A product of

INTERNATIONAL SOCIETY OF ARBORICULTURE 32nd CHAPTER

NZARB™

New Zealand Arboricultural Association Inc.

Endorsed by

eea

Electricity Engineers' Association

# Safety Requirements for the Maintenance or Removal of Trees Around Power Lines in New Zealand


# Utility Best Practice Guide (UBPG)

INTERNATIONAL SOCIETY OF ARBORICULTURE 32nd CHAPTER

NZARB™

New Zealand Arboricultural Association Inc.

Edition number 1
Year 2020
Version number 2

Produced by The New Zealand Arboricultural Association
P.O. Box 1193
Nelson 7040
New Zealand
Web: www.nzarb.org.nz
Email: info@nzarb.org.nz

Acknowledgement Electricity safety guidance produced with support from and the endorsement of the Electricity Engineers Association (EEA)'

## TABLE OF CONTENTS

## SCOPE AND PURPOSE OF THIS DOCUMENT

This Utility Best Practice Guide (UBPG) contains safety requirements for climbing, pruning, trimming, maintaining and removing trees and vegetation from around powerlines and for using tools and equipment in arboricultural operations involving electrical hazards.

Nothing specified in this document supersedes legislation or the recommendations of equipment manufacturers, The use of this document does not replace the need or requirement for Network approval.

This UBPG sets out sound work practices for everyone involved in vegetation control and tree felling around powerlines. This document is not designed as a training manual and should not be considered as one. This UBPG covers pruning, maintaining or removing any vegetation that is near to any overhead network or privately owned live electric power lines, where any parties to the work owe Health and Safety at Work Act (2015) duties. It concerns clearing or maintaining vegetation that is hazardous because it is close to the live power lines. This also includes any tree removal or felling for commercial or any other purposes; close to the power lines. This UBPG states acceptable practices for safely removing or maintaining vegetation that is close to live power lines. Its aim is achieving the safety of people and power supplies during this work.

*These guidelines are not intended to be an instruction manual for those working in the Arboricultural Industry or those undertaking Utility Arboriculture work. It is essential that all persons working within the Arboriculture and/or the Utility Arboriculture Industry first seek and obtain specialist training and qualifications in the correct use of the techniques and equipment described in this document.*

### Application

This UBPG applies to anyone engaged in vegetation control, which is defined in this document as the business, trade or performance of pruning, maintaining or removing trees and vegetation, or cutting scrub that is close to live power lines. 'The UBPG states preferred practices for these works, for 'service providers' and 'asset managers' in support of this type of work.

The UBPG states preferred work practices for 'ordinary persons', utility arborists level 1 and utility arborists level 2 undertaking vegetation control work on trees and vegetation that may approach live power lines. This UBPG informs ordinary persons' about keeping a safe distance from the lines, how to liaison with asset managers, and undertake work practices to avoid electrical hazards in their work.

An ordinary person for the purposes of this document is any person that does not meet the core competencies that are considered core for a utility arborist as defined by this guide.

Asset manager and service provider management must incorporate into their policies and procedures the practices fitting to each in this guide. Responsible persons must carry out their role in arranging or requiring vegetation control work.

All have duties under the Health and Safety at Work Act, whether as employers, principals, contractors, self-employed or 'persons in control'.

### Application to electricity network and private power lines

Utility arborist work practices are applicable across all live power lines, whether electricity network or privately owned power lines. Most of their work is around electricity networks, so the UBPG incorporates accepted electricity network requirements into the utility arborist work practices. These include, for example:

a) Requirements to follow reclose block procedures (that is, procedures to ensure that circuit breakers and reclosers supplying the power line near which vegetation control work is being carried out do not immediately reclose after clearing an electrical fault);
b) Following asset manager policy about trees in contact or directions about use of safety observers or use of mobile plant;
c) Heeding asset manager advice about their electricity network assets or about applying temporary earths.

Private power line owners are not competent to require such practices; they rely on utility arborist advice and expertise. Service providers and utility arborists must apply the practices in this UBPG suitably to work near privately owned power lines.

### Asset manager options for clearing vegetation

The Utility Arboriculture Best Practice Guide (UBPG) recognises that electricity network asset managers may exercise various choices for clearing vegetation. For example, they may use qualified electrical workers working to approved procedures (including in emergencies) near live power lines, or they may use other suitable means to clear vegetation for power lines that have been disconnected and made safe.

## CONTEXT FOR THIS GUIDE

The Electricity Act 1992 and Electricity (Safety) Regulations supported by Codes of Practice require asset managers to maintain safe electricity networks. Private owners must also ensure their power lines are safe. ECP 34 New Zealand Electrical Code of Practice for Electrical Safety Distances specifies safety practices for work close to power lines.

The Electricity (Hazards from Trees) Regulations 2003 require tree owners to manage their trees and to keep them clear of electricity networks. The Regulations specify tree exclusion and notice zones around power lines. This is to avoid hazards from trees near to the networks and to maintain public safety.

The Health and Safety at Work Act 2015 (HSWA) and the relevant Regulations, Codes and Guides govern the work activity of maintaining vegetation close to power lines at 'places of work'. ECP 34 [the NZ Code of practice for Electrical Safe Distances] specifies safety practices for work near to power lines, but it does not specifically cover trees. The Safety Manual – Electricity Industry (SM-EI) conveys principles and acceptable practices for work on or near power lines. This UBPG adapts the principles and practices in ECP 34 and SM-EI. It applies these to the non-electrical work activity of maintaining vegetation close to power lines, as a work activity covered by the HSWA Act.

### Variations

Any Safe Work Document and/or Guide other than this particular Utility Best Practice Guide that is used for vegetation control work must meet or exceed the requirements of this document. The use of Safe Work Documents and/or Guides is only with the approval of the asset manager, the service provider, and with an employee agreement.

### Further Information

Further information on managing work place health and safety including Codes of Practice and other safety information and documentation can be found on the WorkSafe NZ website: www.worksafe.govt.nz WorkSafe can be contacted during normal office hours on their free phone number 0800 030 040

### Terminology

The terminology of this UPBG is consistent with NZ Codes of Practice. Firstly, all specific recommendations are presented as numbered clauses within the booklet's different sections. Less specific background information that may be of use to a reader is usually included as unnumbered paragraphs at the beginning of each section. When reading the guideline, it should be remembered that "shall" denotes a mandatory requirement; and "should" denotes an advisory recommendation.

### Acknowledgement

The New Zealand Arboriculture Association recognises the electricity supply and arboriculture industry representatives who helped develop this Guide. The association also recognises the Trees Code Part Two Working Group who created and revised the first draft(s) of this document. The New Zealand Arboriculture Association, with other industry bodies called this Work Group together. It comprised regulatory representatives, representatives of electricity network operators and owners, service providers who carry out the work, and The New Zealand Arboriculture Association/32nd Chapter of the International Society of Arboriculture Incorporated, which owns this document.

## THE HEALTH AND SAFETY AT WORK ACT (2015)

The Health and Safety at Work Act (2015) (HSAW Act) is the over-arching legislation for health and safety in the workplace context, and compliance with the HSAW Act is mandatory.

The object of the HSAW Act is to prevent harm to all people at work and people in, or in the vicinity of, a place of work.

### The duty of care chain

A duty of care is a legal obligation that is usually imposed on an individual person requiring them to adhere to a standard of reasonable care while undertaking or performing any acts of duty that could possibly harm others.

The duty of care chain starts at the top then works down to the person doing the work; it ensures that everybody is responsible for the safety of others as well, and being responsible for their own actions.

### Public safety

If any risk of injury to the public exists, then the site shall be managed in such a way as to ensure public safety.

The service provider must have in place appropriate procedures for the safety and separation of the public and vehicular traffic from vegetation control work in progress.

### Notifications

The WorkSafe's web address www.worksafe.govt.nz. "Notifications" shows how to inform WorkSafe about occupational disease, serious harm accidents, commercial vehicle accidents and "particular hazardous work". This includes commercial tree felling and maintaining vegetation around power lines.

Service providers must send a completed "Notification of particular Hazardous work" to the local WorkSafe office in accordance with their requirements. Others such as responsible persons, asset managers or self-employed utility arborists can have 'person in control', 'principal', 'contractor', or 'self-employed' responsibilities for the vegetation control work, under the HSAW Act. These should similarly notify the local WorkSafe office as they require. Ordinary persons have similar responsibilities for notifying work they are permitted to do. Such notification is not required for emergency work around power lines that has been authorised by the asset manager.

General enquiries and more information can be made calling WorkSafe on their free phone number 0800 030 040 during normal office hours.

The Person Conducting a Business or Undertaking (PCBU) has an obligation to do more than just provide information on the hazards. WorkSafe NZ requires the principal and the contractor (or employer) to jointly determine measures to manage the hazards.

This Utility Best Practice Guide (UBPG) applies to anyone engaged in the business, trade or performance of pruning, maintaining or removing trees, or cutting scrub that is close to live power lines. 'Utility arborists' do this work called 'vegetation control'. The UBPG states preferred practices for these and for 'service providers' and 'asset managers' in support of this work. The Best Practice Guide obliges anyone else arranging or requiring this work as 'responsible persons'.

The UBPG states preferred practices for 'ordinary persons' doing other tree work that approaches live power lines. These are not competent to work with vegetation close to live power lines. The UBPG informs them about keeping a safe distance from the lines, liaison with asset managers, and work practices to avoid electrical hazards in their work.

Asset manager and service provider management must incorporate into their policies and procedures the practices fitting to each in this guide. Responsible persons must carry out their role in arranging or requiring vegetation control work.

All have duties under the HSAW Act, whether as employers, principals, contractors, self-employed or 'persons in control'.

## HAZARD MANAGEMENT AND APPLICATION

### Health and safety system

Before any work begins, the principal is required to verify that the contractor (or employer) has a documented health and safety system in place.

When a WorkSafe NZ inspector visits, they will want to see evidence of that system, and will look for the following things:

a) there is a documented process to identify on-site hazards and the management of the associated risks.
b) there is a designated, competent observer for complex felling or high-risk situations.
c) the person conducting the work holds the appropriate competency and has been deemed competent using a robust process;
   (i) where the person conducting the work does not hold that recognised competency, that they are working towards achieving it, and, in the interim, have been deemed competent to do the work or are under close supervision;
d) there is a system to audit competence on a regular basis.

### Accidents and Serious Harm

HSAW Act defines “accident” as an event that:

a) Causes any person to be harmed; or
b) In different circumstances might have caused any person to be harmed. This means that “accident” includes both near misses and accidents that result in harm to a person or might have caused any person to be harmed.
c) Every employer is required to maintain a register of accidents and serious harm, and record particulars relating to: Every accident that harmed (or, as the case may be, might have harmed):
   (i) Any employee at work; or
   (ii) Any person in a place of work controlled by the employer; and
   (iii) Every occurrence of serious harm to an employee at work, or as a result of any hazard to which the employee was exposed while at work, in the employment of the employer.
d) Where there occurs any serious harm or accident an employer must:
   (i) As soon as possible after its occurrence, notify the secretary of the occurrence; and
   (ii) Within 7 days of the occurrence, give the secretary written notice, on the prescribed form, of the circumstances of the occurrence.
e) The notification to the secretary applies to:
   (i) Every occurrence of serious harm to an employee at work, or the occurrence of serious harm, as a result of any hazard to which the employee was exposed while at work, in the employment of the employer, and accidents of a kind or description required by regulations.

### Training and Supervision of Employees

According to The HSAW Act , an employer must ensure that every employee who:

a) does work of any kind, or
b) uses plant of any kind, or
c) deals with a substance of any kind in a place of work, has the knowledge and experience - or is supervised by someone who has - so that they are not likely to suffer harm, or lead to the harm of others.

Every employee must be adequately trained in the safe use of all plant, objects, substances, protective clothing and equipment that they are, or may be, required to use or handle.

## MANAGEMENT PRACTICES

### Key Practices in Work with Vegetation

This section informs managers about key work practices in this guide. The preferred management practices promote safe outcomes for work with vegetation near to live power lines.

a) The HSAW Act requires duties of all parties involved in work with vegetation near to power lines. Preferred work practices are developed throughout this Guide. Additional information and practices are in the referenced publications. The work must be conducted in a way that achieves safe outcomes for those doing the work and for others in the vicinity.
b) Asset managers must establish appropriate policy concerning the clearing of vegetation within the vegetation control zone Policy options may include:
   (i) Removal of power lines from service, isolation and application of safety measures, before clearing the vegetation by ordinary persons using approved work methods;
   (ii) Use of qualified electrical workers, for example line mechanics or live line mechanics as appropriate, to clear vegetation near to live power lines using approved work procedures;
   (iii) Utility arborist vegetation control methods: utility arborist Level 1 for vegetation outside the utility arborist minimum approach distance, or insulated tool procedures by utility arborist Level 2 for vegetation that encroaches the utility arborist minimum approach distance.
c) Utility arborists must conform to the work practices in this UBPG for conducting vegetation control work.
d) Utility arborists and ordinary persons must conform to the minimum approach distances and the other required separations from power lines that are specified for each in this guide and ECP34.
e) Excepting any formal consent given by the asset manager as provided for in (f) below, ordinary persons must not work with vegetation that is within the vegetation control zone, around live power lines.
f) Asset managers may consent to ordinary persons clearing or removing vegetation that is within the vegetation control zone only for live power lines 66kV and below, provided that the following minimum requirements are met:
   i) The asset manager ascertains that the intended work involves no risk of electrical hazard to persons or hazard to the electricity network;
   ii) The asset manager specifies appropriate conditions for the avoidance of electrical hazards, including any conditions for the safe use of any mobile plant, in the written consent for the work to proceed;
   iii) Under the written consent, the reduced minimum approach distance permitted for ordinary persons, inclusive of the trees they work with, and any tools, equipment or mobile plant they use, must not be less than the distance specified for voltage in Table 2 (page 29);
   iv) The asset manager is able to be satisfied that the ordinary person will take reasonable steps in the circumstances to ensure that any potential electrical hazards and any hazards to the network are avoided.

Note: Any written consent conditions for ordinary person mobile plant use should take into account guidance on avoiding electrical hazards. This guidance is available in the EEANZ "Guide for Non-Electricity Supply Industry Employees Operating Mobile Plant Near to Live Overhead Electric Lines."

g) When notifying of dangers or issuing notices required under the Electricity (Hazards from Trees) Regulations, asset managers should incorporate appropriate guidance from this guide, and must incorporate this guidance when otherwise liaising with ordinary persons about working with trees near power lines.
h) Responsible persons must require work in the vegetation control zone to be done by utility arborists, as vegetation control procedures under this guide. Section 2 outlines available options where this work cannot be done by utility arborists for any reason.

