PR-NET-OSM-047

VOID SUBSTATIONS

OPERATIONAL SAFETY MANUAL - SECTION 6.5

Scottish & Southern Electricity Networks

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1 Introduction

1.1 **SSEN-D** has a responsibility to effectively manage its substations and switching sites to ensure that the public are not placed at undue risk.

1.2 This document defines the **Approved** procedure for the management of **Void Substations**, i.e. Substation **Apparatus** that is redundant but has not been permanently **Disconnected** and declared off the **System** in readiness for dismantling.

1.3 Compliance with the following **Approved** procedure **Shall** enable staff to work safely and reduce the risk of injury to themselves and their colleagues.

1.4 The purpose of this document is to ensure that substations and switching sites that are no longer required are effectively managed until permanently **Disconnected** from the **System**.

1.5 This should ensure that the public are adequately protected from themselves in relation to sites vulnerable to the risks posed by **Live** electrical **Apparatus** due to unauthorised interference, vandalism, theft and attempted theft, or other activities, so far as is reasonably practicable.

2 Scope

2.1 This policy applies to Substations and switching sites providing supplies either directly to a customer at **High Voltage** or **Low Voltage**, or indirectly via a **Low Voltage** distribution **System** capable of supplying more than one customer.

2.2 The procedures included herein have been developed to minimise incidents associated with human error by ensuring that:

- A consistent approach is maintained for managing **Void Substations**
- Substation vulnerability is recognised.
- Uncertainty and misinterpretation in relation to the state of Substation **Apparatus** is suitably acknowledged to minimise the risk of **Danger**.
- At all times consideration is given to the operating characteristics of the **System** and the **Dangers** imposed.

2.3 This document does not apply to situations where supplies to customer's equipment are discontinued in order to allow work on **SSEN-D** equipment or cables, e.g. switchgear maintenance, cable diversions. In these instances, the normal business process for notification of customer supply interruption **Shall** be used.

3 References

The documents detailed in Table 3.1 - Scottish and Southern Electricity Networks Documents, and Table 3.2 - External 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-086	Management of Activities at the Interface with Independent Distribution Network Operators - Operational Safety Manual – Section 13.4
FO-NET-ENG-056	High Voltage Apparatus Decommissioning Certificate

Reference	Title
WI-NET-ENG-038	High Voltage Apparatus Decommissioning Procedure
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 Safety and Continuity Regulations 2002 (as amended)

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 **OSR**.

4.2 **De-energised**

Where customer supplies have been removed by opening the **SSEN-D** owned controlling switch or device. Examples are opening a **High Voltage** metering circuit-breaker; removal of cut-out fuse/s; removal of **Low Voltage** fuses or links in a Substation.

4.3 **Disconnected**

Where a physical break between **SSEN-D**'s Distribution **System** and the customer's electrical equipment exists such that jointing or other work is required to restore the ability to provide an electricity supply.

4.4 **External Service Provider (ESP)**

Company external to the SSE Group providing a service for **SSEN-D** in relation to work on the Distribution **System** assets.

4.5 **Independent Network Operator (IDNO)**

An electricity distribution company operating an embedded network where the supply is provided from **SSEN-D**'s Distribution **System**.

4.6 **Meter Operator**

The **Supplier** or customer appointed company that provides the meters at the site and are responsible for their installation, inspection, maintenance, and removal.

4.7 **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.**

4.8 **General Enquiries**

The team within the **SSEN-D** Customer Contact Centre responsible for managing the metering points and for processing requests for de-energisation, disconnection, and re-energisation.

4.9 **Supplier**

The company selling the electricity being consumed at a site.

4.10 **Void Substation**

A Substation or switching site no longer required to provide customer supplies.

5 General Responsibilities

5.1 Persons who are required to operate and undertake work on the **System Shall** have a thorough understanding of the work and ensure on-site risks are suitably assessed and appropriate control measures put in place before, during and after all activities.

5.2 Persons must ensure that, at all times during the work (or associated testing), **General Safety** arrangements are maintained and that other work areas are not adversely affected by the activities for which they are responsible.

6 Authorisation

6.1 It **Shall** be the responsibility of the individual to ensure that any actions performed are within the bounds of their competency and authorisation level.

