Strategic Risk Chapters

Electrical Safety

30 May 2025

Contents

SRC Electrical Safety

ORR Strategy for Electrical Safety

The integrity of Electrical Assets is important to prevent people from being killed or severely injured from direct contact with electricity or as a result of fires or explosions due to catastrophic failure of assets. Most electrical accidents occur because people are working on or near equipment that is:

- Thought to be dead but which is live.
- Known to be live but those involved do not have adequate training or appropriate equipment to prevent injury, or they have not taken adequate precautions.

The rail sector has a high proportion of electrical assets that predate current legislation concerning electrical safety. It can be very challenging to make retrospective changes to these legacy assets in order to improve safety and promote better compliance with legal requirements. Even when constructing ‘new’ electrification schemes, there remain considerable potential barriers to meeting legal obligations when assets are being overlaid onto existing infrastructure. It is only when building from scratch (HS1 and HS2 for example) that it becomes easier to design in optimal arrangements for risk control and legal compliance.

ORR’s strategic approach acknowledges these challenges. We have adopted a targeted, prioritised and proportionate plan to secure the greatest improvements to risk control and enhanced legal compliance. We have supported the mainline network in developing a programme to enhance safety at electrical assets. This includes improving procedure and process where necessary until technological change can be introduced. We have enforced on Network Rail infrastructure to promote the best working processes as interim controls.

It is recognised that when carrying out maintenance on a busy section of electrified railway it can be disruptive to apply and secure isolations by traditional means. Application of technological developments has eliminated the need for the manual isolation processes and has the added benefit of increasing the time made available work.

ORR’s strategy for regulating the risks that arise from working on or near to electrical assets is to promote the elimination of the risk of working near such assets, followed by the implementation of engineering controls supplemented with robust safe working procedures. Suitable assurance activities will need to be embedded in these work procedures to ensure compliance.

We will:

- Continue to monitor the progress made with the application of enhancements to the rail infrastructure and standards identified by Network Rail's Electrical Safety Delivery Program. We will promote the realisation of its vision of introducing fundamental changes over a three Control Period timespan.
- Ensure that Network Rail continues to review and improve its methods and rules for working on or near to electrical assets, including adopting technology that reduces reliance on human performance and learning from other sectors where appropriate.
- Maintain pressure on industry to continue to improve asset integrity and resilience. This will reduce future disruptive failure and minimise potentially unsafe conditions.
- Engage with LU to appreciate how it is addressing and mitigating risks associated with ageing assets. We need to understand how what is being implemented in both the short term and over a longer timeframe is suitable and sufficient. Where necessary we will require strengthened arrangements to maintain risk control.

1. Introduction

The rail network in the UK obtains its electrical power from the National Grid or Distribution Network Operators (DNOs) such as UK Power Networks or Northern PowerGrid. This is then distributed through electrical assets to both Overhead Line contact systems and Conductor rails, these assets typically include:

- High and Low voltage Switchgear.
- Transformers, to change from high voltage to lower voltage levels.
- Rectifiers, to convert from ac electricity to dc electricity.
- Cables, to distribute the electricity.

The asset life of components will vary. Factors influencing this include the maintenance strategy applied and the environment in which the assets are located. The balance, type and age of assets is different for each duty holder.

The electrical conductors on the contact systems are uninsulated and as such, unintended contact with these dangerous parts will result in an individual receiving an electrical shock. This has the potential to result in life changing or fatal injuries being inflicted.

Catastrophic failure of assets on electrical systems can lead to an uncontrolled release of energy that will have the potential to inflict life changing or fatal injuries to individuals. Where reliance is placed on rules and procedures to control risks, it is important that these are understood by everyone, and that adequate monitoring and assurances activities take place to confirm understanding and embedment.

In addition, the failure of electrical assets can lead to the loss of power to trains and introduce secondary risks. For example, a failure of overhead line equipment will mean a loss of power and a train may become stranded. The electricity supply will need to be turned off and made safe. Subsequently there may be a need to detrain and the associated risks with carrying out this activity mitigated. There have been examples of passengers becoming frustrated when there are long delays and trying to leave a train before the environment has been made safe.

