



16 November 2022

# SAFETY AT WORK

Protecting rail workers  
from trains

100 YEARS  
ANNIVERSARY



# Safer railway maintenance

Protecting rail workers from trains

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Safety  
Task  
Force

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NetworkRail

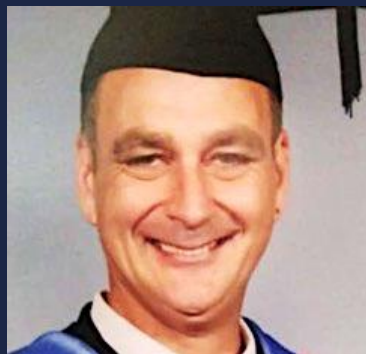
# Tragic losses – a reminder why we do this

On 3 July 2019, at 09:52 the driver of a Great Western Railway train reported that the train had struck three people working on the South Wales Main Line track.

Our colleagues **Gareth Delbridge** and **Michael ‘Spike’ Lewis** were fatally injured.  
Another colleague escaped by inches.



**Aden Ashurst** lost his life on 8 April 2020 at Roade Northamptonshire. A contractor’s employee, Aden was fatally struck while on the track.



**Tyler Byrne** was killed on 9 February, 2021 at only 30 years of age. He was struck by a train on the tracks near Surbiton station, in Surrey.



# A closer look at trackworkers struck by trains

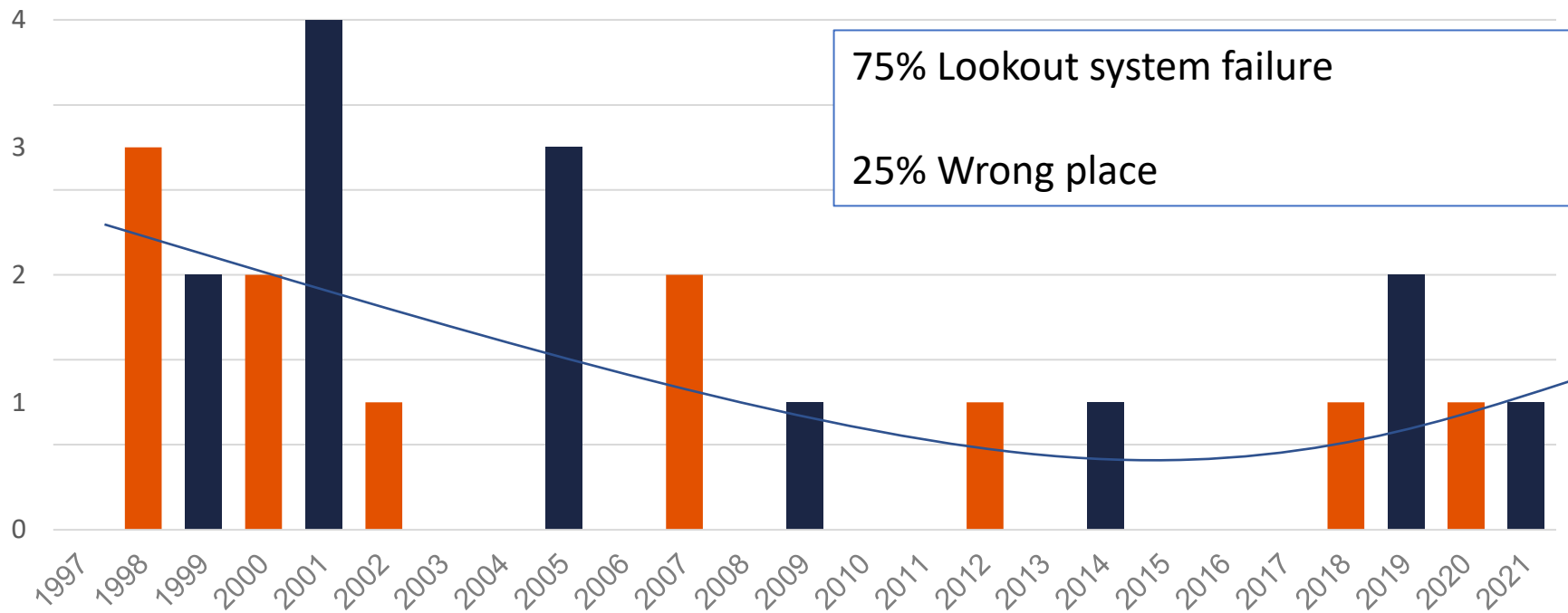
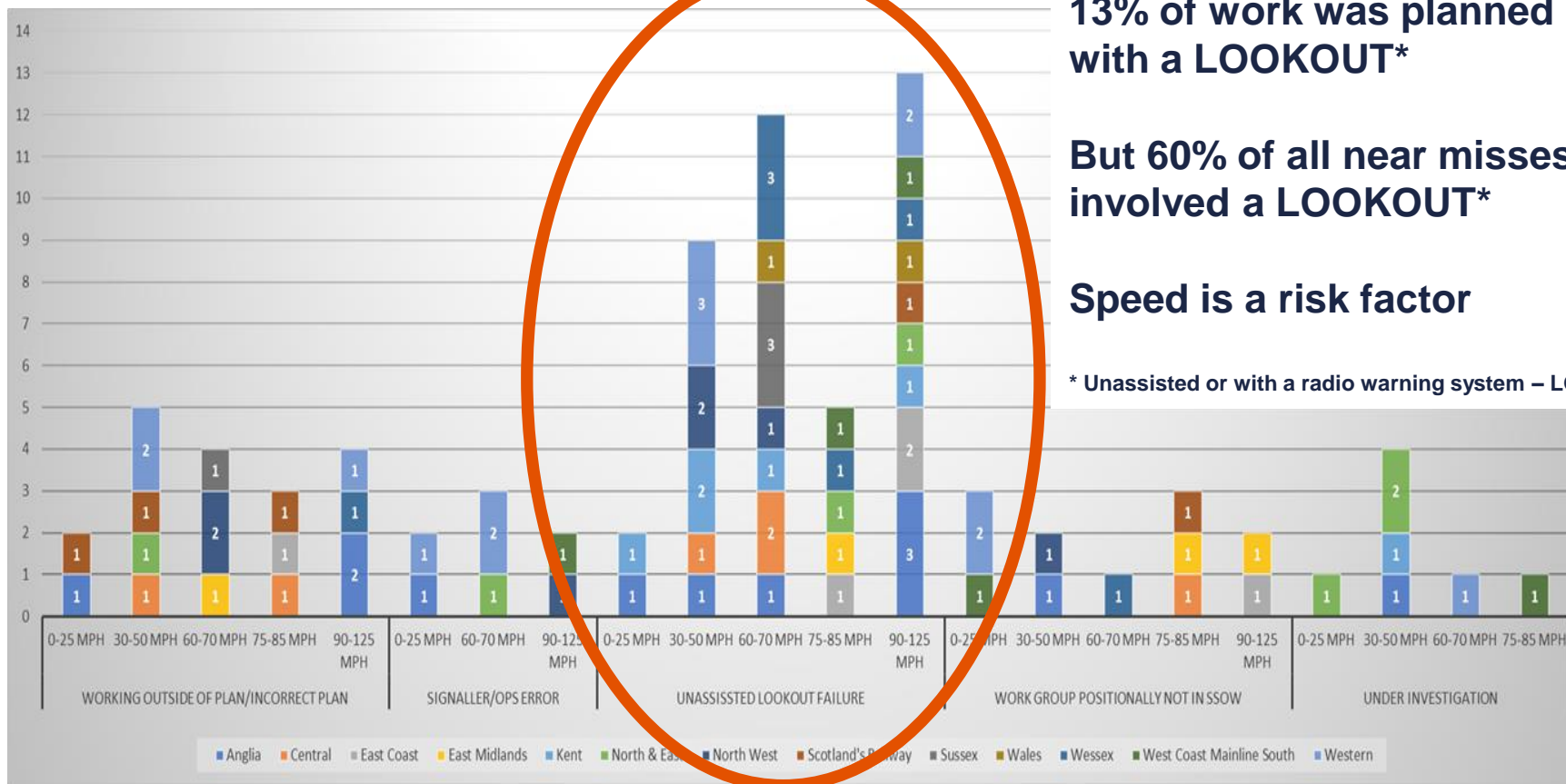


