

SAFETY TASK FORCE

NetworkRail

“Using technology to reduce risk”

The Permanent Way Institution

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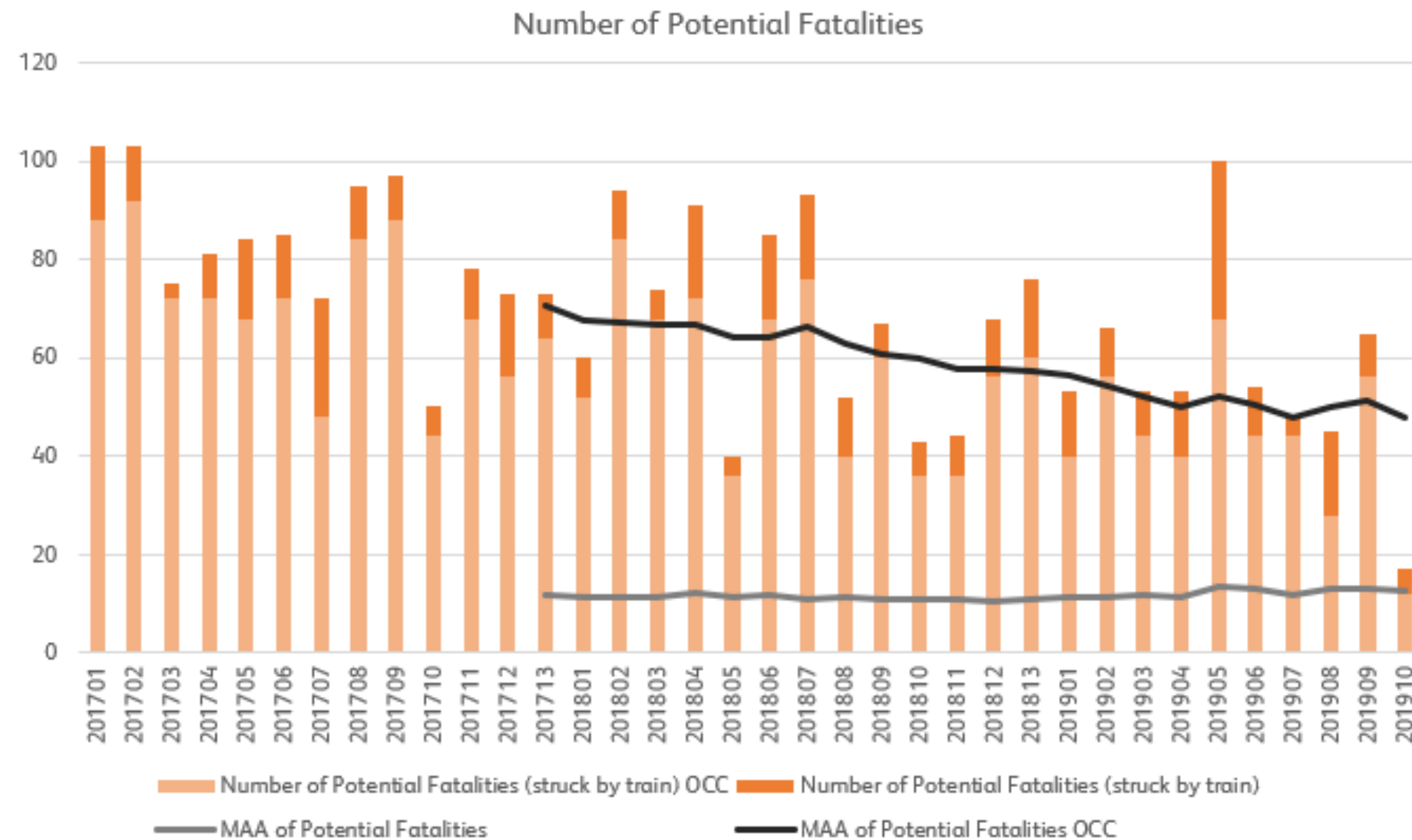
March 2020



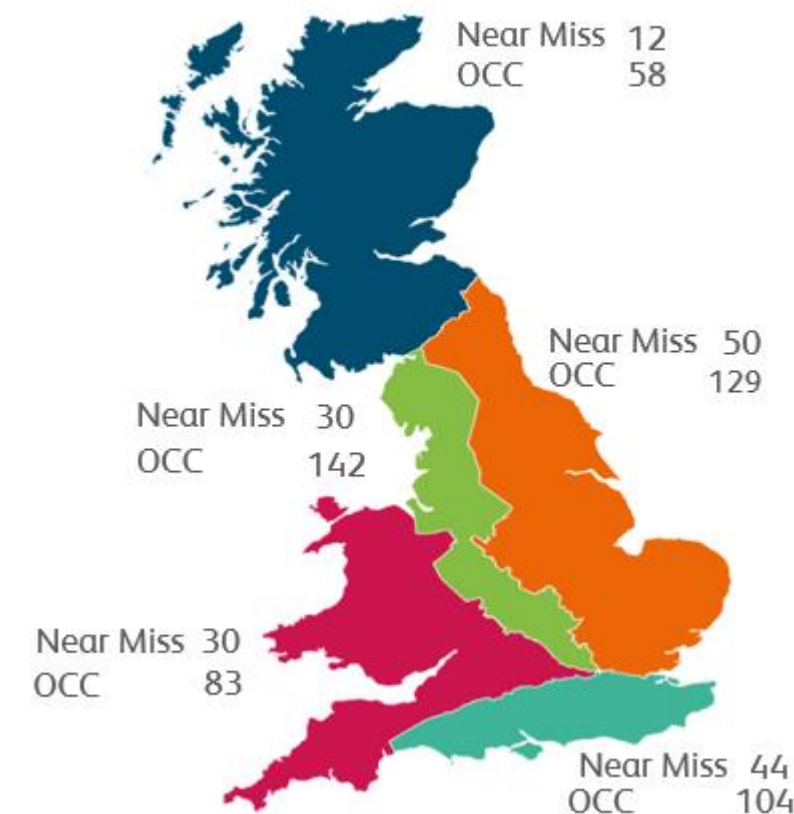
POTENTIAL FATALITIES: 'THE RISK'

In the last 13 periods the number of people involved in near misses totals: **158**
 MAA movement in last 13 periods: **15 %**

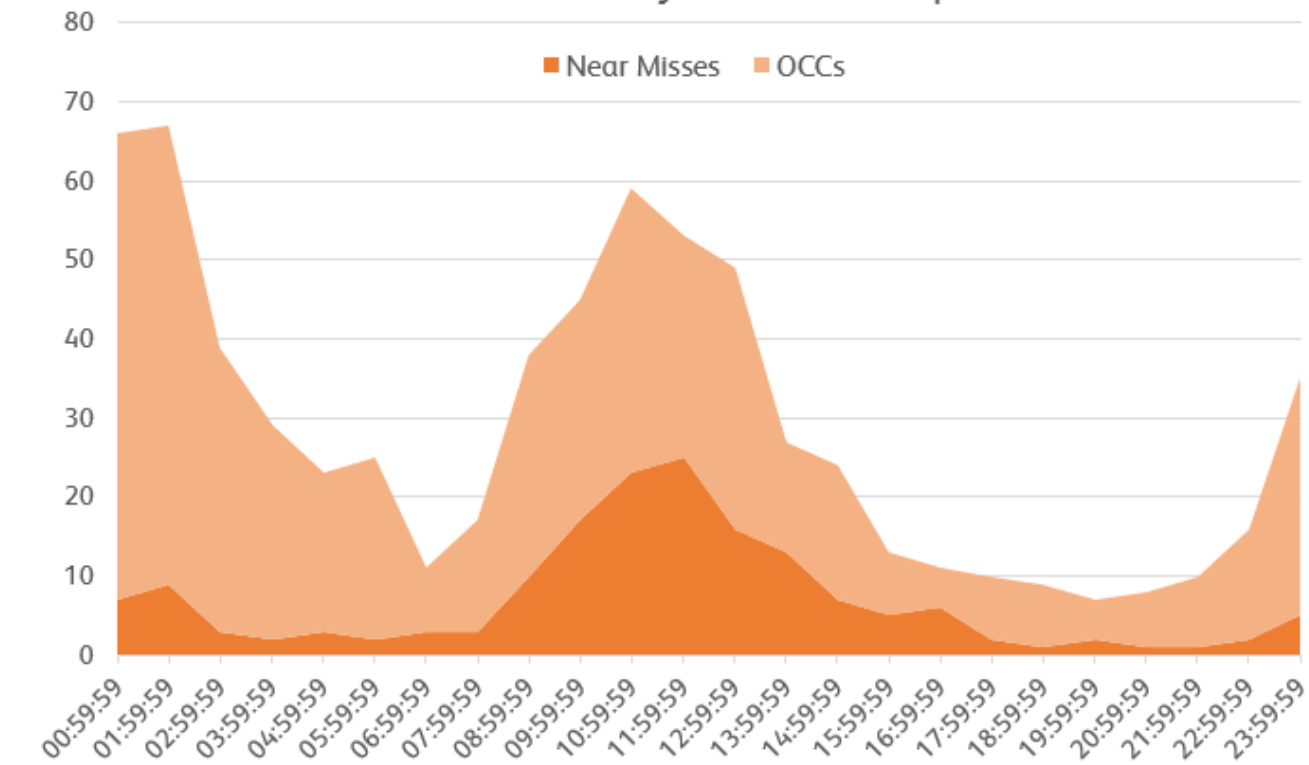
In the last 13 periods the number of track workers involved in OCCs totals: **584**
 MAA movement in last 13 periods: **21 %**



