PR-NET-OSM-008

GENERAL SYSTEM CONTROL REQUIREMENTS

OPERATIONAL SAFETY MANUAL - SECTION 2.1

Scottish & Southern Electricity Networks

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1 Introduction

This document describes the procedures and processes to be used for operation and control of the Distribution and Transmission **Systems** operated by Scottish and Southern Electricity Networks (**SSEN-D**), under both normal and emergency conditions.

2 Scope

2.1 This document relates to requirements for management of operation and control on **SSEN-D**'s Distribution **Systems**.

2.2 It applies to all persons employed by or working on behalf of **SSEN-D** in the operation and control of the Distribution **Systems**.

2.3 This document replaces the following documents:

- PR-NET-OPS-058
- EOP A/1 (South)
- PSI 0/11/97 (North)

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	Distribution Operational Safety Rules 2022 – Operational Safety Manual – Section 1.1
PR-NET-OSM-028	Switching Terminology and Approved Abbreviations - Operational Safety Manual - Section 4.4
PR-NET-OSM-009	EHV System Planning – Operational Safety Manual – Section 2.2
PR-NET-OSM-013	HV System Planning – Operational Safety Manual – Section 2.3
PR-NET-OSM-021	Transfer of System Control Responsibilities - Operational Safety Manual - Section 2.11
PR-NET-OSM-019	System Emergency Procedures - Operational Safety Manual - Section 2.9
PR-NET-OSM-026	High Voltage System Switching and Earthing - Operational Safety Manual - Section 4.2
PR-NET-OPS-005	Distribution Control Engineer Operational Authorisation (Scotland)
PR-NET-OPS-083	HV & EHV Control Engineer Operational Authorisation (South)
PR-NET-OPS-082	Distribution System Outage Planning Procedure
PR-PS-007	Customers HV/EHV Networks
PR-NET-EPR-011	Response to Network System Emergencies
PR-NET-EPR-013	Emergency Response Flood Procedures
PR-NET-OSM-005	Procedure for Planning Switching Isolation and Earthing Operations on High Voltage (HV) Systems
PR-NET-ENG-031	Procedure to Change Control and Safety Rule Boundaries
FO-PS-181	User Authorisation Document
N/A	SSEN SHE Handbook (Held in Safety, Health and Wellbeing SharePoint Site)

Table 3.2 - External Documents

Reference	Title
DOC8	Distribution Operating Code 8 – Safety Co-ordination

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 **Network Control System (NCS)**

System used to manage, monitor and control distribution **Systems**, consisting of a graphical user interface, supervisory control and data acquisition, and network management capabilities.

NOTE: Within **SSEN-D** this is currently referred to by the system name ENMAC or PowerOn.

4.3 **Operational Safety Rules**

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 **Operator**

The **Authorised Person** permitted to carry out **Switching** on the **System**

4.5 **Safety Co-ordinator**

A person or persons nominated to be responsible for the co-ordination of safety precautions at each control boundary where work (which includes testing) is to be carried out on a **System** which necessitates the provision of safety precautions on **HV Apparatus**. For **SSEN-D** this will be the **Control Engineer**

4.6 **System Control Procedure 1 (SCP 1)**

Managing the control of the **System** by a **Control Engineer** from a Distribution Control Centre

4.7 **System Control Procedure 2 (SCP 2)**

Managing the Control of the **System** by a **Control Engineer** using a digital control system from a site other than a Distribution Control Centre

4.8 **System Control Procedure 3 (SCP 3)**

Managing the control of a part of the **System** by a **Control Engineer** using contingency/paper diagrams from a site other than a Distribution Control Centre

5 General Responsibilities

Control Engineers Shall be responsible for control of all operations within their **HV System** control zone to ensure that:

- All operations **Shall** be carried out safely in accordance with the **SSEN-D Operational Safety Rules** and relevant **Approved** Procedures
- The safety and welfare of all personnel, including the **Public**, **Shall** always take priority during any operational or work activities on the **System**.
- The **System Shall**, where practicable, be operated to maximise security of supply, avoid overloading and maintain voltages within statutory limits
- Customer supplies **Shall**, where reasonably practicable, be restored as quickly as possible post-fault
- Compliance with all requirements for statutory and internal reporting of incidents

6 Authorisation

6.1 Persons who are required to undertake **Control Engineer** duties on the **SSEN-D Systems Shall** hold the appropriate competence and authorisation to carry out specified duties. It **Shall** be the responsibility of the individual to ensure that any actions performed are within the bounds of their Competency and Authority level.