Figure 10: The number of fatalities as a result of track workers being struck by trains (source: RAIB)

# 'Near Miss' causation since April 2019





# Headline objectives



NO MORE  
'LOOKOUTS'



**100% LINE BLOCKAGE**  
with additional protection,  
or train activated warning



100% COMPLIANCE WITH  
**019 SAFE WORKING  
PRACTICES**

# Fixing fundamental, long-standing barriers to track worker safety

## Planning

**Workbank reviews and safe access**



**Optimise signaller capacity**



**Improve line blockage data**



**Improve safe planning & working**



## Technology

**Track safety equipment**



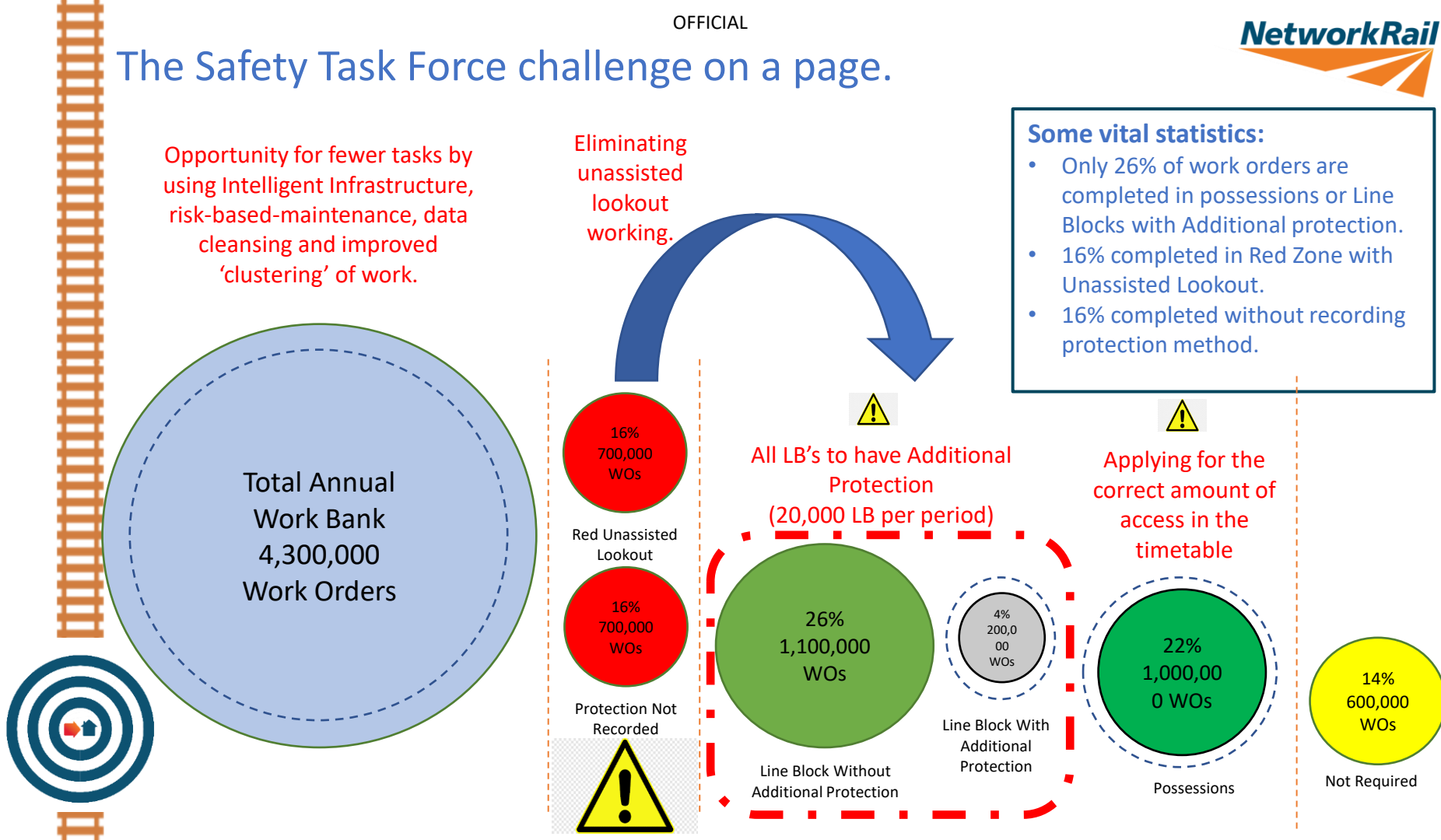
# The Safety Task Force challenge on a page.

Opportunity for fewer tasks by using Intelligent Infrastructure, risk-based-maintenance, data cleansing and improved 'clustering' of work.

Eliminating unassisted lookout working.

## Some vital statistics:

- Only 26% of work orders are completed in possessions or Line Blocks with Additional protection.
- 16% completed in Red Zone with Unassisted Lookout.
- 16% completed without recording protection method.







# Technology







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# New technology helps keep boots off ballast and customers happy



Eddy Current technology in use



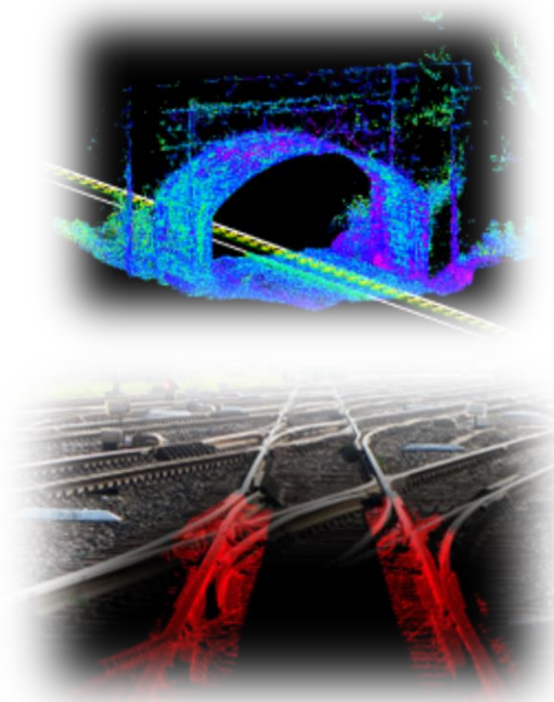
Plain Line Pattern Recognition camera



Remote condition monitoring,  
without the need for track access



# New technology helps keep boots off ballast and customers happy



Automated Surveying (RILA)