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

7 Records

7.1 Where notified, The **Control Engineer Shall** place a marker on Power On of any Substation or switching site that is classified as vulnerable and therefore poses a risk to the safety of staff and public alike. In addition, the person identifying the **Void Substation Shall** ensure the Asset Management Database is updated.

7.2 Where the redundant substation **Apparatus** has been permanently **Disconnected** from the **System,** the **Control Engineer Shall** update the control diagram to reflect current **System** running.

7.3 Decommissioning **Shall** be carried out in accordance with WI-NET-ENG-038 and confirmed through the issue of a High Voltage Apparatus Decommissioning Certificate (FO-NET-ENG-056).

8 Personal Protective Equipment

8.1 Persons who are required to work or carry out **Switching** on or near the **System Shall** wear suitably **Approved** Personal Protective Equipment (PPE). Furthermore, where warning labels or signs identify the existence of a particular hazard, additional and appropriate PPE **Shall** be worn.

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

9 General Requirements

9.1 External Service Provider (ESP) staff that are authorised under **OSR Shall** not carry out the De-energisation or **Disconnection** of **High Voltage** customer supplies unless it has been agreed that they may do so by **SSEN-D** as a specific job or part of a larger project.

9.2 **SSEN-D** employees **Shall** follow the established business processes and procedures in relation to **De-energisation** and **Disconnection** of customer supplies.

9.3 Substation **Apparatus** can exist in two states:

- Subject to the requirements of the **OSR**, connected to the **System** and where locking-off the points exist, secured with **Approved** locks. **Apparatus** in this state can only be worked upon when released under a **Safety Document.**
- Off-the-**System**, either fully **De-energised** and **Disconnected**, or in the construction state of removal where free access is available, no **Approved** locks are used, and no **Danger** exists.

9.4 Substations and switching sites that are no longer required for customer supplies **Shall** be maintained **Live** for the shortest possible time considering:

- Future requirements for electricity supplies at the location
- Risks posed by unauthorised third-party interference with **Apparatus**
- The likelihood of attempted theft of valuable components

9.5 Frequency of inspection **Shall** be reviewed as there might be an increased risk of interference or attempted theft. Factors that are considered in the decision to increase the frequency of inspection and maintain **Live SSEN-D** owned **Apparatus** on the site **Shall** be:

- Security of the site
- The presence of signs of vandal activity
- Suitability of the building to continue to contain **High Voltage Apparatus**
- The general state of surrounding buildings

9.6 Notwithstanding clause 9.4 and 9.5, it is essential that redundant substation **Apparatus** is **De-energised** and permanently **Disconnected** from the **System** at the earliest opportunity to avoid any confusion that might be had as to the state of **Apparatus** to be worked on. The targets for **Disconnection** from the date of **De-energisation** are shown in Table 9.1.

Table 9.1 - Disconnection Targets from De-energisation

Site	Additional Requirements	Target
Unoccupied customer sites – shared substation or **SSEN-D** substation integral to customer building	Without 24 hr security provision by site owner	1 month
	With 24 hr security provision by site owner	3 months NOTE 1
Unoccupied customer sites –**SSEN-D** substation physically separate from customer building	Without 24 hr security provision by site owner	1 month
	With 24 hr security provision by site owner	3 months NOTE 1
SSEN-D owned substations or **Switching** sites	Located where not readily visible from routinely frequented public highway	1 months NOTE 2
	Adjacent to public highway or in a location where readily visible from routinely frequented public highway	6 months NOTE 2

NOTE 1: Where there is an immediate prospect that supplies might be required then the above times may be extended to a maximum of 6 months from initial **De-energisation** of the customer supplies.

NOTE 2: Where the Substation is a Primary Substation, then as a result of the practicalities involved in disconnecting and removing **Apparatus**, for example due to outage restrictions, then these timescales may be extended for the minimum amount of time that is reasonably practicable. A specific hazard and risk management plan for the site **Shall** be devised and applied to reduce the risk of interference to the lowest level reasonably practicable.

9.7 **SSEN-D** will seek to minimise its liability to civil and criminal action in relation to **De-energised** sites by ensuring that all reasonable steps are taken to ensure that Substations

are maintained in a secure state by the building owner, or that **SSEN-D Apparatus** is **Disconnected** and removed.

