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NR/L3/ELP/29987

Module Z

Isolation and Earthing of Sunderland 1500V d.c. Overhead Electrified Lines

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1 Purpose

This module sets out the actions to be taken to avoid danger from the presence of the D.C. overhead electrified lines specific to the Sunderland network, and is laid out to provide a consistent approach to working on or about 1500V d.c. Electrified Lines.

2 Scope

This module applies to those parts of Network Rail Infrastructure Limited (known as Network Rail) controlled infrastructure equipped with the 1500V d.c. overhead line system, and therefore the requirements of 25kV a.c. Electrified Lines as defined in this standard apply to the Sunderland d.c. overhead line, except where indicated in this module.

This module applies to Network Rail personnel and Network Rail's contractors and contains mandatory statements applicable to other persons.

Train Operating Companies may, as best practice, apply this module on infrastructure they control.

This module does not include the following:

- Work on or about Network Rail controlled infrastructure equipped with the 750v d.c. overhead line system.

3 Definitions

For the purpose of this module the following definitions apply.

Abutting sections	Those sections additionally switched off to minimize the risk of re-energisation of Emergency Switched Out sections. See 'Affected section(s)' and 'Emergency Switch Off'.
Affected section(s)	The area isolated in an emergency, not including abutting sections. See 'Abutting sections'.
Authorised Person	A person certificated as competent to carry out specific duties in relation to the requirements of this document.
Coast through section insulator	A long non bridging section insulator introduced into d.c. overhead line equipment and designed to separate two electrical sections which may not be connected directly are kept separated even during the passage of the pantographs of electric trains.
Designated Earthing Point	A location at which the d.c. overhead line equipment may be earthed, for the

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	purpose of issuing Overhead line Permits, using specifically approved long earths, securing devices and insulated earthing poles.
Earth	<p>The general mass of earth and any conductor in direct contact with it.</p> <p>NOTE 1: 'Earth, for the purpose of d.c. overhead line equipment only, is also used to denote the traction return circuit (not the overhead line equipment supporting structures which are not connected to the traction return rails but double insulated from it).</p> <p>NOTE 2: 'The term 'Earth' is also used to refer to the cable used to form a connection between isolated d.c. overhead line equipment and the traction return rail. See Traction return rail(s) and 'Local earth'.</p>
Earthed	The term 'Earthed' when applied to d.c. overhead line equipment, which is normally live, means connected to the traction return rail directly (under no circumstances connected to an OLE structure which is itself double insulated from the OLE). See Traction return circuit
Earthing pole	A device consisting of a handle, primary insulator, and other attachments, used for the application and removal of specifically approved long earths and continuity jumpers for d.c. overhead line equipment.
Emergency Switch Off	<p>A disconnection of d.c. overhead line equipment initiated by the Electrical Control Operator in circumstances when it is essential to switch off the electricity supply immediately to remove danger to persons from live overhead line equipment.</p> <p>Such a disconnection is effected by the Electrical Control Operator switching off the electrical supply from the lines in the immediate affected area including, as necessary abutting sections. See Affected section(s) and Abutting section(s).</p>
Feeder	A transmission line or cable in the electrical power distribution system for: <ul style="list-style-type: none"> a) Bringing a supply of electricity to a

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	<p>substation</p> <p>b) Connecting a substation or track paralleling hut to the overhead line equipment</p>
Local earth	Local earths not used on Sunderland d.c. system.
Local isolation	These are not permitted on the Sunderland d.c. system.
Long earth	<p>A specifically approved interlocking type of local earth approved for use at all locations, with a pole applied electrical clamp at one end and a hand applied clamp at the other. It has yellow sheathing and is specifically identified for use on d.c. overhead line equipment.</p> <p>These earths are clamped to the return rail and secured to the OLE structure, clear of loading gauge using approved devices.</p>
Section	A length of overhead line equipment between substations, or between a substation and a terminal end.
Substation	A building or compound containing electrical equipment that converts high voltage electricity supplies from the DNO to d.c. traction voltage for distribution to the overhead line equipment.
Track Paralleling Hut	A building or compound containing d.c. electrical equipment which is arranged to connect together electrically a number of sections of overhead line equipment.
Traction return circuit	The traction return rail(s) and associated cables through which electricity flows from the electric train back to the substation.
Voltage Limiting Device	A protective device against a permanent existence of an inadmissible high touch accessible voltage BS-EN 50122-1.
Voltage testing device	A specifically approved device for use on those parts of the overhead line equipment normally live at 1500V d.c., operated from ground level, used to

