
HEALTH AND SAFETY IN EMPLOYMENT ACT 1992

APPROVED CODE OF PRACTICE FOR SAFETY
AND HEALTH IN TREE WORK

PART 1:

ARBORICULTURE

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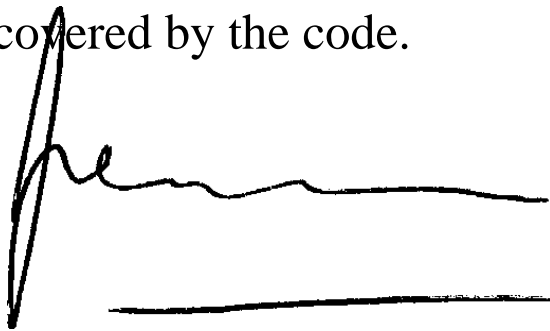
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NOTICE OF ISSUE

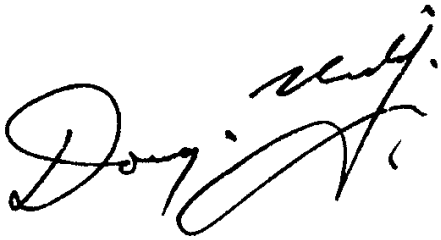
I have issued this *Approved Code of Practice for Safety in Tree Work Part One: Arboriculture*, being a statement of preferred work practices or arrangements for the purpose of ensuring the health and safety of persons to which this code applies and persons who may be affected by the activities covered by the code.

A handwritten signature in black ink, appearing to read 'J M Chetwin', written over a horizontal line.

J M Chetwin
Secretary of Labour
July 1994

FOREWORD

I have approved this statement of preferred work practices, which is an *Approved Code of Practice for Safety in Tree Work Part One: Arboriculture*, under section 20 of the Health and Safety in Employment Act 1992. When a code is approved, a Court may have regard to it in relation to compliance with the relevant sections of the Health and Safety in Employment Act. This means that if an employer in an industry or using a process to which an approved code applies can show compliance with that code in all matters it covers, a Court may consider this to be compliance with the provisions of the Act to which the code relates.

A handwritten signature in black ink, appearing to read 'Doug Kidd', with a stylized flourish above the name.

Hon. Doug Kidd
Minister of Labour
July 1994

SUMMARY OF THE HEALTH AND SAFETY IN EMPLOYMENT ACT 1992

The principal object of the Health and Safety in Employment Act 1992 is to prevent harm to employees at work. To do this it imposes duties on, and promotes excellent health and safety management by, employers. It also provides for the making of regulations and codes of practice.

APPROVED CODES OF PRACTICE

The Act provides for the development and approval of statements of preferred work practice or arrangements, that may be approved as “approved codes of practice”. These are recommended means of compliance with provisions of the Act, and may include procedures which could be taken into account when deciding on the practicable steps to be taken. Compliance with codes of practice will not be mandatory.

However, they may be used as evidence of good practice in Court.

EMPLOYER'S DUTIES

Employers have the most duties to perform to ensure the health and safety of employees.

If you are an employer, then you have a general duty to take all practicable steps to ensure the safety of employees while at work. (This is set out in section 6.)

In particular, you are required to take all practicable steps to:

- Provide and maintain a safe working environment;
- Provide and maintain facilities for the safety and health of employees at work;
- Ensure that machinery and equipment in the place of work is designed, made, set up and maintained to be safe for employees;
- Ensure that employees are not exposed to hazards in the course of their work; and
- Develop procedures for dealing with emergencies that may arise while employees are at work.

HAZARD MANAGEMENT

Employers must identify hazards in the place of work (previously existing, new and potential)

and regularly review them to determine whether they are significant hazards and require further action. Where there occurs any accident or harm in respect of which an employer is required to record particulars, the Act, section 7(2), requires the employer to take all practicable steps to ensure that the occurrence is so investigated as to determine whether it was caused by or arose from a significant hazard.

“*Significant hazard*” means a hazard that is an actual or potential cause or source of:

- Serious harm; or
- Harm (being more than trivial) the severity of whose effects on any person depends (entirely or among other things) on the extent or frequency of the person’s exposure to the hazard; or
- Harm that does not usually occur, or usually is not easily detectable, until a significant time after exposure to the hazard.

WHERE THE HAZARD IS SIGNIFICANT

The Act sets out the steps an employer must take:

- Where practicable, the hazard must be *eliminated*;
- If elimination is not practicable, the hazard must be *isolated*;

- If it is impracticable to eliminate or isolate the hazard completely, then the employer must *minimise* the likelihood that employees will be harmed by the hazard.

Where the hazard has not been eliminated or isolated, the employer must, where appropriate:

- Ensure that protective clothing and equipment is provided, accessible and used;
- Monitor employees' exposure to the hazard;
- Seek the consent of employees to monitor their health; and
- With informed consent, monitor employees' health.

INFORMATION FOR EMPLOYEES

Before an employee begins work, their employer must inform them of:

- Emergency procedures;
- Hazards the employee may be exposed while at work;
- Hazards the employee may create while at work which could harm other people;
- How to minimise the likelihood of these hazards becoming a source of harm to others; and

- The location of safety equipment.

