

OFFICIAL



Electrical Safety Delivery Industry Engagement Update

February 2023

Why is improving traction power electrical safety a priority for the industry?



We should never have an accident on the railway. We should never have an accident through contact with electricity. To achieve this, we need to **eliminate the industry belief that accidents just happen.**

Life-changing incidents

- These have to be industry-changing!



Godinton
20th December 2018



Kensal Green
25th December 2019



Wolverton
14th May 2021

Electrical Safety Delivery – key changes

- 1. A Single Approach to Isolations** – embedding changes in process and ways of working associated with planning and implementing isolations of the traction power supply.
- 2. Technology improvements** – to enable safer, faster isolations through remote securing, earthing and shorting, enabling safety and financial benefits.



Our culture underpins these key changes.

The same principles should be applied to new electrification projects to enable further safety and productivity improvements



Single Approach to Isolations

Why are we developing a Single Approach to Isolations?

To increase workforce safety by:

- a. Improving identification of electrical hazards, and an increased focus on removing or mitigating those that remain after isolations are in place (residual electrical hazards) when working on or near traction power systems;
- b. Equipping the workforce to apply the rules by increasing their electrical knowledge and competence;
- c. Increasing the emphasis on the isolation and earthing of all tracks, and requiring written justification to be provided where this is not used. The only exception is for tasks considered to be low electrical risk and covered by task risk control sheets or other suitable risk assessment;



- ✓ Improve workforce electrical safety risk
- ✓ Increase electrical competence of the workforce
- ✓ Enable Network Rail to meet regulatory commitments

Single Approach to Isolations OLE – deployment planning

NR/L3/ELP/25000 issue 2 – as a reference standard

Phase 0 – Refresh of Test before Touch process for OLE and introduction of standard NR/L3/ELP/27720

Phase 1 – AP/NP prerequisites and trial of on-site assessment

Phase 2 – Introduction earthing terminology and device terminology to align with the EaWR 1989 Circuit Main Earths, Additional Earths and Disconnectors.

Phase 3 – Risk assessment and supporting changes

Phase 4 – Distribution Interfaces and Remote Securing

Phase 5 – Optimised Earthing, Neutral Section and Return Conductor Earthing

Phase 6 – Implementation of NR/L3/ELP/25000

Phase 7 – Introduction of core training

Phase 8 – Post Implementation review of NR/L3/ELP/25000

No business impact – the reference standard outlines the direction of travel

Compliance date January 2023

Industry engagement underway through ISLG

E&P standards briefing in September 2022 supported by films and other materials

Request support to commence deployment planning for the key phases 3 and phase 4. Classroom training and competency updates for AP/NP and new competencies introduced for electrical safety risk assessor and approver and technical briefings for other roles

Deployment planning for later phases will commence later in CP6

Deployment timescales, sequence and scope of phases 5 to 8 may be reviewed due to the dependency on other factors e.g. optimised earthing trial.

Single Approach to Isolations – Overhead Line Equipment

Single Approach to Isolations (SAI) is one of the key changes within the Electrical Safety Delivery (ESD) programme to enable electrical safety improvements associated with planning and implementation of isolations of the traction power supply and the associated improvement in electrical safety competency.

- A phased approach to implementation applies to Overhead Line Equipment
- Phase 3 plans to introduce the following changes in NR/L3/ELP/29987 issue 9
 - Improved process for electrical risk assessments
 - Introduction of new competencies for electrical risk assessor and approver and technical briefings for existing competency holders
 - Enhanced electrical control measures
 - Introduction of the electrical safe system of work
- A two year compliance date applies to accommodate training and briefing
- Infrastructure Safety Leadership Group engaged and supply chain awareness briefings planned

For support please contact ESDSAISupport@networkrail.co.uk



NR/L3/ELP/29987 Issue 9 Scope

Improved Electrical Risk Assessment Process

- Formalises the electrical risk assessment process
- Improves knowledge of the individuals undertaking the electrical risk assessment
- More emphasis on removing residual electrical hazards. Where they cannot be removed, risks will be mitigated through the use of formalised electrical risk control measures .
- Increased focus on the task delivery method. Ensuring someone with a detailed understanding of the work is assisting in the completion of the electrical risk assessment.

