out on locomotives owned and/or operated by the company are adequate, consistent and subject to monitoring and supervision independent of those doing the work (paragraph 121a).</p>	
4 23/11/2013 13/2014 Locomotive failure near Winchfield	<p>The intent of this recommendation is that restorers of steam locomotives should be made aware of the need to thoroughly evaluate and risk assess design changes proposed or made during the restoration process, or subsequently.</p> <p>The Heritage Railway Association and the Main Line Steam Locomotive Operators Association should bring this report to the attention of their members and invite them to consider thoroughly evaluating and risk assessing changes to the design of steam locomotives that are made during restoration, overhaul or maintenance. The following should be considered:</p> <ul style="list-style-type: none"> • whether the purpose and function of the original design, and the reasons for making the change are fully understood; • whether any additional risk will be introduced by the change; and • any measures that may be needed (during overhaul, operation or maintenance) to reduce the risk associated with the change, and to assess its impact. (paragraph 119b) 	
1 26/10/2013 14/2014 Road vehicle incursion onto the railway at Aspatria, Cumbria Status: In-progress	<p>The intent of the recommendation is to reduce road vehicle incursion risk by ensuring that the risk of vehicles from side roads, including running downhill onto the railway, is properly taken into account when sites are risk ranked.</p> <p>The Department for Transport, in liaison with highway authorities and railway infrastructure managers, should review and amend the current guidance 'Managing the accidental obstruction of the railway by road vehicles' published in 2003 so that it adequately takes into account in the risk ranking process for neighbouring sites the risk of road vehicles on side roads, including those that</p>	DfT advise that this recommendation is to be addressed at the UK Bridges Board.

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are unattended, running downhill onto a railway. The guidance, when amended, should clearly describe how this risk should be derived and included in the overall risk ranking score (paragraph 62).

2 26/10/2013 14/2014
Road vehicle incursion onto the railway at
Aspatria, Cumbria

The intent of the recommendation is to provide additional mitigation against road vehicle incursions from side roads, including where vehicles may run downhill onto the railway.

Following the completion of Recommendation 1 above, railway infrastructure managers, with highway authorities, should use the new guidance to implement a time-bound plan to review the risk ranking scores for sites where there is a significant risk from side roads, in particular with respect to road vehicles running downhill onto a railway. Additional risk mitigation measures justified by increased risk ranking scores should be considered and implemented (paragraph 62).

1 21/04/2013 15/2014
Runaway of RRV and resulting collision in
Queen Street tunnel, Glasgow

The intention of this recommendation is to ensure that Rexquote adopts a formalised approach to managing the quality of equipment that it manufactures or converts.

Rexquote should implement a quality assurance process commensurate with good practice in engineering safety management.

Development of the process should include, but not be limited to, consideration of the following measures:

- undertaking peer review or checking of design assumptions and design calculations;
- ensuring that the intended design performance of equipment is used as the basis for assessing the results of design validation testing;
- ensuring that maintenance procedures and the associated tests are consistent with the intended design performance of equipment;
- ensuring that the design of safety related systems, such as brakes, and of any associated maintenance processes, takes account of foreseeable degradation mechanisms, such as brake pad wear, the need for adjustments and environmental conditions; and
- formal certification by an external body.

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(paragraphs 154e, 154f, 155 and 156a)

2 21/04/2013 15/2014
Runaway of RRV and resulting collision in
Queen Street tunnel, Glasgow

The intention of this recommendation is to extend an existing RAIB recommendation relating to adequate quality assurance processes so that it covers all suppliers of rail plant used on Network Rail infrastructure, not only those who supply directly to Network Rail.

Network Rail should extend its process for auditing the engineering management system of rail plant suppliers (linked to Bradford Interchange Recommendation 4; paragraph 160) so that it includes auditing the engineering safety management processes of all organisations manufacturing and/or converting rail plant likely to be used on Network Rail infrastructure (paragraphs 155 and 156a).

3 21/04/2013 15/2014
Runaway of RRV and resulting collision in
Queen Street tunnel, Glasgow

The intention of this recommendation is to prevent RRVs running away with no lighting illuminated.

Network Rail, in conjunction with RSSB, should review the requirements for RRV lighting in standard RIS-1530-PLT, with the objective of reducing the risk of RRVs running away without active lights. This should include consideration of:

- requiring rail mode lighting to be activated when rail wheels start to be deployed (when on-tracking is taking place); and
 - requiring all illuminated lights to remain lit on activation of engine stop or emergency stop controls.
- (paragraph 157a)

4 21/04/2013 15/2014
Runaway of RRV and resulting collision in
Queen Street tunnel, Glasgow

The intention of this recommendation is to reduce the likelihood of RRV parking brakes being inadequate by improving the quality of RRV parking brake tests.

Network Rail, in conjunction with the M&EE Networking Group, should review and improve the requirements and guidance for testing of RRV parking brakes so that such tests reliably demonstrate that the brake will be effective in all foreseeable operating conditions. The review should include, but not be limited to, consideration of:

- demonstrating sufficient safety margins (including any related to uncertainties in the testing method);

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- allowing for foreseeable degradation, such as brake pad wear;
- allowing for varying environmental conditions, including variations in contamination at the brake/wheel interface;
- ensuring that test methods used are repeatable and consistent; and
- testing to be carried out by RRV suppliers, users and maintainers.