2. The law

Health and safety legislation relevant to the management of Electrical assets includes the following:

- Health and Safety at Work etc. Act 1974
- Electricity at Work Regulations 1989 (EaWR)
- Management of Health and Safety at Work Regulations 1999
- Construction (Design and Management) Regulations 2015
- Railways and Other Guided Transport Systems (Safety) Regulations 2006 (for mainline railway undertakings)

It should be noted that the Electricity at Work Regulations contain some regulations that are absolute. These can be identified if the requirement for that duty in that regulation is not qualified by the words 'so far as is reasonably practicable'. This means that the requirements of that regulation must be met regardless of cost or other consideration.

Guidance

- HSR 25 Guidance on Regulations – The Electricity at Work Regulations

  The Electricity at Work Regulations 1989. Guidance on Regulations (hse.gov.uk)

- HSG 85 Electricity at Work – Safe working practices

  Electricity at work: Safe working practices HSG85 (hse.gov.uk)

See appendix for details of the growth in electrified lines on the mainline network. A large proportion of mainline electrical assets – both DC 3rd rail systems and AC overhead line equipment – was constructed before the Electricity at Work Regulations. The requirements of the Regulations are not retrospective, but Network Rail must – as part of its wider health and safety duties – keep risk control arrangements under review and identify opportunities for improvement. As part of a 'deep dive' review undertaken by Network Rail into electrical safety it identified that if renewal of its legacy electrical assets to modern compliant standards relied solely on existing condition-based intervals, it would take over a century to achieve compliance. This was deemed unacceptable and led to the evolution of the Electrical Safety Delivery Programme described later in the chapter.

3. Safety risks by sector

Network Rail Overview

To deal with the legacy electrical assets that do not fully meet current legal requirements laid down by EaWR. Network Rail has an Electrical Safety Strategy that sets out a targeted and pragmatic approach over three funding control periods (CP5, CP6 and CP7) to deliver progressive improvements to the infrastructure and working practices. The strategy will achieve improved risk control and greater compliance with EaWR. The vision is being delivered by the Electrical Safety Delivery Programme (ESDP). It has been drawn up by analysing where risk controls and legal compliance have been historically weakest and where improvements will deliver the greatest benefits – not just for safety and legal compliance but in relation to performance and productivity. An investment decision support tool has been employed to identify which options for improvement will achieve the best combined benefits.

ORR will continue to support Network Rail's delivery of ESDP – by monitoring its greater devolution to the Regions and by ensuring, during our Periodic Reviews, that business plans propose appropriate funding based on analysis of priorities for risk control. ESDP is fully funded for CP6 and plans are in place for CP7.

An example of success of the ESDP has been the roll out of Circuit Main Shorting Devices (CMSD) on the 3rd rail system. The 3rd rail system is used to supply direct current electricity to trains via a 'contact shoe'. The 3rd rail is placed adjacent to the track and is an exposed electrical conductor charge to 750V. Network Rail takes an electrical feed from distribution network operators typically at 33kVac. This is transformed and rectified at substations to provide the 750V to the 3rd rail. Track Paralleling (TP) huts are used in between substations for switching between the electrical sections.

Prior to the installation of CMSDs workers manually fitted straps between the 3rd rail and track rail as a part of the isolation process by walking track side to fit them. Errors in this process could lead to workers inadvertently applying earths to potentially live parts. The CMSDs use technology that electrically short the section of 3rd rail to be isolated without the need for workers to apply straps and prevent the 3rd rail from becoming live. In addition to eliminating the need for workers to apply the straps the use of the CMSDs is much quicker than manual application of straps and contributes to a faster isolation process. The roll out continues throughout the current funding period but has already demonstrated substantial safety benefits and productivity gains.

Whilst this work has had positive effects on the number of DC isolation irregularities, there are still areas where risks arise. This includes unplanned work to respond to faults, where there may not be a full appreciation of the dangers present. An incident occurred at Godinton substation in

December 2018 involving distribution equipment. Two E&P staff were injured by an electrical flashover in a 750V substation when carrying out work on a circuit breaker. This led to ORR investigating the incident and ultimately carrying out enforcement action. Network Rail responded to this incident by reviewing its procedures and assessing the risk of working on or near to this electrical equipment. We will ensure that Network Rail continues to review and improve its working methods in electrical substations for all persons who work in them.

