NZARB™

New Zealand **Arboricultural** Association Inc.

BEST PRACTICE GUIDE FOR SAFETY REQUIREMENTS IN NEW ZEALAND **ARBORICULTURAL** OPERATIONS.

Edition No. 3.1 2022

Version 2

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ORIGINS OF THIS DOCUMENT

Industry approval to produce the first Best Practice Guideline (BPG) for Arboriculture was given at the 2010 Annual General Meeting of the New Zealand Arboricultural Association. From that meeting came the original 2011 BPG. That document was based on the 1994 Approved Code of Practice for Safety and Health in Tree Work Part One: Arboriculture, and all subsequent review material through to and including the 2010 review.

This document is reviewed annually and updated to remain current with New Zealand arboricultural industry accepted best work practices.

The intent of this document

Health and safety in the workplace is an on-going matter. There will be issues that arise which need to be addressed in the future, which is why this Best Practice Guide remains a living document, reviewed annually and updated.

The New Zealand Arboricultural Association encourage developments in systems or technology that introduce new and safer ways of working, and urge users of this document to share their safer ways of working by making submissions to this document

Submissions to this document

If you would like to make a submission or comment about the content of this document, or you would like to suggest additional safe working practice for Safety and Health in Tree Work please complete the online BPG submission on the NZ Arb website

Correspondence received by the 1st of May each year will be reviewed by the New Zealand Arboricultural Association Safety, Education and Training Committee (SET) and if accepted will be incorporated into the following years document.

Acknowledgements

The NZ Arboricultural Association (NZ Arb) would like to thank the individual members of the working group who undertook the review of the BPG.
We would like to give you all a big shout out from NZ Arb for your efforts to complete this important mahi.
Thank you - Dale Thomas, Zane Wedding, Andy Neverman, Sam Smith, Jaiden Palmer, Rimu Tane, Stuart Byrne.

The latest version of document will be made available on the NZ Arb web site: www.nzarb.org.nz

Disclaimer

This document is a guide only. It should not be used as a substitute for legislation or legal advice. The New Zealand Arboricultural Association is not responsible for the results of any actions taken on the basis of information in this document, or for any errors or omissions.

The New Zealand Arboricultural Association acknowledge that it is not possible to state with absolute certainty that a work practice can be described as 'best practice' for all circumstances and situations, therefore we urge users of this document to always plan accordingly, only carry out tasks in which all personnel involved are competent and qualified to carry out and apply the safest methods of work relevant to the circumstances.

INTRODUCTION

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. All Arborists engaged in arboricultural work shall be suitably qualified and competent to carry out that work.

All people using this document should adopt a safe conduct attitude:

- Work with due consideration for your own and others' safety at all times.
- Carry out instructions properly.
- Seek clarification if in doubt or unsure about any, item, process or activity
- Rectify and report all unsafe conditions.
- Report unsafe machinery and equipment.
- Use correct tools and equipment.
- Keep the workplace as tidy and organised as practicable.
- Have all injuries reported and attended to.
- Use only tools, machinery and equipment that you are authorised and trained to use.
- Do not start machinery unless authorised and until guards are in place and people aware.
- Wear and use the protective clothing and equipment provided.
- Obey all safety rules and signs.

Arborist competencies

This is a list of the competencies considered core competencies in an Arborist as defined in this document

Understanding in the following,

- Hazard awareness and control
- Health and safety in the work place
- Worksite organisation
- Signage and pedestrian control/traffic control
- Maintaining separation from utility services
- Identifying and contacting asset owners
- Knowledge of the power industry
- Soils, botany and plant health (including pests and diseases)
- Plant and equipment used in tree maintenance

Ability in the following areas,

- Tree identification
- Tree hazard identification
- Tree Climbing, Pruning, dismantling and felling techniques
- Use, inspection, maintenance, and storage of personal protective equipment
- Emergency procedures for Tree and MEWP aerial rescue
- Maintenance of amenity trees
- Rigging and rigging equipment
- Use and application of agrichemicals
- Use of mobile plant including MEWP.
- Use and maintenance of brush chippers and stump grinders
- Mechanical theory (use of winches etc.)
- Safe use and maintenance of chainsaws
- Safe use and maintenance of pruning tools and winching equipment
- Hand tools and small plant use and maintenance
- Use and identification of specialist arboricultural climbing equipment, handling, maintenance and storage
- First Aid

Approved Codes of Practice (ACoP)

Approved codes of practice are provided for in the Health and Safety in Employment Act (1992) (The Act). They are statements of preferred work practice or arrangements and may include procedures which could be taken into account when deciding on the practicable steps to be taken. Compliance with codes of practice is not mandatory; however, compliance with an approved code of practice may be used in Court as evidence of good practice of an employer or other duty holder having taken "all practicable steps" to meet the duty.

This document is a Best Practice Guide (BPG), like an ACoP it also contains statements of preferred work practice. The main difference between an ACoP and a BPG is the level of detail. A BPG should include more information on procedures and techniques than an ACoP.

Scope of this document

This BPG contains safety requirements for climbing, pruning, trimming, maintaining and removing trees, cutting brush and for using equipment in arboricultural operations not involving electrical hazards.

Purpose of this document

This BGP sets out sound work practices for everyone involved in arboriculture. The purpose of the BPG is to provide safety criteria for Arborists, workers and the public in and around tree work operations. This document is not designed as a training manual and should not be considered as one.

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.

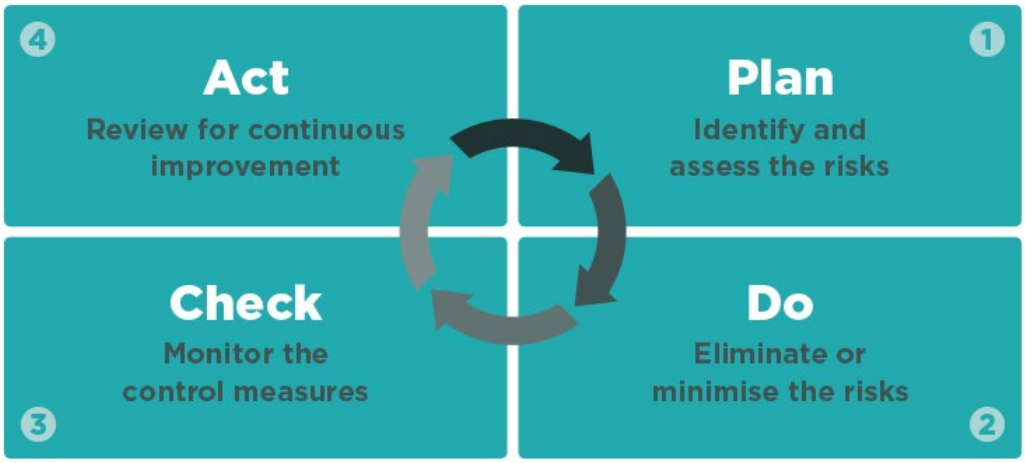
Hierarchy of control measures for a PCBU

According to the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016;

i. This regulation applies if it is not reasonably practicable for a Person Conducting a Business or Undertaking (PCBU) to eliminate risks to health and safety in accordance with section 30(1) a. of the Act.
ii. A PCBU must, to minimise risks to health and safety, implement control measures in accordance with this regulation.
iii. The PCBU must minimise risks to health and safety, so far as is reasonably practicable, by taking 1 or more of the following actions that is the most appropriate and effective taking into account the nature of the risk:
    a) substituting (wholly or partly) the hazard giving rise to the risk with something that gives rise to a lesser risk:
    b) isolating the hazard giving rise to the risk to prevent any person coming into contact with it:
    c) implementing engineering controls
iv. If a risk then remains, the PCBU must minimise the remaining risk, so far as is reasonably practicable, by implementing administrative controls.
v. If a risk then remains, the PCBU must minimise the remaining risk by ensuring the provision and use of suitable personal protective equipment.

Managing work health and safety risks

The following risk management framework describes four steps that can help you with managing your workplace health and safety risks.



WorkSafe NZ Image – as seen on:

https://worksafe.govt.nz/managing-health-and-safety/managing-risks/how-to-manage-work-risks/

How to manage work risks

Plan: Identify and assess the risks

- Start by walking around your workplace and identifying what could seriously harm the health or endanger the safety of your workers and others (eg visitors, bystanders, or someone else's workers). This harm could be acute (occur immediately) or chronic (occur slowly over a long period of time).
- Think about your workers and whether any of them might be vulnerable (eg young people, pregnant women, casual workers, night shift workers, workers with reduced literacy levels).
- Consider whether your workers' general health could reduce their ability to work safely (eg reduced mobility, existing illnesses or injury).
- Identify reasonably foreseeable hazards that could result in risks to people's health or safety.
- Look at your work processes and the machinery/equipment used, your workplace itself and your workers' activities.
- To work out which risks to control, think about the consequences of being exposed to the hazards you have identified, and how likely this is to occur (the frequency with which people are exposed to the hazard and the probability that they could be harmed).
- Focus your attention initially on the risks that could cause permanent injury or illness or death to workers or others – even if this is not very likely.
- Engage with your workers when assessing your risks.

Do: Eliminate or minimise the risks

- Once you've assessed the workplace risks associated with your business, you need to decide how you will deal with them.
- Consider first whether the risk be eliminated (eg can you remove the source of the harm?). If the risk can't be eliminated, then it must be minimised using control measures.

- To determine the control measures you should use:
    - Think about the current control measures you have in place, and whether they are managing the risk. If not:
    - Find out if there are any legal requirements relevant to the risk, and if there are any standards or guidance materials you could follow. For example, handling asbestos or preventing falls from heights.
    - Ask others who do similar work to you how they manage the risk.
    - Seek specialist advice from a competent health and safety professional
    - Think about how easy and accessible the ways to control the risk are and whether they will work within your business.
    - Think about whether the controls you implement could create other risks.
- The most expensive control option is not necessarily the best one. If there are well-known and effective controls already in use by your industry, and they are suited to the circumstances of your workplace, these controls may be implemented.
- Engage with your workers when making decisions about the ways to eliminate or minimise the risks.
- Communicate the risks and the control measures to your workers in a way that is appropriate to their needs (ie appropriate to the way they work, their work environment and their literacy and language).
- Remember that good health and safety is not about good paperwork, it is about active control of risk.

Check: Monitor the control measure

- Your health and safety systems should be 'living' and become part of business as usual. You should check that the control measures you put in place are being used by your workers and are effective. Monitoring mechanisms might include:
    - inspections, observations and walk-throughs
    - meetings and worker feedback
    - checklists and audits
    - independent reviews
    - technology (monitoring alarms on machinery, or gas alarms for example)
    - health surveillance records
    - environmental monitoring activity (eg air quality and noise testing).

Act: Review for continuous improvement

- You should review your work activities on an ongoing basis to identify any new risks that might need to be managed.
- Reviewing also means thinking about the way you identify, assess and control risks – do your processes work, or is there a better way to do these activities. For example, do you need to have a different method to assess consequences and the likelihood of the risk happening, and could you improve the way that you monitor your risk control effectiveness?