(paragraph 154g)

1	25/08/2013	16/2014	<p>The purpose of this recommendation is to promote a design review of the passenger emergency alarm system on 1992 tube stock and the adoption of ergonomics best practice in an improved design.</p> <p>London Underground Limited should carry out an ergonomics assessment of the driver interface with the passenger emergency alarm system on 1992 tube stock. This assessment should include the functioning of the talkback system and the compatibility between the controls and the display. Taking account of guidelines on alarm handling and prioritisation (such as the, 'Good Practice Guide for the design of alarms and alerts' (T326), RSSB, 2008), London Underground Limited should then take appropriate action to present critical information to the train operator in a way that supports decisions and actions so that they can deal appropriately with the emergency situation (paragraph 129).</p> <p>Relevant outcomes of this ergonomic assessment should also be applied to other stock as appropriate.</p>
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2	25/08/2013	16/2014	<p>The purpose of this recommendation is to improve the ability of train operators to handle multiple passenger emergency alarms and other 'out of course' events on 1992 tube stock.</p> <p>London Underground Limited should review the rules, procedures and training applying to the handling of emergency situations on 1992 tube stock where multiple passenger emergency alarms have been activated and/or where only part of the train is stopped in a station. This review should include an assessment of the ways in which train operators can best manage a situation and adequacy of existing training arrangements. Particular attention should be paid to helping operators make appropriate and timely announcements and the</p>
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safe management of doors in such circumstances. Any necessary changes to existing arrangements should then be implemented and staff briefed and trained as appropriate (paragraph 126b).

Relevant outcomes of this review should also be applied to other stock as appropriate.

3 25/08/2013 16/2014
Uncontrolled evacuation of a train at Holland
Park station

The purpose of this recommendation is to ensure that train operators remain in communication with line controllers when they are required to leave the cab to go back into the train.

London Underground Limited should put procedures in place to require train operators to carry their hand-held radio when going back into the train, for example, to investigate the activation of a passenger emergency alarm, so that they can communicate with the line controller in a timely manner (paragraph 126c).

4 25/08/2013 16/2014
Uncontrolled evacuation of a train at Holland
Park station

The purpose of this recommendation is to make sure that line controllers are enabled to take appropriate and timely action when dealing with potential safety critical faults and conditions on trains.

London Underground Limited should:

a. review the procedure applying to line controllers for dealing with reports of faults on trains, particularly reports relating to smoke or burning, and improve as necessary, in order that line controllers are provided with a clear process to assist timely decision-making and response; and

b. establish a protocol to manage the shift changeover between controllers, so that there is no loss of time or continuity in dealing with an incident (paragraph 128).

5 25/08/2013 16/2014
Uncontrolled evacuation of a train at Holland
Park station

The purpose of this recommendation is to ensure that London Underground Limited's staff are able to respond appropriately to incidents on trains in platforms.

London Underground Limited should review the required competencies and training for dealing with out-of-course events on trains in platforms. This should include consideration of how best to prepare station staff, train operators and line controllers to respond to such events in a rapid, coordinated and coherent manner, to protect the safety of passengers and station users (paragraphs 126b, 126c, 126d and 128).

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6 25/08/2013 16/2014 Uncontrolled evacuation of a train at Holland Park station	<p>The purpose of this recommendation is to draw attention to the need for the prompt and accurate reporting of incidents.</p> <p>London Underground Limited should devise a time bound programme to reinforce, by briefing and further training if necessary, its procedures on the reporting and investigation of incidents in which there are no reported injuries but which could have led to more serious consequences. This should include the need for the early debriefing of staff involved and, where appropriate, the withdrawal of any trains from service for inspection and testing, to permit such incidents to be properly investigated (paragraph 130).</p>	
1 28/08/2013 17/2014 Southend Central	<p>The intention of this recommendation is to reduce the risk of pushchairs and wheelchairs rolling off platforms.</p> <p>Network Rail and Station Facility Operators should implement processes for managing the risk of wheelchairs and pushchairs rolling onto the track. These should include:</p> <ul style="list-style-type: none"> • the inclusion of platform slopes as a factor to be considered when assessing the risk to passengers on platforms; • guidance to risk assessors on factors likely to exacerbate any risk of roll away (such as the presence of ticket machines, help points and shops/kiosks where people are more likely to release their hold on pushchairs and wheelchairs); • consideration of measures to manage the risk (taking account of the work arising from the implementation of recommendation 3 in the short-term and recommendation 2 in the longer term); • specific consideration of the impact on platform slopes of any works that are to take place at the station and methods of ensuring that those works will, as a minimum, not worsen the slope (and reduce or eliminate it if reasonably practicable to do so); and • the sharing of information concerning any residual risk at the conclusion of works (paragraphs 73a and 75c). 	
2 28/08/2013 17/2014 Southend Central	<p>The intention of this recommendation is for the rail industry to understand the point at which a slope becomes sufficiently steep for it to be more likely than not that an occupied wheelchair or pushchair without a brake applied would roll away. The work should consider the most appropriate methods of influencing the behaviour of passengers to minimise the risk.</p>	

Network Rail in consultation with the Association of Train Operating Companies, RSSB and the Department for Transport, should (as part of the national strategy for managing the platform train interface risk) arrange for work to be undertaken to determine when a slope towards the railway could become a significant hazard, and ways of mitigating the risk. The scope of the exercise should consider:

- all slopes on platforms including those that have been installed intentionally (for example to accommodate changes in level along the platform length);
- at what point a slope towards the railway makes it more likely than not that a wheelchair or pushchair without brakes applied could roll away, taking account of modern designs of such equipment; and
- other factors such as how individuals perceive a slope hazard, the most appropriate way to highlight the hazard, appropriate methods to influence public behaviour, and other ways of mitigating the risk.