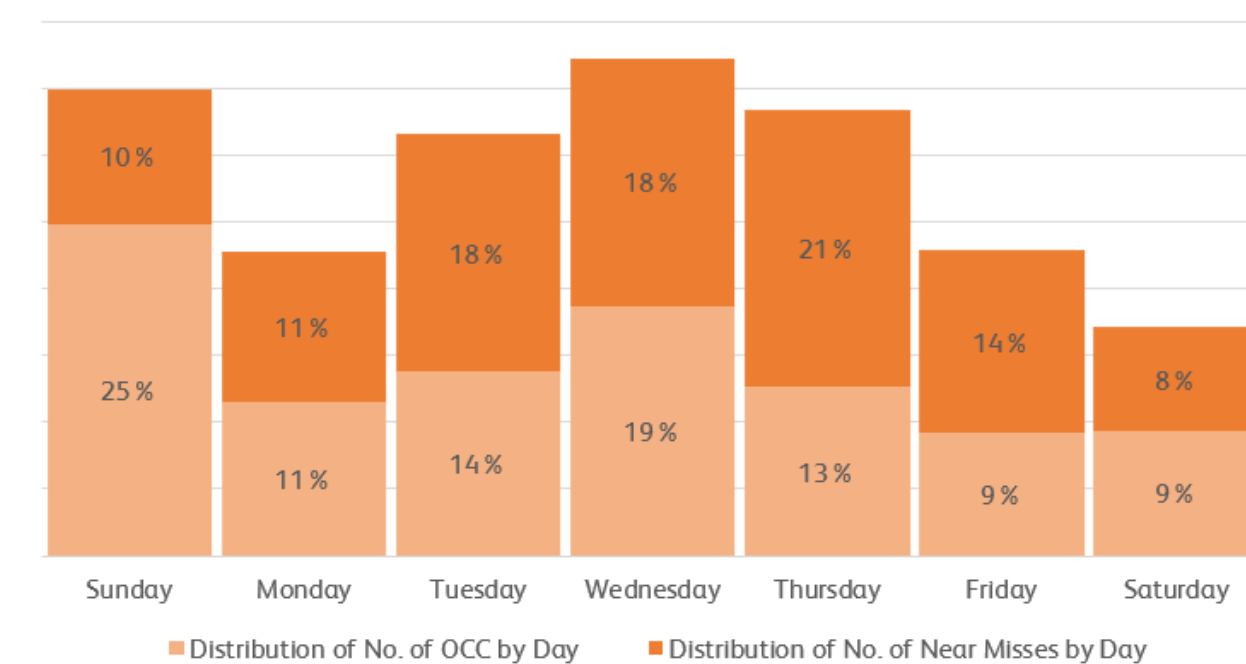
Regional Distribution since 1st April 2017



Distribution of events by hour since 1st April 2017



Distribution of events by day of the week since 1st April 2017



- 58 near misses, involving 158 track workers
- 146 operational close calls, involving c. 584 track workers
- Midnight and 11am most risky
- Sunday and Wednesday see higher near misses/OCCs

TRAGIC FATALITIES ON OUR NETWORK IN 2019

On 3 July 2019, at 09:52 the driver of a Great Western Railway train from Swansea to London Paddington reported that the train had struck three track staff on the Up Main line at Margam East Junction between Port Talbot and Pyle stations on the South Wales Main Line.

Our colleagues **Gareth Delbridge**, 64 and **Michael (Spike) Lewis**, 58 were struck and fatally injured.



A third colleague escaped by inches.



SAFETY TASK FORCE KEY GOALS



**① ELIMINATE
UNASSISTED
LOOKOUT WORKING**



**② 100% ADDITIONAL
PROTECTION FOR
TRACK WORKERS**



**③ ALIGNING WORK
TASKS INTO SAFER
ACCESS**



SAFETY TASK FORCE CURRENT PRIORITIES TO COMPLY *NetworkRail* WITH ORR IMPROVEMENT NOTICES

‘PLANNING’

‘TECHNOLOGY’

MAINTENANCE REVIEWS

- C. 4.5 MILLION PER ANNUM
- Input to EAS
- EXTEND RISK BASED MAINTENANCE (PLPR, Eddy Current, RCM, II)
- PLAN REMAINING MSTs INTO LINE BLOCKAGES,



SIGNALLER WORKLOAD

- New assessment tool ready for rollout from June
- Understand impact of increased use of line blockages and additional protection



LINE BLOCKAGE DATA

- Collect accurate data about use of line blockages
- Understand potential capacity for maintenance
- Understand additional protection
- Extend EPR



PLANNING4DELIVERY

- Embed 019 principles
- Upskill planners
- Improved SSOW packs, planning technology
- Person in charge competency
- Improved data for section managers