### General Safety Management

a) Asset managers and service providers must ensure that the requirements relevant to each, throughout this UBPG, are being met.

b) Asset managers must take reasonable steps to satisfy themselves that the service providers they engage:
   (i) Meet the requirements of this guide;
   (ii) Their work procedures are developed in accordance with this UBPG and fit for purpose.
c) Asset managers must monitor the service provider's performance against the requirements of this guide.
d) Employers must instruct their employees in the provisions of this guide, the proper use of all equipment provided for them and the safe working practices to be followed.
e) The standard and practice of supervision must conform to this UBPG and the supervision requirements relevant to vegetation control work[1]
f) Safety equipment, devices and personal protective equipment must conform to this guide, relevant statutory requirements and referenced documents. Equipment must be maintained in a safe condition.
g) All vehicles and equipment must be equipped, operated and maintained in conformance with this guide, relevant statutory requirements and according to manufacturers' operating instructions.
h) The asset manager's consent with conditions is prerequisite to utility arborists operating any EWP or other mobile plant closer than 4 metres to or over any power lines. Asset managers should require written confirmation that the consent conditions will be met.
i) Traffic control measures must conform to the current requirements of the relevant Road Controlling Authority.

The potential for accidents in tree work is very high, and many of the injuries are serious, so safety in your work is of the utmost importance to you, your family and your fellow workers. Injuries have been reduced by the use of good safety rules in professions and industries the world over.

(iii) All arborists engaged in arboricultural work shall be suitably qualified to carry out that work.
(iv) All people using this document should adopt a safe conduct attitude:
(v) Work with due consideration for your own and others' safety at all times.
(vi) Carry out instructions properly.
(vii) Seek clarification if in doubt or unsure about any, item, process or activity.
(viii) Rectify and report all unsafe conditions.
(ix) Report unsafe machinery and equipment.
(x) Use correct tools and equipment.
(xi) Keep the workplace as tidy and organised as practicable.
(xii) Have all injuries reported and attended to.
(xiii) Use only tools, machinery and equipment that you are authorised and trained to use.
(xiv) Do not start machinery unless authorised and until guards are in place and people are aware.
(xv) Wear and use the protective clothing and equipment provided.
(xvi) Obey all safety rules and signs.

## GENERAL PROVISIONS FOR ELECTICAL SAFETY WHEN PRUNING

Vegetation close to power lines can affect the reliability of the power supply and affect the performance of these assets. This electrical risk also increases the risk for serious harm to persons who trim or remove vegetation from around power lines and to members of the public close by.

Vegetation touching or near to touching live power lines is an electrical hazard. The vegetation may become live and the conductors may flashover to it.

Vegetation in contact with or close to conductors can be live with little or no visual sign of this. Vegetation that is or has been in contact with conductors may have burned or damaged leaves or branches at the point of contact.

[1] Under the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 (the GRWM Regulations), a person conducting a business or undertaking (PCBU) must ensure, so far as is reasonably practicable, the information, training, instruction and supervision provided to workers is suitable and adequate.

Where any vegetation becomes live from being close to power lines, including during flashover, the surrounding ground becomes a “pool” of varying voltage, or “potential difference”, spreading out from the affected tree generally referred to as Step Potential. Any person or animal can suffer electric shock causing serious harm or death, stepping across the “pool” while the voltage exists. Anyone touching different parts of live vegetation, the ground or mobile plant close by, can suffer electric shock causing serious harm or death, from the “potential difference” across the points of contact.

The same principles apply to mobile plant that accidentally contacts live conductors or vegetation that has become livened.

Any tree work near electrical supply lines is subject to requirements of the This UBPG unless written authority has been obtained from the asset owners, and then you must remain outside of the vegetation control zone.

Any overhead power line shall be considered as live and capable of causing serious or fatal harm from electric shock and in some instances from electric arc flash, unless the person having control of the power line has taken appropriate steps to de-energise and make the lines safe and has confirmed the status of the lines.

Arborists engaged in any tree work operation that approaches the vicinity of any overhead power line shall have in place a dedicated safety observer to ensure that they or anything they work with or are in contact with or are using, including the tree, mobile plant or equipment, remain separated from the power line in accordance with ECP 34.

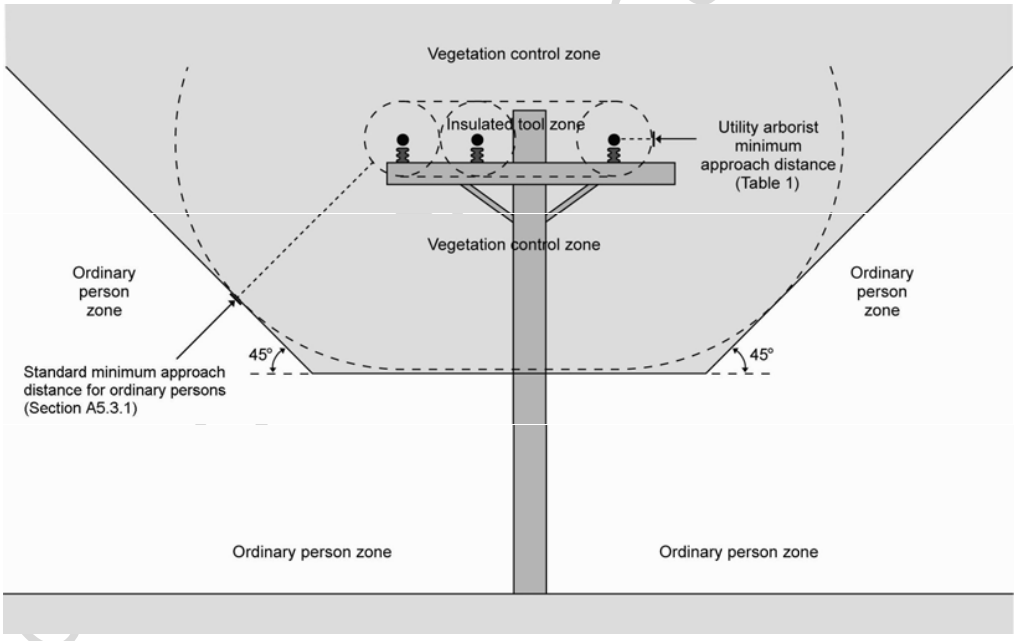


Illustration showing the standard minimum approach distance for ordinary persons demarcates the ordinary person zone from the vegetation control zone in which the utility arborists do their vegetation control work.

All tree work within the electrically hazardous “Vegetation Control Zone” shall be done only by Utility Arborists who have met and maintained the core competency requirements of a utility arborist in accordance with this guide. Where there is a risk that any tree work operation by arborists working to the Trees Code Part 1 may encroach the “Vegetation Control Zone” where the overhead power lines are owned or controlled by an electricity network owner;

a) the arborists shall contact and seek guidance from the owner or its authorised representative before proceeding with the work. The owner may exempt arborists to carry out such tree work where there is no electrical hazard; however, such work shall be subject to the written consent of the owner or its representative with conditions, including any safety procedures, for ensuring avoidance of any potential electrical hazards in the course of the work;

b) Where the overhead power lines are owned by a private owner (e.g. farmer, other commercial enterprise, or private dwelling owner), the work shall be carried out by a Utility Arborist to the requirements of this guide, or the power lines shall be disconnected and made safe by an electrically competent person before the arborist working to the Code of Practice Part 1 does the work.

Where the electricity network owner or its authorised representative does consent to any tree work within the "Vegetation Control Zone" to avoid electrical hazards:

a) Any mobile plant, including, for example, elevated work platforms, cranes, mechanical shelter belt trimmers, logging machinery and any attachments, may only be used subject to written consent and conditions, including any safety procedures, required by the power asset owner;
b) Manual pole pruners, pole saws and other similar tools with poles made of metal or other conductive material shall not be used;
c) Ladders with styles made of metal or other conductive material shall not be used.

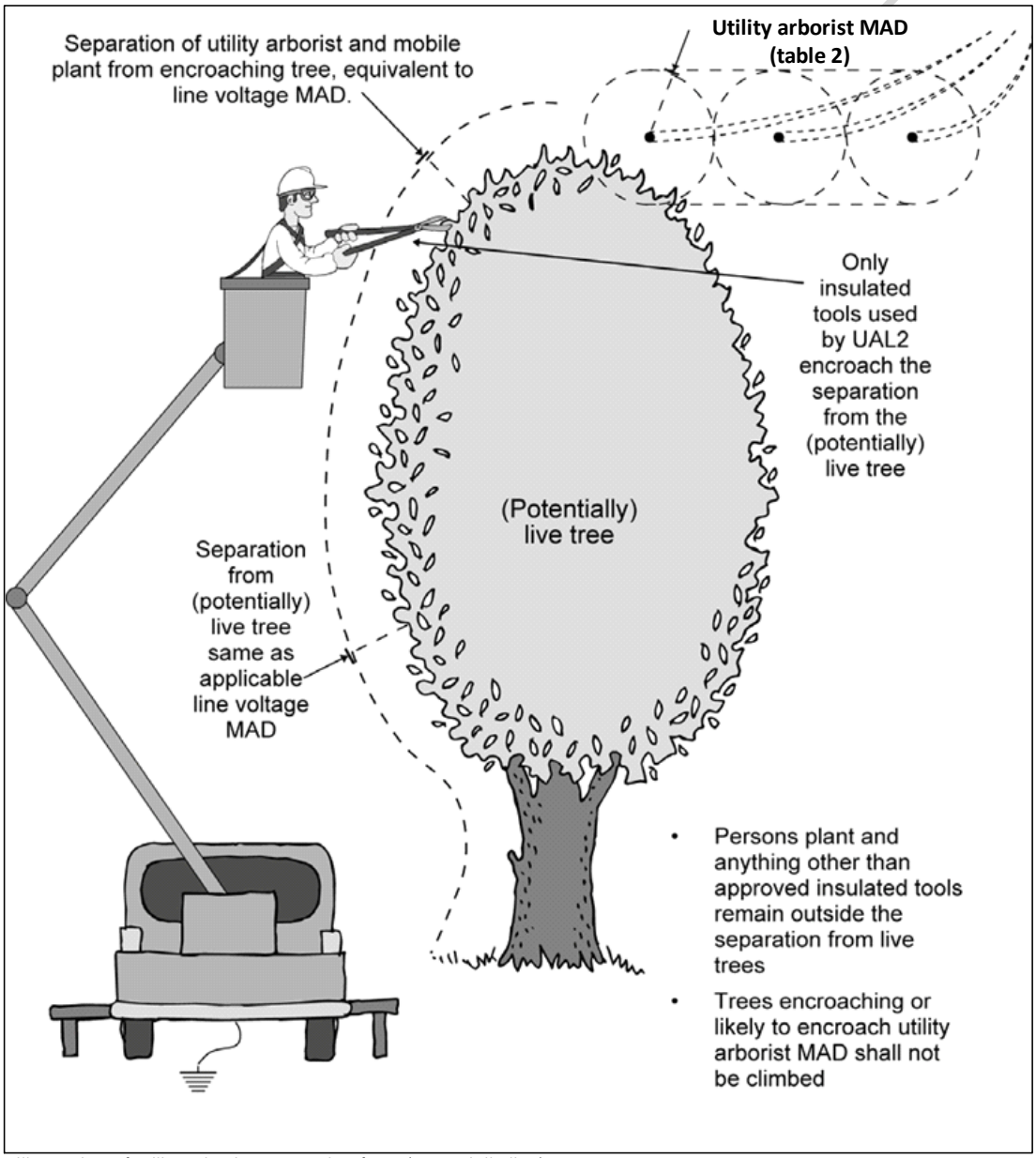


Illustration of utility arborist separation from (potentially live) tree

Where any tree work operation approaches or could in any circumstances contact or affect any communications line, the arborists shall contact and seek guidance from the communications line owner.

### Underground services

All work that may impact on underground services must be notified to the appropriate authority. Documentation can be found on the WorkSafe NZ website: www.worksafe.govt.nz

## UTILITY ARBORIST COMPETENCIES

The list of the competencies considered core competencies for an arborist are defined in the NZ Arb Best Practice Guide for Arboriculture.

The following is a further list of competencies that are considered core for a utility arborist as defined by this guide.

Further, an arborist is required to be competent as an arborist according to the Arborist Best Practice Guide (the Best Practice Guide for Safety Requirements in New Zealand Arboricultural Operations) before they can be considered competent as a utility arborist as described in this guide. An arborist should be able to meet the minimum competencies required in this guide by completing the NZQA New Zealand Certificate in Horticulture (Level 3) with a strand in Arboriculture and the New Zealand Certificate in Electricity Supply (Utility Arboriculture) with an optional strand in Insulated Tool Work

The subjects itemised below are grouped by the nature of the competence required, whether a level of knowledge, understanding or ability, appropriate to different aspects of the work:

a) 'A knowledge of' – the 'store' of information needed as background information to indirectly support safe conduct of the work – the 'what', 'when' and 'where';
b) 'An understanding of' – the detailed working knowledge needed regularly and continually that is an intrinsic basis for day to day work activities – the 'how' and 'why';
c) 'An ability to' – the actual capability, based on knowledge, understanding and acquired practical skills to physically carry out tasks on a regular basis to the acceptable standard.

### Utility Arborist Level 1

Knowledge of:

a) General principles for safe access near to power lines.
b) Reclose block procedures.
c) Control room procedures and protocols.

An understanding of:

a) General hazard management.
b) Electrical theory, hazards and hazard controls.
c) Rigging.
d) WorkSafe notifications.
e) Minimum Approach Distances (MAD)
f) Power line access policies specific to the asset manager.
g) SM-EI requirements relevant to all aspects of vegetation control work.
h) Customer and property owner relations.

Ability to:

a) Identify circuits and voltages.
b) Identify and apply appropriate minimum approach distances for power lines.
c) Use line distance measuring devices.
d) Identify, check, operationally inspect and test, use and store tools, plant and equipment.
e) Safely use non-insulated tools and equipment near power lines.
f) Use, inspect and check, maintain and store personal protective equipment.
g) Use mobile plant near power lines, and apply mobile plant minimum approach distances.
h) Earth mobile plant and carry out bonding appropriate to the work.
i) Carry out duties of Safety Observer.
j) Use work procedures for work near power lines.
k) Be aware of and recognise electrical hazards.
l) Undertake EWP and tree aerial rescue near electrical hazards.

m) Undertake emergency procedures for injuries, fallen power lines and equipment.
n) Undertake Basic first aid and CPR relating to work on electricity networks.

**Utility Arborist Level 2**

In addition to the Knowledge, Understanding and Ability of an Utility Arborist Level 1, an Utility Arborist Level 2 will have:

An understanding of:
a) ECP 34 Insulated tool work theory.
b) EEA NZ - Guide for Non-Electricity Supply Industry Use of Mobile Plant Near Power Lines and Electricity Cables

Ability to:
a) Do required operational inspection and testing of insulating tools, plant and equipment.
b) Inspect, care for and maintain insulating tools, plant and equipment.
c) Safely carry out insulated tool techniques and procedures using insulated tools, plant and equipment.
d) Use line distance measuring sticks, rods or tools.

GENERAL

## 1. GENERAL SAFETY STATEMENT

The rules contained in this document shall be observed by all persons employed in, engaged in, or visiting an Arboricultural operation.

1.1 Responsible persons

1.1.1 Responsible persons occasionally arrange for maintaining or removing vegetation that is in the vegetation control zone. Utility arborists must do this work as vegetation control procedures under this guide. If the utility arborists cannot do the work for any reason, arrange it by other means preferred in this guide, for example:

a) Clear the vegetation using suitable qualified electrical workers (whether or not under asset manager direction), or
b) Arrange for a qualified electrical worker to disconnect and make the power lines safe so that arborists or other suitable ordinary persons can safely clear the vegetation.