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	verify that the overhead line equipment under test has been switched off.
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For the purpose of this module the following abbreviations apply:

- a.c. Alternating Current
- d.c. Direct Current
- DNO Distribution Network Operator
- ECO Electrical Control Operator
- EC Electrical Control
- MSOA Metro Systems Operating Area (Nexus)
- OCC Operational Control Centre
- OLE Overhead Line Equipment
- PICEE Person in Charge of Electrical Emergency
- TPH Track Paralleling Hut

4 Description of the Electrification System

4.1 Electrified Lines

The lines between Pelaw, Sunderland and South Hylton are electrified at 1500volts d.c. on the overhead line system.

4.2 Supply of Electricity

Electricity is supplied to three traction Substations at 11,000V (11kV), 50Hz frequency, alternating current (a.c.), from the DNO distribution system. Duplicate supplies are afforded to each substation, with automatic change-over arrangements to enable either incoming supply to support the total substation capacity.

4.3 The Electric Traction Circuit

The high voltage a.c. supplies from the Distribution Network Operator (DNO) are transformed and rectified to the traction voltage of 1500V d.c. at the three traction substations.

From the rectifiers, the positive (+) pole of the traction supply feeds the overhead line equipment sections through feeder circuit breakers and mast-top isolating disconnectors.

Traction current is collected from the OLE by the train pantograph, from where it is fed to the train's traction and auxiliary equipment. Having passed through the axles and wheels of the train, the current is returned via the bonded running rails to the

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negative bus bars in the substations, and finally back to the negative (-) pole of the rectifiers to complete the circuit.

The negative pole of the supply is not deliberately earthed at any point, in order to discourage the flow of stray return currents in the earth. Wherever possible, all traction return rails are bonded together, using impedance bond connections where necessitated by the signalling system. In single-rail track circuiting areas, through-bonding is duplicated. The traction return connections to the negative bus bars in substations comprise duplicate cables from impedance bonds on each track, with cross-bonding between the impedance bond connections.

The traction return current passing through the running rails and the bonding system is not dangerous to human life.

However, if the rails are broken or separated, or the bonds become detached a dangerous voltage may be present and they shall be reported to the Electrical Control Room and not be touched.

4.4 Substations and Track Paralleling Huts

The traction substations are spaced approximately 7 km apart along the electrified route, and are named and identified as follows:

- Fellgate Metro Substation (FGM)
- Seaburn Metro Substation (SBM)
- Pallion Metro Substation (PLM)

Track paralleling huts, containing 1500V d.c. switchgear only, are named and identified as follows:

- Pelaw TPH (PTP)
- South Hylton TPH (STP)

4.5 Overhead Line Equipment

The OLE itself comprises a mixture of designs to suit different types of location and service speeds. For main line applications, a contact wire is supported from a catenary wire, and the whole supported and registered from masts using cantilevers, twin track cantilevers or headspan construction.

Fixed termination and auto tensioned OLE is applied as appropriate to the location, and the contact wire height above track is within the range 4.15m to 5.65m.

OLE support structures are not in general bonded to the track but are incidentally-earthed through their foundations and double-insulated from the OLE conductors. Exceptions are feeder disconnecter structures, Sunderland Tunnel OLE structures, various steel bridges and other structures, which are indirectly bonded through impedance bonds to the traction return circuit via voltage limiting devices.

