PR-NET-OSM-076

RESPONSE TO UNAUTHORISED ACCESS TO OVERHEAD STRUCTURES AND OPERATIONAL PREMISES, AND EMERGENCY RESCUE PROCEDURES

OPERATIONAL SAFETY MANUAL - SECTION 12.3

Scottish & Southern Electricity Networks

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1 Introduction

1.1 At times, **Overhead Line Structures** and **Operational Premises** might be subject to **Unauthorised Access** (intentional or not), where the Trespasser will be placing themselves in a position of **Danger**. **SSEN-D** have legal obligations to ensure that all **Overhead Line Structures** and **Operational Premises** are kept as secure as reasonably practicable from any **Unauthorised Access**.

1.2 There are also legal obligations on **SSEN-D** to react to and report any such **Unauthorised Access**, this document defines the requirements and responsibilities for ensuring that **SSEN-D** operational staff (including **Control Engineers** and field staff) report and react to these incidents following correct procedures, so as to be compliant with all legal requirements and to ensure further **Unauthorised Access** is prevented, so far as is reasonably practicable.

2 Scope

2.1 This document relates to the legal obligations, operational requirements and key procedures required in the event of intentional or unintentional **Unauthorised Access** to **Overhead Line Structures** and **Operational Premises**.

2.2 It applies to all persons employed by or working on behalf of **SSEN-D**.

2.3 This **Approved** procedure is provided to help ensure that **SSEN-D** operational staff are provided with all the necessary information to ensure that all occurrences of intentional **Unauthorised Access** to **Overhead Line Structures** and **Operational Premises** are dealt with and reported in the correct manner, so as to comply with **Operational Safety Rules** (**OSR**) and all relevant legal obligations, particularly with regards to the Electricity Safety, Quality and Continuity Regulations 2002 (as amended).

2.4 This document only relates to **Overhead Line Structures** and **Operational Premises** containing **Live** exposed **Conductors**, which form part of the **System** at all voltages.

2.5 This scope does not apply to:

- **Operational Premises** where there are no exposed **Conductors** (e.g., standard ground mounted distribution Substations, primary Substations where all switchgear is metal-enclosed and all connections are by cable with no exposed bushings, etc.). This is covered in PR-NET-OSM-043 Access to Substations and Switching Sites - Operational Safety Manual – Section 6.1.
- **Overhead Line Structures** carrying only effectively insulated **Low Voltage Conductors**, (e.g., aerial bundled **conductors** (ABC) or ABC Hybrid, etc.), where the insulation is deemed “safe to touch”
- Any **Overhead Line Structures** and **Operational Premises** forming part of a third-party owned **System**, unless the site is in joint ownership with **SSEN-D**

2.6 For the purposes of this **Approved** Procedure, it is assumed that all operational staff will be aware of the obligations for **System** and Substation security under Electricity Safety, Quality and Continuity Regulations 2002 (as amended), and that they **Shall** report any non-compliances. ENA Engineering Report 2 - Guidance on Security of Substations, Cable Bridges and Cable Tunnels gives guidance on the kinds of issues to be considered.

2.7 Where the incident involves a fire, the requirements of PR-NET-OSM-082 Firefighting Operations in Substations and near OH lines - Operational Safety Manual – Section 12.11 **Shall** be implemented.

3 References

The documents detailed in Table 3.1 - Scottish and Southern Electricity Networks Documents, Table 3.2 - External Documents, and Table 3.3 - Miscellaneous Documents, should be used in conjunction with this document.

