openreach
Connecting you to your network

"The overhead power glove box guide"

"Your guide to staying safe when working in the vicinity of overhead power"

Issue 3.8 Revised June 2023
Update Author: Rich Abercrombie
Openreach Central Safety Team

Text PowerGBG to 81192

openreach
Connecting you to your network

Contents

openreach
Connecting you to your network

A general guide to keeping safe when working with or near OH power

This guide is for engineers who encounter overhead power. This **doesn't** replace formal training. **First rule when working with overhead power: Fully understand what voltage you are dealing with. DON'T GUESS!** If you aren't sure what voltage you are dealing with **DO NOT START WORK.** Contact someone, either your FMA/Coach/Manager, safety services (0800 077 8588) or refer to the listed ISIS documents.

Joint User Poles (JUPs) refers to both Openreach **and** Distribution Network Operators (DNO) owned poles. The voltage on these pole should be **LOW voltage only**. **DO NOT** attempt to access any cables or Openreach line plant that's on a pole which carries **HIGH voltage** until you've permission to do so from the DNO and have contacted your manager.

Note: The Energy Network Association (ENA) sets out the rules and policies for Telecommunication Providers and DNOs joint use of poles. As such these rules and policies are adopted and implemented by Openreach. There are no JUPs in Northern Ireland. For those in Openreach Northern Ireland, this section is for information only.

If you find any situation you consider unsafe or breaches current guidance concerning Openreach line plant and its proximity to overhead power you **must** raise an **A1024** either online or via the mobile app

Under the category **398 Safety: BT line plant in conflict or contact with EL choose the** relevant defect code:

536 – Contact with power LV	For either Poles or Wires	**537 – Proximity to power LV**
538 – Contact with power HV	For Wires ONLY	**539 – Proximity to power HV**
540 – Dropwires, cables or blocks directly on HV poles		**541 – Poles in proximity to HV**

The **REMEDY CODE** for all of these should be **309** – **Survey required.**

As part of a project (April 19) to remove all telecoms line plant from HV joint user poles you may see or be asked to attach a label like this direct onto a pole with HV. The label should be fixed around waist/shoulder height and is designed to alert Openreach engineers to the HV risk and remind them that no work is allowed. **If you are working on a service affecting task –** further it using QBF code **HAZ** and include the words **High voltage** in your notes

092615 - pack of 10

Back to home

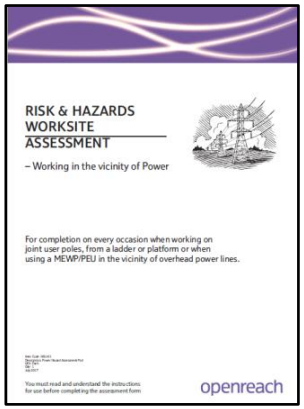
openreach
Connecting you to your network

A general guide to keeping safe when working with or near OH power

Remember 1:

You must complete the **RISK ASSESSMENT form** every time when working on Joint User Poles and **LV**, **EITHER** from a ladder, from a MEWP or if conducting surveying from ground level in proximity to **LV**.

AND when using a MEWP/ PEU within 25m of **HV**



Remember 2:

A Ladder 7A (blue ladder) **MUST** be used on **ALL** Joint User Poles and occasions where there is a risk of contact with overhead power.

When working from a blue ladder you should always use your harness **AND** Lanyard These ladders have a rating of 1kv and will NOT offer protection against higher voltages

Remember 3:

Gloves IR Wherever there is a risk, however slight, of any contact between Openreach plant and power conductors, you **MUST** wear gloves IR. They **must** also be worn if you are using measuring rods, ropes or sash lines which may come into contact with power lines.

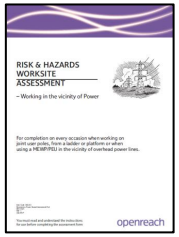
Did you know? They should be on your esiTest holdings **AND** checked visually for any signs of cracking and for any holes/splits by inflating them before use.

Blue ladder myth buster: It's a myth these can't be carried on top of vehicle as they might degrade in sunlight. **But** prolonged road vibration **will cause damage** and reduce the lifespan of the ladder. Minimise this risk by checking they're tightly secured and **always** check them thoroughly before you use them.

Back to home

openreach
Connecting you to your network

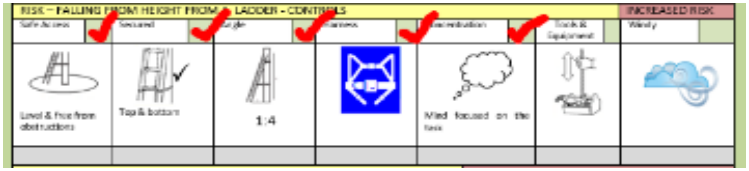
How/when do I fill in the Risk and Hazards worksite assessment form?



i/c 061461

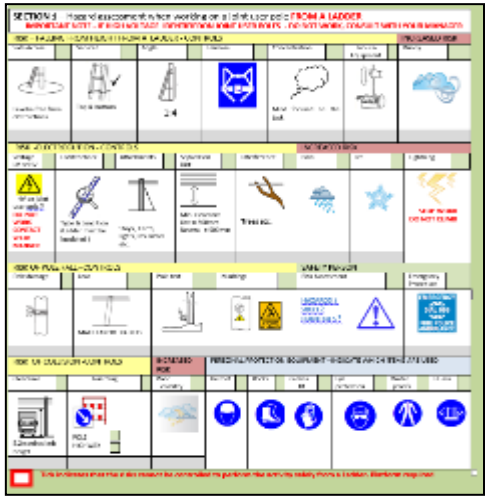
You need to fill in one of these **BEFORE** you start work **when working on a JUP or within 25m of HV .** Work through the form, ticking any control measures you've checked for or put in place. If you need to add other information, put your notes in the lower box.

This form helps you think about what hazards exist on your site and records what you've considered and put in place to keep yourself and others safe.

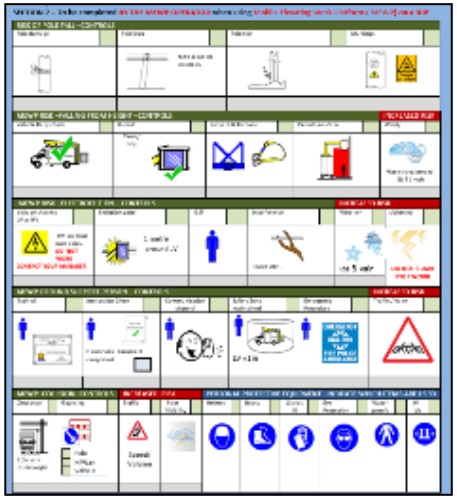


SECTION 1 - To be completed before work commences on a joint user pole with LV from an insulated ladder
SECTION 2 - To be completed **BY THE MEWP OPERATOR** before work commences on a joint user pole with LV from a MEWP
SECTION 3 - To be completed **BY THE MEWP/PEU OPERATOR** before work commences for ALL MEWP /PEU work within 25m of HV
Completed forms must be retained for a minimum of 6 months and be available for inspection

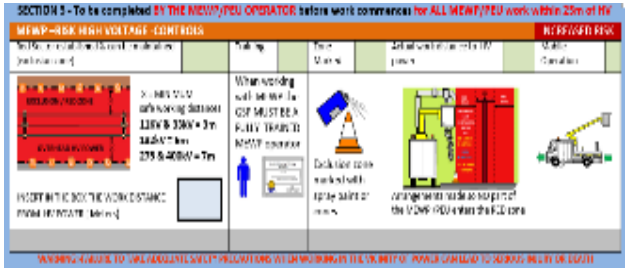
Section 1



Section 2



Section 3



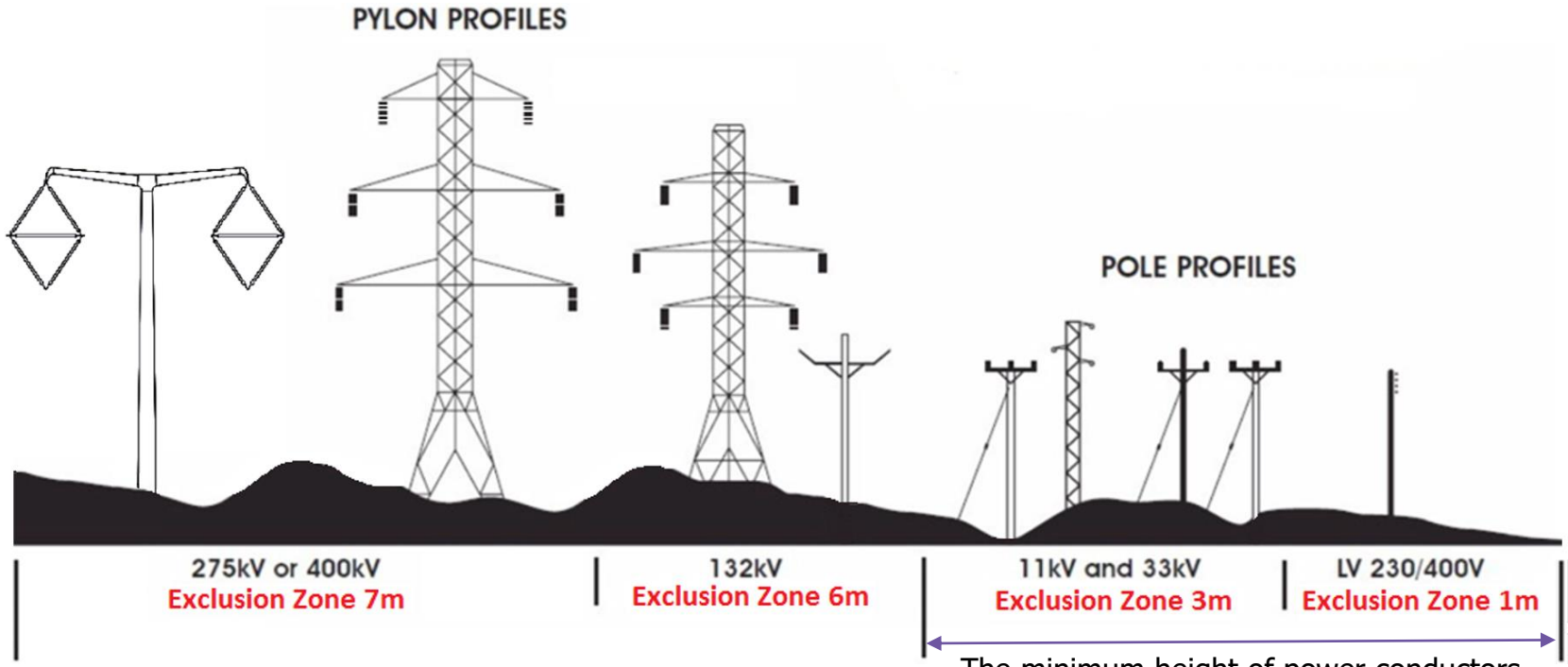
Make sure you have latest version - the ones with the blue & green background

Back to home

openreach
Connecting you to your network

How do I know what the voltage is on this pole or pylon?

These pictures show typical types of overhead lines and provides a guide to help you assess the line voltage of lines on steel pylons or wooden poles. The new 'T' pylons are typically around 35m in height and around a third shorter than the larger style of existing UK 400kV lattice examples.