6.2 North license area **Control Engineers Shall** be authorised according to the requirements of PR-NET-OPS-005.

6.3 South license area **Control Engineers Shall** be authorised according to the requirements of PR-NET-OPS-083.

7 Working at Control Boundaries

7.1 Introduction

7.1.1 This section defines the internal process for managing **System** safety at control room boundaries between two or more parties.

7.1.2 The process **Shall** be applied where the other party has a Control Authority or where they are a user without a Control Authority.

7.1.3 The process includes reference to the following main documents, which it is recommended are consulted:

- Grid Code
- Distribution Code
- PR-PS-007
- **OSR**
- PR-NET-ENG-031

7.2 Operational Safety Rules

7.2.1 **OSR** 9.5. specifies the duties of **Control Engineers** include consulting with **Control Engineers** of other **Systems** to agree and initiate **Switching** where there is inter-connection across control boundaries; also agreeing responsibility for control of circuits in the Isolated state preparatory to sanctioning the issue of **Safety Documents**.

7.2.2 Dependant on the circumstances, different methods may be used as detailed in the proceeding sections.

7.3 RISSP (Record of Inter System Safety Precautions)

7.3.1 When work is to be carried out on one **System** that requires safety precautions on another **System** where co-ordination is between two or more Control Authorities, then the RISSP system **Shall** be used.

7.3.2 Full details of the RISSP procedure can be found in the Grid Code Document under Operating Code (OC) 8.4.2 Safety Co-ordination in Scotland and OC 8.4.3 RISSP in England.

7.3.3 When the use of a RISSP is required to make a **System** safe to work on, the following procedure **Shall** be applied:

NOTE 1: ISC - Implementing **Safety Co-ordinator**

NOTE 2: RSC - Requesting **Safety Co-ordinator**

1. RSC **Shall** consider the work to be carried out and safety precautions required.
2. RSC **Shall** contact the **Control Engineer** for the adjoining **System** and confirm their authority to act as ISC.
3. Both parties **Shall** agree the safety precautions required and switch out method.
4. Switch out circuit as agreed and log details, confirm to ISC.
5. Establish isolations as agreed and log details, confirm to ISC.
6. Establish **Earthing** as agreed and log details, confirm to ISC.
7. ISC **Shall** then raise RISSP document and fill in details of safety precautions established.
8. RSC **Shall** agree and make an exact copy of these details on their copy then issue a unique number to the ISC.
9. Both parties **Shall** sign and date the relevant issue sections of the document.
10. If both parties undertake work on the **System** then two sets of RISSPs **Shall** be issued and agreed.
11. Once signed, no alteration **Shall** be made to the RISSP document, it can only be cancelled.
12. The RSC is now free to issue **Safety Documents** for work but not for testing.
13. Where testing is required the two **Safety Co-ordinators Shall** ensure that all **Safety Documents** relating to the **System** within the points of isolation on the RISSP documents are cancelled. Only one RISSP document can be held relating to the **System** to be tested. Both **Safety Co-ordinators Shall** agree on and log the scope of the testing to be carried out.
14. Where **Earths** are removed as part of testing and are not intended to be re-applied, then the RISSP associated with the test **Shall** be cancelled on completion of the testing. Where **Earths** are re-applied following the completion of testing there is no requirement to cancel the relevant RISSP.
15. Restoring the **System** is a reversal of the above process with the key requirement to agree and log each stage between the **Safety Co-ordinators**, i.e. cancel RISSP, agree removal of **Earths**, log, agree removal of isolations, log, agree circuit restoration procedure, log and finally confirm normal **System** running.

7.4 Use of Isolation Certificates and User Authorisation Documents

7.4.1 Where **Switching** or work is to be carried out on the boundary between **SSEN-D** and a User, or on a User's **System**, and the User does not have their own Control Authority, then this **Shall** be done in accordance with the guidelines set out in the Distribution Code.

7.4.2 Full details of the guidance can be found in the Distribution Code Documentation under Distribution Operating Code 8 (DOC8) Safety Co-ordination.