TRACK SAFETY TECHNOLOGY

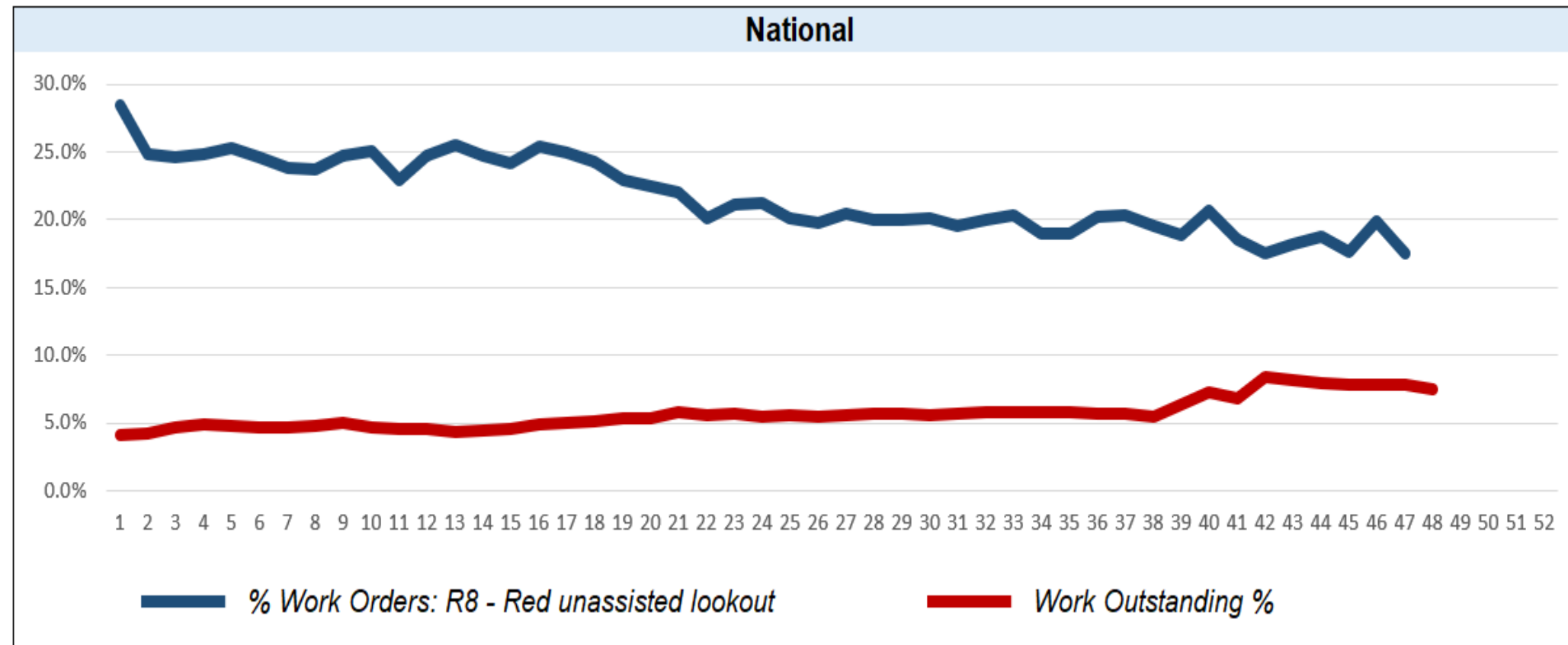
- Deploy tech for additional protection faster
- Enable existing technology – installed and unused
- Design in track worker safety technology for future



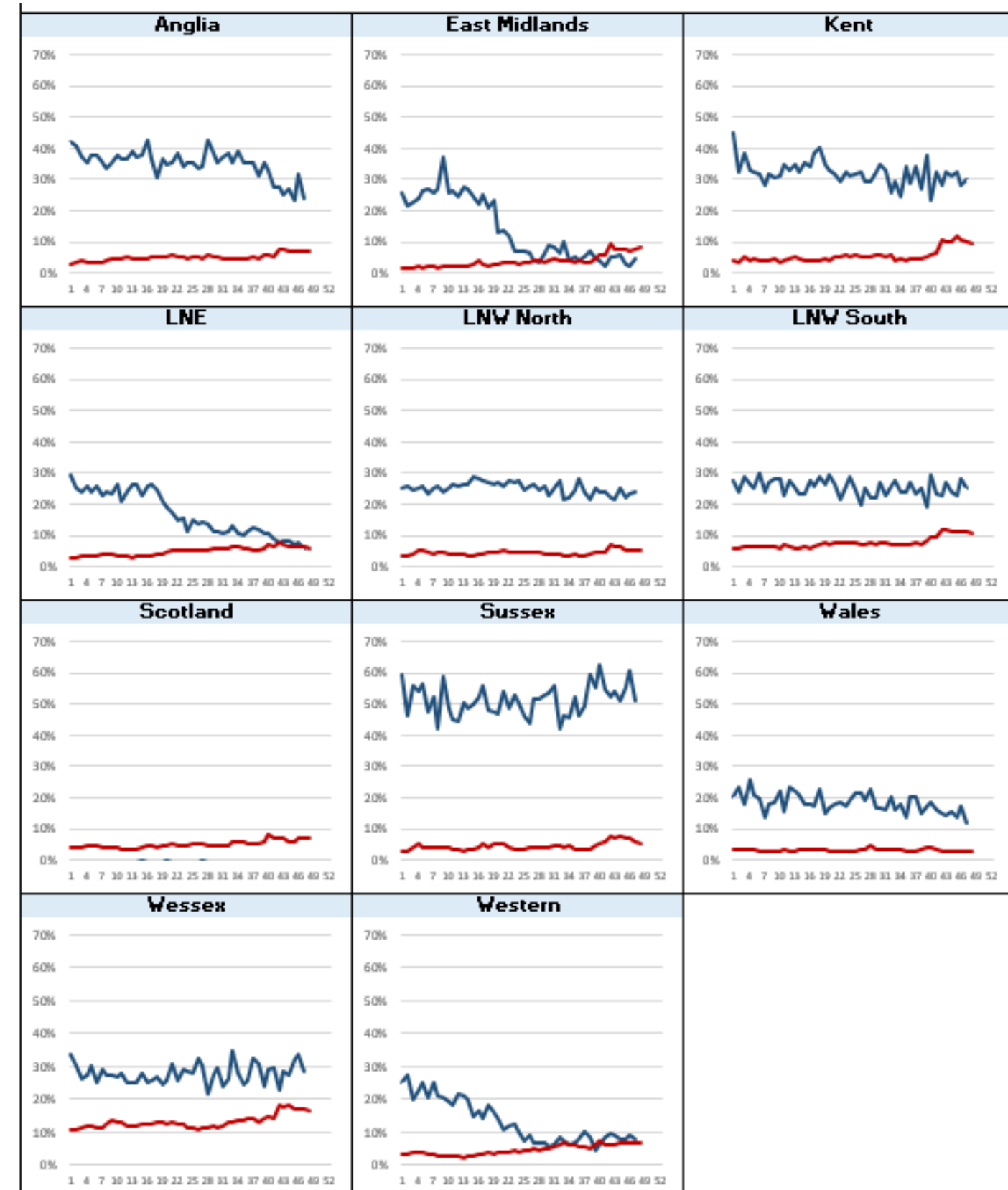


30% REDUCTION IN UNASSISTED LOOKOUT WORKING SINCE JULY 2019

NetworkRail



- Increased assurance and controls around unassisted lookout working
- Initial re-phasing exercise undertaken
- Modernising work banks
- Maintenance Standard Task reviews to reduce this to almost zero by July 2022





TECHNOLOGY TO REPLACE TRACK VISITS

NetworkRail

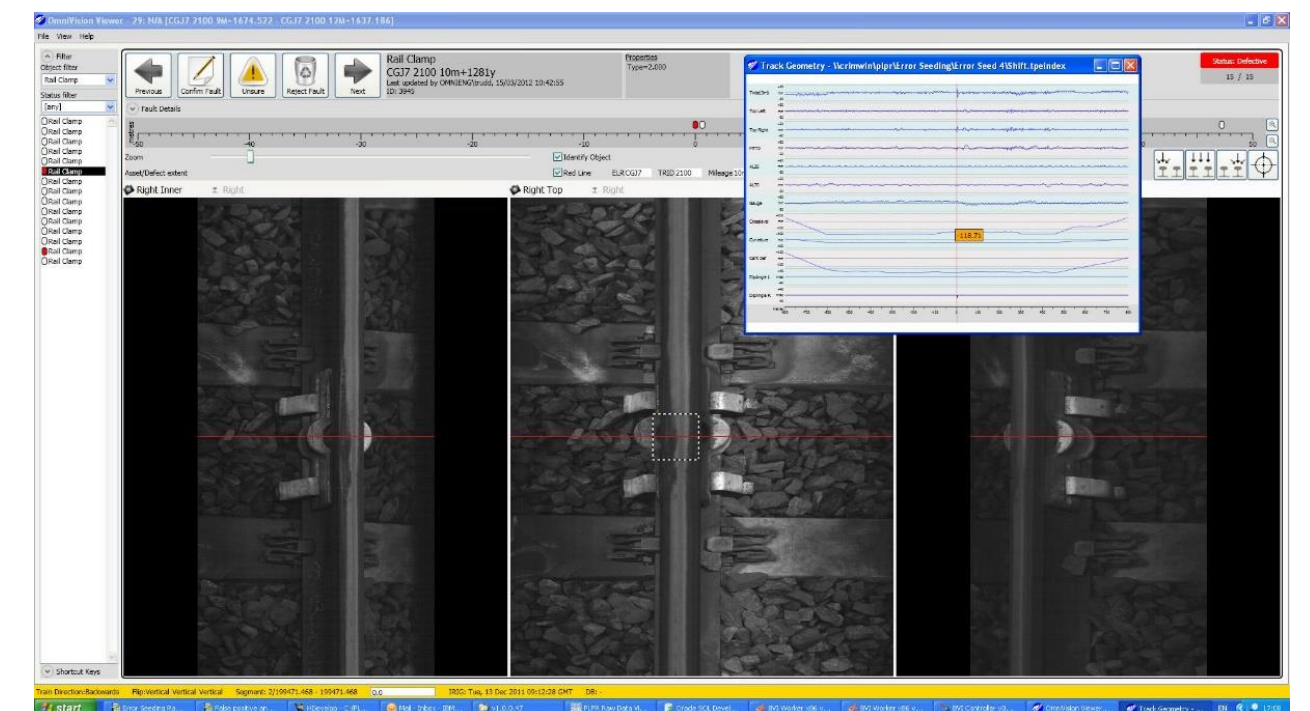
“Predict and Prevent – Planning safer interventions...”