UAV / Drone Trials





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# Reducing 'Trackworker' risk: Remote Switch and Crossing Inspection



**Before**



**After**




# Up to date, regular CCTV with additional features

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Advanced SightingQuick SightingAnnotateMarkupMeasureZoom



Show Route History▲

14/01/2022 11:45:26 GMT

Speed 1.0xType: Overlay

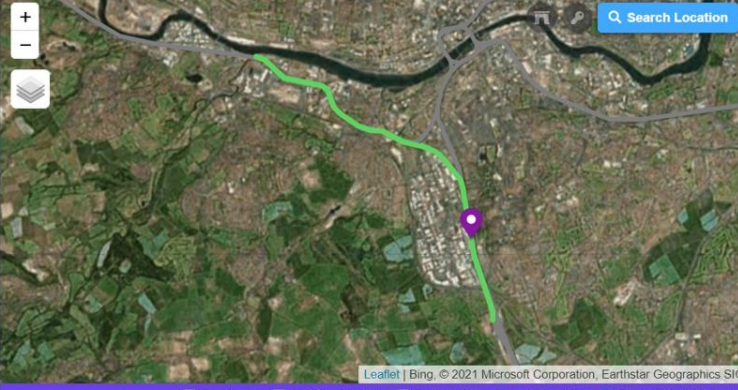
SessionsShortcutsMarkup Feed

Search for a session

#85882AIS NMT PC9900:3614/01/2022 - 10:47:50 GMTDay

#85879AIS TRU HD00:1414/01/2022 - 11:39:46 GMTDay→ Forward

Search Location



Leaflet | Bing, © 2021 Microsoft Corporation, Earthstar Geographics SIO

Route ageHidden MarkersFollow Video/Images on MapShow Snapped Route

InfoSession ContentHistoryMarker InfoGPS Adjustment

VIEWING#85879AIS TRU HD

MARKERSNo route markers

POSITION (LAT, LON)54.92989, -1.60865

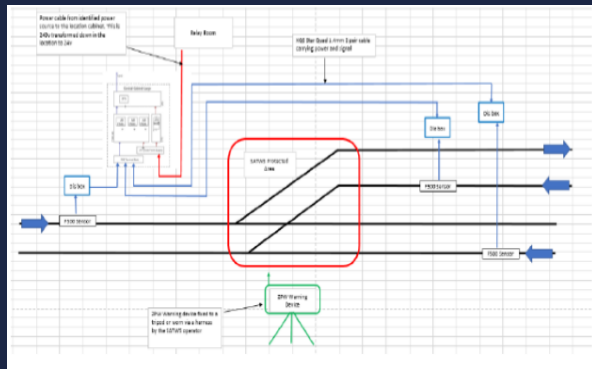
DATUMBETADatum not setSet Here

POSITION (EASTING, NORTHING)



# Deploying track safety equipment to reduce the risk of human error

- Safety Task Force is providing new track safety equipment and training
- Semi-Automatic and Automatic Track Warning Systems at around 150 sites





# Track safety equipment to protect people working in line blockages

- Safety Task Force is providing new track safety equipment and training
- ZKL Track Circuit Operating Devices (TCODs) break the track circuit, preventing trains entering a section and keeping workers safe
- 2800 will be installed in total.





# Geofence technology: reduce the risk of straying from a safe place

- Since July 2019, over 200 recorded incidents where staff have unknowingly gone onto or close to an open line, e.g. to either place protection/isolation equipment or tools and materials such as trolleys etc as part of their normal track work.



Track Tracker	Onwave	Tended
		

**Trials with route teams and three potential suppliers – now all approved for use.**

# We are sorting some basics too.....



**CASTLEFORD GREENWAY – IN PROGRESS** 





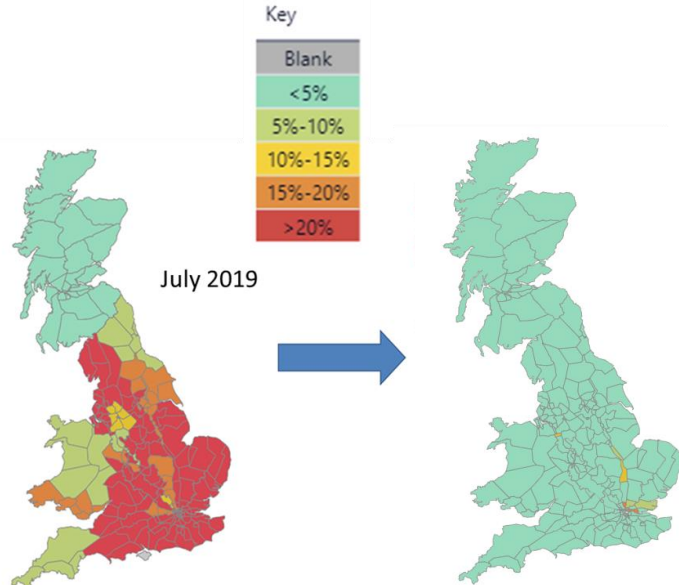


# Data analysis, not anecdote

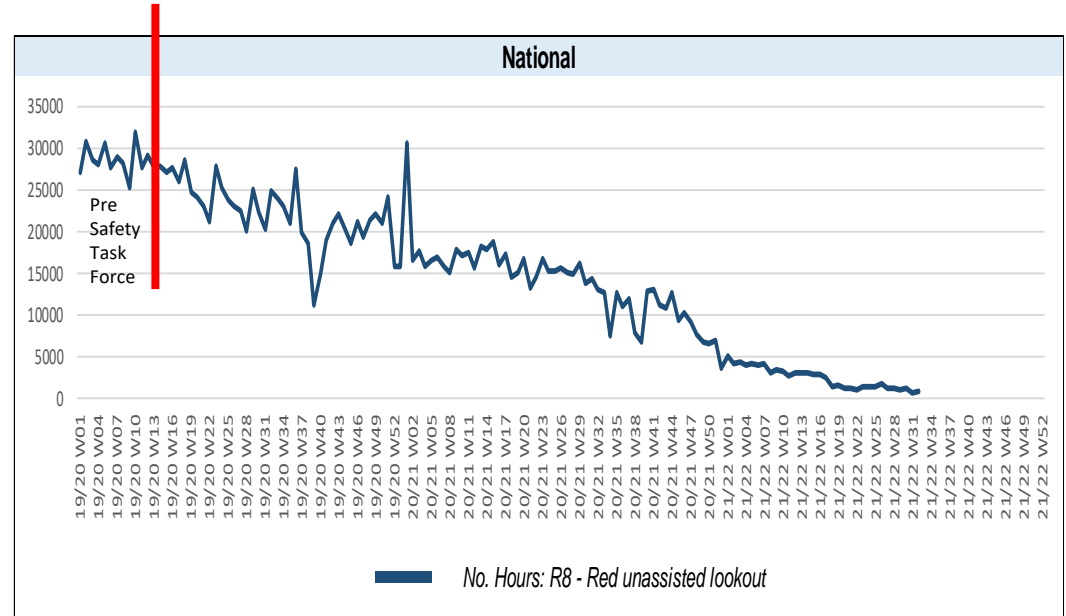


## Unassisted Lookout (Red Zone) Warnings

- July 2019: Over 25% of work was completed using unassisted lookout working.
- Red Zone Unassisted lookout working was the method associated with 80% of near miss events and track workers being struck by trains.
- Now less than 1%

