PR-NET-OSM-079

OPERATIONAL RESPONSE TO FLOODING EVENTS

OPERATIONAL SAFETY MANUAL - SECTION 12.8

Scottish & Southern Electricity Networks

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1 Introduction

1.1 This document defines the **Approved** procedure for the operational response required before, during and following flooding events at **Operational Sites** and on customer premises where **System Assets** have been affected by such events.

1.2 Compliance with this **Approved** procedure will enable employees to respond correctly and safely in the event of flooding affecting **System Assets** and to do so fully in accordance with current legislation, relevant industry requirements and all regulatory requirements.

1.3 The purpose of this **Approved** procedure is to ensure that there is an effective and safe response process in place where **System Assets** at **Operational Sites** and on customer premises that have been subjected to flooding.

1.4 This **Approved** procedure also ensures that employees responding to a flooding event affecting **System Plant** and **Apparatus** take relevant and appropriate action to ensure the safety of all employees on site and any members of the **Public** who could be at risk from the effects the flood could have on the **System Assets**.

2 Scope

2.1 This document relates to the operational requirements and key procedures necessary in the event of flooding events at **SSEN-D** owned **Operational Sites** and also where **System Assets** at customer premises have been affected by flooding. It also provides procedures to be used when accessing overhead line assets that are in a flooded area.

2.2 It applies to all persons employed by or working on behalf of **SSEN-D** and, in particular, to employees who might have to respond to a flooding event at an **Operational Site** or employees merely entering an **Operational Site** which has been flooded and also to employees responding to flooding of customer premises.

2.3 This **Approved** procedure is provided to help ensure that **SSEN-D** employees are provided with all the necessary information to ensure that flooding events are responded to in the correct and safe manner, so as to comply with **Operational Safety Rules (OSR)** and all relevant legal and regulatory obligations.

2.4 This **Approved** procedure also ensures that employees entering flooded **Operational Sites** (even if they are not there to respond to the event itself) know what to do and what not to do on entry.

2.5 The scope of this document relates to Flooding events that partially or fully submerge **System Assets** at **Operational Sites** such as:

- **System Assets** at ground-mounted substations, including all switchgear, transformers, **Low Voltage** pillars, marshalling pillars and boxes, plus auxiliary equipment such as protection and battery systems, etc
- Flooding of customer cut-outs and service termination positions

NOTE: Electricity meters are the responsibility of the Meter Operator / Supplier.

- Accessing overhead lines located in flooded areas
- Risks associated with flooding events and the response to such events

2.6 This scope does not apply to:

- Flooding events affecting **System Assets** forming part of a third-party owned **System**, unless the assets involved are in joint ownership with **SSEN-D**
- **Low Voltage** link boxes, as these are covered in other **Approved** procedures

- Flood resilience and mitigation requirements, as required under ESQCR 3(1)(b), which are covered within ST NET-ENG-005
- Grid and Primary substations, as it is assumed that any such sites at risk of flooding will have adequate flood resilience and mitigation in place, as covered in TG-NET-SST-033

3 References

The documents detailed in Table 3.1 - Scottish and Southern Electricity Networks Documents, and Table 3.2 - 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-082	Firefighting operations in Substations and OH lines - Operational Safety Manual - Section 12.11
ST-NET-ENG-005	Flood Mitigation Strategy
TG-NET-SST-033	Resilience to Flooding of Grid and Primary Substations
PR-NET-EPR-011	Response to Network System Emergencies
PR-NET-EPR-013	Emergency Response Flood Procedures
BN-NET-EPR-013	Scouting for Network Damage
PR-NET-EPR-017	Duty Manager Information
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 - 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 **Failure**

A **Failure** (catastrophic or not) of any **System Asset** due to ingress of water, which prevents or restricts the normal operational service of the affected asset and might or might not have caused a **System** trip.

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 **Operational Site**

Substation or **Switching** station connected to the **System** operating at all Distribution and Transmission voltages.

4.5 **Public**

General **Public**, customers, emergency service personnel and site visitors.

4.6 **Public Area**

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

4.7 **SOP**

Suspension of Operational Practice.