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.

2. Pre-work checks

2.1. Operational considerations / before work commences;
I. All workers engaged in tree work must collectively undertake a risk assessment to identify actual or potential hazards specific to; the workplace, the equipment, the environmental conditions, the skills and capabilities of the workers
II. All workers shall be given clear instructions on the work to be done and any hazards involved, to themselves, property and to the public.

2.2. After a risk assessment has been undertaken, workers shall do all that is reasonably practicable to control the risks

2.3. Every employer shall nominate a competent person to be in charge of each operation. That person shall exercise such supervision as will ensure that the work is always performed in a safe manner. A competent person shall be nominated to take charge if it is necessary for this person to leave the operation.

2.4. Every employer shall exercise such supervision as will ensure that work is always performed in a safe manner. Employers shall also ensure that all workers are properly instructed and trained in the work they are required to perform, and the dangers or hazards involved in each operation.

2.5. Should any employer hire an experienced worker, the new employee shall (before being allowed to work unsupervised) be required to visually demonstrate to the employer or the person in charge that they have the competence to safely accomplish the work they may be required to perform. Workers holding a valid and approved training qualification shall be considered experienced in those skills or special skills in which they have Qualified.

2.6. Should an employer hire an inexperienced worker, the employer shall provide the instruction or training required and ensure close supervision until the employee demonstrates their competency to work safely in the job they are to perform. When training activities of a potentially high risk nature, direct supervision shall be provided on a one-to-one basis.

2.7. All workers should familiarise themselves with the relevant industry publications referenced in APPENDIX 2: and the safety provisions of this guide and shall take all practicable steps to ensure their own safety, the safety of their team members engaged in each particular operation.

2.8. The employer shall provide a first aid-kit adequately stocked and maintained when and where arboricultural work is being carried out, some form of communication (e.g. mobile phone or R.T.) should be available as part of this first-aid kit.

2.9. All workers shall be trained in emergency care first aid.

2.10. No person shall work in or visit an arboriculture operation while under the influence of drugs or alcohol. All workers should be able to perform assigned duties safely and acceptably without any limitations due to the use or after-effects of alcohol, illicit drugs, non-prescription drugs, or prescribed medications or any other substance.

2.11. Where any operation becomes dangerous because of high winds, wet weather, poor visibility or other adverse conditions, the employer or person in charge shall suspend all such operations while such conditions exist. In emergency situations, work should be the minimum to make the situation safe. An exclusion zone to all persons should be erected around the operation site until such conditions abate

2.12. Before any tree work is carried out, or any climbing is undertaken, a thorough visual tree assessment (VTA) shall be carried out to identify hazards to the climber and ground worker(s). These may be decay or rot, dead branches, suspended materials such as branches, interlocking branches or power lines, either within or close to the crown.

2.13. All tree work requiring an arborist to ascend above 3m shall have a second worker trained in aerial rescue procedures and have an appropriate rescue procedures in place.

2.14. No person should work on their own with a chainsaw unless:

I. Visual or voice contact is maintained with other person who is able to assist or obtain help in an emergency; or

II. They have an audible alarm device that can be activated in an emergency.

2.15. No person shall work aloft on their own.

2.16. While working on their own in other circumstances, a worker's presence and welfare shall be appropriately managed by the employer so the worker has access to suitable communication at all times.

2.17. All persons (new operational personnel, land owners, STMS's, mobile service providers, visitors, WorkSafe NZ inspectors etc) approaching an operational area shall:

I. Before entering the area, notify the employer or person in charge.

II. While machinery is operating, approach the area, where practicable, from a visible location to operators.

III. Draw attention to their presence and intention by calling out loudly or some other means and;

IV. Not enter the operational area until acknowledged or signalled to do so.

V. Not enter the Work Zone until operational personnel provide a briefing of the Hazards and the No Entry Zones that all personnel onsite must be made aware of. (This should be documented in a Hazard ID / Tail Gate form and acknowledged with the visitors signature)

VI. Wear appropriate PPE

VII. Not approach operating machinery.

2.18. No person under the age of 15 shall work in any arboriculture operation. Work carried out by young persons shall not be beyond their physical capabilities, and they shall be fully trained or in training under adequate supervision while engaged in an arboriculture operation.

2.19. No person under the age of 15 years shall, without the permission of the person in charge and unless under constant supervision of a responsible person, be permitted in the vicinity of arboricultural operations.

2.20. A handheld fire extinguisher designed for class "B" fires shall be immediately available. It shall be of suitable capacity in relation to the potential fire hazard.

2.21. All tree work sites shall be left safe at the end of each work period. At close of work for the day, provision must be made for the safety of all persons during darkness.

2.22. All tree work in the vicinity of overhead power lines shall be in accordance with the Approved Code of Practice for Safety in Tree Work Part Two: Maintenance or Removal of Trees Around Power Lines (Trees Code Part 2").

3. Machinery/Mobile Plant

3.1. All safety equipment fitted at time of manufacture shall be used and maintained to the standard of manufacture. Machinery shall not be used if any manufacture fitted safety equipment is inoperable. No machine shall be used unless it is:

I. In a sound and safe condition, maintained and inspected in accordance with manufactures instructions

II. Suitable for the operation in capacity and design;

III. Operated by a competent person (or person training under adequate supervision);

3.2. Unless training under adequate supervision, operators shall only use machinery and equipment they are trained and authorised to use.
3.3. Any person who discovers any defect in any machinery shall forthwith report the defect to the person in charge of the operation.
3.4. Where machines are operating adjacent to or on roads or road verges, appropriate road signage shall be used in accordance with the consent and requirements of Waka Kotahi NZ Transport Agency or the appropriate roading authority. An approved TMP shall be adhered to.
3.5. Material and equipment carried on vehicles shall be properly stored and secured to prevent movement, spillage and departure from the moving vehicle.
3.6. In arboriculture operations, owners of machinery used shall take all practicable steps to eliminate, at source, excessive noise levels that are likely to impair a worker's hearing. Where the excessive noise is integral to the machine's operation, then the appropriate isolation, PPE and associated training must be required.
3.7. All machinery used in an arboricultural operation shall comply with relevant regulations and requirements including but not limited to; HSNO – Health and Safety in Employment Act 1992, the Hazardous Equipment Regulations 1994, and the Transport Act 1962.

4. Protective clothing and equipment

The employer shall provide or make provision for all appropriate clothing, footwear and personal protective equipment to protect employees from harm due to any hazard in the workplace, and ensure it is used correctly.

4.1. The employer shall provide appropriate training to ensure all protective clothing and equipment is, worn, maintained, and used correctly.
4.2. No persons shall interfere with or misuse any items of protective clothing or equipment provided for their protection and health.
4.3. Long hair shall be confined in such a manner as to prevent it being caught by any moving part of any tools or machinery.

5. Clothing

5.1. All clothing shall fit closely about the worker, be comfortable and allow free movement.
5.2. Damaged or torn clothing shall be properly repaired or replaced where necessary.
5.3. Clothing/equipment shall be kept clean and properly maintained.
5.4. Clothing of high-visibility colours should be worn so that workers or other persons entering operation areas are more readily seen by others (badly faded high-vis clothing should be replaced where necessary).

6. Leg protection

All workers required to use a chainsaw shall wear safety leg protection complying with either: AS/NZS 4453.3 1997 Protective clothing for users of hand held chainsaws, Part 3, Protective leg wear, or relevant English language standards issued by organisations that are Member Bodies of the International Organisation for Standardisation (ISO) or CEN.

7. Safety footwear

All workers engaged in arboricultural operations shall wear footwear which has safety toe caps complying with either AS/NZS 2210 Occupational protective footwear Part 1; or any other standard with the same or relevant English language standards issued by organisations that are Member Bodies of the International Organisation for Standardisation (ISO) or CEN.

8. Safety helmets

8.1. All safety helmets shall comply with the requirements of NZS 5806:1980 Specification for industrial safety helmets (medium protection) or relevant English language standards issued by organisations that are Member Bodies of the International Organisation for Standardisation (ISO) or CEN.

8.2. Safety helmets shall be worn at all times by all personnel in or around an arboricultural operation.

8.3. Machine operators can remove their helmets when fully protected by a suitably certified protective structure which is fit for purpose, When the operator exits the machine, a safety helmet shall be worn along with hearing and eye protection that meet the relevant safety standards.

8.4. Safety helmets shall be colours that are hi-visibility in the workplace

8.5. Helmets shall be inspected before use and removed from service if signs of excessive wear or damage are found. Otherwise, helmets shall be replaced as recommended by the manufacturer.

8.6. Helmets should not be stored in a place where they are exposed to direct sunlight. Paints, petrol, oil or solvents should not be applied to helmets, as they can cause deterioration.

8.7. All safety helmets should have a chin strap to prevent accidental loss or removal while working

9. Hearing protection

9.1. All workers shall wear hearing protection in any area subject to harmful noise (see Appendix four for noise levels and grades of hearing protection). All chainsaw operators shall wear at least grade 4 earmuffs.

9.2. Earmuffs shall be inspected before use and removed from service or replaced where necessary if signs of excessive wear or damage is found.

9.3. Ear Plugs may be used as an alternative however they must be rated to at least grade 4 and be securely fitted.

10. Eye protection

10.1. Suitable visors or safety glasses shall be worn for eye protection during all arboricultural operations.

10.2. Eye protection shall be inspected before use and removed from service or replaced where necessary, if signs of excessive wear or damage is found.

10.3. Where safety glasses compromise the effectiveness of hearing protection a safety visor or some other form of eye protection that does not compromise the effectiveness of hearing protection shall be used.

11. Hand tools

11.1. All tools used shall be kept in good working condition, be properly sharpened where applicable, and should be restricted to the use for which they are intended.
11.2. Handles shall be securely and correctly attached to tools.
11.3. All tools shall be removed from a tree or secured in such a way that they cannot fall
11.4. When the worker has finished the task or when a crew is finished for the day.

12. First Aid

Subject to the provisions of any Act, award, or industrial agreement:
12.1. All workers involved in arboricultural operations shall hold a current first aid certificate.
12.2. A first aid kit or box shall be kept in each vehicle and at each work area. Vehicle kits or boxes can substitute for those required at each work area, provided a vehicle remains at the work site.
12.3. Every box or kit shall be kept fully stocked to the minimum requirements as prescribed by WorkSafe NZ, and shall be stored so as to ensure that the contents are protected against contamination by dust, heat, moisture or any other source.
12.4. WorkSafe NZ may require additional requirements for arboricultural operations that take place in isolated or hazards locations

13. Reporting accidents

All accidents and near misses must be recorded. Instances of serious harm must be reported to WorkSafe NZ

14. Transportation of workers

14.1. All tools, fuel and equipment shall be stowed securely in separate compartments designed specifically for such use.
14.2. Each person authorised to travel in a vehicle conveying workers shall have a suitable place to sit under cover and shall be seated on an approved properly made and secured seat with a seat belt.