1.2 Key Safe Practices

1.2.1 Key practices for achieving electrical and general safety in vegetation control work:

a) Obtain the asset manager's consent for work on vegetation near to power lines in an electricity network, and, similarly, liaise with the private owner when the work is around privately owned power lines.
b) Apply the preferred work practices in this UBPG fitting to the category of power lines, whether to electricity network power lines or privately owned power lines.
c) Use only vegetation control work procedures written and approved by the service provider.
d) Utility arborists must be currently competent to the requirements of this UBPG.
e) A designated supervisor must supervise vegetation control work at each workplace.
f) Consider all power lines as being live unless formally stated otherwise.
g) All tree work is carried out from a position of earth potential.
h) Utility arborists and the plant and equipment in use must not encroach the correct minimum approach distance for line voltage
i) Treat all parts of any vegetation that is inside the utility arborist minimum approach distance as being live.
j) Follow the asset manager's policy for clearing vegetation that is at or inside the utility arborist minimum approach distance.
k) Do not climb any tree that encroaches the utility arborist MAD.
l) Apply temporary earthing to any EWP and towed attachments where required, before raising the EWP's boom to the work position. Where applying the temporary earths is impracticable for any reason, consult the asset manager before proceeding with the work.
m) Obtain the asset manager's consent, or, as the case may be, liaise with the private power line owner, before doing any insulated tool procedure.
n) Insulated tools are used by utility arborists Level 2 under approved insulated tool procedures. These tools may encroach the utility arborist minimum approach distance provided:
o) The persons doing the work do not encroach the utility arborist minimum approach distance, and
p) The tools do not contact the live power lines.

1.2.2 Employees must:

q) Be familiar with electrical hazards and the related information in this Guide;
r) Understand the provisions of this UBPG and the safe work practices to be followed;
s) Understand the hazards specific to each workplace and how to avoid harm from these;
t) Carry out instructions and the work properly, with safe conduct and attitude;
u) Work with due consideration for personal safety and that of others nearby at all times;
v) Ask when in doubt;

w) Rectify or report unsafe conditions;
x) Be familiar with emergency and incident response procedures;
y) Report accidents, injuries and near misses, and promptly attend to injuries;
z) Report on machinery and equipment that is unsafe;
aa) Keep the workplace as tidy and organised as practicable;
bb) Use only approved tools, machinery and safety equipment that is suitable for the task and that has properly functioning safeguards where these are required;
cc) Inspect safety equipment each day before use, and use, store and maintain it in a safe condition;
dd) Properly use tools and equipment and operate all vehicles safely;
ee) Wear and use protective clothing and equipment suited to the task;
ff) Obey all safety rules and signs.

1.3 Notifications

1.3.1 Notify Vegetation control work as 'Notification of Particular Hazardous Work' to WorkSafe.

1.4 Weather Impact on Procedures and MADs

1.4.1 All procedures and minimum approach distances shown in this UBPG apply to good weather and working conditions.

1.4.2 Assess and take action to avoid hazards from adverse weather such as lightning, high winds, rain, fog, snow, sleet or conditions that may prevent absolute control of the branch being removed

1.5 Protective Clothing and Equipment at Vegetation Control Work Sites

1.5.1 Use personal protective clothing and equipment fitting to the work, according to the service provider's and asset manager's requirements. The equipment and its use must conform to relevant NZ Standards, or equivalent, and relevant Guides listed in Appendix 1, in particular:

gg) Wear head protection at all times. Do not rely on the helmet for protection from electric shocks.
hh) Wear safety footwear that provides ankle support and that has moulded non-conductive soles and protective toe caps.
ii) Wear safety leg protection at all times while using chainsaws.
jj) For work near power lines, use arc rated protective clothing that gives full body cover, including cover of the arms and legs. SM-EI provides for protective clothing for work in the vicinity of live power lines.
kk) Wear hearing protection for protection from harmful levels of noise. Minimum of Class 4 hearing protection is recommended as appropriate for use with equipment such as chainsaws. Arborist Code Part 1 provide guidance on hearing protection.
ll) Wear appropriate eye protection at all times.
mm) Climbing activity and the climbing equipment used must conform to the "Climbing and Climbing Equipment" section of the Arborists' Code Part 1.

## 2. INCIDENT EMERGENCY AND RESCUE PROCEDURES

The asset manager and/or service provider must have in place documented emergency and incident procedures appropriate to the roles of each in the work arrangements and relationship. The asset manager and/or service provider must itemise minimum incidents and emergencies requiring response capability and supporting procedures). Procedures must at least cover:
The rescue of injured persons or those at risk including, for example: rescue from EWP; rescue from ladder or tree;

a) The immediate first aid and medical needs of any injured person and the safety of other persons at the worksite including, for example, cardiopulmonary resuscitation (CPR);
b) Any emergency switching requirements;
c) Restoration of any circuit as a result of the incident;
d) Investigation and reporting requirements to determine incident or emergency causes and the appropriate corrective actions;
e) Notification of all parties required under regulations, this UBPG and industry agreements.

2.1 First Aid

2.1.1 Have available an adequately stocked and maintained first aid kit at the vegetation control work site. Each utility arborist must be instructed in its use. The kit must at least conform to the Arborists' Code Part 1.

2.2 Utility arborists must be competent in relevant emergency and incident procedures including rescue procedures for work above ground. This must include EWP rescue, where relevant. The minimum emergencies and incidents are listed in this Guide.

2.3 Pedestrian and Vehicle Traffic

If the operation poses a risk to a road or carriageway, operations shall not proceed unless suitable precautions have been taken to warn oncoming traffic. Such precautions shall include the appropriate signage and/or notification in accordance with Transit New Zealand or the appropriate road and/or rail authorities have been made.

2.3.1 Control public access to the work site, including pedestrian and vehicular traffic at all times while work is in progress.
2.3.2 All signage shall comply with Transit New Zealand or the appropriate road and/or rail authority.
2.3.3 Where work necessitates the closing or partial closing of a road, footpath or public access, the above precautions are to be taken and compliance is required with any additional conditions laid down by the local road controlling authority.

2.4 Fire Protection for Vegetation Control Work
2.4.1 Capability and equipment to extinguish fires must conform to local and regional authority requirements. Arborists Code Part 1 provides additional information.
2.4.2 Follow any particular requirements from fire authorities when working in special areas, such as forests, Department of Conservation areas, and reserves.
2.4.3 Re-fill petroleum-powered equipment only after it has been stopped. Remove any spilt fuel from the equipment and move at least three metres away from the refilling site before restarting.
2.4.4 Store, handle and dispense flammable liquids only from approved safety containers.
2.4.5 Smoking is prohibited when handling or working around any flammable liquid.

## 3. ELECTRICAL HAZARDS

3.1 Vegetation near or touching live power lines can be livened, including any flashover between the two. Burned or damaged leaves or branches may indicate present or past contact in some but not all cases. Mobile plant directly or indirectly touching live power lines is a significant electrical hazard. Depending on how high the voltage is, just being too close to the live power line is sufficient to create a hazard.

3.2 Voltage in the ground around anything in contact with live power lines can be illustrated by the surface of a still water pond when a stone is thrown into it. The waves travelling away from the point where the stone entered the water become weaker and eventually become ripples. Similarly, the voltage is highest where the livened part enters or sits on the ground and reduces as the distance from the entry point increases.

3.3 In the case of livened mobile plant, the whole of the plant including any conductive attachments can become livened. The voltage can rise at numerous ground entry points, expanding the electrical hazard area. Entry points could include, for example, any vehicle “earth” pin, any outriggers, wheels and any plant or items in contact with the mobile plant, such as attached chippers. Also, any conductive items, such as fences nearby can become livened. The mobile plant in contact with a live source greatly expands the electrical hazard zone.

3.4 Any people or animals exposed to this hazard and that get any parts of their body across the voltage difference due to any cause (across the waves reducing to ripples in the pond illustration) can experience what is called “step or touch potential”. They may be electrically shocked, and this can result in serious burns and death. Historically, human contact with livened trees or livened

mobile plant has proved this to be the case, particularly where mobile plant and things attached to it have been livened.

Examples of how people experience step or touch potential include:

a) Being in or touching any tree that is in contact with live power lines;
b) Walking or standing feet apart on livened ground;
c) Touching or stepping off any part of mobile plant or anything attached that is livened;
d) Touching anything conductive nearby that has been livened.
e) Workers who are in contact with both the ground and the mobile plant during any electrical contact are particularly vulnerable. Therefore every possible endeavour must be made to avoid contact with any live source. If any risk of contact remains, additional precautions are needed. Three main strategies for avoiding step and touch electrical hazards outlined are:

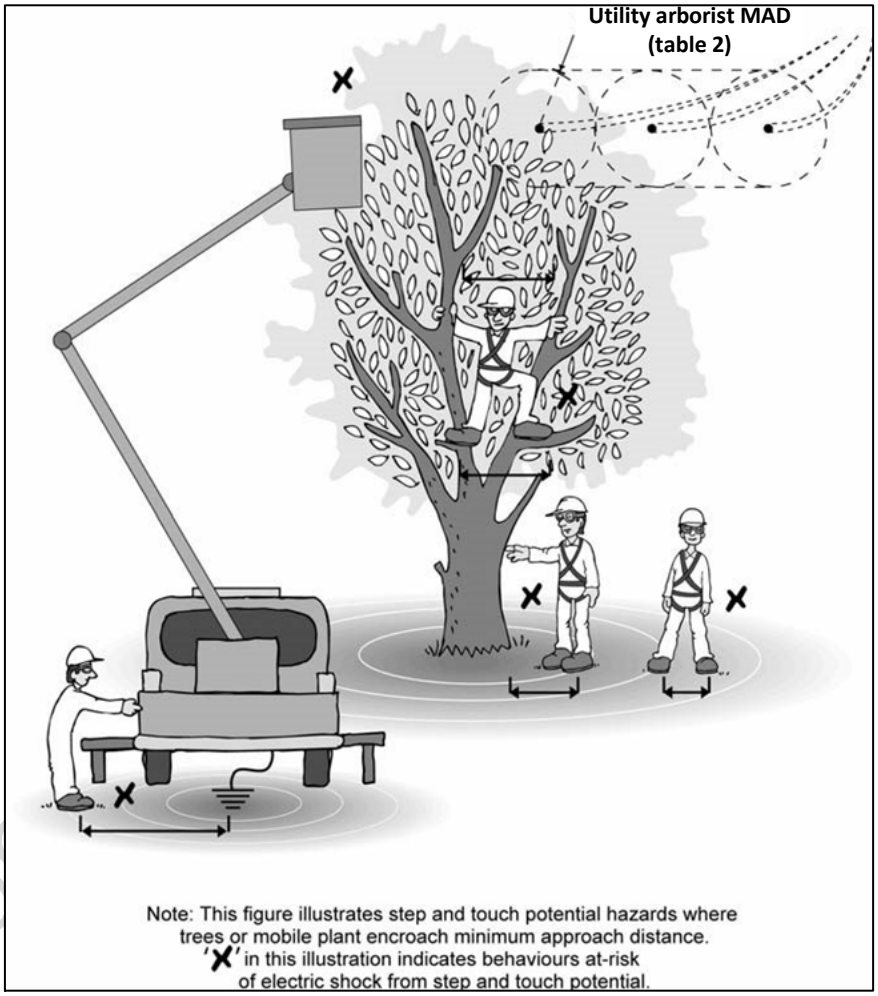


Illustration showing Electrical hazards from step and touch potentials.

3.5 Avoiding the hazard through adequate separation distance from any live power line, and from anything able to conduct electricity that could foreseeably contact the line. This includes, for example, remaining well clear of any mobile plant while there is a risk of contact with live conductors;

3.6 Insulation from the hazard under controlled conditions. This can include, for example, standing on an insulating pad while in contact with the mobile plant; Controlling the effects from step and touch potential where inadvertent contact does occur. This includes, for example, standing on a metal "mat" or "screen" electrically connected to the frame of the mobile plant while in contact with or operating it.

3.7 Utility arborists must understand these hazards, including how they can arise unexpectedly, and how they are controlled in work with vegetation. Others such as ordinary persons should have an awareness of such hazards, sufficient for them to appreciate the importance of staying away from live power lines.

APPROVED WORK PROCEDURES

## 4. WORK PROCEDURES

4.1 Job Briefing

4.1.1 Hold a job briefing to discuss with the work team:

a) Why the work is to be done;
b) What is to be accomplished;
c) Work team composition;
d) How the work is to be carried out;
e) Individual roles and responsibilities;
f) Hazards specific to each task and how these will be controlled.
g) Address factors that affect the safety and progress of the work, particularly:
   (i) Circuit identification of the power lines in close proximity to the trees, and the associated voltage or voltages;
   (ii) The minimum approach distances for those voltages, as specified in this guide

All of the above items, including the name of the designated supervisor, and the Work Procedure(s) being used must be documented.

4.2 Work Area Control

4.2.1 Where the public are in the vicinity, designate and mark sufficient area around the vegetation (including any EWP in use). Marking must include erection of warning signs, barricades, marker ropes or other appropriate and effective methods. Maintaining public separation from the area reduces the risk of "step" and "touch" potential arising where a tree, mobile plant or other equipment accidentally contacts a live conductor.

4.3 Tree hazard identification

4.3.1 Inspect trees to identify hazards before entering, climbing or performing any work on the trees.

4.4 Circuit and minimum approach distance identification

4.4.1 Identify and record the circuit/s and voltages around which work is to be done and the minimum approach distance required for the work.

4.4.2 The recorded Minimum Approach Distance (MAD) must not be less than specified for the relevant line voltage

4.5 Role of Safety Observers

4.5.1 Criteria for appointing Safety Observers.

a) Safety Observers must be competent in the work being observed and must understand the hazards specific to the work site.

4.5.2 The Safety Observer(s) must:

a) Be readily identifiable and known to relevant work team members at all times;
b) Have the authority to temporarily suspend the work at any time;
c) Be positioned at a suitable location to effectively observe the work being performed;
d) Maintain effective and immediate communication with the work team at all times;
e) Ensure that all persons, tools (except insulated tools used by utility arborist), plant and equipment remain outside the specified minimum approach distance and maintain separation from (potentially) live trees as appropriate, unless performing a rescue as in approved procedures;
f) Suspend work while moving position so as to continue the Safety Observer role effectively from a new position;
g) Suspend all work in the event of having to leave the site until he or she has returned or has been replaced;
h) Not perform any other task, including passing tools to work team members, while acting as a Safety Observer.

4.5.3 The Safety Observer(s)'s role should be rotated among work team members. This maintains their effectiveness and reduces fatigue. At rotation, hand the role over formally. Communicate the change to the work team members so that they are aware who is performing the Safety Observer(s) role at all times.

4.5.4 Trainees must not carry out the Safety Observer role.

4.6 During Work

4.6.1 Observe the correct minimum approach distances at all times, as identified and recorded.

4.7 Safe climbing

4.7.1 Tree climbing must conform to the "Climbing and Climbing Equipment" sections of the Arborists' Code Part 1 and NZ Arb Best Practice Guide.

4.7.2 Climbers must be conversant with and competent in safe climbing techniques and must use climbing equipment designed and fit for the purpose.