Electrical Risk Control Measures

- Builds on the existing RoLE equipment risk control measures
- RoLE will become part of a suite of electrical risk control measures to include, delineation, barriers and obstacles and direct supervision etc
- Electrical risk control measures are identified as part of the electrical risk assessment process
- Continued emphasis on the importance of the understanding of electrical risk control measures used for the benefit of the working group members

Introduction of New Competences & Technical Briefs for existing competences

- Introduction of new competences to improve electrical knowledge and enhance the quality of the planning process, including electrical risk assessments
- New competences and technical briefs to improve awareness of electrical safety.
- New suite of documents to better suit technological improvements will be trained and briefed

Electrical Safe System of Work (ESSoW)

- Formalising the categorisation of the different types of Electrical Safe System of Work
- Justification must be provided for not working with all lines earthed and isolated
- The ESSoW selection is part of the overall electrical risk assessment process
- Provides clarification on known anomalies within the current standard

Work Categorisation		Description
ESSoW Category L	Low electrical risk working	Specifically listed tasks that do not require an Earthed Isolation. Entry within 2.75m of Live OLE is only permitted for specifically listed and approved tasks. Low electrical risk working is normally conducted with operatives standing at rail level, although it could include work on signalling assets where approved screens are fitted.
ESSoW Category A	Working with the OLE dead on all tracks	Working where all the OLE is under an Earthed Isolation, within the along track limits when applied across all tracks. No OLE remains Live within the along track limits.
ESSoW Category B	Working with the OLE dead on some tracks	Working where the OLE within the site of work is under an Earthed Isolation but Live OLE or other residual electrical hazards remain within the along track limits when viewed across all tracks.
ESSoW Category C		Not used in this standard.
ESSoW Category D	Working with the OLE live	Working where the OLE is Live, which includes on/off tracking and travelling approved plant under Live OLE. Excludes all Category L and Category E tasks.
ESSoW Category E	Working on live OLE	Working within 0.6m of Live OLE. Live working is limited to specifically listed and approved tasks using approved insulated tools.

Single Approach to Isolations – Conductor Rail

- A review of the deployment strategy for the new standard NR/L3/ELP/00750 is underway to understand if the moved to a phased deployment will reduce the business impact of one big change and accelerate safety improvements to address the root causes of isolation irregularities.
- As a result, work on developing the new standard is paused until Spring 2023
- This approach takes into account the lessons learnt from Overhead Line Equipment



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Electrical Safety Step Up

The electrical safety Step Up is a safety event for teams involved with planning and implementation of isolations to support improvements in our electrical safety culture.

The theme of the Step-Up is to emphasise the importance of following the process, the consequences if we don't, and what good looks like (relating to behaviors). The target audience is front line staff who are involved in the planning and implementation of isolations



Progress update

- 45 suppliers have engaged with the 'Step Up' team
- 21 requests received from suppliers to attend train the trainer training and commitment to cascade to 4700 people
- Pilot sessions have been held in Eastern Region to ensure the material is ready for cascade

Feedback from the pilot sessions

How engaged/interested were you during the session?

4.8 out of 5 Stars

Did you get the information you expected from today's session?

4.7 out of 5 stars

What will you do differently following this Step-Up session?

When out on site ask more questions and not just rely on the process.

Challenge unrealistic programme timescales & pressures. Incentivise implementing the plan and not doing unplanned works.