Be aware that most Distribution Network Operators (DNOs) in the UK operate a HV distribution system of **11kV & 33kV** often on wooden poles. However some areas of the **Northern Powergrid DNO area employ 20kV & 66kV** systems (20kV equates to a 3m exclusion zone with 66kV equating to a 6m exclusion zone). Note: In Northern Ireland the 'Grid' transmission system operates at 275kV (7m exclusion) and 110kV (6m exclusion).

Back to home

openreach
Connecting you to your network

How do I measure wire heights/separation distances on Low & High voltage?

Unless you know with absolute certainty that the power line is Low voltage, use an ultrasonic device

LOW voltage (less than 1,000 volts /1kV)

Rods Telescopic 7m (i/c 008874) can be used to get a direct height measurement of LV conductors. To determine the clearance between a power line conductor and a Openreach wire or cable, measure the height above ground of each cable separately and take the difference. EPT/PPS/B046 Sect. 8

Important: NEVER measure LV overhead power lines by this method when it is raining.

EPT/OHP/C022 Sect.4

Remember: When measuring LV always to use Gloves IR – They'll provide protection against contact with LV conductors.

(They **aren't** designed to protect against HV)

HIGH voltage (greater than 1,000 volts /1kV)

DON'T attempt to measure HIGH voltage with any type of rod or measuring tape.

The ONLY safe method is with an Ultrasonic measuring instrument (available by local purchase)

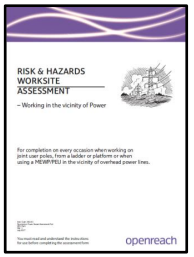
Back to home

openreach
Connecting you to your network

How do I keep safe when working on a Joint User pole (JUP)?

- Before you work on a JUP you must have had the relevant instruction, have the skill recorded and have been checked by your supervisor within the last 2 yrs
- Always have a second person present – this applies to both electricity company and Openreach owned poles (this needs to be an Openreach person and not a member of public or the property owner)
- Always use a ladder 7A (blue ladder)

- Think about the hazards – Use the **RISK & HAZARD WORKSITE ASSESSMENT** sheet to identify the hazards and record your control measures (i/c 061461)
- When your role is to act as a Ground Support Person (GSP), your responsibilities are:
  - To look out for hazards from the ground and warn the engineer working on the JUP or in the Mobile Elevating Work Platform (MEWP) of any danger.
  - To bring the MEWP to a low level in the event of an emergency.
  - To complete the handshake sign off.



As a GSP you **must not** leave site, work on another task or do any part of the active task.

Did you know:- That all new fixings to E/L poles require a licence before attachments are made and there's **no** exception to this rule.

IMPORTANT: Joint user poles refers to both Openreach and DNO owned poles. The voltage on these pole should be **LOW VOLTAGE ONLY**. **NEVER** attempt to access any Openreach cables or line plant that is on a pole which carries **HIGH VOLTAGE** until you've have permission to do so from the DNO and have contacted your manager. (Section 4 covers safe working distances from HV)

Back to home

openreach
Connecting you to your network

How do I keep safe when working on a Joint User Pole – Pole labels

Part of your safety assessment when working on joint user poles is always inspecting the pole before you decide to work on it. Check you know your markings and labels. Here are a couple of things worth knowing:

There should be a 3m mark - Poles dated prior to 1958 cannot have their depth confirmed and must be treated as Defective for "Depth". Poles dated 1958 onwards have the 3 metre mark at the same point as Openreach supplied poles. If there's no 3m mark, YOU CANNOT work on it from a ladder. You can access it using a platform or scaffold.

Other labels – a quick guide:

J Standard marking indicating there is a joint use agreement. It might also have a number by it, this number indicates the maximum number of dropwires permitted on this pole.

C If you see this it indicates that cables larger than dropwires are allowed.

L Indicates that work on this pole is limited – **YOU CANNOT** work on it from a ladder

S Some (but not all) suppliers use "S" to indicate "suspect". You should not attempt to access this pole until you have checked with the supplier.

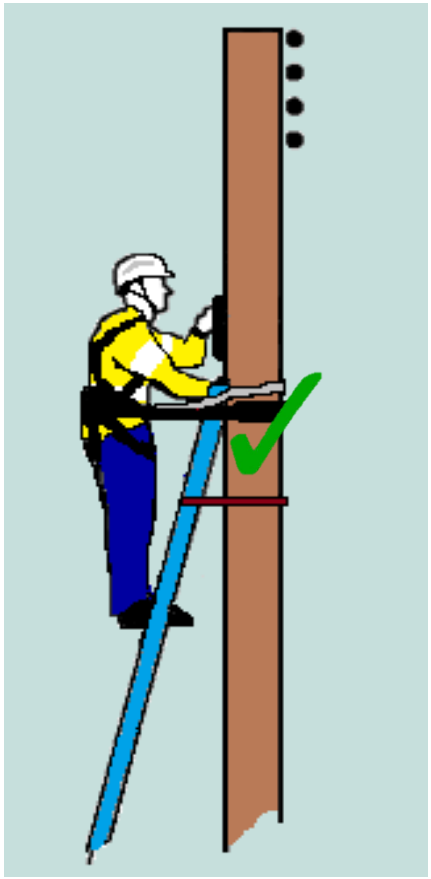
D DNOs normally use a red coloured 'D' label similar to Openreach's but if you are in any doubt treat the pole as 'D' and report the problem to your manager.

Important: Not all suppliers use all of these labels. To keep safe **always** test the pole before you work on it and if in doubt, contact the supplier and find out more information on the markings.

openreach
Connecting you to your network

Joint User poles – What's the safe working position when working from a ladder?

Your ladder position is really important and will improve your lateral stability if you get it right

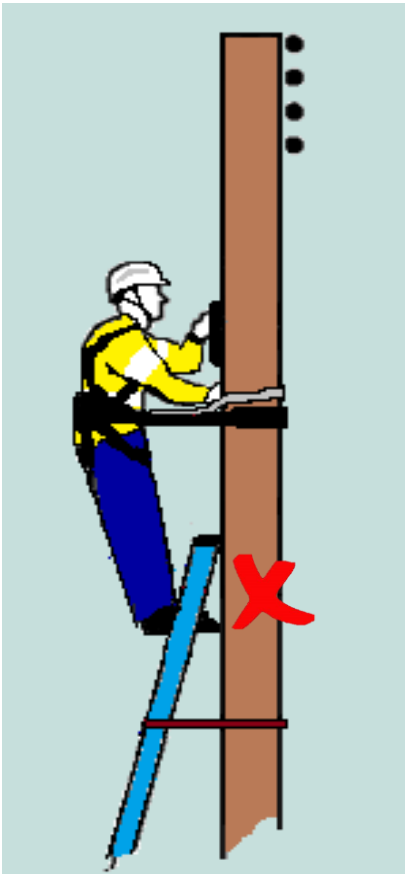


As a rule of thumb – See if you can get a hold of a rung from your working position – if you can, you've got it right

Why? – Because as you're working from a ladder your feet are closer together than they would be if they were on pole steps, so it's important to have an additional fixed structure to hold onto should you require it.

Here are a few reminders on how to stay safe and reduce your risk when on a JUP

- Test /inspect the JUP pole before you start work
- Always use a insulated ladder
- Always use your belt and lanyard *



* Remember to follow the TETRA process outlined on your training for accessing a JUP – TETRA System FAQ's

Back to home

openreach
Connecting you to your network

How do I keep safe when working on a Joint User pole (JUP)?

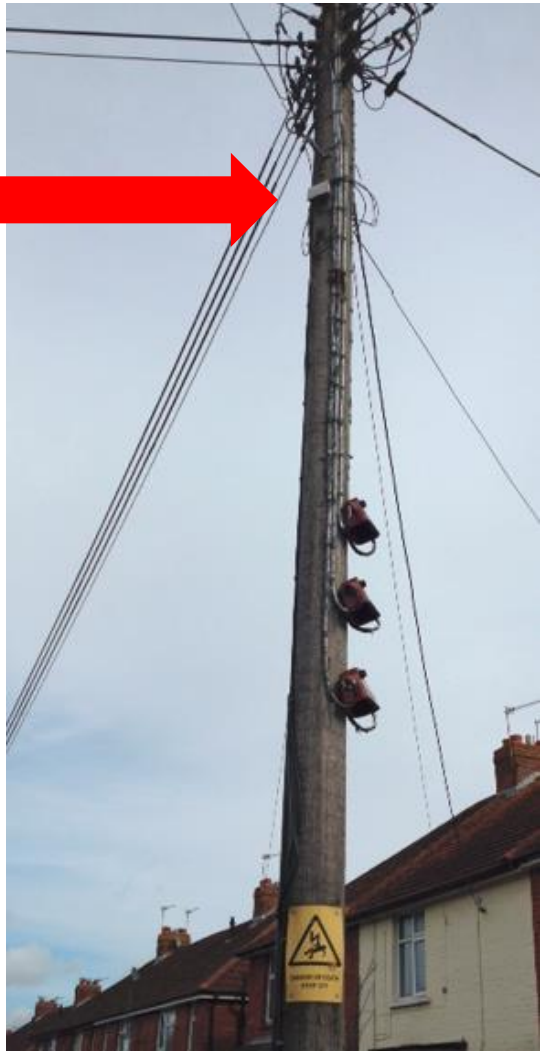
Sometimes you'll come across joint user poles that have other cables/conductors coming down them. Always take time to study the position of these. Assume they are LIVE unless you can prove otherwise.

To keep safe **NEVER** put any part of your ladder 7A in a position where they may come to contact with these as you could cause a short circuit and power discharge.

If you are working on a JUP with power conductors that cross the road they must be checked and should not be below 5.8m

Be aware, foliage on JUPs can hide conductors **AND** conduct electricity.
As part of your risk assessment you should get this removed so that you can determine if the JUP is safe to work on.