4.7.3 Continually monitor the position of the tree/s and the climber/s in relation to live power lines so that the minimum approach distance is not encroached by the climber or the tree/s. Climbing should be on the side of the tree that is away from the lines.

4.7.4 Attach a separate rope to limbs that cannot be safely controlled by a climber. The rope should be controlled by utility arborist/s at ground level. Use of the same crotch for both the safety rope and the lowering rope should be avoided.

4.8 Safe Pruning and Felling

4.8.1 Pruning practices must conform to the "Tree Pruning" sections of the Arborists' Code Part 1, and NZ Arb Best Practice Guide

4.8.2 Any tree felling practices must conform to the "Tree Felling" sections of the Arborists' Code Part 1, and NZ Arb Best Practice Guide

4.8.3 Control trees and tree parts during work procedures. Where a tree or any part of a tree does inadvertently fall towards a live power line, do not attempt to stop it falling.

4.8.4 When pruning trees, whether working from ropes inside a tree or from a EWP:

a) Control branches or limbs with the use of ropes, prior to commencing cutting;

b) Support branches and limbs so that during any cutting or removing, they will move away from any live power line;

c) Fully control any branch or limb that may spring in any direction and create hazardous conditions.

d) Fully secure branches or limbs extending over power lines before cutting or trimming, to prevent them falling into the utility arborist minimum approach distance or onto power lines. Very small individual cuttings may be allowed to fall to the ground between the conductors provided that the diameter of such cuttings is less than 75 mm and the length less than half the distance between the conductors.

4.8.5 If any part of a tree cannot be controlled with certainty that it will move away from the power line, stop the work immediately and use one of the following options:

a) Adjust the work method so that it is not possible for any part of the tree to encroach the utility arborist minimum approach distance or contact the live power line; or

b) Liaise with the asset manager to determine whether the line should be taken out of service for de-energised work procedure.

4.8.6 Work procedures must provide, in accordance with the asset manager's policy, for situations where any part of any tree:

a) Does inadvertently fall or move into the utility arborist minimum approach distance, or

b) Does make contact with or comes to rest on live power lines, or

c) Is imminently likely to do either of the above.

4.9 Response to Adverse Weather

4.9.1 Adverse weather, for example, high wind, rain, sleet, snow, mist, fog or lightning, can make control of vegetation more difficult during trimming activity or may increase electrical hazards.

4.9.2 Stop vegetation control work for the time being where such hazards, including lightning in particular, prevent the work being done safely. Descend to ground level and keep clear until the hazard has passed.

4.10 Response to Emergency or Incident

4.10.1 Suspend any work and immediately notify the asset manager when any emergency condition develops or incident occurs during vegetation control work. Do this whether or not the power lines remain in service after the event. An incident may be, for example, a tree making contact with or falling towards a power line that is live.

4.10.2 Work may resume only with the approval of the asset manager after the emergency or incident condition has been resolved.

4.10.3 As a minimum, emergency or incident response and supporting procedures must cover:

a) Electric shock or other serious injury received by any member of the work team or member of the public;
b) Flashover at, or close to, the worksite for any reason;
c) The mechanical failure of any tool, which did, or could have the potential to, cause an incident or emergency;
d) Any occurrence that impacts upon the physical or electrical integrity of the electricity network;
e) Any occurrence that necessitates a rescue procedure or that causes serious harm to any person;
f) Any near miss for the emergencies or incidents specified above.

Note: Additional emergencies or incidents for insulated tool work are itemised in this Guide require asset managers and service providers to have in place complementary documented emergency and incident procedures appropriate to each for the work arrangement.

4.11 Safety Harnesses

4.11.1 Harnesses must conform to the relevant AS/NZS 1891 Standards or to relevant English language standards issued by organisations that are Member Bodies of the International Organisation for Standardisation (ISO). If no suitable standard exists, the service provider must ensure that the equipment is certified by the supplier as being fit for the purpose.

4.11.2 Use and maintain harnesses in accordance with AS/NZ 1891.4 and/or the manufacturers' instructions, relevant Standards, and relevant section(s) of the Arborists' Code Part 1 and the Arborist Best Practice Guide

4.11.3 Strops or flip lines used when working or climbing above a live power line where the utility arborist minimum approach distance could be encroached, must not be made of or contain a metal core.

4.12 Rope (climbing and working lines)

4.12.1 Rope (with the exception of purpose-designed rope or cord that forms part of approved insulated tools) is used only outside the utility arborist MAD. Its use is for climbing, securing or controlling vegetation, or for moving materials in support of the vegetation control work. Rope used to support vegetation control work, including rope used to support approved insulated tool procedures, must not be used within the utility arborist MAD.

4.12.2 Rope used in vegetation control work must be fit for purpose, and clean and dry to minimise electrical hazards in the event of accidental contact with power lines.

4.12.3 Store and handle rope in a way that ensures that the required properties of the rope are maintained.

4.12.4 Rope that forms an integral part of approved insulated tools must conform to the requirements for insulated tools in this Code.

4.12.5 Do not use wire ropes and strops within 4 metres of a power line without the permission of the asset manager.

4.12.6 Control climbing ropes, particularly when placing them over climbing crotches, to avoid accidental contact with power lines.

4.12.7 Always direct ropes away from power lines, or control them to prevent tail ends from swinging towards the power lines.

4.13 Pruning Tools

4.13.1 Maintenance and use of all pruning tools must conform to the manufacturers' operating instructions and the relevant sections of the Arborists' Code Part 1 and NZ Arb Best Practice Guide.

4.13.2 Place pole pruners and pole saws away from power lines.

4.13.3 Do not hang or rest pole pruners and pole saws on or against power lines or cables

4.14 Ladders within the Vegetation Control Zone

4.14.1 Ladders may be used only outside the utility arborist minimum approach distance.

4.14.2 Ladders should be non-metallic and must conform to an appropriate standard.

4.14.3 Maintenance, care for, inspection, use and storage of ladders as for vegetation control work must conform to Section 30 of the Arborists' Code Part 1 as appropriate.

## 5. DEVELOPMENT, PROVING AND REVIEW

5.1 Service providers must develop, document, approve and periodically review work procedures for all vegetation control work by utility arborists, including insulated tool work.

5.2 Work procedures must be proven in a trial around a de-energised line, or around a live power line but outside the standard minimum approach distance for ordinary persons. Such trials must satisfy competent and sufficiently experienced person(s) that the procedures can be carried out reliably, safely and without encroaching in designated MADs.

5.3 Documentation

5.3.1 Documentation setting out the basic steps must be provided for each approved work procedure. In addition, each work procedure must:

a) Identify the objectives of the work procedure;
b) List the minimum tools and equipment required for the procedure;
c) Have unique document identification numbers and show amendment or issue numbers and date of issue;
d) State the minimum number of workers required and associated

5.3.2 Copies of the relevant approved work procedure, and the emergency and incident procedures must be readily available at the work site.

5.3.3 Any consent for mobile plant use must be readily available at the work site.

5.3.4 Codes of Practice, Best Practice and Industry Guides relevant to the work should also be readily available for reference purposes.

## 6. EMERGENCY AND INCIDENT PROCEDURES

6.1 Emergency and Incident Procedures

6.1.1 The asset manager and/or service provider must have in place documented emergency and incident procedures appropriate to the roles of each in the work arrangements and relationship. All incidents and emergencies requiring response capability must have supporting procedures. Procedures must at least cover:

a) The rescue of injured persons or those at risk, including, for example, rescue from EWP or rescue from ladder or tree;
b) The immediate first aid and medical needs of any injured person and the safety of other persons at the worksite, including, for example, cardiopulmonary resuscitation (CPR);
c) Any emergency switching requirements;
d) Restoration of any circuit as a result of the incident;
e) Investigation and reporting requirements to determine incident or emergency causes and the appropriate corrective actions;
f) Notification of all parties required under regulations, this UBPG and industry agreements.

# COMPETENCE AND SUPERVISION FOR UTILITY ARBORISTS

## 7. COMPETENCE AND SUPERVISION

7.1 Utility arborists and supervisors must be competent to the requirements of this Guide

7.2 A designated supervisor must supervise vegetation control work at each place, where it is performed in accordance with the standard and practice of supervision in this Guide.

7.3 The supervisor must plan the work and conduct it to the requirements of this UBPG as a minimum.

7.4 Identify and control the hazards associated with the work at each workplace.

7.5 Discuss the work procedures, the hazards and the hazard controls with the work team so that these are understood by all members of the team before the work begins.
7.6 Utility arborists may only do vegetation control work for which they are currently competent. Any work activity for which they are not currently competent must be directly supervised by a competent person.
7.7 Trainee utility arborists undergoing on the job (OTJ) training in the work team must be directly supervised by a utility arborist for the duration of the work, one supervising utility arborist per trainee. In the case of a utility arborist being trained in Insulated Tool Procedures, the trainee must be supervised by a utility arborist Level 2.
7.8 Utility arborists must not do work that they consider likely to cause serious harm to themselves, their workmates or any other persons.

## 8. COMPETENCE AND TRAINING

8.1 Utility Arborist Competency
8.1.1 The service provider must:
a) Document the competencies of the utility arborists including any national qualifications supporting competency to this Guide;
b) Ensure that trainers provide the training and refresher training for utility arborists;
c) Ensure that the utility arborists are currently competent for the vegetation control work they are required to do

8.1.2 Utility arborists are persons who:
a) Have at least 300 logged hours of current arboriculture work experience as arborists competent to Arborists' Code Part 1,
b) Are currently competent to work to the Arborist Code Part 1, and
c) Are currently competent and authorised to do vegetation control work near to power lines to the requirements of this Guide.

8.1.3 The two categories of utility arborist competence and the scope of work permitted for these are:
1. Utility arborist Level 1 (UAL1) – competent to do vegetation control work near to power lines where the vegetation to be worked on is outside the Table 2 (page 29) minimum approach distance for utility arborists;
2. Utility arborist Level 2 (UAL2) – additional to UAL1 competency, are competent to use insulated tools to do vegetation control work where the vegetation encroaches the minimum approach distance for utility arborists

8.2 Supervision of formal training
8.2.1 A trainer who holds current certification covering the scope of training to be provided must directly supervise all formal training including refresher training. (Note. Supervision of OTJ training is distinct from formal classroom training)

8.3 Training in insulated tool methods
8.3.1 Training in insulated tool procedures must provide a thorough understanding of both the principles and also the procedures for insulated tool work as well as a comprehensive practical programme. This must include insulated tool work theory and application, correct use and maintenance of personal protective equipment, proper care of tools and equipment, and practising the required procedures or techniques around de-energised isolated and earthed power lines, before practising the procedures around live power lines.
8.3.2 Monitor utility arborists undergoing training (including refresher training) to ensure their continued suitability for insulated tool work.
8.3.3 Only issue competency certification in insulated tool methods when the trainee can demonstrate the required knowledge, skills and experience to carry out the work safely and to the required standards.

8.4 Utility Arborist Refresher Training
8.4.1 Regular renewal and updating of certain aspects of training is necessary to ensure continuing competency. Provide refresher training in vegetation control work at intervals of not more than 1 year, and cover, as a minimum, knowledge, skills, work procedures and attitude necessary for an individual to perform specified activities and tasks.

8.4.2 Assess competence in rescue and emergency procedures annually.
8.4.3 Conduct further refresher training if vegetation control safety rules, concepts or techniques are found to be deficient during field assessments. Refresher training may be done at the work site in conjunction with field assessments or audits.

8.5 Competence Limitations and Work Restrictions
8.5.1 Some utility arborists may be restricted from certain work activities due to limitations in their competence, or restrictions from certain work activities may arise from other changes. Examples include change in physical capability to climb trees, or, lapse of certain competencies for any reason. Any work restrictions must be identified and documented in the employee competency records and certification. Also, note the restrictions in the planning of any work in which they participate.

8.6 Competency Maintenance and Field Assessments
8.6.1 Utility arborists must complete the procedures they are authorised to do at least three times in each calendar year in order to maintain the competence in these procedures.
8.6.2 Utility arborists must be assessed individually at least annually, to appraise their performance of the procedures they are authorised to do and to appraise their competencies for which they hold certification.
8.6.3 The persons who conduct the field assessments must be currently competent in the areas being assessed, independent of the work party being assessed and authorised by the service provider.

8.7 Records
8.6.4 Service providers must maintain current records of all vegetation control training and work for their employees, including as a minimum for each individual:
a) Record of work procedures performed;
b) Regular (preferably annual) training needs analysis and training plans;
c) OTJ training and formal training provided;
d) Assessment and examination results;
e) Refresher and other training arising from any identified deficiencies (field audits, assessments, accidents or near misses etc.);
f) Certificates issued, expired and withdrawn;
g) Restrictions required to be listed
h) Trainer details and credentials.

8.7 Training records must include reviews, audits and assessments of the training system and scope of training provided, and evidence of corrective actions and improvements resulting from these.

8.8 Certification
8.8.1 Service providers must operate and maintain a system of certification of current competency. Certification must indicate current competency for each individual as utility arborist Level 1 or Level 2, and as supervisor where appropriate. Certificates for each individual must be available as proof of competency at all times at the location where the individual is working.
As a minimum, certificates must show:
a) Unique certificate number;
b) Name of holder;
c) Date of issue and expiry;
d) Qualifications held (if any);
e) Name of trainer;
f) Categories of competency (utility arborist L1 or L2; supervisor) in which the holder has current competency;
g) Service provider procedures, for which the holder has current competence;
h) Any current work restrictions
i) For supervisor competency, the categories of work and the number of persons they may supervise;
j) Signature of the issuing service provider.

8.9 Utility arborists must at all times hold a current competency certificate issued by their current employer who is a service provider.

8.10 Certificates must be issued by the service provider:

8.10.1 Following satisfactory completion of training endorsed by the trainer;
8.10.2 Following refresher or other training required after field inspection, audit, assessment or identified deficiency;
8.10.3 Immediately before the holder moves to employment with a new service provider;
8.10.4 When an existing holder moves to employment with a new service provider, and after satisfactory completion of appropriate refresher training required in Section above.

8.11 A certificate issued under this Section of the UBPG may be withdrawn where the holder is found to be incompetent in any categories of competence for which the certificate was issued.

8.12 Supervisor Competence

8.12.1 Supervisors must be suitably experienced and currently competent in the categories of work they supervise and currently competent to supervise the number of persons required for doing such work.