7.4.3 When working at or across a Control Boundary, where the User does not have their own Control Authority, the following guidance **Shall** apply:

NOTE 1: User - A term defined within the Distribution Code which refers to persons using a DNO's distribution network. In the context of this document a User **Shall** include any customer **HV System,** generator or IDNO connected to any DNO's **System**.

NOTE 2: User Authorisation Document (UAD) - A document issued by the User to **SSEN-D** giving authority for **SSEN-D** to control and / or operate the User's **System** (FO-PS-181)

1. Distribution Operating Code DOC8 specifies the safety management criteria that **Shall** be applied by the DNO and Users for the co-ordination, establishment and maintenance of necessary safety precautions when work or testing is to be carried out on **Plant** and/or **Apparatus** under the ownership of the DNO or a User, including where necessary isolation on and/or **Earthing** of the other **System** as required.
2. Additionally, Distribution Code DOC8 specifies the requirement for Site Responsibility Schedules, the appointment of **Authorised Persons** etc.
3. Cross boundary working **Shall** be in accordance with **SSEN-D Approved** Procedure PR-PS-007. This includes the use of Isolation Certificates and UAD documentation.
4. The **SSEN-D Control Engineer Shall** notify Users of any action which effects the User's **System**, for example contacting a wind farm control centre before attempting to close their supply circuit breaker following a trip.

7.5 Change of Control and Safety Rule Boundary Declaration (CCSRBD)

7.5.1 This process below is to be used by **SSEN-D** when work is to be carried out on **Plant** or **Apparatus** and in order to facilitate this work it is deemed appropriate to change the Control and Safety Rule Boundary for the duration of the work from its normal location to another location, see **SSEN-D Approved** Procedure PR-NET-ENG-031 for this document.

1. The **Safety Co-ordinator** who is to relinquish control of part of the circuit, the "Relinquishing **Safety Co-ordinator**", **Shall** contact the **Safety Co-ordinator** who is to assume control of that part of the circuit, the "Assuming **Safety Co-ordinator**", and they **Shall** implement the change procedure.
2. The **Safety Co-ordinators Shall** arrange for any work or testing which has been authorised on the **Plant** or **Apparatus** between the current Control and Safety Rule Boundary and the newly determined temporary Control and Safety Rule Boundary, to be terminated and for all **Safety Documents** pertaining to that work or testing to be cancelled.
3. The Relinquishing **Safety Co-ordinator Shall** complete Parts 1 & 2 of the CCSRBD-R.
4. The Relinquishing **Safety Co-ordinator Shall** then contact the Assuming **Safety Co-ordinator** and read out the contents of Parts 1 and 2 to the Assuming **Safety Co-ordinator** who **Shall** enter the precise details on the CCSRBD-A.
5. The Assuming **Safety Co-ordinator Shall** then read back the details to the Relinquishing **Safety Co-ordinator** and, if the **Safety Co-ordinators** agree that the details are correct, the Relinquishing **Safety Co-ordinator Shall** issue the CCSRBD identifying number to the other Assuming **Safety Co-ordinator** who **Shall** enter it on the CCSRBD.
6. Each **Safety Co-ordinator Shall** then sign Part 3 of their respective CCSRBDs and enter the time and date. When signed, no alteration to the CCSRBD is permitted; the CCSRBD may only be cancelled.
7. The Assuming **Safety Co-ordinator** may then utilise the RISSP procedure, or any other **Approved** procedure, as Requesting **Safety Co-ordinator** to enable work to be carried out on the **Plant** or **Apparatus** for which he has assumed Control Authority.

8. When the work is completed and the Assuming **Safety Co-ordinator** decides that there is no further requirement for the temporary Control and Safety Rule Boundary, he **Shall** contact the Relinquishing **Safety Co-ordinator** and confirm to him that the boundary change associated with that particular CCSRBD number is no longer required. They **Shall** establish verbally that the details entered in Parts 1 and 2 are identical on both forms before commencing the cancellation.

7.5.2 Each designated and suitably authorised **Safety Co-ordinator Shall** maintain a Safety Log which **Shall** be a chronological record of all messages relating to changes of Control and Safety Rule Boundaries and agreement to switch for RISSP procedures both sent and received by the **Safety Co-ordinator**(s).

7.5.3 The Safety Log **Shall** be retained for a period of not less than one year from the last entry associated with a particular change of Control and Safety Rule Boundary or use of the RISSP procedure.

