PR-NET-OSM-058

MANAGEMENT OF WORK AND ACCESS TO POLES ON THE HIGH VOLTAGE SYSTEM

OPERATIONAL SAFETY MANUAL – SECTION 7.1

Scottish & Southern Electricity Networks

	Name	Title
Author	Jason Black	Operational Safety Manager
Checked by	Peter Vujanic	Head of SHE Distribution
Approved by	Richard Gough	Designated Engineer

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1 Introduction

This document includes requirements to help ensure work and access on **High Voltage** overhead pole lines is completed in a controlled and safe manner.

2 Scope

2.1 This document is in addition to the **OSR** and applies to all overhead line pole assets owned and operated by **SSEN-D.**

2.2 The requirements of this document apply to all employees and contract partners working on behalf of **SSEN-D**.

2.3 Requirements within this procedure apply to **Persons** engaged in **High Voltage Live Line Work** unless contradicted by requirements set out within Section 15 of the **OSM**. Section 15 of the **OSM** is put in place to make clear the specific **Approved** requirements for **High Voltage Live Line Work** as required under the **OSR**; equally however Section 15 of the **OSM** must not be used in isolation from the **OSR** and other associated **Approved** procedures. If situations associated with **High Voltage Live Line Work** arise involving a contradiction between the detail of this procedure and the requirements set out in Section 15 of the **OSM**, the requirements of Section 15 of the **OSM Shall** take precedence. **Persons** that encounter such contradictions must stop and ask for help if they are in any doubt regarding the correct procedures and requirements to use.

3 References

This document forms part of the SSEN Distribution Operational Safety Manual, SHE Management System, and business management system. It should be read and used in conjunction with other documents within the manuals and systems; it has however been developed with the user and in scope activity in mind, meaning it should provide the user with the information they need to complete in-scope activities without referencing other documents.

In addition to the above, this document has been put in place to align SSEN Distribution with the associated Legal requirements and good practice electricity sector guidance.

For further help and guidance on how this document relates to other documents and requirements, please contact a member of the SSEN Distribution Operational Safety team.

4 Definitions

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

4.1 **Mobile Work Equipment**

Mobile items of **Plant** used to carry out work on the **SSEN-D System.** They might include cranes, vehicles and Mobile Elevated Working Platforms (MEWPs). They also include any vehicles having buckets on movable arms and vertical rising platforms whether self-powered or not.

4.2 **Operational Safety Manual (OSM)**

The **SSEN-D Operational Safety Manual** (**OSM**) is put in place to house and make available to users the majority of the **Approved** procedures in **SSEN-D** directly associated with the **OSR**. The **OSM** has an activity based user-friendly index within which **Approved** procedures are catalogued and made readily available to employees and contract partners working on behalf of **SSEN-D**.

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 **Shall** 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 is the responsibility of the individual to ensure that any actions performed are within the limitations and requirements of their competency and authorisation level.

6.2 Operational authorisation certificates should be retained in a safe place by individuals and made readily available at all times in case of audit or management request.

7 Personal Protective Equipment

7.1 **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.

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

8 General Requirements

8.1 Prerequisites

8.1.1 All **Persons** who work on **High Voltage** overhead lines **Shall**:

- Attend and pass a Basic First Aid awareness training course or provide a valid certificate as proof of their competence in this area
- Have readily available on site at all times an **Approved** first aid kit
- Wear and make use of **Approved** safety harnesses and appropriate PPE provided for their safety and protection
- Be authorised in writing (i.e. operational authorisation)
- Have received training / refresher training in pole rescue procedures within the last 3 years
- Have received and passed specific training associated with the **SSEN-D** safe system of work for access to wood poles

- Work at height **Shall** in accordance with the **SSEN-D Approved** Procedures

8.1.2 Before work commences under a **Safety Document**, the **Competent Person** in control of the **Working Party Shall** confirm by visual inspection (from ground level) that there is no problematic damage or degradation of the **Apparatus** to be worked on.

8.1.3 Where access to, or work on poles situated in **High Voltage** substations is carried out, the requirements of **OSR** Section 4.5.1.(c) **Shall** be complied with.

8.1.4 Weather conditions **Shall** be continually assessed to ensure that work can continue safely. On the approach of a lightning storm, all work **Shall** cease immediately, and the **Distribution Control Engineer** notified in accordance with **OSR** 5.10.9 (a).

8.2 Dangers

The main **Dangers** to personnel when working on **High Voltage** overhead lines and supports are electric shock, burns or falls arising from:

- A Person confusing **Apparatus** and **Conductors** which have been made **Dead** with those which remain **Live**
- Inadequate precautions taken to control induced voltages from other adjacent **Live Apparatus**
- Touch potentials due to inadequate application of, or damaged **Earthing** and bonds
- Proximity of a lightning storm
- Inadequate clearance from **Live Apparatus**
- Insufficient allowance for insulator and **Conductor** movement caused by wind and gales when assessing **Safety Distances**
- Incorrect use of climbing aids, equipment, PPE, etc.

8.3 Additional Precautions

8.3.1 Work **Shall** be carried out in a way to minimise any out-of-balance conditions and temporary stays must be applied where these conditions arise.

8.3.2 The release of tension and lowering of **Conductors Shall** be carried out in a controlled manner, to avoid any shock loading on the pole.

8.3.3 When overhead line **Conductors** and stays form part of the structure, then they **Shall** where reasonably practicable, be installed before erecting any pole mounted **Plant** or **Apparatus**. If this is not practicable, then the pole **Shall** be guyed as a temporary measure.

9 Identification of Work Location

9.1 Responsibilities

9.1.1 It is a requirement of the **OSR** Sections 5.11.1 and 5.12.1 (b), prior to the issue of a **Permit-to-Work,** that the overhead line circuit to be worked on and the point of work, **Shall** be identified in an **Approved** manner.

9.1.2 When determining which process is most appropriate to the circumstances, the **Senior Authorised Person Shall** take into account the general competence of the recipient of the **Safety Document** together with the recipient's geographical knowledge of the area around the work location(s).

9.1.3 The **Senior Authorised Person Shall** satisfy themselves that the recipient of the **Safety Document** can correctly identify the work location and successfully set the **Working Party** to work under that document.

9.1.4 The recipient / person responsible for the work site, **Shall** confirm that the **Working Party** is in the correct location. If there is any doubt this must be discussed with the **Senior Authorised Person** or **Control Engineer**.

9.2 Procedure

When issuing a **Safety Document**, the preferred methods are detailed below and are arranged in order of descending preference.