4.8 **System Asset**

Any **Plant** or **Apparatus**, such as switchgear, transformers, cables, service equipment, bushings, terminations, connectors, overhead lines, surge protection, cut-outs, control and auxiliary equipment, batteries, protection, metering and telecommunications equipment, etc., forming part of the **SSEN-D System**.

5 General Responsibilities

5.1 All duties required in response to flooding events which affect **SSEN-D System Assets** at **Operational Sites** and at customer premises, and accessing overhead line assets, **Shall** be carried out in compliance with this **Approved** procedure, and also with PR-NET-EPR-011, **SSEN-D** Safety, Health and Environmental policy and procedures and the **OSR**.

5.2 **SSEN-D** higher level strategic planning for major flooding events, including government reporting requirements, are covered in PR NET-EPR 011, PR-NET-EPR-013.

5.3 During flood events it is important that **SSEN-D** activities are coordinated with those of the Emergency Services and contact should always be established at regional level to ensure this is done, e.g. at a Silver or Gold Command Centre. National contacts with the Scottish Government, Department of Business, Energy, and Industrial Strategy (BEIS), Ofgem and the Energy Networks Association will be done as part of the business central response, as outlined in PR-NET-EPR-011.

5.4 During the on-site response to a flooding event, employees **Shall** ensure that site specific risks are suitably assessed (including an enhanced assessment of the risk associated with flooding) and that appropriate control measures are put in place before carrying out any actions on the site.

5.5 The procedures and instructions in this **Approved** procedure **Shall** only be carried out by suitably trained and competent persons.

5.6 Employees **Shall** ensure that at all times during the on-site response, **General Safety** arrangements are maintained, and that other areas (including **Public Areas**) and other employees and the **Public** are not adversely affected by the activities for which they are responsible.

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

6 Authorisation

6.1 All employees involved in the operational response to flooding events affecting **System Assets Shall** hold the requisite competence and authorisations for any and all procedures they undertake in relation to the response.

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

7 Personal Protective Equipment

7.1 When carrying out any activities on-site in relation to any operational response to flooding affecting **System Assets**, **Approved** PPE **Shall** be worn at all times, appropriate to the location and circumstances of the flooding event. This may include non-standard PPE such as waders or buoyancy aids.

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

8 Typical Effects Caused by Flooding Events

8.1 Flooding events might be caused by either natural events such as extreme weather, rivers bursting their banks etc., or they may be caused by large scale leaks or bursts on water pipes or mains.

8.2 Flooding events which affect **System Assets** at **Operational Sites** can result in a number of different issues, depending upon the nature and location of the **System Assets** affected and the severity of the flooding event.

8.3 Common issues include, but are not limited to:

- Ingress of water causing a breakdown of electrical insulation, resulting in electrical arcing and/or disruptive **Failure**
- Risk of a surge of water into any submerged or semi-submerged compartment containing **Live System Assets** when the compartment door is opened, causing a flashover
- Electric shock due to wet insulation
- Gradual ingress of moisture leading to a **Failure** of **System Assets** at some later time
- Accessing overhead line **Plant** and **Apparatus** where the surrounding area has been or is flooded

8.4 Typical signs to look and listen for before opening any compartment containing **System Assets** which is or has been flooded are: external signs of distress; noise or smell of discharge (or partial discharge test); steam rising or escaping; surfaces hot or warm to touch, etc.

8.5 If there is any doubt about the condition of a **System Asset** during or after a flood, it **Shall** not be opened or operated until it has been **Isolated** from all points of supply and suitably inspected / tested.

8.6 Flooding events might also affect **System Assets** (such as cut-outs and service terminations) on customer premises, presenting similar risks to those mentioned in 8.3 above but presenting a risk to the customer.

9 General Requirements

9.1 In the event of a flood affecting **System Assets, SSEN-D Shall** attempt to maintain supplies, where reasonably practicable, but if it is considered that the safety of employees or the **Public** is at risk, supplies **Shall** be **Isolated**. This might affect large areas, including street lighting and traffic signals.

9.2 For a flooding event on an **Operational Site** 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 flooding event and **Shall** liaise with them as necessary during the flood response process.