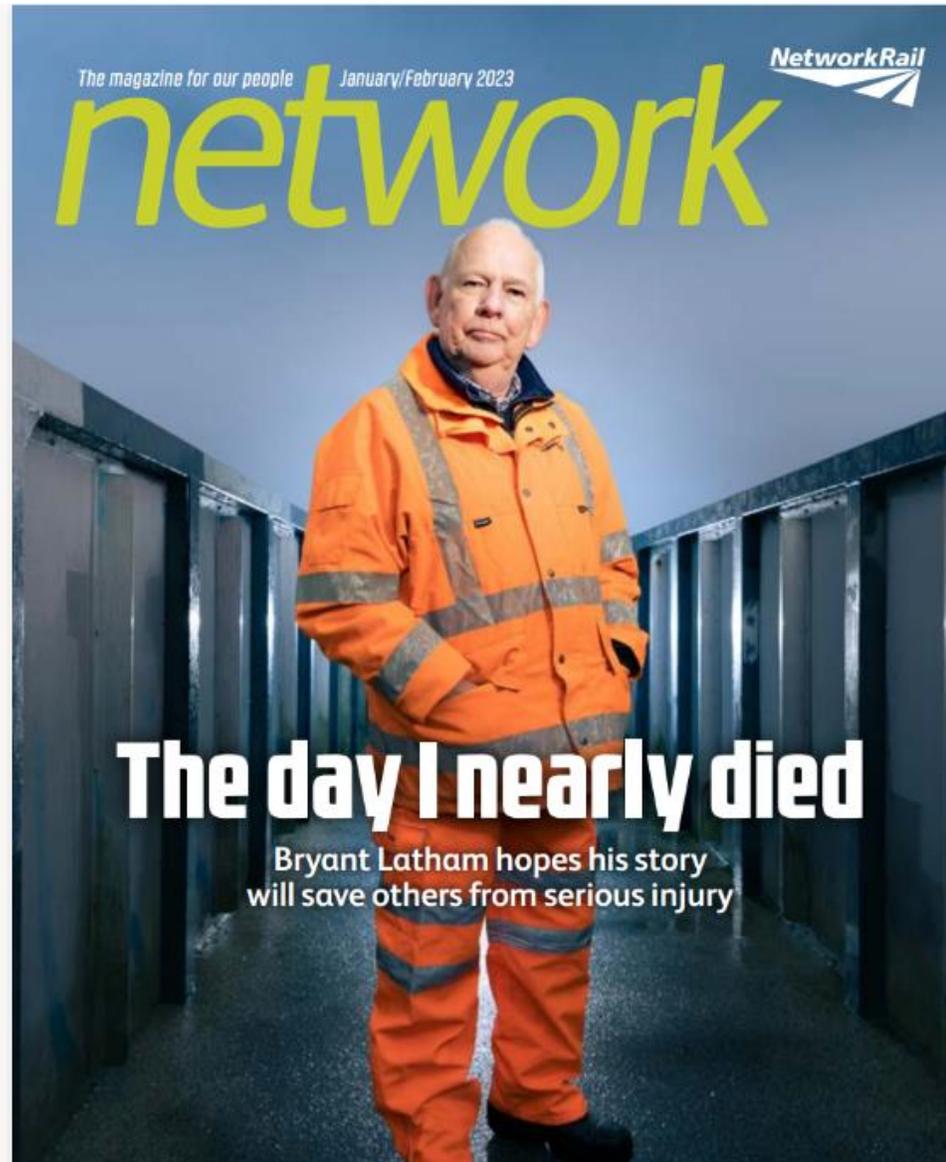
I will work on my confidence to challenge potential unsafe behaviour.

Speak up when I believe something does not look right.

Please support the H&S teams who are leading arrangements to cascade the Step Up before March 2023

ElectricalCulture@networkrail.co.uk

Electrical Safety Culture



DON'T RISK IT

STEP UP TO ELECTRICAL SAFETY

The Electrical Safety Step Up is an interactive 90-minute session focusing on our behaviour around electrical safety.

The session must be completed by this March (2023).