Regardless of the order of preference listed below, for dual circuit overhead lines, where one circuit remains **Live,** the **Senior Authorised Person Shall** identify the **Dead** side of the pole at each point of work with green flags and the **Live** side with an **Approved Danger Live** notice:

1. Where a **Safety Document** is to be issued, the **Senior Authorised Person Shall** firstly attend the work location of issue followed by any subsequent work locations, accompanied by the **Safety Document** recipient prior to the commencement of work.
2. Where it is impractical for the **Senior Authorised Person** to visit every point of work, where there are multiple work sites over a large geographic area and/or multiple **Working Parties**, then an arrangement which ensures that the recipient can correctly identify the succeeding work locations and successfully move to them **Shall** be adopted. Where visual contact with the line can be maintained because the recipient can travel along or adjacent to its route, the **Senior Authorised Person Shall** issue corresponding instructions to the **Safety Document** recipient specifying that visual contact must be maintained at all times.
3. Where the requirements of the above cannot be met, then the **Senior Authorised Person Shall** identify the work location(s) on a geographical map of the area, which is of a suitable scale and size, to ensure that the recipient can find the way to the correct location(s).
4. The map provided for the recipient **Shall** have the overhead line route marked on it together with any other details which help to distinguish it from other overhead lines in the vicinity. These may include the circuit identification, pole, tower or support numbers, air-break switch numbers etc.
5. When a geographical map is provided for the above purpose, the **Senior Authorised Person Shall** confirm that the recipient understands how to read the map and interpret any additional information provided about the work location(s).
6. An up-to-date schematic diagram, appropriately colour coded to show **Live**, **Dead**, points of isolation and **Earths** should also be provided. (A legend is required to explain colour coding.)
7. Under exceptional circumstances, in very remote or island situations when a **Senior Authorised Person** cannot get to site, an alternative procedure may be agreed by the **Control Engineer** in accordance with **OSR** Section 4.6.2 (a).
8. Where the pole, tower or support has a method of unique identification marked on it because of the combination of Circuit Designation Colour(s), Safety Step Bolts, Keyed Flag Brackets and number, the **Senior Authorised Person Shall** include this information on the **Safety Document** and instruct the recipient to work in accordance with **OSR** Section 5.10.2.

10 Access to Poles

10.1 General

10.1.1 It **Shall** not be assumed that because of good superficial appearance, recent installation, testing or maintenance that a pole is safe to access or for use as a personal support.

10.1.2 All structures **Shall** be inspected, tested, and assessed by a **Competent Person** before being climbed. This **Shall** include checking for deterioration, decay, and damage due to woodpeckers and lightning strikes etc.

10.1.3 Only persons who have received asset management pole inspection training and are deemed competent to carry out enhanced testing and categorisation of wood pole condition, may fix D labels when poles are identified as not fit to climb. In these cases, those persons **Shall** also update the pole asset record accordingly as soon as possible.

NOTE: Steel poles fitted with **Approved** alternative climbing means **Shall** be climbed in accordance with associated **Approved** procedures.

10.1.4 If the person making the assessment has not received the required asset management pole inspection training, then they must escalate via the 30-minute reporting line at the earliest possible opportunity. The 30-minute report should detail the pole ID, its location and the fact that it has been assessed as not for fit for access. The Asset Management team will then arrange for a timely formal condition assessment of the pole in accordance with TG-NET-OHL-139.

10.1.5 Structures which are covered with ivy or other vegetation cannot be correctly inspected or accessed safely and **Shall** therefore be regarded as defective until the vegetation has been removed and the structure assessed.

10.1.6 Wood poles no older than 5 years may be assumed to be rot-free and therefore require only a visual inspection and hammer test to check for other defects.

10.1.7 If any of the testing or inspection regimes determine that the pole is unfit to be climbed, then an alternative method of access **Shall** be used as detailed in Section 10.9.

10.1.8 Assessment of condition obtained from line inspections **Shall** not be used as proof of condition of the structure prior to climbing.

10.2 Inspection of Poles

10.2.1 All poles **Shall** be assessed before climbing. Assessments **Shall** take into account the following:

- If the pole has been previously labelled as being defective
- Stability of pole foundations. If the foundations appear inadequate or defective or have been disturbed, e.g. any excavations adjacent to the pole base
- Any alterations in ground clearance which would decrease the depth of the foundation
- Abnormal ground conditions such as shrinkage of clay
- Visual check of **Conductor** and stay security, trees or third-party encroachment, **Plant** and **Apparatus** integrity
- The pole is not overloaded, e.g. as a result of broken **Conductors**
- Confirm, using the scarf mark (birthmark), that the pole is buried to the correct depth
- From the ground, visually inspect the pole for physical damage, impacts, lightning damage, crushing, vermin and woodpecker damage, etc

- From the ground visually inspect the top of the pole for damaged components that could fall
- Age of the pole from the date mark.

10.2.2 Damage to poles due to lightning and woodpeckers **Shall** always be treated with caution. It is not usually possible from ground level to establish the total amount of damage done to the pole. Careful assessment **Shall** be made and the use of alternative **Approved** access methods should be used as detailed in Section 10.9

10.2.3 Where 'D' labels are to be applied and the defect is due to rot or woodpecker damage high up the pole, then the 'D' should be fitted preferably out of reach, this will make it clear that the 'D' is not to be removed in error at the next inspection.

10.2.4 A QA (quality assurance) work order will then be raised by the inspections team and the pole to ensure that a decay and/or damage assessment of 4 is entered. This will ensure that an asset replacement defect work order is raised in Maximo.

10.2.5 Where no damage is found the pole **Shall** be checked for decay.

10.3 Checks for Decay

10.3.1 If the age of the pole has been positively established from the date mark as being no older than 5 years, then a hammer test only may be carried out.

10.3.2 Where the date cannot be positively established, e.g. the date mark is hidden or unreadable or the pole does not have a date mark, then full testing for decay **Shall** be carried out.

10.3.3 Poles **Shall** be checked visually and by using the hammer and prod method as specified in Section 10.4. Where a pole fails the prod test, then it **Shall** be deemed unfit to climb, a 'D' label **Shall** be fitted and the pole placed into the asset replacement programme. An alternative method of gaining access **Shall** be used.

10.3.4 Where no decay or damage is found, the pole is fit to be accessed.

10.3.5 Where decay is found the procedures in Section 10.9 **Shall** apply.

10.3.6 Where an 'S' or 'D' label is fitted to the pole and no decay is detected, then decay **Shall** be assumed to have been found by earlier inspections, unless positively proved otherwise, the provisions of Section 10.9 **Shall** apply.

10.3.7 An 'S' label was traditionally used for 'suspect' poles. 'S' labels are no longer used to classify poles. All redundant/inaccurate pole labels, such as 'S', must be removed and replaced with the appropriated label at the time of discovery by the person carrying out the inspection.

10.3.8 Where a 'D' label has been fitted then decay has been detected and the pole **Shall** be thoroughly tested, using the hammer and prod technique, before access.

10.4 Hammer and Prod Test

The following procedure **Shall** be used to determine the condition of a pole before access or whilst undertaking a routine inspection:

1. Undertake a prodding test by pushing a thin screwdriver or bradawl (minimum length 75 mm) into the surface of the pole. An indication that the pole is sound is when the screwdriver or bradawl is resisted by firm fibre.
2. If the pole is not resistive to the pressure of the screwdriver or bradawl and spongy or weak fibre is detected to a depth of 50 mm at one point of test, or 25 mm at multiple points of test around the circumference of the pole, then the pole is unfit to climb.

3. Undertake a hammer test by using a 2lb hammer to strike the pole, at regular intervals at least 300 mm apart, in a spiral motion from ground level to arms reach. Where a pole has had a pole repair sleeve fitted then testing **Shall** be carried out from the top of the sleeve to at least 1 m above it, providing this does not infringe any **Working and Access Clearance**.