Eddy Current tool in use



Plain Line Pattern Recognition camera



Remote condition monitoring, without the need for track access



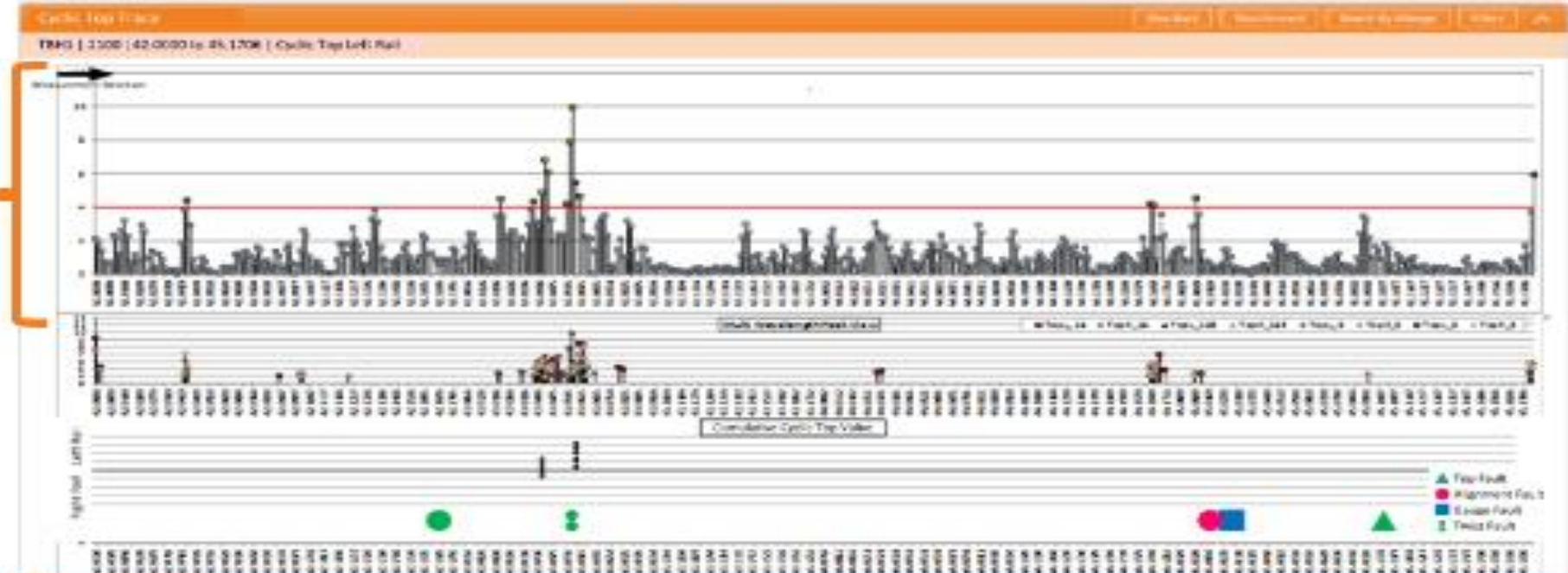
Accelerating the deployment of more “Intelligent Infrastructure”:

1. 5500 more miles of PLPR;
2. 5000 more miles of Eddy Current testing;
3. 12000 more miles of Risk Based Maintenance;
4. 65000 more S&T assets moved to Risk Based Maintenance;
5. Significant increase in S&C ‘Track’ Risk Based Maintenance;
6. £200m further technology deployments through CP6.

Cyclic Top Risk Site Table

TG Parameter	EBR	Track ID	Defect Mileage	Severity	AL	E	AL	Risk Score	Sleeper Type	Track Cat	Date Of Last Run	Credible Change	TME Name	TSM Name	Actioned?
Gauge	TRH1	2100	42.0420	AL	30/08/2019	24/09/2020		6	F34 Concrete	2	24/09/2020		TME Brighton North	TSM Horsham	Intervention Planned
Twist	TRH1	2100	42.0536	Pre-AL	22/11/2019			3	F34 Concrete	2	24/09/2020		TME Brighton North	TSM Horsham	No Action Required
Left Cyclic Top	TRH1	2100	42.1728	Car US				3	F34 Concrete	2	24/09/2020		TME Brighton North	TSM Horsham	
Gauge	TRH1	2100	43.0535	Pre-AL	13/12/2020			3	F34 Concrete	2	24/09/2020		TME Brighton North	TSM Horsham	
Top Left	TRH1	2100	43.1357	Pre-AL	22/11/2019			2	F34 Concrete	2	24/09/2020		TME Brighton North	TSM Horsham	
Top Left	TRH1	2100	43.1359	Pre-AL	19/11/2019			2	F34 Concrete	2	24/09/2020		TME Brighton North	TSM Horsham	
Right Cyclic Top	TRH1	2100	44.0679	Pre-AL				3	F34 Concrete	2	24/09/2020		TME Brighton North	TSM Horsham	
Alignment	TRH1	2100	45.0145	Pre-AL	23/11/2019			2	Timber	2	24/09/2020		TME Brighton North	TSM Horsham	
Gauge	TRH1	2100	45.0132	Pre-AL	21/11/2019			3	F34 Concrete	2	24/09/2020		TME Brighton North	TSM Horsham	
Gauge	TRH1	2100	45.3538	Pre-AL	22/10/2019			3	F34 Concrete	2	24/09/2020		TME Brighton North	TSM Horsham	

