

nationalgrid

Look out, look up!

National Grid Electricity Distribution's
guide to the safe use of mechanical
plant in the vicinity of electricity
overhead lines



The safe use of mechanical plant in the vicinity of electricity overhead lines

Every year in the UK on average, two people are killed and many more are injured when mechanical plant and machinery comes into contact or close proximity to overhead electricity lines.

This booklet has been produced for anyone who uses mobile plant, (such as Hiabs, MEWPs, tipper lorries and trailers, grab lorries, concrete conveyors and excavators) for short duration work and provides general guidance on how to avoid becoming part of these statistics.

1 Before starting work

Overhead lines have the advantage that they can easily be seen, so before you set up your vehicle or plant always:

Stop and look up!

If you are working at night, or in conditions of poor visibility, you should use spotlights or a torch to carefully check that there are no overhead lines within your vehicle's reach.

If you are in any doubt about whether the lines in question are power or telephone (this is a very common mistake) – always assume that they are power lines and are live.

Always assume that our lines are live unless we have informed you otherwise in writing.

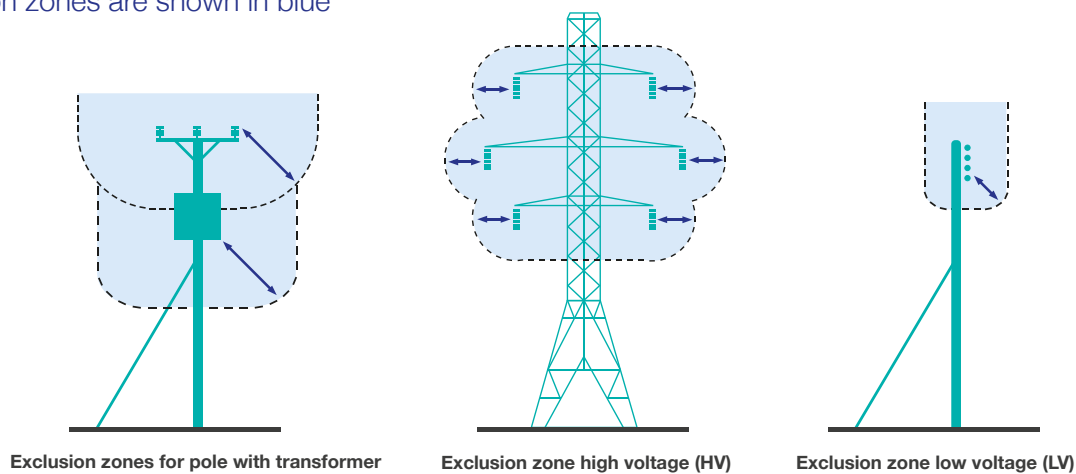
It is not normally practical for electricity companies to shroud high voltage conductors and even when low voltage conductors are shrouded, the shrouding is not designed to protect against contact by mechanical plant – again, always assume the lines are live.

2 Exclusion zones

Overhead power lines are not normally insulated and so any contact can result in serious or fatal injuries. Electricity at high voltages can also jump gaps with no warning whatsoever, so it is also dangerous to let your plant approach too close to a line. The distance that electricity can jump depends on the voltage of the line.

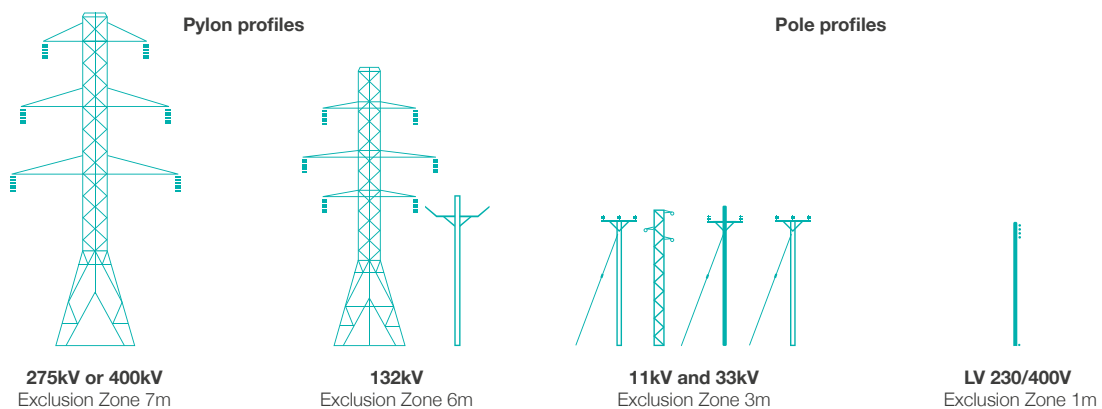
The higher the voltage, the further you must stay away from the line and any other equipment that may be fitted to the pole or pylon. This distance is called the **exclusion zone**. Examples of this are shown highlighted in the diagram below.