Table 3.1 - Scottish and Southern Electricity Networks Documents

Reference	Title
PR-NET-OSM-006	SSEN Distribution Operational Safety Rules – Operational Safety Manual – Section 1.1
PR-NET-OSM-028	Switching Terminology and Approved Abbreviations - Operational Safety Manual - Section 4.4
PR-NET-OSM-054	Depleted Substation Earthing Systems - Operational Safety Manual – Section 6.12
PR-NET-OSM-043	Access to Substations and Switching Sites - Operational Safety Manual – Section 6.1
PR-NET-OSM-082	Firefighting Operations in Substations and near OH lines - Operational Safety Manual – Section 12.11
WI-NET-OSM-002	Personal Protective Equipment and Workwear for Live Environments
N/A	SSEN SHE Handbook (Held in Safety, Health and Wellbeing SharePoint Site)

Table 3.2 - External Documents

Reference	Title
ESQCR	Electricity Supply, Quality and Continuity Regulations 2002 (as amended)
ENA-EREP 2	Guidance on Security of Substations, Cable Bridges and Cable Tunnels

Table 3.3 - Miscellaneous Documents

Reference	Title
Occupational Safety Manual	This can be found in the Safety, Health and Environmental Sharepoint site

4 Definitions

4.1 The words printed in bold text within this document are either headings or definitions. Definitions used within this **Approved** Procedure are defined within the list presented immediately below, or within section 2 of the **Operational Safety Rules**.

4.2 **Operational Premises**

Distribution Substation, primary Substation, grid supply point, Switching Station, etc.

4.3 **Operational Safety Rules (OSR)**

The **SSEN-D** Distribution set of rules, as read with related documents and procedures, that provide generic safe systems of work on the **System** therefore ensuring the health and safety of all who are liable to be affected by any **Danger** that might arise from the **System**.

4.4 **Overhead Line Structure**

Steel lattice tower, wood pole, metal pole, composite pole, lattice mast, concrete pole or gantry or any similar structure that supports insulators carrying **Live** exposed **Conductors**.

4.5 **Public**

Members of the community who do not have a legitimate reason for assessing **SSEN-D** Assets.

4.6 **Public Area**

Areas open to the **Public** including streets, roads, parks, fields, customer premises, etc.

4.7 **Trespasser**

Third-party carrying out an **Unauthorised Access** to an **Overhead Line Structure** or an **Operational Premise**.

4.8 **Unauthorised Access**

Access by unauthorised third parties, including, members of the **Public**, thieves, vandals, children, etc.

5 General Responsibilities

5.1 All works and operational activities required in response to incidents of **Unauthorised Access Shall** be carried out in compliance with **SSEN-D** Safety, Health and Environmental Policy and procedures, including the **OSR**.

5.2 Staff who are required to respond to incidents of **Unauthorised Access Shall** have a thorough understanding of the required procedures and **Shall** ensure that on-site risks are suitably assessed and that appropriate control measures are put in place before carrying out any procedures to address the situation at the site of the incident.

5.3 The procedures and instructions in this **Approved** procedure **Shall** only be carried out by suitably trained and **Authorised Persons**.

5.4 Staff **Shall** ensure that, at all times during the incident response activities, **General Safety** arrangements are maintained, and that other areas and individuals are not adversely affected by the activities for which they are responsible in responding to the incident.

5.5 All other specific responsibilities in this **Approved** procedure **Shall** be followed.

6 Authorisation

6.1 All staff involved in responding to incidents of **Unauthorised Access Shall** hold the requisite competence and authorisations for the procedures being undertaken in response to such incidents.

6.2 Competence and authorisation certificates **Shall** be retained personally and be made available upon request.

7 Personal Protective Equipment

7.1 Persons who are required to work near the **System Shall** wear suitable Personal Protective Equipment (PPE) as identified in their risk assessment. Furthermore, where warning labels or signs identify the existence of a particular hazard, additional and appropriate PPE **Shall** be worn.

7.2 As a minimum, PPE **Shall** meet the requirements of WI-NET-OSM-002.

8 Dangers of Unauthorised Access

8.1 **Trespassers** gaining **Unauthorised Access** to **Overhead Line Structures** or **Operational Premises** containing exposed **Live Conductors** are at risk of serious injury or death from electrocution or the associated burns caused by contact with, or proximity to, exposed **Live Conductors** or due to falling from high structures, walls, and fences, etc.

8.2 **Trespassers** intent on vandalism might cause wilful damage to **Plant** or **Apparatus** or start fires which might place the **Trespassers** or the wider **Public** in further **Danger**, or cause damage to **System** assets and risk to supplies.