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Sections of OLE, other than terminal ends, are normally double end fed from the substations at each end, and all are protected by over-current, switchgear earth fault, and intertripping schemes.

Normally the OLE over each running line is kept electrically separate from that over other lines and is also divided into sections which extend from one substation to another or, from one substation to a track paralleling hut. There are separate sections for each track. Each section of OLE is fed through a circuit breaker at a substation or track paralleling hut.

At substation and track paralleling hut locations the OLE is fed via manually operated off-load feeder disconnectors; bypass disconnectors, which are normally open, are provided to enable adjacent sections to be connected together when the substation is out of service. These are all mast-top disconnectors operated from ground level. Each disconnector has a unique identifying number and is provided with a unique locking device, the key of which is kept in the box provided for that purpose.

The OLE is further divided into sub-sections, where demanded by operational reliability considerations. The sub-sectioning points are bridged by manually operated off-load section disconnectors.

Details of the sectioning arrangements are given in the appropriate Isolation Diagrams and Isolation Instructions.

4.6 Electrical Control Room

The traction power system is continuously monitored over the SCADA system by the ECO at York ECR. All substations track paralleling huts and OLE sections are normally energised, unless required to be made safe for work on or near the equipment.

The SCADA system allows the status of the substation equipment to be continuously monitored and controlled.

The ECO can be contacted by the following means:

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CONTACT NUMBERS FOR ELECTRICAL CONTROL OPERATOR

Electrical Control Room	NRN Band III Radio * Note	ETD Telephone Numbers		PSTN Telephone Numbers (Public Subscriber Telephone Network)
		Short Code § Note	ETD (Railway Extension Trunk Dialing)	
York	2-174	174	037-5836 037-5837 037-4902 037-4906	01904-525952
	2-173	173	037-4691 037-4962 037-4963 037-4872	01904-525622
Nexus				0191 2033666

Notes

- * If busy use "P" button to obtain priority call.
- § The ECO can identify calls coming in on short code emergency numbers; consequently, these must only be used for emergencies.

5 Existing Module Status

The following clause provides details of the status of each module with respect to its application to the Sunderland d.c. system.

All references in each module to 25kV a.c. electrified lines apply equally to Sunderland 1500V d.c. electrified railway unless otherwise stated.

5.1 Module 1 - General Requirements

5.1.1 General

The requirements of Module 1 remain unchanged with respect to the introduction of this module.

All employers shall confirm that staff that are required to work adjacent to cable sealing ends and on associated d.c. overhead line feeder disconnectors have been trained, are competent and are authorised for this purpose.

NOTE: Network Rail restricts access to the equipment and into substations and track paralleling huts to only those persons authorised in accordance with NR/L2/CTM/018.

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5.2 Module 2 – Assessment of Electrical Risks

5.2.1 General

The requirements of Module 2 remain unchanged with respect to the introduction of this module.

5.3 Module 3 – Management of Electrical Risks

5.3.1 General

The requirements of Module 3 remain unchanged with respect to the introduction of this module.

A person shall never climb above the floor level of the driving compartment on traction units, or above the floor level of Metrocars (except on unwired lines where there is no OLE above or adjacent to the traction unit or Metrocar) unless the OLE has been isolated and earthed and an Overhead Line Permit issued.

5.4 Module 4 – Maintaining the Integrity and Safe Operation of 25kV a.c. Electrified Lines

5.4.1 General

The requirements of Module 4 shall also include the measures in clause 5.4.2 to 5.4.4 of this module.

5.4.2 Traction Bonding

Section 4 of this module contains a description of the traction bonding system for Sunderland 1500V d.c. overhead electrified lines. In certain areas bond connections may include voltage limiting devices, and connections to the traction return circuit may be made via impedance bonds rather than direct to the rails.

Work on the running rails involving the disconnection of any bonds affecting the continuity of the traction return circuit shall be undertaken only in accordance with the method statements accepted by the Delivery Unit Electrification & Plant Engineer and the Task Risk Control Sheet NR/L3/MTC/RCS0216/OLE17.