Exclusion zones are shown in blue



You must not allow any part of your plant to enter the **exclusion zone**. The diagram below shows typical types of overhead lines and provides a guide to help

you assess the line voltage of lines on wooden poles or steel pylons. The minimum **exclusion zone distance** is shown for each example.



Please note that these are absolute minimum distances that should under no circumstances be infringed. **If you do – it could prove fatal.**

Please remember this is for guidance only, and if you are in any doubt, please call us for advice before setting up your plant or starting work.

As well as staying away from the lines or equipment, you should also stay at least 600mm away from any part of poles, pylons and stay wires.

3 Stand off distances

If there are power lines in the vicinity of your work the best way to make sure you stay out of the **exclusion zone** is to position your vehicle at a **safe stand off distance** so that, even when fully extended, no part of it can accidentally reach inside the **exclusion zone**.

This **safe stand off distance** can be calculated by adding the **exclusion zone** distance for the appropriate voltage of the line to the **maximum operating reach** of your vehicle.

This is shown in the diagram opposite (Fig. 1).

If you position your vehicle outside of the **safe stand off distance**, there is no risk of accidental contact with the lines and no danger of electricity jumping from the line to your vehicle.

If you cannot achieve a **safe stand off distance**, consider moving your vehicle to a safer location (Fig. 2).

It may make your job a bit more difficult, but if it means you stay away from the **exclusion zone** - it will be safer.

The next best option would be to consider using smaller plant with a **maximum operating reach** (Fig 3) that cannot enter the **exclusion zone** (Fig 2).

You may not be able to achieve either of these options, so, as a last resort, if you cannot avoid operating large items of plant in the vicinity of lines, you must make sure that the plant is fitted with restraints to ensure that the **exclusion zone** cannot be entered.

These restraints may be electrical or hydraulic systems fitted to the plant, or mechanical devices such as chains. Please seek advice from the plant manufacturer for more information on choices available for your particular item of plant.

If you are using a mechanical excavator to dig parallel to the line, it is good practice to position the excavator with the tracks or wheels parallel to the line, so as you move along the excavation the **safe stand off distance** is easily maintained (Fig. 3).

Care must also be taken to avoid non mechanical equipment, (e.g. scaffold poles, ladders and long loads such as lengths of steel or timber) from entering the **exclusion zone**.

Always maintain at least 600mm clearance from your plant to any of our poles, stay wires or pylons. Any contact with these by your plant could cause the line to break and fall to the ground.