8.3 Any **System** trip caused by a **Trespasser**'s actions might have a severe impact on the wider population due to potentially extensive loss of supplies.

8.4 A common motivation for **Unauthorised Access** to **Operational Premises** is for the theft of **Earthing**. This can lead to depleted **Earthing** on normally **Earthed Overhead Line** Structures and at **Operational Premises** and consequential **Danger** to staff, the thieves themselves and the **Public**.

NOTE: Requirements for addressing depleted substation earthing systems are contained in PR-NET-OSM-054 Depleted Substation Earthing Systems – Operational. Safety Manual – Section 6.12.

9 General Requirements when Responding to Unauthorised Access

9.1 The relevant emergency services **Shall** be called to all confirmed incidents of **Unauthorised Access** where the **Trespasser** is known, or suspected to be, in a position of **Danger**. The call **Shall** generally be made by the **Control Engineer**.

9.2 The emergency services **Shall** be made aware that they **Shall** not enter the site of the incident or approach any electrical equipment, until clearance has been given by an **SSEN-D Authorised Person**.

9.3 The **Control Engineer Shall** ensure that an **SSEN-D Authorised Person** is immediately despatched to the site of the incident and their estimated time of arrival noted and passed to the Emergency Services if required.

9.4 Depending on the situation, it might be necessary to request police assistance to assist in getting **SSEN-D** staff to the site of an incident quickly and/or to deal with any members of the **Public** who might have congregated at the scene. The police will usually take control of the incident upon arrival.

9.5 If an incident is affecting a site or **Apparatus** which is jointly owned or operated with National Grid or another third-party, the **Control Engineer Shall** ensure that the joint owners are made aware of the incident and **Shall** liaise with them as necessary during the incident.

9.6 Any response activities **Shall** only be carried out in accordance with **Approved** Procedures and only after they have been fully risk assessed taking into account any reasonably foreseeable hazards to the **Trespasser**, staff and the **Public**. The risk assessment **Shall** be recorded (either on paper or electronically), or in extreme emergencies, this may be a verbal risk assessment. All staff involved with the response **Shall** agree and where practicable sign on to the risk assessment.

9.7 The risk assessment **Shall** take into account the incident location, site-specific conditions and also the individual involved with the **Unauthorised Access**, whether they may be children, adolescents, persons under the effects of drink or drugs, mentally ill or aggressive individuals, etc.

9.8 The risk assessment **Shall** be updated if conditions change during the process of dealing with the incident. For instance, changes in weather, darkness falling, or the **Trespasser** moving to a place of more **Danger**, etc.

9.9 The process of dealing with the **Trespasser Shall** not commence unless a risk assessment has been prepared and agreed, and the Person in charge is in receipt of the correct **Safety**

Document (if required) and has been personally instructed at the scene by the **Senior Authorised Person** issuing the **Safety Document** or the supervisor, as appropriate.

9.10 If the **Unauthorised Access** incident has taken place in or close to a **Public Area**, members of the **Public** should be kept sufficiently far away from the activity such that, if a flashover or an explosion occurs, they will not be harmed.

9.11 All reasonably practicable steps (such as the use of barriers, fences, warning signs, lookout or watch person etc.) **Shall** be taken to exclude the **Public** from the incident area.

9.12 Any barrier system employed to create an exclusion zone **Shall** be clearly visible from all approach routes and so designed such as not to create any additional significant hazard to staff or the **Public** and **Shall** allow safe controlled access and egress for staff.

9.13 If activities to bring the **Trespasser** to safety are being carried out at height, then **Approved** Procedures for working at height **Shall** be followed at all times, including Occupational Safety Manual, and all relevant working at height legislation and regulations.

9.14 Any temporary scaffolding or mobile elevated work platform (MEWP) used to gain access to the **Trespasser Shall** comply with the requirements of the Occupational Safety Manual and all relevant current legislation and **Shall** be **Earthed** if in close proximity to **Live Apparatus** to ensure the safety of the **Trespasser**, staff and the wider **Public**.

9.15 The responsibility for the full and correct application of the requirements of this **Approved** Procedure sits with the operational person on site at the incident. Where there is more than one operational person on site, then the responsibility for compliance is held both individually and collectively.