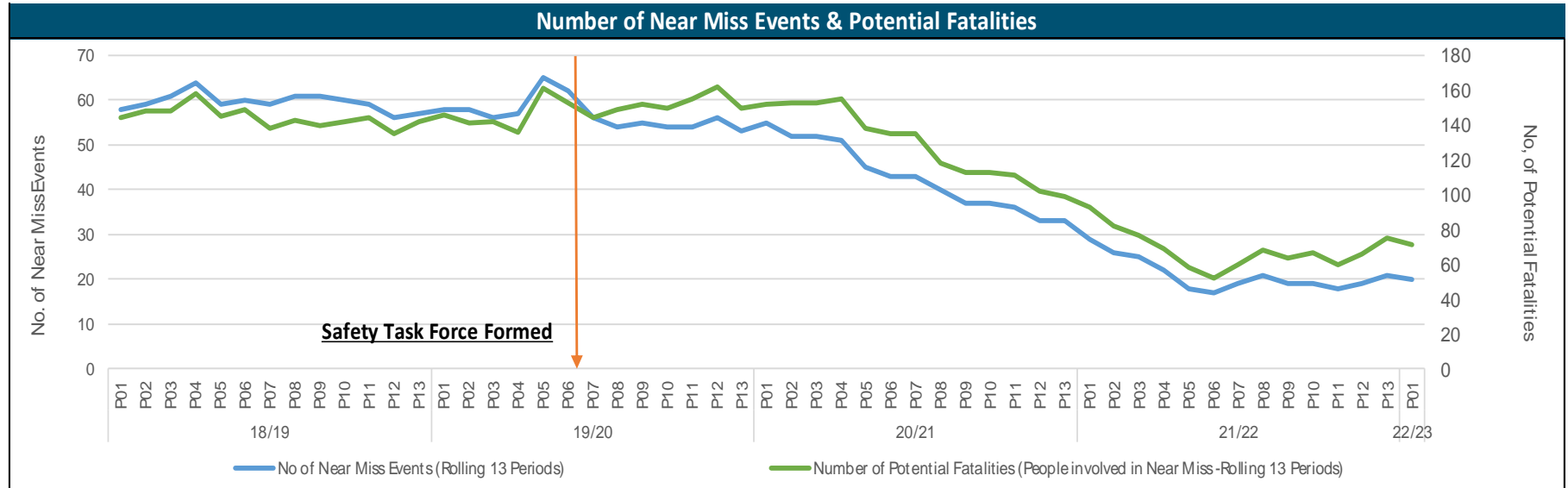


98% Reduction





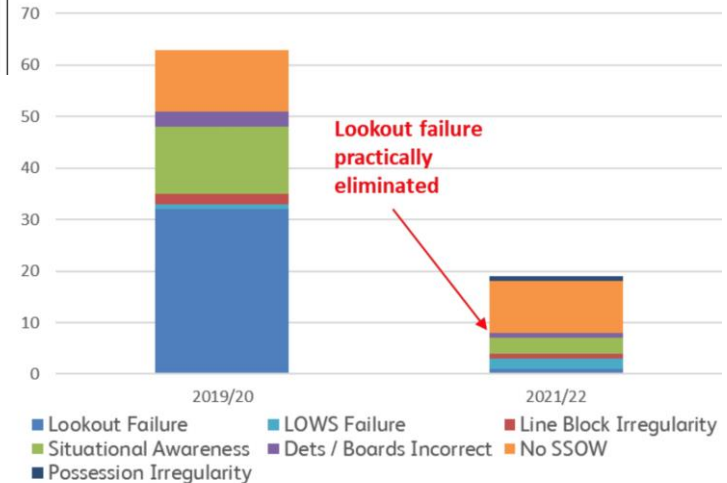
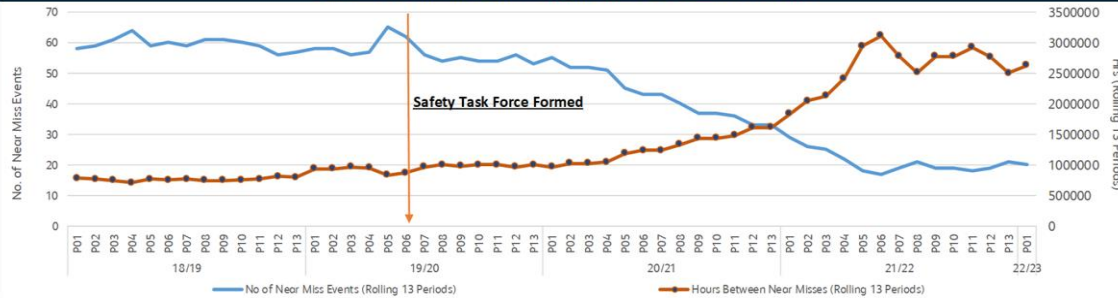
- Near miss numbers were climbing in 2019
- Potential Fatalities (number of track workers involved) peaked in Summer 2019
- Safety Task Force formed in September 2019 – Incidents have continued to reduce