This can only be done by the DNO



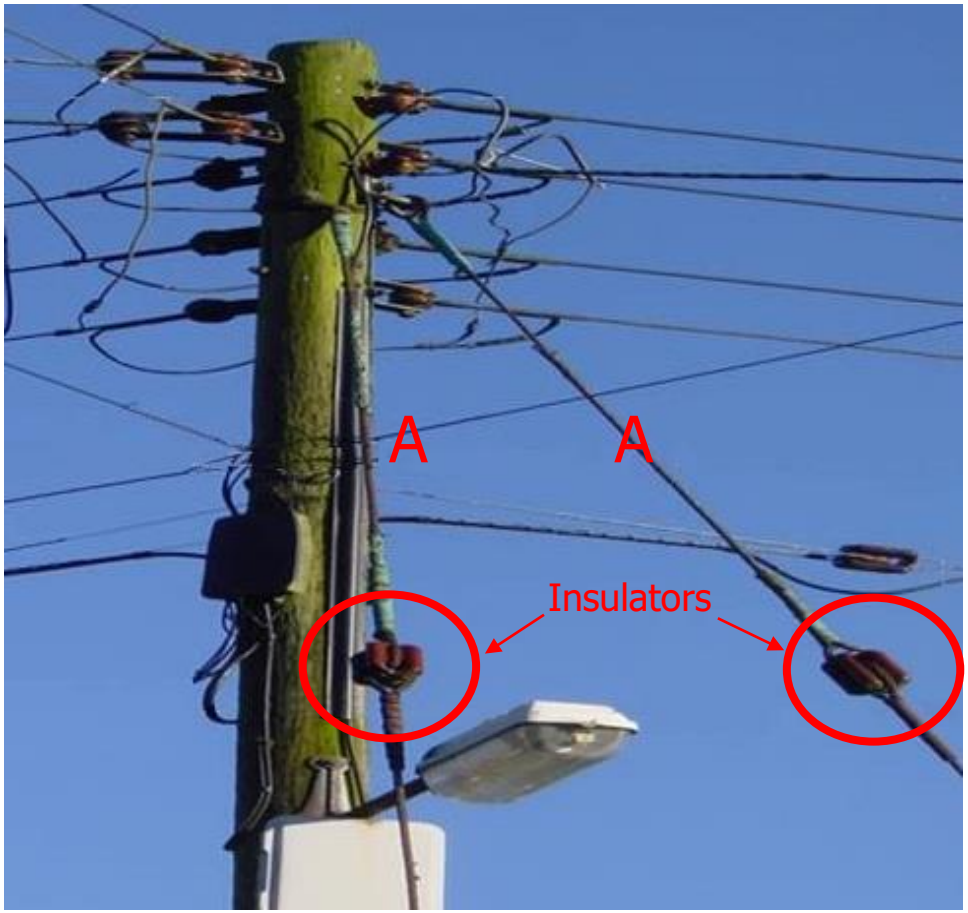
Damage to a ladder 7a due to contact with power cables running down a JU pole.

Back to home

openreach
Connecting you to your network

How do I keep safe when working on a Joint User pole (JUP)?

Stay Wires – Stay wires are a common sight on electricity company owned joint user poles for safety reasons they come with insulator blocks usually positioned within 3ft of the top anchor point. The insulators on the stay wire prevent any electrical current that may be present under fault conditions being conducted to earth.



What this does mean is that **UNDER CERTAIN FAULT CONDITIONS** the section of stay wire above the insulator and the top anchor point (A) could become **LIVE.**

(You would have to be earthed to receive a shock)

As a precaution:

- Check that an insulator is present
- Give a the insulator a visual check for obvious signs of damage
- Position your ladder so that you can avoid any close/direct contact

You should maintain a safe working distance from this section of the stay wire of **800mm**.

See EPT/PPS/B038
Joint User Poles for more details

Back to home

openreach
Connecting you to your network

How do I keep safe when working on overhead power or a JUP?

FAQs for overhead power and joint user poles.

Q Can I /should I attach a A1024 or other label to a JUP?

A ***No.*** *However you can still report the defect on a A1024.*

Q Can we use standard tools/equipment when working on a JUP?

A ***Yes.*** *However under NO circumstances can aluminium ladders be used. You should always use a LADDER 7A (Blue ladder). For scaffolding tower solutions, only certified insulated GRP PASMA towers must be used.*

Q Can I climb a JUP in the hours of darkness using WITHOD?

A ***No,*** *for your safety JUPs must* ***not*** *be climbed during the hours of darkness, or if there is low ambient light or thunderstorms.*

Q Do I need to carry out my pre-climb checks on a JUP?

A ***Yes, always****. You should refer to the risk assessment form for the hazards you may encounter (i/c 061461) – However you do not have to fix a pre-climb check label*

Q What should I do if I encounter powered non Openreach equipment on a pole? e.g. lighting, sound equipment, CCTV or low voltage domestic supply?

A ***Contact your manager*** *who will need to e-mail the National Notice Handling Centre @ nnhc@openreach.co.uk with the details. They'll contact the site owner and give notice for the equipment to be removed.*

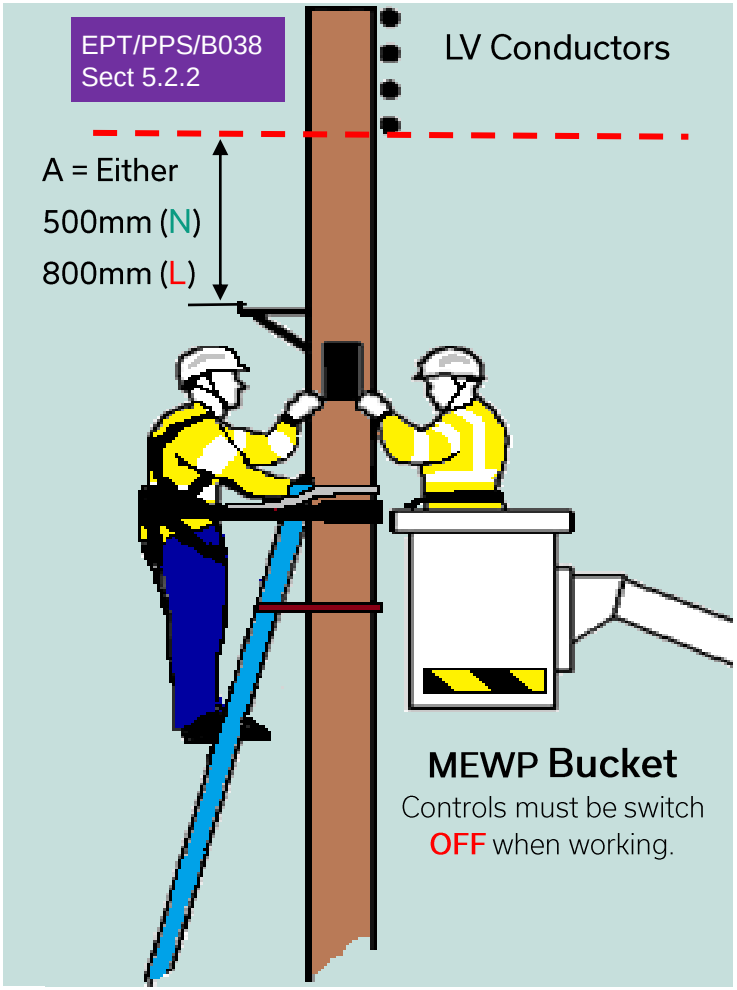
EPT/OHP/C032 - **Working on Joint User Poles**

Back to home

openreach
Connecting you to your network

Joint User poles - LOW VOLTAGE safe working distances from a ladder & MEWP

How close can I work safely from a LV conductor on a joint user pole?



A – Openreach plant must be either **500mm** from **NEUTRAL*** or **800mm** from **LIVE** conductor.* The **NEUTRAL** wire can be identified by the common drop off to each property.

The separating distances shown also apply when accessing overhead plant from a **bucket or ladder.** **You must not work on any line plant positioned closer than these distances**

Keep your head and body below the lineplant at all times. (occasionally your hands may need to be a bit closer so you can carry out your work.)

IMPORTANT NOTE - WHEN USING A MEWP
When manoeuvring or positioning the MEWP bucket it must never be closer than **1m** (in any plane) from any **LIVE** conductor/s

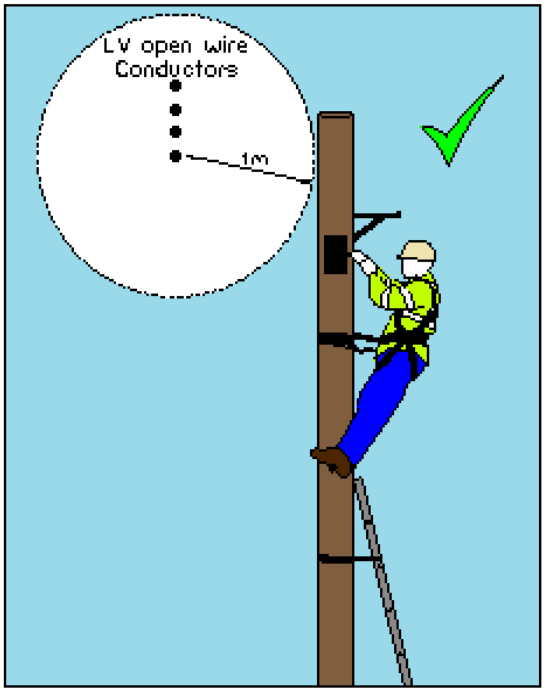
ALSO When you get the bucket to where you need to work, you **MUST** switch the bucket controls to **OFF.**

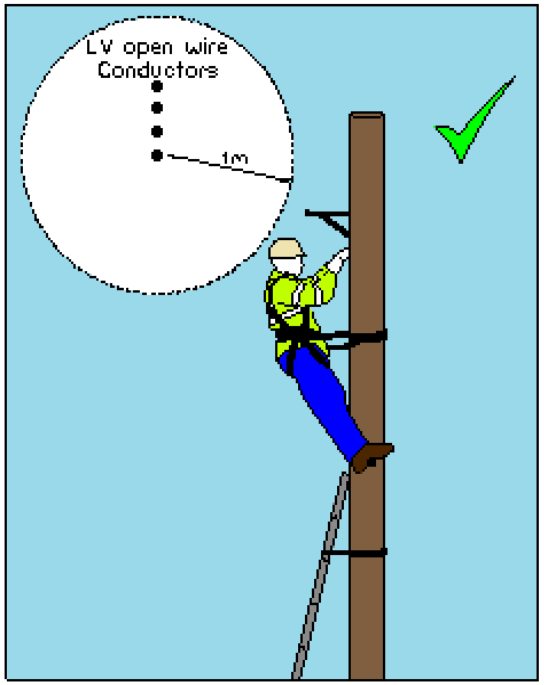
This stops you accidently getting too close to the power (if you inadvertently knock or move the controls vertically or horizontally)

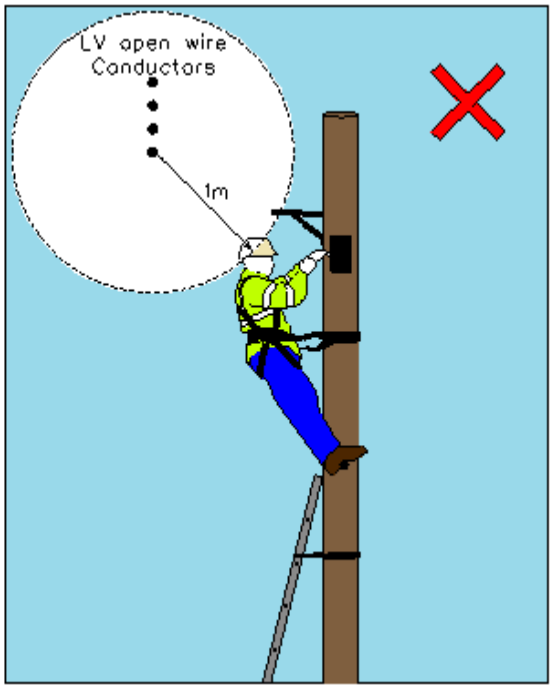
Back to home

openreach
Connecting you to your network

Maintaining correct working clearance from LV conductors in mid span







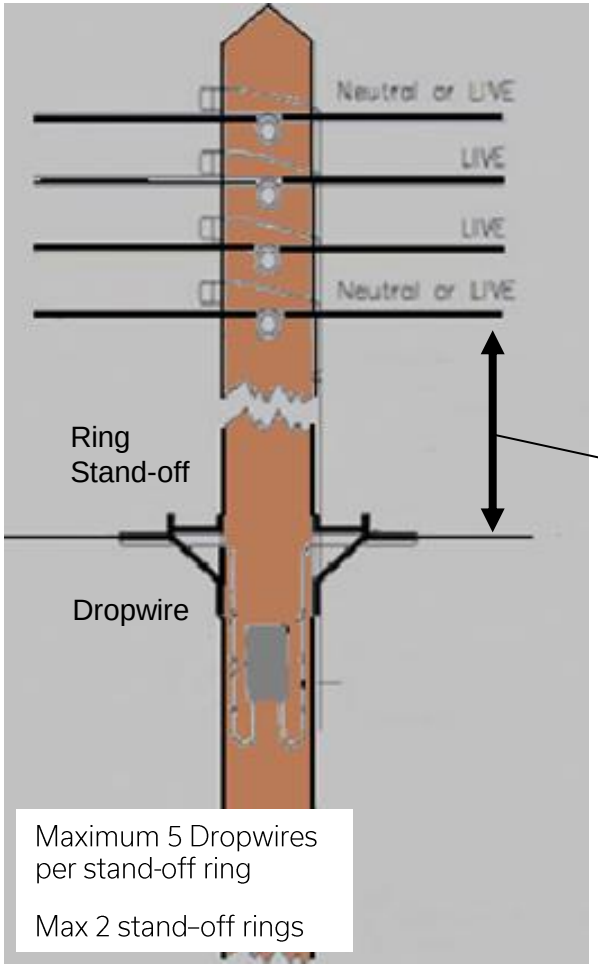
It's essential to maintain the minimum **1m clearance** from LV conductors which are in mid-span, but passing close to an Openreach pole. As shown in the pictures, this may determine which side of the pole can be accessed.