8.12.2 Supervisors must have knowledge in, understanding of and ability in the following areas, commensurate with the categories of work and numbers of persons they supervise:

a) Management of People and work – an ability to: Plan the safety aspects of work activity and respond to changes that impact upon safety at the place of work;
   (i) Lead and direct the work team;
   (ii) Execute and lead hazard and risk identification and control in the place of work;
   (iii) Plan, conduct and report worksite briefings (tailgate sessions) involving all persons at the place of work;
   (iv) Receive and communicate instructions effectively, both orally and also via written communications, solicit advice, and collect and analyse input from team members.
b) Legal and Regulatory Compliance and Guidance for Person in Charge: An ability to find and use information relevant to safety aspects of supervision;
   (i) An understanding of HSAW and Electricity Acts,
   (ii) Regulations, Codes and Guides related to supervision;
   (iii) An understanding of supervision requirements in SM-EI

8.13 Supervisor Training, Competency Maintenance, Certificates and Records

8.13.1 Supervisor training must be managed so that supervisors maintain ongoing competence in their role.
8.13.2 A trainer who holds current certification covering the scope of training to be provided must directly supervise formal training of supervisors.
8.13.3 Monitor trainee supervisors and supervisors undergoing refresher training to ascertain their continued suitability for the supervisor role.
8.13.4 Provide refresher training for supervisors at intervals not exceeding 2 years or when field assessments identify any deficiency in performance of the supervisor function. As a minimum, cover the competencies specified for supervisors and any performance deficiencies in this role.
8.13.5 To maintain supervisor competence, the supervisor must carry out this function in vegetation control work at least 6 times during a calendar year.
8.13.6 Field audits and assessments required under this UBPG must include assessment of supervisors in their supervising function. Such assessments must be conducted by persons who have a level of competence at least equivalent to the supervisor being assessed.
8.13.7 Certificates must be issued or renewed for competent supervisors only where they can demonstrate the required knowledge, skills and ability to carry out the supervisor role to the required standard.

MINIMUM APPROACH DISTANCES

## 9. MINIMUM APPROACH DISTANCES (MAD)

9.1.1 Utility arborists and ordinary persons must observe the specified separations from power lines

9.1.2 The minimum approach distances (MAD) for persons and mobile plant are specified for ideal environmental weather and working conditions.

9.1.3 Allow for the effects of temperature, wind and other environmental influences on powerline sag and swing while vegetation control work is in progress. In practice, allow extra safety clearance towards the centre of the spans to maintain the MAD

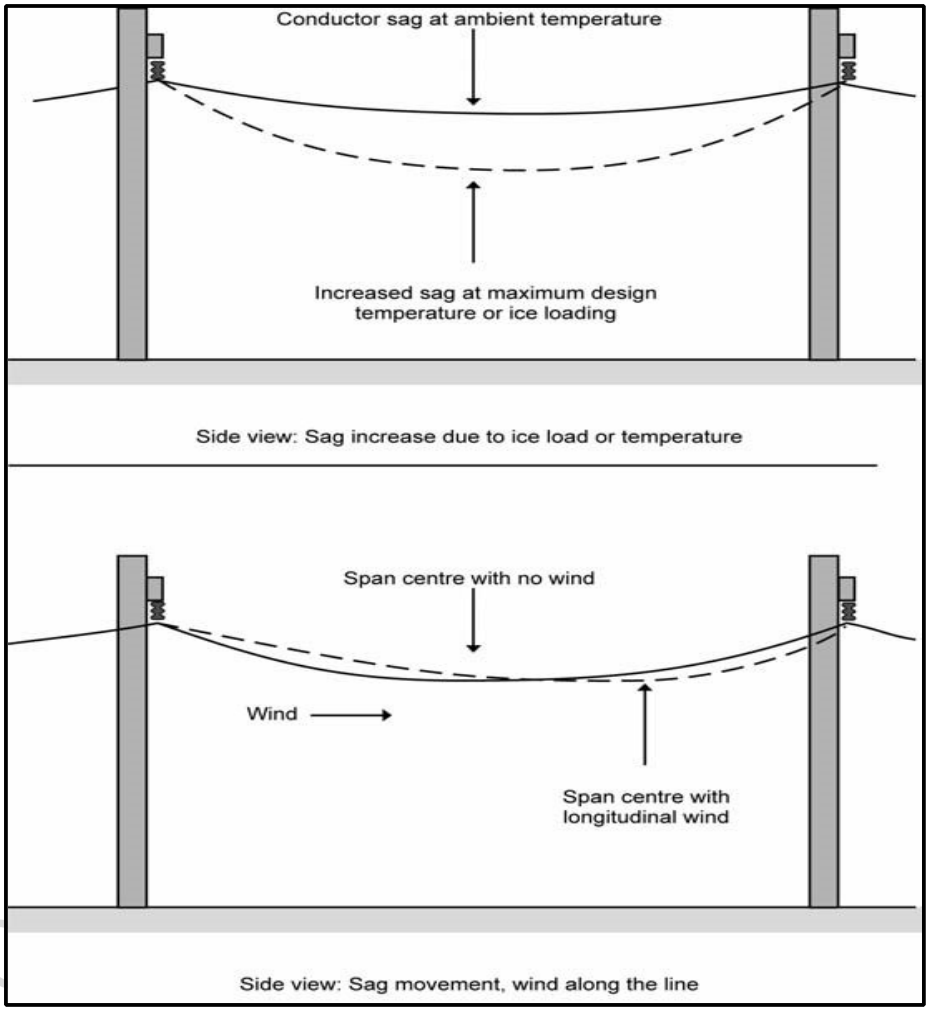


Illustration showing conductor sag due to electric current and physical loads, and longitudinal wind effects on power line sag

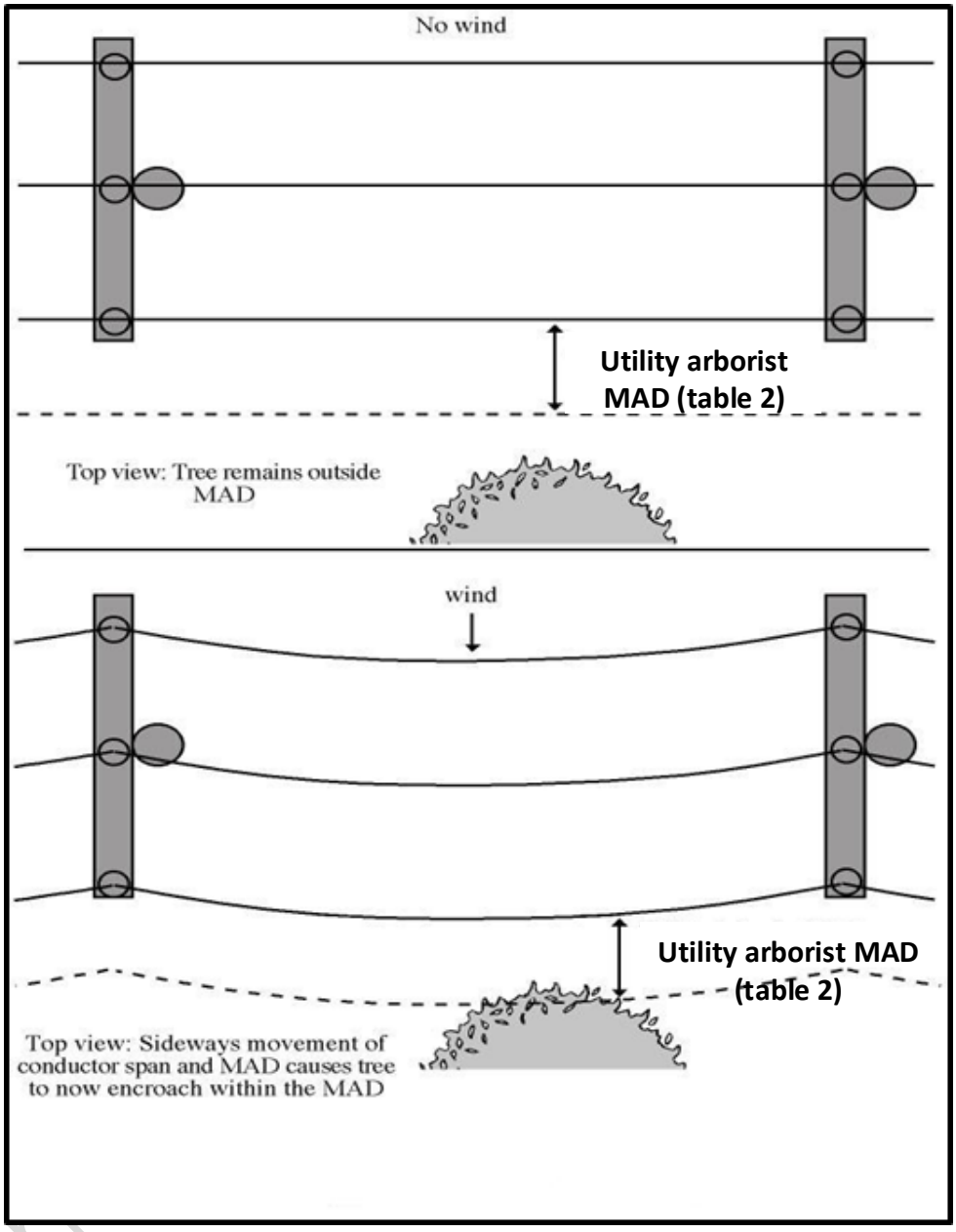


Illustration showing wind causing tree encroachment of minimum approach distance (side view)

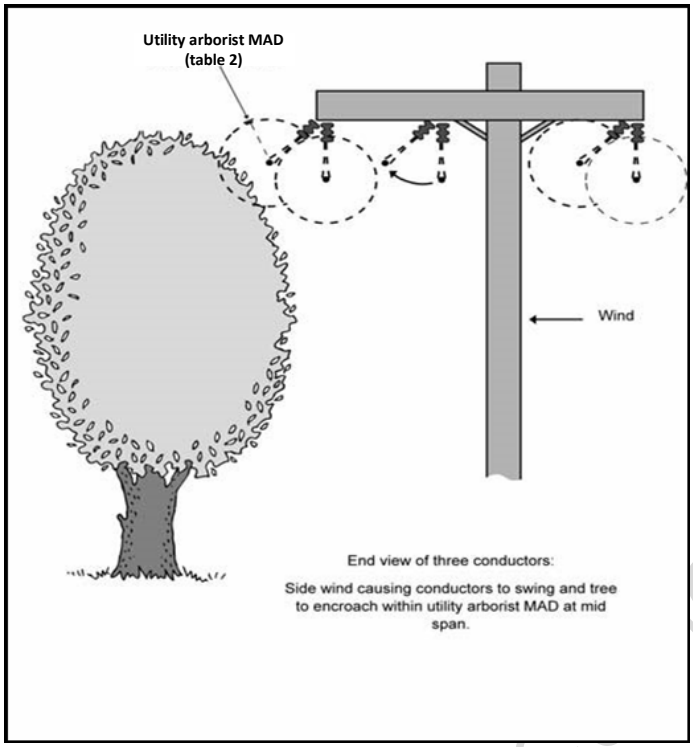


Illustration showing conductor swing causing tree to encroach minimum approach distance (end view)

## 10. MINIMUM APPROACH DISTANCES FOR ORDINARY PERSONS

This Section specifies minimum approach distances for ordinary persons doing any work with vegetation in the vicinity of power lines.

10.1 The standard minimum approach distance to power lines for ordinary persons: vegetation they work with; tools, equipment, mobile plant and any substances (e.g. herbicide sprays) they use; and falling vegetation; are:

a) For circuit voltages 110 kV and below – 4 metres;
b) For circuit voltages above 110 kV – 6 metres.
c) Additionally, ordinary persons and the above-associated items must remain outside the vegetation control zone illustrated below

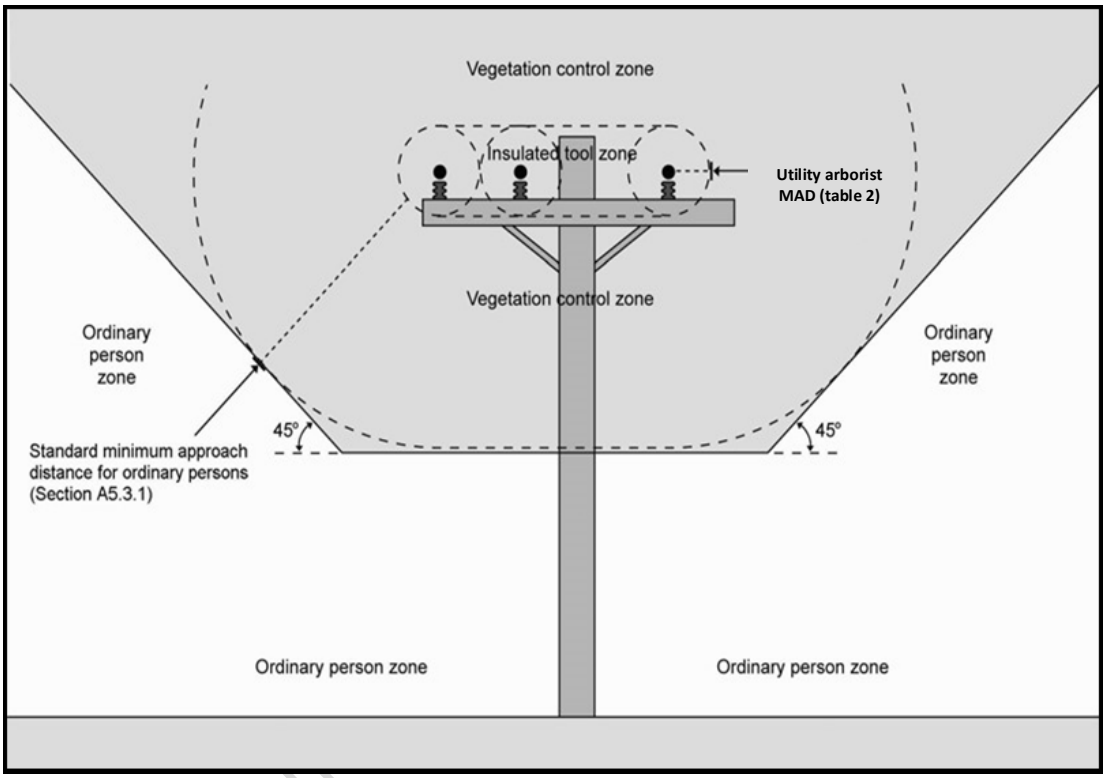


Illustration showing the standard minimum approach distance for ordinary persons demarcates the ordinary person zone from the vegetation control zone in which the utility arborists do their vegetation control work.

| Circuit Voltage | Distance Limits (m) |
|---|---|
| 110 kV and below | 4.0 |
| 220 kV and above | 6.0 |

Table 1 - Minimum safe approach distance for ordinary persons from exposed live parts Source: ECP34

10.2 To avoid electrical hazards, ordinary persons must actively look out so that they always maintain the required separations from power lines and the vegetation control zone. Figure 8 "Illustration of zones and activities for ordinary persons" explains the permissible activities. Where these separations are likely to be encroached:

a) For a power line forming part of an electricity network, ordinary persons must contact and obtain guidance from the asset manager before doing the work. No exemption is available for ordinary persons or mobile plant they use to approach closer than 6 metres to 220 kV and 4 metres to 110 kV power lines. The asset manager may, however, consent to work within the vegetation control zone for voltages 66kV and below, including the use of any mobile plant, in accordance with Section mobile plant.
b) Where such consent is granted, the reduced minimum approach distances permitted for ordinary persons, inclusive of the vegetation they work with, any tools, equipment or mobile plant they use, must not be less

than the distances, specified for voltage, in ECP 34 Table 9 (reproduced in Table 2 on page 29.

10.3 For a privately owned power line (for example, owned by a farmer, other business, or private home owner): the work must be done by a utility arborist and conform to the work practices in this Guide. Otherwise, have a suitable qualified electrical worker disconnect and make the power line safe before any ordinary persons start the work.