# Near Misses and Hours Worked Between Near Misses

- Track workers are now working around 2m more hours between near misses

Number of Near Miss Events & Hours Worked Between Near Misses



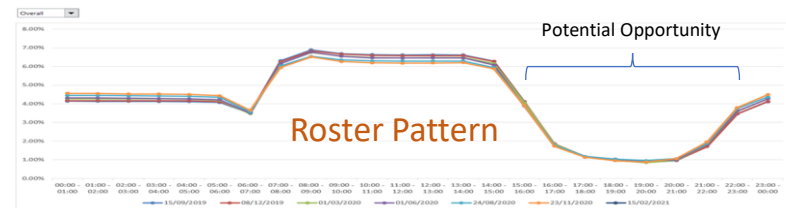
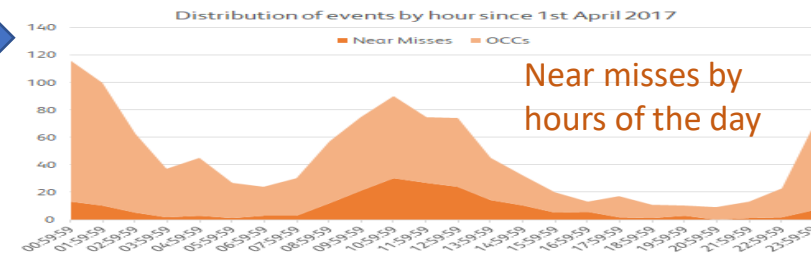
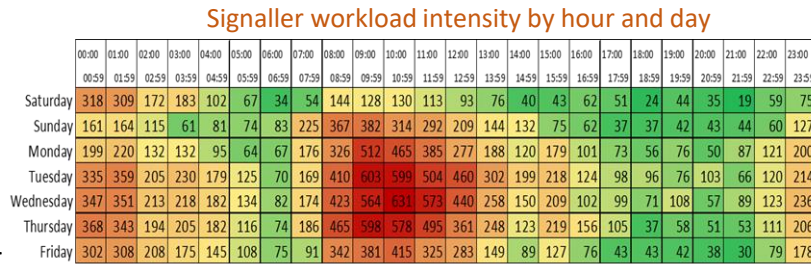
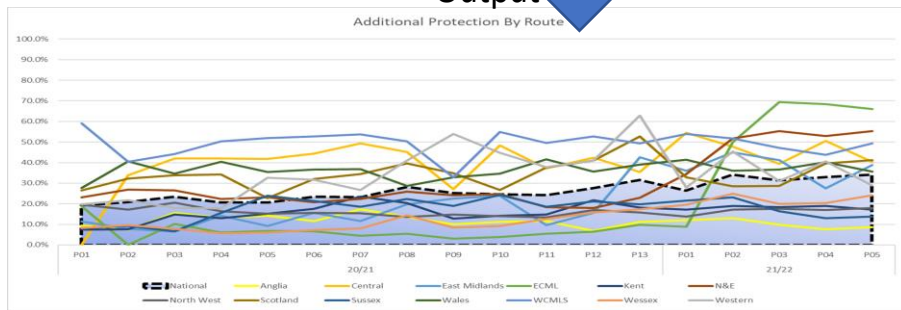
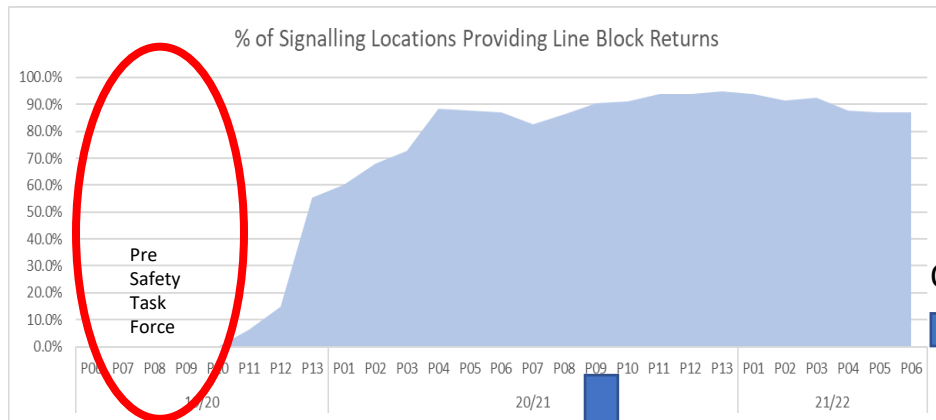


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Force

# Line blockage data



- From no data about Line Block utilisation and signaller workload risk to 85% now
- Revealed peaks in signaller workload and correlation between busy periods and near misses.
- Enables focus on areas where protection technology should be deployed.



# Causal Factors. Our people, systems and standards

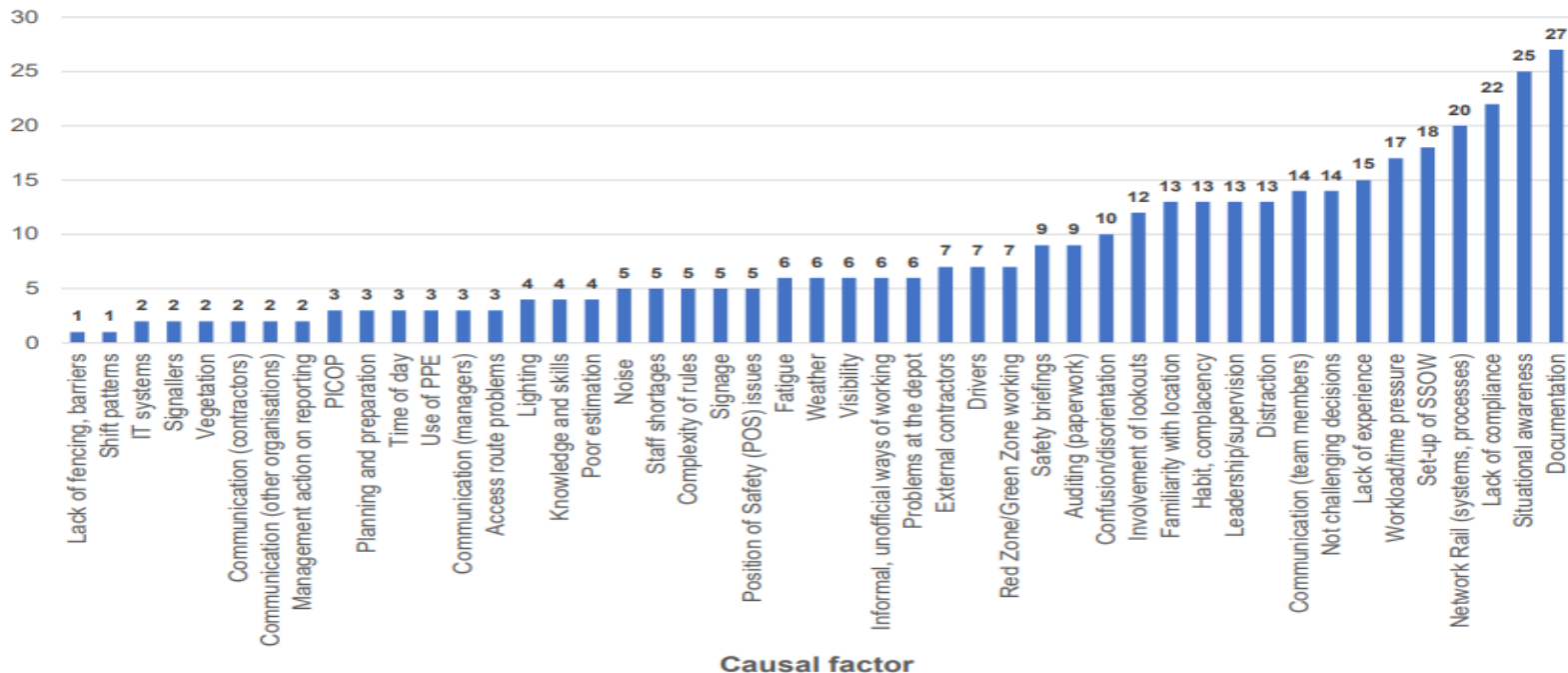


Figure 16: Aggregated causal factors and frequency of occurrence in RAIB reports



# People matter







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Task  
Force**

# Engaging and listening to front line colleagues – must be routine



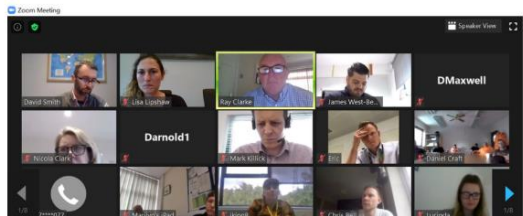
Posted in Southern Region

**Lipshaw Lisa**  
Thu at 6:58 AM • @9

2 shares • Seen by 64

Wow, what a great turnout yesterday at our second Track Worker Safety call! Thanks to those who joined us - over 200 of you. We'll be having our final call at 22:00 tonight to catch those of you we've missed.

Special thanks to **West-Beard James** and **Maxwell Douglas** for telling us why maintenance teams must get involved with this once-in-a-generation programme.



