



Electrical utility arboriculture



Introduction

This leaflet covers the safe working practices to be followed by those working specifically for and on behalf of Network Operators (NOs) undertaking routine and emergency tree-work operations near energised and de-energised overhead power lines.

Any person undertaking this work must be authorised by the local NO to carry out such work and should follow the Safety Rules enforced by the local NO (see Energy Networks Association (ENA) Engineering Recommendation G55/1 *Safe tree working in proximity to overhead electric lines*).

All operators must have had appropriate training in how to operate the equipment and carry out the tasks required. Training is available from Lantra Awards and other training providers (see AFAG leaflet 805 *Training and certification*). Operators working near overhead lines should possess the appropriate Certificate of Competence awarded by the NPTC under their Utility Arboriculture Scheme.

This leaflet does not apply to general tree-work operations in proximity to overhead power lines for which guidance is provided in AFAG leaflet 804 *Electricity at work: Forestry and arboriculture*. General guidance on tree-climbing operations is in AFAG leaflet 401 *Tree-climbing operations*; AFAG leaflet 402 *Aerial tree rescue*; and the Arboricultural Association publication *Guide to good climbing practice*.

Hazards involved

- 1 Contact with overhead power lines causes fatal injuries or severe electric shock and burns.
- 2 Striking underground cables frequently leads to burn injuries from the resulting 'explosion' and may also result in electric shock if contact is made with live conductors.
- 3 All work at height creates the risk of serious injury from falls and needs to be properly planned, organised and carried out by competent workers (see INDG401 *The Work at Height Regulations 2005: A brief guide*).

Risk assessment

- 4 A site-specific risk assessment including all arboricultural and electrical risks **must** be carried out on the day. All risks must be re-considered even if an assessment of these has been made at the work planning stage. A suitable emergency procedure needs to be agreed and set up with the NO to manage any electrical incidents. Access routes need to be agreed and incorporated in the emergency plan.
- 5 Working near 'live' overhead power lines should rarely be permitted. All work near live overhead power lines must be fully justifiable and satisfy all three requirements of regulation 14 of the Electricity at Work Regulations 1989. These requirements are that no one should work near a 'live' conductor unless:

- it is unreasonable in all circumstances for it to be made dead; and

- it is reasonable in all the circumstances to be at work near it while it is live; and
- suitable precautions (including where necessary the provision of suitable protective equipment) are taken to prevent injury.

6 This justification must be carried out each time any work near 'live' overhead power lines takes place. If the justification is not met then the work must not proceed until the line has been de-energised. Detailed guidance on deciding to work 'dead' or 'live' is given in HSE publication HSG85 *Electricity at work: Safe working practices*.

7 Work should not take place on or near overhead power lines during electrical storms (lightning) or in wet weather where the surface of trees or tools and equipment could become live if contact with the line or arcing occurs.

Worksite planning before work begins

- 8 A site-specific risk assessment should have been carried out (see paragraph 4).
- 9 A site plan and electrical schematic diagram of the area should be available. Ensure the name of the line including pole numbers, transformer names and, where relevant, switchgear identification numbers or names are known to all members of the working party and are identified on site before work starts.
- 10 Information should be available on which parts of the work are to be undertaken live or dead, and clear guidance given on site as to the exact parameters of the work area and the work to be done. A suitable Safety Document may need to be issued.
- 11 Details of the route of all overhead and underground power lines that cross through or near the worksite, any access roads and paths adjacent to the site should be available.
- 12 Details of the minimum safe clearance distance for driving alongside the lines and the maximum safe height for vehicles passing under the lines should be available (see GS6 *Avoidance of danger from overhead electric powerlines*). Clearly mark these on the site map. This will need to be established in consultation with the NO.
- 13 Information on how the operations are to be organised within the worksite to minimise the need for equipment to pass below or close to overhead power lines should be available.

Emergency procedures

- 14 It is the responsibility of all members of the working party to be aware of these procedures.
- 15 Before work starts, an 'emergency briefing' must be carried out with the working party. An agreed 'procedure for emergency situations' should be produced by the duty holder (likely to be the contractor) in consultation with the NO and as a minimum should include:
- contact details for the NO Control Room – check you can actually make contact, eg is there mobile phone reception?