7.6 Network Operating Procedures (NOPs)

7.6.1 Network Operating Procedures are covered in detail in PR-NET-OSM-021 System Operations and Transfer of System Control Responsibilities - Operational Safety Manual - Section 2.11

7.6.2 **Switching** on any **System** which crosses a Control Boundary **Shall** be done under NOP 1.

7.6.3 Where work or testing is undertaken across **Systems** and under the RISSP procedure, for example an interface with Scottish Power or Gen Ops, then work **Shall** be done under direct control of the **Control Engineer** (NOP 1).

7.6.4 Control Authority **Shall** not be transferred to a **Field Controller** on a **System** that requires safety precautions on an adjacent **System** that is controlled by another Control Authority. Once a **System** has been transferred, it may be transferred to a **Field Controller**, they may through the course of work issue a **Sanction-For-Test**, this **Shall** not be completed without agreement between the **Safety Co-ordinators**.

7.6.5 The issue of a NOP 2, 3 or 4 on a **System** involving another Control Authority **Shall** involve a CCSRBD document that transfers the isolations under **SSEN-D** control, this may be advantageous on long-term planned outages.

7.6.6 In situations involving safety precautions on Users equipment where they do not have a Control Authority, for example an interface with a wind farm. The procedure **Shall** be to establish the necessary isolations along with the Users and lock them off using an ITEX lock guard and obtain an Isolation Certificate or similar. Then proceed under NOP 1, 2, 3 or 4 as appropriate. The key point is to establish isolations on the Users **System** before issue of the NOP and remove them after the NOP has been cancelled. If these isolations are on **HV** switchgear then they **Shall** be stated as boundary points on the Control Transfer Certificate, where issued.

8 Application of System Control Procedures

8.1 The options for the use of SCP 1-3 are shown below:

Table 8.1 - Application of System Control Procedures

System Control Procedure		SCP 1			SCP 2	SCP 3	
Mode of Operation		NCS @ TCC / DCC (North/ South)	NCS @TCC / DCC DRS Site	Paper Diags @ TCC / DCC	NCS @ Depot	Paper Diags @ Depot	Paper Diags @ S/Stns
Normal Use		✓	✓				
Storm Use	Level 1	✓	✓		✓		
	Level 2	✓	✓		✓	✓	✓
Contingency Use (TCC / DCC Evacuation)	Level 1		✓				
	Level 2		✓		✓		
Contingency Use (Loss of NCS)	Level 1			✓			
	Level 2			✓		✓	
Level 1 -> 2 implies increasing level of activity or workload							

8.2 Under emergency conditions any **Senior Authorised Person** authorised for NOP 4 (without restrictions), and in accordance with PR-NET-OSM-021 System Operations and Transfer of System Control Responsibilities - Operational Safety Manual - Section 2.11, may also operate SCP 3.

8.3 Under normal circumstances the Network Control System is available at the Distribution Control Centre's at Perth and Portsmouth, the contingency sites at Burghmuir and Havant, and at most depots.

9 System Control Procedure 1 (SCP 1)

9.1 Mode of Operation

9.1.1 **SCP 1** defines the control of the **System** using the **Network Control System** or contingency diagrams (section 10.9) from a Distribution Control Centre (DCC).

9.1.2 This is the normal operating procedure that **Shall** be used under normal operating conditions, except for severe storms, where the workloads demand development from centralised control, or where full/partial evacuation of a Distribution Control Centre has taken place.

9.2 Operational Diagrams and Records

9.2.1 Normally the **Network Control System** will be used as the operational **System** diagram and record of dressing, for System Control Automation and Data Acquisition (SCADA) remote control, alarm monitoring and as a record of all **Switching** operations. The **Network Control System** will be operated in accordance with the **Network Control System** Operations Manual.

9.2.2 **Control Engineers Shall** maintain a log of all events.

9.2.3 **Control Engineers Shall** require access to the following additional systems / information:

- SIMS for information and updating of incidents / calls and for NAFIRS reporting
- **System** Ratings – as marked on the **NCS** diagram and/or GIS

- Operational Restrictions, **System** Defects – as recorded on the **NCS** diagram
- **System** Loadings – available from Pi Process book or from local readings on site
- Mains Records – accessed via PCGIS
- Contingency Manual – covering evacuation plans, loss of facilities, Load Shedding etc
- Copies of Procedures, substation diagrams and operational information, and relay setting data

9.3 Control Boundaries and Zones

9.3.1 The Control Boundaries between **SSEN-D Systems** and third parties are defined within the Site Responsibility Schedules and / or Operational Agreements for each site. The internal control boundaries for **SSEN-D Systems** are detailed in this section.