10 De-energising Conductors and Contingency Switching

10.1 Operational staff **Shall** always carefully balance up the requirements of providing for continuity of electricity supplies and reducing the electrical hazard to the **Trespasser** by de-energising the affected **Conductors**.

10.2 De-energising the **Conductors** whilst ignoring the effect on electricity supplies might initially seem attractive, however it must be borne in mind that significant societal risk could be posed to customers in their homes and the wider **Public**.

10.3 The societal risks increase significantly where the scale of any interruption affects large numbers of customers in urban or suburban areas. Hospitals and customers on the high-risk register might be involved in any interruption of supplies, further complicating the decision process.

10.4 Any interruption to electricity supplies, if required, should only take place once the location of the **Unauthorised Access** and the **System** asset involved has been confirmed beyond reasonable doubt.

10.5 The use of reports from members of the **Public** on or near to the site, information from emergency service personnel, GPS information, asset records, unique asset markings (e.g., Substation name plates, pole numbers, etc.). Site information and local knowledge from **SSEN-D** personnel are also useful in determining the location of the incident.

10.6 Where there is reasonable suspicion of an **Unauthorised Access** incident, then contingency **Switching** via SCADA may be carried out to mitigate any potential interruption to customer supplies resulting from any associated circuit trip, as long as any such **Switching** does not have the potential to put the **Trespasser**, staff or the **Public** at further risk.

10.7 Appendix A gives further guidance on the hierarchy of disconnection of equipment for safety reasons.

11 Auto-Reclosing and Sequence Schemes

11.1 On reasonable suspicion of an **Unauthorised Access** incident, where the circuit or equipment involved is covered under an auto-reclose, DAR, auto-changeover or restoration sequence scheme that could re-energise the exposed **Conductors** on the **Overhead Line Structure** or within the **Operational Premises** subject to the **Unauthorised Access**, then where practicable, these facilities **Shall** be immediately switched off or otherwise rendered inoperative, where this can be completed via SCADA.

11.2 In the event that this cannot be completed via SCADA, then the use of site staff to disable such schemes manually **Shall** be considered. However, this **Shall** not delay any actions required to disconnect **Plant** and **Apparatus**, as detailed in Appendix A, to ensure the safety of a **Trespasser**.

12 Role of SSEN-D Non-Rescue Staff at the Incident Site

12.1 **SSEN-D** staff not immediately involved in the rescue process on site, **Shall** focus on ensuring that any emergency services personnel or other members of the **Public** do not place themselves in a position of **Danger**, or undertake acts that could cause injury to themselves or others.

12.2 Whilst there may be implied or direct pressure to recover a potentially injured person from an area of **Danger**, the safety of the rescuers **Shall** be paramount at all times.

12.3 It will often be the case that onlookers will congregate around the site of an incident. If police are not yet in attendance, site staff **Shall** implement measures such that any onlookers are kept at a safe distance and take time to explain the reasons for any request to vacate an area or retreat to a safe distance from the incident location. The onlookers **Shall** be informed that such steps are required to safeguard them in the event of an unforeseen problem.

12.4 Where a member of the **Public** will not comply with reasonable requests to retreat to a safe distance, then the rescue activities **Shall** be suspended, and the police called (if not already on site) to deal with the individual(s) involved. Under no circumstances **Shall** rescue activities be continued if members of the **Public** nearby are considered to be at risk.

13 Rescue Process

13.1 In an emergency involving threat to life there is a need to commence the rescue at the earliest opportunity. Where the need to carry out a rescue is urgent full isolation need not be carried out first.

13.2 Emergency service personnel (including their specialist rope access rescue teams) **Shall** only be granted access to **Overhead Line Structures** or **Operational Premises** with exposed **Conductors** for the recovery of a **Trespasser** or to fight a fire, under the **Personal Supervision** of a suitably **Authorised Person**.

NOTE: This would preferably be a **Senior Authorised Person**.