15. Petrol and other flammable liquids

15.1. Petrol and other flammable liquids shall be conveyed, stored and packed in containers that comply with requirements prescribed under the Dangerous Goods Act 1974. Containers shall:
  I. Be made of metal or other approved materials;
  II. Be of such construction that the contents cannot escape in either liquid or vapour form;
  III. If made of plastic, be approved and be marked with the LAB approval number (see 16 for use in transportation of fuel by foot).
15.2. Only containers with a LAB number, or those approved by an inspector and not more than 5 litres in capacity, shall be used to carry fuel for “on site” refuelling. Such containers shall not be used for the long term storage of fuel.
15.3. On filling, an air gap of 5% by volume shall always be left in the container.
15.4. Containers shall be regularly inspected and removed from service if signs of excessive wear or damage are found.
15.5. Glass containers shall not be used to carry oil or fuel in any operation.

16. Lifting and handling

16.1. Do not try to lift or move objects beyond your capacity—ask for help. Coordinate lifting, moving and lowering by pre-arranged signals.
16.2. Bend knees, grasp the load and lift by straightening the legs. Avoid reaching, bending forward to lift, twisting the back or bending sideways.

17. Fires

17.1. A permit to light fires shall always obtain from the appropriate fire authority
17.2. Petrol shall not be used to start a fire or as an accelerant.
17.3. Fires shall not be lit under or near over-head power lines as electrical discharge through the smoke may occur.
17.4. Fires should be extinguished and ashes cold at the end of a shift Unless the fire is directly monitored by a competent person with access to suitable fire management equipment and a working communications device.

ELECTRICAL HAZARDS

18. General provisions for pruning electrical safety

Vegetation close to power lines is hazardous to these assets and the power supply. The electrical hazard also involves potential 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.

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. Any person or animal can suffer electric shock serious harm, 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 serious harm 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.

It is recommended that all people using this guide also have and use the; Safety and Health in Tree Work Part 2: MAINTENANCE OR REMOVAL OF TREES AROUND POWER LINES
Any tree work near electrical supply lines is subject to requirements of the Arborist Code of Practice Part 2. Unless written authority has been obtained from the asset owners, then you must remain outside of the vegetation zone.

Any overhead power line shall be always treated as live and capable of causing serious or fatal harm from electric shock and in some instances from electric arc flash. Only in special circumstances when the lines owner has directly advised the operators on the lines being de-energised and given instructions should a different approach be taken

18.1. Arborists engaged in any tree work operation that approaches the vicinity of any overhead power line shall maintain a lookout to ensure that they or anything they work with or are in contact with or using, including trees, plant or equipment, remain

separated from the power line according to the requirements of section A 5.3 of the Approved Code of Practice for Safety in Tree Work Part Two: Maintenance and Removal of Trees Around Power Lines ('Trees Code Part 2').

18.2. All tree work within the electrically hazardous "Vegetation Control Zone" shall be done only by Utility Arborists to the requirements of Trees Code Part 2. Where there is a risk that any tree work operation by Utility Arborists working to this Trees Code Part 1 may encroach the "Vegetation Control Zone"

18.3. Where the overhead power lines are owned or controlled by a electricity network owner, the arborists shall contact and seek guidance from the network owner or its authorised representative before proceeding with the work. In some rare cases the network owner may authorize 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 network owner or its representative with conditions, including any safety procedures, for ensuring avoidance of any potential electrical hazards in the course of the work;

18.4. 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 Trees Code Part 2, or the power lines shall be disconnected and made safe by an electrically competent person before arborist working to the Code of Practice Part 1 commence work.

18.5. Where the electricity network owner or its authorised representative does consent to any tree work within the "Vegetation Control Zone and for the avoidance of electrical hazards:

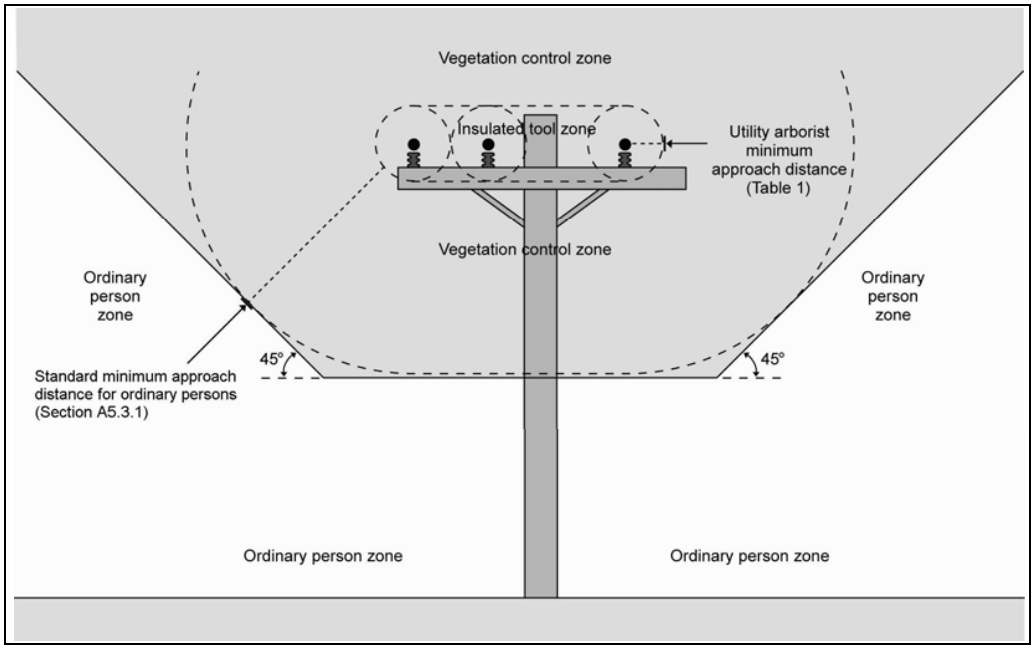
i. Any mobile plant, including for example elevated work platforms, cranes, mechanical shelter belt trimmers, logging machinery and any attachments, may only be used subject to written consent and conditions, including any safety procedures, required by the network powerline owner;
ii. Manual pole pruners,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

	MAD for Competent Worker	MAD for Any Tree Worker
Power Line Nominal Design Voltage	Radius 'A'	Radius 'B'
230/400v	0.15m	0.5m
11,000v	0.6m	1.5m
33,000v	0.7m	2.5m
66,000v	1.0m	3.0m
110,000v	1.5m	4.0m
220,000v	2.2m	6.0m

Table showing minimum approach distances ("MAD") in metres permissible for persons clearing vegetation encroaching around power lines - subject to asset manager consent

Power Line Nominal Design Voltage	Mobile Plant MAD **with Asset Manager Consent**
Not exceeding 1 kV a.c.	1.0
11 kV	1.0
22 kV	1.5
33 kV	1.5
50/66 kV	2.0
110 kV	3.0
Above 110 kV	4.0

Table showing minimum approach distances ("MAD") in metres. Mobile plant includes elevated platform vehicles, cranes, Hiab's, and excavators.
The Asset Manager is the network utility or power lines owner and they have the sole responsibility to issue operators a close approach permit.



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.

18.6. 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;

18.7. Manual pole pruners, pole saws and other similar tools with poles made of metal or other conductive material shall not be used;

18.8. Ladders with styles made of metal or other conductive material shall not be used.

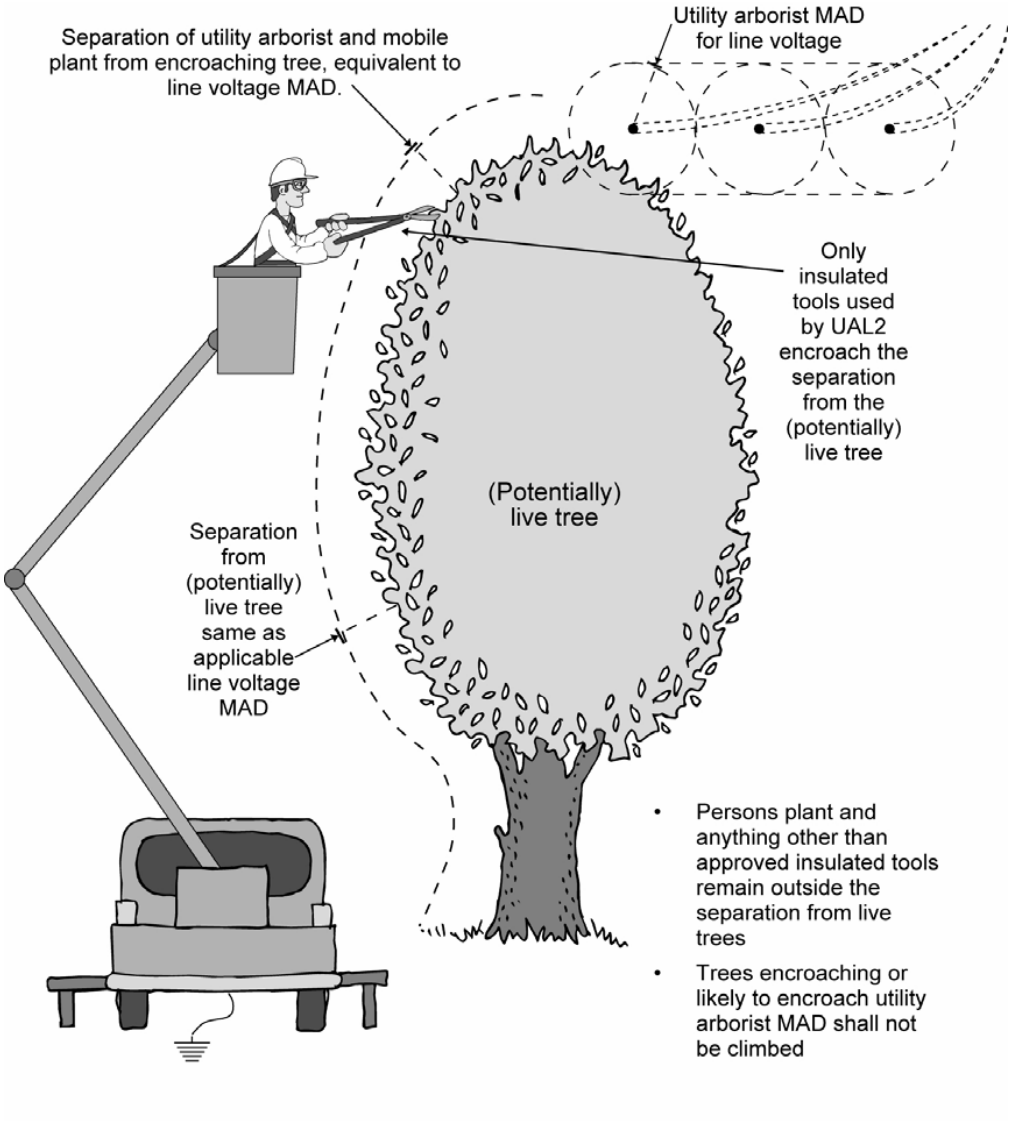


Illustration of utility arborist separation from (potentially live) tree

18.9. 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 lines owner.