Figure 1

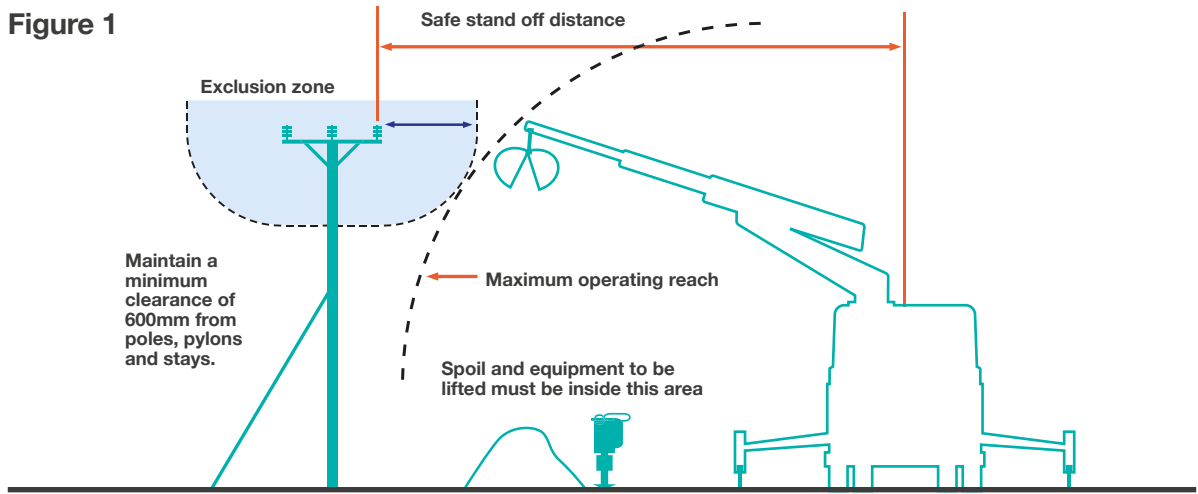


Figure 2

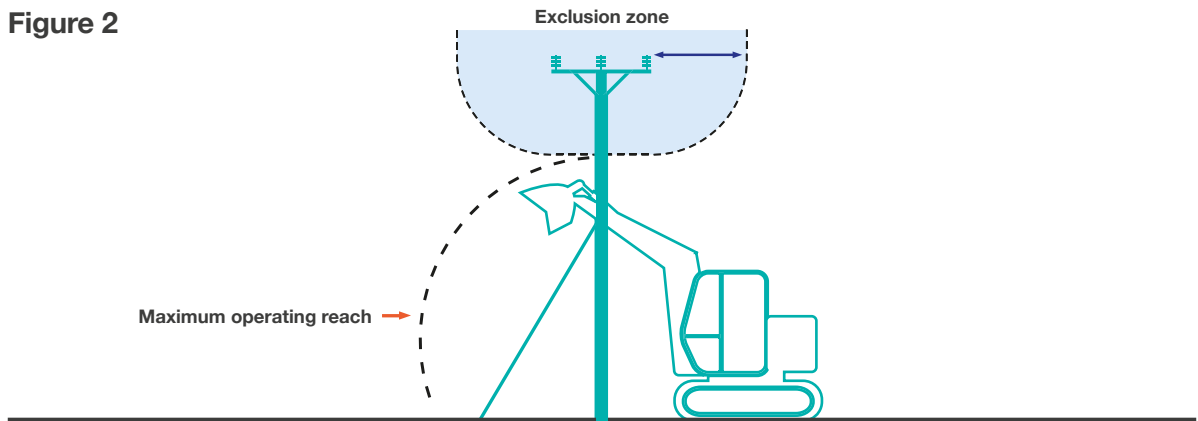
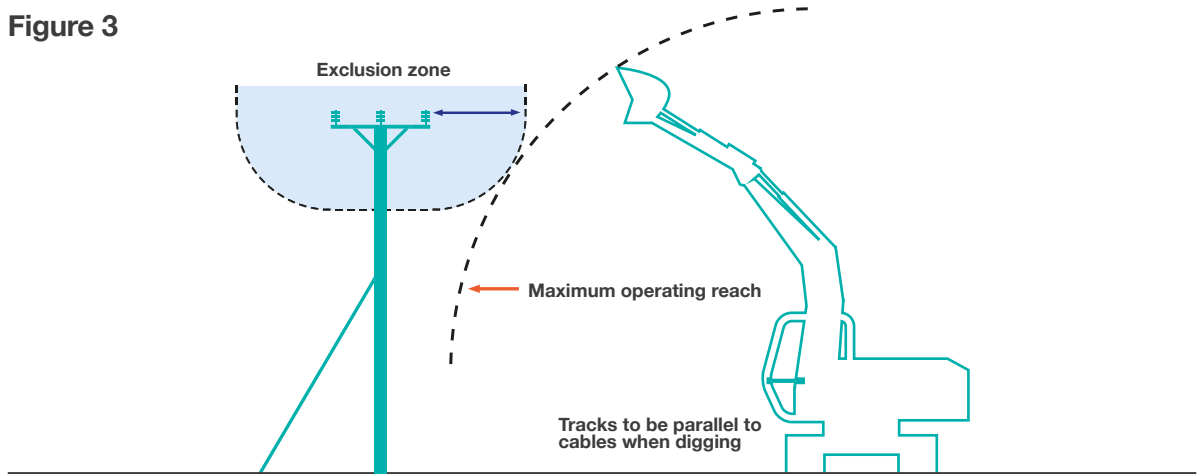