No OLE or extraneous infrastructure shall be bonded directly to traction return rail.

5.4.3 Red Bonds

For the purposes of this module the requirements of Module 4, Clause 4.2 shall apply with the following additional requirements:

- In the case of Sunderland 1500V d.c. OLE certain bonds connected to the running rails from substations and track paralleling huts are marked in red.

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5.4.4 Red Bonds Found Broken or Disconnected

For the purposes of this module the requirements of Module 4, Clause 5.2 shall apply with the following additional requirements:

- The reporting and repair of defective bonds found, during electrification maintenance activities, shall be in accordance with the method statements accepted by the Delivery Unit Electrification & Plant Engineer.
- The requirements of Module 4, Clause 5.2.2 shall not apply as return conductors carried on insulators are not fitted to the Sunderland d.c. overhead line equipment
- If all four negative return cables from the traction return circuit are disconnected, severed or otherwise seriously damaged, then the broken or damaged bonds may be at a dangerous voltage.
- The ECO shall arrange for the de-energisation of the substation and of the OLE in accordance with Electrical Control Room instructions, and for the repairs to be undertaken by authorised staff.

5.5 Module 5 – Particular Actions to be Taken by the Infrastructure Maintainer

5.5.1 General

The requirements of Module 5 shall also include the measures in clause 5.5.2 to 5.5.8 of this module.

5.5.2 Actions to be Taken in Relation to Emergency Switch Offs

For the purposes of this module the requirements of Module 5, Clause 5, shall apply, with the exception of parts 5.1 and 5.2, to the Sunderland d.c. overhead line equipment.

5.5.3 Initial Implementation

- a) The ECO shall decide, on the information given, whether to initiate an emergency switch off or to take other action as may be necessary.
- b) If the ECO decides to initiate an emergency switch off the ECO shall immediately open circuit breakers to isolate the appropriate sections and abutting sections and take action to prevent them being reclosed.
- c) The OLE may be isolated without first arranging for a blockage to electric trains.

5.5.4 Actions Following the Initial Implementation

The ECO shall switch on the abutting sections, when it is necessary to restore electricity to assist movement of traffic outside the limits of the emergency switched off section, subject to an assurance having been received that:

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- a) no trains are standing across the OLE section insulators; and
- b) the Signaller has protected the emergency Switched Off section by blocking to electric trains; and
- c) any normally-open OLE disconnectors have been physically checked to confirm that they are in the open position.

5.5.5 Management of the Emergency Switch-Off

Module 5 Clause 5.3 shall apply except for part a) where the isolation and earthing of the d.c. OLE shall be in accordance with clause 5.8 of this module.

5.5.6 Shortening of the Emergency Switch Off

Module 5 Clause 5.4 shall apply except the switching is to be in accordance with clause 5.8 of this module.

5.5.7 Restoration after Emergency Switch Off

Immediately after the emergency has passed, the person in charge of the emergency switch-off shall:

- a) Inform the ECO or arrange for this to be done.
- b) Await further instructions from the ECO.

When the ECO receives the information that the Emergency Switch Off is no longer required, provided that the affected area has not been isolated and earthed for the purpose of issuing an Overhead Line Permit, the ECO shall require the person on site who has been granted the Emergency Switch Off to confirm that all persons and materials are clear of the OLE.

The ECO shall then:

- a) Return the system to normal operation and advise all persons concerned accordingly.
- b) Advise the person in charge of the Emergency Switch Off that they have been relieved of this duty.

5.5.8 Rescue of a person from D.C. OLE

If it is necessary for rescue/emergency operations to be carried out, the person in charge shall check that all concerned are kept clear of the OLE until an assurance is received that the electricity has been switched off.

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5.6 Module 6 – Planning of Isolations

5.6.1 General

The requirements of Module 6 shall apply to this module in conjunction with the requirements in this clause.