9.3 Only employees who are supervising or carrying out work associated with a flood event **Shall** enter the flooded site and they **Shall** always be accompanied when entering and working in a flood affected area. At least one member of the team **Shall** have immediate access to a functional mobile phone while the work is in progress, in case of emergency.

9.4 Employees should be aware of the signs of hypothermia and be able to recognise symptoms, which include slurred speech, lack of co-ordination and the skin being cold to the touch. In order to reduce the risk, employees should avoid getting wet, but if this does occur, personnel moved to a warm dry area as soon as practicable, e.g., van or car interior.

9.5 All employees responding to flooding events **Shall** be fully conversant with of the requirements of PR-NET-EPR-013 and BN- NET-EPR-013.

9.6 Any on-site activities required in response to a flooding event **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 employees and, if appropriate, the **Public**. The risk assessment **Shall** be recorded, and all employees involved with the on-site activities **Shall** agree and sign on to the risk assessment. The flooded area **Shall** not be entered until the risk assessment has been completed.

9.7 The risk assessment **Shall** consider site-specific conditions, with an enhanced assessment of the additional risks posed by the flood event itself. The risk assessment **Shall** be updated as required if conditions change during the on-site activities.

9.8 Where the flooding event causes a **Failure** of a **System Asset** which results in a fire, then firefighting **Shall** be immediately put into action and the procedures detailed in **Approved** procedure PR-NET-OSM-082 Firefighting operations in Substations and OH lines - Operational Safety Manual - Section 12.11 **Shall** be followed.

9.9 If the flooded **Operational Site** is in, or close to a **Public Area**, members of the **Public Shall** be kept sufficiently far away from the affected **System Assets** such that they will not be affected by any transfer of potential due to flood water being in contact with **Live Plant** or **Apparatus**, or not be at risk if a flashover due to water ingress were to occur. In busy areas it may be beneficial to seek assistance from the authorities (e.g., Police).

9.10 All reasonably practicable steps, e.g., use of barriers, fences, warning signs, lookout or watch person etc. **Shall** be taken to exclude the **Public** from the flooded **Operational Site**.

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

9.12 The barriers and signs might need to have extra stabilisation weighting to account for any flowing flood water.

9.13 If any of the flood response activities are carried out at height, then **Approved** procedures for working at height **Shall** be followed at all times, in compliance with Section 36 Working at Height of the SHE Handbook.

9.14 Any temporary scaffolding or mobile elevated work platform (MEWP) used to gain access to **System Assets** affected by a flooding event **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 safety.

9.15 **System Assets** subject to **Failure** as a result of flooding **Shall** be made safe to approach in accordance with the requirements of the **OSR** and the Operational Safety Manual. If the state of the **System Asset** is considered to pose a **Danger**, then it **Shall** be made safe for approach/work and an appropriate **Safety Document** issued, as required by Rule 4.1.1 of the **OSR**.

9.16 **SSEN-D** employees at an **Operational Site** which has been subjected to flooding **Shall** focus on ensuring that any deployed emergency services personnel or other members of the **Public** do not place themselves in a position of **Danger** or undertake acts that may cause injury to themselves or others.

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

10 Co-ordination During and Following a Flooding Event

10.1 A central coordination team **Shall** provide details to the local teams of the areas, properties, and **System Assets** subject to, or likely to be subject to flood by using:

- Maps showing all **System Assets** likely to have been affected by floods
- Suitable maps scaled to a level to allow identification of individual properties likely to have been affected

10.2 A visit **Shall** be made to all **Operational Sites** expected to be at risk of flooding. The safe access procedures detailed in Section 9 of this **Approved** procedure **Shall** be followed at all times. **Operational Sites Shall** not be entered if they are considered unsafe and in such instances the **Control Engineer Shall** be consulted.