The Overhead Line Equipment (OLE) equipment used to power trains is charged to 25kV ac. Much of this equipment predates EaWR. This means it was not designed with the requirements of the Regulations in mind. The process of placing an isolation on this infrastructure whilst balancing the need to maintain this equipment and the track below it is challenging. To address these issues Network Rail has through the ESDP have increased the level of security of isolations that are placed on the system In addition they are developing technological solutions to enhance the level of security and speed with which isolations are able to be safely applied to the infrastructure. Network Rail is developing a ‘Single Approach to Isolation’ (SAI). The SAI will replace NR/L3/ELP/29987 which is more commonly known as the ‘Green Book’ The intention of this new standard will be to provide a framework risk-based process, with clear lines of responsibility for the application of isolations on Network Rail infrastructure. We will continue to monitor the progress made with the application of these enhancements to ensure better compliance with EaWR.

ORR has accepted that ESDP is the best means in the medium to long-term to make the operation of Network Rail’s electrical assets safer and more in line with the requirements of the law. In order to improve risk control in the short term, Network Rail developed some of its life saving rules (LSRs) to ensure that staff always checked that equipment had been dead before earthing it and starting to work. Despite several attempts to clarify and re-brief the requirements of the LSRs to ‘test before touch’ and ‘test before earth’ ORR found there were still widespread misconceptions and inconsistencies regarding the application of these rules. This has led to incidents which might have been prevented if the LSR had been effective, such as life changing burns experienced by a member of Amey staff at Kensal Green in December 2019.

A similar incident in May 2021 at Wolverton demonstrated continued lack of clarity regarding interpretation and application of LSRs regarding establishing that electrical equipment has been made dead. Further – this incident showed that there was additional potential for confusion due to varying practices to physically demarcate the limits of electrical isolations. Physical demarcation is a development that ORR has long advocated, but its introduction onto the mainline network had been piecemeal and had allowed different technology and procedures to grow.

As a result of ORR’s investigations of these incidents we issued two improvement notices in July 2021. Our enquiries had revealed that, despite the LSRs and introduction of physical demarcation of isolation limits, between March 2020 and February 2021 there had been over a hundred isolation irregularities on Network Rail infrastructure. Each of these is a precursor to possible serious harm and each is an illustration of failed processes.

Our enforcement required Network Rail to produce clear, unambiguous instructions to ensure staff have proved equipment dead before working on it. There were prompts for Network Rail to consider a number of scenarios where there was evidence of inconsistent understanding. We also required that roles and responsibilities are clear and underpinned by instruction and training. We required that Network Rail draw up a mechanism to assure itself of continued compliance with the procedures. In relation to physical demarcation, our enforcement required Network Rail to identify the most suitable means to warn staff of the limits of isolations and ensure their effectiveness by clear information, instruction, training and supervision. Effective implementation should be assured by monitoring.

The work required to comply with the requirements of the improvement notices has now been carried out.

When discussing findings from our inspection and investigation work we have pointed Network Rail to other sectors such as the electrical supply industry that also deal with high voltage electrical distribution systems. These sectors can provide a good source of guidance and information on their best practice which has the potential to be applicable to mainline electrified networks.

The OLE equipment in use in the UK has a number of configurations depending on the time that it was installed. The operating temperature limits that they are designed to are 18 °C to +38 °C. This makes the systems vulnerable to extreme weather events. The summer of 2020 recorded a temperature of 37.8 °C. Whilst this was within the upper temperature limit signification disruption occurred on the network when the OLE failed. This can be attributed to other contribution factors such as the asset life, asset condition, pantograph passage and wind speed. Network Rail reviewed its preparedness for hot weather and its maintenance work specifications to mitigate the risk of OLE failure in hot weather. We will monitor the work carried out to improve the asset condition and resilience to prevent future disruptive failure of this equipment.

In addition to this there are challenges to achieving legal compliance for new electrification schemes that are overlaid and integrated on to existing infrastructure. Legacy infrastructure such as bridges and tunnels pose challenges to compliance with standards for electrical clearances. ORR has pushed hard to ensure that new electrification projects take every reasonably practicable opportunity to achieve risk control and legal compliance. This has not always been easy. We have challenged, whilst trying to be clear that we are not insisting on legal compliance at any cost.

Our efforts have prompted some welcome innovation as Network Rail has sought solutions for locations with physical constraints. We agreed, for example, to the use of surge arrestors and insulating paint at Cardiff Intersection Bridge. The trial is generating valuable empirical evidence that can be used to inform option selection for future sites with challenging characteristics. As a result of continued ORR questions during discussions with electrification projects, Network Rail has undertaken significant analysis of incidents occurring at bridges on electrified lines. This intelligence provides a better understanding of risk and can inform decisions about reasonably practicable options.