Once the work is complete the industry should publish appropriate guidance, including consideration of standardisation in the contents of signage, announcements, etc (paragraphs 73b and 73c).

3 28/08/2013 17/2014
Southend Central

The intention of this recommendation is for the Association of Train Operating Companies to consider the most appropriate ways of influencing the behaviour of passengers travelling with a wheelchair or pushchair, pending the outcome from recommendation 2.

As an interim measure, pending the outcome of the research identified in recommendation 2, the Association of Train Operating Companies should, in consultation with passenger groups including those representing the interest of disabled passengers, review the findings of this report and seek to understand the ways in which the risk of wheelchairs and pushchairs rolling onto the track can be more effectively managed by operators. This review should include consideration of:

- locations where passengers may need to remove both their hands from a pushchair or wheelchair because of the nature of another task to be performed (eg at a ticket machine or

shop/kiosk);

- reference to any existing good practice in this area; and
- measures that could most effectively influence the behaviour of passengers using wheelchairs and pushchairs on station platforms.

The output of the review should be consolidated into suitable guidance for train operators (paragraphs 73b, 73c and 75c).

4 28/08/2013 17/2014

Southend Central

The intention of this recommendation is for the rail industry to capture, share and use information relating to roll-off events with a particular emphasis on identifying where platform slopes were a causal factor so that it has a better understanding of the causes of roll-off events and the associated risk.

Network Rail, in consultation with Station Facility Operators and RSSB, should implement a process to improve the investigation and recording of roll-off incidents and the way in which data is shared. Particular attention should be paid to the following areas:

- improvements in capturing and recording incidents involving roll-off type events, including the identification of the key factors that caused the roll-off such as the presence of a slope towards the railway on the platform;
- a review of previous roll-off incidents and accidents (covering at least the last five years) to identify those that may have been solely attributed to 'user error' or 'trespass', including establishing whether there may have been other causal factors such as a slope at the location concerned; and
- a review of how intelligence on roll-off incidents should be shared within and between SFOs and Network Rail as an input to decisions on the nature and content of improvement works at stations (recommendation 1 also refers) (paragraphs 73b and 74).

1 05/06/2013 19/2014

Passenger trapped in train door at Newcastle
Central Station

The intent of this recommendation is to reduce the risk to passengers due to trapping and dragging incidents by taking into account the learning from this accident.

Operators of Siemens UK Desiro trains fitted with electrically operated sensitive edges should re-assess the risk of injuries and fatalities due to a trapping and dragging incident in light of failures identified in this report and take appropriate action to

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reduce the risk. This should take account of historical data, the incidents highlighted in this report and precursor events to trapping and dragging. This risk assessment should take into account observed passenger behaviour (eg by monitoring passenger attempts to reopen closing doors) and estimated human error rates within the dispatch process (paragraph 143b).

2 05/06/2013 19/2014

Passenger trapped in train door at Newcastle Central Station

The intent of this recommendation is to reduce the risk to passengers due to trapping and dragging incidents by modification of future door designs.

Siemens should redesign the doors, as used on the Class 185 and other similar units, for future vehicles supplied to the UK, to reduce the probability of a passenger being trapped in them but not detected by the door control system. This could be achieved by redesigning the sensitive edges or by other means (paragraph 143b).

3 05/06/2013 19/2014

Passenger trapped in train door at Newcastle Central Station

The intent of this recommendation is to reduce the risk to passengers due to hazards from trains supplied by Siemens which are either discovered at the design stage, or that subsequently emerge during service.

Siemens should review and, where appropriate, improve their design processes to ensure that they fully identify record and assess hazards associated with the design of their trains. The train operator, or those with operational experience, should be involved in the hazard identification and review process to ensure that this is considered in any design decisions. Any hazards identified following the design phase should be fully assessed, including consideration of the potential for redesign to manage the residual risk. Where this is not practicable, the operator of the train and/or the maintainer should be made aware of the hazard and the residual risk so that suitable mitigation measures and monitoring arrangements can be put in place.

Siemens should also seek to ensure that it is kept aware of problems that emerge during service so that the need for subsequent design modifications can be assessed as necessary (paragraph 99).

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4 05/06/2013 19/2014

Passenger trapped in train door at Newcastle
Central Station

The intent of this recommendation is to reduce the risk to passengers due to hazards from trains operated by First TransPennine Express by implementing a process for the logging of hazards and the management of risk associated with each. It is also intended that the recording of hazards should be sufficiently visible to its staff so that awareness of them is maintained, possible precursors established (eg near-misses) and monitored and regularly re-assessed.