10.3 A visit **Shall** also be made to all customer premises which have been, or may have been, subject to flooding. Those employees visiting the premises **Shall** identify whether the cut-out and service termination has been subject to flooding by:

- Gaining entry to affected properties, with the permission of customers and if safe to do so
- Identifying the external flood level line on buildings
- Inferring the state of the cut-out and service terminations in properties which cannot be accessed by the condition of a neighbour's cut-out and service terminations
- Using customer and local information

10.4 If it is not possible to confirm a cut-out and service termination has been submerged and access to adjacent properties is inconclusive, then an assumption that submersion has occurred **Shall** be made as a default.

10.5 All information **Shall** be shared with an appointed local area co-ordinator, who **Shall** collate the information as follows:

- Any site visits completed
- Name of person who completed the assessment

- Was the property flooded – Yes/No/Yes (as 10.4)
- Action required or taken
- Customer contact details
- Any information left on site, e.g., letter

11 Response to Flooding of Operational Sites

11.1 When dealing with **Operational Sites** which are, or have been flooded, the **Authorised Person** on site **Shall** follow the guidance points below:

- Only enter the **Operational Site** if safe to do so
- Liaise with the **Control Engineer** to determine the best course of action, based on **SSEN-D** strategic planning, operational requirements, and available on-site information
- Compartment doors of **System Assets Shall** not be opened if there is a risk of water being able to run into the compartment, i.e., if any part of the door is under water
- Check the condition of switchgear – refer to Appendix A
- Check the condition of transformers – refer to Appendix B
- Check the condition of any auxiliary equipment (protection and control panels, battery systems, etc.)
- Following a risk assessment, it may be necessary to apply an operational restriction on flood affected **System Assets** until the necessary maintenance or remedial works are carried out, as detailed in Appendix A and Appendix B
- Do not enter cable basements, tunnels nor any other confined spaces below ground during a flood event or before a flood where one has been forecast
- Arrange for mobile pumping equipment to be brought to site and deployed as necessary

11.2 Deployment of temporary and demountable flood defences may be called upon for use at **Operational Sites** at risk of flooding, in advance of a flood event, as mentioned in ST-NET-ENG-005.

12 Response to Flooded Access to Overhead Line Assets

12.1 It is possible that **SSEN-D** staff or contractors might encounter flooded areas containing overhead line assets during their work.

12.2 Prior to accessing overhead line assets that are in a flooded environment, a risk assessment Shall be completed, additional hazards to consider (not exhaustive) are:

- Equipment **Failure** due to water ingress
- Injuries from submerged objects
- Infection and disease (waterborne)
- Drowning

12.3 Where reasonably practicable, floodwater **Shall** be avoided, where possible alternative routes should be identified.

12.4 Where necessary for **SSEN-D** staff or contractors to walk into floodwater additional PPE requirements **Shall** be identified in the risk assessment, and may include:

- Waders
- Warm clothing to be worn underneath waders
- Dry-suits
- Buoyancy aid
- Shoulder slung tool bag
- Safety line
- Wading stick

12.5 **SSEN-D** staff **Shall** not enter water that is deeper than waist height. Where flood water is above the knee but below the waist, this **Shall** not be entered unaccompanied.

12.6 Consideration **Shall** be given to the use of pumping equipment to lower flood water levels if practical.

12.7 The following general precautions **Shall** be made when accessing flooded areas:

- Before entry, entry and exit routes **Shall** be identified
- Be aware of displaced items below the surface and changes in ground level or water depth. A wading stick should be used to assess terrain
- Stay away from drains, culverts, and gullies as the flow of water may be significantly stronger around them
- Ensure the area is sufficiently illuminated
- Where reasonably practicable, persons entering floodwater **Shall** be accompanied
- Where entry is required into water to a distance further than 10m from a non-flooded area, a safety line **Shall** be used
- Where practicable **Switching Shall** not be carried out **Live**.

12.8 Vehicles (including MEWPS) **Shall** not be used to access overhead lines in flood conditions.

12.9 In certain circumstances, a boat may be required. Should this be the case, the following principles **Shall** apply:

- The boat **Shall** be fit for purpose and properly maintained
- The boat **Shall** be operated by a suitably experienced and competent crew
- Prior to use, a suitably experienced and competent person **Shall** carry out a risk assessment to determine a boat can be used safely for the task required
- Should any **Switching** take place from the boat, it **Shall** be securely moored to the pole, the **Apparatus** to be operated **Shall** be **Dead** and all occupants **Shall** wear appropriate PPE for carrying out **Switching** operations.