- the location of the nearest Accident and Emergency facility;
- an access point for the emergency services;
- a rescue plan for incidents at height (as required by regulation 4 of the Work at Height Regulations 2005);
- agreed responsibilities of the working party members.

What to do in an emergency

- 16 Following any contact or electrical discharge incident:
- always treat all conductors as 'live' until confirmed otherwise by a representative of the NO;
 - keep everybody at least 6 m (measured horizontally) clear of any conductor, person, machine or other plant-type machinery or vegetation that is within the vicinity zone (see paragraph 26) of the power line.
- 17 If a vehicle should come into contact with an overhead power line and the operator is at risk from fire or other immediate danger and the vehicle cannot be moved, the operator should jump clear of the vehicle, avoiding simultaneous contact with any part of the vehicle and the ground.
- 18 Following an incident, do not approach or touch any person, machine or other plant-type machinery or vegetation that is within the vicinity zone of the power line, until advised by the NO that it is safe to do so. Warn others to keep away and post a watchman if necessary.

Other key issues

- 19 Do not reduce the clearance between the ground and overhead power lines in any way, eg by creating brash mats.
- 20 Agree with the NO the tools and equipment that will be used and only use that equipment.
- 21 When transporting ladders or other long objects around a worksite, they must be carried in a horizontal position and as close to the ground as possible.
- 22 Ensure that stay wires and other pole-supporting equipment are not disturbed or damaged as this may result in the overhead lines breaking or reducing their ground clearance.
- 23 Where work is to be carried out using a mobile elevating work platform (MEWP), the instructions of the local NO must be followed (see AFAG leaflet 403 *Mobile elevating work platforms (MEWPs) for tree work*).

Categories and zones

- 24 All tree-work operations near live overhead lines should comply with the general guidance given in ENA's G55/1 and/or the NO's Safety Document, Permit to Work or other instructions.

Notes

Further reading

<i>Using petrol-driven chainsaws</i>	AFAG301
<i>Top-handled chainsaws</i>	AFAG308
<i>Use of winches in directional felling and takedown</i>	AFAG310
<i>Tree-climbing operations</i>	AFAG401
<i>Aerial tree rescue</i>	AFAG402
<i>Mobile elevating work platforms (MEWPs) for tree work</i>	AFAG403
<i>Emergency planning</i>	AFAG802
<i>Electricity at work: Forestry and arboriculture</i>	AFAG804
<i>Training and certification</i>	AFAG805
<i>The Work at Height Regulations 2005: A brief guide</i>	INDG401
<i>Avoidance of danger from overhead electric power lines GS6</i>	0 7176 1348 8
<i>Avoiding danger from underground services HSG47</i>	0 7176 1744 0
<i>Electricity at work: Safe working practices HSG85</i>	0 7176 2164 2

These publications are available from HSE Books - see 'Further information'.

Energy Networks Association (ENA) Engineering Recommendation G55/1 *Safe tree working in proximity to overhead electric lines* available from Energy Networks Association, 18 Stanhope Place, London W2 2HH Website: www.energynetworks.org

Guide to good climbing practice available from the Arboricultural Association at: www.trees.org.uk

Name:.....

Checklist verified by:.....

Date:.....

Further information

HSE priced and free publications are available by mail order from HSE Books, PO Box 1999, Sudbury, Suffolk CO10 2WA Tel: 01787 881165 Fax: 01787 313995 Website: www.hsebooks.co.uk (HSE priced publications are also available from bookshops and free leaflets can be downloaded from HSE's website: www.hse.gov.uk.)

For information about health and safety ring HSE's Infoline Tel: 0845 345 0055 Fax: 0845 408 9566 Textphone: 0845 408 9577 e-mail: hse.infoline@natbrit.com or write to HSE Information Services, Caerphilly Business Park, Caerphilly CF83 3GG.

This leaflet contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.

This leaflet is available in priced packs of 15 from HSE Books, ISBN 0 7176 2646 6. Single free copies are also available from HSE Books.

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