Owing to the configuration of certain OLE supports it shall be confirmed that both lines are isolated by issuing a Form C for all high level work.

During an incident situation it is acceptable to keep one line energised to allow the movement of trains prior to issuing a Form C for both lines.

Siding 2 at Sunderland may be isolated and earthed for work independently of adjacent electrified lines, in accordance with the method statements accepted by the Delivery Unit Electrification and Plant Engineer

5.7 Module 7 – Isolation and Earthing of Overhead Line Equipment

5.7.1 General

The requirements of Module 7 shall apply to this module in conjunction with the following clauses.

For the purposes of these instructions only the requirements of Module 7, clause 4, Isolation method a) shall apply as well as the emergency switch off requirements outlined in Section 5.5.1 above.

Module 7 clause 9.2 shall not apply as it relates only to neutral sections in a.c. systems.

The coast through section insulators at the Network Rail / MSOA boundary are not classified as neutral sections. For the applicable procedure refer to clause 5.7.4 below.

Module 7 clause 9.3 does not apply. Refer to clause 5.7.4 part b.

5.7.2 Earthing the D.C. Overhead Line Equipment

Earthing shall be completed in accordance with Module 7, Clause 11, except as indicated in the following clauses

Module 7, Clause 11.3.1 shall not apply.

Module 7, Clause 11.4.1 shall not apply.

The following procedure shall apply:

The electrical continuity of the OLE shall be maintained uninterrupted between successive earths. If the OLE is not electrically continuous between successive earths, the OLE on each side of the electrical discontinuity shall be separately earthed. Circuit Main Earths (CMEs) shall be applied at each side within a distance of 75 metres (80 yards) from the discontinuity.

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The ECO shall maintain all circuit breakers which are providing the electrical continuity in the 'closed' position.

Module 7, Clause 11.4.2 Continuity Jumpers shall not apply.

The following procedure shall apply:

When it is necessary to apply continuity jumpers after the equipment has been earthed, but before an overhead line permit has been issued, such jumpers shall have been planned in advance and included on the isolation details form. The jumpers shall be applied and subsequently removed using approved portable earthing equipment in accordance with Module 10 by a person(s) authorised for such activities, and then only on the instruction of the Nominated Person. Part 2 of the Form B shall be endorsed with the details of the continuity jumpers.

5.7.3 Isolation and Earthing for Work on or Adjacent to feeder disconnectors and Associated Cables

Module 7 clause 8.6 shall apply except as indicated in the following clauses:-

Module 7 clause 8.6.3 shall not apply. A Permit to Work on High Voltage Electrical Equipment (Form 21067/P) is required.

5.7.4 Isolation and Earthing for Work Spanning the Coast Through Section Insulators at the Network Rail/MSOA Boundary

- a) The coast-through section insulators at Pelaw Metro Junction form the boundary of electrical control responsibility between Network Rail's ECO (York) and MSOA Power Controller (South Gosforth).
- b) York ECR is designated as responsible for isolations spanning the boundary coast-through section insulators at Pelaw Metro Junction. MSOA Power Control is the non-designated ECR.
- c) The authority between both the Network Rail ECO and the MSOA Power Controller for such isolations at Pelaw Metro Junction is in the form of a numbered message which both record on their own copies of an identical form, the Form CT.
- d) The Network Rail ECO shall arrange for the isolation of the sections of OLE for which Network Rail is responsible in accordance with clause 5.7.1.
- e) When the Network Rail ECO has confirmed that the OLE for which Network Rail is responsible has been isolated, the Network Rail ECO shall request the MSOA Power Controller to arrange for the isolation and earthing of the abutting electrical section(s) or sub-section(s) for which MSOA are responsible by giving a numbered message which both parties shall enter in Part 1 of their respective Forms CT.
- f) The busbar of Pelaw TPH shall not be used for electrical continuity between successive local earths, but the coast-through section insulator shall be treated as a discontinuity and CMEs shall be applied on each side.