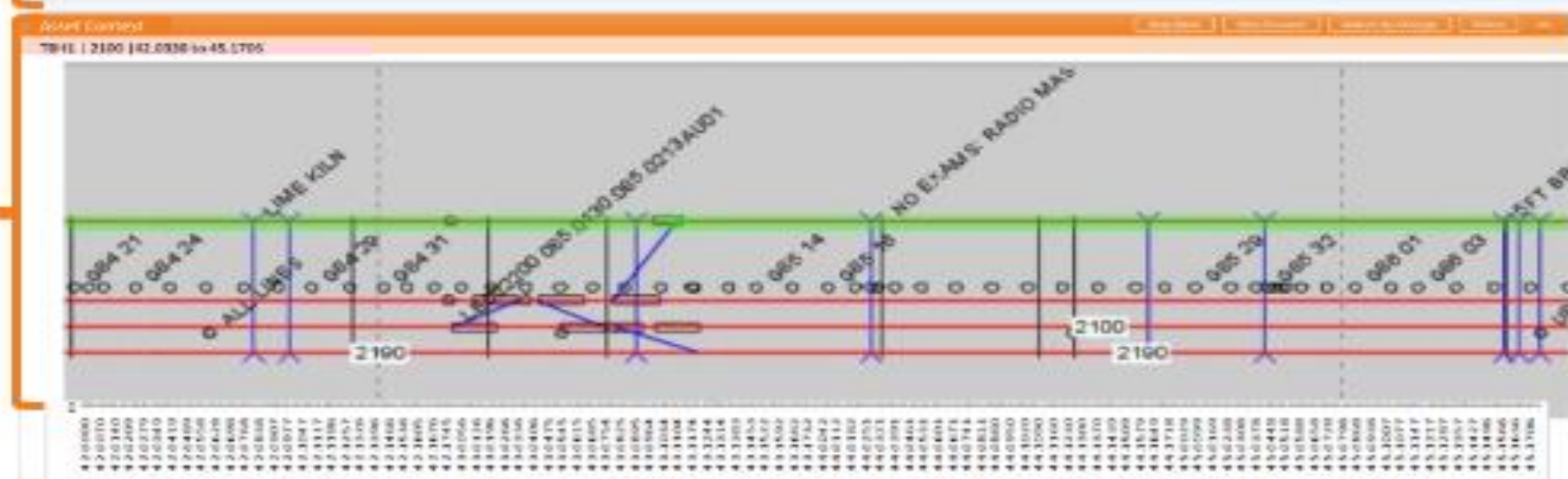
Cyclic Top Trace



Rolling SD



Asset Context of Risk Site



Ellipse Workbank for the Risk Site

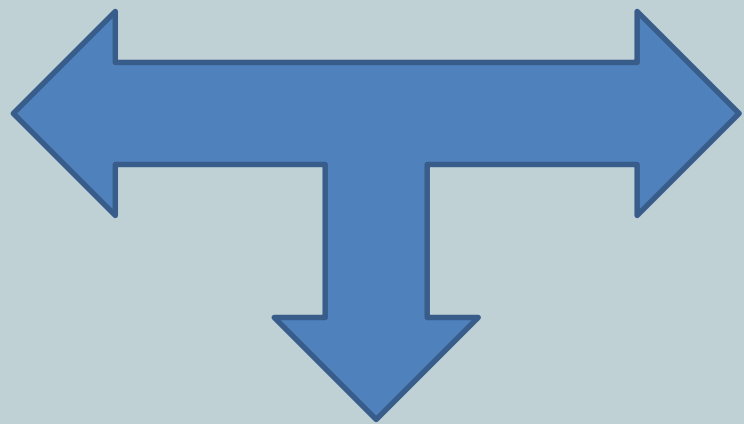
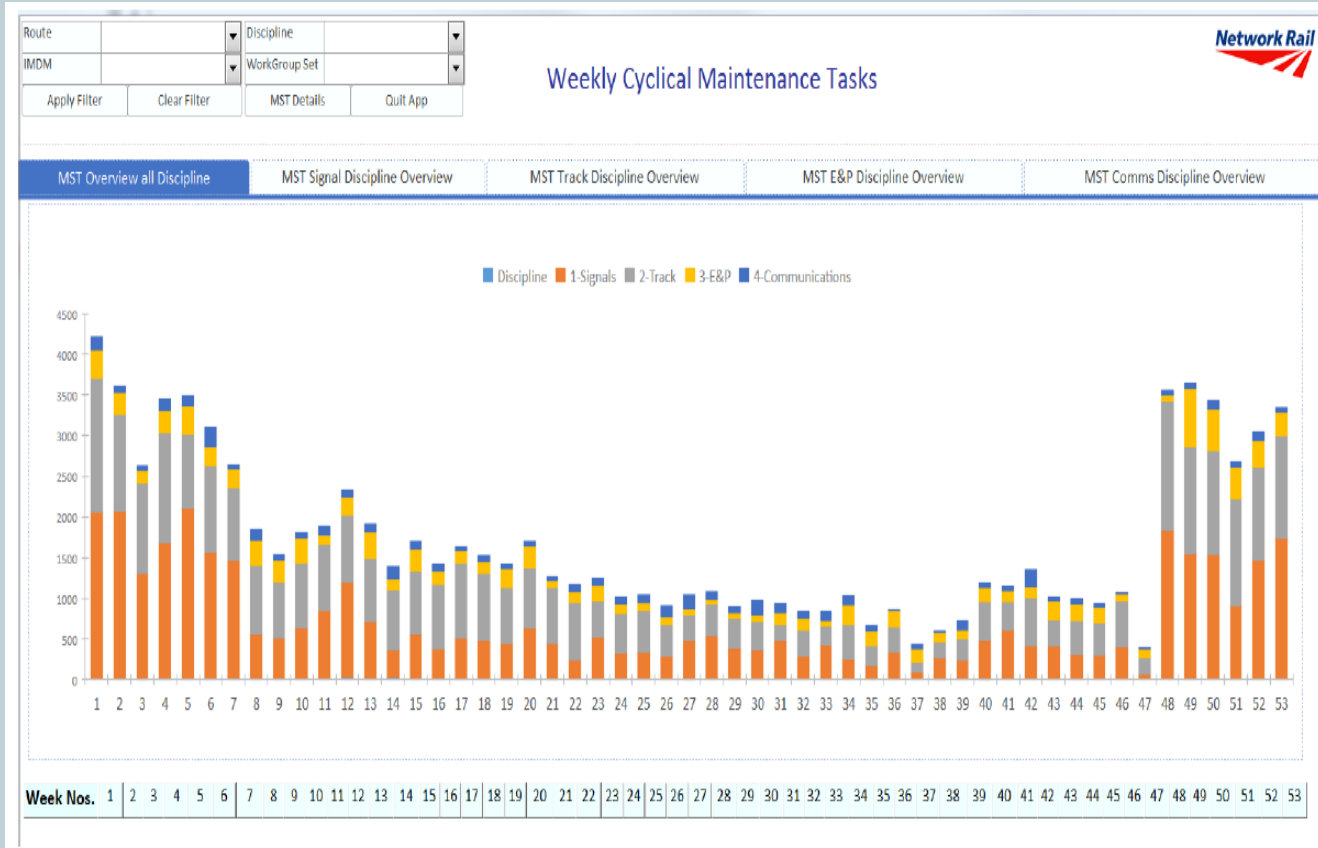
Work Book														Print	Close
Work Order	Description	Job Description	Close Date	Items Required	Items Complete	Spk	SLR	Source SL	Start Location	End Location	Item Name 1	Item Name 2	Plant No		
50750801	TRH1-AL SHED RAIL USING SMALL PLANT		10/10/2019	0	0	0	0	TRH1	2100	118.0022	240.1095	TRH1-AL-118.0022-240.1095-01	TRH1-AL-118.0022-240.1095-01		
50750801	TRH1-AL SHED RAIL USING SMALL PLANT		10/10/2019	0	0	0	0	TRH1	2100	118.0022	240.1095	TRH1-AL-118.0022-240.1095-01	TRH1-AL-118.0022-240.1095-01		
40236274	TRH1-AL SHED RAIL USING SMALL PLANT	Permanent Day	20/02/2019	00	0	0	0	TRH1	2100	118.0022	240.1095	TRH1-AL-118.0022-240.1095-01	TRH1-AL-118.0022-240.1095-01		
40236274	TRH1-AL SHED RAIL USING SMALL PLANT	Permanent Day	20/02/2019	00	0	0	0	TRH1	2100	118.0022	240.1095	TRH1-AL-118.0022-240.1095-01	TRH1-AL-118.0022-240.1095-01		
50007600	TRH1-AL SHED RAIL USING SMALL PLANT	Permanent Day	10/10/2017	0.76	0.76	0	0	TRH1	2100	118.0022	240.1095	TRH1-AL-118.0022-240.1095-01	TRH1-AL-118.0022-240.1095-01		
40000000	TRH1-AL SHED RAIL USING SMALL PLANT	Permanent Day	01/10/2017	00	00	0	0	TRH1	2100	118.0022	240.1095	TRH1-AL-118.0022-240.1095-01	TRH1-AL-118.0022-240.1095-01		
40000000	TRH1-AL SHED RAIL USING SMALL PLANT	Permanent Day	01/10/2017	1.76	1.76	0	0	TRH1	2100	118.0022	240.1095	TRH1-AL-118.0022-240.1095-01	TRH1-AL-118.0022-240.1095-01		
40000000	TRH1-AL SHED RAIL USING SMALL PLANT	Permanent Day	01/10/2017	1.76	1.76	0	0	TRH1	2100	118.0022	240.1095	TRH1-AL-118.0022-240.1095-01	TRH1-AL-118.0022-240.1095-01		



28 MILLION MAINTENANCE TASKS

Network Rail

“Using technology to plan safer access.....”

