Guidance - General

Look Out, Look Up!

Safety information for safe usage of mechanical plant in the vicinity of overhead power 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

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.

Overhead power lines can be seen, so before you start work always:

Stop, Look Out and Look Up!

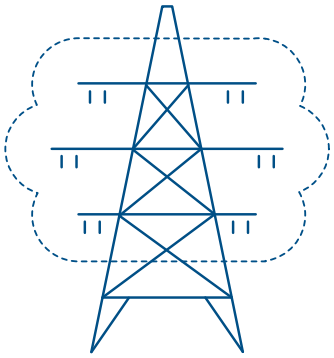
2.
Exclusion zones

Overhead power lines are not normally insulated and so any contact can result in serious or fatal injuries.

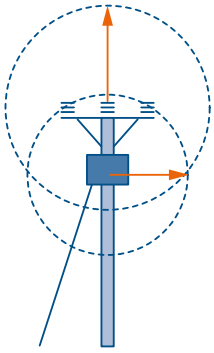
Electricity at high voltages can also jump gaps with no warning whatsoever, so it is also dangerous to let your plant approach too close to a line. The distance that electricity can jump depends on the voltage of the line.

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.

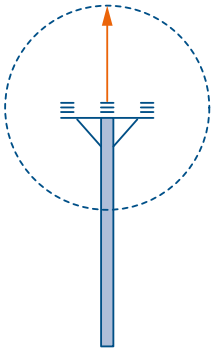
Exclusion zone high voltage (HV)



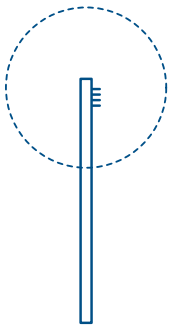
Exclusion zones for pole with transformer (HV)



Exclusion zone for pole without transformer (HV)



Exclusion zone low voltage (LV)



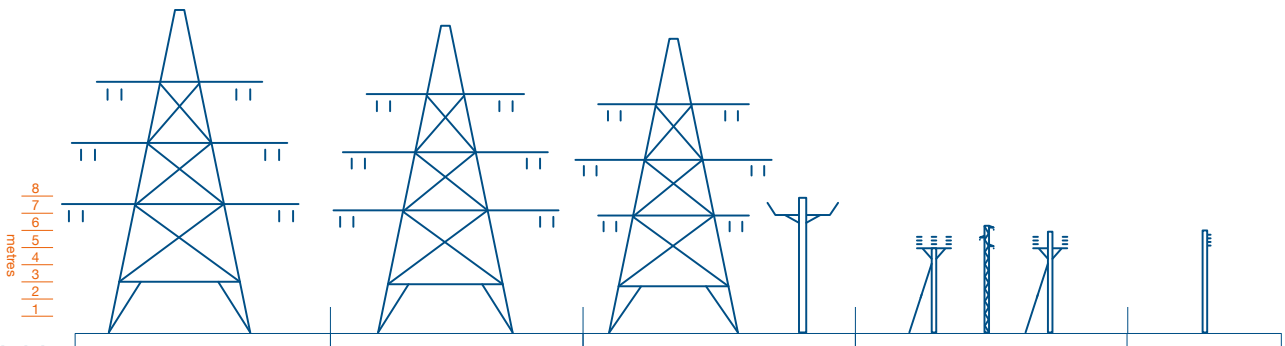
You must not allow any part of your plant to enter the exclusion zone. The diagram below shows typical types of overhead lines and provides a guide to help you assess the line voltage of lines on wooden poles or steel pylons. The minimum exclusion zone distance is shown for each example.

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

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

Any contact with these by your plant could cause the line to break and fall to the ground.

Please remember this is for guidance only, and if you are in any doubt, please contact your local electricity network operator for advice before setting up your plant or starting work.



	400kV	275kV	132kV	1kV to 33kV	LV 230/400V
Minimum height above ground	7.3 metres	7 metres	6.7 metres	5.2 metres	5.2 metres
Exclusion zone distance	6 metres	5 metres	4 metres	3 metres	1 metres

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 (Figure 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 (Figure 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 (Figure 3.) that cannot enter the exclusion zone (Figure 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 if 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 (Figure 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 part of the electrical structure (poles, pylons and stay wires). Any contact with these by your plant could cause the line to break and fall to the ground.