9.8 The convenience and commercial advantage to a developer or site/building owner in retaining a **SSEN-D** Substation **Live** but with the supply **De-energised** comes second to the requirement to control or remove any electrical hazard on site due to the presence of **Live SSEN-D Apparatus.**

9.9 **Void substation Apparatus Shall** be declared de-commissioned only when it is to be permanently removed and there is no intention to reconnect the **Apparatus** at a later point.

9.10 Work to disconnect the redundant Substation **Apparatus** from the **System Shall**, be carried out in accordance with the **OSR**.

9.11 Where the requirements of 9.10 cannot be met and the redundant Substation **Apparatus** is to remain on site, the following **Shall** be observed:

The redundant Substation **Apparatus Shall** not be declared off-the-**System** where:

- Established **Working and Access Clearance** from the nearest exposed **Live Conductor** cannot be maintained
- The **Apparatus** can be made **Live** by **Switching**
- The **Apparatus** cannot be permanently **Disconnected** from all potential backfeed

9.12 Where the **Void Substation Apparatus** has been **Disconnected** from the **System**, all operational locks, circuit labels **Shall** be removed, and switchgear placed in the **Earthed** position. The **Apparatus** and Substation information, including the Substation diagram and Substation log book **Shall** be marked-up accordingly by the **Senior Authorised Person** overseeing the work.

10 Disconnection of Customer Supplies

Any request or requirement for permanent disconnection **Shall** be passed to **General Enquiries**. They will use the established business process to process the disconnection request.

11 Temporary De-energisation of Customer Supplies

11.1 General

11.1.1 A temporary **De-energisation** is one where the supply to a customer is interrupted at their request, to enable the customer or their appointed contractor to carry out work on their electrical **Apparatus** and **System**. They are of short duration only, normally up to 48 hours.

11.1.2 A temporary **De-energisation** might require either the operation of the **SSEN-D High Voltage** controlling device, or the removal of **Low Voltage** links or fuses.

11.2 Low Voltage Whole Current Metered Supplies

11.2.1 Temporary **De-energisation** where the supply is metered using a whole current meter is provided by the **Meter Operator**.

11.2.2 The customer should contact their **Supplier** who will make the necessary arrangements with the **Meter Operator**.

11.2.3 Electrical Contractors / Electricians working on behalf of the customer or property owner are not permitted to remove **Low Voltage** cut-out fuses or links to isolate customer supplies to allow them to work on the customer owned equipment, unless specifically authorised by **SSEN-D** to do so.

11.3 Low Voltage Supplies with Current Transformer Operated Metering

11.3.1 Temporary **De-energisation** where the supply is metered using a current transformer operated meter is facilitated by the **Supplier**.

11.3.2 The customer should contact their **Supplier** who will make the necessary arrangements with the **Meter Operator** or DNO.

11.3.3 Electrical Contractors / Electricians working on behalf of the customer or property owner are not permitted to remove **Low Voltage** cut-out fuses or links to isolate customer supplies to allow them to work on the customer owned equipment.

11.4 High Voltage Supplies

11.4.1 Temporary **De-energisation** where a **SSEN-D** metering circuit-breaker or fused switch is the controlling **High Voltage** device, is the responsibility of **SSEN-D**.

11.4.2 Customer requests for temporary **De-energisation** should be made to **Supplier** who will make the necessary arrangements. Work requirements will be issued to the local Depot for delivery.

11.4.3 The cost for the provision of a temporary **De-energisation** is chargeable to the customer.

11.4.4 The **De-energisation Shall** be carried out in accordance with the **OSR** and Operational Safety Manual requirements to provide isolation and **Earthing** to ensure the safety of the customer or their contractor whilst working on the customer owned **Apparatus**.

11.4.5 An Isolation and **Earthing** Certificate **Shall** be issued to ensure effective communication of the safety measures required and taken at the interface between the **SSEN-D** owned **Apparatus** and the Customer equipment / **System**.

12 Permanent De-energisation of Customer Supplies

12.1 General

12.1.1 Permanent **De-energisation** might be required where a site is to be vacated and the electricity supply is no longer required. This might precede permanent disconnection of the site or be a short-term interim arrangement pending the re-occupation of the building by a new customer.