13.3 The senior police officer on site (or the incident commander) **Shall** be responsible for initiating all actions and activities in relation to talking a **Trespasser** down or rescuing them from the affected **Overhead Line Structure** or **Apparatus** within the **Operational Premises**.

13.4 Where the **Trespasser** is capable of climbing down from the point of **Danger**, then they **Shall** be encouraged and allowed to do this but only if it is safe for them to do so and there is no risk of **Safety Distances** being encroached.

13.5 Where the **Trespasser** is unable or unwilling to climb down of their own accord and a rescue of the **Trespasser** can be facilitated without encroaching **Safety Distances** from any unearthed **High Voltage Conductors**, (even if they are **Dead**), then the rescue can proceed under the **Personal Supervision** of a **Senior Authorised Person**.

13.6 If there is a risk of **Safety Distances** being encroached during the rescue, but the **Trespasser** requires urgent medical attention, then the **Senior Authorised Person** will, in agreement with the **Control Engineer**, prove **Dead** and apply a portable **Earth** to the relevant **Dead Conductors**, as close as possible to the point of rescue and then give **Personal Supervision** to the emergency services while they render medical attention and recover the casualty.

13.7 If there are no serious injuries requiring urgent medical attention, and **Safety Distances** have to be encroached to facilitate a rescue, then **SSEN-D** staff **Shall** issue a **Permit-to-Work**, in accordance with the requirements of the **OSR** and the Operational Safety Manual before the rescue is attempted.

13.8 If the **Authorised Person** on site is not authorised to issue a **Permit-to-Work** and unnecessary delay has the potential to put the **Trespasser** at further risk, then once the affected **Apparatus** has been confirmed as safe by the **Control Engineer**, the **Authorised Person Shall** give verbal authorisation to emergency service personnel to carry out the rescue whilst the **Authorised Person** gives **Personal Supervision**.

14 Reporting Requirements

14.1 In addition to standard **SSEN-D** escalation and incident reporting procedures the Control Centre Manager or Duty Manager **Shall** be notified of any confirmed incident of **Unauthorised Access** as soon as is reasonably practicable.

14.2 Death or injury of a **Trespasser** during **Unauthorised Access Shall** be reported to the Health and Safety Executive (HSE), as required under the Electricity Supply, Quality and Continuity Regulations.

14.3 Any confirmed **Unauthorised Access** to any **High Voltage** equipment (including substations), even if no injury or damage has occurred, **Shall** also be reported to the HSE, as required under the Electricity Supply, Quality and Continuity Regulations 2002.

14.4 Theft of **Earthing** resulting from **Unauthorised Access Shall** also be reported to the HSE, as required under the Electricity Supply, Quality and Continuity Regulations 2002.

15 Revision History

No	Overview of Amendments	Previous Document	Revision	Authorisation
01	New document created	TBC	1.00	Richard Gough
02				

Appendix A Hierarchy to be Applied to Discharging Equipment for Safety Reasons

Where it has been confirmed there is an ongoing **Unauthorised Access** incident and de-energisation of **System Plant** and/or **Apparatus** is required to ensure the safety of a **Trespasser**, then the following hierarchy for discharging equipment **Shal**l be followed:

1. Secure full alternative supplies via SCADA prior to making the **Conductors** on the affected **Overhead Line Structure** or exposed **Apparatus** within the **Operational Premises Dead**.
2. Secure part alternative supplies via SCADA prior to making **Dead** some **Conductors** in the affected **Overhead Line Structure** or **Apparatus** within the **Operational Premises**, without disconnecting load.
3. Secure full alternative supplies by a mixture of SCADA and field **Switching** prior to making the **Conductors** on the affected **Overhead Line Structure** or **Apparatus** within the **Operational Premises Dead**.
4. Secure part alternative supplies by a mixture of SCADA and field **Switching** prior to making **Dead** some of the **Conductors** in the affected **Overhead Line Structure** or **Apparatus** within the **Operational Premises**, without disconnecting load.
5. Make **Dead** for rescue or recovery of a **Trespasser** only when as much load as reasonably possible has been secured and sufficient personnel are in position to keep any unavoidable interruption to the shortest time practicable.