Always measure the **1m** 'on the ground', do not use rods /rulers aloft to check the distance.

Back to home

openreach
Connecting you to your network

Joint User poles - LOW VOLTAGE and lighting cable separation distances



Maximum 5 Dropwires per stand-off ring

Max 2 stand–off rings

The **NEUTRAL** wire can be identified by the common drop off to each property as depicted on page 21.

Minimum Separation Distances

Open Wire (Single Wire) Systems:

Live - 800mm

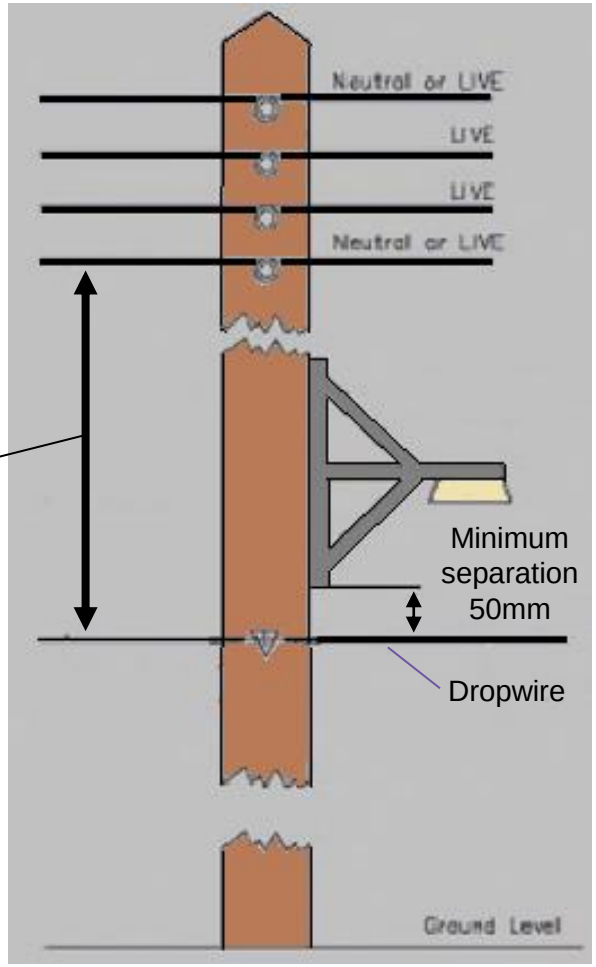
Neutral - 500mm

Aerial Bundled Conductor

500mm

Lighting MUST be bonded to earth or neutral.

Note: Visually inspect the bonding strap.



Back to home

openreach
Connecting you to your network

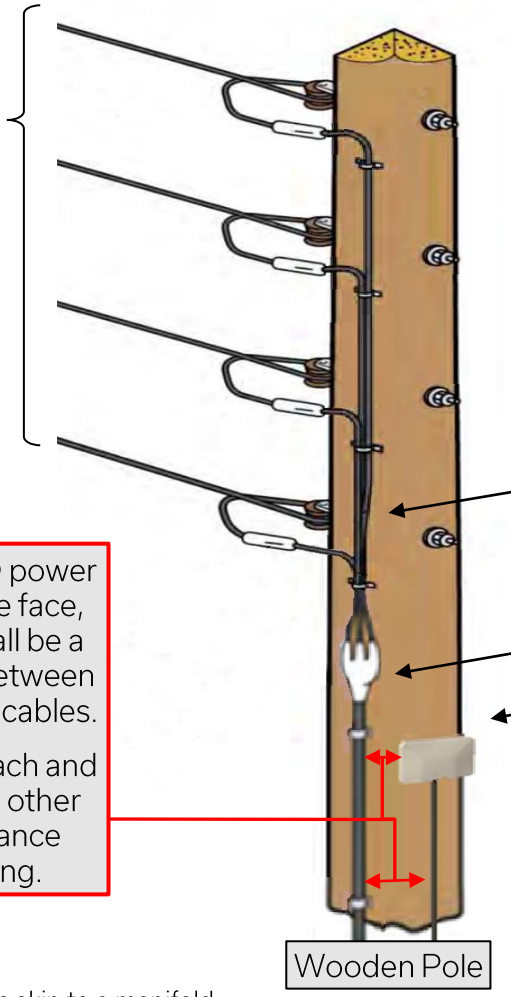
Joint User poles - LOW VOLTAGE cables running down wooden poles

To understand the separation / clearance distances between DNO and Openreach plant fixed to and running down a wooden pole, the terminology is important to understand. The definitions are defined by the ENA and are as follows:

Overhead **Conductor**
Single Wires in this diagram

800mm clearance
(From a live open wire conductor)

500mm clearance
(From a neutral open wire conductor AND from an Aerial Bundled Conductor)



The line **'conductor'** forms the overhead element (the span or aerial part) of the DNO's network.

The **'cable'** contains one or more phase conductors enclosed within an earthed metallic sheath or screen which is by design effectively insulated. These cables may run to DNO equipment on the pole or into the DNO's UG network.

DNO **Cable**
(On both sides of the cable termination)

50mm clearance
(from DNO cables)

Cable Termination*

Openreach Plant

Where Openreach plant and DNO power **cables** which are fixed to the pole face, not in an aerial position, there shall be a minimum separation of **50 mm** between Openreach plant and DNO power cables.

Where it is necessary for Openreach and DNO power cables to cross each other there should be sufficient clearance between them to avoid touching.

Note: The working position belt & fall arrest lanyard of the Safety Belt No11 as well as the ladder N°7's rope tie may be placed around a DNO fixed **cable** on a wooden pole, following a suitable visual inspection and risk assessment of the cable's outer sheath.

Back to home *A DNO 'cable termination' is akin to a manifold.

openreach
Connecting you to your network

LOW VOLTAGE - How do I recognise LOW voltage? (Less than 1,000 volts /1kV)

Low voltage lines come in 3 types:

Aerial Bundled Conductor (ABC) – classed as insulated, electric companies bundle their cables/wires together. As a rule these are **'LOW VOLTAGE'**

Concentric Neutral service cable - an insulated single service cable with the neutral concentrically bound around the phase conductor.

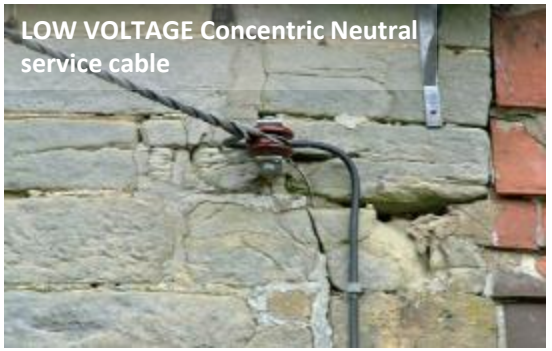
Single Wires – separate phase conductors and neutral. These must be assumed to be uninsulated irrespective of any covering which may be present.

However you should know that…

At some sites around the country, **HIGH VOLTAGE ABC** has been identified.

These **SHOULD** have labels to that effect.

ALWAYS check for signage on the pole before you start work.



Back to home

openreach
Connecting you to your network

How do I recognise LOW voltage? (LV - less than 1,000 volts /1kV)

- LOW voltage (LV) is **generally** mounted **VERTICALLY** on Electricity poles and has a voltage of less than 1000v A/C and 1500v D/C. (See exception images below)
- It is equally common to see single wires bundled together in a single black sheathing known as ABC (**A**erial **B**undled **C**onductor).
- Generally LOW voltage is seen going from pole to pole with individual feeds to houses/buildings.
- The LOW voltage insulators are usually smaller than HV examples and are typically around 80mm (3 inches) in diameter when compared to an 11kV insulator of around 150mm (6 inches) in diameter.

Example of LOW voltage joint user pole sign "DANGER OF DEATH"

Example of an 11kV High Voltage insulator (left) with a Low Voltage insulator (right) showing the size comparison between HV & LV insulators.

This is a LOW VOLTAGE JUP in a **HORIZONTAL** plane

Back to home

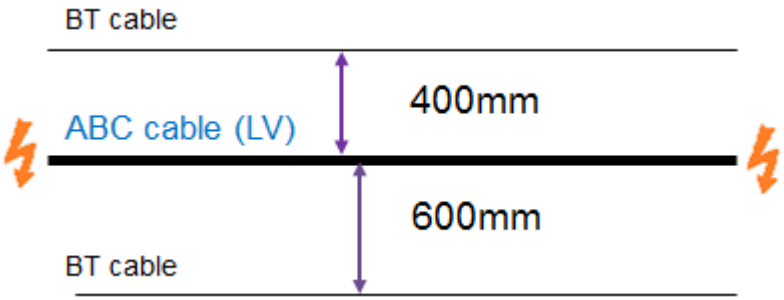
openreach
Connecting you to your network

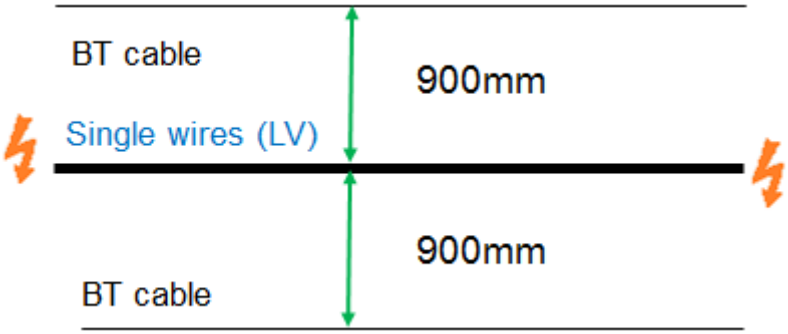
LOW VOLTAGE - Non insulated power cables.
What are the minimum overhead clearance distances?