19. Underground services

Where carrying out work that involves excavation or penetration below ground level, suitable methods should be applied to establish and identify the presents and voltage of underground services. Where services are present appropriate ground markings should be made including the approximate depth of the service line. All work that may impact on underground services must be notified to the appropriate authority and may be subject to network owner approval.
Guide to Underground Service [PDF, 349 KB]

PUBLIC SAFETY

20. 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. Including cases of sabotage eg. Unruly protestors

21. Works Near Public Roads

21.1. If the operation alters the normal operating conditions of 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 Waka Kotahi NZ Transport Agency or the appropriate road and/or rail authorities have been made.

21.2. All signage shall comply with Waka Kotahi NZ Transport Agency or the appropriate road and/or rail authority.

21.3. 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

SAFE USE OF CHAINSAWS

Chainsaws shall comply with: NZS 5819:1982 Chainsaw safety: Part 1: Code of Practice for safe use of petrol and electrical chainsaws. Part 2: Specification for the safe Design of petrol and electrical chainsaws; or relevant English language standards issued by organisations that are Member Bodies of the International Organisation for Standardisation (ISO) or CEN.

22. General Safety / Chainsaws

22.1. Chainsaws must always be used in accordance with the manufacturer's instructions.

22.2. Chainsaws must be used within the operators physical or operational capabilities and all operators must have adequate training. It is important to identify and control all hazards prior to commencing work. Note that the dangers of carbon monoxide poisoning when working in situations where restrictions on the dispersal of exhaust fumes are encountered can be equally as fatal as the more 'obvious' hazards.

23. Chainsaw safety

23.1. Forces acting on a piece of wood or tree change when cuts are made through the wood. To prevent these forces becoming a hazard Multiple chainsaw operators should not work on the same section of wood or section of tree at any one time.

23.2. All chainsaw safety equipment fitted at time of manufacture shall be used and maintained to the standard of manufacture.

23.3. Chainsaws held directly by hand shall have:

I. an effective chain brake
II. a functional ON-OFF switch
III. a chain catcher
IV. a rear hand guard
V. anti-vibration mounts
VI. a throttle lockout

VII. an effective muffler
VIII. a spark arrester

23.4. A chainsaw shall not be used if any safety equipment is inoperable.
23.5. Operators shall not operate defective or poorly maintained chainsaws.
23.6. Operators shall ensure that they have adequate training in the correct use and safe operation of chainsaws.
23.7. Chainsaw operators should not use a chainsaw to make cuts within 1.5m of any other person. Forces acting on a piece of wood or tree change when cuts are made through the wood. To prevent these forces becoming a hazard Multiple chainsaw operators should not work on the same section of wood or section of tree at any one time.
23.8. Chainsaw operators should not use a chainsaw to make cuts while any other person is in a position where they may be struck by the chain if it were to break free from the saw.
23.9. Top handled chainsaws should only be used on the ground to carry out formative pruning.
23.10. The operator shall only use a top handled saw on the ground when it is safer to undertake the work than with a rear handled chainsaw.
23.11. The chainsaw shall be inspected before use and removed from service or rectified where necessary, if signs of excessive wear or damage are found.
23.12. Except for the fine-tuning of the carburettor, no cleaning, oiling or adjustments shall be carried out while the motor is running.

24. Starting the chainsaw

24.1. A chainsaw motor shall only be started when it is clear of all obstructions or people.
24.2. Approved starting methods are:
I. Starting a chainsaw on clear ground.
II. Step over method for warm starting. (The throttle lock should not be used and it is recommended that the chain-break be engaged.)
III. Extended arm technique (when aloft)
24.3. Drop starting a chainsaw is prohibited.

25. Chainsaw operation

25.1. Operators shall use all protective equipment, appliances or other means provided to afford protection and safeguard health.
25.2. Operators shall not operate or carry a chainsaw in a manner likely to endanger themselves or others.
25.3. Operators shall identify and control hazards prior to commencing work.
25.4. The use of a top handled or rear handled chainsaw shall be in accordance with the manufacturer's instructions / recommendations
25.5. Operators shall pay particular attention to the dangers of carbon monoxide poisoning when working in situations where restrictions on the dispersal of exhaust fumes are encountered.
25.6. Except for short unobstructed distances, the chainsaw motor shall be stopped while being carried by hand, or the chain-brake activated.
25.7. The chainsaw should always be carried at the side of the body with the bar pointing to the rear, so it can be thrown clear in case of a fall. It should not be carried on the shoulder.
25.8. The operator shall not operate a chainsaw above shoulder height.

26. Refuelling the chainsaw

26.1. The following rules shall be observed when refuelling:

I. Stop the motor
II. Place the saw on clear ground. Fill the oil tank first to allow the saw to cool down.
III. Avoid spilling fuel on hot engine components, as excessive heat can cause ignition.
IV. Do not smoke or have any sparking or open flame near the fuelling point.
V. When completed, wipe excess fuel from the saw.
VI. Move at least 3 meters away from the refuelling site before restarting.

27. Use of chainsaws aloft

27.1. Unless under direct supervision of suitably qualified personnel: No person shall use a chainsaw while in a tree unless they have been assessed and deemed competent in chainsaw operation and tree climbing in Arboricultural operations by a suitably qualified assessor. This shall include the documented criteria the individual is assessed against and the assessment carried out. Competency documentation should be kept on record by the Employer / PCBU.

27.2. Chainsaws shall be secured when used in trees, or in an elevated working platform unless there is danger of the chainsaw being trapped and taken with the severed section. In this instance the risk shall be suitably managed to avoid all harm.

27.3. When starting a chainsaw aloft using the extended arm technique, the chainsaws shall be held firmly in place or otherwise held in a manner that restricts the movement of the saw when pulling the starter handle. The chain brake shall also be engaged.

27.4. When operating the chainsaw while aloft a secure position at or above the level of the cut shall be adopted. The climber shall be attached by two points of attachment when making cuts aloft.

27.5. Ensure that the saw is well clear of the operator and climbing equipment at all times.

27.6. Obtain the best cutting position to minimise the risk of being struck by the saw including kickback or by severed pieces of wood.

27.7. A climbing saw shall be operated using two hands at all times or as per manufacturer's instructions.

27.8. The saw shall be stopped, or the chain-brake activated while changing working positions.

CLIMBING TECHNIQUES AND EQUIPMENT

All persons using climbing equipment and techniques (including knots and hitches) shall be trained and competent in their use and have an understanding of the item or technique's limitations and applications.

28. General Safety / Climbing

28.1. Persons undertaking tree work aloft shall be competent and fully trained in the use of climbing equipment or under direct supervision in a training situation

28.2. A visual hazard assessment on the tree including the rooted area shall be performed prior to climbing or performing any work in the tree.

28.3. Working techniques and work progression shall be fully discussed and understood by ground staff before climbing commences. Rescue procedures shall be outlined and understood. Ground staff should be able to affect an aerial rescue procedure if required.

28.4. Effective communication shall be maintained between the climber and ground crew during Arboricultural work.
28.5. The climber shall be securely attached to a suitable anchor point at all times while in the tree by means of climbing line, safety line or lanyard. The anchor attachment point shall at no time be below the waist of the climber.
28.6. Anchor points should be well above the work area. Anchor points shall be sufficient to take the climber's weight and equipment, and that of a potential rescuer. Anchor points must also be able to withstand dynamic forces. The arborist line should be passed around the main leader or an upright branch. A false crotch should be used instead of or where a natural crotch does not exist.
28.7. Arborists shall be tied in or secured to the tree while ascending and remain tied in until work is completed and the arborist has returned to the ground. Supplementary anchor points shall be used where a fall or swing that may cause injury is possible. The exception to this is when a ladder is used to gain entry into the tree, the arborist shall not work from or leave the ladder until tied in or secured.
28.8. Climbing lines and lanyards should have en effective means to prevent the friction hitch or device from slipping off the end of the lanyard.
28.9. When descending, ensure that the rope is as straight as possible and use both hands to control a smooth descent.
28.10. There shall be no more than 0.6m of slack in the climbing line at any time.
28.11. A false crotch should be used where applicable to prevent damage to the tree, equipment and reduce strain on the climber

29. Climbing equipment

29.1. All climbing equipment shall comply with applicable safety standards.
29.2. Climbing equipment must not be used for any other purpose and must be replaced if worn, damaged or inoperative
29.3. All equipment must be used in compliance with the manufacturer's conditions or instructions.
29.4. No climbing equipment shall be marked for identification purposes or altered in any Manner that undermines the structural integrity of that piece of equipment.
29.5. All carabiners used, as part of a climbing system shall be rated at or above 22kN and be auto-locking. An auto-locking carabiner, is defined as a carabiner, which upon closing, automatically moves into the locked position and requires a minimum of three distinct movements to open it.
29.6. Snap hooks (lanyard clips) used as part of the climbing system shall be rated at or above 22kN and be auto-locking.
29.7. New equipment should be recorded in a logbook prior to being entered into service. Record the type of item, the date the product enters services, the date of manufacture and any individual serial numbers which will allow the operator to trace the item when updating records of inspection.6 monthly documented climbing equipment inspection

30. Safety harnesses

30.1. Work positioning (sit) harnesses are the most common type of harness used in tree climbing operations. They are designed to be connected at a pelvic attachment point and are used to support the climber in situations where the fall protection system is under tension, or any potential fall is limited to a short distance.
30.2. Fall arrest harnesses are designed to arrest a worker's fall. The method of attachment between the harness and anchor point usually incorporates some type of energy absorbing device and are usually attached via the chest or dorsal (upper back).
30.3. Harnesses shall conform to the relevant AS/NZS 1891 Standards or relevant

English language standards issued by organisations that are Member Bodies of the International Organisation for Standardisation (ISO) or CEN.

30.4. Only harness attachment points designed for load bearing support shall be used to connect the harness to the climbing system. Harness attachment points shall only be used and configured in direct accordance with the manufacturer's instructions

30.5. Harnesses shall not be altered in a manner that would compromise the integrity of the equipment.

30.6. Before use, arborists shall check all components of their harnesses for damage, cuts, abrasion and/or deterioration. Excessively worn or damaged components shall be replaced (where possible) or the complete harness shall be removed from service if signs of excessive wear or damage are found or expiry date has lapsed.

30.7. Harnesses should be kept in compartments or suitable containers while being transported to avoid harmful substances or damage and stored in the same manner as climbing lines

31. Climbing Lines

The Safe Working Load (SWL) of a climbing line is 10% of the breaking or tensile strength of the rope. Knots can weaken a rope by up to 50% of its breaking strength.