## Contents

Hello from the TWS team  
Spotlight on 2021  
What we have completed so far

## Meet the team



New members will be joining the team shortly

## Hello from the TWS team

Welcome to your first Track Worker Safety (TWS) programme newsletter.

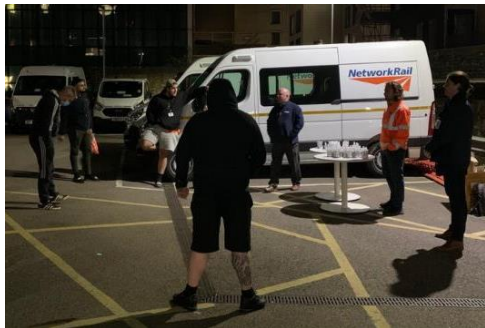
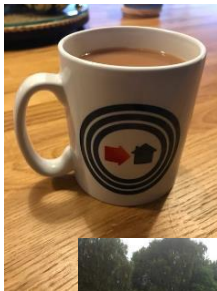
The programme will help us provide the safest environment for our track workers by reducing the need for us to go on track. It's also ensuring that, when we do need to, that we're using the safest method by:

- 1 Make it easier to plan work into possessions and line blockages
- 2 Making all warning methods and line blockages safer

We know we must do better to make ourselves safer whilst working on the railway. In the last year alone, we've had over 700 people exposed through operational close calls and near-misses. This is unacceptable and across Network Rail, wide-ranging plans are underway to reduce these incidents and near-misses.

This programme is part of those plans with a once in a generation opportunity to plan and deliver our trackside work differently. It's going to be more ambitious than anything we've done before in this area, and we're rising to the challenge with the right team and with your support.

We'll reduce the single point of failure that exists too often in our work - we need to stop relying on one person, whether that's a track worker or a signaller further away. That's why we want to achieve 0% unassisted bailout working. We're going to use the latest technology, such as Plan Line Possession Recognition (the train-borne tool measurement equipment), Remote Condition Monitoring and reliability-centred maintenance of signalling equipment (RCME) to reduce the number of times we need to go trackside. We'll also be reviewing our workbooks to ensure we have sufficient safe access to deliver our work and in August we're going to request additional access that meets our needs - we're completely overhauling the way we plan our work so more of it can go into possessions and line blockages.







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# The Signaller, Planner and Track Worker are more joined up

*“Making safety the simplest thing to do.....”*



It's the plan everyone wants

Cyclical line blocks are being pre-planned with the signaller

The signaller know what signals they are giving up

Changes can be made before track worker rosters are issued so the track workers know what days they are working with minimal disruption

Everyone knows what they are supposed to do and when they are supposed to do it

Unauthorised requests won't take the place of planned work

We all understand the plan, and our roles in it because we've all been included in the process

A planner knows what is happening and changes are applied by a change control process



**Signaller**



**Planner**




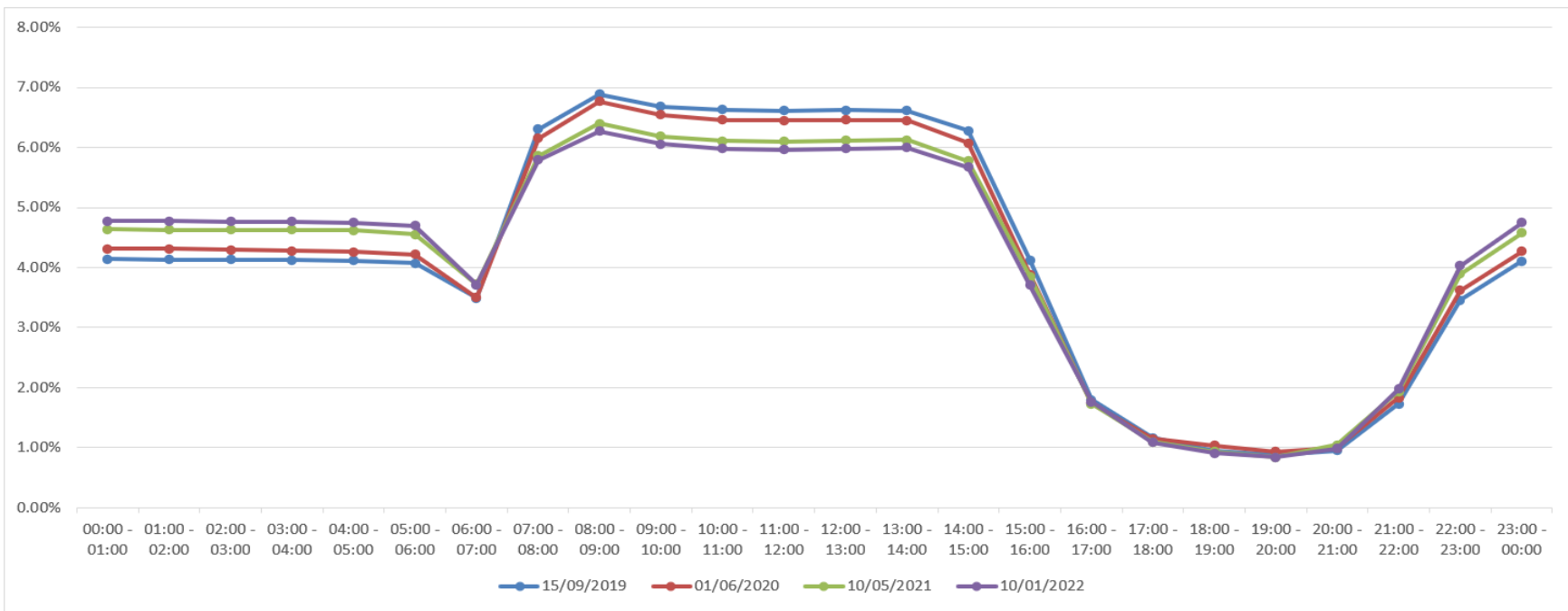
**Track Worker**



Non-technical skills for front line leaders

# Day work vs night work

Overall 



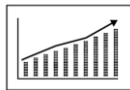
# Managing and mitigating night working

## Industry Collaboration



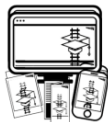
Liaison with industry groups to explore different approaches and best practices

## Reporting & MI



Shift times, absence levels, fatigue and line block information now available to identify trends.

## Education & Training



Fatigue, sleep, diet and hydration training.  
Healthy eating, nutrition fact sheets to be developed.