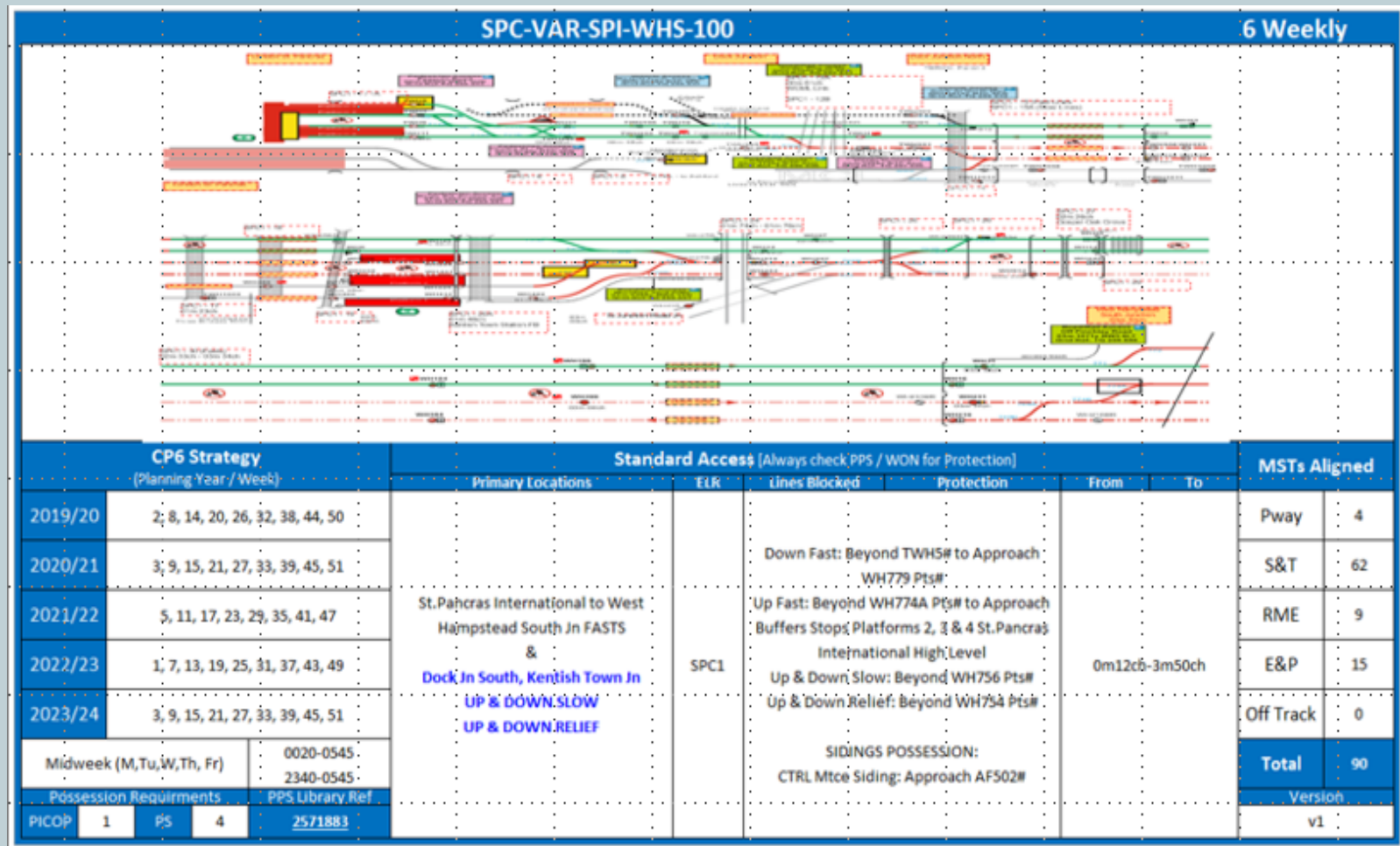


Cyclical MST Possession Planning

Filter Show All Records Clear Filter Weekly Cyclical MST Graph Excel Path Save Changes Enter Line Block Apply Changes All Possessions

Red Zone Working Prohibited

MVC	Discipline	Working Loc	Equip Req	Asset Description	TrackID	SLT	Start Mile	End Mile	SLD	Freq	NOT Description	UPD	LOC	MOE	CAT Code	Period	Week	Confirm	CNIC Date	Approved	PS
NALINDEM CdrH	Signals	000011223523	LOC: T10(AH) CARMARTHEN JUNC	2100	SWM2	243.0835	243.0835	006477	1820		CABLE ROUTE - INSPECT [C]	29/04/2018	06/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011223522	LOC: T11(AH) CARMARTHEN JUNC	2100	SWM2	243.0635	243.0635	006660	364		WIRE DEGRADATION CHECK-CONE	11/05/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011182974	ST: W54(S) UP BRANCH INNER H	3100	PEM	259.0132	259.0132	006976	182		TELEPHONE - SPT	30/10/2018	01/11/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011182643	LOC: T10(AH) CARMARTHEN JUNC	2100	SWM2	240.1628	240.1628	006497	91		PUBLIC LX TELEPHONES (NON AHB)	07/02/2018	31/01/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	00002631290	CF3: CANTON SWCC: CENR PARR	1202	SWM2	170.1530	170.1530	002021	182		VOICE RECORDERS 3002 - APP 5	12/11/2015	02/11/2015	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011223591	LOC: T8(AH) CARMARTHEN JUNC	2100	SWM2	244.0132	244.0132	006680	364		WIRE DEGRADATION CHECK-CONE	07/05/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011223591	LOC: T8(AH) CARMARTHEN JUNC	2100	SWM2	244.0132	244.0132	006636	364		TRACKSIDE APPARATUS CASE - SV	07/05/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011223591	LOC: T8(AH) CARMARTHEN JUNC	2100	SWM2	244.0132	244.0132	006635	91		TRACKSIDE APPARATUS CASE - SV	30/01/2020	31/01/2020	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011223591	LOC: T8(AH) CARMARTHEN JUNC	2100	SWM2	244.0132	244.0132	006477	1820		CABLE ROUTE - INSPECT [C]	29/04/2018	06/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011266444	LOC: B1(AH) TAFFS WELL	1100	CAM	068.0050	068.0050	006477	1820		CABLE ROUTE - INSPECT [C]	27/05/2018	06/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011266444	LOC: B1(AH) TAFFS WELL	1100	CAM	067.1415	067.1415	006680	728		WIRE DEGRADATION CHECK-CONE	18/04/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011266444	LOC: B1(AH) TAFFS WELL	1100	CAM	067.1415	067.1415	006635	364		TRACKSIDE APPARATUS CASE - SV	18/04/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000026313008	ST: INTER-PARK JCN 18 PARK JCN	1100	GAE	186.0047	186.0047	002028	182		WHI STS INTER-TEC 3007R-APP A SV	02/11/2018	02/11/2018	01/05/2018	1	4					
NALINDEM CdrH	Track	000026495445	WAM ABC PENLLYGAER	2100	SCD	006.0048	006.0048	003040	364		Access Point - Request	01/05/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Comms	00000117564	TRUFFORD BOTT ON TO PTN/EDM	1100	CAM	018.0019	018.0019	003038	364		BATT. LEAD ACID VRLA 3008L-APP	15/05/2018	04/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011184294	ST: PUBLIC DNJAC LLYWYNNER	3100	PEM	280.1188	280.1188	006497	91		PUBLIC LX TELEPHONES (NON AHB)	30/10/2018	31/01/2018	01/05/2018	1	4					
NALINDEM CdrH	Track	000021282852	Z10M 73C UP MAIN SWING COCKE	1100	SWM2	215.1715	215.1715	005000	364		AUTHORISED ACCESS POINT - WHI	01/05/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Track	000021282852	Z10M 42C UP MAIN VICTORIA RCR	1100	SWM2	215.1364	215.1364	005000	364		AUTHORISED ACCESS POINT - WHI	01/05/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Comms	000026495445	PARK JCN 18	1100	GAE	186.0047	186.0047	002021	182		VOICE RECORDERS 3002 - APP 5	02/11/2018	02/11/2018	01/05/2018	1	4					
NALINDEM CdrH	Track	000026495445	WAM ABC PENLLYGAER	2100	SCD	006.1120	006.1120	003040	364		Access Point - Request	01/05/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011184295	ST: PUBLIC DNJAC LLYWYNNER	3100	PEM	261.0132	261.0132	007196	364		LX TELEPHONE (NOT AHB/ABCL)	06/05/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011184294	ST: PUBLIC DNJAC LLYWYNNER	3100	PEM	260.1188	260.1188	007196	364		LX TELEPHONE (NOT AHB/ABCL)	16/05/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011182747	ST: VPOH(S) TAFFS WELL	1200	CAM	007.1738	007.1738	006977	364		TELEPHONE - SPT	23/04/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011223522	LOC: T11(AH) CARMARTHEN JUNC	2100	SWM2	243.0635	243.0635	006636	364		TRACKSIDE APPARATUS CASE - SV	11/05/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011182746	ST: VPOH(S) TAFFS WELL	1200	CAM	008.0102	008.0102	006976	182		TELEPHONE - SPT	28/05/2018	03/11/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011182746	ST: VPOH(S) TAFFS WELL	1200	CAM	008.0102	008.0102	006977	364		TELEPHONE - SPT	13/05/2018	03/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Comms	000011545056	CLIFREW - FOL: F/G/ETH	1100	NAB	-000.0100	-000.0100	003021	364		EARTH FARM TO ROOM 3007A-APP	05/05/2018	04/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Comms	000011545057	CLIFREW - FOL: F/G/ETH	1100	NAB	-000.0100	-000.0100	003022	364		EARTH FARM - LS PT - 3007A-APP B	05/05/2018	04/05/2018	01/05/2018	1	4					
NALINDEM CdrH	Signals	000011182687	ST: W35(S) UP BRANCH HOME	3100	PEM	259.0819	259.0819	006976	182		TELEPHONE - SPT	30/10/2018	01/11/2018	01/05/2018	1	4					