Note: Where a pole is frozen a hammer test may not give the correct indication of pole condition, therefore frozen poles must be accessed by a method other than climbing i.e., a MEWP, or "A" Frame ladder.

4. During this test a resonant ringing sound **Shall** be listened for to indicate a sound section of pole and the hammer should rebound sharply. Decay pockets will be indicated by sounds which are hollow, boxy or dull, or a less pronounced hammer rebound. It should be noted that cable guards or other equipment fitted to a pole may affect the sound produced.

5. If decay is suspected at ground level, but, not to the extent that the pole is unfit to climb, then the pole must be excavated and the tests continued to a depth of 300 mm.

6. Where decay is detected, but not to the extent that the pole is unfit to be accessed, then further tests **Shall** be carried out as the pole is accessed up to the safe climbing limit (where **Conductors** are **Live**). Where it is not possible to access to the pole top due to safety restrictions, the pole **Shall** be visually examined to ensure that there is no decay or damage in the vicinity of the pole top.

7. If the pole is declared unfit at any stage, the pole **Shall** be descended and an alternative **Approved** method of gaining access used.

10.5 Concrete Pole Inspection

10.5.1 Concrete structures are reinforced with steel rods and ties. When these are surrounded in sound concrete, they do not rust or otherwise deteriorate. However, once a crack has developed in the concrete, which allows moisture to pass onto the reinforcing rods and ties, then rusting takes place. The steel rods or ties expand due to rusting and cause the concrete around them to crack and break out, indicating defects.

10.5.2 The following checks **Shall** be used to determine the condition of a concrete pole before climbing or whilst undertaking a routine inspection:

1. Check visually from ground level for cracks in the concrete. Minor cracks are due to shrinkage and do not affect the structure. Look for rust staining at the lower end of the cracks which indicates that the reinforcing steelwork has started to rust. If found do not use ladders to climb the pole.

2. Check visually at ground level for signs of disturbance of the foundations. If found do not use ladders to access the pole.

3. Check visually from ground level for signs of loose or broken out concrete, or exposed reinforcing rods. If found do not use ladders to access the pole.

4. Check unstayed angles for signs of bowing. If only slight, erect the ladder in a position such that the bend will be reduced. If severe do not use ladders to access the pole.

5. Check visually for alterations in ground clearance which would decrease the depth of the foundation.

6. Check visually for **Conductor** and stay security, third party damage, **Plant** and **Apparatus** integrity.

7. Check that the risk assessment addresses the additional loads imposed on poles found defective to access. If necessary, these poles will need to be replaced before work starts.

10.6 Metal Pole Inspection

10.6.1 Metal poles can consist of either a lattice type structure or rolled steel column. These structures can either have a foundation enclosed in concrete in the ground or be direct buried in the ground without additional foundations.

10.6.2 The following checks **Shall** be used to determine the condition of a metal pole before accessing or whilst undertaking a routine inspection:

1. Check visually at ground level for signs of rusting resulting in reduction in area of the metal at the ground line. If necessary, dig down for 150 mm and inspect. If deterioration is found do not use ladders to access the pole.
2. Check visually at ground level for signs of disturbance of the foundations. If found do not use ladders to access the pole.
3. Check visually from ground level for signs of rusting resulting in reduction in area of the metal pole and the **Conductor** fittings. If found do not use ladders to access the pole.
4. Check unstayed angles for signs of bowing. If only slight erect the ladder in position such that the bend will be reduced. If severe do not use ladders to access the pole.
5. Check visually for alterations in ground clearance which would decrease the depth of the foundation.
6. Check visually for **Conductor** and stay security, third party damage, plant and equipment integrity.
7. Check that the risk assessment addresses the additional loads to be imposed on poles found defective to access. If necessary, these poles will need to be replaced.

10.7 Composite Pole Inspection

The following checks **Shall** be used to determine the condition of a composite pole before climbing or whilst undertaking a routine inspection:

1. Check visually from ground level for cracks, delamination or damage to the structure. If found do not use ladders to access the pole.
2. Check visually at ground level for signs of disturbance of the foundations. If found do not use ladders to access the pole.
3. Check visually from ground level for signs of loose or broken bolts. If found do not use ladders to access the pole.
4. Check unstayed angles for signs of bowing. If only slight, erect the ladder in a position such that the bend will be reduced. If severe do not use ladders to access the pole.
5. Check visually for alterations in ground clearance which would decrease the depth of the foundation.
6. Check visually for **Conductor** and stay security, third party damage, **Plant** and **Apparatus** integrity.
7. Where a fixed ladder is fitted, prior to accessing, it **Shall** be visually inspected to assess its integrity and to ensure **Earth** bonds are continuous. If any defect or damage is identified, it **Shall** not be used.

8. Check that the risk assessment addresses the additional loads imposed on poles found defective to access. If necessary, these poles will need to be replaced before work starts.

10.8 'D' Labels fitted to Concrete or Metal Poles

'D' labels fitted to concrete and metal structures **Shall** be secured using cable ties, binding wire or equivalent.

10.9 Access to Defective Poles

Where access to a defective pole is required, then one of the following methods **Shall** be used.

- A vehicle mounted hydraulic platform of an **Approved** type used by competent staff
- A replacement pole **Shall** be erected next to the defective pole and the defective pole lashed to the newly erected pole for stability. All work carried out by the climber **Shall** be from the sound pole or from a platform mounted on the sound pole
- A self-supported scaffold tower installed by competent staff or competent scaffold contractors
- In situations where none of the above can be applied then poles **Shall** have their residual strength assessed using an **Approved** pole testing device. Should this assessment be acceptable and provided the pole is not subject to any other form of defect it may be climbed, providing a written risk assessment has been carried out detailing why other methods cannot be utilised. The risk assessment **Shall** be discussed with the person issuing the work prior to commencement of work
- Where access to a defective pole is required and cannot be risk managed using one of the above methods, then a written risk assessment **Shall** be made taking into account the work to be done and the safe methods of working, such as the use of temporary anchors, guy ropes or additional support. This additional risk assessment and method **Shall** only be used in consultation with a member of the Occupational Safety Team.

11 Work on Poles

11.1 General

11.1.1 Prior to accessing poles, the following points should be maintained:

- All insulators, fittings and steelworks supporting Live or unearthed **High Voltage Apparatus** or **Conductors Shall** be visually inspected for signs of damage or distress
- On double-circuit overhead lines the **Earth** bonding between the cross-arms **Shall** be visually inspected for signs of damage or distress
- A distance of 300mm **Shall** be maintained from all steelwork and associated bonding **Conductors** outside of the **Safety Distance** which is not connected to **Earth**

11.1.2 Where work is to be carried out on an earthed pole supporting **Live Conductors** at a height greater than 3.7m above ground level, prior to climbing the **Earthing Shall** be visually inspected and where any damage or degradation is suspected its integrity should be checked.

11.1.3 Where work is to be carried out on an unearthed pole supporting **Live Conductors** at a height above 3.7m above ground level, the **OSR** require that actions are taken to prevent **Danger** from leakage currents.