The employer is also required to inform employees of:

- The results of any health and safety monitoring. In doing so, the privacy of individual employees must be protected.

EMPLOYERS TO INVOLVE EMPLOYEES IN THE DEVELOPMENT OF SAFETY AND HEALTH PROCEDURES

Employers need to ensure that all employees have the opportunity to be fully involved in the development of procedures for the purpose of identifying hazards and dealing significant hazards or dealing with or reacting to emergencies and imminent dangers (section 14).

TRAINING OF EMPLOYEES AND THE SAFETY OF OTHERS

The employer must ensure employees are either sufficiently experienced to do their work safely or supervised by an experienced person. In addition, the employee must be adequately trained in the safe use of equipment in the place of work, including protective clothing and equipment (section 13).

An employer is also responsible for health and safety of people who are not employees. An employer must take all practicable steps to

ensure that an employee does not harm any other person while at work, including members of the public or visitors to the place of work (section 15).

EMPLOYEES' DUTIES

If you are an employee, the Act gives you responsibility for your own safety and health while at work. You must also ensure that your actions do not harm anyone else.

SELF-EMPLOYED PEOPLE'S DUTIES

Every self-employed person shall take all practicable steps to ensure that no action or inaction of the self-employed person while at work harms the self-employed person or any other person.

ACCIDENTS AND SERIOUS HARM: RECORDS AND NOTIFICATION

The Act defines "accident" as an event that:

- Causes any person to be harmed; or
- In different circumstances, might have caused any person to be harmed.

This means that "accident" includes both near-misses and accidents that result in harm to a person or might have caused any person to be harmed.

Every employer is required to maintain a regis-

ter of accidents and serious harm; and record particulars relating to:

- Every accident that harmed (or, as the case may be, might have harmed):
 - Any employee at work; or
 - Any person in a place of work controlled by the employer; and
- Every occurrence of serious harm to an employee at work, or as a result of any hazard to which the employee was exposed while at work, in the employment of the employer.

Where there occurs any serious harm or accident an employer must:

- As soon as possible after its occurrence, notify the Secretary of the occurrence; and
- Within 7 days of the occurrence, give the Secretary written notice, in the prescribed form, of the circumstances of the occurrence.

The notification to the Secretary applies to:

- Every occurrence of serious harm to an employee at work, or the occurrence of serious harm as a result of any hazard to which the employee was exposed while at work, in the employment of the employer; and
- Accidents of a kind or description required by regulations.

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. Adopt a safe conduct attitude:

- Work with due consideration for your own and others' safety at all times.
- Carry out instructions properly.
- Ask when you are in doubt.
- 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.

The rules contained in this code have been drawn up by practical people, experienced in all aspects of the profession, and these rules are well-proven ways of making your work safer.

Read them and make sure you understand them. If not, ask and make sure before you start the job. Follow the rules in this code and make sure others do so too.

Remember: the life that's saved may be your own.

ABOUT THIS CODE

ORIGINS

The *Safety Code for Bush Undertakings* was originally published in 1960. Recent revisions have expanded the code and it has been re-named *Safety Code for Forest Operations*.

However, it was felt there was sufficient demand to cover non-forestry type operations involving trees and this code has been named *Code of Practice for Safety and Health in Tree Work*. It is initially to be divided into two parts: part one on arboriculture and part two on working around power lines.

PURPOSE

This code sets out sound work practices for everyone involved in arboriculture. It describes recognised methods of arboricultural work, care of equipment and safety of participants and public.

When work of a forestry type is carried out,

operations should be conducted under the provisions of the appropriate part of the *Safety Code for Forest Operations*. Guidelines on the use of this safety code follow, but are not necessarily complete — interpretation is required.

<i>OPERATION</i>	<i>PART OF CODE</i>
Agricultural chemicals	<i>Part 1: Forest Establishment and Silviculture</i>
Brush cutters	”
Fires	”
Seed collection	”
Use of explosives	”
Use of haulers and winches	<i>Part 2: Cable Logging</i>
Breaking out	<i>Part 3: Logging</i>
Machine operations	”
Preparation for extraction	”
Skidders	”
Skids and working on skids	”
Tree driving	”
Loading and transportation of logs	<i>Part 4: Transportation</i>

Copies of *the Safety Codes for Forest Operations* are available from OSH branch offices.

TERMINOLOGY

A number of conventions are followed in the terminology of this code which are intended to aid clarity.

Firstly, all specific recommendations are presented as numbered clauses within the booklet's different sections. Less specific background information that may be of use to a reader is usually included as unnumbered paragraphs at the beginning of each section.

When reading the code, it should be remembered that:

shall: denotes a mandatory requirement;
and

should: denotes an advisory recommendation.

ACKNOWLEDGEMENT

The Occupational Safety and Health Service acknowledges the assistance given by people in the industry with the contents of this part of the code. In particular, thanks to David Aitchison and David Palmer for their contributions. It is hoped the code will continue to provide practical guidance to workers and management alike,

and that observance of the minimum standards it sets out will achieve the desire of all concerned to make arboriculture and related work a safe and rewarding occupation.