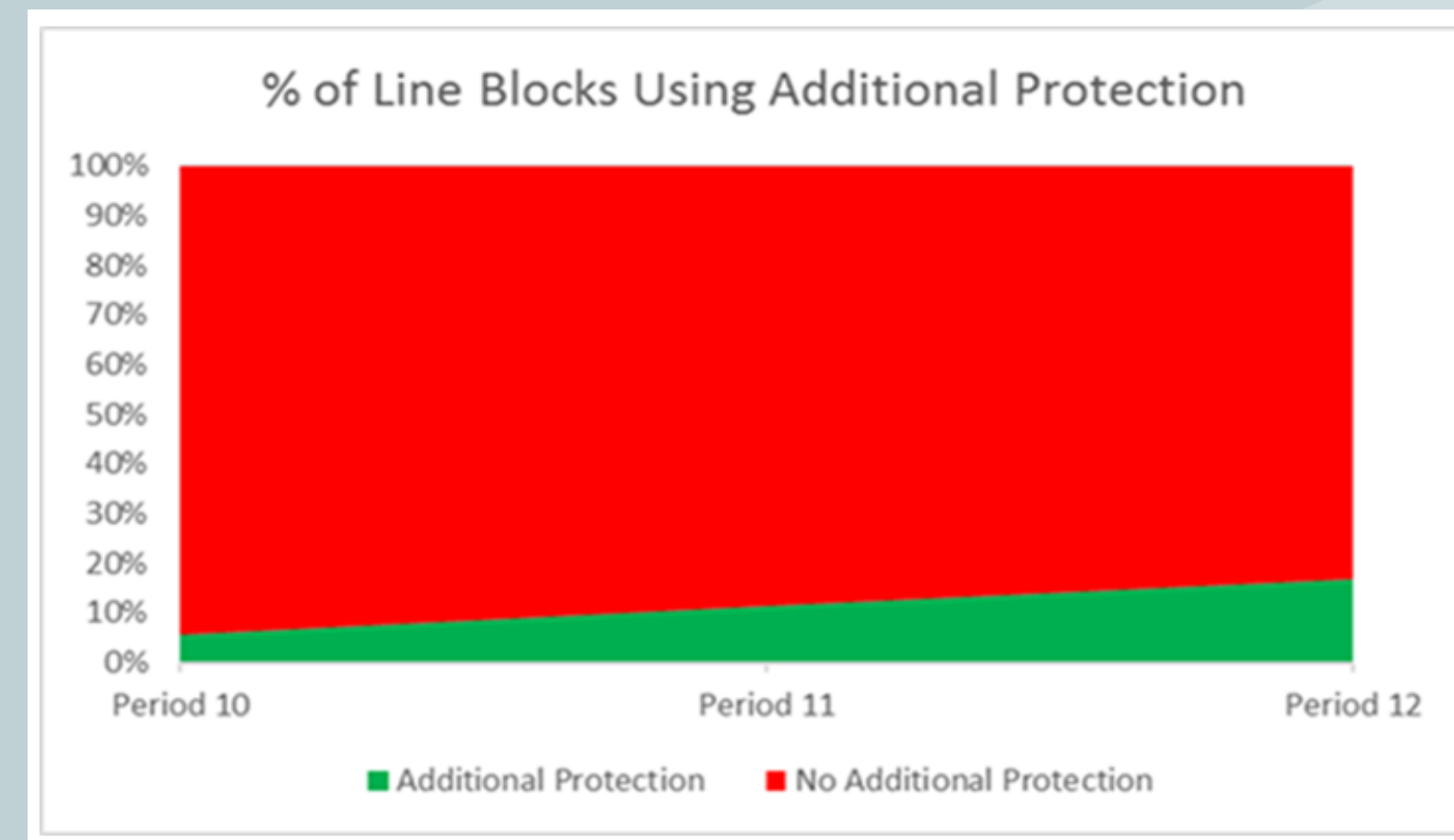
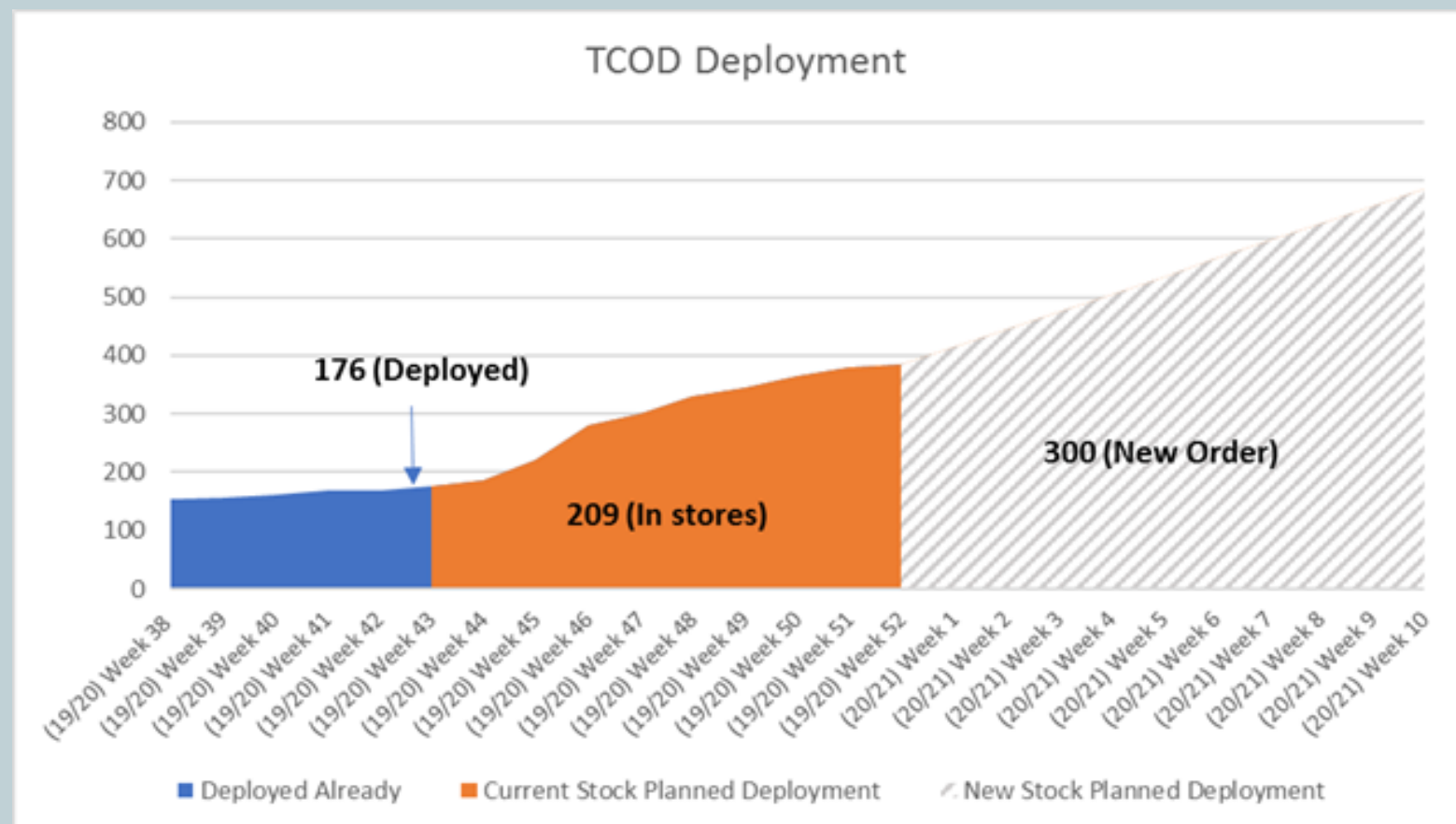
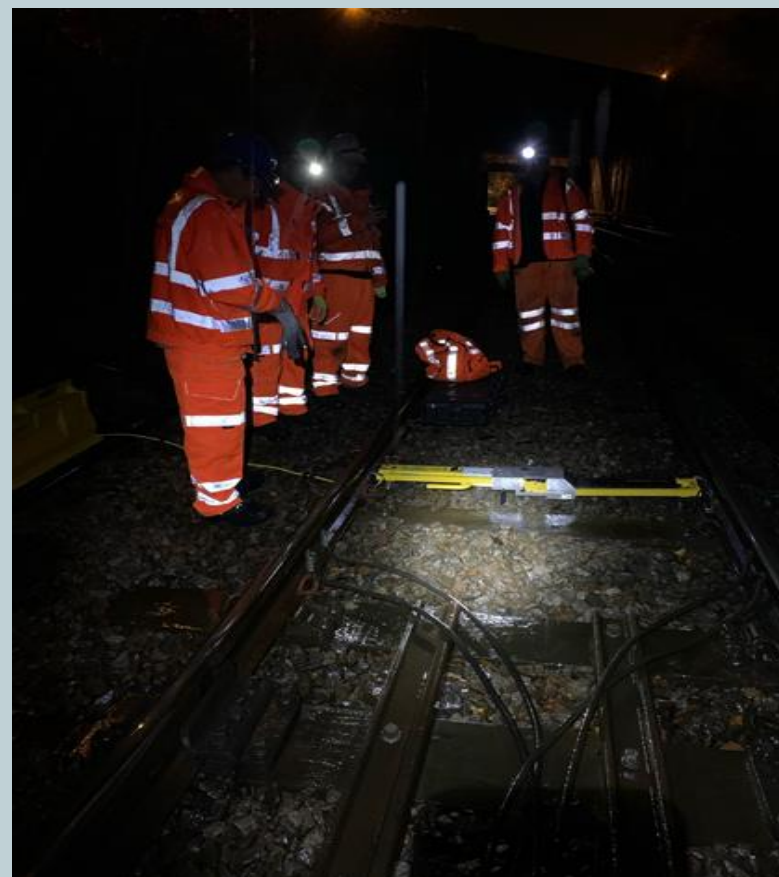