Can I put a dropwire or aerial cable above or below LOW voltage?

Yes you can, so long as you maintain the correct clearance distances from the LIVE and NEUTRAL conductors.

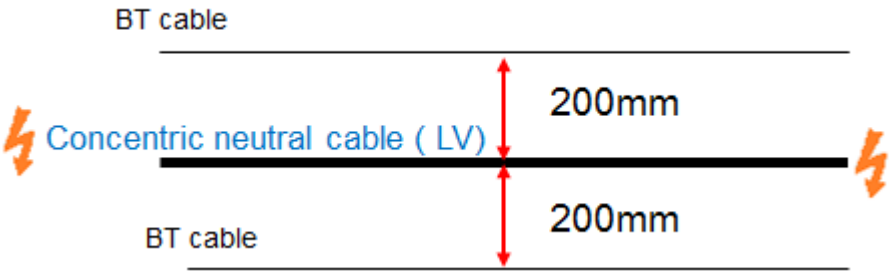
Where electricity and Openreach cables **CROSS** or run **IN PARALLEL** the minimum **IN SPAN** clearance is determined by **the type of cable** and whether the Openreach cable is run **ABOVE** or **BELOW.**





EPT/PPS/B026 Sect 10.D1.4 Code of practice

AN EXCEPTION TO THIS RULE - At crossing points which are close to the support points, (e.g. respective poles or house / building fixing points) where movement due to temperature is unlikely then the vertical clearance **can be reduced to 400mm**



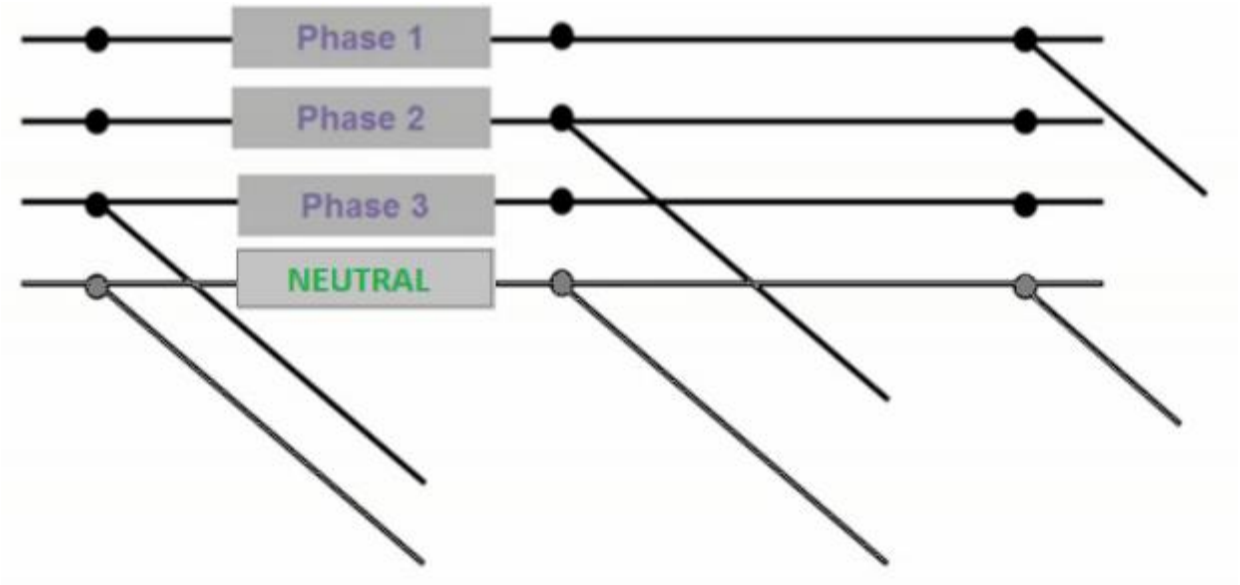
Back to home

openreach
Connecting you to your network

On LOW voltage how do I recognise the LIVE and NEUTRAL conductors?

On a vertical stack like this, look for the conductor that has a common drop-off to each property on the power route – This is the NEUTRAL .

The LIVE will come individually from each of the phase wires.



NOTE: The NEUTRAL conductor can be on the **TOP** OR the **BOTTOM** of the stack.

To identify it correctly you should walk the route to establish which of the phase wires is the NEUTRAL

Back to home

openreach
Connecting you to your network

LOW Voltage – What are the separation distances on buildings?

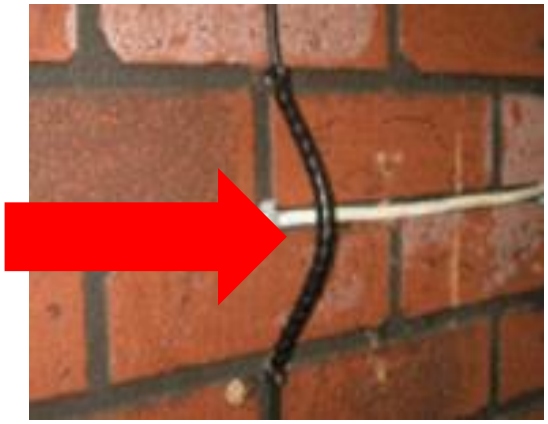
Where Openreach cables and power lines **are attached to the same buildings**, then the minimum clearance between the points of attachment are as follows:-

Cable type	Clearance from Openreach cables
Concentric neutral service cable	200mm
ABC & Single wires service cables	600mm

Example of a concentric neutral service (a single cable) separation at attachment of 200mm.

The clearance for the cables cleated in PARALLEL along the wall is **50mm**.

If you have to bridge over an electric cable use a piece of **P**rotector **C**able **A**brasion **PCA** (tree guard) over the Openreach cable with cleats 140mm apart and give 25mm clearance.



PCA comes in packs of 10 or 20 x 1m lengths and in five sizes for different cable diameters.
Dropwire / CAD55 PCA i/c 048987

Where power attachments are present at a customers premises the use of blue ladders 7A **isn't mandatory**, but you should consider the risk. The type of attachment, how close you are working to them, as well as the weather conditions may mean you decide to use them.

Back to home

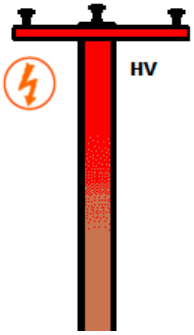
openreach
Connecting you to your network

HIGH Voltage – the dangers

Information on the effects of HIGH voltage - Accidents involving HIGH voltages can result in severe injuries and death. When an electric current passes through the body, it generates heat and can extensively damage internal tissues and organs as well as produce serious burns. In some cases, the entry and exit wounds are so severe that a foot or hand may have to be amputated.

Step potential - If anything touches a HIGH voltage power line or if a power line falls to the ground, electricity will flow to the ground, energizing the tree or equipment and anything in contact with it. The surrounding ground may be extremely hazardous. The voltage **gradually** decreases from the point of contact until it reaches zero . This distance can be up to 10m (33ft) - or even greater depending on ground conditions.

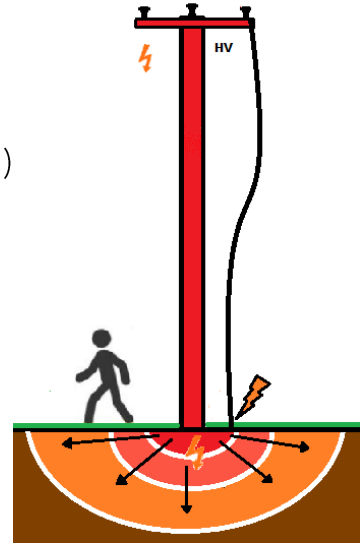
Leakage - Under some conditions, it's even possible for the wooden pole to conduct current several metres down the pole (known as leakage). The amount of leakage and distance it travels down the pole depends on the pole's moisture content, the voltage and the temperature.
This could extend beyond any legacy BT wires or equipment on the HV pole. (see diagram)



Current Leakage

For these reasons YOU SHOULD NEVER WORK on HIGH voltage poles/ structures UNLESS the power has been switched off.

If you encounter existing legacy telecom wires or block terminals on HIGH VOLTAGE poles – NEVER access these unless the power has been switched off.



Step potential

Back to home

openreach
Connecting you to your network

How do I recognise **HIGH** voltage? (greater than 1,000 volts /1kV)

Typically HIGH voltage can be identified by SOME of the following characteristics:

- Horizontal, triangular configuration or large vertical formation.
- Steel Towers/pylons
- Longer spans over 45 metres.
- Anti climb devices (these can also appear on LV) It may seem obvious but you should never erect a ladder over the anti climb device.
- DANGER HIGH VOLTAGE notices. Not all - some have the same "Danger of death" label that appears on Low voltage poles.
- Large insulators /Glass dish type insulators (approx. 12 inches in diameter) – BE AWARE that on newer installations the insulators are grey and can be the same size for both 11 and 33kv.

IF you are in ANY doubt as to the voltage you are dealing with:

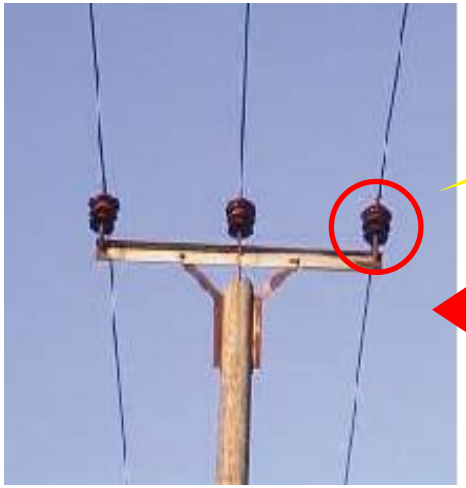
Before you start work speak with your manager / supervisor / planner or local power distributor and arrange to get the voltage verified from the utility prints.

Don't guess....

Back to home

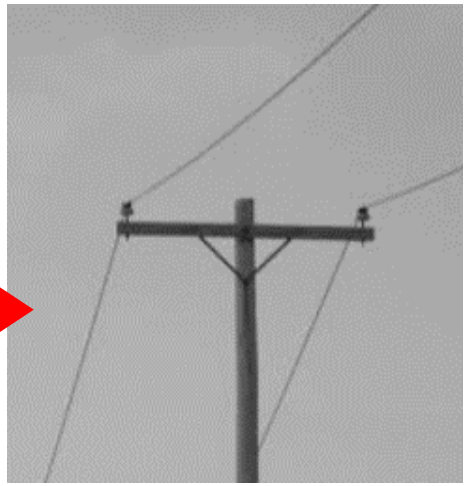
openreach
Connecting you to your network

How do I recognise HIGH voltage? (greater than 1,000 volts / 1kV AC)

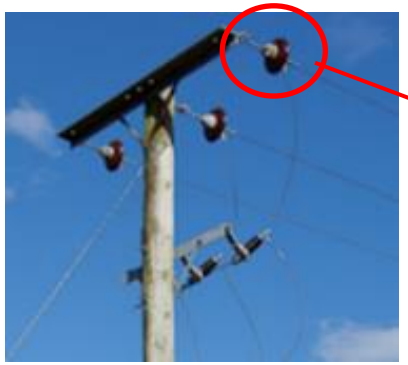


33kV lines typically have large three shed insulators.