First TransPennine Express should continue to review and, where appropriate, improve its safety management processes to ensure that it has a system for the identification and recording of hazards, assessment of the risk associated with each, and management of the implementation of any necessary control measures. By means of these processes, FPTE should:

- a) manage risk associated with the original design features of the trains it operates, and those that emerge during operations, inspections and maintenance, or when changes are made to equipment and operational practice (paragraph 110);
- b) develop a time bound programme for the implementation of control measures that have been identified; and
- c) track the implementation of any control measures, including those identified during its station risk assessments (paragraph 150).

This recommendation may be applicable to other train operating companies.

5 05/06/2013 19/2014

Passenger trapped in train door at Newcastle
Central Station

Status: In-progress

The intent of this recommendation is to reduce the risk to passengers due to trapping and dragging incidents by ensuring that door obstruction detection systems on new trains, both in the UK and Europe, cannot be readily overcome.

RSSB should recommend to the British Standards Institution (BSI) that in the forthcoming BS EN version of the European standard (EN 14752 Railway applications - Bodyside Entrance Systems for rolling stock) the UK National Foreword informs readers of the possibility of entrapment even on correctly adjusted doors that comply with the specified obstruction tests (paragraph 161). Additionally, RSSB should recommend to the BSI that in the formal vote on this emerging European standard, it includes a request to review the obstruction test requirements to reduce the probability of trapping and dragging and to make reference to either this investigation report, or the

RSSB advises that it has submitted text for inclusion in Standard BSEN14752 to clarify the need to take into account operational dispatch procedures when reviewing the effectiveness of door obstacle detection methods. Furthermore, RSSB voted to approve an immediate revision to prEN 14752 to consider the suitability of the current obstacle testing methodology, given that the Newcastle incident highlighted that a door system compliant with the Euronorm can trap and not detect the presence of an arm inserted at an angle to the door.

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urgent safety advice issued by the RAIB to the European Rail Agency (ERA) on 24 October 2013, reference 665/02 on ERA's Safety Information System (paragraph 154).

6 05/06/2013 19/2014
Passenger trapped in train door at Newcastle
Central Station
Status: In-progress

The intent of this recommendation is for RSSB to consider what additional data needs to be captured within its Safety Management Information System (SMIS) to allow a more complete evaluation of the risk of trapping and dragging events on the national network.

RSSB should identify any additional data that should be captured within SMIS from incidents of persons trapped by train doors, who are outside the train which subsequently moves, whether this results in injury or not. This data should be collected and used by railway undertakings to monitor such events and inform decisions to reduce this risk (paragraph 130).

RSSB have informed RAIB that it has already started the project to review the data that should be captured within SMIS, with a particular focus on the platform-train interface.

1 15/10/2013 20/2014
Freight train derailment near Gloucester

The intent of the recommendation is to reduce the possibility of new track defects developing due to the installed drainage not preventing water ingress from the local water table, which could give rise to a risk of derailment.

Network Rail should review the effectiveness of the drainage in the area where the train derailed (between 118 miles 60 chains and 118 miles 40 chains on the up main line between Lydney and Gloucester) to confirm if the work that was undertaken to improve the drainage, when the track was renewed in March 2014, will control the risk of water from the local water table affecting the track's vertical geometry and the recurrence of a cyclic top track defect (paragraphs 194a.i and 195a).

2 15/10/2013 20/2014
Freight train derailment near Gloucester

The intent of the recommendation is to reduce the risk of derailment from cyclic top track defects.

Network Rail should revise its processes for the management of cyclic top track defects. It should:

a) review the requirement that immediate action cyclic top track defects must be repaired within 36 hours to understand if it is feasible for an effective repair to be made in this timescale, and if not, mandate the actions that must be taken to mitigate the risk due to the cyclic top track defect until an effective repair can be planned and made (paragraph 194a.iv);

b) provide guidance, which is briefed out to its track maintenance staff, on how to make effective repairs to cyclic top

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RAIB)

track defects. This guidance should tell track maintenance staff not to carry out manual repair work that is only aimed at breaking the cyclic top track defect into sections of track with poor vertical track geometry, unless the risk presented by the residual poor vertical track geometry is assessed and mitigating actions taken (such as the imposition of a speed restriction) (paragraph 194a.iv);

c) review the adequacy of its processes for imposing and removing emergency speed restrictions applied for cyclic top track defects. This is to assure itself that there are adequate controls in place for the removal of cyclic top related speed restrictions. Such controls could include an assessment of the track's vertical geometry, carried out after trains have run over the repaired track, but before line speed is restored (paragraphs 194a.iv and 195b); and

d) have a process in place that raises the visibility of repetitive cyclic top track defects, so that senior management responsible for the local maintenance team are made aware of it and can monitor the actions being taken to address the cyclic top (paragraphs 195b and 207).

3 15/10/2013 20/2014
Freight train derailment near Gloucester

The intent of the recommendation is to enable maintenance staff to know if their repair work has been sufficiently effective to correct the reported track geometry defect.

Network Rail should provide its maintenance staff with a method of measuring repairs to vertical track geometry which provides early confirmation that the repairs undertaken have been effective (paragraph 194a.iii).

4 15/10/2013 20/2014
Freight train derailment near Gloucester

The intent of the recommendation is to provide maintenance staff with a way of making effective repairs to vertical track geometry faults on steel sleeper track.