NOTE: Within the Control Boundaries noted below, the Distribution Control Centre may operate the **System** divided into zones by a combination of geographic area and / or voltage.

9.3.2 **HV** Distribution Network to **LV** Distribution Network

Distribution transformer **LV** links or fuses, when used as a point of isolation for work on the **HV** network.

South License Area

9.3.3 National Grid Network to **SSEN-D** 132 / 66kV Network

Supergrid Transformer (SGT) side contact of SGT busbar isolators at sites where **SSEN-D** control busbars. Busbar side contacts of **SSEN-D** circuit busbar isolators where National Grid control busbars.

9.3.4 **SSEN-D** 132 / 66 / 33 / 22kV Network to **SSEN-D** 11 / 6.6kV Network

Busbar spouts or busbar connections on 11 / 6.6kV feeder circuit-breakers. (Excluding capacitor banks).

North License Area

9.3.5 **SHET** Transmission Network to **SSEN-D** Distribution 33 / 11kV Network

Individual circuit boundary points as specified on asset register and recorded on the **NCS**.

9.4 Identification of Control Zone Responsibilities

9.4.1 The **Network Control System** allows a number of **Operators** to have simultaneous access to the same zone(s), so a means of clearly identifying who has responsibility for the control of zones, or parts of zones **Shall** be used. By definition, the identified **Control Engineer** has authority for control of the relevant **System** within the identified zone.

9.4.2 The **Network Control System** Fault Markers **Shall** be used as a warning at the boundaries of any parts of a zone transferred to another **Control Engineer** for fault location and repair.

9.4.3 Where work extends across internal control boundaries, the **Control Engineers** involved may also agree to delegate operations in the relevant part of their zone from one to the other. One **Control Engineer Shall** then manage the whole job, e.g. work on primary substation 11kV busbars, dual 11 / 33kV poles.

9.5 Transfer of Control Zones out of the Transmission or Distribution Control Centre

Where control of a complete zone is transferred out of the Distribution Control Centre under **SCP 2**, or control of one or more primary substations is transferred under **SCP 3** then a 'Control Zone Transfer Record' **Shall** be used by both the **Control Engineers** involved, (copy in Appendix B) to record the transfer.

9.6 Communications

9.6.1 Contact with the Distribution Control Centre can be achieved via:

- the **SSEN-D** internal telephony network
- PMR radio
- DDI dialling from the PSTN network onto the internal network
- Direct exchange lines on the published freephone contingency numbers
- Status Messaging is available on certain lines

9.6.2 The Distribution Control Centre (DCC) will distribute a schedule of contact numbers at regular intervals, or when changes take place.

9.7 Planned Outages

All requests for outages **Shall** be made in advance, in accordance with PR-NET-OPS-082. This, where reasonably practicable, **Shall** allow adequate time to check loads/ratings and develop contingency plans to reduce risk. In addition to this, requests for outages on the distribution **System Shall** be made by submitting a pre-checked Schedule on the **Network Control System** or via a paper schedule.

9.8 Storm / Emergency Response

9.8.1 In the event of a storm or other **System** emergency then the Distribution Control Centre **Shall** operate in accordance with PR-NET-OSM-019 Emergency Procedures - Operational Safety Manual - Section 2.9, supplemented by the local instructions included in the Contingency Manual.

9.8.2 Use should be made of NOP 3/4 to reduce the amount of operational activity involving the **Control Engineer**.

9.9 Operations from Contingency Diagrams

9.9.1 Where the **Network Control System** fails then the Distribution Control Centre is required to operate using contingency diagrams maintained by the cartographers, all **Switching Shall** be recorded on Unplanned **Switching** Logs and dressed using coloured pins/markers in accordance with the relevant section of **SCP 3**.

9.9.2 Normally all planned work **Shall** be suspended for the period of unavailability. Outages affecting customers already in progress **Shall** be restored on completion of the work.

9.9.3 Details of all current Operational Restrictions and Defects **Shall** be made available from a local backup and updated weekly.