FURTHER INFORMATION

You can get further information on the occupational safety and health aspects of tree operations from your nearest office of the Occupational Safety and Health Service. There are branches in each of the following centres, with the locations of inspectors shown in **boldface** type:

Whangarei	Napier
Takapuna	Palmerston North
West Auckland	Lower Hutt
Penrose	Wellington
Manukau	Nelson
Hamilton	Christchurch
Rotorua	Dunedin
Tauranga	Invercargill
New Plymouth	

GENERAL

1. **DEFINITIONS FOR THE PURPOSE OF THIS CODE**
- 1.1 **“Agricultural chemicals”** means any fertiliser, soil conditioner, pesticide and additives in liquid, dust, granule, paste or any other form.
- 1.2 **“Arboriculture”** means the management and care of amenity trees in the general community.
- 1.3 **“Climbing”** means ascending, descending or shifting work positions while carrying out operations in a tree.
- 1.4 **“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.
- 1.5 **“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.
- 1.6 **“New Zealand Standard”** means 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.

- 1.7** “**Machine**” means any machinery, apparatus or appliance that may be used in or about an arboriculture operation.

2. GENERAL SAFETY RULES

The rules contained in sections 2 to 16 shall be observed by all persons employed in, engaged in or visiting an arboricultural operation.

3. OPERATIONAL CONSIDERATIONS

- 3.1** 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 performed in a safe manner at all times. A competent person shall be nominated to take charge if it is necessary for this person to leave the operation.

- 3.2** Every employer shall exercise such supervision as will ensure that work is performed in a safe manner at all times. 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.

- (a) 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.

- (b) 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. Training while off the ground shall be on a one-to-one basis.

- 3.3** All workers shall acquaint themselves with the relevant safety provisions of this code for each operation, and shall take all necessary precautions to ensure their own safety and the safety of others engaged in each particular operation.
- 3.4** No person shall work in or visit an arboriculture operation while under the influence of drugs or alcohol.
- 3.5** 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.

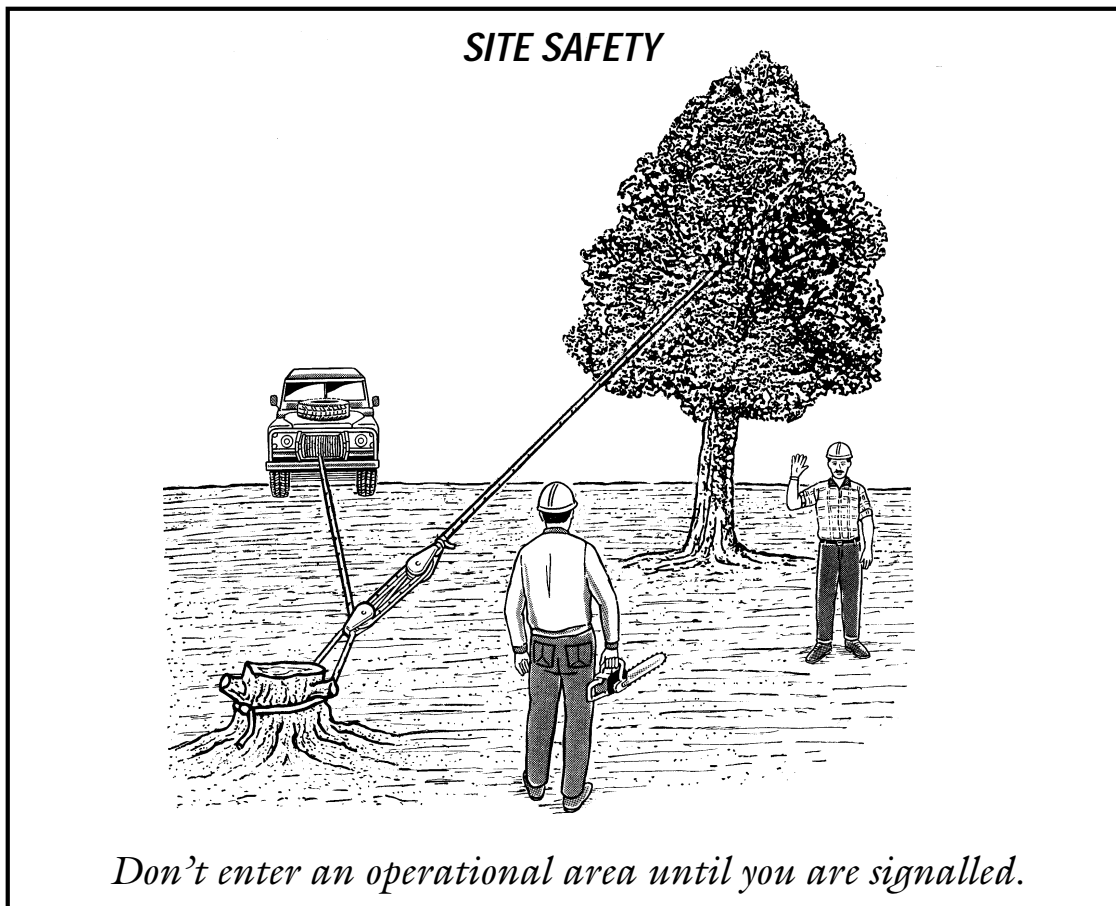
- 3.6** Before any work is carried out, or any climbing is done, proper inspections of the work area shall be carried out to identify hazards to the worker. These may be decay or rot, dead branches, suspended materials such as branches, interlocking branches or power lines, either within or close to the crown. All workers shall be given clear instructions on the work to be done and any hazards involved, to themselves, property or to the public.
- 3.7** Unless training on a one-to-one basis or directly assisting in the operation, only one person shall normally be up a tree at one time. Generally at least two persons shall be employed at any time on tree work. However, specialists with competent experience who are properly equipped with the appropriate working and safety equipment, may work on their own on general tree work. Where any doubt exists as to their safety or well being because of the nature of the work, or any hazard to the public, a further person shall be present.
- 3.8** No person shall be required to work on their