To guide projects, Network Rail has drawn up ‘Safe by Design Principles’ that state that Safe by Design is the integration of hazard identification and risk assessment methods early in the design process to eliminate or minimise the risks of harm throughout the construction and life of the product being designed. We will monitor the application of these principles by engaging with new electrification projects at an early stage.

References

- OLE Hot Weather resilience TAR

  Overhead Line Equipment (OLE) hot weather resilience - Targeted Assurance Review - 31 August 2021 (orr.gov.uk)

- Safer Faster Isolation TAR

  Safer Faster Isolation - Targeted Assurance Review - March 2021 (orr.gov.uk)

London Underground (LU) Overview

LU has a large volume of electrical assets. Its entire network employs electric traction. It has long had a good record for workforce electrical safety due to its carrying out all planned work during ‘Engineering Hours’ at night, when traction current is made dead. It employed testing equipment to prove the line dead long before the mainline network adopted that measure. In terms of public safety, it has the benefit of a more compact network than the national mainline, where access can generally be restricted more easily. There is still the hazard of bare live conductors in stations. More recent line extensions have employed platform edge doors, which assist in preventing accidental contact with live rails.

LU carries out an annual survey of its assets and produces an Asset Condition Report. The output of the report is a reflection of asset health across known assets. The profile of the asset health is then used by LU to assess risk and appropriate the required resource against the requirements of LU and British standards and current legislation.

The reports highlight that an increasing number of assets are obsolete or approaching end of life. Managing such assets presents risk of uncontrolled failure that may lead to significant business interruption and a culture of reactive maintenance that may lead to a 'fix on fail' approach. For this risk to be controlled LU will need to understand the consequence of failure of assets highlighted as being obsolete or approaching end of life. ORR will engage with LU to understand how short and medium term plans to mitigate these risks are being implemented.

Trams

Tramway overhead line electrification (OLE): Tramway OLE shares many of the same issues as the mainline railway system. There are additional risks in the tramway context given that they run in streets to which the public have access and run close to and under buildings. This can give increased risk of contact with road vehicles, construction work and maintenance such as window cleaning. Additionally, where tramway overhead line becomes dislodged and drops below its normal height this will not be detected unless it contacts the running rails or other bonded tramway structures; low hanging wires are a risk to the public.

The Light Rail Safety and Standards Board (LRSSB) has developed a risk model for the sector. The model contains four hazardous events and two precursors for electrical matters. ORR will continue to support the sector as it matures its responses to the risks in the model. Additionally, we have engaged on emerging issues around the safe storage and charging of batteries.

Dockland Light Railway (DLR)

DLR employs DC traction. It illustrates how traction systems can be designed to avoid the shortcomings of older electrified networks. It benefits from being a more recent network than either LU or Network Rail. It has been designed to achieve compliance with EaWR and deliver high levels of risk control. The collector shoe on trains is positioned so that it does not make contact with the top of the conductor rail – allowing the rail to be shrouded to prevent electric shock should there be accidental contact. Its network is raised up or in tunnels, so public access is more tightly controlled, thereby reducing the opportunity for trespass and accidental contact.

Eurotunnel and Eleclink

The Channel Tunnel is a 35-mile sub-sea railway system that entered service in 1994 and connects Folkestone with Calais in France. Many of the electrical power and control assets used to supply electricity to the rolling stock and tunnel auxiliary systems are approaching mid to end of life. Eurotunnel have a program in place to renew aged assets. This program requires careful oversight to ensure that electrical assets at a high risk of failure are identified, and their maintenance and replacement is appropriately prioritised, to ensure that the consequence of failure of equipment does not lead to an increased risk to passengers or workers.

The cable system for the 325kV, 1GW capacity HVDC Eleclink interconnector system is installed in the Running Tunnel North (UK to France) with converter stations located on the both the UK and French terminals. The authorisation of this project presented numerous significant regulatory and technical challenges given its ‘World first’ novel nature. The system was commissioned and entered service during the first half of 2022. Given that the system is now operational, It is important that the operational risks identified during the authorisation process are mitigated, and that monitoring and assurance activities are embedded in Eurotunnel’s safety management systems and activities.