9.9.4 Where the **Network Control System** and Pi process Book are not available then analogue readings **Shall** be checked on-site.

10 System Control Procedure 2 (SCP 2)

10.1 Mode of Operation

SCP 2 defines the control of one or more control zones, or sections of **System**, using the **Network Control System** from a site other than the Distribution Control Centre. Typically, this scenario would occur following evacuation of a Distribution Control Centre or where additional control positions are required during a storm.

10.2 Operational Diagrams and Records

10.2.1 These requirements **Shall** be met as for **SCP 1** by using the **Network Control System**, Pi Process book, GIS and SIMS.

10.2.2 Depending on circumstances, the **Control Engineer** at the remote location may require access to:

- Contingency Manual – plans for evacuation, loss of facilities, load shedding etc
- Copies of Procedures, substation diagrams and operational information, and relay setting data

10.3 Control Boundaries and Zones

10.3.1 The Control Boundaries between **SSEN-D Systems** and third parties are defined within the Site Responsibility Schedules and / or Operational Agreements for each site. The internal control boundaries for **SSEN-D Systems** are detailed in this section.

NOTE: Within the Control Boundaries noted below, the Distribution Control Centre may operate the **System** divided into zones by a combination of geographic area and / or voltage.

10.3.2 **HV** Distribution Network to **LV** Distribution Network

Distribution transformer **LV** links or fuses, when used as a point of isolation for work on the **HV** network.

South License Area

10.3.3 National Grid Network to **SSEN-D** 132 / 66kV Network

Supergrid Transformer (SGT) side contact of SGT busbar isolators at sites where **SSEN-D** control busbars. Busbar side contacts of **SSEN-D** circuit busbar isolators where National Grid control busbars.

10.3.4 **SSEN-D** 132 / 66 / 33 / 22 kV Network to **SSEN-D** 11 / 6.6kV Network

Busbar spouts or busbar connections on 11 / 6.6kV feeder circuit-breakers.

North License Area

10.3.5 **SHET** Transmission Network to **SSEN-D** Distribution 33 / 11kV Network

Individual circuit boundary points as specified on asset register and recorded on the **NCS**.

10.4 Identification of Control Zone Responsibilities

10.4.1 The **Network Control System** does not prevent **Operators** having simultaneous access to the same responsibility zone(s), therefore a means of clearly identifying who **Shall** have control of the relevant zones, or parts of zones **Shall** be used. By definition, the **Control Engineer Shall** have the authority for control of the relevant **System** within the identified zone.

10.4.2 The **Network Control System** Fault Markers **Shall** be used as a warning at the boundaries of any parts of a zone transferred to another **Control Engineer** for fault location and repair.

10.4.3 Where work extends across internal control boundaries, then the **Control Engineers** involved may agree to delegate operations in the relevant part of their zone from one **Control Engineer** to another. In such circumstance, the designated **Control Engineer Shall** manage the work in its entirety, (e.g. work on primary substation 11 kV busbars, dual 11 / 33 kV poles, combined transmission and distribution jobs, etc.).

10.5 Transfer of Control between SCP 1 and SCP 2

10.5.1 Where **Control Engineers** are evacuated from a Distribution Control Centre to an alternative location then there **Shall** be no requirement for transfer of control

10.5.2 Where control of one or more zones of the System is being transferred to another **Control Engineer** at a remote location, then both parties **Shall** record the transfer of responsibility on a 'Control Zone Transfer Record', (Appendix B).

10.5.3 The **Control Engineer** handing over control Shall brief the recipient on all work-in-progress.

10.6 Communications

10.6.1 Status Messaging can be used at any location where a PC connected to the corporate network is available.

10.6.2 Where this is not practicable, the **Operators Shall** be given appropriate telecommunication means to contact the **Control Engineer**, this excludes call queuing facilities.

10.6.3 Where available, PMR communications can be established by reconfiguring PMR despatchers. At busy times it may be necessary to provide clerical support to manage incoming calls, using a separate line/phone/PMR despatcher.

10.7 Planned Outages

All requests for **System** outages **Shall** be made in advance, in accordance with PR-NET-OPS-082. Effective submission **Shall** allow adequate time to check loads/ratings and develop contingency plans to reduce risk. In addition, requests for outages on the distribution network **Shall** be made by submitting a pre-checked **Switching** Schedule on the **Network Control System** or via a field equivalent.