Climbing lines running through crotches, over branches, through friction hitches or descenders create heat from friction. This heat can lead to rope failure. Always descend in a safe and controlled manner.

31.1 Climbing lines shall be constructed with a minimum breaking strain of 22kN when new and be designed for the purpose of tree climbing.

31.2 All climbing lines shall be free of joining splices or knots. Spliced eyes or end splices shall be done in accordance with the rope manufacturers' instructions.

31.3 Climbing lines and equipment shall be stored dry in a suitable bag or box to prevent damage through contact with sharp tools, petrol, oil, excessive sunlight or chemicals.

31.4 Where appropriate a knot should be placed at the end of the line as a back-up to prevent the climber from descending off the end of the line

31.5 Arborists shall check climbing lines, work lines, lanyards, and other climbing equipment for damage, cuts, abrasion and/or deterioration before each use and shall remove it from service if signs of excessive wear or damage are found.

31.6 Climbing line shall be only used for climbing.

32. Knots and hitches for arboricultural operations

32.1. Any person tying knots and/or hitches for the use in arboricultural operations shall be competent and fully trained in the use of those knots. Knot tying should observe the following rules:

I. Tie it
II. Dress it – align the parts
III. Set it – tighten the knot and make ready for use

32.2. The 'tail' end of all knots should extend at least 5 times the thickness of the line beyond the knot once the knot has been dressed and set.

33. Friction hitches

33.1. Friction hitches shall:
- I. Move freely up and down the climbing line
- II. Activate and hold on its own
- III. Hold a climber's weight plus the weight of another climber
- IV. Hold a climber's weight plus additional equipment while working aloft

33.2. Friction hitches and work-positioning lanyards used in a climbing system shall meet the minimum strength standards for arborist climbing lines.

33.3. Climbers shall be aware of the characteristics and use of any friction hitch and / or Friction system used for climbing and must receive adequate training before use.

33.4. Climbers shall be aware of the characteristics of the friction hitch and how it will perform in combination with other components e.g.: a micro-pulley or cambium saver. Climbers shall consider the fibre type, construction and cordage diameter when selecting a friction hitch as this will have a significant impact on the holding characteristics, abrasion resistance, heat and working life of the hitch.

33.5. Friction hitches used in a dynamic climbing system should be constructed or tied with a minimum cordage diameter of 8mm.

33.6. Friction hitches used in a static / anchor application can be tied with a minimum Cordage diameter of 6mm. The hitch cord shall be approved by the manufacture for its application.

34. Ancillary (supporting) equipment

34.1. Always read the manufactures instructions before using new equipment and ensure that it is fit for purpose. When configuring a climbing system or climbing aids ensure that the specifications of the manufacturer's instructions are followed (e.g. Safe Working Load limits).

34.2. Check ancillary equipment for physical damage such as significant dents or Distortion, cracks or forging folds, weak pivots or springs and remove from service if signs of excessive wear or damage are found. Do not modify or repair equipment.

34.3. A suitable container shall be provided to protect equipment and prevent contact with cutting tools, chemicals, or other hazards while in storage or transit.

34.4. Maintain, clean, and lubricate equipment in accordance with the manufacturer's instructions.

35. Moving rope technique (MRT)

MRT involves using a climbing line in dynamic manner. One end of the climbing line is attached to climber (the working end) the line passes through an anchor point and back to the climber, the climber is attached to that part of the line (the running end) via a friction system. By moving the friction system up or down the running end of the line the climber able to ascend and descend. MRT climbing systems can be used for access and work positioning.

36. Stationary Rope Technique (SRT)

SRT involves using a climbing line in stationary manner. The climbing line is secured to the tree and the climber is attached directly to the standing line via a friction system. By moving the friction system up or down the standing line the climber is able to ascend and descend. SRT climbing systems can be used for access and work positioning, BUT some techniques and equipment used for SRT Access may not be compatible with SRT Work Positioning and therefore SRT Access and SRT Work Positioning need to be considered separately.

SRT general

I. Any person using SRT in arboricultural operations shall be competent and fully trained in the safe instillation and use of the equipment, techniques and configurations.
II. All SRT access / work positioning lines shall be compatible with the equipment used on them.
III. A single personal attachment point with a minimum breaking strain of 22kN must be maintained at all times while the climber is connected to the SRT access / work positioning line.
IV. The climber shall have a suitable descending device with them at all times and be able to install and use it if required.
V. A suitable aerial rescue plan with the required equipment and trained personal shall be on site during SRT operations.

37. SRT access

SRT Access involves using a single line to gain vertical access into the tree. Many SRT access systems are not designed for lateral movement and / or slack within the system. The rules below cover SRT access

37.1. Access line must be of double braid or Kermantel construction, when using toothed ascenders.
37.2. Cam ascender should only be used in pairs or with a back up.
37.3. The gap between the first ascender and second ascender shall not be more than 500mm (50cm)
37.4. The climbers system shall remain at least 300mm (30cm) below the top anchor point at all times
37.5. Before the climber begins ascending the access line, the secureness of the line should be tested with double the estimated weight of the climber.
37.6. No arboricultural operations shall be undertaken while using SRT Access techniques and equipment.
37.7. Base anchors with a lower-able system are preferred when setting up SRT Access system due to the difficulties of completing an aerial rescue when the victim is connected with toothed ascenders

38. SRT work positioning

38.1. SRT work positioning involves using a single line to provide a primary means of support and restraint to allow work to be carried out in reasonable comfort.
38.2. SRT work positioning systems, equipment and configuration must be designed to allow lateral movement and non-vertical loading.
38.3. The minimum safety requirements for working on a MRT system shall be maintained When using SRT Work Positioning.

39. Suspension intolerance (trauma)

39.1. Suspension intolerance can occur when a person remains immobile while suspended in a harness. This could be as a result of an accident, exhaustion, overheating, a contaminated atmosphere or a medical condition.
39.2. Suspension intolerance can occur in as little as five minutes and can lead to fainting, nausea, breathlessness and, if not quickly alleviated, unconsciousness and death.
39.3. It appears to be caused by the constriction of the femoral artery in the groin, causing the failure of blood to return from the lower limbs to the heart. This causes a rapid acceleration in other physiological conditions. Operator susceptibility is

unrelated to fitness or other physical conditions. Unconscious persons are in immediate danger and urgent intervention is required.

39.4. Symptoms of suspension trauma include but are not limited to:

I. a tingling of the toes and fingers numbness
II. sweating up the side of the head
III. disorientation and nausea
IV. To prevent suspension trauma from occurring, the operator must get out of a suspended position as soon as possible. If this is not possible:
V. move the legs regularly – like pedalling a bicycle
VI. raise the knees towards the chest.

39.5. Immediate medical attention must be given to any person who has been unconscious on rope irrespective of whether they appear to recover once on the ground.

39.6. Suspension intolerance as per the Best Practice Guidelines for Industrial Rope Access in New Zealand

40. Tree climbing spikes

40.1. All tree-climbing spikes (also known as spurs or gaffs) shall be manufactured from best quality materials by competent trades-people

40.2. Before use, Climbers shall check all components their spurs for fractures or cracks in the metal portions; misshapen, bent or loose spikes; cut or worn straps; pulled rivets and damaged or worn buckles, rings and pins. Excessively worn or damaged components shall be replaced (where possible) or the complete spur shall be removed from service if signs of excessive wear or damage are found.

40.3. Spurs should be kept properly sharpened as per the manufacturers' recommendations.

40.4. When climbing, the safety lanyard shall be never unclipped except to bypass branches. In such circumstances a second safety lanyard or line shall be fastened free of the obstructive branch and checked for security before the first lanyard is unclipped.

40.5. When arboricultural work is being conducted using a work positioning lanyards the Primary security attachment the climber's primary climbing line should also be attached lower down the trunk should the primary attachment fail.

41. Ladders

Improper use of ladders is a major work hazard. The most common causes of accidents are ascending or descending improperly, failure to secure the ladder, holding objects while ascending or descending or structural failure of the ladder.

41.1. All ladders must comply with either NZS 3609:1978 Specification for timber ladders, ANSI A14.1-1982, Ladders - Portable wood or NZS 5233:1986 Specification for portable ladders other than timber, ANSI A14.2-1990, Ladders - Portable metal or relevant English language standards issued by organisations that are Member Bodies of the International Organisation for Standardisation (ISO) or CEN.

41.2. Ladders made of metal or other conductive material shall not be used where electrical hazards exist. Only non-metallic ladders equal to or exceeding the strength of wooden ladders shall be used.

41.3. Only ladders specifically designed as a working platform shall be used to work from. Other ladders maybe used for access and egress.

TREE WORK

Commonly accepted tree pruning standards

a) AS 4373 - 2007 Pruning of amenity trees, or
b) ANSI A300 pruning standards in 6 parts, or
c) British Standards; BS 4373 and BS 3998

42. General safety / tree work

42.1. The PCBU shall confirm ownership of the tree and gain necessary permissions to work on or near the tree before commencing work.
42.2. Communication shall be established between the arborist in the tree and the ground crew before cutting and/or dropping branches.
42.3. Generally, in a climbing situation, the climber shall be positioned at or above the branch to be worked on.
42.4. Avoid situations where there is a likelihood of the branch kicking back or striking the operator.
42.5. A separate lowering line shall be attached to limbs that cannot be dropped safely or controlled by hand. Arborist climbing lines and lowering lines shall not be run through the same crotch OR come into contact with each-other while lowering is taking place
42.6. Partially cut branches or hangers shall not be left unsecured in trees upon completion of work.
42.7. While cutting works are being undertaken the climber should have two points of attachment. For example a climbing line and lanyard.

43. Handsaws

43.1. The free hand should be held clear of the saw and, cuts are to be made way from the body.
43.2. Hand saws should have a suitable guard or scabbard complete with some means of attachment to the worker's belt for working aloft. A tool strop may be used.

44. Pole pruners

Manual pole pruners, pole saws and other similar tools with poles made of metal or other conductive material shall not be used in line-clearance operations or in other operations where electrical hazards exist. Refer to the Trees Code part 2

44.1. Never stand directly under the limb being pruned.
44.2. If raising or lowering pole pruners for tree work aloft, attach the rope to the end of the tool so it is less likely to be caught in branches, the rope must be attached below the cutting jaws and not tied to or run through

45. Mechanical pruning

Where mechanical pruners are used, the safety specifications as recommended by the manufacturer shall apply.