12.1.2 Any request or requirement for permanent **De-energisation** or **disconnection Shall** be passed to the **General Enquiries** team.

12.1.3 The **General Enquiries** team **Shall** ensure that all necessary documentation and agreements are received from the customer and the **Supplier**, and that the required electronic communication with the customer's **Supplier** and **Meter Operator** are received and/or issued.

12.1.4 Where a Substation is to be re-utilised or relocated as part of a site re-development, the Asset Management team **Shall** be notified to ensure that distribution data is maintained and up to date.

12.1.5 Wherever possible Substations **Shall** be **Disconnected** rather than maintained **Live**, but with customer supplies **Isolated**. This is to reduce the potential of third-party interference resulting in serious or fatal injuries.

12.1.6 Where leaving the **SSEN-D Apparatus Live** with the customer supplies **Isolated** is unavoidable, the substation **Shall** be subject to an enhanced frequency of Substation inspections. The Asset Management Team **Shall** be notified that the substation is now a **Void Substation** to ensure that the required high-risk site inspections take place; this is the responsibility of the **Senior Authorised Person** or **Authorised Person** carrying out the site **Switching** operations.

12.1.7 The **Senior Authorised Person** or **Authorised Person** carrying out the **Switching Shall** ensure that:

- A meter reading is taken and recorded where a meter is still on site. The serial number of the meter or meters **Shall** also be recorded.
- The **SSEN-D** controlling switch is opened
- In the case of withdrawable switchgear, the circuit-breaker **Shall** be racked out of the service position and where practicable, removed from site
- Isolation **Shall** be maintained by the application of a **Safety Lock** and **Caution Notice** to the point of isolation. A **Danger Notice Shall** also be applied to any shutters where **Live Conductors** are present
- Wherever practicable the controlling switch towards the customer owned equipment **Shall** be closed to **Earth** and locked in that state

NOTE: Practicable in this case means that this requirement **Shall** be met for all switches that have an integral **Earth** facility or where a portable **Earthing** device is readily available. Where the application of a portable **Earthing** device would mean that one of that type might not be available for other sites and **Switching** requirements, then it is permissible to leave the circuit-breaker in the Isolated position with the circuit/feeder shutters secured with an operational lock.

- **Danger** tape / **Danger Notices Shall** be applied to any **SSEN-D Apparatus** that contains any **Live Conductors** or connections
- Confirm that the Substation can be effectively secured against unauthorised access. Where the Substation cannot be effectively or adequately secured, then a discussion **Shall** take place with a **Control Engineer** about the desirability of leaving **SSEN-D Apparatus** in the substation **Live**. A Substation that cannot be secured **Shall** be made **Dead** and remain so until it is either secured or the switchgear is **Disconnected** from the **System**. It might be necessary to initiate an urgent permanent **Disconnection** of the site regardless of customer/developer requirements
- The means for **SSEN-D** to achieve 24 hr access to the site for routine and fault **Switching** purposes, and to achieve dual locking arrangements etc. as required are identified
- Verbally confirm the state of the Substation and **Apparatus** to the customer/developer's representative where they are available on site, see Section 15
- Notify the Asset Management Team that the site is a **Void Substation**

12.1.8 The **Control Engineer Shall** apply a marker to the site in the Network Management System to identify which sites are **Void Substations**.

12.2 Re-energisation following Permanent De-energisation

12.2.1 Where supplies that have been permanently **De-energised** are required again, for example by a new customer occupying a vacant building, then an application for a new connection Shall be made.

12.2.2 This **Shall** ensure that all the required documentation and agreements are in place and that **SSEN-D** meets it legal obligations.

12.2.3 Under no circumstances are **SSEN-D** employees or **ESP**'s permitted to re-energise a permanently **De-energised** supply without being specifically instructed to do so in accordance with the normal business operating procedure for new connections.

13 Void Substation Inspections

13.1 Inspection of **Void Substations Shall** be carried out in accordance with the **SSEN-D** Policies applicable to the inspection of Substations.

13.2 Where an inspection reveals adverse third-party activity, then arrangements **Shall** be put in place to increase the frequency of visits to weekly or even daily (depending on the perceived threat of unauthorised interference) until the **SSEN-D Apparatus** is **Isolated** from the Distribution **System**, or **Disconnected** and removed.