10.8 Storm / Emergency Response

10.8.1 **SCP 2 Shall** form part of the **SSEN-D** response to a storm or other **System** emergency, operating in accordance with PR-NET-EPR-011 and the local Contingency Manual.

10.8.2 Maximum use **Shall**, where practicable, be made of NOP 3/4 to reduce the amount of operational activity involving the **Control Engineer**.

10.9 Operations from Contingency Diagrams

SCP 2 does not allow the use of contingency diagrams. These **Shall** only be used at the discretion of the Distribution Control Centre under **SCP 1** or at any other location under **SCP 3**.

11 System Control Procedure 3 (SCP 3)

11.1 Mode of Operation

11.1.1 **SCP 3** defines the control of zones or sections of **System** by a **Control Engineer** using contingency/paper diagrams from a suitable location, e.g. Depot or Substation site.

11.1.2 Under emergency conditions staff authorised for full NOP 4 **Shall** also be deployed to operate **SCP 3** from one or more primary substation sites.

11.2 Operational Diagrams and Records

11.2.1 Printed contingency diagrams Shall be used as the operational **System** diagram and record of dressing.

11.2.2 Alarm monitoring and operations of SCADA **Plant Shall** either be via a **Control Engineer** at another location with access to the **Network Control System**, or by local operation as agreed at the time of Control Transfer.

11.2.3 The **Control Engineer** operating **SCP 3 Shal**l maintain a written record of all **Switching** and significant events using Unplanned **Switching** Logs.

11.2.4 Under **SCP 3** the **Control Engineer** may also require the following information:

- SIMS records of incidents/calls – generally via telephone contact with local Depot
- **System** Ratings – sizes **Shall** be marked on the **NCS** plots or GIS schematics and a copy of the ratings table **Shall** be made available to the **Control Engineer**
- Details of all current Operational Restrictions (taken from The Asset Management System) and Defects logged in the **NCS**. Further details may be obtained through **Approved** means
- **System** Loadings – take local readings
- Mains Records – to be collected from the local Depot if required for specific faults

11.3 Control Boundaries and Zones

11.3.1 The control boundaries under **SCP 3** may differ from the boundaries used under **SCP 1** or **SCP 2**.

11.3.2 Typically, the section of **System** transferred to **SCP 3 Shall** only be one or two primary substations.

11.4 Transfer of Control between SCP 1, SCP 2 and SCP 3

11.4.1 Where **Control Engineers** are evacuated from a Distribution Control Centre to an alternative location there **Shall** be no requirement for transfer of control.

11.4.2 Where control of one or more zones of the **System** is transferred from **SCP 1** or **SCP 2** to **SCP 3** with a **Control Engineer** permanently located at a remote location, then both parties **Shall** record the transfer of responsibility on a ‘Control Zone Transfer Record’, (Appendix B).

11.4.3 The **Network Control System** Fault Zone markers **Shall** be placed at every boundary point, (unless a whole zone is transferred in which case Fault Zone markers are not required).

11.4.4 The **Control Engineer** handing over control the **System Shall** brief the recipient on all work-in-progress, all operating arrangements and Shall ensure the recipient has all the necessary information and records available to operate and maintain safety from the **System**.

11.5 Communications

11.5.1 The **Control Engineer** operating **SCP 3 Shall** use a combination of **Approved** communication mediums such as mobile phones, PMR radio, substation and/or DDI extensions.

11.5.2 Where required, clerical support **Shall** be provided to assist with incoming calls.

11.6 Planned Outages

11.6.1 All planned work **Shall** be suspended under **SCP 3** conditions.

11.6.2 Unplanned outages affecting customers who are already subject to an ongoing planned outage **Shall** be restored on completion of the work. Where practicable, the Customer Information Centre (CIC) **Shall** update customers accordingly.

11.7 Storm / Emergency Response

11.7.1 **SCP 3 Shall** only be used in response to a serious storm or **System** emergency, operating in accordance with PR-NET-OSM-019 Emergency Procedures - Operational Safety Manual - Section 2.9 and the local Contingency Manual.

11.7.2 Where practicable, the maximum use of NOP 3/4 **Shall** be used to reduce the amount of operational activity involving the **Control Engineer**.