NOTE: The distance of 3.7m includes any parts of the body, tools, or conducting equipment and it applies even when the work is to be carried out from an elevated work platform, or free-standing access platform, whether or not this is of an insulated design.

11.1.4 Work on **Live** unearthed or earthed **Systems Shall** be suspended where:

- The steelwork test indicates a **Live** pole or steelwork
- Damage or distress is found or suspected

11.1.5 In addition to the requirements of 11.1.2, the following actions **Shall** be taken as appropriate:

- Where the steelwork or pole tests indicate it to be **Live** – immediately notify an **Authorised Person**, who **Shall** check the test results. If the re-test is negative and there is no sign of damage or distress, the **Authorised Person Shall** decide if access above 3.7m may be permitted. If the test is positive, the work **Shall** stop and the **Control Engineer Shall** be advised immediately for remedial action to be taken
- Where the pole or steelwork is not **Live**, but there is evidence of damage, distress or defects – the **Competent Person** in charge of the **Working Party Shall** assess whether climbing above 3.7m can be permitted on that pole/structure with the **Conductors** remaining **Live**. In addition, the **Competent Person Shall** report any defects to the appropriate **Control Engineer**

11.2 Steelwork Testing

Steelwork should be tested using current approved instruments. i.e. Potential Indicators.

11.3 Use of Safety Documents

11.3.1 A **Competent Person** can carry out work on a pole, or structure which is carrying **Live Conductors** or **Apparatus**, provided that the **Safety Distance** is maintained, and there will be no contact with a **Conductor**, insulator, associated fitting or unearthed steelwork. Where appropriate, a **Limitation-of-Access Shall** be issued.

11.3.2 Contact with unearthed **Apparatus**, e.g. maintenance of pole mounted switches disconnected from the **System**, can be made only in accordance with an **Approved** procedure.

11.3.3 The **Senior Authorised Person** or **Authorised Person** with the authority to issue and cancel a **Limitation of Access, Shall** establish the **Working and Access Clearance** in order to ensure that the **Safety Distance** is not infringed. A marker or markers **Shall** be placed on the pole to indicate the safe **Working and Access Clearance**. Specific restrictions placed on the work must be stated on the **Limitation-of-Access**.

12 Access to Conductors, Insulators and Fittings

12.1 Work on overhead **Conductors**, insulators or associated fittings **Shall** be carried out with the circuit(s) **Dead**, **Isolated** and **Earthed** in accordance with the **OSR** and a **Permit-to-Work** issued.

12.2 There are specific examples where it is permissible to carry out **Live** Line working. These activities are strictly controlled and **Shall** only be carried out by appropriately **Authorised Persons** in accordance with **Approved** procedures and PR-NET-OSM-099 Management of

Live Working Activities on the **High Voltage System** - Operational Safety Manual – Section 15.1.

12.3 Where the circuit has the provision for circuit colours/wristlets they **Shall** be used in accordance with **OSR** Section 5.10.2.

12.4 When working on the on the circuit made safe in accordance with **OSR** 4.1.1, on a structure carrying other **Live Conductors**, due to the additional risks involved with the proximity of other **Live Conductors**, the only work which may be carried out under a **Safety Document** is as follows:

- Binder replacement
- Pin or suspension insulator replacement
- Specific work activities detailed in an **Approved** Procedure (see Section 16)
- Other minor work carried out following a risk assessment by a **Senior Authorised Person** and carried out under their **Personal Supervision**

13 Earthing

13.1 General

13.1.1 All portable **Earths Shall** be applied using the procedure specified for the particular type and in accordance with the **OSR**. If the design permits, trailing leads should be kept away from the body until all of the connections are made.

13.1.2 Only portable **Circuit Main Earths** and **Additional Earths** which are designed for use on overhead line **Conductors** and have been maintained in accordance with manufacturers recommendations and/or known industry good practice **Shall** be used.

13.1.3 The sequence for use and application of **Circuit Main Earths** and **Additional Earths** is detailed in **OSR** Section 4.3.

13.2 Circuit Main Earths

13.2.1 Where reasonably practicable, **Circuit Main Earths Shall** be applied or removed by the use of a circuit breaker or an **Approved Earthing** switch rated for the chosen application. Where this is not reasonably practicable or not applicable, the initial **Earth** may be applied adjacent to the point of work in accordance with **OSR** Section 4.3.1.

13.2.2 The **Competent Person** applying the portable **Earth Shall** ensure that if a **High Voltage** steelwork **Earth** is present, that it **Shall** be bonded to the **Earthed Conductors**.

13.3 Additional Earths

13.3.1 **OSR** Section 5.10.3 allows the **Competent Person** receiving a **Permit-to-Work** to apply **Additional Earths**. These provide additional protection against accidental energisation from either the **System**, induced voltages, or by other means, e.g. private generation.

13.3.2 Should the **Senior Authorised Person** identify any special precautions required, they **Shall** specify the requirements for, and locations of, **Additional Earths** on the **Permit-to-Work** or in an associated **Earthing** Schedule.

13.3.3 If inspection only is to be carried out, and the appropriate **Safety Distance** can be maintained to all other **Conductors**, then a single **Earth** applied to the **Conductor** which is to be approached or handled will be adequate. This **Shall** be specified in special conditions on the **Permit-to-Work**.

13.3.4 **Additional Earths Shall** be applied at or as near as practicable to the point of work.

13.3.5 Before applying any **Additional Earth**, the **Competent Person Shall** ensure that at least one of the following conditions has been met:

- The circuit is proved **Dead** by an **Approved** voltage testing device at the location where the **Additional Earth** is to be applied
- A **Circuit Main Earth** or an **Additional Earth** is connected to the same circuit **Conductor** and can be visibly traced to the point at which the **Additional Earth** is to be applied. If visibility is impaired by mist or other problem, then the circuit **Shall** be tested as above

13.3.6 The **Competent Person** applying the **Additional Earths Shall** confirm their removal before clearing the **Permit-to-Work** or ensure that the **Senior Authorised Person** is aware of the position of any **Additional Earths** that have not been removed.

13.3.7 In circumstances where an **Additional Earth** cannot be accounted for, the **Competent Person Shall** report this immediately to the **Senior Authorised Person** who issued the **Safety Document** to determine how to proceed. This may require a visual patrol to confirm the circuit is free from any **Additional Earths**.

13.3.8 Where **Conductors** are to be broken, then an **Earth Shall** be applied each side of the intended break and connected together, where practicable before **Conductors** are broken/cut.

13.4 Loss of Connection with Earth

13.4.1 If for any reason the portable **Earth** becomes disconnected or the connection is faulty, a voltage could appear across the disconnection.

13.4.2 If such a disconnection does occur, no attempt **Shall** be made to recover the connection or to approach within the **Safety Distance** of the disconnected/faulty **Earth** lead.

13.4.3 All work **Shall** cease until the **Earth** has been effectively replaced. Replacement **Shall** be in accordance with the following:

- A second portable **Earth Shall** be connected at the same point in parallel with the disconnected **Earth** (ground end connected first). Only when this has been done can the faulty connection be remade using **Approved Earthing** poles
- For a **Circuit Main Earth** this procedure **Shall** be carried out under the **Personal Supervision** of the **Senior Authorised Person**

13.4.4 This procedure may also be used where a previously applied portable **Earth** is found to be missing. However, under these circumstances the **Senior Authorised Person Shall** satisfy themselves that other portable **Earths** which have been applied are intact and have not been tampered with, before allowing work to recommence.