TREE FELLING

46. General safety / tree felling

46.1. Before beginning any tree removal operation, the chain saw operator and/or crew leader shall carefully consider the following conditions to Eliminate, Isolate, Minimise any potential hazards. The planning process to address tree and site factors and shall take appropriate actions to ensure a safe removal operation:

I. Surrounding areas including other trees and the tree to be removed
II. Species, shape and condition of the tree
III. Lean of the tree
IV. Broken branches, deadwood or other overhead material that may dislodge during the felling process.
V. Wind force and direction, and other climatic factors.
VI. Decayed or weak spots throughout the tree (be aware of additional hazards if these conditions exist in the hinge area)
VII. Location of, and means to protect other persons, property and over-head and below ground utilities. See Sections 18 and 19 of this guideline for the avoidance of hazards from overhead and underground power lines and other services.
VIII. Size and terrain characteristics or limitations of the work area.
IX. When it is necessary to shorten or remove branches before dropping the tree, the arborist shall attempt to determine if the tree can withstand the strain of the lowering procedures. If not, other means of removing the tree should be considered.

46.2. All felling operations shall be undertaken by a competent person fully experienced in the work to be carried out. The person in charge of felling operations shall exercise control and supervision of the work to ensure adequate safety precautions are being observed.

46.3. Special care should be taken when felling dead trees, as parts may fall into the work area as the tree falls.

46.4. An escape route shall be planned and kept clear of tools and other material that would impede a quick exit. The ideal escape route is 45 degrees on either side of a line drawn opposite the intended direction of the fall.

46.5. A pulling line should be attached to all trees and stems being felled to provide directional pull where assisted directional felling is required.

46.6. Particular care should be taken when felling uphill or on steep slopes as this creates extra hazards with trees likely to roll or slide back towards the operator.

46.7. People not directly assisting with the felling operation, shall remain at a safe distance (at least two tree-lengths) from the tree being felled.

46.8. Where the size of tree being felled has the potential to cause harm, wedges, block And tackle, rope, wire cable or other appropriate devices shall be used. All limbs shall be removed to a height and width sufficient to allow the tree to fall clear of any objects in the vicinity.

46.9. Wedges and driving tools should be readily available during all felling operations.

46.10. Where any electrical hazard exists refer to the Trees Code Part 2

47. Felling operations

47.1. Wherever possible, trees shall be felled towards a clear open space.
47.2. All scarfing and back-cutting shall comply with the accepted felling methods described in section 48
47.3. When felling of a tree is started, the scarf and back-cut shall be completed before starting on the next tree.
47.4. Where a tree is “hung-up” or “cut-up” it shall be brought to the ground as soon as possible, and before operations continue. A hung-up or cut-up tree shall not be left standing, nor shall the feller leave the area before the tree has been brought to the ground, other than to seek assistance to do so. The person in charge shall be notified and additional precautions taken immediately.
47.5. No person shall move forward within two tree lengths of the intended direction of fall of any hung-up or cut-up tree, or the direction of fall of any hung up tree.
47.6. No machine shall operate within two tree lengths of any felling operation while felling is in progress, or forward of any hung-up or cut-up tree, unless to assist, under adequate supervision, in safely bringing the tree to the ground.
47.7. When falling trees greater than 20 centimetres in stump diameter and 4 meters in height, the faller shall be suitably equipped to ensure the trees can be felled in a controlled manner in the intended direction. This could be achieved through the use of felling wedges, cable or guide lines and winch or machine assistance suitable for the size of tree being felled.

General provisions and felling operations are consistent with the Approved Code of Practice for Safety and Health in Forest Operations – where the two tree length rule is not a suitable option tree dismantling techniques will need to be considered and planned accordingly

48. Accepted felling methods

48.1. Scarf cuts shall be used on all trees and trunks over (125 mm) in diameter at breast height.
48.2. The two cuts that form the scarf shall not cross at the point where they meet.
48.3. Scarf and back cuts shall be made at a height above the highest ground level to enable chain saw operators to safely begin the cut, control the tree or trunk and have freedom of movement for escape.
48.4. The scarf cuts used shall be either a conventional, open-face or Humboldt.
48.5. Scarf cuts should be 45 degrees or greater and large enough to guide the fall of trees and trunks to prevent splitting.
48.6. Scarf cuts depth should not exceed one-third of the diameter of the tree.
48.7. The back cut shall not penetrate into the predetermined hinge area.
48.8. Before commencing the back cut, there shall be a command such as “stand clear” from the arborist operating the chain saw and a response such as “all clear” from the workers supporting the removal operation. Pre-arranged, hand signals may also be used. Only designated persons shall give such signals. All workers in the vicinity shall be out of range when the tree or trunk falls. Visual contact should be maintained with the tree or trunk until it is on the ground.

49. Tree dismantling and rigging

This operation involves dismantling and rigging trees by cutting into manageable sections where the situation does not allow felling by conventional ground based techniques.

49.1. No person shall carry out tree dismantling unless they have fully demonstrated their competence and knowledge of tree dismantling techniques.

49.2. No equipment shall be used for tree dismantling unless it has been checked for damage, cuts, abrasion and/or deterioration before each use. If the equipment is found to be defective it shall be removed from service and not used again until it has been replaced or repaired appropriately.

49.3. Before tree dismantling begins, a drop zone and a hazard zone shall be identified and workers made aware of both of these zones (the hazard zone shall include the drop zone)

49.4. Clear communication shall be maintained between the arborist in the tree and the ground crew within the hazard zone before cutting and lowering branches.

49.5. No worker shall enter the drop zone until having received an 'all clear' from the climber

49.6. The climber must ensure a safe working position is adopted prior to any cuts being made and shall comply with section 29 of this guideline.

49.7. In roping down and slinging, the weight of sections to be removed should be carefully assessed to ensure the selected lowering point and all equipment used shall not exceed safe working loads.
The SWL of all rigging equipment should be calculated with a minimum safety factor of 10/1. In some instances a greater safety factor will be necessary.

50. Felling against the lean of the tree

50.1. All persons felling trees against their lean (sometimes called 'back-pulling') shall be competent or training under adequate supervision. Machinery and equipment shall be adequate to handle all aspects of the operation. Use of such machinery shall be for its intended purpose and in accordance with the manufactures instructions.

50.2. The faller and machine or equipment operator shall have an effective means of communication. This may require the use of an intermediary in some circumstances.

50.3. The rope should be secured as high as practicable on the tree, having regard for tree size, lean and height and the pulling capacity of the machine or equipment.

50.4. If two-tree lengths clearance is possible, the tree may be pulled towards the machine or point of equipment anchor.

50.5. When felling trees against the lean, wedges shall always be carried with the feller.

51. Winches, wire ropes and accessories

This section relates to felling activities common in arboriculture. For large scale/multiple tree felling activities, operations should be carried out in accordance with the Approved Code of Practice for Safety and Health in Forest Operations or other relevant approved code(s) of practice.

51.1. Wire ropes, gears, chain drives and other parts shall be inspected in accordance with the manufacturers' instructions and guidelines, and removed from service if signs of excessive wear or damage are found.

51.2. Tackle blocks, pulleys and their connecting links, chokers, slings or other means of attachment shall be inspected before use and shall be removed from service if signs of excessive wear or damage are found.

51.3. No person shall remain in the bight of any working operating rope.

51.4. The use of knots in any wire rope is prohibited.

51.5. All lines used in pulling operations shall not exceed the SWL (Safe Working Load) of the rope or its accessories. For all arboricultural operations, the SWL shall be one sixth (1/6) of the breaking strength.
51.6. All wire ropes shall comply with NZS/BS 302 Part 5 Specification for ropes for Hauling purposes. No wire rope shall be used in an arboriculture operation unless the manufacturer or vendor has certified it as to its breaking strength.
51.7. Eye-to-eye splices shall not be made in any pulling or lifting rope. Only long splices or butt splices are to be used in joining such ropes.
51.8. Hand winch, machine winch and hauling machine operators shall be competent and conversant with all facets of winching operations.
51.9. Where two persons have applied the load to a hand winch handle or lever, two persons shall be used to release the load.
51.10. The tree feller shall, before felling commences, advise winch and machinery operators as to what is required in terms of line tension, winching and pulling speeds. Visual signals and vocal commands shall be determined before felling starts.
51.11. When using a stump as a ground anchor or to secure pulling blocks, the stump shall be of sufficient size and stability for the winching operation. Slings and strops used on stumps need to be secured against slipping off the top of the stump.
51.12. The configuration used to anchor any operating rope, strop, winches or pulling blocks shall be at least shall be at least equal in strength to the operating rope

52. Windthrow and storm damaged

Windthrown and storm damaged trees are those that have been blown down, have become unstable or have been significantly damaged by wind action. These provide additional hazards that shall require having more than one person working on the site at all times.

52.1. When a tree is resting on its upturned roots the worker shall ensure that the cut is made in such a manner that neither the feller nor other workers are in a position of danger from movement of either the root plate or the trunk and branches.
52.2. When working on fallen trees, once removed from the stump (see exception 52.3) all work shall begin from the up-hill side working from the outside in towards the trunk. Care shall be taken to ensure there is no uncontrolled movement of the fallen trunk and branches.
52.3. When working on fallen trees, unless removing the tree from the stump could cause additional health and safety risks all trees shall be cut from the stump before work begins.
52.4. Climbing a tree to remove hanging or broken branches provides additional hazards that require skill and experience. A worker shall not climb a tree to remove hanging or broken branches unless;
    I. They have fully demonstrated their competency and knowledge of tree climbing and dismantling techniques
    II. They have assessed the tree and surrounding trees for stability and assessed the work area for other hanging or broken branches
    III. They have identified a safe access route that allows them to gain access to the hanging or broken branches
    IV. When working in a tree to remove hanging or broken branches, all cuts shall be made so no part of the hanging or broken branch can fall onto the worker or their equipment.

MACHINE OPERATIONS

53. General safety / machines and equipment

All safety equipment fitted at time of manufacture shall be used and maintained to the standard of manufacture. Machinery shall not be used if any manufacture fitted safety equipment is inoperable.

53.1. No machine shall be used unless it is:

I. In a sound and safe condition, maintained and inspected in accordance with manufactures instructions

II. Suitable for the operation in capacity and design;

III. Operated by a competent person (or person training under adequate supervision);

53.2. Unless training under adequate supervision, operators shall only use machinery and equipment they are trained and authorised to use.

53.3. Any person who discovers any defect in any machinery shall forthwith report the defect to the person in charge of the operation.

53.4. All defective machinery shall be shut down and visibly tagged as defective until repairs are made and the machine is returned to it's normal safe working condition. In some cases testing and certifying may be required by a third party before returning the machine to operation. Servicing moving parts shall only occur when the machine is shutdown and protective locking mechanisms are in place preventing movement during servicing. No person shall get under or have any body part under or between an unlocked feed roller, raised blade or accessory for any purpose.

NZARB Lock out tags **EXAMPLE ONLY, NOT TO SCALE.**

Provided by – "Palmer. J, Managing Director, Franklin Trees"

54. Brushwood chippers and stump grinders

54.1. All persons operating wood chippers and or stump grinders shall comply with the Provisions as to protective clothing and equipment outlined in Sections; 4 through to and including section 10.