Scan the QR code for more information:



#choosetochallenge



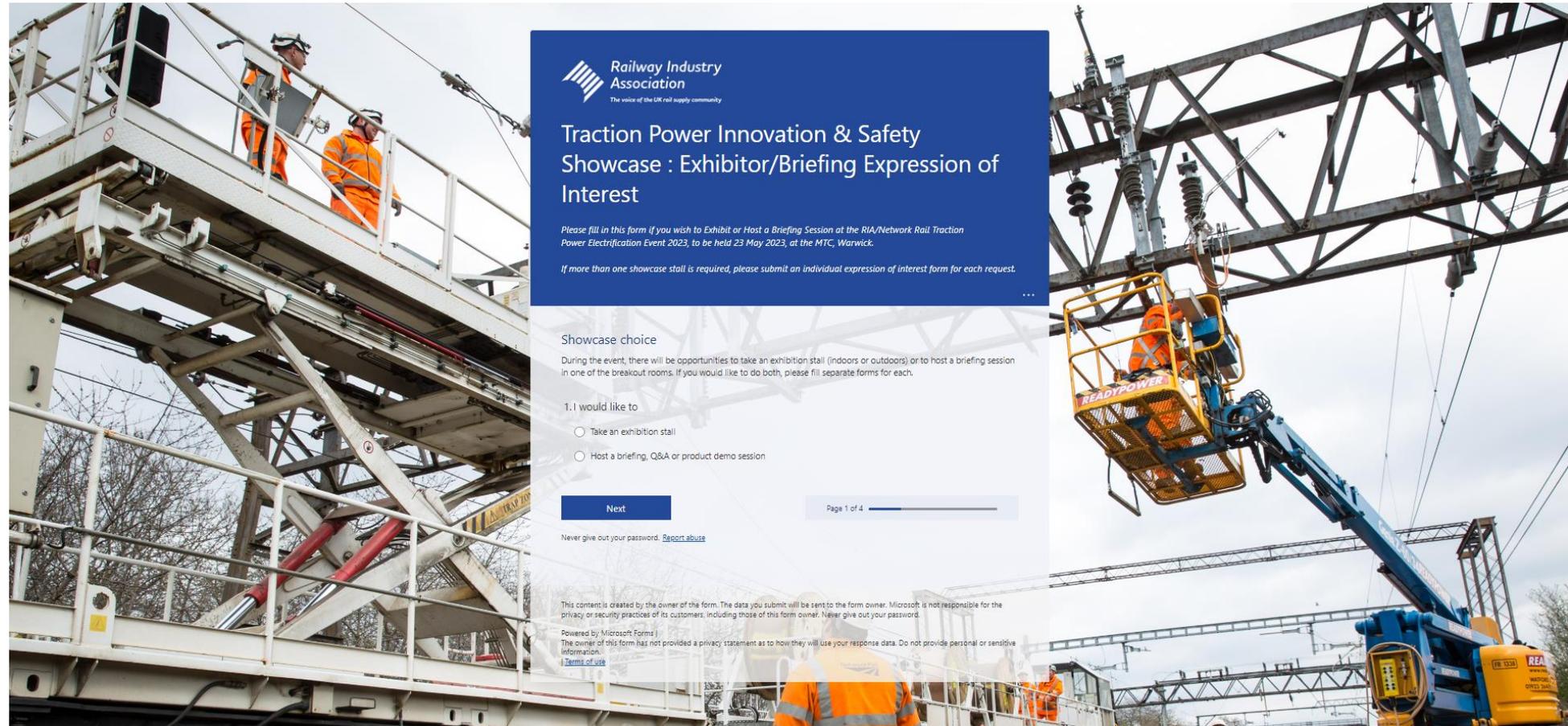
NetworkRail

Tuesday 23 May

Registration open for exhibitors

Larger venue for 2023 given popularity of event last year

Manufacturing Technology Centre Coventry



We hope to meet you there! For queries please contact ElectricalCulture@networkrail.co.uk



**Follow Network Rail
and Martin O'Connor
#LinkedIn**



Martin O'Connor (He/Him) - 1st
Network Technical Head of Overhead Line
Conductor Rail at Network Rail, CEng FIET
Network Rail - Liverpool John Moores University
Southport, England, United Kingdom



Appendix





Electrical Safety Roadmap – AC

Roadmap date – 7 October 2022

CP5	CP6 2019-22	CP6 2022-23	CP6 2023-24	CP7	CP8
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Process and competence

GWESIP+

◆ Delivery of GWESIP+ to enable energisation of Great Western Main Line – May 2019