own with a chainsaw unless:

- (a) visual or voice contact is maintained with other person who is able to assist or obtain help in an emergency; or
- (b) they have an audible alarm device that can be activated in an emergency.

3.9 While working on their own in other circumstances, a worker's presence and welfare shall be ascertained at least once in any work period in which that person is so engaged and at the completion of each work period. As a guideline, this time should not exceed 2 hours.

3.10 All persons approaching an operational area shall:



- (a) before entering the area, notify the employer or person in charge; and
- (b) while machinery is operating, approach the area, where practicable, from above or level with the operation; and
- (c) draw attention to their presence and intention by calling out loudly or some other means; and
- (d) not enter the operational area until acknowledged or signalled to do so.

3.11 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.

3.12 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.

3.13 All vehicles used in conjunction with an arboriculture operation shall have a current Warrant of Fitness.

3.14 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.

4. MACHINERY

4.1 No machine shall be used unless it is:

- (a) properly maintained in a sound and safe condition and inspected at least daily;
- (b) suitable for the operation in capacity and design;
- (c) operated by a competent person (or person training under adequate supervision);
- (d) where appropriate, equipped with brakes that are capable of holding the machine on any gradient on which it is operated;
- (e) serviced and operated within the manufacturer's recommendations and specifications.

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

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

4.4 All defective machinery shall be shut down until repairs are made and the machine inspected and tested before returning to service. Adjustments shall never be made while a machine is in motion and no person shall get under an unblocked, raised blade or accessory for any purpose.

- 4.5** Where machines are operating adjacent to or on roads or road verges, appropriate road signs shall be used to warn other road users, and machines shall comply with Transport Regulations.
- 4.6** In arboriculture operations, owners of machinery used shall take all practicable steps to remove, at source, excessive noise levels that are likely to impair a worker's hearing.
- 4.7** All machinery used in an arboricultural operation shall comply with the Health and Safety in Employment Act 1992, the Hazardous Equipment Regulations 1994, and the Transport Act 1962.

5. PROTECTIVE CLOTHING AND EQUIPMENT

Protective clothing, equipment and appliances are complementary to, not a substitute for, full instruction, sufficient training and adequate supervision.