13 Response to Flooding of Low Voltage Pillars

When dealing with **Low Voltage** Pillars which are, or have been flooded, the **Authorised Person** on site **Shall** follow the guidance points below:

- Liaise with the Customer Contact Centre (CCC) or **Control Engineer** or to determine the best course of action based on **SSEN-D** strategic planning, operational requirements and available on-site information
- Make the pillar **Dead** from all sources of supply, if necessary

- If safe to do so, ascertain the condition of switchgear/fuse-gear inside – refer to Appendix C
- Following a risk assessment, it may be necessary to apply an operational restriction to any affected **System Assets** until the necessary maintenance or remedial works are carried out, as detailed in Appendix C.

14 Response to Flooding of Customer Premises

When dealing with **Low Voltage** assets within customer premises and street furniture which are, or have been flooded, the following guidance points **Shall** be followed:

- Where the **Low Voltage** cut-out/service termination and or meter position has been subject to flooding, a **Competent Person Shall** attend to inspect the equipment.
- If the **Competent Person** on site believes that the assets are in a dangerous condition, the assets **Shall** not be approached until isolation has been carried out remotely.
- **Low Voltage** cut-outs which have been submerged **Shall** be **Isolated** remotely and inspected (see Appendix D).
- Whilst inspecting **Low Voltage** cut-outs, a visual inspection of the meter position **Shall** also be conducted. If the meter appears to have sustained damage, the consumer **Shall** be instructed to contact their supplier to arrange for the meter to be repaired or replaced and the cut-out fuse **Shall** not be replaced until these remedial actions have been completed.
- Where a **Low Voltage** cut-out is inaccessible, a risk assessment **Shall** be made to determine the likelihood of damage or any risk due to it being energised. This may be based on the conditions found in adjacent properties.
- Where properties are inaccessible, then it is important to gain access to confirm the condition of **System Assets** as soon as possible by informing the local area coordinator, who will coordinate the appropriate action.
- Post flood re-energising of **Low Voltage** mains cables **Shall** not take place until all necessary checks on connected service cables have been completed.
- Any **Low Voltage** main which was kept **Live** during flooding, may remain **Live** until an inspection can be carried out, unless any report of a dangerous situation associated with that **Low Voltage** main has been received.

15 Advice to Customers

Appendix E contains standard advice and information which can be provided to customers relating to their electricity supply, fixed wiring and appliances in the event of a flood. This information is based on advice given in PR-NET-EPR-017.

16 Revision History

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

Appendix A Actions Required for HV Switchgear

Flood Mark Level	Immediate Action	Medium Term Action	Anticipated Problems
Below bottom entry cable gland	• No action required • Switchgear can be operated normally	Normal inspection and maintenance regime	None
Below top of cable box (Bitumen)	• Leave **Live** to maintain supplies • Operate gear **Dead** • Apply **SOP**	• Switch-out • Examine cable boxes for water ingress / discharge • Pressure test if necessary	• Water may have entered over compound • Paper bushings may be damp resulting in breakdown within cable box or switch tank
Below top of cable box (Dry – Air Insulated)	• Leave **Live** to maintain supplies • Operate gear **Dead** • Apply **SOP**	• Switch-out • Examine cable boxes for water ingress / discharge • Pressure test if necessary	• Heatshrink over cable should be waterproof, but discharge may have taken place • Paper bushings may be damp, resulting in breakdown within cable box or switch tank
Oil Switch - Below oil level	• Leave **Live** to maintain supplies • Operate gear **Dead** • Apply **SOP**	• Maintain • Pressure test before lifting **SOP**	• Mechanism may be subject to rusting and mal ops may occur • Cable box issues as above
Oil Switch – Above oil level or may have been above oil level. e.g., water level indication on sub-station or adjacent buildings walls.	• Do not enter substation whilst **Live** • Do not operate **Live** or **Dead** • Leave **Live** to maintain supplies • Apply **SOP**	**URGENT** At first opportunity: • Maintain • Pressure test before lifting **SOP**	• Oil/ water mix inside switch tank • Oil may stratify above water maintaining a degree of insulation • Mechanism may be rusting and mal ops may occur • Cable box issues as above
SF6 Switchgear – Above cable box / totally immersed	• Leave **Live** to maintain supplies • Operate gear **Dead** • Apply **SOP**	• Maintain • Pressure test before lifting **SOP**	• Mechanism may be rusting, and mal ops may occur • Discharges may take place around resin compartments • Cable box issues as above