54.2. All persons operating chippers and or stump grinders shall not leave a running machine unattended.

54.3. Persons not engaged in the operation, shall not be allowed in the vicinity of an operating chipper.

54.4. All chipper and grinder equipment shall be equipped and maintained with all manufacturers' safety devices, instructions, warnings and safeguards. Arborists and other workers shall follow instructions provided by manufacturers.

54.5. Prior to daily use of all chipper and grinder equipment a visual walk-around inspection and operational checks shall be made in accordance with the manufacturer's instructions.
54.6. When feeding the chipper, operators shall keep the face and body away from the Infeed opening and not allow hands or arms inside the infeed hopper. Stand to the side of the cutters to avoid particles thrown back.
54.7. Materials should be pre-trimmed to fit easily into the infeed area. Materials stuck or lying in the area shall be released or fed in with a wooden push stick or suitable branch.
54.8. Operators shall stand clear of the discharge opening while the equipment is running.
54.9. Operators shall ensure that the discharge is safely directed and or confined as to Prevent injury or damage.
54.10. All chippers and grinders shall be turned off, keys removed and rotating parts at rest prior to making repairs or adjustments, except where manufacturers' procedures require otherwise. Defects or malfunctions affecting the safe operation of equipment shall be corrected before placing such equipment into use.
54.11. No person shall under any circumstances, reach into the infeed hopper when the cutter disc or rotary drum or feed rollers are moving, is turned off, key removed and locking pins in place.
54.12. Access panels for maintenance and adjustment including discharge chute and cutter housing shall be closed and secured prior to starting the engine of chippers.
54.13. Chippers equipped with a mechanical infeed system shall have a quick stop and reversing device on the infeed system. The activating mechanism for the quick stop and reversing device shall be located close to the feed end of the infeed hopper within easy reach of the worker.
54.14. Rotary drum or disc chippers not equipped with a mechanical infeed system shall be equipped with an infeed hopper of sufficient height and length so as to prevent workers from contacting the blades or knives during operations.
54.15. Rotary drum or disc brush chippers not equipped with a mechanical infeed system shall have a flexible anti-kickback device installed in the infeed hopper to reduce the risk of injury from flying chips and debris.
54.16. Keys shall be removed from the ignition when equipment is left unattended.
54.17. When in a towing position, chipper safety chains shall be attached as per the manufacturers' instructions and in accordance with transport regulations.
54.18. Care should be taken to ensure that chipper exhaust systems do not present a fire hazard.

55. Power-operated Mobile Elevating Work Platforms (MEWP's)

55.1. An employer or principal, who tells someone to use a MEWP, must make sure that the operator is adequately trained by a competent person and can demonstrate their competency before using any equipment.
55.2. The operator must get training on the type of MEWP they will be using. The operator must be supervised during the training period until the person is considered competent to operate the MEWP.
55.3. MEWP operations shall comply with the relevant codes and GPG as required by Worksafe, further details can be found at the link below https://www.worksafe.govt.nz/topic-and-industry/working-at-height/mobile-elevating-work-platforms/mobile-elevating-work-platforms/
55.4. MEWP operator training requirements.
55.5. An employer or principal, who tells someone to use a MEWP, must make sure that The operator is adequately trained by a competent person and can demonstrate their competency before using any equipment.
55.6. The operator must get training on the type of MEWP they will be using. The operator Must be supervised during the training period until the person is considered

competent to operate the MEWP.

55.7. All power-operated work platforms used shall have an engineer's certificate stating the work and loads that, that particular platform is capable of and that it meets the requirements of the Code of Practice Safety in Construction No 8 Power-Operated Elevating Work Platforms.

55.8. All work platforms shall be visually inspected and checked in accordance with the manufacturers instructions prior to daily use.

55.9. Work platforms shall be operated by a competent operator and in accordance with the manufacturer's instructions and the BPG Power Operated Elevating Work Platforms.

55.10. All Elevated work platforms shall be provided with a point of attachment to secure a fall arrest harness with a shock-absorbing lanyard. Operators working from an MEWP shall be tied in at all times while aloft.

55.11. Elevated work platforms shall not be used as cranes or hoists to loft or lower materials unless specifically designed by the manufacturer to perform such operations.

55.12. Operators shall not exceed the SWL of the platform or approach within 4 metres of overhead power lines or encroach the Vegetation control zone until advised by the electrical line's owner.

55.13. Do not use the platform over workers or allow workers access under the platform.

55.14. A chainsaw shall not be started from inside a bucket or platform unless a fixed starting bracket is fitted to the bucket walls or platform guardrails, so that the bar and chain are outside the working area when the saw is started. Otherwise, the saw shall be warmed up on the ground and started outside the bucket.

55.15. Where two workers may be operating from a bucket, only one chainsaw shall be operated at a time with the second worker remaining clear from the chainsaw worker.

55.16. When using an MEWP for tree access and egress, operators may use work positioning harnesses incorporated with a travel restraint system.

55.17. Transfers between elevated buckets and other work positions (trees) aloft are discouraged. Other access methods that eliminate fall risks should be used where practicable; however where such transfer is essential for the work the transfer must be managed and fallprotection provided.

55.18. The following minimum guidelines apply:

55.19. General

I. The transfer is planned and the climber, MEWP operator and other work team members are prepared for it;

II. There is an alternative means of descent available from the external work position (tree);

III. The proposed transfer point to the external work platform or other work position (e.g. tree foot/hand hold point) is well within the vertical and horizontal reach of the MEWP bucket;

IV. The MEWP is checked as being stable for the transfer and the extent of any boom deflection is anticipated in the transfer;

55.20. The transfer process

I. The bucket floor is displaced no more than 300mm vertically from the standing or foothold surface of the external work position (tree) during the transfer, and, if the bucket is positioned adjacent to the external work position(tree) the horizontal gap between the two should be no more than 100mm;

II. Attaching and detaching height safety equipment during the transfer is always done from the work position within the bucket;

III. The process requires the anchor point in the tree to be installed and set then attached to the harness immediately, followed by the removal of the MEWP attachment.

56. Cranes and Related Hoists

56.1. Operators of hoisting equipment shall be trained and shall ensure they maintain separation from overhead power lines provided for in Section 18 of this guideline.

56.2. Boom angle indicators shall be maintained on telescopic cranes, when provided by the manufacturer.

56.3. Operators of hoisting equipment shall remain at the controls while a load is suspended.

56.4. Wire ropes, gears, chain drives and other parts shall be inspected in accordance with applicable standards as well as the manufacturers' instructions and guidelines. Chokers, slings or other means of attachment shall be inspected before use and removed from service if signs of excessive wear or damage are found.

56.5. Riding the load line of a crane while it is under load tension shall be prohibited.

56.6. A qualified arborist may be hoisted into position utilizing the crane, provided that he/she is tied in with an arborist climbing line and arborist harness and secured to a designated anchor point on the boom or line. The following procedures shall be followed when an arborist is to be lifted by a crane:

I. A suitably experienced and qualified dogman must be on site supervising slinging and lifting of loads. This dogman must be in direct communication with arborist and crane operator.

II. The person specifically responsible for the work shall authorize the use of a crane only when he/she has determined that it is the safest and most practical way to perform the work or gain access to the tree. Such authorization should be made in writing and be retained at the job site.

III. The crane operator shall be familiar with the potential hazards and operational techniques encountered in tree work.

IV. The arborist climbing line shall be secured to the crane in such a way that it does not interfere with the function of any damage prevention or warning device on the crane, and so that no part of the crane compromises the climbing line or any other component of the climbing system.

V. The arborist shall check for any sprags on or near the point of attachment that may damage or compromise the function of the climbing line.

VI. The crane operator and the person responsible for the work to be performed shall meet prior to the work to review procedures to be followed. If the work involves a signal person and/or arborist being lifted in addition to the person responsible for the work, they shall participate in the review.

VII. Communication between the crane operator and the arborist being lifted shall be maintained either directly or through the appointed signal person.

VIII. The crane shall be supported on a firm surface and maintained in a level position. The crane operator shall use blocking or other means if necessary so that the support medium does not exceed its load-bearing capabilities. When provided, outriggers shall be extended and properly set. Lifting of arborists shall not be permitted when the crane is supported solely on its tires.

IX. The crane operator shall test the adequacy of footing prior to any lifting.

X. The lifting and supporting shall be made under controlled conditions and under the direction of the arborist or an appointed signal person.

XI. The crane operator shall remain at the controls when the arborist is attached to the crane.

XII. The crane boom and load line shall be moved in a slow, controlled, cautious manner with no sudden movements when the arborist is attached. The lifting or lowering speed shall not exceed 0.5 meters/sec. The crane shall be operated so that lowering is power-controlled.

XIII. The crane carrier shall not travel at any time while the arborist is attached.

57. Helicopters

The majority of this section has been taken directly from the 'Approved Code of Practice, for Safety and Health in Forestry Operations.

57.1. A suitably experienced and qualified dogman must be on site supervising slinging and lifting of loads. This dogman must be in direct communication with arborist and operator.

57.2. Pilots shall hold a current valid licence and appropriate rating for specialised work.

57.3. A briefing session on safety between the pilot, controllers and workers shall be held before operations commence.

57.4. Procedures shall be established to ensure that alternative communication methods are available should radio communication fail or become unclear before operations commence.

57.5. Hand signals shall be in accordance with the instructions issued by the pilot.

57.6. An appropriate area shall be allocated for refuelling. The pilot shall be responsible for safety procedures during refuelling and ensuring compliance with:

- I. Civil Aviation Rule 135.73
- II. Dangerous Goods Act 1974
- III. Dangerous Goods Regulations 1985.

57.7. Strops or taglines used shall have an ultimate breaking strength 3 times their safe working load and shall be regularly inspected for wear.

57.8. Any worker shall wait for a signal from the pilot before entering, leaving, loading, unloading connecting or disconnecting anything from a helicopter.

57.9. All workers shall

- I. Remain clear of the immediate vicinity of helicopter that is hovering (unless unavoidable).
- II. All workers shall not approach or leave a starting up or closing down helicopter.
- III. All workers shall keep clear of the rotors
- IV. All workers shall not approach a helicopter from the uphill side
- V. All workers shall stay in full view of the pilot (i.e. stand forward of the helicopter).
- VI. All workers shall not go near the rear of the helicopter.

57.10. Operations involving suspension of persons below the helicopter, including injured persons shall be conducted in compliance with the Civil Aviation Rule 133.

57.11. While riding in the helicopter seat belts shall be fastened until pilot signals for passengers to exit.

57.12. Where safety helmets are worn in helicopter operations, they shall be provided with a means of preventing them from being blown off such as a chin strap or by wearing earmuffs attached to the helmet.