Future and ‘infill’ schemes

ORR has been approached by a number of projects seeking to extend existing electric traction routes, or to ‘plug the gaps’ in existing networks. Our starting point is always to explain that the options being considered should deliver compliance with EaWR and good levels of safety management – as described for DLR in the previous paragraph.

Our discussions have embraced a range of potential solutions including battery technologies and conductors that are only energised with the passage of a train.

Table 3.1 Infrastructure on the mainline

This table shows the characteristics of the infrastructure on the rail network, Great Britain

Annual data (financial year): 1985-86 to 2020-21

Nation	Financial year	Route open for traffic	Of which electrified	Route Open for Passenger & Freight Traffic	Route Open for Freight Traffic Only	Track kilometres	Of which electrified	New electrification projects track km (see note 2)
Great Britain	1985-86	16,752	3,809	14,310	2,442	:	:	:
	1986-87	16,670	4,156	14,304	2,366	:	:	:
	1987-88	16,633	4,207	14,302	2,331	:	:	:
	1988-89	16,599	4,376	14,309	2,290	:	:	:
	1989-90	16,587	4,546	14,318	2,269	:	:	:
	1990-91	16,584	4,912	14,317	2,267	:	:	:
	1991-92	16,588	4,886	14,291	2,267	:	:	:
	1992-93	16,528	4,910	14,317	2,211	:	:	:
	1993-94	16,536	4,968	14,357	2,179	:	:	:

Nation	Financial year	Route open for traffic	Of which electrified	Route Open for Passenger & Freight Traffic	Route Open for Freight Traffic Only	Track kilometres	Of which electrified	New electrification projects track km (see note 2)
	1994-95	16,542	4,970	14,359	2,183	:	:	:
	1995-96	16,666	5,163	15,002	1,664	:	:	170
	1996-97	16,666	5,176	15,034	1,632	:	:	129
	1997-98	16,656	5,166	15,024	1,632	:	:	0
	1998-99	16,659	5,166	15,038	1,621	:	:	0
	1999-00	16,649	5,167	15,038	1,610	30,846	:	0
	2000-01	16,652	5,167	15,042	1,610	30,846	:	0
	2001-02	16,652	5,167	15,042	1,610	31,972	:	0
Nation	Financial year	Route open for traffic	Of which electrified	Route Open for Passenger & Freight Traffic	Route Open for Freight Traffic Only	Track kilometres	Of which electrified	New electrification projects track km (see note 2)
	2002-03	16,670	5,167	15,042	1,610	31,766	:	0
	2003-04	16,493	5,200	14,883	1,610	31,564	:	22

Nation	Financial year	Route open for traffic	Of which electrified	Route Open for Passenger & Freight Traffic	Route Open for Freight Traffic Only	Track kilometres	Of which electrified	New electrificatio n projects track km (see note 2)
	2004-05 (b)	16,116	5,200	14,328	1,788	31,482	:	38
	2005-06	15,810	5,205	14,356	1,454	31,105	:	5
	2006-07 (b)	15,795	5,250	14,353	1,442	31,063	:	0
	2007-08	15,814	5,250	14,484	1,330	31,082	:	0
	2008-09	15,814	5,250	14,494	1,320	31,119	:	36
	2009-10	15,753	5,239	14,482	1,271	31,073	:	0
	2010-11	15,777	5,262	14,506	1,271	31,108	:	106
	2011-12	15,742	5,261	14,506	1,236	31,063	:	0
	2012-13	15,753	5,265	14,504	1,249	31,075	12,810	10
	2013-14	15,753	5,268	14,504	1,249	31,092	12,887	61
	2014-15	15,760	5,272	14,506	1,254	31,120	13,034	177
	2015-16	15,799	5,331	14,552	1,247	31,194	13,063	7
	2016-17 (b)	15,811	5,374	14,491	1,320	31,221	13,046	0