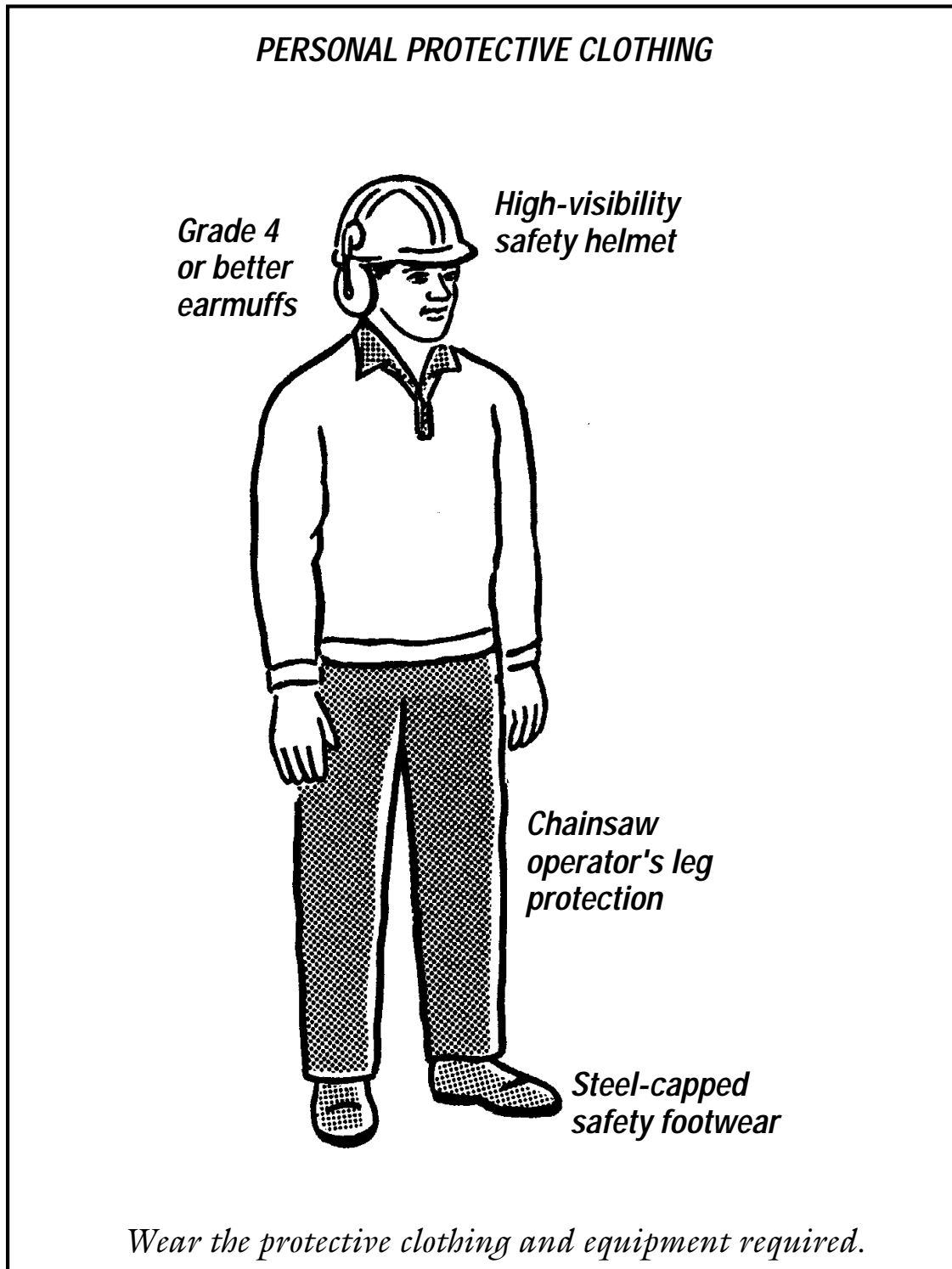
GENERAL

- 5.1** Protective equipment suitable for the work being performed shall be provided, as required, for the use of all workers.
- 5.2** No persons shall interfere with or misuse any equipment, means or appliance provided for their protection and health.
- 5.3.** Long hair shall be confined in such a manner as

to prevent it being caught by any moving part of any tools or machinery.

CLOTHING

5.4 All clothing shall fit fairly closely about the



worker, be comfortable and allow free movement. Damaged or torn clothing shall be properly repaired or discarded.

- 5.5** Clothing of high-visibility colours should be worn so that workers or other persons entering operation areas are more readily seen by others.

LEG PROTECTION

- 5.6** All workers required to use a chainsaw shall wear safety leg protection. When legwear to NZS 5840:1988 and Amendment No.1 1993 *Specification for protective legwear for chainsaw users* becomes available, all replacement legwear shall comply with that standard or its equivalent.

SAFETY FOOTWEAR

- 5.7** All workers engaged in arboriculture operations shall wear footwear which gives support to the ankles. Such footwear shall have steel toecaps and comply with NZS 5845:1989 *Specification for safety footwear*. Lace up types shall be securely laced up at all times.

SAFETY HELMETS

- 5.8** Safety helmets shall be worn at all times by all persons using a chainsaw and by those on the ground, in or about an arboricultural operation.

- 5.9** Machine operators who are fully protected by an approved canopy need not wear helmets. However, should the operator cease to be fully protected by the canopy, then a safety helmet shall be worn.
- 5.10** All safety helmets shall comply with the requirements of NZS 5806:1980 *Specification for industrial safety helmets (medium protection)* or better.
- 5.11** Safety helmets for chainsaw operators shall be fitted with earmuffs and have provision for visors.
- 5.12** Safety helmets should be of high-visibility colours.
- 5.13** Helmets should be inspected regularly. They shall be replaced if they have suffered damage. Otherwise, high-visibility coloured helmets shall be replaced as recommended by the manufacturer. Other helmets shall be replaced no more than three years after issue to the wearer.
- 5.14** Helmet harnesses should be inspected regularly to check the clearance distance is correct, be washed as required, and be replaced on a yearly basis.
- 5.15** 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.

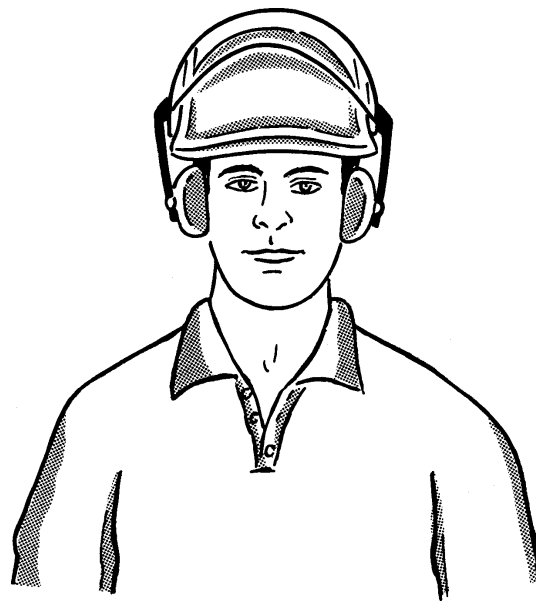
HEARING PROTECTION

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

5.17 To alleviate harmful noise:

- (a) People should not approach or remain in high noise areas unnecessarily or without adequate hearing protection.
- (b) Noisy machines and equipment should be operated at a distance from tree work. If this is not possible, the machine or

COMPLETE HEAD PROTECTION



An approved helmet with integral earmuffs and mesh face visor offers all-in-one head protection.

operator should be enclosed to cut down noise levels.