## 11. WORK PRACTICES FOR ORDINARY PERSONS

11.1 Permissible Work Practices for Ordinary Persons

11.1.1 Any work with vegetation permissible for ordinary persons under this Guide should be done in accordance with the approved codes and practices appropriate to the work. For example:

a) The current edition Arborists' Code Part 1 applies to arboricultural work;
b) The "Forest and Woodlot Safety Management around Electric Lines" Best Practice Guide ("BPG") covers commercial forest or woodlot tree felling;
c) The "Mechanical Shelter Belt Trimming" BPG covers shelter belt trimming.

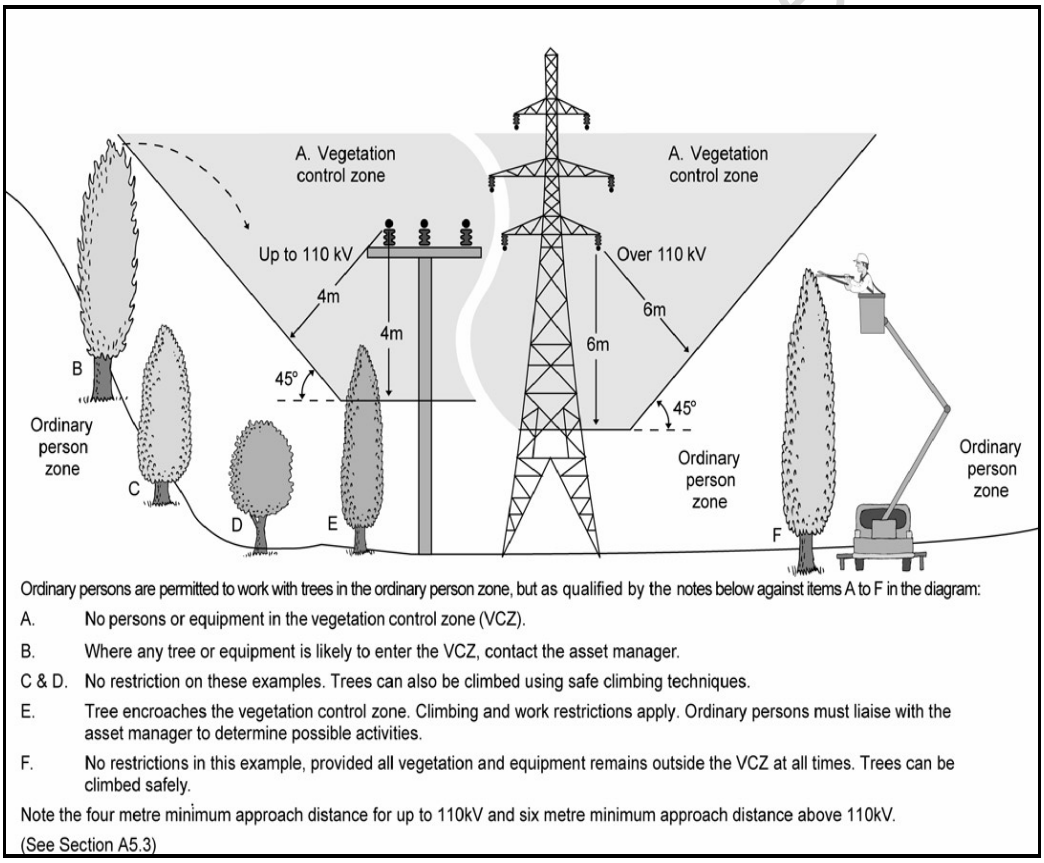


Illustration showing zones and activities for ordinary persons

## 12. MINIMUM APPROACH DISTANCES FOR UTILITY ARBORISTS

12.1 Utility Arborist Minimum Approach Distances

Minimum approach distances (MAD) for utility arborists and reduced MAD for mobile plant use by utility arborists in vegetation control.

12.1.1 Table 2 sets out the minimum approach distances for utility arborists. These distances apply to all parts of the body, clothing, and any non-insulated handheld tools.

12.1.2 Factors such as trees on slopes or background lighting can cause trees to appear more distant from power lines than they actually are. Take measurements where there is any doubt about the distance between any tree and the power line.

12.1.3 Where the vegetation encroaches or is for any reason likely to encroach the utility arborist minimum approach distance:

a) Treat the vegetation as being live;
b) Maintain separation from the vegetation equivalent to the minimum approach distance for the line voltage;
c) Liaise with the asset manager or private owner.

12.2 Where the asset manager's policy requires, or the private owner agrees to, the use of insulated tool procedures to clear the encroaching vegetation:

a) Only utility arborist Level 2 may do this work using approved insulated tools and procedures;
b) Conduct the work from a position that is both outside the minimum approach distance for utility arborists and that also maintains a separation distance from the encroaching (potentially live) vegetation equivalent to the minimum approach distance applicable at the time. The separation from the encroaching vegetation applies until the vegetation has been trimmed to a position outside the minimum approach distance, that is, where the electrical hazard has been eliminated;
c) Only approved insulated tools may encroach the utility arborist minimum approach distance and the separating distance from the encroaching (potentially live) vegetation.

| Circuit Voltage (AC) | Minimum Approach Distance | |
|---|---|---|
| | Utility Arborist (m) | Mobile plant (m) |
| Below 1 kV (conductor insulated) | 0.5 | 0.15 |
| Below 1 kV (conductor not insulated) | 0.5 | 1.0 |
| 11 kV | 1.5 | 1.0 |
| 22 kV | 2.0 | 1.0 |
| 33 kV | 2.5 | 1.0 |
| 66 kV | 3.0 | 1.0 |
| 110 kV | 4.0 | 1.5 |
| 220 kV | 6.0 | 2.2 |

Table 2 - Minimum safe approach distance for utility arborist or mobile plant from exposed live parts (where consent from the asset owner is obtained) Source: ECP34

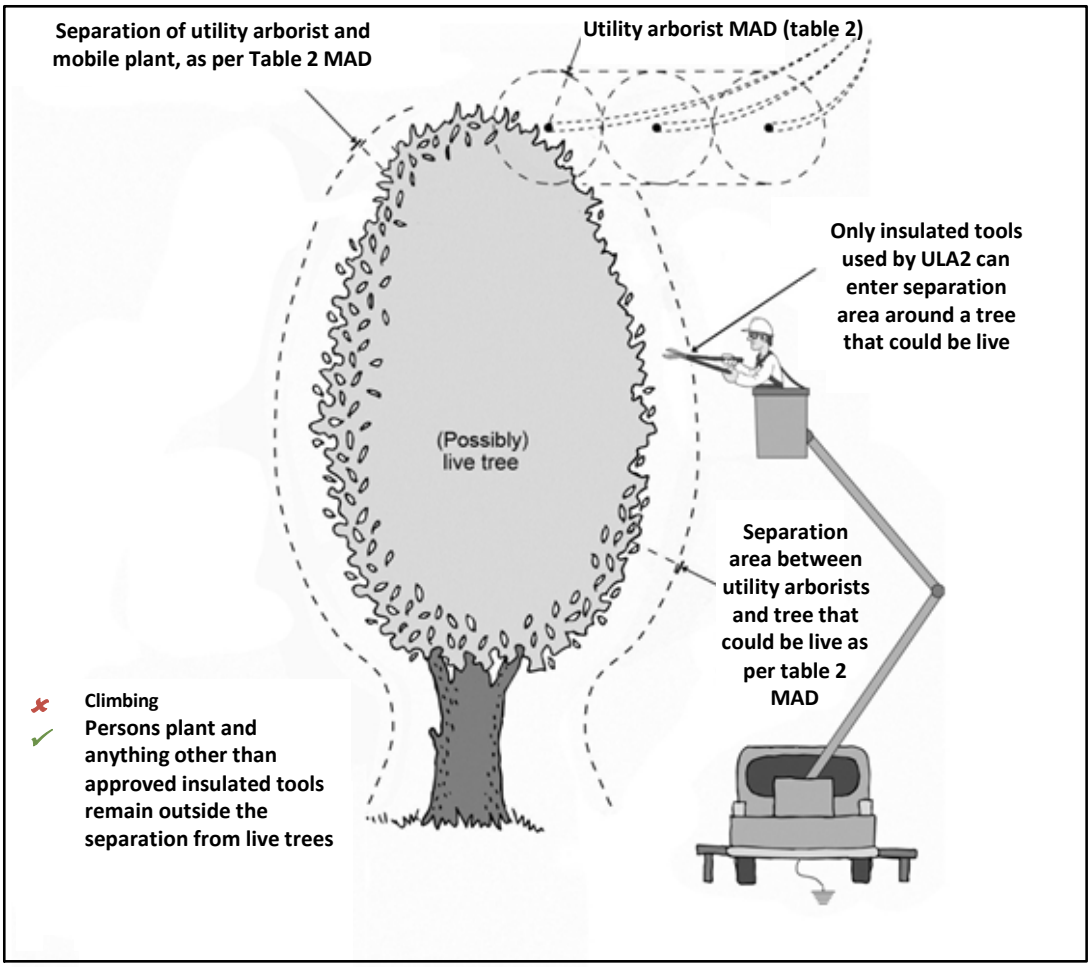


Illustration of utility arborist separation from (potentially live) tree

12.3 Figure 5

12.3.1 Figure 5 illustrates the minimum approach distance for utility arborists, the corresponding separation distance from encroaching (potentially live) vegetation, and application of the distances during the use of insulated tools.

12.3.2 Figure 5 illustrates the utility arborist minimum approach distance as part of the vegetation control zone.

a) Where it is impracticable to maintain the required separation distance from the encroaching vegetation:

(i) For an electricity network, liaise with the asset manager and proceed according to its policy for this see appropriate section.

(ii) For a privately owned power line, advise the owner on options available to responsible persons.

12.4 Utility arborist's use of mobile plant for vegetation control (see figure 6)

12.4.1 All mobile plant, including all EWPs or other machinery or any load carried, must not operate over or approach closer than 4 metres to any power line, unless, in the case of electricity network power lines, the asset manager consents to this with conditions for the activity and the conditions are met.

12.4.2 Where the asset manager does consent to the above, the minimum approach distances must be not less than those stated in this Guide

12.4.3 The consent and conditions from the asset manager, including the applicable minimum approach distances, must be in writing and held at the work site.

12.4.4 EWPs must be earthed in accordance with this Guide

12.4.5 In the case of privately owned power lines, since private owners generally do not have the knowledge or experience to consent to closer approach, service providers must require the same work practices with mobile plant that would reasonably be expected by asset managers for similar work around electricity network power lines.

## 13. WORK PRACTICES FOR UTILITY ARBORISTS

13.1 Approved Work Procedures as described in section 4 and;

13.1.1 Approval for the work.

a) Obtain the asset manager's consent for vegetation control work to be done around its electricity network
b) Liaise with any private owner for vegetation control work to be done around their power line.
c) Only work procedures approved by the service provider may be used for the work.

13.2 Appointment of Safety Observers

13.2.1 Safety Observers must be appointed in accordance with the requirements of SM-EI 3.708 and this Guide

13.2.2 In vegetation control work, appoint Safety Observers where:

a) Utility arborists, trees or non-insulated tools they are working with are at risk of encroaching the utility arborist minimum approach distance for the line voltage
b) There is a risk of mobile plant encroaching reduced mobile plant minimum approach distances
c) As required by the asset manager for the use of mobile plant (e.g. for work above conductors);
d) During insulated tool work:
   (i) Where there is a risk of any part of a utility arborist's body encroaching the utility arborist minimum approach distance;
   (ii) Where insulated tools, parts of a utility arborist's body or trees may contact a live conductor;
   (iii) Where approved insulated tool procedures require Safety Observer appointment.

13.2.3 More than one Safety Observer may be appointed where the work position and complexity require this.

13.2.4 Safety Observers must be competent in the work they observe.

13.2.5 Trainees or non-competent persons must not carry out the Safety Observer role.

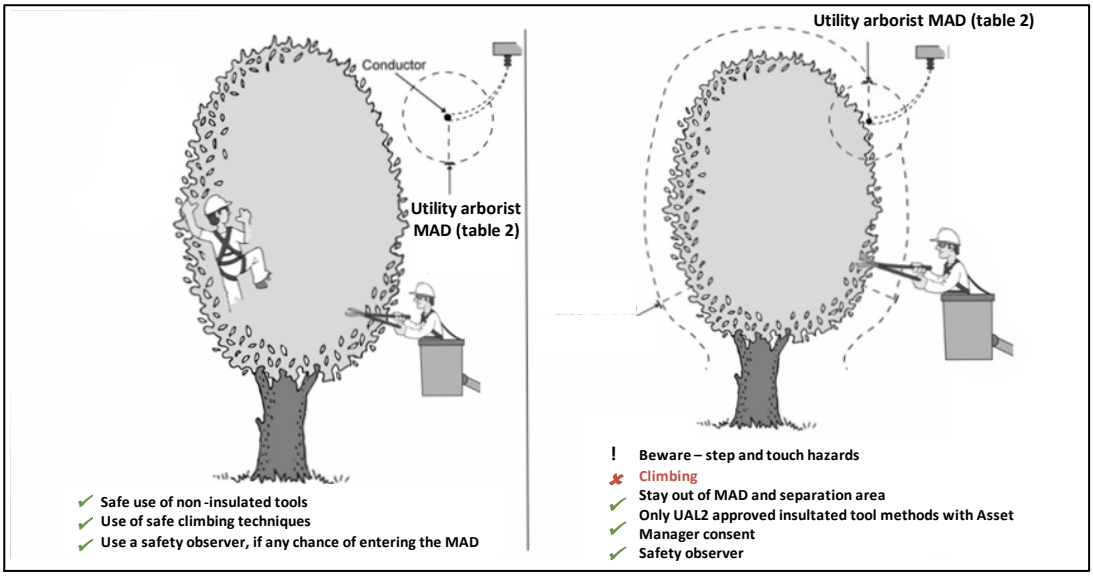


Illustration showing permitted and prohibited activities for utility arborists in the vegetation control zone

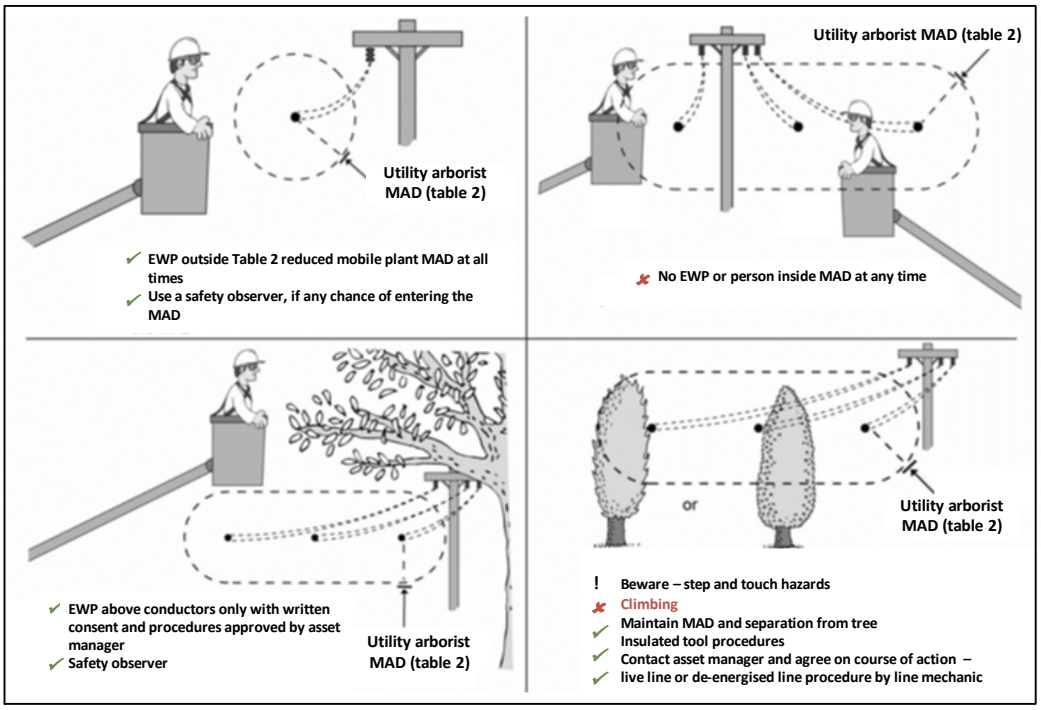


Illustration showing permitted and prohibited activities for utility arborists in the vegetation control zone

Figure 6 illustrates key examples of permitted and prohibited activities for utility arborists Level 1 (UAL 1) and Level 2 (UAL 2).