14 Removal of SSEN-D Apparatus

14.1 General

All decommissioning **Shall** comply with the requirements of WI-NET-ENG-038.

14.2 Ground Mounted Substations

14.2.1 **Apparatus Shall** be removed from Substations by **SSEN-D** employees or employees of a **SSEN-D Approved** contractor. Customer, developer or demolition contractor employees **Shall** not cut any cables or dismantle and remove any **SSEN-D** owned assets. This is in accordance with nationally agreed good practice which has been determined to reduce the risk of injury to non-Distribution Network Operator employees.

14.2.2 A **Senior Authorised Person Shall** be responsible for proving that the **Apparatus** and associated cables are **Dead** prior to sanctioning removal of the **Apparatus**.

14.2.3 Once proven **Dead** all **SSEN-D** cables **Shall** be cut, shorted and capped either level with the floor where no cable trench exists, or at the external duct entry point into the cable trench. This **Shall** be carried out in accordance with the requirements of the **OSR** and **SSEN-D** Operational Safety Manual.

14.2.4 Cables and **Apparatus Shall** be removed from site at the earliest opportunity once **Disconnected** so as to eliminate the potential for third-party interference and theft.

14.2.5 Electricity Safety and Continuity Regulation (ESQCR) Schedule 1 "Danger of Death" signs along with other notices and signs that might indicate that the building was a substation **Shall** be removed once the **Apparatus** has been **Disconnected** from the **System**. On no account **Shall** safety signs be left on site as a deterrent or an attempt to protect **Disconnected** equipment from theft.

14.3 Pole Mounted Substations

14.3.1 Where **Low Voltage** supplies are no longer being taken from a pole-mounted transformer and there is no foreseeable need in the immediate future for new customer supplies being required, then arrangements **Shall** be made to **Disconnect** and remove the pole mounted transformer.

14.3.2 The presence of pole mounted transformers that are obviously not being utilised, for example when the fuses have been removed from the pole mounted fuse cut-outs, is an attraction for potential thieves. Also, the presence of **Live High Voltage** connections at reduced height rather than statutory line clearance increases the risk of inadvertent contact by a member of the public.

15 Communication with Customers, Builders, Developers and / or Demolition Contractors

15.1 **SSEN-D** has a duty in law to liaise and communicate with third-parties where a worksite or building is shared. If this is not done completely or correctly by a **SSEN-D** employee or an **Approved SSEN-D** contractor, then the individuals as well as the company could be held accountable in the event of an incident.

15.2 Verbal and written communications with third-parties identifying what has been done, and more importantly what must be done to ensure safety, are essential to make certain that any electrical hazard is controlled and risk reduced to the lowest possible level.

15.3 To ensure that there is no misinterpretation or misunderstanding of the difference between **De-energised** and **Disconnected**, it is essential that clear and concise communications take place with the person in charge of the site. This person might be the customer or a builder, developer or demolition contractor working on their behalf.

15.4 The state of the **SSEN-D Apparatus Shall** be communicated formally in writing to the person in charge of the customer site. For supplies that have been permanently **De-energised** and **Disconnected**, then the Project Manager **Shall** carry out these communications automatically as part of their process. For other situations the **Senior Authorised Person** or **Authorised Person** responsible **Shall** ensure that written communication takes place with copies of correspondence being retained for future reference in the event of an incident. The associated job files will be retained for a period of not less than 3 years.

15.5 Isolation and **Earthing** Certificates **Shall** only be used where a **High Voltage** supply is temporary **De-energised**, and **Shall** not be issued where the **High Voltage** supply to a customer is permanently **De-energised**.

15.6 Where a sub-contractor is involved in making the request on behalf of the customer, builder, developer or demolition contractor, then both parties **Shall** be provided with a copy of the written communication in clause 15.4, to avoid any misunderstanding or misinterpretation of the message.

16 Independent Network Operator (IDNO) Connections

Supplies and connections to electricity distribution networks owned, operated and controlled by an **Independent Network Operator (IDNO),** Shall be managed in accordance with PR-NET-OSM-086 Management of Activities at the Interface with Independent Distribution Network Operators - Operational Safety Manual – Section 13.4.

17 Revision History

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