- (c) Silencers should be fitted to exhausts and be regularly inspected and maintained.
- (d) Earmuffs should be regularly inspected and maintained to the highest standard. Any worn or damaged parts shall be replaced where necessary.

EYE PROTECTION

- 5.18** Visors or goggles for eye protection should be worn where excessive dust or danger from flying debris exists.
- 5.19** Eye protection is to be made available to workers on request.
- 5.20** Eye protection equipment shall be maintained to the highest standard. Damaged equipment shall be repaired or discarded.

6. HAND TOOLS

- 6.1** All tools used shall be kept in good working condition, be properly sharpened where applicable, and shall be restricted to the use for which they are intended.
- 6.2** Handles shall be securely and correctly attached to tools. All wooden handles shall be of firm straight-grained stock and free from defects. Do not use tools with loose handles. Check wooden handles for cracks or splits. Damaged handles

shall be replaced.

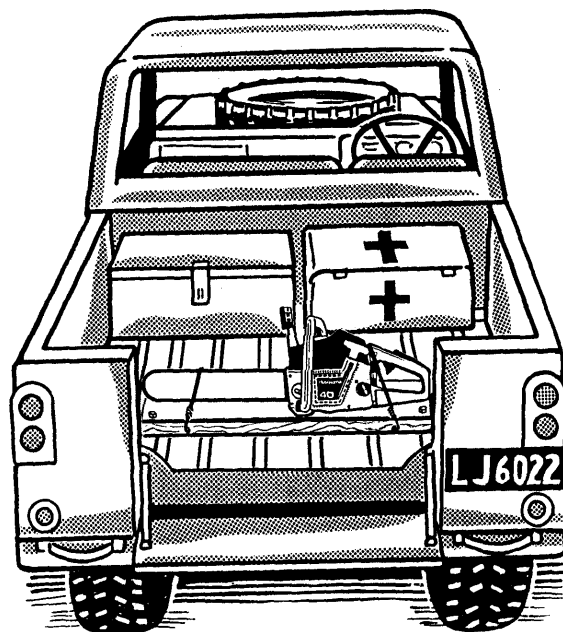
- 6.3** Split axe heads, damaged or mushroomed steel wedges, hammers and similar equipment shall be properly repaired or replaced.
- 6.4** A maul or other suitable tool shall be provided for the driving of wedges.
- 6.5** Pole pruners should be provided with guards, preferably of leather, to cover the cutting heads when the pruners are not in use.
- 6.6** Jacksaws shall have a guard or pouch equipped with a strap, rope or snap so they can be secured to the worker's belt during work or while changing positions.
- 6.7** Saws, pruners and other tools should not be carried in the worker's hands while climbing. They should be raised and lowered by tool lines or clipped on to the climbing harness. Canvas buckets are ideal for small tools.
- 6.8** Tool lines should be attached to the end of the tool so that there is less chance of the tool being caught in obstructions when raising or lowering.
- 6.9** Do not drop or throw tools to the ground in general operations. If it is necessary to drop or throw tools to the ground, a warning shall be given and the ground area cleared.
- 6.10** All tools shall be removed from a tree when the worker has finished the task or when a crew is finished for the day.

7. FIRST AID

7.1 Subject to the provisions of any Act, award or industrial agreement:

- (a) Where operations involve a number of people, first aid treatment for the injured shall be in the hands of a person who by training or experience is the most qualified to do so. A holder of a current qualification from St Johns, Red Cross or other organisation approved by OSH should be present at each operation.
- (b) A first aid kit or box shall be kept in each

SECURE AND SEPARATE EQUIPMENT STORAGE



Keep a first aid kit in each vehicle or work area.

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.

- (c) Every box or kit shall be kept fully stocked to the minimum requirements detailed on page 37 and shall be stored so as to ensure that the contents are protected against contamination by dust, heat, moisture or any other source.

7.2 Where arboriculturalists work largely on their own, a belt pouch or vehicle kit containing the following minimum requirements is essential:

Individually wrapped crepe or roller bandages	2
Individually wrapped large sterile wound dressings	2

Two such kits would be suitable if working in pairs. These kits shall comply with the requirements regarding availability and contamination as outlined in sections 7.1(b) and 7.1(c).