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- g) The authority from the MSOA Power Controller, confirming that the OLE for which MSOA are responsible for has been isolated and earthed, shall be given by a numbered message which both parties shall enter in Part 2 of their respective Forms CT. Both parties shall also record details of the electrical section(s) or sub-section(s) switched off, the limits of isolation and the time by which the authority is to be cancelled on Part 2 of the Form CT.
- h) If in unusual circumstances there is an overhead line disconnecter(s) within the isolation which is not in the normal position, both the Network Rail ECO and MSOA Power Controller shall record the number(s) and the position of the disconnecter(s) concerned in Part 2 of the Form CT.
- i) When the Network Rail ECO is satisfied that the OLE on both sides of the coast-through section insulator has been isolated, they shall issue a Form B authority for the OLE spanning the coast-through section insulator to the Nominated Person. The limits of isolation for the Form B shall be those shown on the isolation instructions for the combined isolation. The Network Rail ECO shall record the Form AE Part 1 and Form B message numbers on Part 3 of the Form CT .
- j) The Nominated Person shall then carry out the testing and earthing requirements of sections 5.7.1 & section 5.7.2 of this document on the Network Rail OLE sections abutting the coast-through section insulator.
- k) The Network Rail ECO shall then inform the Nominated Person of the details of the earthing on the MSOA side of the boundary in Part 2 of the Form CT, which both shall enter in Part 2 of their respective copies of the Form B.
- l) The Nominated Person shall then carry out the requirements of Module 7 Clause 19 for the issue of a Form C spanning the coast-through section insulators, within the limits of the combined isolations detailed on the Form B so issued.
- m) On completion of the work, Overhead Line Permits shall be cancelled in accordance with Module 7 Clause 22. The Nominated Person shall then arrange for local earths to be removed only from the Network Rail OLE sections abutting the coast-through section insulator in accordance with Module 7 Clause 23.
- n) The Form B Authority shall then be cancelled in accordance with Module 7 Clause 24. The earths detailed in Part 2 of the Form B for OLE on the MSOA side of the boundary shall be indicated as remaining in place and this shall be confirmed with the Network Rail ECO.
- o) The Network Rail ECO shall record the Form B Authority cancellation time in Part 3 of the Form CT. The authority from the Network Rail ECO to the MSOA Power Controller, cancelling the Form CT authority and declaring the OLE is fit for the passage of electric traction, will be given by a numbered message which both parties shall enter in Part 4 of their respective Forms CT.

5.7.5 Earthing the Connections between a Negative Busbar and Rail

For the purposes of these instructions the requirements of Module 11, clause 9 and Module 7, clause 12 do not apply.

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The negative return arrangement at the substations comprises four return cables, two from the centre point of the up track to the negative busbar in the substation, and two from the centre point of the down track, to the same negative busbar in the substation. There is also a cross-bond between the two-impedance bond centre points.

The following procedure shall apply:

- Where one or more of the four negative return cables from the traction return circuit to a traction substation is intact and correctly connected, and the cross-bonding is also intact and correctly connected, then work can be carried out on the traction return circuit without an Overhead Line Permit or Permit-to-Work on High Voltage Electrical Equipment.
- If all four negative return cables from the traction return circuit to a traction substation are disconnected, severed, or otherwise seriously damaged, then work shall be carried out on the traction return circuit only under an Overhead Line Permit and Permit-to-Work on High Voltage Electrical Equipment in accordance with Clause 5.7.1.

5.8 Module 8 – Local Isolation and Earthing of Overhead Line Equipment

There is no requirement to apply local isolation procedures within the Sunderland d.c. electrified railway.

5.9 Module 9 – Isolation and Earthing when Constructing or Dismantling Overhead Line Equipment

The requirements of Module 9 remain unchanged with respect to the introduction of this module.

5.10 Module 10 – Use of Voltage Testing Devices, Portable Earthing Equipment and Temporary Continuity Jumpers

Only use testing devices approved for use on Sunderland 1500V d.c. electrified equipment.