Figure 3



4 Emergency procedures

If contact is made with an overhead line, you must immediately clear the area and suspend all work within 50m of the damage because the line could still be live, or become live again.

The operator of a machine that is in contact with an overhead line should take the following steps:

If the machine is still operable:

- lower any raised parts that are controlled from the driving position and/or drive the vehicle clear of the line, as long as neither of these actions risk breaking the line or dragging it to the ground.

If the machine is not operable or cannot be driven clear of the line:

- stay in the cab
- contact your site manager or us immediately by radio or mobile phone or as soon as possible by any other method
- instruct everyone outside the vehicle not to approach it
- do not exit the cab until given confirmation by National Grid Electricity Distribution personnel that it is safe to do so.

If the machine is inoperable or cannot be driven free and there is risk of fire or other immediate hazard:

- jump clear of the vehicle, avoiding simultaneous contact with any part of the machine and the ground
- try to land with your feet as close together as possible
- where possible, continue to move away from the vehicle using 'leaping strides' until at least 15m from the vehicle
- instruct other people in the vicinity not to approach the vehicle
- do not return to the vehicle until given confirmation by National Grid Electricity Distribution personnel that it is safe to do so.

Whatever the circumstances please contact us on our emergency number immediately and tell us what has happened.

Please be ready to provide us with a contact telephone number and an accurate location or set of directions – this will help us in getting our staff to site quickly to minimise any danger and to reduce any disruption to your work.

**Our emergency number is:
105 or 0800 6783 105**

Please report any damage or contact no matter how minor they may seem to you at the time.

Whilst the damage may not cause a serious problem at the time of contact it could fail later, causing danger to our staff and members of the public, disruption to our customer's supplies, and – if we trace the damage back to you – a larger repair bill!



what3words

what3words is a simple way to identify precise locations. Every 3 metre square has been given a unique combination of three words. Learn more about how it works here: [what3words.com](https://www.what3words.com)

CALL 105



5 More information

Proximity Warning Systems (such as Wire Watcher – see wirewatcher.co.uk for information) may be fitted to your vehicle. Never turn these devices off or disable them in any way.

Take note of any warnings these proximity warning systems may provide but do not use the presence of such devices as a reason not to follow the advice provided in this leaflet.

For your information, we are legally obliged to report all contact with our system to the Health and Safety Executive (HSE), and, if you are an employer, you may be obliged to report incidents involving your staff or contractors to the HSE. Even if no one is hurt, you could still find yourself being prosecuted for causing a dangerous occurrence.

6 Further reading

For advice related to signing and guarding at longer term work sites please also refer to National Grid Electricity Distribution booklet “Avoidance of Danger from Electricity Overhead Lines and Underground Cables”. More detailed information is also published in the following documents available from the HSE.

GS6 – Avoidance of Danger from Overhead Lines.

HS(G) 47 – Avoiding Danger from Underground Services.

Along with Forestry Industry Safety Accord (FISA) publication **FISA 804 - Electricity at Work: Forestry.**

Simple rules to stay safe:

- treat all overhead lines as live and dangerous
- any contact may be fatal or cause very serious injuries
- electricity can jump gaps
- before you set up near to lines, **stop and look up**
- take special care and use lights in the dark or poor light conditions
- if there are lines in the vicinity of your work, stay well away
- set up your plant with care to reduce the chance of contact
- if you are unsure or need advice, please ask us before starting work.



If you require more site-specific information relating to our equipment at your location please contact us on the relevant **general enquiries number:**

0800 096 3080

Finally... please, always remember that electricity overhead lines can be very dangerous – **the general rule is stay away and stay safe!**