14 Induced Voltages

14.1 General

14.1.1 Induced voltages can occur on overhead lines which have been made **Dead**, **Isolated** and **Earthed** in accordance with the **OSR**.

14.1.2 The levels of voltages which can occur, vary depending on the following:

- The proximity to other overhead lines
- The distance the overhead lines run close together
- Adjacent / dual circuit construction lines

- The electrical loading of the adjacent circuit
- Atmospheric / weather conditions

14.1.3 The higher voltages occur when a line runs parallel to another and is lowest when the lines cross at right angles.

14.1.4 A lightning strike can also cause **High Voltages** to appear on the line.

14.1.5 The **Senior Authorised Person Shall** decide the appropriate actions to eliminate or minimise the risk of induced voltages, e.g. by the application of **Additional Earths**, or by isolating the other circuit.

14.2 Crossing Points

Where work on **Conductors** is to take place at **High Voltage**, there might be locations where other **Low Voltage**, or **High Voltage** circuits will either cross under or over the circuit being worked on. **Work Shall** be undertaken in accordance with **OSR** Section 5.10.7.

15 Mobile Work Equipment

15.1 The use of **Mobile Work Equipment**, **Shall** be risk assessed to ensure that it is to be used in an **Approved** manner and within its capabilities, for example:

- A vehicle/platform Approved for the task

15.2 A Suitable connection point to attach the equipment to **Earth, Shall** be used. i.e. **Earth** reel or connected to a suitable location on the mobile plant chassis.

- When using mobile work equipment outside the safe **Working and Access Clearance** to **Live** overhead **Conductors,** the mobile work equipment **Shall** be **Earthed**. When multiple items of mobile work equipment are used then these **Shall** be connected to the same **Earth** arrangement to ensure equipotential between all items of equipment
- Correctly used, e.g. with stabilisers/safety harness
- Operated by persons who have received training in its use
- Used under suitable conditions, e.g. weather and ground conditions
- Operated within its Safe Working Load (SWL)
- Not going to be used such that it, or any part of its load, will be operated and moved such that it would infringe **Safety Distances**

15.3 **Approved** Insulated Aerial Devices (IAD) may encroach the **Safety Distance** only in accordance with an **Approved** Hot Glove working procedure.

16 Specific Approved Procedures

16.1 Earthing of Non-Standard Configuration Overhead Lines

The following procedure **Shall** only be used where it is not possible to apply **Earths** to all **Conductors** of an overhead line without encroaching the **Safety Distance** of the lower phase of the line, e.g. wishbone, vertical configuration or double circuit pole lines:

1. The circuit to be worked on **Shall** be **Isolated** from all points of supply.

2. All three phases of the **High Voltage** line **Shall** be tested and proved **Dead** using an **Approved** voltage testing device.
3. The lower phase(s) of the line **Shall** be **Earthed** using an **Approved Earth** applied by an **Earthing** pole without encroaching the **Safety Distance**.
4. If necessary, the **Earthed** phase(s) may then be approached closer than the **Safety Distance** in order to test or apply the **Earth** to the remaining phase **Conductor(s)** using an **Approved Earthing** pole.
5. Removal of the **Earths Shall** be carried out in the reverse sequence detailed above, i.e. highest phase first, descending to below the **Safety Distance** to remove the **Earth** from the lower phase(s).

16.2 Earthing and Removal of Pole Box Jumpers

The following procedure **Shall** be used as an alternative to applying **Earths** at the next pole(s):

1. The circuit to be worked on **Shall** be **Isolated** from all points of supply.
2. An **Earth Shall** be applied at the remote end of the cable.
3. The pole box **Shall** be positively identified (by records, location, position, circuit identification, etc).
4. All the **Conductors** on the pole **Shall** be tested and proved **Dead** using an **Approved** voltage testing device.
5. The pole box jumpers **Shall** be **Earthed** using an **Approved Earth** applied by an **Earthing** pole.
6. With all the **Conductors** on the pole visibly connected to **Earth**, the **Earthed Conductors** may be approached within the **Safety Distance** to apply the line **Earth**, in accordance with **OSR** Section 4.3.3.
7. A **Safety Document Shall** be issued for the removal of the pole box jumpers.

16.3 Work on Pole Transformer without a CME Permanently in Position

16.3.1 The following procedure **Shall** only be used where the means of **High Voltage** isolation is at the same pole as the transformer. In all other cases a **Circuit Main Earth** will remain in position during the work. In addition to, the procedure **Shall** only be used when clearances are such that there is no risk of encroaching the **Safety Distance** surrounding any **Live High Voltage Conductor**:

1. The **Low Voltage** fuses/ links **Shall** be **Isolated,** and a **Caution Notice** fitted.
2. Disconnect the **High Voltage** jumpers using **Approved Live** Line Working procedures or remove **High Voltage** links (ASLs or DOEFs etc) and apply a **Caution Notice**.
3. The transformer **Low Voltage** fuse or link terminals **Shall** be proved **Dead** with an **Approved** voltage testing device, and a shroud and **Caution Notice** fitted.
4. The **High Voltage** transformer terminals **Shall** be tested and proved **Dead** with an **Approved** voltage testing device and then discharged to **Earth** using an **Approved Earth** applied by an **Earthing** pole. Where **Live** Line taps are fitted, these may be used to discharge the **High Voltage** terminals to the **Earthed** steelwork of the pole **Apparatus**.

5. A **Permit-to-Work Shall** be issued for the work on the transformer, and the words '***Apparatus*** *has been discharged to* ***Earth***' **Shall** be included on the **Permit-to-Work**.

16.4 Earthing and Removal of Jumpers to a Spur Line

The following procedure **Shall** be used as an alternative to applying **Earths** at the next pole(s):

1. All **Conductors Shall** be **Isolated** from all points of supply.
2. All the **Conductors** on the pole **Shall** be tested and proved **Dead** using an **Approved** voltage testing device.
3. The lower line **Shall** be **Earthed** at the tee-off pole using an **Approved Earth** applied by an **Earthing** pole.
4. With all the **Conductors** on the pole visibly connected to **Earth**, the **Earthed Conductors** may be approached within the **Safety Distance** to apply the **Earth** to the upper line.
5. A **Permit-to-Work Shall** be issued for the removal of the spur line jumpers.

16.5 Earthing and Replacement of Spur Line Jumpers

The following procedure **Shall** be used as an alternative to applying **Earths** both at the next pole(s) and to the spur line:

1. All **Conductors Shall** be Isolated from all points of supply.
2. The lower line **Conductors Shall** be tested and proved **Dead** with an **Approved** voltage testing device from a position outside the **Safety Distance**.
3. The lower line **Conductors Shall** be **Earthed** using an **Approved Earth** applied by an **Earthing pole**.
4. The upper line **Conductors Shall** be tested and proved **Dead** with an **Approved** voltage testing device.
5. **Earths Shall** be applied to the upper line **Conductors** in accordance with **OSR** Section 4.3.3.
6. It is permissible to approach the **Earthed** lower **Conductors** within the **Safety Distance** if necessary, to carry out steps 4) and 5).
7. A **Permit-to-Work Shall** be issued for the replacement of the spur line jumpers.