H.V. Distribution work instructions review

NR/L3/ELP/25000 issue 1 development & trial

◆ Implement first earthed isolation using NR/L3/ELP/25000 – February 2020

NR/L3/ELP/25000 issue 2 development

Evolution of the competency framework

Test Before Touch refresh

PPE review

'Step Up' for Electrical Safety

Electrical Safety Culture Framework

Optimised Earthing development and trial

Optimised earthing rollout

Earth Before Touch Development and Trial

Tools and Technology

Mobile RoLE

◆ RoLE deployment complete – February 2022

Remote Securing App development, trial and integration

Remote securing rollout (SIP areas)

Further rollout of Remote securing and earthing

Remote Securing trapped key, development and trial

Remotely Controlled Circuit Main Earth Devices development

Initial earthing pantograph development

Further earthing pantograph development and rollout

R&D – next generation RoLE and e-permits and workflow

Rollout of next generation RoLE and e-permits and workflow

R&D – Live line indicators

Additional improvements

NR/L2/ELP/25001

◆ Electrical Safety principles for new Electrification published – February 2022

Electrical Principles

Asset Management Feasibility

Delivery of Asset Management initiatives

Late

At Risk

On Track

Complete

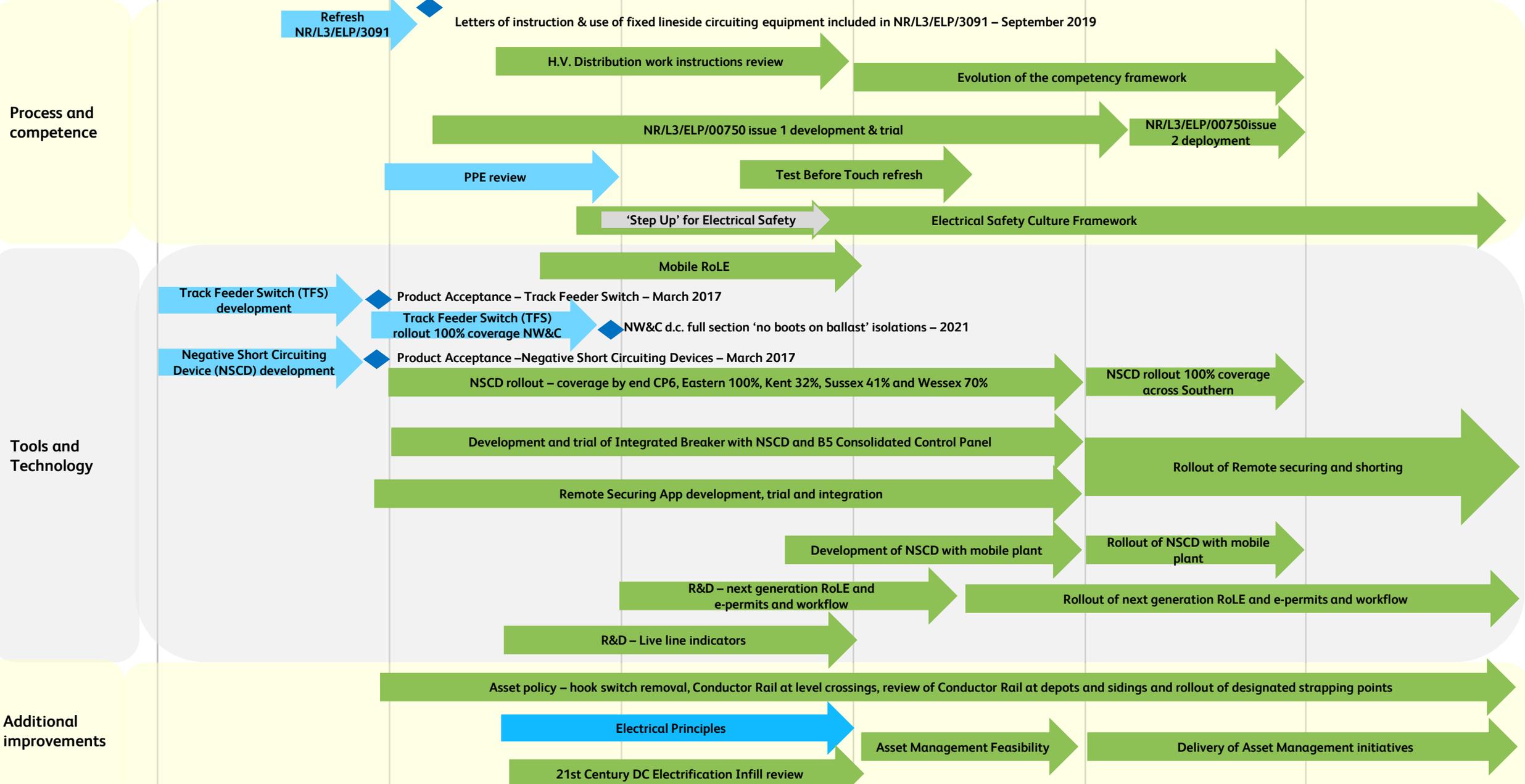
Key



Electrical Safety Roadmap – DC

Roadmap date – 7 October 2022

CP5	CP6 2019-22	CP6 2022-23	CP6 2023-24	CP7	CP8
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What are the plans for technology on Overhead Line Equipment?

Remote Securing
App and Earthing
App2i rollout



CP7-8
From 2024

Remote Securing
Trapped Key solution
rollout



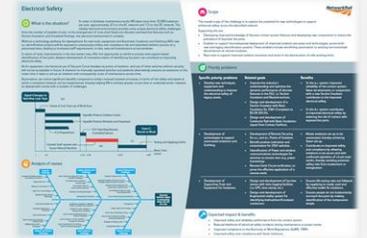
CP7-8
From 2024

Earthing Pantograph
rollout



CP7-8
From 2024

Next Generation
technology rollout
and asset
management
improvements



CP7-8
From 2024

- ✓ Wales and Western and Scotland are leading with development and trial of Remote Securing 'trapped key' in CP6