Appendix B Actions Required for Distribution Transformer

Flood Mark Level	Immediate Action	Medium Term Action	Anticipated Problems
Below bottom entry cable gland	• No action required	N/A	None
Below top of cable box (Bitumen)	• Leave **Live** to maintain supplies • Apply **SOP**	• Switch-out and examine cable boxes for water ingress / discharge • Pressure test if necessary	• Water may have entered over compound • Paper bushings may be damp resulting in breakdown within cable box or transformer
Below top of cable box (Dry – Air Insulated)	• Leave **Live** to maintain supplies • Apply **SOP**	• Switch-out and examine cable boxes for water ingress / discharge • Pressure test if necessary	• Heatshrink over cable should be waterproof but discharge may have taken place • Paper bushings may be damp resulting in breakdown within cable box or transformer
Above breather	• Leave **Live** to maintain supplies. • De-energise remotely if it has to be made **Dead** at any time • Apply **SOP**	**URGENT** At first opportunity: • Maintain, change oil and pressure test insulation before lifting **SOP** • Take oil sample for analysis 1 week after recommissioning to establish if insulation has absorbed water	• Oil/ water mix inside transformer tank • Oil will stratify above water • Transformer may have to be replaced if oil sample shows excessive moisture • Cable box issues as above

Appendix C Actions Required for Low Voltage Distribution Pillar

Flood Mark Level	Immediate Action	Medium Term Action	Anticipated Problems
Below bottom of pillar	No action required	N/A	None
Above bottom of pillar External signs of distress: • Listen for signs of discharge • Look for signs of steam • Is pillar surface hot?	• Leave **Live** to maintain supplies • Do not open • Apply **SOP**	**URGENT** At first opportunity – Make **Dead** and dry out and clean up • IR test bus bars before lifting **SOP** • May need to replace **LV** tails and cables	• Paper cables may have become wet and may be breaking down • Surface tracking on insulation • MDIs may be damaged and/or CTs open circuited. • **LV** 13A socket and heater damaged
Above bottom of pillar No External signs of distress	• Carefully open door if safe to do so and visually inspect • Leave **Live** to maintain supplies • Energise remotely if it has to be made **Dead** at any time • Apply **SOP** if required	• Make **Dead** and dry out and clean up. • IR test busbars before lifting **SOP** • May need to replace **LV** tails and cables	• Paper cables may have become wet and may break down at some future date • Surface tracking on insulation • MDIs may be damaged – CTs open circuited • **LV** 13A socket and heater damaged

Appendix D Actions Required for Low Voltage Service Position

Flood Mark Level	Immediate Action	Medium Term Action	Immediate Action
Below bottom cut-out	• No action required on cut-out or meter • Leave consumer unit main switch Off or On as found	N/A	• None on cut-out • Customer's internal wiring may be damaged
Above bottom cut-out	• Isolate and examine cut-out • Record if consumer unit main switch is Off or On • Turn main switch Off. • Dry out cut-out or replace as necessary • Re-energise cut-out with fuse removed • Carry out polarity/ rotation / loop impedance tests • Visually inspect meter and tails up to consumer unit • Replace cut-out fuse if safe to do so • Leave consumer unit main switch Off or On as initially found	N/A	• Tracking across insulation of cut out • Paper service cable may be damp • Customer's internal wiring may be damaged
Above bottom cut-out and also over meter	• As above but replace and seal cut-out without a fuse • Meter Operator needs to attend to continue restoration work	N/A	• Meter damaged in addition to service cable and cut-out • Customer's internal wiring may be damaged

Appendix E Advice Provided to Customers

Scottish and Southern Energy Networks (SSEN) Advice to Customers Regarding your Electricity Supply During Flood Events

Prior to Potential Flooding

Make sure vulnerable neighbours have enough supplies and warm clothing and a means of contacting friends or relatives in an emergency.