## 14. UTILITY ARBORIST WORK METHODS

Preferred work practices in this section cover utility arborist work with vegetation where it does not or is not likely to encroach the utility arborist minimum approach distance. This Section deals with clearing encroaching vegetation where asset manager policy is to use insulated tool procedures for this, or, for privately owned power lines, where insulated tool procedures are appropriate for the work.

14.1 Obtain the asset manager's consent or, as the case may be, liaise with the private power line owner, for work on vegetation near to power lines.

14.2 Vegetation control work must be done by utility arborists, including any appropriately supervised trainees under OTJ training, working to written procedures approved by the service provider.

14.3 Vegetation control work at each work site must be supervised by a designated supervisor who is competent with the requirements of this Guide.

14.4 All work must conform to relevant requirements of this guide and to relevant SM-EI requirements for work near power lines.

14.5 Only work where conditions of light and general visibility are adequate for the task.

14.6 When applying the minimum approach distances, allow for environmental effects of wind and temperature on power line swing and sag.

14.7 Fell trees in a direction away from power lines, unless an alternative method is agreed with the asset manager or private power line owner as the case may be.

14.8 Treat any tree encroaching the utility arborist minimum approach distance or in contact with any power line as being live:

a) Do not climb such trees;
b) Maintain separation from these trees equivalent to the overhead line voltage minimum approach distance;
c) Liaise with the asset manager and follow their policy for clearing encroaching vegetation, or, as the case may be, liaise with the private power line owner regarding available options conforming to this UBPG for conducting the work.

14.9 Do not operate EWPs or other mobile plant over or allow these to approach closer than 4 metres to any power line without written consent from the asset manager.

The requirements for closer approach for utility arborist mobile plant use in vegetation control work are in listed in this guide.

14.10 Reclose blocks may be applied for vegetation control work if the asset manager or service provider prefers this. Applying this measure must not in any way substitute for strictly adhering to the other requirements in this UBPG for the work.

14.11 Work Procedure Conformance and Availability

14.12 Current approved work procedures, including the procedure in use at the time, must be readily available at each worksite.

14.13 Work teams must conform strictly to approved work procedures. Minor non-substantial procedural variations are permitted to suit specific task requirements provided that: these do not alter the basic structure of the procedure; do not reduce applicable minimum approach distances; do not compromise safety requirements or safe work performance in any way.

14.14 Work Team Composition

14.15 There must be at least the number of utility arborists required by the work procedure present at the work site at all times while the procedure is under way. Any trainee/s added to the work team for OTJ training must be additional to the number required for the work procedure

14.16 Before Starting Work

14.16.1 Obtain the asset manager's permission for the work to be carried out.

14.17 Communications with the Asset Manager

14.17.1 Establish and re-establish it as soon as possible, if it is lost.

14.17.2 Maintain a reliable on-site two-way communication link with the asset manager, a3 Work Team Communications.

14.17.3 Establish and maintain effective communication among all the members of the work team, including trainees, for the duration of the work.

## 15. UTILITY ARBORIST INSULATED TOOL WORK

The preferred practices in this section and the relevant practices apply, where it is for utility arborists to clear vegetation encroaching the utility arborist minimum approach distance. Relevant practices also apply where insulated tool procedures are required near privately owned power lines.

15.1 Clearing Encroaching Vegetation Restriction

15.1.1 Only utility arborists Level 2 may clear vegetation that encroaches the utility arborist minimum approach distance, by the use of approved insulated tool procedures.

15.2 Tree Climbing Restriction

15.2.1 Do not climb any trees where any part of the tree encroaches the utility arborist minimum approach distance.

15.3 Insulated Tools and Equipment

15.3.1 All insulated tools and equipment to be used for insulated tool work must conform to the requirements in this guide, and must have current test certification or labels, or be listed in a register as having a current test.

15.4 Work Team Composition

15.4.1 Work team composition is specified.

15.4.2 During insulated tool work procedures, one of the utility arborists shall remain on the ground at all times.

15.5 Before Commencing Work

15.5.1 Minimum tool insulation distance

a) A utility arborist Level 2 must verify the minimum tool insulation distance required for the work.

b) Place marks that do not reduce or damage the tools' insulation qualities on the insulated stick; position the marks so that the minimum approach distances (Table 2) and minimum tool insulation distances are not infringed.

15.6 Safety Observer

15.6.1 Implement the role as appropriate to meet the requirements for insulated tool work.

15.7 Auto-reclosers and protection

15.7.1 The supervisor must request the asset manager to block the operation of any auto-reclose equipment controlling the section of power lines near which insulated tool procedures are to be carried out. This is to prevent auto reclose following any line tripping.

15.7.2 Check the asset manager's reclose block request procedures;

15.7.3 Lodge the reclose block request with adequate lead-time for the asset manager to implement it before the insulated tool work starts.

15.7.4 The auto-reclose equipment must be blocked for the duration of the work.

15.7.5 Having blocked the auto-reclose equipment as requested, the asset manager must confirm to the supervisor that:

a) The auto-reclose equipment is blocked in accordance with the asset manager's procedures and will remain so for the requested duration;

b) Protective devices are operational on that section of line and will remain operational for the requested duration;

c) The status of items (a) and (ib) above will not change until an assurance has been received from the supervisor that:

d) The insulated tool work has been completed and the worksite is safe;

e) All utility arborists, equipment, tools and mobile plant are safely clear of the power line.

15.8 Consent and approved procedures

15.8.1 Obtain the asset manager's consent before carrying out insulated tool work.

15.8.2 Only insulated tool procedures approved according to the requirements in listed in this Guide may be used.

15.9 Tools and equipment

15.9.1 Only use tools and equipment that are in a clean and dry condition.

15.9.2 Do not lay tools and rope directly on the ground.

15.9.3 Visually inspect and clean all equipment and insulating tools before any use. Withdraw from service any tool or equipment that appears to be defective, and arrange further inspection, testing, repair and/or replacement as appropriate.

15.9.4 Keep all insulating tools and equipment clear of oils, greases, oil-based hand cream, oil-based sunscreen cream or any other oil-based substance. Clean tool with wet/dry cloth to remove containments (sap oil). Wipe with silicon wipe.

15.9.5 Check for cracks caused by overstressing.

15.9.6 Set marker for tool MAD.

15.10 Tool insulation distances

15.10.1 When using insulated tools, observe appropriate minimum tool insulation distances, as determined under Section 8.5.1.

15.11 Pruning procedures

15.11.1 Where possible, pull vegetation clear of live power lines before cutting.

15.11.2 A cutting from a tree may be moved towards a live power line provided that distances equivalent to the applicable minimum approach distance are maintained between each of the cut sections, the tree and the power lines.

15.11.3 A small cutting may be allowed to fall between the conductors of power lines providing its diameter is less than 75 mm and its length is less than half the distance between the conductors.

15.11.4 Approved procedures should address cut and falling branches encroaching the MAD on the outside phases of the circuit.

15.12 Communications with the Asset Manager

15.12.1 Establish and maintain clear two-way communications with the asset manager at all times for the duration of the work.

15.12.2 Regularly check that the two-way communication is working during the course of the work.

15.12.3 If the two-way communication is lost or cannot be confirmed re-establish the link as soon as practicably possible. If the communication loss occurs during insulated tool procedures, stop the work until two-way communication with the asset manager is re-established.

15.12.4 Agree and set up alternative communication arrangements with the asset manager if usual methods are impracticable for any reason, for example topography or remote location.

15.13 Work Team Communications

15.13.1 Establish and maintain effective communication among all the members of the work team, including trainees, for the duration of the work. Headset communication should be used

15.14 Care and Use of Tools and Equipment

15.14.1 Store and transport insulated tools and equipment in moisture and dust-resistant containers or transporters. The transportation containers should be constructed so that the tools are held firmly in place to prevent surface abrasion or other tool damage.

15.15 Routine Testing and Inspection

15.15.1 Test all insulating equipment and tools in accordance with ANSI/IEEE: 978. Before testing, clean each equipment or tool item in accordance with the manufacturer's recommendations or the requirements of the service provider.

15.15.2 Inspect tools prior to use for signs of overstressing. Check tool in test. (6 monthly) Check tool working appropriately.

15.16 Response to Emergency or Incident

15.16.1 The requirements for suspending work, notifying the asset manager, including the conditions for work resumption, for any emergency or incident during insulated tool work, are the same as for vegetation control work.

15.16.2 Additional to those emergencies and incidents listed in responses and supporting procedures for insulated tool work emergencies or incidents must also cover as a minimum:

a) Complete or partial breakdown of any insulating tool or equipment, irrespective of whether flashover occurred;
b) The electrical or mechanical failures of any insulating tool, which did, or had the potential to, cause an incident or emergency.
c) Any near miss for the emergencies or incidents specified above.

## 16. POWER-OPERATED ELEVATING WORK PLATFORMS (EWP)

16.1 EWP use in vegetation control must conform to this UBPG as the prime statement of preferred practice for this work.

16.2 SM-EI and the Power Operated EWPs Best Practice Guideline contain other relevant guidance.

16.3 EWP Suitability for Purpose

16.3.1 Select EWPs appropriate for the required vegetation control work, in consultation with the asset manager. Selection must include consideration of EWP insulating properties appropriate to the planned task.

16.3.2 Where insulated EWP/s are selected, these must conform to ANSI/SIA A92.2 insulating and testing requirements throughout the work.

16.3.3 Electrical test 6 monthly, Engineering test 6 monthly, Acoustic check every two years.

16.3.4 Buckets, platforms or booms must be fitted with an approved anchorage for safety harness or lanyard attachment.

16.3.5 Do not drill holes in EWP buckets unless the holes are necessary for fittings or attachments and it can be shown that the holes do not affect the mechanical integrity of the bucket.

16.4 When to Earth EWPs and Towed Attachments

16.4.1 This guide specifies minimum approach distances for utility arborists and for mobile plant. This includes requirements to maintain separation from any vegetation where any part of this encroaches the utility arborist minimum approach distance.

16.5 EWPs must be temporarily earthed:

16.5.1 Where there is any risk of the EWP/s, or persons, or any tools, or vegetation to be worked on inadvertently encroaching the utility arborist minimum approach distance or the required separation from encroaching vegetation;

16.5.2 Where encroaching vegetation is to be cleared using approved insulated tool procedures.

16.5.3 Where temporary earthing is required before raising the boom within the vegetation control zone:

16.5.4 Earth the EWP chassis via a short, appropriately rated earth lead, temporary earth connection and earth spike driven to a depth of at least 600mm;
16.5.5 Bond the chassis of any towed attachment to the EWP chassis;
16.5.6 If the towed attachment and EWP are not bonded, earth the towed attachment separately as in (a) above;
16.5.7 For any ground operated EWP, bond a conductive mat or plate to the EWP chassis for the operator to stand on.
16.5.8 If applying earths is impracticable for any reason, consult with the asset manager to decide suitable alternatives before starting the work.

16.6 Operating EWPs, Tow Attachments and Stand-Alone Plant
16.6.1 Operators of ground-operated EWPs must stand on the bonded conductive mat.
16.6.2 All persons at ground level other than the EWP operator must stand well clear of the EWP and any towed attachment. This applies during EWP positioning and operation within the vegetation control zone.
16.6.3 Tow attachments, such as brush-wood chippers, may be operated only where there is no electrical hazard to the chipper operator.
16.6.4 Stand-alone wood chippers must be positioned and operated well clear of any step and touch potential footprint at the work site and must not be operated when a Utility Arborist is working in the Vegetation Control Zone unless an alternate a method of communication can be used that is not affected by the sound of the wood chipper
16.6.5 Ensure members of the public stay clear and use barriers and warning signs where appropriate.

More guidance is in the EEANZ “Guide for Electricity Supply Industry Employees Operating Mobile Plant Near Live Conductors”.

16.7 Consent for Reduced Distance
16.7.1 Written consent is required to operate EWP or other mobile plant over any power line or closer than 4 metres from any power line. Where the asset manager does consent to this:
a) Hold the written consent on site.
b) Additional EWP Operating Requirements and Precautions
c) Chock wheels and correctly position outriggers or torsion bars before using any EWP.
d) Wear a full body harness secured to the anchorage at all times while in the bucket.
e) Do not permit more than one person in any bucket designed to hold only one person.
f) While operating an EWP, look in the direction of bucket travel and be aware of the boom in relation to other objects and hazards.
g) Only use an EWP as a crane or hoist to lift and lower materials if it is specifically designed to perform such operations.
h) Do not run booms or buckets into live power lines, cables, poles, trees or other similar objects.
i) Do not run electric leads (for portable electrical appliances) or electrically conductive hoses and pipes from the truck or the ground to the bucket of any EWP.

16.8 Refuel portable equipment away from buckets. Do not carry flammable liquid containers or liquids in bucket liners; there is a risk of vapour pooling and subsequent fire or explosion.
16.9 Conform to vehicular and pedestrian control requirements, including current Road Controlling Authority requirements, while operating EWP booms over roads.

## 17. INSULATED TOOL WORK STANDARDS

17.1 Selection and Management
17.1.1 A competent and suitably experienced person must ensure that:
a) All equipment is suitable for insulated tool work and is safe for use by competent workers;
b) The tool manufacturer’s insulation rating complies with ASTM: F711 and ANSI/IEEE: 978;
c) The equipment meets appropriate standards

d) All cleaning agents used to clean any tool or EQUIPMENT are suitable for the purpose and safe for any worker to use.

17.2 A tool management and maintenance system must be in place to ensure that equipment is maintained to appropriate standards, and that records of purchase, inspection, maintenance and testing are kept.

17.3 Insulated Tool and Equipment Testing

17.3.1 All insulating tools and equipment must meet the requirements of the relevant standard and be certificated as such by the equipment supplier.