7.3 An inspector, at his or her discretion, may

MOBILE FIRST AID KIT FOR UP TO 10 PEOPLE

- | | | |
|-----|---|---------|
| 1. | Individually wrapped triangular bandages | 2 |
| 2. | Individually wrapped roller bandages | 2 |
| 3. | Individually wrapped sterile dressings (non-adhesive) | 5 |
| 4. | Individually wrapped sterile eye pads with attachment | 4 |
| 5. | Individually wrapped sterile adhesive dressings | 5 |
| 6. | Individually wrapped sterile wound dressings (non-medicated) | |
| | (a) medium | 1 |
| | (b) large | 2 |
| 7. | Safety pins | 6 |
| 8. | Disposable gloves | 2 pairs |
| 9. | Card listing local emergency numbers | |
| 10. | List of minimum contents of kit | |
| 11. | Basic first aid notes (e.g. St John, Red Cross) | |
| 12. | Hepatitis B/Aids notice on first aid box | |
| 13. | Resusci-aid mask | |
| 14. | If tap water is not available, sterile water or sterile normal saline in disposable containers, each holding at least 300mls, shall be kept near the first aid box. | |

require additional requisites and appliances due to the isolated location or hazards of any arboriculture operation.

- 7.4** In the event of an accident, no seriously injured person shall be moved until a careful assessment of the extent of their injuries has been made by the most qualified first aider present. If it appears to the person making the examination that there is a risk of complication of the injury, the patient shall be made as comfortable as possible until qualified medical advice is available.

8. REPORTING ACCIDENTS

SPECIAL NOTE TO WORKERS

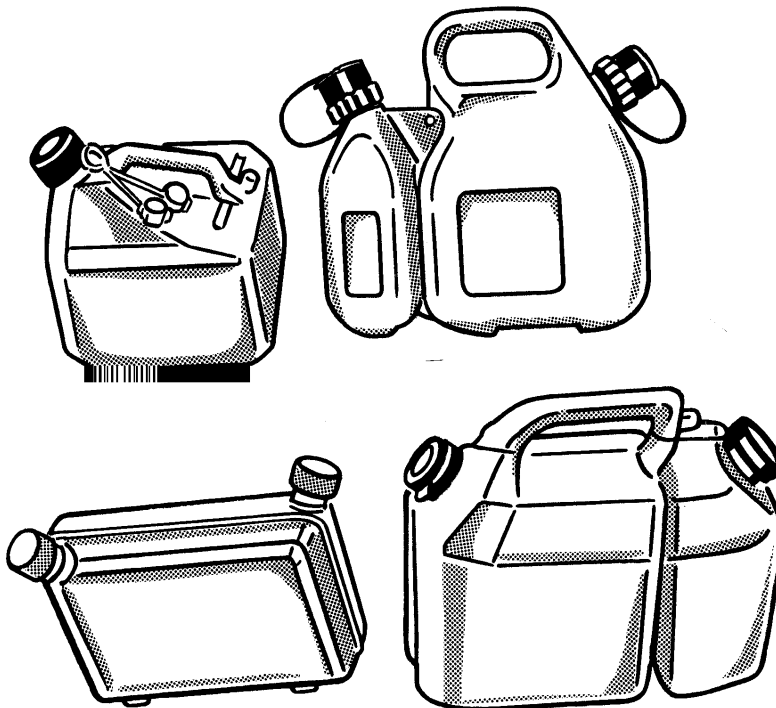
- 8.1** It is essential that you report all work injuries, including minor injuries, to your supervisor or person in charge. In the interest of safety and accident prevention, you are also urged to report all incidents which could have resulted in injury.

9. TRANSPORTATION OF WORKERS

- 9.1** In addition to any provisions contained in any Act, award or industrial agreement:
- (a) All vehicles used for conveying workers shall have current registration and a valid Warrant of Fitness.

- (b) Only persons directly concerned with the arboriculture operation, or others authorised by the person in charge of the operation, shall be permitted to travel in vehicles.
 - (c) All vehicles shall be driven with due regard to road and weather conditions.
- 9.2** All tools, fuel and equipment shall be stowed securely in separate compartments designed specifically for such use.
- 9.3** No loose tools, fuel or equipment shall be carried in the passenger compartment of a

FUEL STORAGE CONTAINERS



Fuel storage containers must comply with regulations.

vehicle conveying workers.

9.4 Each person authorised to travel in a vehicle conveying workers shall have a suitable place to sit under cover.

9.5 Carriage of flammable liquids in vehicles used also for carrying of personnel, shall comply with section 10.3 of this code.

10. STORAGE OF PETROL AND OTHER FLAMMABLE LIQUIDS

10.1 Petrol and other flammable liquids shall be conveyed, stored and packed in containers that comply with requirements prescribed under the Dangerous Goods Act 1974.