Nation	Financial year	Route open for traffic	Of which electrified	Route Open for Passenger & Freight Traffic	Route Open for Freight Traffic Only	Track kilometres	Of which electrified	New electrification projects track km (see note 2)
	2017-18	15,878	5,766	14,548	1,330	31,038	13,729	291
	2018-19	15,847	6,010	14,634	1,214	31,091	14,074	883
	2019-20 (r)	15,904	6,049	14,668	1,236	31,218	14,486	252
	2020-21	15,935	6,045	14,712	1,290	31,251	14,518	179
England	2012-13	11,575	4,617	10,321	954	24,392	11,296	0
	2013-14	11,573	4,620	10,620	953	24,394	11,327	61
	2014-15	11,580	4,623	10,622	958	24,422	11,403	89
	2015-16	11,570	4,640	10,618	952	24,427	11,432	7
	2016-17 (b)	11,582	4,681	10,556	1,026	24,455	11,415	0
Nation	Financial year	Route open for traffic	Of which electrified	Route Open for Passenger & Freight Traffic	Route Open for Freight Traffic Only	Track kilometres	Of which electrified	New electrification projects track km (see note 2)
	2017-18	11,669	5,007	10,616	1,053	24,300	11,789	291

Nation	Financial year	Route open for traffic	Of which electrified	Route Open for Passenger & Freight Traffic	Route Open for Freight Traffic Only	Track kilometres	Of which electrified	New electrification projects track km (see note 2)
	2018-19	11,637	5,021	10,693	944	24,365	12,128	554
	2019-20 (r)	11,672	5,109	10,705	967	24,447	12,490	40
	2020-21	11,702	5,104	10,688	1,014	24,478	12,519	179
Wales	2012-13	1,490	0	1,650	140	2,447	0	0
	2013-14	1,490	0	1,350	140	2,458	0	0
	2014-15	1,490	0	1,350	140	2,458	0	0
	2015-16	1,492	0	1,352	140	2,460	0	0
	2016-17 (b)	1,492	0	1,352	140	2,459	0	0
	2017-18	1,490	0	1,350	140	2,458	0	0
	2018-19	1,491	0	1,350	140	2,454	0	0
	2019-20 (r)	1,532	56	1,371	160	2,497	213	213
	2020-21	1,532	56	1,431	160	2,497	213	0
Scotland	2012-13	2,688	648	2,533	155	4,236	1,514	10

Nation	Financial year	Route open for traffic	Of which electrified	Route Open for Passenger & Freight Traffic	Route Open for Freight Traffic Only	Track kilometres	Of which electrified	New electrification projects track km (see note 2)
	2013-14	2,690	648	2,534	156	4,240	1,560	0
	2014-15	2,690	649	2,534	156	4,240	1,631	88
	2015-16	2,737	691	2,582	155	4,307	1,631	0
	2016-17 (b)	2,737	693	2,583	154	4,306	1,631	0
	2017-18	2,719	759	2,582	137	4,280	1,940	0
	2018-19	2,719	989	2,590	129	4,272	1,946	329
	2019-20 (r)	2,701	885	2,592	109	4,276	1,786	0
	2020-21	2,701	885	2,592	109	4,276	1,786	0

Source(s): Network Rail
Last updated: 14 October 2021
Next updated: October 2022

Email: rail.stats@orr.gov.uk

Symbols: (:) Data not available; (r) Data revised; (p) Data are provisional; (b) Break in time series

Notes:

(b) Prior to 2004-05 route length data and electrification data was collected using various systems and collected on a semi-annual basis. These systems, whilst often the most accurate measures available at the time, would not have provided as accurate a measure as the GEOGIS system and there is therefore a break in the time series between 2003-04 and 2004-05.

(b) There is a break in the time series between 2006-07 and 2007-08 due to a new methodology where the route classification reference data was revamped.

(b) There is a break in the time series between 2016-17 and 2017-18 due to Network Rail replacing GEOGIS, its master database for track assets, with a new system called INM (Integrated Network Model).This means any comparison of the current route length with previous years must be treated with caution.

(b) Prior to 2012-13, data is only available for Great Britain as a whole and not split by country. However, the data for new electrification projects track km is available separately for England, Wales and Scotland going back to 1995-96. This may not equal the Great Britain total due to rounding.

(r) The total Great Britain figure does not include Isle of Wight line, which is 17.4 track km. This line is leased from Network Rail to First MTR South Western Trains Limited (operating as South Western Railway).

1. High Speed 1 is not included in these figures. This has a route length of 109km.

2. The majority of the total new electrification projects track km was in England between 1995-96 and 2011-12. In 2005-06 5km of new electrified track km was added in Scotland. In 2010-11 106km of new electrified track was added in Scotland.

[Rail infrastructure and assets release]

[Rail infrastructure and assets quality and methodology report]

[ORR Revisions log]

This publication is available at orr.gov.uk

Any enquiries regarding this publication should be sent to us at orr.gov.uk/contact-us