Note: Not all HV routes have three wires, some may just have two.



Example of 33kV **shed** insulator.
Approx. 300mm in diameter (12 inches)



Example of 33kV **tension** insulators.
Approx. 300mm in diameter (12 inches)

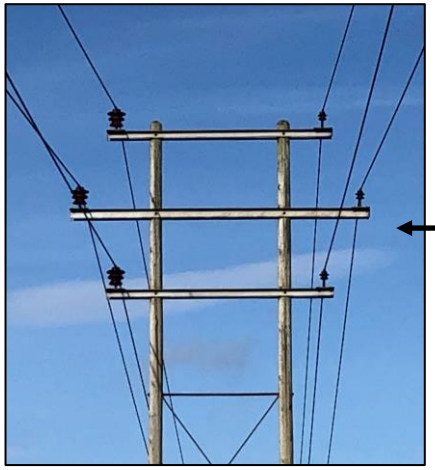
The 33kV insulator is generally much larger than the 11kV (colours may vary). On newer installations, the insulators are made from a modern material and are grey in colour.

Note: In some cases they can be the same size for both LV and HV. **If you are in any doubt as to the voltage, you should check with the region power company.** *(Details on page 38)*

Back to home

openreach
Connecting you to your network

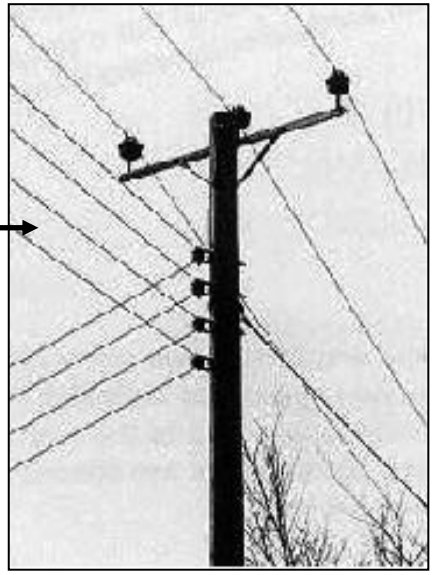
How do I recognise HIGH voltage? (greater than 1,000 volts /1kV)



BE AWARE

33kV (left) & 11kV (right) HIGH voltage routes mounted on 'H' poles

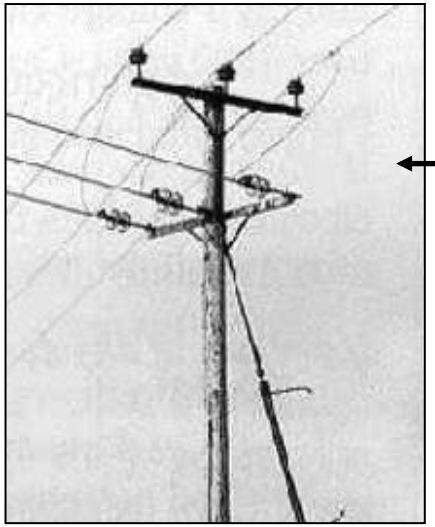
11kV HIGH voltage AND LOW voltage line.



Some poles may have BOTH - HIGH AND LOW VOLTAGE
If you find this, **ALWAYS** treat this as a HIGH VOLTAGE

Note: Not all HV conductors between 11kV and 33kV are mounted horizontally.

In some cases, such as in the 'H' pole photo above, the 33kV and 11kV are mounted vertically.



Tee-off pole, 3 phase 11kV HIGH voltage line
NOTE – HV is now running HORIZONTAL.

33kV HIGH voltage AND LOW voltage line on the same pole

Network Rail
Overhead Line Equipment (OLE) carries 25kV and as such is also classified as HV.
See note on page 27.

Back to home

openreach
Connecting you to your network

UNDER or OVER ? - Safety standards when working with HIGH voltage

Can I run any wires or aerial **cable** under or over HV?

	UNDER HV	OVER HV
11kV	✓*	X
20kV** & above	X	X
33kV & above	X	X

EPT/PPS/B023 Sect.3
Electrified Railways

EPT/PPS/B026 Sect.7
Protection of Telecommunication Lines from Power Lines

EPT/PPS/B046 Sect. 1.3
Crossing & proximities of BT lines & HV power lines

* Insulators are required on Aerial Cable where bare catenary wire exists.

** Areas of Northern Power Grid use a 20kV system with many other DNOs using 66kV systems – You cannot fly wires with metallic pairs or strengthening members under or over these lines.

- You can use ADSS fibre cables (non metallic) under **HIGH** voltage, up to and including 33kV
- You must **NOT** fly wires under/over a **HIGH** voltage railway line, even if the wires cross on a bridge.
- You cannot attach any wires or cables to poles carrying **HIGH** voltage
- If you are working **within 25m of HIGH voltage** you must use the safe sector method.

If you're not sure of the voltage...
DO NOT GUESS, or assume its 11kV
STOP WORK and find out the information

Back to home

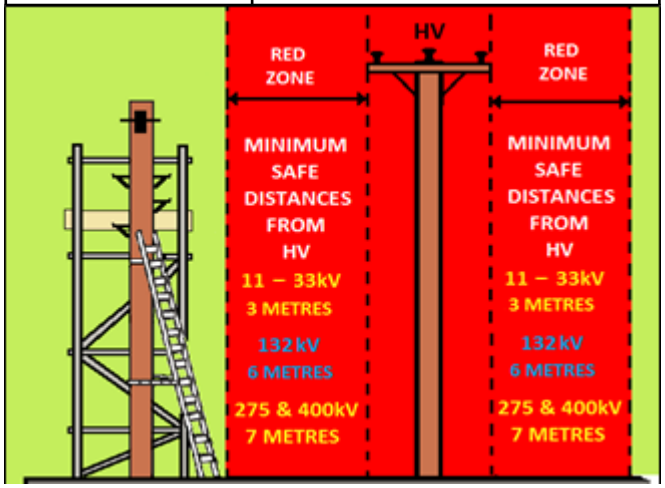
openreach
Connecting you to your network

How far must I stay away from HIGH voltage?

If you're working on poles, or accessing Openreach line plant from a ladder or scaffold close to HV, the minimum safe working distance is shown below. **Important:** You must not deploy access equipment or Work at Height in this zone.

If you can't achieve the minimum safe working distance from the HV, contact your manager and the safety team before you start ANY work. 11kV power conflicts and their possible resolutions are detailed in ISIS EPT/PPS/B072

HIGH VOLTAGE	MINIMUM safe working distance
11kV to 33 kV	3 metres
132 kV	6 metres
275 & 400 kV	7 metres

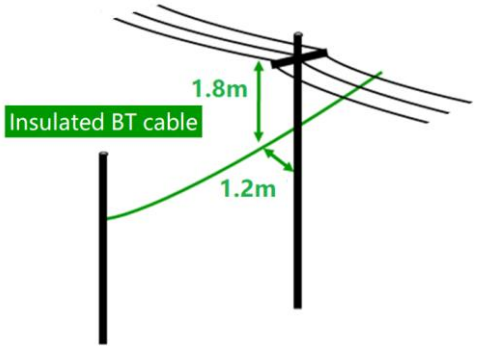


Where Openreach O/H wires and cables cross UNDER an HV route (11kV or below only), the minimum separation distance between them and the HIGH Voltage are:

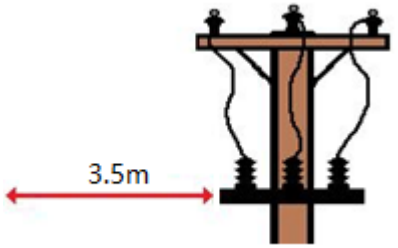
For further details see ISIS:

EPT/PPS/B026
Sect. 7. A2.9 & 11

Protection of Telecommunication Lines from Power Lines



Note: For non-crossing scenarios, a **3.5m minimum horizontal plant** separation distance must exist between any Openreach wire or cable and the **outside edge of ANY 11kV electrical equipment** that is sited on the DNO pole – i.e. air brake switches or transformers.



IMPORTANT: NEVER attach wires or cables to HV poles. If you find, or need to work on, existing Openreach line plant on HV poles, contact your manager AND the Openreach safety team who will advise on a safe system of work.
See ISIS: SFY/HSH/D043

Back to home

openreach
Connecting you to your network

How far must I stay away from HIGH voltage?

ADSS (All Dielectric Self-Supporting) fibre cables are approved for use under High Voltage Power, up to and including 33kV - Subject to the following conditions:

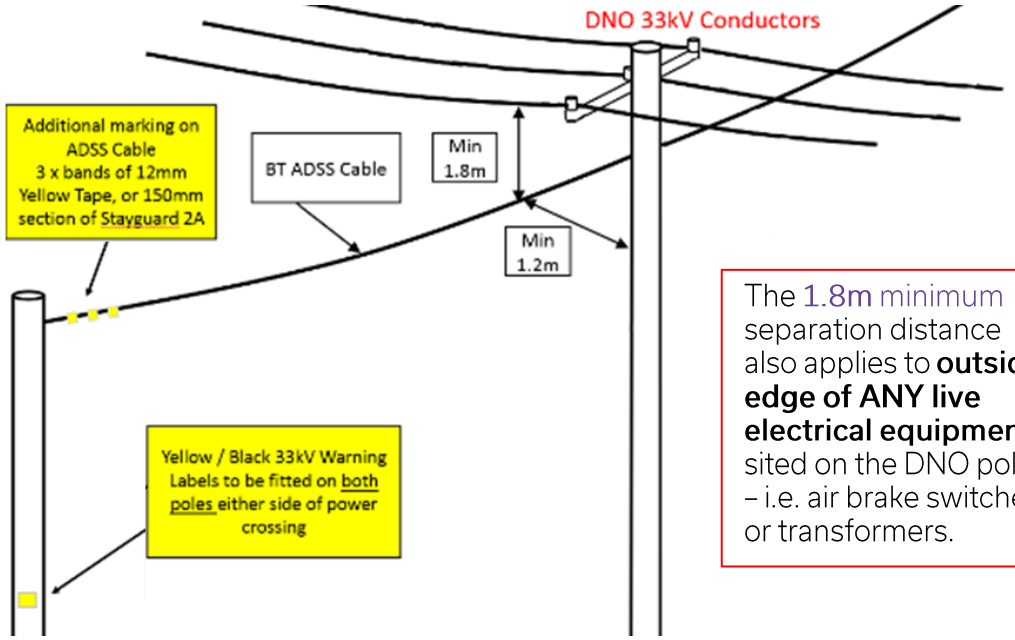
- ADSS fibre cables ONLY are permitted under voltages >11kV – there should be no metallic cables! *(this includes types which have metallic support wires)*
- Min safe clearances must be met
- Yellow Warning Labels (i/c 093534) must be provided on the two poles either side of the crossing.

The ADSS cable should also be marked just beyond the Clamp position, using either a 150mm piece of Stay Guard 2A (i/c 016321) or 3 bands of Tape Plastic Adhesive Yellow (i/c 071298)

Joint / CBT Positions may not be located any closer than the second pole back, either side of the crossing

Caution!
33kV Power Crossing
Only ADSS Type cable to be used
No metallic cables permitted

Note: ADSS cables are not simply cables with no metallic components. For example: CoF 250 has no metallic component parts but has **not** been tested or certified to ADSS standards and must not be considered as such.