## Risk Assessment



Night work risk assessment review with trade unions

## Medicals & Health Screening



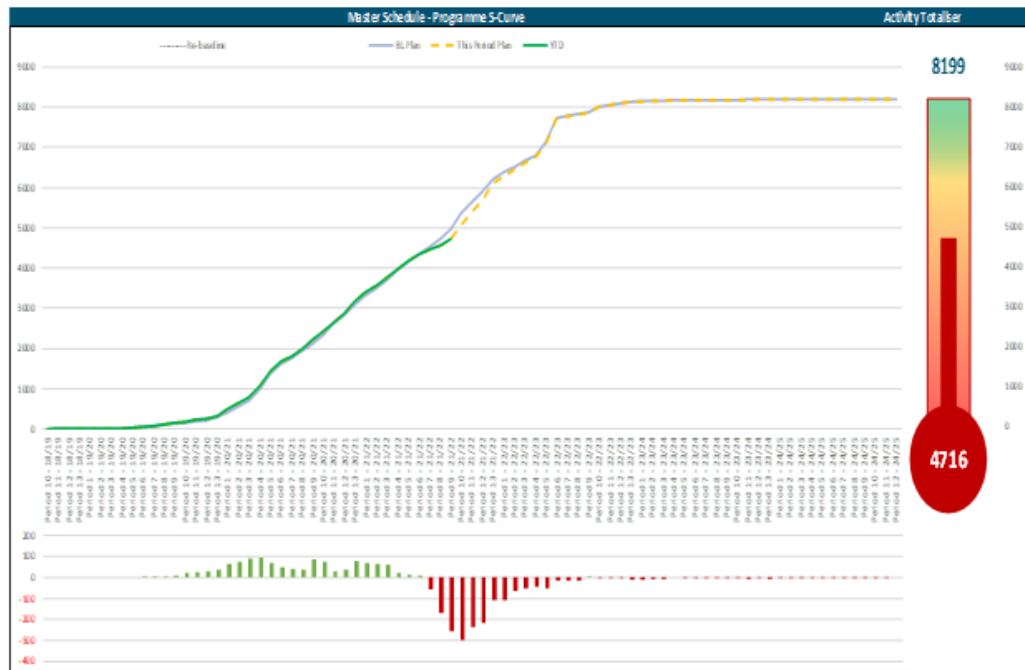
Safety critical medicals now more frequent.  
Physical\* & mental health assessment including wellbeing discussion - 13 000 in 2021. (\* blood glucose, cholesterol, BMI, body fat %, blood pressure, Q risk – cardiovascular assessment, smokerlyser)  
Full occupational health screening annually - 7000 in 2021



So what did the  
~~Romans~~ Safety Task Force  
ever do for us?