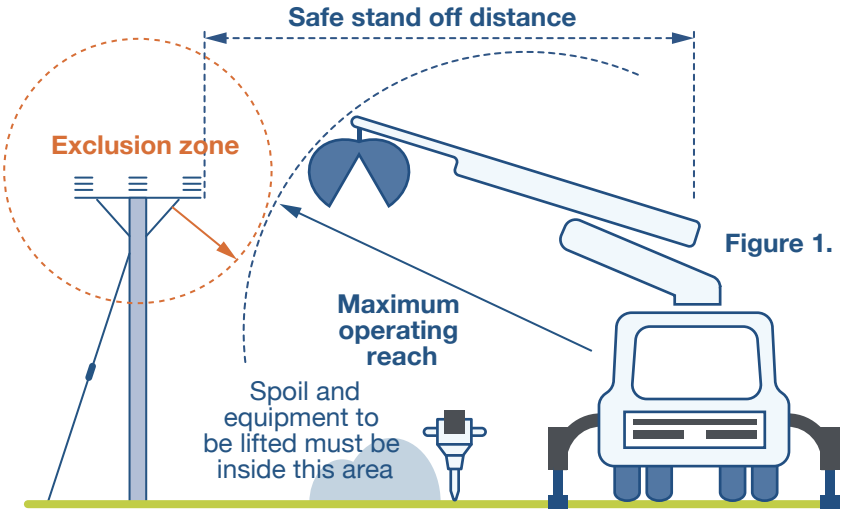


Figure 1.

Figure 2.

	Exclusion zone distance
400kV	6 metres
275kV	5 metres
132kV	4 metres
1kV to 33kV	3 metres
LV 230/400V	1 metres

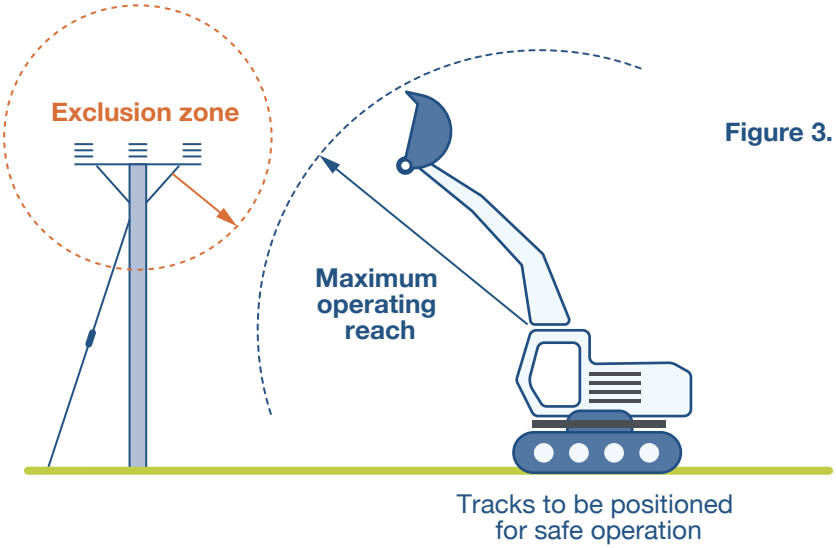


Figure 3.

4.
Emergency procedures

Has your machine / vehicle come into contact with an overhead power line?

Yes

Is there a fire or risk of injury?

Yes

If you can, Call 999

Report your location, tell them what has happened and that power lines are involved.

No

Is the machine / vehicle safe to operate?

Yes

Stay in the cab (if safe), lower any raised parts that are controlled from the driving position and/or drive the machine / vehicle clear of the line, as long as neither of these actions risk breaking the line or dragging it to the ground.

No

Stay in the cab if possible.
If you need to evacuate then jump well clear!!

Avoid simultaneous contact with any part of the machine and the ground.

(Electrocution is possible if anyone touches both the machine / vehicle and the ground at the same time).

Move away using 'long leaping strides' until at least 10 metres from the machine / vehicle.

Warn others and restrict all access to area.

(Instruct everyone outside the machine / vehicle not to approach it and not to touch any fallen wires and stay 10 metres clear, even if the line appears dead.)

Contact your local electricity network operator on 105 within GB or 03457 643 643 within Northern Ireland.

Do not exit the cabin or return to the machine / vehicle until given confirmation by the electricity network operator that it is safe to do so.

CALL 105

Wait for electricity network operator personnel to confirm that power is off and safe.
(There is a possibility that the overhead power line will be re-energised at any time.)

Whatever the circumstances please contact you rlocal the electricity network operator on 105 within GB immediately and tell them what has happened.

Please be ready to provide a contact telephone number and an accurate location or set of directions – this will help them to get staff to site quickly to minimize any danger and to reduce any disruption to your work.

Emergency number is:
105 within GB 03457 643 643 for Northern Ireland.

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 staff and members of the public, disruption to customer's supplies, and – if traced back to you – a large 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

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 -

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.

7.
Simple rules and information 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, Look Out, 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 if you can. If not, follow the recommended safe distances and exclusion zone distances mentioned in this guidance.
- set up your plant with care to reduce the chance of contact
- if you are unsure or need advice, please contact your local electricity network operator on 105 (GB) and 03457 643 643 (NI).

Always remember that overhead power lines can be very dangerous – the general rule is Look Out, Look Up, stay away and stay safe!

For advice, telephone your local electricity network operator on 105 (GB), or 03457 643 643 for (Northern Ireland).

CALL 105

Alternatively log on to ENA website **www.energynetworks.org**

This guidance is published by ENA (Energy Networks Association)