The 1.8m minimum separation distance also applies to **outside edge of ANY live electrical equipment** sited on the DNO pole – i.e. air brake switches or transformers.

The **only** approved ADSS cable types are: BIRLA, CDC & HFCL. For full details of the cable types see AEI/AEC/B301

Back to home

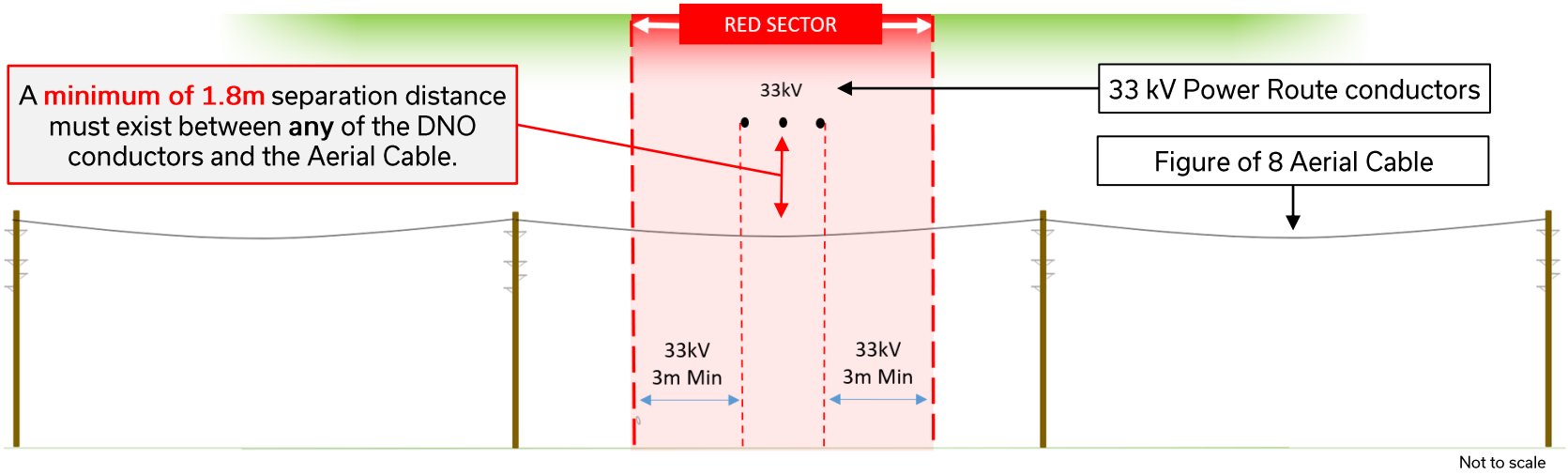
openreach
Connecting you to your network

How far must Wires and Aerial Cable be away from HIGH voltage that is greater than 11kV?

Where an existing Self Supporting Aerial Cable (sometimes referred to as a figure of 8 aerial cable) is found running under any power system operating at a voltage **greater than 11kV** (typically 20kV and 33kV), this is a non-compliance against the required standard and an A1024 with a 539 defect code must be submitted. (See page 27 for information on running aerial cables under or over HV).

Can I access poles where Aerial Cables or wires exist that cross under HV that is greater than 11kV?

Providing that the minimum vertical separation distance of 1.8 metres (as measured using an ultrasonic device) exists and that the poles either side of the crossing are located at a horizontal distance of 3 metres or more from the outermost 20kV or 33kV conductor, then the poles immediately either side of the crossing can be accessed subject to a pre-climb check.



Remember: Any stay wires which are encroaching into the red sector must be suitably insulated.

Back to home

openreach
Connecting you to your network

Keeping safe when working in the vicinity of power from a MEWP/PEU

Before you start work:

Be confident that you know the difference between LOW voltage and HIGH voltage.

Understand the difference in safe working practices between LOW and HIGH voltage

- Understand the safe sector method.
- Know how to measure the separation distances.
- Have a Risk Assessment form and fill it in
- Have all of the safety equipment that you may need – gloves IR, sash lines, measuring rods, spray paint, cones etc.

Remember: Only LV can be measured with rods. For HV the ultrasonic device is the ONLY safe method you can use.

Finally ask yourself **"Have I done enough to keep myself and others safe?"**

If you do not know the answers to these questions, STOP work and seek further guidance. Your life could just depend on it.

FIRST AID - To adequately cover the potential for burns, PEU and hoist teams need to have access on site to, as a minimum:- One full dressing pack for each person on site (2 people 2 packs, 3 people 3 packs, etc.) this can be in the form of full first aid kits available via normal stores process.

To protect and reduce the possibility of increased skin damage in the event of burns and scalds a clean (un-opened) roll of Clingfilm (local purchase) or burns dressings should also be available.

Back to home

openreach
Connecting you to your network

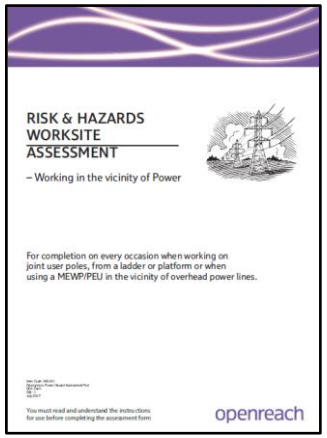
MEWP in the vicinity of Power - LOW voltage

ALWAYS.....

- Be 100% confident that you know the voltage of the overhead power BEFORE you start work. If you're not sure then check.
- Complete the Ground Support Person (GSP) handshake sign off.
- Complete your risk assessment and record what you find on the RA pad. (JUPs)
- Be aware of the safe working distances and separation distances.
- Make sure you have, and can maintain, a communications link between you and the GSP.
- Be confident that the GSP is able to bring the bucket down in the event of an emergency.

SFY/ HSH/D039

O/H Network using a MEWP



The GSP should not leave site whilst the MEWP is in operation.

The GSP should NEVER go up in the bucket.

Back to home

openreach
Connecting you to your network

MEWP in the vicinity of Power - LOW voltage

Is there a safe method for providing a wire OVER overhead low voltage?

Yes, there are two methods to first provide a sashline Nº2 over the low voltage power conductors.

Both methods require either one, or two MEWPs and those MEWP operators must be trained to do so. This training has been part of the Openreach IPAF MEWP operator course since August 2020, but is also available as a stand-a-lone course (ORMWP015) for existing Openreach MEWP operators. Where a road crossing may also be involved with a power crossing, then Traffic Management is also required.

The Safe System of Work (SSoW) for using either one or two MEWPs is detailed in the ISIS EPT/OHP/B011. Section 14.12.

It is also illustrated in a guide:
snip.bt.com/LVpower_crossing

Both involve a sashline Nº2 being attached / fed through a plastic tube (Stay Guard High Visibility I/C 013612)

The SSoW also details how to safely recover wires that are above LV lines. (Section 14.12.7)

NEVER attempt to, or throw a sashline over power cables

EPT/OHP/B011 - Overhead Distribution

Back to home

openreach
Connecting you to your network

MEWP/PEU **working** in the vicinity of power - HIGH voltage

You don't have to be working on HV poles to get an electric shock. Just working in the vicinity puts you at greater risk and you need to do something different to minimise this.

So how close is too close?

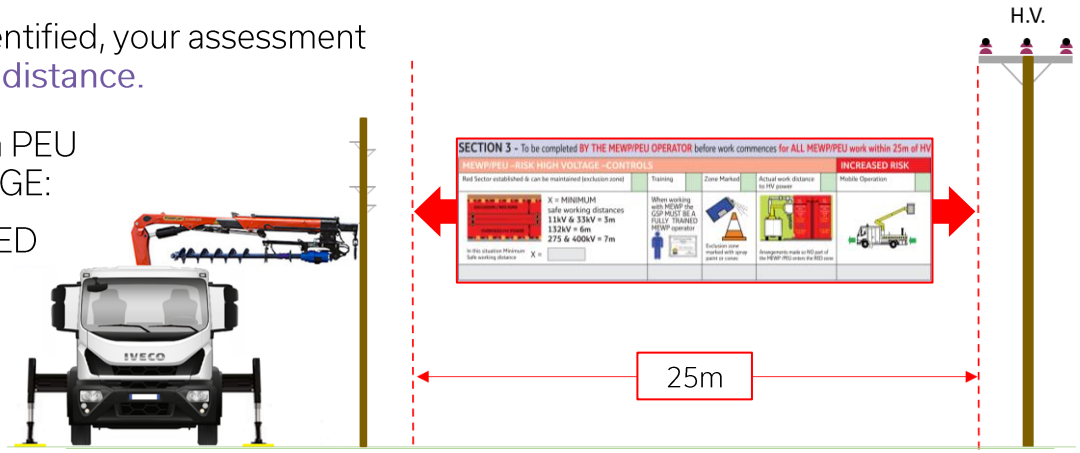
If ANY PART of the MEWP / PEU goes within 25m of High Voltage you need to employ the **SAFE SECTOR METHOD** and document your findings and actions on the 'Risk & Hazard Worksite Assessment' form.

Then, depending on the voltage you've identified, your assessment establishes your **MINIMUM** safe working distance.

Remember: When operating a MEWP or a PEU within 25 metres of overhead HIGH VOLTAGE:

For a MEWP – TWO OPENREACH TRAINED MEWP operators both with valid IPAF PAL cards, MUST be in attendance.

For a PEU - THREE fully trained PEU operators are required.



Plant separation distance

It is important to note that the plant separation distance IS NOT THE SAME as the safe working distance.

The plant separation distance is the safe distance our poles can be installed when in the vicinity of overhead power and is **greater** than the safe working distance. For full details on calculating the plant separation distance, refer to EPT/PPS/B026 Appendix F

Back to home

openreach
Connecting you to your network

MEWP/PEU working in the vicinity (within 25m) of Power - HIGH voltage

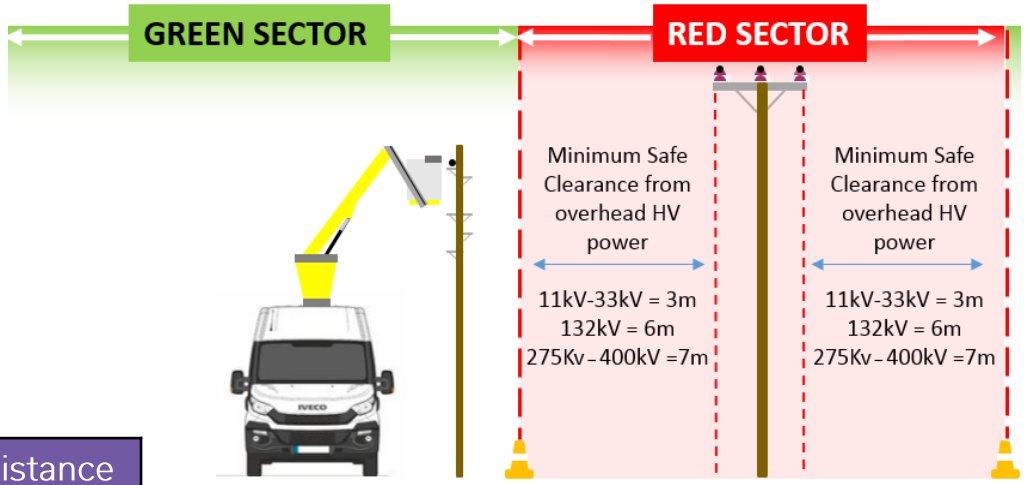
Question - What is the safe sector method?

