SAFETY AT WORK
Protecting rail workers from trains

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Safer railway maintenance
Protecting rail workers from trains

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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

75% Lookout system failure
25% Wrong place

Figure 10: The number of fatalities as a result of track workers being struck by trains (source: RAIB)
‘Near Miss’ causation since April 2019

13% of work was planned with a LOOKOUT*

But 60% of all near misses involved a LOOKOUT*

Speed is a risk factor

* Unassisted or with a radio warning system – LOWS
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.

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.

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

Total Annual Work Bank
4,300,000 Work Orders

Eliminating unassisted lookout working.

All LB’s to have Additional Protection (20,000 LB per period)

Applying for the correct amount of access in the timetable

26%
1,100,000 WOs

Protection Not Recorded
16%
700,000 WOs

Red Unassisted Lookout
16%
700,000 WOs

Line Block Without Additional Protection
4%
200,000 WOs

Line Block With Additional Protection

Possessions
22%
1,000,000 WOs

Not Required
14%
600,000 WOs
Accelerating more “Intelligent Infrastructure”

5500 miles of Plain Line Pattern Recognition

5000 miles of Eddy Current testing;

12000 miles of Risk Based Maintenance;

65000 signalling assets into Risk Based Maintenance;

Significant increase in switch and crossing Risk Based Maintenance;

£200m extra technology investment by 2022.
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
Reducing ‘Trackworker’ risk: Remote Switch and Crossing Inspection

Before

After
Up to date, regular CCTV with additional features
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.

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<th>Track Tracker</th>
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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 Events & Potential Fatalities

- 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
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.

Signaller workload intensity by hour and day

Near misses by hours of the day

Potential Opportunity

Roster Pattern

Output

Pre Safety Task Force

% of Signalling Locations Providing Line Block Returns

Additional Protection By Route

Output
Causal Factors.
Our people, systems and standards

Figure 16: Aggregated causal factors and frequency of occurrence in RAIB reports
People matter
Engaging and listening to front line colleagues – must be routine

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 Darrow James and Maxwell Douglas for telling us why maintenance teams must get involved with this once-in-a-generation programme.
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

Non-technical skills for front line leaders
Day work vs night work
## 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

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*Compliance*  |  *Care*
So what did the Romans Safety Task Force ever do for us?
A very structured delivery programme
Radically changed maintenance work safety

Work undertaken in possessions & protected line blocks has increased from 31% to 60%.

Moving work from unassisted lookout and LOWS to line blocks has increased the dependency on protection technology.

The dependency on warning has been reduced significantly through the planning work.

Deploy: Remote TCODs, Manual TCODs, LOBs, EPR.

Deploy: SATWS/ATWS.
Fewer people with permission and competence to work on open railway lines AND simplifying our company rules

- Time
- 10k
- 20k
- 30k
- 40k

- Up to 11,000 IWA
- 14,000 Supply Chain COSS’s
- 14,000 Network Rail COSS’s

- Now
- April ’24

- Entry Point Assessment
- New PiC Intro
- None Technical Skills training
- New PiC
- Open Line
- T3 Poss’n
- Track Safety System
- Significantly less open line competences

- Targeted support in specific areas

- 100+ page Standard, down to sub-20 pages

- Individuals
- 28,000 COSS’s
- 11,500 IWA’s
Sustaining this change:
When we have eliminated / reduced the need to go on track, ‘Safe Access’ should be a part of our system.
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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100 YEARS ANNIVERSARY