Network Rail should investigate methods of making more effective repairs to vertical track geometry faults on steel sleeper track, especially if the underlying formation is poor or the ballast is contaminated. Any methods that are identified by this work should then be incorporated into procedures and Track Work Information Sheets, and briefed out to its track maintenance staff (paragraph 194a.ii)

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5 15/10/2013 20/2014 Freight train derailment near Gloucester Status: In-progress	<p>The intent of the recommendation is to ensure that when a vehicle's dynamic behaviour is assessed to identify whether its ride performance is compatible with the railway infrastructure in Great Britain (this may include infrastructure that does not comply with Technical Specifications for Interoperability), the susceptibility of its ride performance to track geometry with cyclic top is included in this assessment.</p> <p>RSSB, in conjunction with Rolling Stock Standards Committee, should carry out a review to identify how a vehicle's response to regular changes in vertical track geometry should be assessed (ie a cyclic top assessment). RSSB should then propose changes to the standards which are used assess the compatibility of vehicle's ride performance with the railway infrastructure in Great Britain (at present this is Railway Group Standard GM/RT2141), which will implement the cyclic top assessment identified by the review. The proposed changes to the standards, as agreed by Rolling Stock Standards Committee, should then be implemented by RSSB by means of a time bound programme (paragraphs 194b.i, 194b.ii and 195c).</p>	RSSB has informed RAIB that the report will be presented to the Rolling Stock Standards Committee.
6 15/10/2013 20/2014 Freight train derailment near Gloucester	<p>The intent of the recommendation is to remove or reduce the susceptibility of the IDA wagon's ride performance to dips in the track when in its tare or a partially laden condition.</p> <p>Direct Rail Services should implement measures to reduce the susceptibility of the IDA wagon's ride performance to changes in vertical track geometry when in tare or a partially laden condition. This could be by means of either the introduction of operating restrictions or modifications to the wagon's suspension (paragraph 194b).</p>	
7 15/10/2013 20/2014 Freight train derailment near Gloucester	<p>The intent of the recommendation is to highlight the risk that a wagon may be susceptible to riding problems if it is designed with a bogie centre spacing distance that is the same as a wavelength commonly associated with cyclic top track defects.</p> <p>RSSB, in conjunction with Rolling Stock Standards Committee, should propose that guidance on the design of freight wagons in document GM/GN2688 is amended, to explain that as well as two-axle wagons, if a wagon is designed with a bogie centre spacing that matches a wavelength commonly associated with cyclic top, it may be susceptible to poor ride on jointed track and cyclic top (paragraph 196c).</p>	

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
1 15/10/2013 21/2014 Derailment at Primrose Hill/Camden Road West Junction	<p>The intent of this recommendation is to reduce the probability of track geometry defects remaining undetected in the event that operation of a track geometry measurement train does not take place as scheduled.</p> <p>Network Rail should provide specific guidance to managers with responsibility for track maintenance on the action to be taken to confirm that track quality remains acceptable should a planned run of a track geometry measurement train over a section of line be cancelled (paragraph 128a). This should include the criteria for whether it is necessary to conduct additional track geometry measurements, as well as the timescales for any such measurements to be completed.</p>	
2 15/10/2013 21/2014 Derailment at Primrose Hill/Camden Road West Junction	<p>The intent of this recommendation is for the key stakeholders in the railway industry to work together to assess the risk from asymmetric loading and to identify and adopt reasonably practicable control measures to mitigate that risk.</p> <p>Freightliner and Network Rail should jointly request that RSSB:</p> <ul style="list-style-type: none"> a) researches the factors that may increase the probability of derailment when container wagons are asymmetrically loaded, and in particular: <ul style="list-style-type: none"> i. sensitivity to combinations of longitudinal and lateral offsets in loads that can reasonably be encountered in service; ii. the predicted performance of wagons with high torsional stiffness along their length (using the FEA type as an example); and iii. the effect of multiple twist faults, track twist over distances other than 3 metres (as commonly specified and measured by Network Rail) and lateral track irregularities. b) updates and amends as necessary the risk assessment contained within the RSSB and Transport Research Laboratory joint report ('Potential risks to road and rail transport associated with asymmetric loading of containers'); this should take into account the results from the research referred to in a) and additional evidence presented in this investigation report; and c) works with industry stakeholders to use the outputs of a) and b) to identify, evaluate and promote adoption of any additional reasonably practicable mitigations⁴⁶ capable of reducing the 	