It's about identifying the minimum safe working distance from the HV power, marking out a red zone (or sector), and making sure you don't go into it. DON'T even park in this zone.

Step 1. Decide the red sector distance from the chart below based on the HV voltage - No part of the MEWP / PEU must enter this zone.

Step 2. Use cones or temporary spray paint to mark the red sector so that it can be seen from above when you are working *(make sure if you use cones that you won't be confusing any traffic or pedestrians).*

Step 3. Use the **fully trained operator** acting as a GSP to make sure that you do not enter the red sector.



HIGH VOLTAGE	MINIMUM safe working distance
11 kV to 33 kV	3 metres
132 kV	6 metres
275kV & 400 kV	7 metres

Think of the Red Sector as a curtain extending out over from the edge of the conductors vertically down to the ground.

NEVER attach wires or cables to HV poles. If you find, or need to work on, existing Openreach line plant on HV poles you should contact your manager AND the Openreach safety team who will advise on a safe system of work.

Back to home

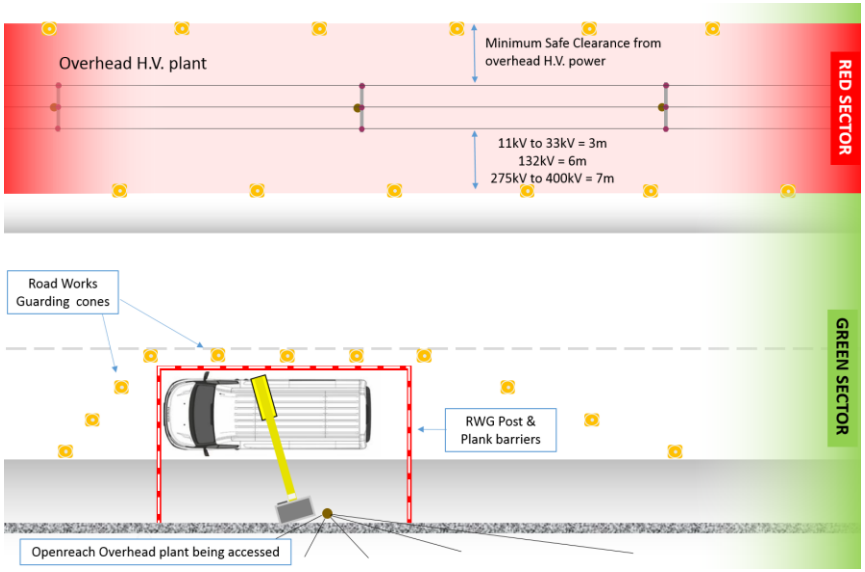
openreach
Connecting you to your network

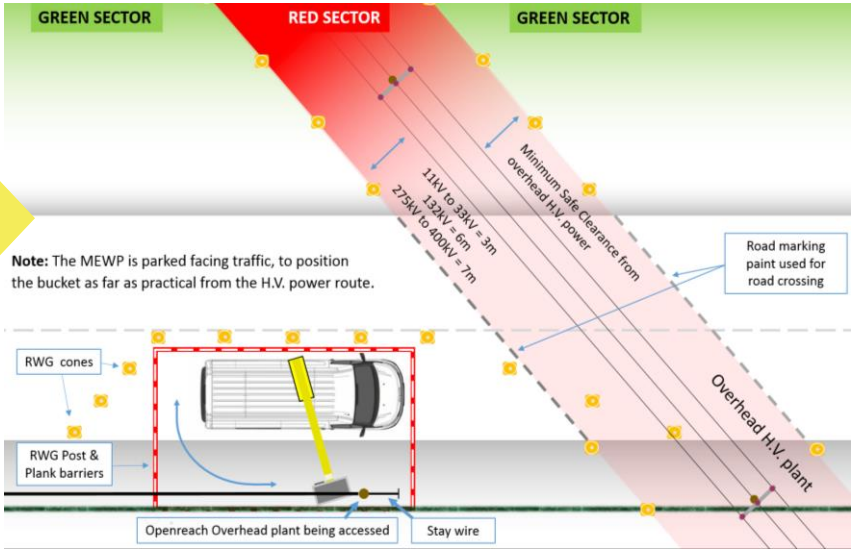
MEWP/PEU working in the vicinity of Power - HIGH voltage

Safe Sector method – Alternative layouts

Ideally you should position your vehicle so that at full extension the MEWP or PEU's boom cannot enter the RED zone. If space is restricted, position your vehicle so that when you move the boom around to access Openreach line plant you do it TOWARDS the RED ZONE thereby avoiding any part of the boom encroaching into the marked out zone.

During the PEU / MEWP operation, NO PART of the boom, crane, bucket or vehicle should ever enter the RED ZONE





Make sure you mark out the RED ZONE clearly with spray paint or cones so that you can see clearly the extent of the RED ZONE when you are working aloft.

PAINT LINE MARKING TEMP. GREY (I/C 087454)

THINK! If you're using cones in the road, advanced RWG is needed. Refer to **the Safety at street works & road works code of practice** for details. http://snip.bt.com/RWGCOP

The diagrams on this page and more information can be found in Section 4 of ISIS SFY/HSH/D039

Back to home

openreach
Connecting you to your network

What should I do in if I encounter a direct overhead power contact ?

If you encounter wires that are in direct contact with live overhead HIGH voltage power DO NOT WORK or TRY TO REMOVE THEM YOURSELF. You must contact the electricity supply company immediately. (Dial 105) and take advice .

What if it there is a casualty resulting from a HIGH voltage contact?

You cannot do anything, even for a casualty, until the power is cut off - so call the emergency services and the electricity supply company.

What if it is a LOW Voltage contact?

If possible wait for the power to be turned off but if any Openreach wire threatens the public or traffic, and you wear Gloves IR, you can move the Openreach wires away or cut them back whichever is most practical. Stand on a dry insulating material, such as a rubber car mat if possible.

What if a casualty is in contact with LOW voltage?

Do not touch any wire or the casualty with bare hands, damp gloves or any damp article. Using Gloves IR or insulated tools while standing on insulation try to remove the live wire or using a stick, rope or article of clothing (they must be dry) and try to drag the cable or the person clear.

Back to home

openreach
Connecting you to your network

Distribution Network Operators emergency contact numbers

In November 2016 power companies introduced a new service. By simply dialling 105 from your mobile, they will put you through to your local network operator who can give you help and advice. Or you can go to the website below and enter your post code and it will show you all of the contact detail.

Company	Contact Telephone Number
SSE Power Distribution	Central southern England 0800 072 7282 North Scotland 0800 300 999
SP Energy Networks	C &S Scotland 0800 092 9290 North West 0800 001 5400
Electricity North west	0800 195 4141
Northern Powergrid	NE England 0800 66 88 77 Yorks. & N Linc 0800 375 675
National Grid	0800 678 3105
UK Power networks	0800 316 3105
Northern Ireland Electricity Networks	03457 643 643
Energy Networks Association	http://www.energynetworks.org/info/faqs/electricity-distribution-map.html
JUST DIAL 105	www.powercut105.com

Back to home

openreach
Connecting you to your network

Where can I find more information on power?

EPT/PPS/B046	Work on overhead BT lines in the vicinity of power - Precautions against electrical accidents
EPT/OHP/C032	Working on Joint User Poles
EPT/PPS/B026	Code of Practice - Protection of Telecommunication Lines from Power Lines
EPT/PPS/B023	Electrified Railways - Electrical Guarding
EPT/PPS/B038	Joint User Poles - Technical Requirements for Attachment on Joint User Poles
EPT/PPS/B037	Joint User Poles – attachments
SFY/ HSH/D039	O/H Network using a Mobile Elevating Work Platform
EPT/OAM/F070	Non BT pole attachments
Health & Safety handbook	http://snip.bt.com/HSHbook
0800 077 8588 or 0207 397 1487	Safety services via HR shared service
Web based training ORSAF023	Safe working at height – an update on overhead power – accessed via Learning Home

Back to home

openreach
Connecting you to your network

	CHANGES FROM VERSION 2.9 April 2018 onwards	Affects
V3.7	New addition (paragraph 3) detailing the origin of policy and JUPs not existing in Northern Ireland.	Sect 1 page 3
V3.7	DNO map updated to include ORNI and WPD now National Grid.	Sect 6 page 38
V3.7	New 'T' pylon incorporated into pylon graphic	Sect 1 page 6
V3.7	5.8m min climb eight for DNO wires over roads added to pylon graphic & grid voltages for NI added. Also 20kV & 66kV made clearer.	Sect 1 page 6
V3.7	Removed the '1m rule does not apply to ABC & concentric neutral cables in mid span' and amended text in paragraph 1.	Sect 2 page 15
V3.7	500mm changed to 800mm correcting an error on stay wire insulator(s).	Sect 2 page 12
V3.7	Two new photos added, with detail, (33kV & 11kV on H pole & 25kV on Network Rail OLE)	Sect 4 page 26
V3.7	New graphics for HV SSoW with more detail on MEWP training	Sect 5 pages 34, 35 & 36
V3.7	New text referencing the provision & recovery of a wire over LV power	Sect 5 page 33
V3.7	Answer to Q2 updated to cover GRP PASMA towers	Sect 2 page 13
V3.7	TETRA statement updated to reflect completion of TETRA role out. Link also added to TETRA FAQs	Sect 2 page 10
V3.7	A1024 code descriptions updated & 541 code added	Sect 1 page 3
V3.7	Text changed to clarify no WaH in the red zone.	Sect 4 page 28
V3.7	Question change to encompass all wire types not just metallic dropwire	Sect 4 page 27
V3.7	Text changed due to policy change on SSAC under HV power regarding fitment of insulator stay No2s	Sect 4 Page 27
V3.7	HV power conflicts and possible resolutions (ISIS EPT/PPS/B072) added to paragraph 2.	Sect 4 Page 28
V3.7	ADSS cable clarification note added and references to 'new' removed.	Sect 4 Page 29
V3.7	Clearance / separation distances of LV cables coming down JUPs – EB TP4	Sect 2 new page added - 17
V3.7	Removal of reference to 'Rods Clearance Complete' which is now recorded on eASC as "obsolete".	Sect 1 page 7
V3.7	Update requested to 'Remember 1' referencing surveyors	Sect 1 page 4
V3.7	Clarification text added reg; PEU staffing req when working within 25m of HV	Sect 3 page 34
V3.7	New detail about ENA agreement regarding existing non standard SSAC under 33kV systems	Sect 4 new page added - 30

Archived changes pre V3.7 can be found here

Back to home

openreach
Connecting you to your network

	CHANGES FROM VERSION 2.9 April 2018 onwards	Affects
V3.8	Links to ISIS documents updated	All sections
V3.8	Clarity added to the 3.5m rule around plant proximity to O/H mounted DNO transformers & switchgear	Sect 4 page 28
V3.8	Updated photo & description to LV / HV insulator identification.	Sect 3 page 19

Back to home