# A very structured delivery programme



**% of Programme  
Complete**

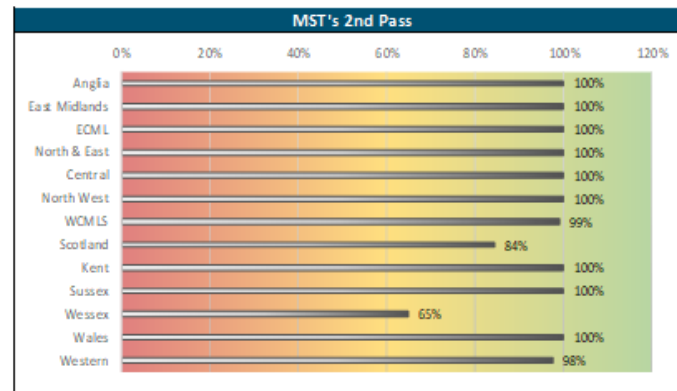
**57.5%**

**Days remaining until Plan  
Completion**

**1174**

**Days remaining until ORR  
Compliance**

**230**

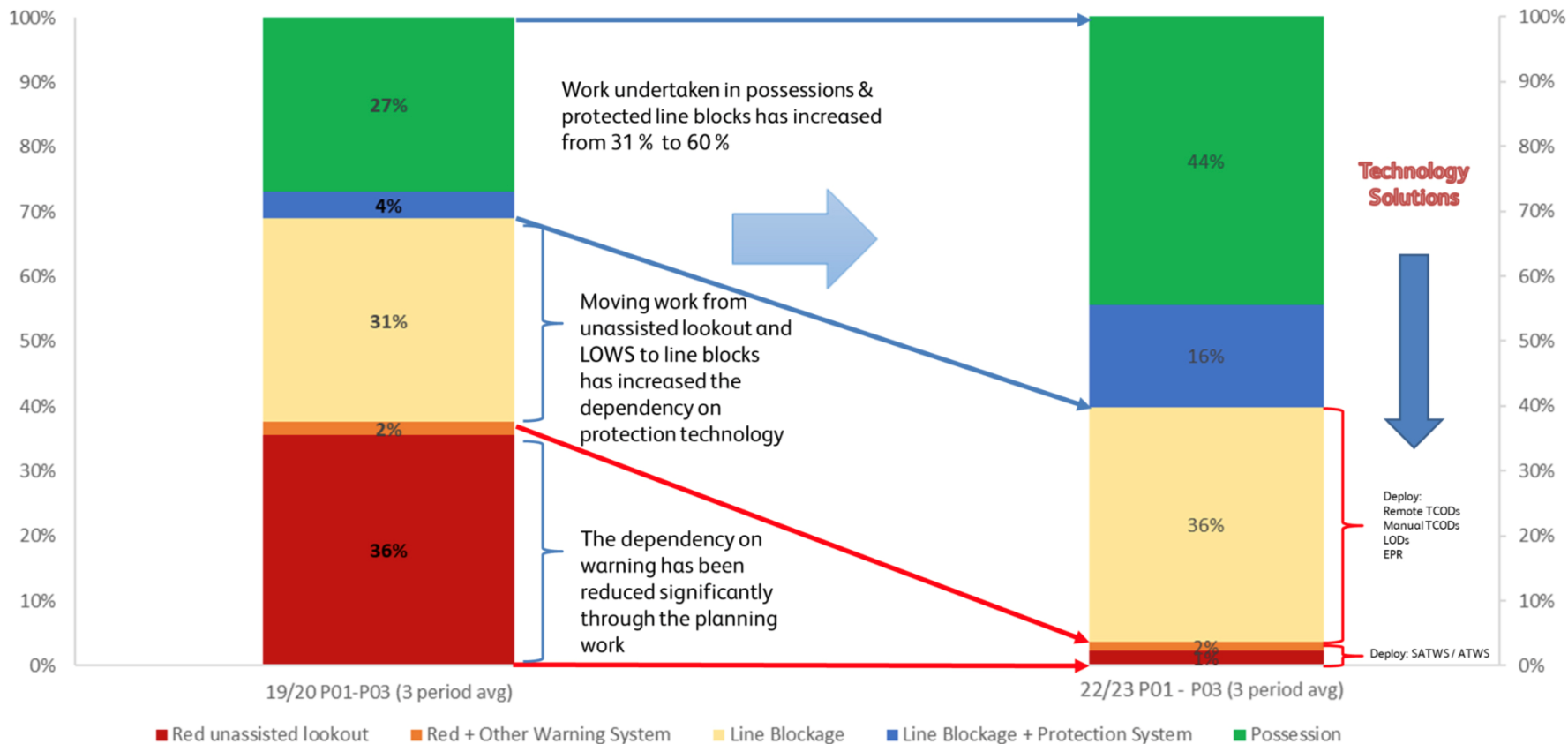


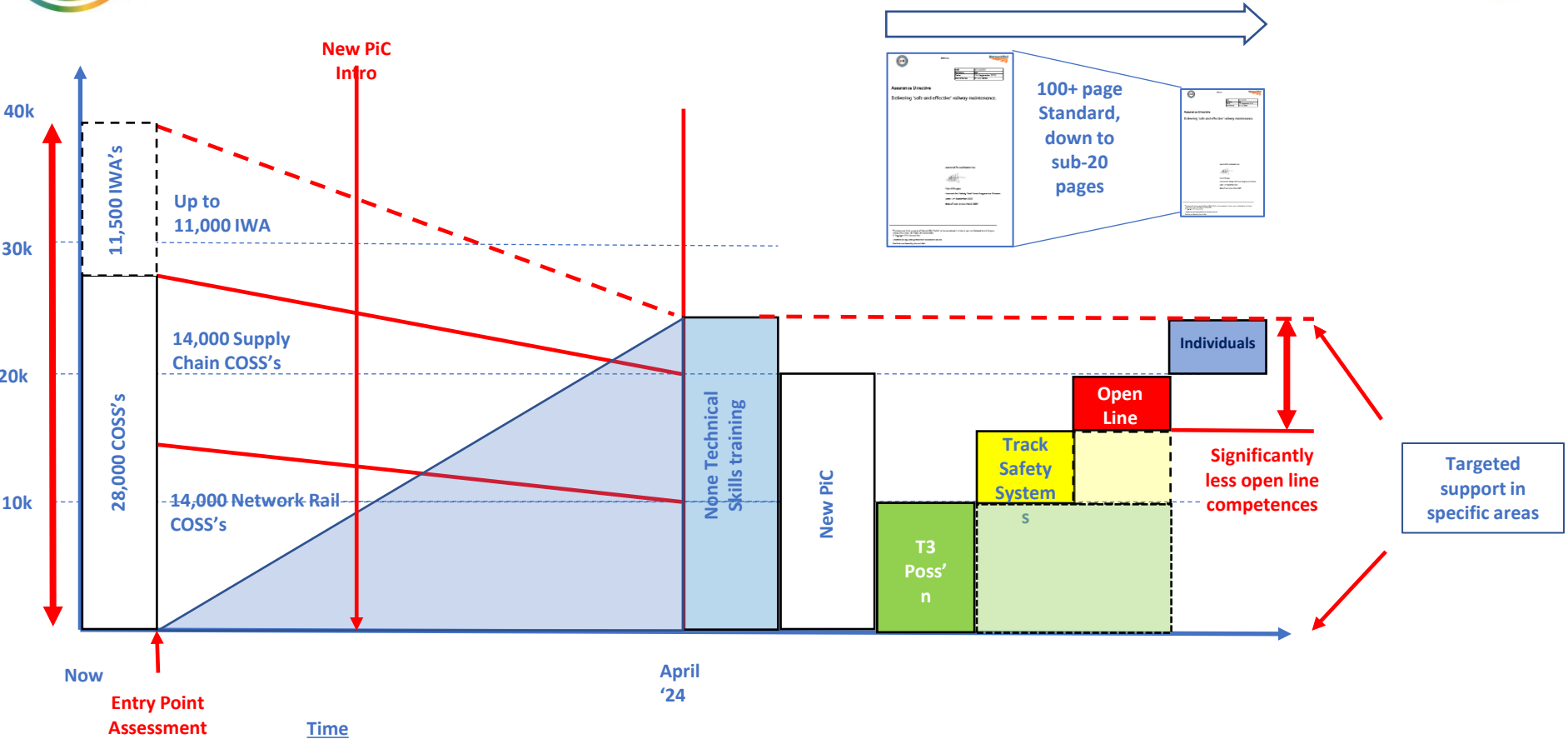
**MST & WA Resilience**

	10%	25%	50%	65%	80%	100%
Lvl 1 Target Dates	31/08/2020	30/10/2020	19/02/2021	29/10/2021	01/02/2022	01/04/2022
Route on Critical Path	Anglia	Western	Wessex	Wessex	Wessex	Scotland
Number of MST's	17/09/2020	30/03/2021	2/08/2021	08/12/2021	17/02/2022	1/04/2022
	0%	40%	60%	80%	100%	100%
	Complete 2nd Pass					1,227,245



# Radically changed maintenance work safety







# Sustaining this change:



When we have eliminated / reduced the need to go on track, 'Safe Access' should be a part of our system.

**Protection**

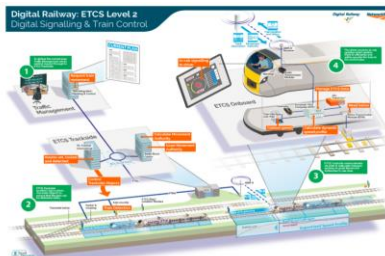


**19<sup>th</sup> Century**

**Warning**

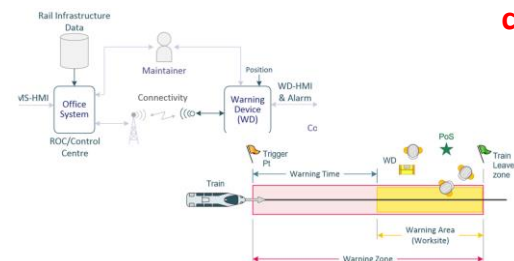


**20<sup>th</sup> Century**



**Signal  
controlled  
Protection  
System**

**21<sup>st</sup> Century**



**Signal  
controlled  
Warning  
System**

**Before  
July  
2019**



**1<sup>st</sup> base July  
2022  
ORR  
compliance**



**Access:  
Intuitively  
easy and safe.**

# Making the change stick

## Trackworker Health



Optimum balance between day and night work.  
Promoting good practice health monitoring and self-management.

## Further work bank optimisation (more technology)



Further implementation of 'risk-based' maintenance.  
Refining safe access needs.  
Further targeted technology introduction.

## Adapting competences



Fewer people with Lookout competences.  
Improved work group leadership

## Developing a better culture



Ensuring our internal maintenance, operations and access planning colleagues continue to collaborate and support each other.

## Operational Cost Optimisation



COVID, along with this change, have altered our 'usual' cost baselines. Detailed business planning will ensure we can realise future efficiency.





## Where are we now?



- Clear case for change built on data as well as tragedy
- Opportunity for a once-in-a-generation change
- Frontline teams engaged in changes
- Unprecedented progress and the goal is almost within our grasp
- Regulator satisfied the company now meets legal duties
  
- Chronic unease to guard against consequential risk
- Our biggest risk is that we slip back when the focus moves to other things...
  - ...it is essential to sustain the change



# We want your ideas

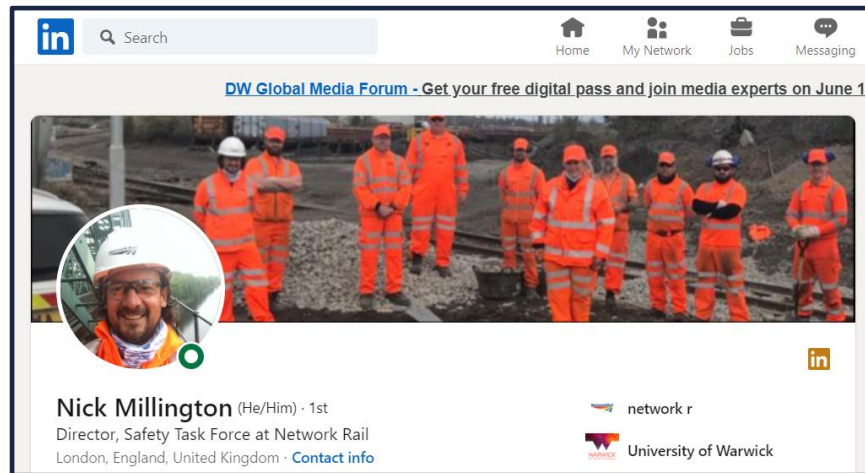
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Nick Millington | LinkedIn





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