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
<p>3 15/10/2013 21/2014</p> <p>Derailment at Primrose Hill/Camden Road West Junction</p> <p>Status: In-progress</p>	<p>risk from asymmetric loading of wagons (paragraphs 128c, 130a, 130b and 131b).</p> <hr/> <p>The intent of this recommendation is to clarify the requirements for the design and acceptance of freight wagons, taking account of the possibility of asymmetric loading.</p> <p>RSSB should amend Railway Group Standard 'Resistance of Railway Vehicles to Derailment and Roll-Over', GM/RT2141 to refer specifically to asymmetric loading, including possible combinations of longitudinal and lateral load imbalance (paragraph 131a).</p>	<p>RSSB has informed RAIB that the report will be presented to the Rolling Stock Standards Committee.</p>
<p>1</p> <p>Holborn</p>	<p>The intention of this recommendation is that staff performing the SATS role should be properly equipped to reduce risks at the platform/train interface by being able to take effective action to stop trains in an emergency . Consideration of how this can best be achieved should take into account the possibility that the waving of two hands in the 'emergency stop' signal is not sufficiently conspicuous on a crowded platform.</p> <p>London Underground Ltd should provide staff acting as Station Assistant (Train Services) (SATS) with an effective means of alerting the train operator to a dangerous situation that arises after the SATS has given the signal to start the door closing sequence, and before the train has begun to move (paragraphs 85d and 86).</p> <p>London Underground Ltd should also review how the role of the SATS is described in Rule Book 8 and other company documents, so that the duty of the SATS to rapidly respond to dangerous events that occur during the despatch process is given appropriate emphasis.</p>	
<p>1</p> <p>Debris falling from overbridge, Denmark Hill station</p>	<p>Network Rail should carry out a review of the means by which defects identified by the structures examination process are evaluated by asset managers, and repairs actioned. Network Rail should then make the improvements necessary. As a minimum, this review should consider:</p> <p>a. ways of improving the integration of asset management and works delivery management systems (by means of technology and/or improved management arrangements) [underlying factors 3 and 7];</p> <p>b. the ways in which contractors are remitted to carry out work,</p>	

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particularly for works reliant on the application of judgement, and the degree of supervision that is required [underlying factor 4];

c. the robustness of processes for confirming that works with an impact on safety have been completed in the manner intended by asset managers [underlying factors 5 and 7]; and

d. the process for assessing the implications of repeat, or similar, defects at the same location [underlying factor 6].

1 14/09/2012 24/2014
Class Investigation into Rail Breaks on the
East Coast Main Line

This recommendation is intended to reduce the risk of rail breaks by taking advantage of technological developments in the UK and elsewhere, not restricted to ultrasonic techniques, to allow detection of smaller cracks in rails.

Network Rail should undertake or commission research to identify any opportunities for reducing the size of cracks and defects which can be identified in rails in circumstances likely to be associated with rail breaks. The research should be targeted at providing reliable information using equipment capable of operating routinely throughout its infrastructure (paragraph 121d).

2 14/09/2012 24/2014
Class Investigation into Rail Breaks on the
East Coast Main Line

This recommendation is intended to ensure that all parts of Network Rail obtain the maximum benefit from knowledge gained by work intended to reduce the risk of rail breaks on the East Coast Main Line and is a formalisation of a process which Network Rail states is already in progress.

Network Rail should review the actions already being taken to reduce the incidence of rail breaks on the East Coast Main Line (including those described in paragraphs 128 and 129) in order to identify whether similar actions would provide significant safety benefits elsewhere on its infrastructure. If such benefits are identified, Network Rail should modify its processes so that they are applied more widely (paragraph 123).

3 14/09/2012 24/2014
Class Investigation into Rail Breaks on the
East Coast Main Line

This recommendation is intended to reduce the risk of rail breaks due to the deterioration of rail pads.

Network Rail should establish a process throughout its infrastructure for inspecting parts of rail pads beneath rails (on a sample basis) and, if necessary, replacing rail pads outside rail replacement projects in areas where this is justified by benefits, including benefits from reducing rail break risk (paragraph 121b).

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
4 14/09/2012 24/2014 Class Investigation into Rail Breaks on the East Coast Main Line	<p>This recommendation is intended to reduce the risk of rail breaks by improving the ability of existing Ultrasonic Testing Unit (UTU) equipment to detect initiator cracks and other defects in the lower part of the rail.</p> <p>Network Rail should complete the current test programme to establish the practicability of extending current UTU testing and analysis to identify defects throughout the full depth of a rail and/or defects on the underside of a rail. If the test programme shows that this offers a reasonably practicable means of improving the detection of initiator cracks and other defects associated with potential rail breaks, Network Rail should introduce equipment and processes to implement this improved testing and analysis (paragraph 121d).</p>	
5 14/09/2012 24/2014 Class Investigation into Rail Breaks on the East Coast Main Line	<p>This recommendation is intended to reduce the risk that railway maintenance staff fail to appreciate that an important change has been made to Network Rail standards.</p> <p>Network Rail should modify existing document preparation processes to ensure that markings intended to show changes to standards and other safety critical documents clearly indicate the change that has occurred (paragraph 124c).</p>	
1 16/01/2014 25/2014 Bridgeway UWC	<p>The intent of this recommendation is to minimise the potential for the SSOWP paperwork to mislead its users into blocking the wrong line when opting to take only one of two parallel line blockages.</p> <p>Network Rail should, as part of its planning and delivering safe work project, take account of the arrangements and associated wording for parallel line blockages in the new permit packs to ensure that:</p> <ul style="list-style-type: none"> a. presentation of the SSOWP documentation is simple and clear with regard to parallel line blockages, particularly in terms of allowing users to identify which line the work is to take place on; and b. designations of 'working' and 'parallel' blockages are verified during production of the SSOWP as referring respectively to the line on which the work is to take place and the adjacent line(s) (paragraph 95b). 	

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2 16/01/2014 25/2014
Bridgeway UWC

The intent of this recommendation is to reduce the risk associated with late notice planning of work and planning to deadlines, which can affect decision-making on site due to the availability of information and perceived pressures of work.