16.6 Earthing Multiple Circuits up to and including 132 kV with all Conductors Dead

The following procedure is applicable on double or multi-circuit lines at supports carrying more than one circuit, where all **Conductors** are **Dead**:

1. All circuits **Shall** be positively identified on site. In accordance with **OSR** Sections 5.10 and 5.11.
2. The ascent to a position such that the **Working and Access Clearance Shall** be maintained from the lowest crossarm or lowest **Conductor**, whichever is nearer.
3. The lower line **Conductors Shall** be tested and proved **Dead** with an **Approved** voltage testing device from a position outside the **Safety Distance**.

4. The lower line **Conductors Shall** be **Earthed** using an **Approved Earth** applied by an **Earthing** pole.

5. Maintaining the **Working and Access Clearance** from any unearthed **Conductors** or crossarms, test, and if proved **Dead**, **Earth** these items. This may be achieved by applying a connection between **Conductors** and **Earthed** crossarms.

6. All phase **Conductors** on the supports must be **Earthed.**

16.7 Earthing Multiple Circuits up to and including 132 kV where Conductors Remain Live

16.7.1 The following procedure **Shall** be used on double circuit pole lines at supports which carry more than one circuit where any **Conductor** on the support remains **Live**. There are restrictions on the work allowed under these conditions (see Section 12). Wristlets **Shall**, where available be used.

16.7.2 The **Senior Authorised Person Shall** visit each site to make sure that the proposed arrangements for connecting to **Earth** can be carried out, whilst still maintaining **Safety Distances**:

1. **Live** and **Dead** circuits **Shall** be identified and labelled under the **Personal Supervision** of the **Senior Authorised Person** in accordance with **OSR** Sections 5.10, 5.12, 5.14 and 5.15.

2. The **Senior Authorised Person Shall** visually check the integrity of the earthing arrangements, if any, at ground level.

3. A **Competent Person** may ascend to a position on the **Dead** circuit side such that the **Safety Distance** can be maintained from any **Conductor** or unearthed steelwork or crossarm.

4. Where the steelwork is not **Earthed**, this **Shall** be tested by means of an **Approved** voltage testing device and connected to **Earth**.

5. Check, by visual inspection, that all other steelwork is bonded to the **Earthed** portion.

6. Whilst maintaining the **Safety Distance** from any **Conductor**, test by means of an **Approved** voltage testing device and **Earth** the lowest **Conductor**. This may be achieved by connection directly to the **Earthed** steelwork.

7. Test by means of an **Approved** voltage testing device and **Earth** the **Conductors** of the other two phases. Where this is not practicable, **Earth** the steelwork as in item 4 prior to earthing the **Conductors**.

NOTE: Requirements for flags and notices **Shall** be in accordance with **OSR** Sections 5.12.3, 5.14.2.

8. Removal of **Earths** should start at the top **Conductor**. The final **Earth** to be removed is that on the lowest **Conductor** or steelwork or crossarm and this must be done from a position at least below the **Working and Access Clearance** position.

16.8 Approved Procedure for Unaccompanied Access up to 2 metres

16.8.1 **OSR** Sections 3.4.2 reads as follows:

*"All persons gaining access to and during work on towers, poles and high structures **Shall** make proper use of **Approved** safety equipment and **Shall** be in visual range of another person, in a position to immediately render effective assistance, where necessary. All persons concerned **Shall** be fully conversant with **Approved** rescue procedures. Unaccompanied access is allowed for **Switching** or testing when it is of limited duration and is covered by an **Approved** procedure."*

16.8.2 The following **Approved** procedure **Shall** apply where an unaccompanied operational person intends to access a pole or structure up to a height of two metres (feet position) above ground for **Switching** or testing purposes of limited duration. In addition to the following procedure, unaccompanied working **Shall** be subject to the requirements of PR-PS-842.

16.8.3 The scope of the definition **Switching** when used in this **Approved** procedure, is limited to the operation of fixed fuse units and ancillary control equipment that is associated with remotely controlled equipment. The breaking / making of **Conductor** jumpers as a **Switching** operation is not included.

16.8.4 The following **Approved** procedure **Shall** only be carried out by operatives who have been briefed on the requirements.

1. The field operative on site must complete a site-specific risk assessment (pre-work) before accessing the pole or structure. Suitable control measures **Shall** be employed to ensure that any risks are managed / controlled to an acceptable and safe level.
2. The field operative **Shall** contact the **Control Engineer**. In a **System** emergency this activity may be transferred; in such cases an advisory communication will be issued.
3. The **Control Engineer Shall** record the information provided by the field operative, the field operative's contact number and the time when the field operative is to be called back. The field operative must keep their mobile phone with them whilst operating under this **Approved** procedure.
4. The field operative **Shall** complete the **Switching** or testing without unnecessary delay. The field operative must contact the **Control Engineer** immediately if delays do occur and agree a new completion time.
5. On completion of the **Switching** or testing the field operative must, without delay, contact the **Control Engineer** and report the completion of the operations on site.
6. If no contact is received from the field operative by the agreed time, the **Control Engineer** will contact the field person for an update.
7. If contact cannot be made at the first attempt, the **Control Engineer** will immediately dispatch additional resources to the location in order to investigate why the field operative has not called back. The **Control Engineer** must continue to try and contact the field operative throughout until contact is made. The Control Centre Manager **Shall** be informed if the field operative does not answer.

16.8.5 A pre-work risk assessment **Shall** be carried out prior to unaccompanied access up to 2 m. Figure 3.1 illustrates the process to be followed.

16.8.6 The process does not include standard working requirements, e.g., assessment of equipment before use and testing poles before climbing. The process assumes that such requirements are done in addition to these requirements. Where defined in the process, the term 'Additional Controls' means that there is a need for the operative to deploy additional controls to operate safely, e.g., an extra person required to help remove an anti-climbing guard.