17.3.2 Each item of insulating equipment must have a unique identification marked on it, and:

a) Be provided with a test certificate or a label; or
b) Be noted in a register that it has passed the relevant test and the due date for a retest.

17.4 Insulated Tool Work Manual

17.4.1 A manual must be prepared containing at least the following:

a) A description of insulated tool working principles and requirements.
b) A description of each tool, its functions and uses.
c) Instructions on caring for the tools and equipment including:
   (i) Daily checks,
   (ii) Inspections,
   (iii) Maintenance instructions,
   (iv) Testing requirements for plant and equipment,
   (v) Storage of plant and equipment.
   (vi) A set of approved insulated tool work procedures for inclusion in the work procedures documentation required in Section 13.2.

17.5 Equipment used for insulated tool work and appropriate aspects of insulated tool work methods must conform to standards issued by ASTM (the American Society for Testing and Materials) and ANSI (American National Standards Institute).

17.5.1 The Standards are:

a) ASTM: F711: Specifications for Fibreglass-Reinforced Plastic (FRP) Rod and Tube.
b) ANSI/IEEE: 978: Guide for In-Service Maintenance and Electrical Testing of Live Line Tools.
c) ANSI/SIA A92.2: Vehicle-Mounted Elevating and Rotating Aerial Devices.

17.6 Electrical Protection Procedures

17.6.1 The service provider and asset manager must establish procedures appropriate to each covering reclose block. (Reclose blocks prevent a circuit breaker or recloser reclosing automatically after it has opened to clear a fault on the line).

17.6.2 Service provider procedures must cover: reclose block requests; receipt of reclose block confirmations from the asset manager; conditions to be met for returning reclose block confirmations.

17.6.3 Asset manager procedures must cover the receipt of reclose block requests and the dispatch of reclose block confirmations to the service provider. This must include the required detail about the equipment covered, the measures applied, and the conditions to be met for the removal of the issued reclose blocks.

## 18. AUDITS

18.1 Other sections of this UBPG require service providers to audit and assess employees and supervisors for the maintenance of competence certification.

18.2 Service providers must also conduct audits of their operations to assess their systems and compliance at least annually against the broader requirements of this Code. The audits must assess management policy, practice and procedures, and application of these in the field, against the requirements in this UBPG as a minimum. The audits must be used to effectively address non-conformances.

18.3 Audits must be conducted by an authorised person who is:

a) appointed by but independent of the service provider,
b) competent in audit procedures and practices, and who has comprehensive understanding and experience in the systems and procedures being audited.

18.4 Asset managers must conduct external audits, assessments and monitoring as appropriate, sufficient to ensure that:
   a) Their own policies, procedures and practices are compliant with the requirements in this UBPG that are relevant to them, and that
   b) The service providers they engage comply with the requirements of this Code.

18.5 The audits required of service providers and asset managers may be conducted in the course of other management systems audits, such as quality management or compliance audits.

# APPENDIX 1:

## DEFINITIONS AND ABBREVIATIONS

Arborists' Code Part 1 – The Approved Code of Practice for Safety and Health in Tree Work — Part 1: Arboriculture (available from www.worksafe.govt.nz)

Asset manager – An organisation or person who owns or is responsible and accountable for an electricity network. An asset manager may also be a service provider.

Competent - Having the necessary knowledge, skills and experience to carry out work safely to this Code.

Earthed - Effectively connected to the general mass of earth.

Electrical hazard - A source of potential harm arising where any person or worker, tool, mobile plant or equipment, or any conductive object (including vegetation) or any conductive matter (including herbicide) encroaches the vegetation control zone in this Guide.

Electricity network - Transmission and distribution systems for conveying or controlling the conveyance of electricity between generators' points of connection and customers' points of connection.

EWP - An elevating work platform vehicle or any other aerial lift equipment having powered height adjustment.

Live - Any electrical equipment or item having a potential difference from earth. It includes equipment that has been disconnected (de-energised) and isolated but not earthed.

Minimum approach distance (MAD) - The closest distance, specified according to voltage, from a power line that is live:

a) To which a person, anything they hold, (with the exception of insulated tools) such as hand tools or hand-held equipment, or anything they are in contact with, such as vegetation, may approach;
b) To which any object, such as mobile plant or equipment and any attachments, may approach.

Minimum tool insulation distance - The minimum effective length, correct for the power line voltage, of exposed insulating material forming the insulating tool. The 'effective length' measure is between the conductive parts of the insulated tool, or between the metal end tool fitting and the designed operator hand mark, as appropriate. Where the insulated tool comprises insulated sections joined by metal couplings, the 'effective length' measure is the sum of the insulating lengths not bridged by the metal couplings.

Ordinary person - Any person including, for example, but not limited to, any arborist, commercial tree faller, or forest woodlot faller, who is not competent to this Guide. Qualified electrical workers approved by an asset manager to do any work with vegetation are not ordinary persons.

OTJ Training - On-The-Job training (as distinct from formal training in a class or group setting).

Power line - Any overhead electric conductor including any service main (including fittings supporting, or connected to those conductors), used, or intended for use, in or in connection with the supply of electricity:

a) From the outgoing terminals of a generating station, building enclosure, or other structure, to the incoming terminals of any other building, enclosure or other structure;
b) Including all overhead electric mains such as service, electricity network or customer mains, or sub-mains, whether owned by an asset manager or private owner.

*Note: In this UBPG, all use of the term "power line" has the meaning of live overhead electric conductors, unless specifically mentioned otherwise.*

Qualified Electrical Worker - Any registered person holding a current practising licence, or any employee currently competent to carry out prescribed electrical work under an employer licence, pursuant to the Electricity Act 1992.

Responsible Person - A person, other than any asset manager or service provider:

a) Who owns or has control over any vegetation near any power line, or,
b) Who owns or has control over any private power line that is not part of any electricity network, and
c) Who may arrange or require maintenance or removal of the vegetation from within the vegetation control zone, and
d) Who, arranges or requires this work, and owes any duties under the HSAW Act at the place of work.

Note: Responsible persons may include, for example, councils, or factory, farm, forest, woodlot or any other property owners or managers, or business owners, including contractors associated with the foregoing, who from time to time require or arrange the maintenance or removal of vegetation that is, or that may fall within, the vegetation control zone.

Service Provider - An organisation, including any asset manager, employer or self-employed person, who undertakes vegetation control work.

SM-EI - Safety Manual – Electricity Industry.

Supervisor - The utility arborist Level 1 or 2, whether or not titled a 'supervisor', certificated to be and appointed the person in charge of the work performed at the place.

Tertiary Education Organisation - Tertiary Education Organisation (TEO). A polytechnic, private training establishment (PTE), industry standard-setting body (ITO) or registered tertiary teaching organisation accredited to deliver NZQA aligned industry standards and assessments.

Trainee - An employee, not yet competent, undertaking work supervised by someone who is competent.

Trainer - A person certificated by a Tertiary Education Organisation as currently competent to deliver training to the outcomes required by this Guide. The following minimum prerequisites must be satisfied for certification as a trainer in utility arborists' competencies. The trainer:

a) Must have current competency to the requirements of this UBPG and current competency in the work procedures taught;
b) A minimum of 12 months documented work experience in vegetation control work;
c) Must be competent in instructing techniques;
d) Must meet any other TEO trainer requirements.

Utility Arborist - A worker whose training, qualifications, experience and ongoing evaluation:

a) Ensures competency in both arboriculture and the electrical safety requirements specified in this Guide, and
b) Proficiency in the relevant work skills necessary to ensure safe outcomes for personnel, power lines and the work with vegetation, and
c) Who is thereby designated as a utility arborist under this Guide,

There are two levels of utility arborist – Level 1 and Level 2,

Vegetation - Any living or non-living flora or any part of that flora.

Vegetation control - Any vegetation maintenance and associated work including the falling or removal of trees, by utility arborists, in accordance with the statement of preferred work practices in this Guide, where any part of the vegetation:

a) encroaches, or may encroach because of any cause or because of any work:
   (i) 4 metres from any power line up to 110kV, or 6 metres from any power lines at 220kV A.C. or 135kV D.C. and above, or
   (ii) The vegetation control zone.
b) Any use of mobile plant by utility arborists for the work specified in (a) above.

Note: For the avoidance of doubt, the work specified by the term 'vegetation control' pertains to work near power line assets that are live. See definitions of the terms 'live' and 'power line'.

Vegetation control zone – the zone surrounding the power lines, bounded by:
The standard minimum approach distance for ordinary persons (4 metres for voltages up to 110 kV and 6 metres for voltages above 110 kV); Boundary lines tangential to the standard minimum approach distance, drawn at 45-degree angles away from either side of the power lines

## APPENDIX 2:

## RELEVANT ACTS, CODES AND STANDARDS

This list provides a guide to some of the broadly applicable Acts, Codes and Standards that are relevant to Arboricultural operations and procedures. It is by no means definitive.

Approved Code of Practice for Safety and Health in Tree Work Part 1: Arboriculture
Approved Code of Practice for Safety and Health in Forest Operations
Approved Code of Practice for Power-Operated Elevating Work Platforms.
Approved Code of practice for Safe use of Petrol and Electrical Chainsaws (Part 1)
Approved Code of practice for Safe use of Petrol and Electrical Chainsaws (Part 2)
Specification for the safe design of petrol and electrical chainsaws
Approved Code of practice for Helicopter Logging

NZCEP 34 (the NZ Code of practice for Electrical Safe Distances)

Safety Manual – Electricity Industry: Requirements for Safety in the New Zealand Electricity Generation, Transmission and Distribution Industry ("SM-EI"):

Guide for Non-Electricity Supply Industry Employees Operating Mobile Plant Near Live Conductors.

BS: 3998-1989, and Amendment 6549-1990 (Tree Works)
ANSI: A300 Tree pruning standards
- ANSI A300 Part 1 (Pruning)
- ANSI A300 Part 2 (Fertilization)
- ANSI A300 Part 3 (Supplemental Support Systems)
- ANSI A300 Part 4 (Lightning Protection Systems)
- ANSI A300 Part 5 (Management during construction, land use, and site planning)
- ANSI A300 Part 6 (Transplanting)
- ANSI A300 Part 7 (Integrated Vegetation Management)

Transport Act 1962;
Traffic Regulations 1976;
Passenger Vehicle Construction Regulations 1978;
Transport (Vehicle Standards) Regulations 1990;
Rules made under the Land Transport Act 1993 which replace or supersede the above Regulations;

Civil Aviation Rule 133 and 135.73;

Dangerous Goods Act 1974;
Dangerous Goods Regulations 1985;

NZS 5819:1982 Chainsaw Safety, reconfirmed 1989;
NZS/AS 1270:1988 Acoustics – Hearing protectors;
AS/NZS 1337:1992 Eye protectors for industrial applications, Amendment 1 Sept 1994 (and subsequent amendments);
AS/NZS 1801:1997 Occupational protective helmets;
AS/NZS 1891.1:1995 Industrial fall arrest systems and devices, Part 1 Safety belts and harnesses (and subsequent amendments);
AS/NZS 1891.4 Industrial fall-arrest systems and devices Part 4: Selection, use and maintenance;
AS/NZS 2210 Occupational protective footwear Part 1;
AS/NZS 4453.3: 1997 Protective clothing for users of hand-held chainsaws, Part 3, Protective legwear;
AS/NZS 4836:2011 Safe Working on or near low-voltage electrical installations and equipment;
NZS/BS 302 Part 5 Specification for ropes for hauling purposes;
NZS 3609:1978 Specification for timber ladders;
ANSI A14.1-1982, Ladders - Portable wood;
NZS 5233:1986 Specification for portable ladders other than timber;
ANSI A14.2-1990, Ladders - Portable metal; Mountaineering and climbing equipment standards:
EN 397 Specification for industrial safety helmets;
EN 701 Fibre ropes for general service – General specification;
EN 696 Fibre ropes for general service – Polyamide;

EN 564 Mountaineering equipment – Accessory cord – Safety requirements and test methods;
EN 565 Mountaineering equipment – Tape – Safety requirements and test methods;
EN 566 Mountaineering equipment – Slings – Safety requirements and test methods;
EN 567 Mountaineering equipment – Rope clamps – Safety requirements and test methods;
EN 892 Mountaineering equipment – Dynamic mountaineering safety ropes;
EN 12275 Mountaineering equipment – Connectors – Safety requirements and test methods;
EN 12277 Mountaineering equipment – Harnesses – Safety requirements and test methods;
EN 12278 Mountaineering equipment – Pulleys – Safety requirements and test methods EN 12492 Mountaineering equipment – Climber's safety helmets – Safety requirements and test methods.
AS/NZS 1800:1998 Occupational Protective Helmets – Selection, Care and Use;
AS/NZS 1801:1997 Occupational Protective Helmets;
AS/NZS 1336:1997 Recommended Practices for Occupational Eye Protection;
AS/NZS 1337:1992 Eye Protectors for Industrial Applications;
AS/NZS 1270:2002 Acoustics – Hearing Protectors;
AS/NZS 1715: 2009 Selection, Use and Maintenance of Respiratory Protective Equipment;
AS/NZS 1891.3: 1997 Fall arrest devices;
AS/NZS 1891.4: 2009 Industrial Fall Arrest Systems and Devices Part 4: Selection, Use and Maintenance;
AS/NZS 1891.1: 2007 Safety belts and harnesses;
AS/NZS 2210 Occupational protective footwear;
AS/NZS 2210.1: 1994 Guide to selection, care and use;
NZS 4453.3: 1997 Protective Clothing for Users of Hand-Held Chainsaws – Protective Legwear (and amendments);
AS/NZS.1892.3: 1996 Portable Ladders – Reinforced Plastic;
AS/NZS.1892.5: 2000 Portable Ladders – Selection, Safe Use and Care;
ASTM: F711: Specifications for Fibreglass-Reinforced Plastic (FRP) Rod and Tube;
ANSI/IEEE: 978: Guide for In-Service Maintenance and Electrical Testing of Live Line Tools;
ANSI/SIA A92.2: Vehicle-Mounted Elevating and Rotating Aerial Devices.
Guidelines for the Provision of Facilities and General Safety and Health in Forestry
BPG for Mechanical Shelter Belt Trimming.
Guidelines for the Prevention of Falls,
NZ Electrical Code of Practice for Electrical Safe Distances (NZECP34: 2001).
Approved Code of Practice for Power-Operated Elevating Work Platforms,
Approved Code of Practice for Cranes 2009,.
Approved Code of Practice for Load Lifting Rigging 2001,
Crane Safety Manual for Operators/Users 2008, published by the Crane Association of New Zealand (Inc.).
Code of Practice for Temporary Traffic Management ("CoPTTM"), published by Transit New Zealand.
Temporary Traffic Management for Local Roads Supplement to Transit New Zealand CoPTTM, First Edition September 2005 published by the Road Controlling Authorities (download at www.transit.govt.nz or www.trainingaspirations.co.nz).
4. Electricity Supply Industry Guidelines

*Any other relevant standards that embody the same or more stringent criteria than those identified below will be acceptable as an alternative.*

*Where documents are superseded, the latest version should be used.*

Notes:


NZARB™

New Zealand Arboricultural Association Inc.

# The Best Practice Guide for Safety Requirements for Maintenance or Removal of Trees Around Power Lines in New Zealand