Network Rail should review work planning practices and processes at Shrewsbury Maintenance Delivery Unit and optimise the distribution of information for both planners and track workers to carry out their jobs effectively (paragraph 96). This review should consider:

- a. workload and resourcing to enable more strategic and proactive approaches to work planning;
- b. information available to the planner and the COSS in producing and checking SSOWP documentation, including details of the work to be undertaken; and
- c. local practices and assumptions about planning parallel line blockages with respect to national procedures and processes, particularly concerning the designation of 'working' lines and the inferred level of protection on the part of the planner and the COSS.

Network Rail should also determine whether such issues are applicable at other maintenance delivery units and take action as necessary to address any problems identified.

3 16/01/2014 25/2014
Bridgeway UWC

The intent of this recommendation is to strengthen Network Rail's competence management processes for staff in particular circumstances where potential shortfalls in their competence or knowledge might otherwise go unchecked.

Network Rail should, as part of its review of Assessment in The Line:

- a. clarify the management arrangements for seconded staff so that it is clear which part of the organisation is responsible for each element of an individual's competence and knowledge; and
 - b. revise its criteria for refresher training following periods of extended absence, particularly where significant changes to work patterns, practices or infrastructure arrangements have occurred during the absence (paragraph 97a).
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Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
1 20/11/2013 26/2014 Buffer stop collision at Chester station	<p>The intent of this recommendation is to reduce the risk associated with low adhesion by extending the fitment of automatic sanders.</p> <p>Operators of class 220 and 221 units should fit sanders to their trains which comply with Group Standard GM/RT2461 and automatically deposit sand on the rail when wheelslide is detected during heavy braking (equivalent to brake step 2 on step braked trains).The mode of operation of this new equipment should take account of recommendation 1 of RAIB report 25 (Part 3)/2006 (paragraph 114).</p>	
2 20/11/2013 26/2014 Buffer stop collision at Chester station	<p>The intent of this recommendation is to reduce the risk associated with trains approaching buffer stops in low adhesion conditions by an extension of existing defensive driving policy.</p> <p>Virgin Trains should amend its defensive driving policy so that the requirement to reduce speed to 10 mph or less at a distance of 200 metres from the signal when approaching a danger signal in low adhesion conditions is also applied when approaching a buffer stop with a train that is not fitted with automatic sanders (paragraph 129).</p> <p>This recommendation may also to apply to other train operators.</p>	
3 20/11/2013 26/2014 Buffer stop collision at Chester station	<p>The intent of this recommendation is that manufacturers of new trains for the UK railway system are made aware of the need for sanders to operate during braking in step 2 (or the equivalent brake handle position for units not fitted with stepped brakes) and above.</p> <p>RSSB should propose and promote an amendment to Railway Group Standard GM/RT2461 to extend the requirement that sanders operate automatically when wheel slip is detected in full service and emergency braking, to braking at lower settings (eg step 2 on units with stepped brake controllers) (paragraph 152).</p>	
1 23/01/2013 27/2014 Liverpool Street	<p>This recommendation is intended to reduce the risk of derailment arising from the performance of non-standard track assets by establishing an appropriate and independently checked inspection regime.</p> <p>Network Rail should improve its management systems so that both the identification of all non-standard track assets, and the associated inspection regimes intended to manage any enhanced risk of derailment, are recorded and independently</p>	

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checked. The scope of these inspection regimes should include mechanisms for identifying indications of possible gauge widening and, where necessary, assessing dynamic track gauge (paragraphs 159d to 159f).

2 23/01/2013 27/2014
Liverpool Street

This recommendation is intended to introduce an assessment of staff in track related safety critical roles where the role is reliant on judgements made by that member of staff, to ensure they have the necessary experience and knowledge to perform that role.

Network Rail should introduce a timebound programme for assessing (and reassessing at intervals) the competence of its managers with safety critical roles linked to track maintenance (eg section managers [track] and track maintenance engineers), and addressing any shortfalls arising (paragraph 160).

3 23/01/2013 27/2014
Liverpool Street

This recommendation is intended to establish whether it is appropriate to extend the aims of recommendation 2 beyond the track discipline.

Network Rail should introduce a timebound programme for the review of the processes used for assessing (and reassessing at intervals) the competence of managers with safety critical roles linked to the maintenance of assets other than track, and addressing any shortfalls arising (paragraph 160).

1 14/07/2013 28/2014
Jetty Avenue UWC near Woodbridge

The intent of this recommendation is to reduce the short-term risk associated with inadequate sighting of approaching trains at user worked crossings by checking that sufficient allowance is made for the position of the driver in the types of vehicle likely to use the crossing. This recommendation should be implemented pending the completion of research referred to at Recommendation 2.

Network Rail should implement a time-bound plan for the re-assessment of the sighting of approaching trains at all user worked crossings where safe use depends on vehicle drivers sighting approaching trains. The time-bound plan should also cover implementation of any mitigation needed to permit safe use of such crossings. The objective of the re- assessment process shall be to verify that drivers seated in the normal driving position of their vehicle have sufficient sighting of approaching trains when the front of their vehicle is stopped a safe distance clear of the line (paragraphs 103 and 105). In providing guidance to staff, Network Rail should consider:

- the range of vehicle stopping positions;
- the types of vehicles likely to use each crossing (particularly the distances of the driver's eyes from the front of the vehicle); and
- any effects due to crossing gates being open, including obstruction of sighting by signs on the gate, when vehicle drivers are looking for trains.