11.8 Operations from Contingency Diagrams

11.8.1 Ideally the contingency diagrams will include plots from the **Network Control System**, or alternatively suitable GIS schematic plots where the **Network Control System** diagrams are not available. These **Shall** be mounted on a suitable surface for dressing, e.g. fibre-board or similar if pins are to be used for operational dressing.

11.8.2 Where reasonably practicable, diagrams **Shall** be dressed using **Approved** coloured pins or coloured markers in accordance with Table 11.1.

Table 11.1 - Contingency Diagram Coloured Markers

Condition	Colour
Open	Green
Abnormal Closed	Pink
Isolated	Blue
Earths	Yellow
Issue of NOP 2/3/4 and **Safety Documents**	Red

11.8.3 **HV** boundary switches **Shall** be adequately marked to demonstration who has control of the switch (agreed at handover).

11.8.4 Care **Shall** be taken to ensure the diagram dressing is maintained accurately so the **System** operating arrangements are correct when operational control is returned to the Distribution Control Centre. A list of the requirements for operating from contingency diagrams is included as Appendix C.

12 Revision History

No	Overview of Amendments	Previous Document	Revision	Authorisation
01	New document created	PR-NET-OPS-058	1.00	Richard Gough
02				

Appendix A Operational Diagrams and Information Required for SCPs

Requirement	SCP 1	SCP 2	SCP 3
Operational System diagram	**NCS**	**NCS**	**NCS** or GIS plots
SCADA monitoring and control	**NCS**	**NCS**	Local monitoring or remote SCADA
Event Log	**NCS** Master Log	**NCS** Master Log	Written on Unplanned **Switching** Log
Incident/Call information	SIMS	SIMS	Remote access to SIMS via telephone to local depot
NAFIRS reporting	SIMS	SIMS	On SIMS post-event
System ratings	**NCS**	**NCS**	Circuit sizes on plots – ratings table required
Operational restrictions	**NCS** / PLACAR	**NCS** /PLACAR	Copy of OR record from PLACAR
System abnormalities and defects	**NCS**	**NCS**	Copy of Abnormalities and Defects from DCC file
System loadings	Pi Processbook or manual load readings	Pi Processbook or manual load readings	Local readings or remote access to **NCS** via telephone
Schematic/Geographic mains records	PCGIS	PCGIS	Couriered from MSU or local depot
Contingency manual	Library file	(Library file if required)	Not required
Procedures/reference diagrams/relay settings	Library files	(Library files for limited information if required)	Not required
Telephony	Status Messaging/PSTN Phones/PMR	Status Messaging/PSTN Phones/Mobile phones/PMR	PSTN substation phones and/or Mobile phones/PMR

Appendix B Control Zone Transfer Record

Appendix 2: CONTROL ZONE TRANSFER RECORD

Zones/Part Zones Transferred:	ENMAC Boundary Markers Applied Yes / No

Transferred from (SC):	Tel:
Contingency Tel:	

Transferred to (SC):	Tel:
Contingency Tel:	

Date/Time:

Limitations:	Voltages: 11 / 33 / 132 kV

Special Arrangements (eg transfer of faults):

Control – EHV/Shift Leader advised:

ESC - Shift Manager advised:

Zones Returned:

Returned from (SC):

Returned to (SC):

Date/Time:

Changes/Network Alterations:

Control – EHV/Shift Leader Advised:

ESC - Shift Manager advised:

Appendix C Site Requirements for SCP 3

The following issues/requirements need to be considered when planning to use any site for SCP 3 (**System** control from contingency diagrams):

1 Communications

- Substation phone / PMR
- Mobile phone (s) and Charger
- Site with secure mobile-phone base station supplies (e.g. town)
- Hands-free facility required for dressing diagram at hand-over

2 Stationary and Other Equipment

- Personal Protective Equipment
- Dressing pins or coloured pencils (Green/Pink/Blue/Yellow/Red)
- Softboard/Fibreboard
- Staple gun/drawing pins
- **Switching** log sheets
- Safety Document Pads
- Control Transfer Certificates
- A4 Paper
- Pens
- Masking Tape/Sellotape
- Highlighter pens
- Erasing Tape
- Mains extension lead
- Scissors

3 Other Considerations

- Water and Toilet
- Wall space
- Easy access/parking
- Table/chairs
- LVAC supplies from auxiliary transformer – preferably not off local System.