APPENDIX 1:

58. Definitions (for the purpose of this BPG)

Aerial Rescue	The procedure for rescuing an injured climber from aloft.
Agricultural chemicals	Means any fertiliser, soil conditioner, pesticide and additives in liquid, dust, granule, paste or any other form
Aloft	Above 3 meters
Anchor point	A designated point for the purpose of attaching a working line, safety line or other fall protection system.
Arborist Code Part 1	Code of Practice for Safety and Health in Tree Work Part 1: Arboriculture
Arborist Code Part 2	Code of Practice for Safety and Health in Tree Work Part 2: Maintenance or removal of trees around power lines
Arborist climbing line	Is a rope used solely for the purpose of supporting a climber while aloft. An Arborist Climbing line shall have a minimum breaking strength of 22kN when new.
Arborist Trainer	A person certificated by a Tertiary Education Organisation (TEO) as currently competent to deliver training to the outcomes required by this guideline.
Ascender	A mechanical device that will slide upwards on a rope but will grip when pulled in the opposite direction.
Auto-locking carabiner	A carabiner, which upon closing, automatically moves into the locked position and requires a minimum of three distinct movements to open it.
Base anchor	Securing one end of the climbing line at the base of the tree is a single rope technique system
Best Practice Guideline (BPG)	A guideline set out by industry for the best practice to carry out a technique, method or process, etc. for a particular condition or circumstance.
Cambium saver	A device used to protect the bark, cambium and climbers line from damage caused by friction. A cambium saver used as part of a climbing system must meet the minimum breaking strength requirements of 22kN
Carabiner	A metal loop with a sprung or screwed gate used as a connector. Carabiners used as part of a climbing system shall be auto-locking and rated to a minimum or 22kN
Chipper (brush-wood chipper).	Portable machinery used to reduce the size of brush-wood by cutting/chipping it into smaller pieces.
Climbing Line	See arborist climbing line

Climbing Saw	Any chainsaw used while aloft
Climbing	Means ascending, descending or lateral movement while carrying out operations in a tree.
Communications line	A wire or a conductor of any other kind (including a fibre optic cable) used or intended to be used for the transmission of any communications by means of an electromagnetic system; and includes • any pole, insulator, casing, fixture, tunnel, or other equipment or material used or intended to be used for supporting, enclosing, surrounding, or protecting any of those wires or conductors; and • any part of a communications line.
Competent person	Means a person suitably qualified either by experience or by training (or both) for the type of work in which the person is engaged or authorised to do by the person in charge. (this is defined in the legislation)
D rings	Attachment points on a climbing harness designed for the attachment of a climbing line, work-positioning lanyard.
Dismantling a tree	The process of felling a tree in sections
Drop start	The act of starting a chain saw by pushing the saw away from the body with one hand while simultaneously pulling on the starter cord handle with the other. This is not an approved work practice.
Drop zone	A defined area where the tree sections of the tree will land during felling or pruning operations
Employer	Means any person or any body of persons whether incorporated or not, employing one or more workers and includes every person having control or superintendence of any operation.
Extended arm technique	A method of starting a saw while aloft
Fall restraint harness	A safety harness designed to safely arrest a worker's fall, minimising the possibility of serious injury.
False Crotch	A system used to support an arborist line other than a natural crotch. A false crotch used to support an arborist climbing line shall incorporate rings or a pulley that will protect the system and arborist climbing line from damage or failure. Each component of the system shall be rated to a minimum of 22kN.
Foreman, foreperson	A person nominated by the company as being in control of place of work
Friction saver	A rated device installed at roping points, used to aid movement and lessen friction on a climbing system. Also used to mitigate damage to trees (aka cambium saver)

Friction Hitch	Usually constructed of synthetic fibre and rated to a minimum or 22kN. Used to secure a tree climber to the climbing line, permitting controlled ascent, descent and work positioning.
Friction saver	See friction device
Good Practice Guide (GPG)	A guideline set out by industry for the minimum practice to carry out a technique, method or process, etc. for a particular condition or circumstance safely
Grinder (Stump Grinder)	Portable machinery used to reduce or remove stumps from the ground by the act of grinding.
Hazard zone	A defined area where there is potential hazards exist due to felling or pruning operations. The hazard zone shall include the drop zone
Kilonewton (kN)	A unit for force. It is used in this context for stating safety holding values of fasteners, anchors and climbing equipment. The safe working loads in both tension and shear can be stated in kN. As a rule of thumb, 1 kN is approximately equal to 100 kilograms.
Lowering / pulling / rigging line.	A rope used in arborist operations to control the movement of a limb or tree
Machine/Mobile Plant	Any machinery, apparatus or appliance that may be used in or about an arboriculture operation.
Micro pulley	A small lightweight pulley.
Moving rope Technique (MRT)	Moving rope Technique is a climbing system used for access and work positioning. One end of the climbing line is attached to climber (the working end) the line passes through an anchor point and back to the climber, the climber is attached to that part of the line (the running end) via a friction system. [Moving rope Technique (MRT)is commonly used in the rope access industry and references two separate lines (an access and a safety / back up line) arborists double the same line – hence DdRT]
New Zealand Standard	A standard approved by the Standards Association of New Zealand or any other standard accepted by the association, in force for the time being or from time to time and available from the Standards Association of New Zealand.
Ordinary Person	Any person including for example, but not limited to, any arborist, commercial tree faller, or vegetation control worker who is not competent to the Arborist Code Part 2. *NB: Qualified electrical workers approved by an asset manager to do any work with Vegetation Control Zone may not be classed as ordinary persons*.
Personal Protective Equipment (PPE);	PPE is equipment designed to mitigate the effect on a user from one or more hazards in the working environment.

Power line:	All electrical conductors including service mains (including fittings supporting, or connected to those conductors), that are used, or intended to be used, in or in connection with the supply of electricity: • 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. • Including all overhead electric mains such as service, power company or customer mains, or sub-mains, whether owned by an electricity network company or private owner. • In this guideline the term 'power line' prefixed by 'overhead' means a power line above ground and 'underground' means a power line below ground.
Qualified arborist	A person who has been awarded a recognised degree, diploma, certificate, or through experience and ability is familiar with the equipment and hazards involved in arboricultural operations and who has demonstrated the ability to perform the tasks involved and meets the competencies set in this guideline.
Safe Working Load (SWL)	The safe working load for the purposes of this document is 10% of the average breaking strength or tensile strength, unless otherwise stated by the Manufacturer.
Safety lanyard (Strop / flip line)	An adjustable rope or strop designed as a work positioning aid all materials shall meet the minimum strength requirements of an arborist climbing line.
Stationary Rope Technique (SRT)	The use of stationary line to gain access and / or to work in a tree (as opposed to double rope techniques – DRT)
SRT Access	Techniques and procedures involving a stationary line to solely gain access into the tree.
SRT Work Positioning	Techniques and procedures involving a stationary line to gain access and/or to carry out arboricultural operations while in the tree
Snap hooks (lanyard clips)	A auto-locking type clip used as part of the climbing system with a minimum breaking strength of 22kN.
Spikes (spurs, gaffs, climbing irons)	A climbing accessory attached to the lower leg used to gain access to the tree, used in conjunction with a safety strop.
Sprag	A sharp edge, point, burr of patch of roughness on a metal surface.
Tertiary Education Organisation (TEO);	A Polytechnic, registered private trainer (PTE), industry standard setting body (ITO) or registered teaching organisation able to deliver NZQA aligned industry standards and assessments
Throw bag	A small weighted flexible bag attached to a lightweight line that can be thrown over a suitable anchor point in the tree.

Tool strop	A short line used to secure tools while aloft.
Trainee arborist	An employee (or student) undertaking work who is not yet competent and who is supervised by someone who is.
Tree	A long lived woody plant usually with a single trunk and many side branches.
Trees Code Part 2	See Arborist Code Part 2
Tree Felling	The removal of a tree down to ground level
Utility Arborist:	A worker whose training, qualifications, experience and ongoing evaluation: • Ensures competency in both arboriculture and the electrical safety requirements specified in the Arborist Code Parts 1& 2 • Proficiency in the relevant work skills necessary to ensure safe outcomes for personnel, power lines and the work with vegetation, and • Who is thereby designated as a utility arborist Level 1 or Level 2, as described in the Arborist Code Part 2.
Vegetation Control Zone (VCZ)	The zone surrounding the power lines, bounded by: • The correct minimum approach distance for ordinary persons (4 metres for voltages up to 110 kV and 6 metres for voltages above 110 kV) and • Boundary lines tangential to the correct minimum approach distance, drawn at 45 degree angles away from either side of the power lines,
Work Positioning Lanyard	See safety lanyard
Work positioning harness	A harness designed to position or suspend the user to enable work to be conducted safely and efficiently. Should not be used on their own in fall arrest situations.
Work positioning system	An adjustable system designed to provide a primary means of support and restraint to allow work to be carried out in reasonable comfort.

APPENDIX 2:

59. 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
  - Part 2: Maintenance or Removal of Trees around Power Lines
- 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)

  - New Zealand Arboriculture Association Tree Care Guidelines
  - Amenity Tree Pruning
  - Trees on Development Sites,
  - Tree Protection Fencing

  Available from: http://nzarb.org.nz/?p=3275
- 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)

- Health and Safety Employment Act 1982
- Health And Safety Employment Regulations 1995 (and subsequent amendments)
- 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

- MIS300 Safe Tree Work
- MIS301 Arborist Knots
- MIS302 Arborist Ropes
- MIS303 Tree Dismantling
- MIS304 Aerial Rescue
- MIS305 Tree Climbing
- MIS306 Tree Inspection for Access and Work
- MIS308 Tree Pruning
- MIS309 Equipment Inspection
- MIS310 Tree Support Systems
- MIS311 Stump Grinding
- MIS312 Environmental Arboriculture
- MIS313 Tree Health & Maintenance
- MIS315 Chainsaw Operation and Tree Falling
- MIS501 Tree Risk Assessment

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APPENDIX 3:

60. Minimum approach distance (MAD) for Ordinary persons

According to the Code of Practice for Safety and Health in Tree Work Part Two: Maintenance or Removal of Trees Around Powerlines. Minimum approach distance (MAD) is defined as the closest distance, specified according to voltage, from an overhead electric line that is live:

a) To which a person, anything they hold, 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.

Under that code, an ordinary person is defined as any person including for example, but not limited to, any arborist, commercial tree faller, or forest woodlot faller, who is not competent to the Code of Practice of Safety and Health in Tree Work Part Two: Maintenance or Removal of Trees Around Powerlines

Unless you are competent according to the Trees Code Part 2, you are classed as an ordinary person

Power Line Nominal Design Voltage	MAD in metres for Ordinary person work within the vegetation control zone (subject to asset manager consent)
Not exceeding 1 kV a.c.	0.5m
11 kV	1.5m
22 kV	2.0m
33 kV	2.5m
50/66 kV	3.0m
110 kV	4.0m
Above 110 kV	6.0m

Minimum approach distances ("MAD") permissible for ordinary persons clearing vegetation, subject to asset manager consent.

For more information about Minimum approach distances refer to the NZ CoP for Electrical Safe Distances (the NZCEP 34) ISSN 0114-0663

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Notes

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