2 14/07/2013 28/2014
Jetty Avenue UWC near Woodbridge

The intent of this recommendation is to identify measures which complement those achieved by Recommendation 1. It is intended to assist risk management until such time as all UWCs are equipped with technology capable of providing reliable advice to crossing users.

Network Rail should commission research into measures to improve the safety of UWCs where vehicular users are reliant on sight to detect the approach of trains (paragraph 103). This should utilise and, as necessary, extend existing research findings to include consideration of:

- the ways in which the behaviour of vehicle drivers can be influenced by the design of the crossing to use the crossing as intended including stopping and looking for trains at an appropriate location;
- use by different types of vehicle, including heavy commercial and agricultural vehicles;
- use of the crossing by persons other than those briefed by the authorised user (eg unexpected visitors or delivery vehicles);
- instructions and/or guidance given to users, including signs and road markings where appropriate; and
- instructions and guidance provided to those assessing, maintaining and modifying UWCs.

This research should take into account the safety of pedestrians (including vehicle occupants when opening gates), cyclists and equestrians who may use UWCs.

The findings of this research should be used by Network Rail to improve/ clarify existing standards related to the design (including gates, signage and road markings), management of

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user worked crossings, guidance provided to users and training/briefing to relevant staff. Network Rail should also identify the need for any modification to the legal requirements relating to level crossing signage requirements, and make suitable representations to government that this be done.

3 14/07/2013 28/2014
Jetty Avenue UWC near Woodbridge

The intent of this recommendation is for Network Rail to provide those responsible for checking level crossing signage with information in a user-friendly format needed to establish the signage required at each level crossing.

Network Rail should review, and if found necessary, modify its processes so that staff checking level crossing signage have a practical and easily used means of establishing the signage required at each crossing they are inspecting (paragraph 107).

4 14/07/2013 28/2014
Jetty Avenue UWC near Woodbridge

The intent of this recommendation is for Network Rail to review and update its method of calculating crossing times.

Network Rail should, in consultation with ORR, review and if necessary, amend the criteria used to calculate crossing times with reference to vehicle speed, the time taken to reach a decision when to start crossing and vehicle length (paragraph 107).

5 14/07/2013 28/2014
Jetty Avenue UWC near Woodbridge

The intent of this recommendation is for the Office of Rail Regulation to provide enhanced guidance relating to user worked crossings, including guidance about how the decision point is determined in order that the sighting of approaching trains is measured from an appropriate location.

The Office of Rail Regulation should provide duty holders with enhanced guidance which:

- reminds duty holders that, when determining the position of decision points at user worked crossings, they must take due account of the characteristics of vehicles likely to use the crossing and recognise that a minimum dimension of 3 metres from the nearest rail is insufficient for most vehicles; and
 - takes account of outputs from the research and review undertaken in response to Recommendations 2 and 4.
(paragraph 106)
-

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on ORR's report to RAIB)
1 20/03/2014 29/2014 Greenford	<p>The intent of this recommendation is that Chiltern Railways should improve the way in which its drivers are trained and managed, to reduce the risk that they will not respond appropriately to unusual events.</p> <p>Chiltern Railways should conduct a review of its driver management processes to confirm that the training and briefing given to drivers is comprehensive as regards the equipment and systems that drivers use, and that assessment of drivers covers the identification of, and response to, TPWS fault warnings as well as drivers' response to other unusual or emergency situations, and make changes in accordance with the findings of the review. As part of its review, Chiltern Railways should consider whether there is a role for more regular use of its driving cab simulator in the assessment of its drivers' competence, to achieve a more systematic approach, and whether it has adequate systems in place for periodically reviewing and revising its competence management processes and training material (paragraphs 124c, 124d, 124e and 126).</p> <p>This recommendation may be applicable to other train operating companies.</p>	
2 20/03/2014 29/2014 Greenford	<p>The intent of this recommendation is that Network Rail should improve the robustness of the GSM-R radio system, in respect of signallers' ability to contact train drivers in an emergency.</p> <p>Network Rail should conduct a review of its implementation of GSM-R, particularly in respect of its configuration where signal boxes which have no GSM-R train describer feed adjoin signal boxes that automatically send train description data to GSM-R, and in areas of enhanced risk such as the entrances to single lines. The review should cover the visibility of trains on signallers' terminals as trains traverse signalling boundaries. Changes should be implemented where necessary so that signallers are able to directly contact all trains that are within, or leaving, their area of control, and are aware that although trains may no longer be shown on the terminal, it may still be possible to contact them by use of a railway emergency call (paragraph 128).</p>	
3 20/03/2014 29/2014 Greenford	<p>The intent of this recommendation is that Network Rail should improve the training given to signallers on the use of GSM-R, so that they are able to use it effectively in an emergency situation.</p> <p>Network Rail should review and modify as necessary the training given to signallers in the use of GSM-R, so that signallers are</p>	

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given adequate opportunity to become familiar with the use of railway emergency calls, by practice, simulation or any other appropriate means (paragraph 129b).

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