ADDITIONAL PROTECTION IN LINE BLOCKAGES



- Up to 25,000 line blockages (LBs) taken per period;
- Consistent 'EPR' policy now in each route (axle counter areas);
- ZKL TCOD – accelerated rollout in all routes (track circuit areas);
- Further 'BOX TOs' being recruited – planned disconnections;
- Further 'remote disconnection devices' being trialled;
- At Period 11, 17% of LBs have additional protection.





FOCUS ON TOWS AND SATWaS

NetworkRail

LOWS



TOWS



LEWIS



RDD



SATWaS



Configuration example for protecting a fixed worksite with automatic train detection from both directions

ZKL TCOD



EPR



Workstream		Output	Yr1 19/20	Yr2 20/21	Yr3 21/22	Yr4 22/23	Yr5 23/24
Information	Dashboard	Mk1 P4D Safety Dashboard	LAUNCHED 15/01/20				
		Stanley - 019 Unannounced Visits Dashboard					
		MK2 P4D Safety Dashboard					
Information	019 Principles	019 Principles Video #1	LAUNCHED 02/03/20				
		019 Principles Video #2					
		019 Principles Video #3					
Information	App	Proof of concept for digital information hub	COMPLETED 24/02/20				
		Digital information hub for 019 supporting material					
Technology	Schematics	PoC in Anglia conducted					
		Access Point specification and data capture, cleanse conducted					
		Feesability Study conducted					
Technology	iPads	Full Asset data captured and displayed on Schematic					
		Provision to provide hardware to use new technology software					
		Provision to provide connectivity hardware to ensure new technology solutions can be maintained on the IT infrastructure					
People	Empowering the Person in Charge	Proof of concept for Person in Charge competence and pilot of learning materials (20 x delegates)					
		STE deliverables: 019 standard, rulebook changes, Track Safety Competence Framework					
		Deploy training & assessment of PIC					
Technology	SWP Solution	Discovery, development & deployment					
		Discovery, development & deployment					
People	Fair Culture	Planning4Delivery to align all workstreams to NR Fair Culture					
		Planning4Delivery Communication workstream to support overall programme					
Information	Communication						



“PLANNING4DELIVERY” TECHNOLOGY





Spring Safety
Standards Challenge

NetworkRail

SPRING SAFETY STANDARDS CHALLENGE

- Feedback from the front line that some standards governing maintenance tasks are no longer fit for purpose
- Spring Safety Standards Challenge calls for everyone's ideas to update and improve standards, improving safety
- This is part of the wider standards challenge underway across Network Rail – seeking ideas from our colleagues
- Every idea will be shared with the relevant standards owner and heads of professions – Safety Task Force team will work with these groups to see what can be implemented
- Easy to share ideas – via online or paper form
- Communication to all in maintenance w/c 2 March 2020
- Challenge runs through to end April 2020
- Participants will be recognised with personal note and certificates for those whose ideas are implemented.



THE END



- Improved planning and delivery
- Eradicate working under unassisted lookout protection
- Optimise line blocks and access

- Plan and deploy adequate technology to protect track workers

- Partner with supply chain to ensure consistently high standards for all track workers

- Transformed national KPIs and reporting and assurance to optimise access, assess technology cover and drive maintenance effectiveness

Change behaviour through stronger safety and service culture