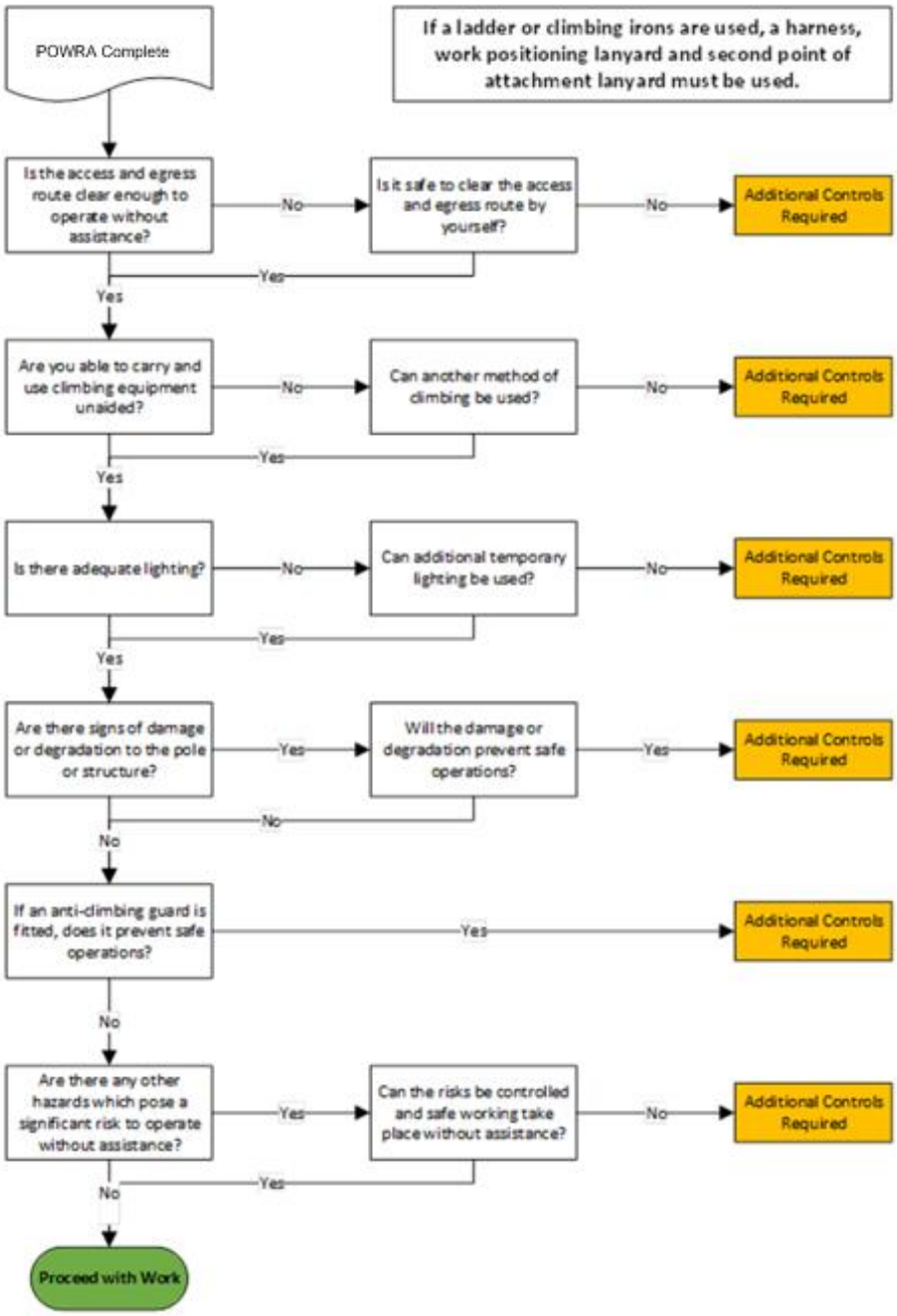

Figure 16.1 - Risk Assessment for Unaccompanied Work up to 2 m

17 Revision History

No	Overview of Amendments	Previous Document	Revision	Authorisation
01	New document created	NA	1.00	Richard Gough
02	Minor revisions made	PR-NET-OSM-059 (Rev. 1.00)	1.01	Richard Gough
03	Minor revisions made	PR-NET-OSM-058 (Rev. 1.01)	1.02	Richard Gough
04	Minor revisions made, and Scope changed to ensure clarity between this procedure and section 15 of the operational safety manual.	PR-NET-OSM-058 (Rev. 1.02)	2.00	Richard Gough
05				

Appendix A Accessing Wood Poles

1 Equipment Required

The following **Approved** equipment **Shall** be used, where relevant to the chosen fall arrest method, when climbing or working on wood poles:

- Full Body Harness including work positioning belt
- **Approved** Pole Choker to Class A1 or B1
- Fall arrest Lanyard
- **Approved** Access Ropes and steady weight with Rope Grab (and shock absorber where required) attached to the Dorsal or sternum D on the harness
- Swifty Rope Installer
- Telescopic Rods / Operating Rods

2 Risk Assessment

2.1 Before starting work in any situation, staff must carry out a Point of Work Risk Assessment. This should identify any hazards and the control measures necessary to ensure a safe working environment.

2.2 The structural integrity of the pole being worked upon and its adjacent poles should always be assessed as their condition has a direct impact on the access method selected and the methods used to undertake the work, particularly in relation to out of balance forces. Only approved methods to assess whether poles are fit to climb shall be used by competent persons.

2.3 The electrical status of the network, voltage, electrical clearance distances, **Safety Document** requirement and electrical competencies are key considerations in the risk assessment and method selection process.

2.4 All climbers must have been assessed or trained in the application of these procedures and best practice.

2.5 As part of the Risk Assessment process the best method of access will be considered. There are five **Approved** means of access in the hierarchy as shown below.

1. **Mobile Work Equipment** (with **Approved** fall restraint harness or fall arrest harness if using an IAD with external attachment points).
2. **Approved** and certified Scaffolding.
3. Ladders, with harness and fall arrest.
4. Climbing Irons, Harness and rope grab device.
5. Climbing Irons, Harness and pole choker.

3 Rescue

3.1 All persons working at height above 2m **Shall** be accompanied by a Person trained in rescue procedures and have a rescue kit available at all times when work is in progress.

3.2 When work at height beyond normal reach is in progress, a person trained in rescue procedures should be available to assist in case an emergency occurs.

4 Inspection

4.1 Before and after every climb, all safety equipment used while working at heights **Shall** be thoroughly examined by the user for any signs of excessive wear, damage or malfunction. Any item found to be defective, suspect or subject to a fall **Shall** be withdrawn from service and quarantined immediately.

4.2 All climbing safety equipment **Shall** be independently inspected in accordance with **SSEN-D** procedures.

4.3 When carrying out user inspections, particular attention should be directed to the following:

- Condition of spikes (check with gaff gauge), all bolts tight and belts and buckles in good condition
- Check webbing and stitching looking for broken, cut or worn threads. Examine the webbing for signs of deterioration, damage or cuts
- Look for signs of stretching or chemical damage
- On pole chokers fitted with a rubber grip strip ensure debris is removed from between the teeth using a hard-bristled brush
- Snap hooks, rope grabs, choker attachments, karabiners etc. should be examined for damage, distortion or faulty springs and free from mud or grit
- Buckles should be tight but easily adjusted
- Ropes should be examined for signs of wear, unravelling strands or extrusion
- All equipment when not in use must be stored in a cool dry place, adequately ventilated and not subject to direct sunlight. Precautions **Shall** be taken to prevent safety equipment coming in to contact with sharp objects, corrosives and other possible causes of damage
- Do not store harnesses long term by hanging from the snap hook with the gate open as this can cause wear “flats” on the locking mechanism causing the gate to stick
- Ensure no attachments have been added to the harness near the D ring attachment point that could mistakenly be used to attached the belt, e.g. metal loops

4.4 Generally, the serviceable life of equipment used for working at height is 5 Years nominal usage life, subject to regular inspection as per **SSEN-D** Procedures, up to a maximum permitted life span of 10 years.