Unplug as many electrical appliances as you can. Where possible, raise appliances so that they are out of reach of water, preferably upstairs.

Make sure that you know where to turn off your electricity supply. The main switch is usually next to the meter as part of the consumer unit; often in the garage, above the front door, in an external wall box, under the stairs or even in the cellar.

Be prepared for power cuts:

- Have at least one torch close at hand (they are safer than candles).
- Have a battery powered radio available if you have one.
- Make sure you have plenty of fresh batteries and that any rechargeable batteries are fully charged.
- Make sure you have warm, dry clothing available.
- Make sure that your mobile phone is fully charged.
- If you have one, connect a wired (non-cordless) landline phone, which does not require a power source, so that you can maintain communications.

Ensure any medical equipment you have which is reliant on an electricity supply has a fully charged battery back-up and that the individual using the equipment is signed up to our Priority Services Register.

If you have them, use power surge protector plugs on sensitive electrical equipment (such as computers) in addition to regularly backing up your work.

On Flooding / Evacuation

DO NOT touch wet electrical equipment.

DO keep well away from any electrical apparatus that is either under water or affected by water.

DO turn off your electricity at the main switch, if it is dry and it is safe to do so. Thoroughly dry your hands before doing this.

DO advise **SSEN** immediately if any overhead line or substation that is affected by flooding is sparking or making unusual noises.

DO contact **SSEN** If your premises are flooded but you are outside the reported flooded areas. We will then attend when access is possible.

During Flooding

SSEN will attempt to maintain supplies wherever possible but if it is considered that public safety is at risk, supplies will be isolated to the affected area. If supplies are interrupted, streetlights and traffic signals in that area will not function.

Supplies may be isolated at the local substation for safety reasons, if the water level rises above the **SSEN** cut out fuse or meters in any properties in your street which are fed from the same section of mains.

In the event of a power cut to your property:

- Check with neighbours, look at streetlights etc., to see if the power cut is affecting a wider area or if it may be an issue with fuses just within your property.
- Check the trip switch is in the 'ON' position (if operated, switch off appliances and attempt to reset the switch to the 'ON' position). If not operated, call the **SSEN** Emergency Helpline to report the issue.
- Keep freezers closed, as they will remain cold for considerably longer if unopened.
- If you do not have a gas supply or have no gas appliances, keep in contact with neighbours who have gas appliances, as they may be able to help with cooking and warm drinks, etc.
- Check on vulnerable neighbours (if possible) to ensure they are warm, medical equipment is working and they have sufficient food and drink supplies.
- Call the **SSEN** Emergency Helpline to report any difficulties vulnerable customers may be having. Arrangements can be made with 3rd party welfare providers to provide help to vulnerable people including warm meals and drinks.

After Flooding

DO NOT switch on the main switch if the flooding has risen over the meter, socket or switch outlets, unless checked by an approved electrician.

DO NOT switch on appliances that have been wet – let them dry and have them checked by an approved electrical contractor.

DO have your internal wiring checked by an approved electrician before switching on. Yellow Pages has phone numbers for NICEIC approved contractors or www.niceic.com.

DO use contractors who are Buildings Regulations registered if they need to replace internal wiring.

What if the Incoming Mains Supply is Off?

If your property has been flooded, **SSEN** need to check the cut-out fuse in all properties in the streets which are off supply due to any flooding, before any supplies are restored.

DO advise your neighbours who have not returned to a property which was flooded that **SSEN** will require access before switching on supplies to the street.

DO advise your electricity supplier if the meter has been affected (see your electricity bill) and they will arrange for a replacement by the meter operator.

DO advise our Emergency Helpline if you are a single property in the reported flooded area still off supply; or have any electrical apparatus showing signs of distress; or you have any flood related concerns; on:

- 105 for UK wide,

For general flood advice, ring the environment agency flood-line on 0845 988 1188.