- ✓ North West and Central are planning to trial Remote Securing 'App and App2i' solutions in CP6

What are the plans for technology on the Conductor Rail network?



Local securing Track Feeder Switches rollout (NW&C)



In use today

Local securing Negative Short Circuiting Devices rollout (Southern & Eastern)



In use today

Securing with Consolidated Control Panel



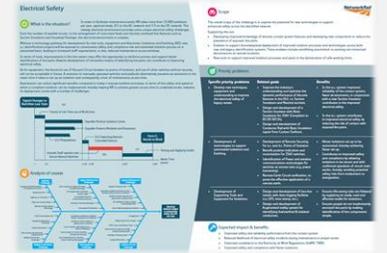
Coming soon

Remote Securing App and Shorting App2i rollout



CP7-8
From 2024

Next Generation technology rollout and asset management improvements



CP7-8
From 2024

- ✓ North West and Central are using 'no boots on ballast isolations' on part of the Conductor Rail network
- ✓ Southern Region expect to avoid manual application of 34,130 straps through CP6 deployment 2019-2024) deployment

CP6 electrical safety culture commitments

Regularly Refresh the contents of **Safety Central** to ensure it is a relevant and useful resource for the industry

Refresh complete, future updates aligned to workstream engagement plans



Launch **Choose to Challenge** campaign to promote the power of challenging unsafe behaviours

Choose to challenge launched, campaign next steps planned



Develop an **Electrical Safety Step Up** event to be cascaded by the Industry and provide support to the industry for deployment

Pilot September 2022, Industry cascade from January 2023



CP6 electrical safety culture commitments

Issue toolbox tools to continue the electrical safety conversation the toolbox talks are linked to many of the risk findings

Tool box talks developed and issued for initial stakeholder review



Design opportunities to open two-way conversations by having “**Time to Talk**”
Sessions designed a bit like Podcasts.

Sessions have been designed – like Podcasts



Develop “**Choose to Recognise**” a specific recognition scheme aligned to Work safe and great safety behaviours.

Options under development





End