4.5 Prior to using a harness, the following **Shall** be followed:

1. Check the date of manufacture of your harness and confirm it is within maximum permitted lifespan for the type of harness.
2. If it is outside this maximum lifespan, it should be quarantined and returned to your Supervisor for disposal and a replacement issued.
3. If the harness is outside its nominal lifespan, confirm that a risk assessment has been completed for its continued use (up to the maximum permitted lifespan).
4. If the harness is within its nominal lifespan it can continue to be used, subject to routine periodic inspection.
5. If the harness is damaged, it should not be used and returned to your Supervisor for disposal.

5 Mobile Elevated Work Platform

Where reasonably practicable, the use of a mobile elevated work platform **Shall** be the first option considered. Special considerations will be required when working on or near a Live network.

6 Use of Ladders

6.1 Ladders **Shall** only be used as a means of access to the work point, and for short duration tasks from the ladder. They are not suitable for use as long duration work platform.

6.2 They **Shall** be visually inspected before and after use, in addition to their regular quarterly examination.

6.3 Ladders **Shall** be set on a firm and level base with non-slip feet. They **Shall** be footed or secured against slipping by tying at the top and should be set at a 4:1 ratio, i.e., one metre out at the base for every four metres of height.

6.4 All persons working from ladders **Shall** wear a full body harness with a Pole Choker with inner choke attached.

7 Climbing Using Rope Grab

7.1 The rope grab **Shall** only be used on **High Voltage** lines after the line has been proved **Dead**, **Circuit Main Earths** applied and the structure subject to safety documentation.

7.2 The only option for attaching the rope access system to a **Low Voltage** pole is by the first person up method using the pole choke device and then attaching the access rope to a choked strop on the pole for subsequent access by other line staff using the rope grab.

1. Remove the head from the standard insulated rod and fit the Swifty rope installer.

Figure A.1

2. Position the rope bag at the base of the pole and fix the rope to the Swifty rope installer (orange section) using a Maillon.

Figure A.2

3. Raise the Swifty rope installer and position under the crossarm. Push the rope installer up to the crossarm ensuring the yoke passes either side of the crossarm.
4. Once the rope installer crossbar has snapped shut pull the rope installer downward ensuring the rope runs freely over the crossarm.
5. Lower the rope, untie from the Swifty rope installer, and choke the rope on its self-using the Maillon (tighten with spanner).
6. Choke the rope on the crossarm and feed any spare rope back in to the rope bag.
7. Attach the weight to the bottom of the climbing rope ensuring that it is clear of the ground.
8. Attach the rope grab to an energy absorber (if required) and then to the front or rear harness D ring. Open the rope grab and attach it to the climbing rope. Ensure the rope grab is positioned the right way up by testing. Only one person at a time should climb on the same rope.

Figure A.3

9. Climb the pole, ensuring the rope is between or clear of your legs, until the required work position is reached then attach a second point of attachment. (The pole choker with inner attached or fall arrest lanyard as appropriate are the only **Approved** second points of attachment. No other types of equipment can be used.

10. If you are detaching from the rope grab for someone else to ascend, a second point of attachment must be applied first.

11. When descending, the pole ensure that the rope grab is at waist height to prevent it locking off during descent.

12. To uninstall the climbing rope, remove the Swifty rope installer from the fuse rod and fit the hook type fuse rod head. Unhook the climbing rope by inserting the hook on the head into the eye at the end of the rope and then pull.

8 Climbing Using Pole Choker

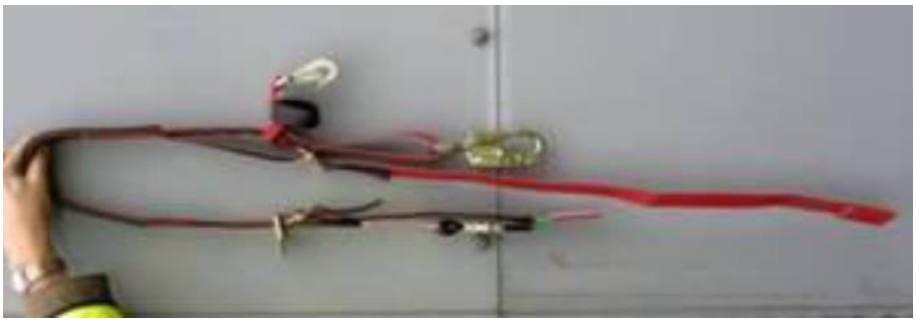

Figure A.4

1. Select and adjust the appropriate size of pole choker ensuring that the range of movement on the inner is sufficient to be able to tightly choke the pole for the range of pole diameter found on the pole you are climbing. Decide if an additional Gaff is required.

2. Attach one end of the pole choker belt to the D ring on the side of the harness.

3. If the inner choke strap is clipped to the inner D ring unhook this and pass the outer belt around the pole.

4. Clip the outer belt to the other D ring on the other side of the harness visually checking the snap hook gate has shut and is hooked correctly.

5. Attach the inner choker strap to the inner D ring. Note: Applying your weight to the belt with the inner choker hanging free may cause the belt to suddenly lengthen, so, before applying your weight to the belt ensure that the inner choker is either attached (left) or parked (right).

Figure A.5

6. Adjust the pole choker to achieve a comfortable climbing position.
7. If using a pole choker with gaffs, push the gaffs to the pole ensuring they are clear of any cables.
8. Take a fold of the inner choke strap and pull outwards and hold it against the outer webbing.
9. Ensure that the gaff if fitted is touching the pole and held there with the webbing fold. With the rubber backed pole choker a detachable gaff is provided; this must be used on icy or otherwise slippery poles.
10. At the other side slide the sliding buckle up to the pole and hold there so that with the inner choke when taught it is in contact with the pole.

Figure A.6

11. Climb the pole by leaning in and raise the pole choker while climbing until the required work position is reached. Ensure the pole choker is not below waist height while ascending or descending Release the inner fold and adjust the pole choker to a comfortable working position ensuring the inner choke is tight against the pole. The choke strap should not be in a position below waist level.
12. Attach your fall arrest lanyard either directly to suitable steelwork or using a pole strop.

Figure A.7

13. At the work position, only the following options are permitted:
    - Pole Choker with inner attached and fall arrest lanyard attached
    - Pole Choker is attached no more than 500mm above a substantial item of plant with pole choker inner strap parked and fall arrest lanyard attached

NOTE: A "Substantial Item of **Plant**" is tie straps, tapping cross arms, transformers etc. It is not **LV** Fuses, anti-climbing devices etc.

14. To descend, ensure inner strap is re-fitted, remove fall arrest lanyard, pull a fold from the inner choker strap, and descend by lowering the outer choker strap with both hands while climbing.

9 Getting over Obstructions

1. Using a pole choker climb up to the obstruction (Tapping crossarm, Transformer platform etc.).
2. Attach fall arrest lanyard above obstruction using a strop if necessary.
3. Release the inner choker strap and park it, then release one end of the pole choker strap and climb above the obstruction or until waist height at minimum.
4. Re attach the pole choker as described before, remembering to avoid loading the belt unless the inner is attached or parked.
5. Picture below showing temporary fall arrest lanyard in position prior to detaching pole choker to pass an obstacle (the label marks the position the obstacle would be in).

Figure A.8

6. Remove the fall arrest lanyard and continue climbing.
7. When descending be sure to place the lanyard above the obstacle