Only use continuity jumpers of a type specifically approved for use on Sunderland 1500V d.c. OLE.

Only use portable earths of a type specifically approved for use on Sunderland 1500V d.c. OLE.

Sunderland 1500V d.c. long interlocking portable earths shall have yellow sheathing and shall be specifically identified for use on 1500V D.C. overhead line equipment.

- Sunderland 1500V d.c. long interlocking portable earths shall be connected directly between the conductor and the traction return rail.

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- as the overhead line structures are double insulated from the overhead line equipment and are not bonded to the traction return rail; do not attach earth-end clamps to the overhead line structures.
- the earth-end connection of the long earth shall always be made BEFORE the line-end is connected to the overhead line equipment.
- the line-end clamp shall be applied using an earthing pole. Where a line guard is fitted to mechanically protect an overhead line conductor, the clamp shall be applied only to the line guard and not directly to the conductor.
- when a screw clamp is used at the line end, the clamp shall be checked for tightness.
- the long earth shall always be secured back clear of trains using the approved device in the approved manner.
- If the earth end clamp becomes detached whilst the line end clamp is attached, the earth end clamp shall be regarded as live and dangerous and shall not be approached or touched until the line end clamp has been removed and lowered to the ground using an earthing pole. The long earth shall then be applied again using the above method.
- The line-end connection of a local earth shall always be removed from the OLE BEFORE the earth-end connection is broken.

5.11 Module 11 – Working on Overhead Line Equipment

The requirements of module 11 apply with the following exceptions:

Clause 8.1 – Abutting electrical sections shall be used to provide Additional protection arrangements in order to avoid inadvertent energisation due to trains bridging Section Insulators.

Clause 9 shall not apply see section 5.7.5 regarding negative bus bar connection.

5.12 Module 12 – Management of Local Isolation Instructions for Overhead Line Equipment.

Local isolations are not permitted on the Sunderland 1500V d.c. railway.

5.13 Module X – Securing of Points of Disconnection for Earthed Isolations on New Electrification Infrastructure

There are no requirements to follow this module.

Ref:	NR/L3/ELP/29987/Z
Issue:	2
Date:	03 September 2022
Compliance date:	03 September 2022

5.14 Module Y – Isolation and Earthing of Sheffield Tram Train D.C. Overhead Electrified Lines

There are no requirements to follow this module.

Ref:	NR/L3/ELP/29987/Z
Issue:	2
Date:	03 September 2022
Compliance date:	03 September 2022

Appendix A – Form CT

General

When it is necessary to revise a form, the form and this index will be updated in accordance with the appropriate change process described in NR/L2/CSG/STP001/02.

Any future re-issue of forms is controlled by the Electrical Power Standards and Controls Steering Group. Any proposed revisions to forms should be forwarded to the Steering Group, who will review the form and pass it to the Standards and Controls Management team for publication at the next available opportunity.

NOTE From time to time it may be necessary to publish a revised version of a form. As a result there may be instances when the version number on Connect is more recent than that identified in the index. The most recent version of the form should be the one used.

For organisations that are not eligible to free of charge standards, there are a number of ways for suppliers, principal contractors and subcontractors to access Network Rail standards and controls: -

- Online: IHS Network Rail Standards Online at: <http://uk.ihs.com/products/rail/index.htm> Call IHS Customer Services on 01344 328300 for login details.
- Online: SAI Global Network Rail Standards Online [Standards Management – i2i | SAI Global Infostore](#) or call SAI Global for more details on 0203 327 3140
- Hard copy: To buy individual standards and controls, call IHS Markit Customer Services on 01344 328300 or emeastore@ihs.com

A.1 Form CT

Reference	Issue	Date	Title
NR/L3/ELP/29987/CT	2	03/09/2022	Declaration Of Isolation At Pelaw Tph Coast-Through Section Insulators Forming Boundary Between Electrical Control Areas