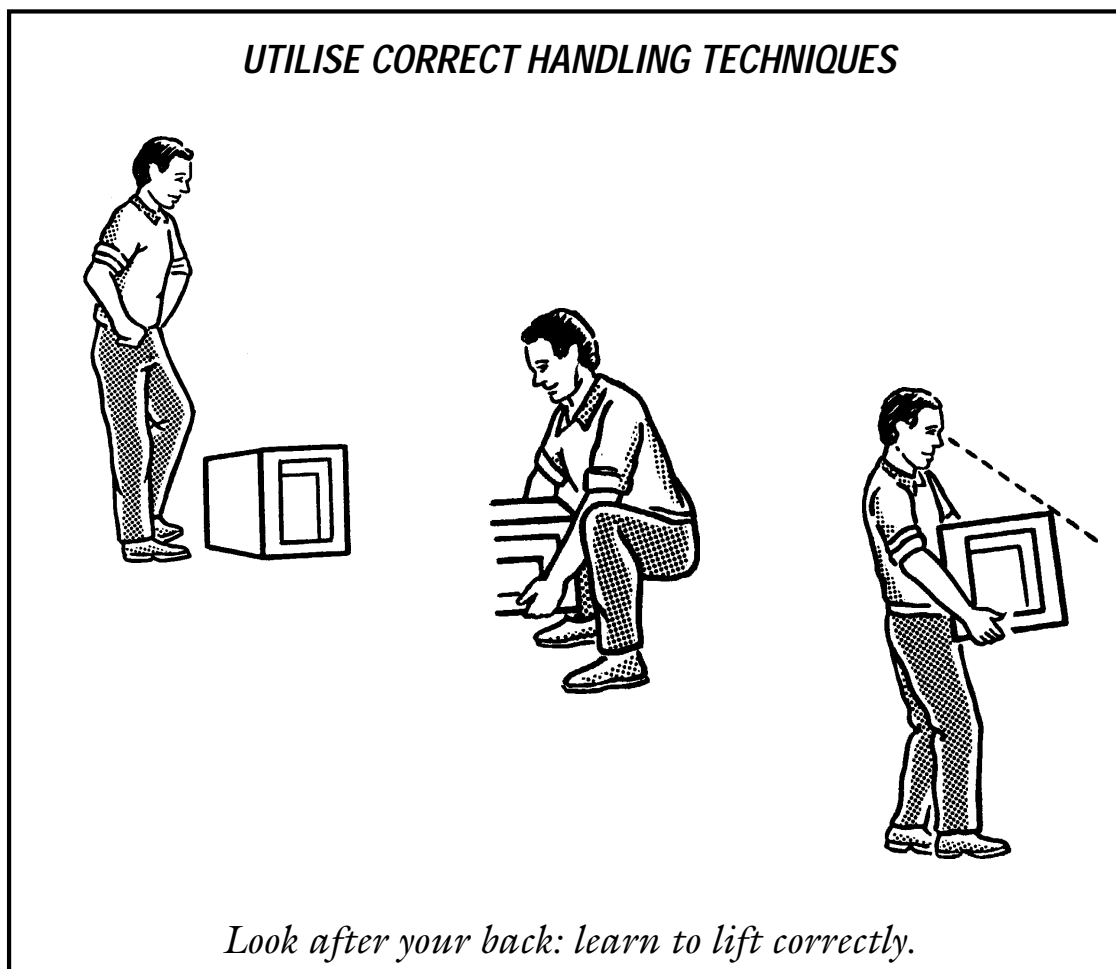
Containers shall:

- (a) Be made of metal or other approved materials;
- (b) Be of such construction that the contents cannot escape in either liquid or vapour form;
- (c) If made of plastic, be approved and be marked with the LAB approval number (see clause 11 for use in transportation of fuel by foot).

10.2 No flammable liquid shall be carried or stored in the same compartment of a gang bus or other vehicle which is being used or which is used for transporting personnel.

- 10.3** When it is necessary to carry flammable liquids in vehicles referred to in 10.2, the container or containers shall be secured in a properly constructed and vented compartment separate from that used to carry passengers. Such a compartment shall be accessible only from the exterior and be vented to the exterior.
- 10.4** Flammable liquids shall not be transported in containers mounted to or protruding over the front or rear bumpers of any vehicle.

11. CONTAINER FOR TRANSPORTATION OF FUEL



BY FOOT

- 11.1** 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 storage of fuel.
- 11.2** On filling, an air gap of 5 percent by volume shall always be left in the container.
- 11.3** Containers shall be regularly checked and shall be destroyed if they show signs of damage.
- 11.4** Glass containers shall not be used to carry oil or fuel in any operation.

12. LIFTING AND HANDLING

- 12.1** Check the load to ensure it is within lifting capacity and can safely be handled without causing injury from strain, sharp edges, splinters or other conditions.
- 12.2** Ensure the work area is clear of obstructions if the load is to be carried from one place to another.
- 12.3** Stand close to the load with the feet apart, one foot behind and the other beside the load.
- 12.4** Bend knees, grasp the load and lift by straightening the legs.
- 12.5** Avoid reaching, bending forward to lift, twisting the back or bending sideways.
- 12.6** Be able to see over or around the load before

moving. Face the spot where the load is to be placed, bend the knees to lower the load, keeping the back as straight as possible and the load close to the body. Protect fingers from pinching before release of load.

- 12.7** Do not try and lift or move objects beyond your capacity—ask for help. Co-ordinate lifting, moving and lowering by pre-arranged signals.

13. FIRES

- 13.1** Always obtain a permit from the local fire authority.

- 13.2** As a guideline, the following clothes are suitable as a minimum dress standard:

- (a) lace up boots;
- (b) headwear: either a safety helmet or woollen cap, hat, beret or similar headwear;
- (c) heavy cuffless trousers and long-sleeved shirt (woollen or wool-based are preferable).

- 13.3** Avoid wearing nylon or synthetic clothing, shorts or singlet with no shirt.

- 13.4** Do not use petrol to start a fire or as an accelerant.

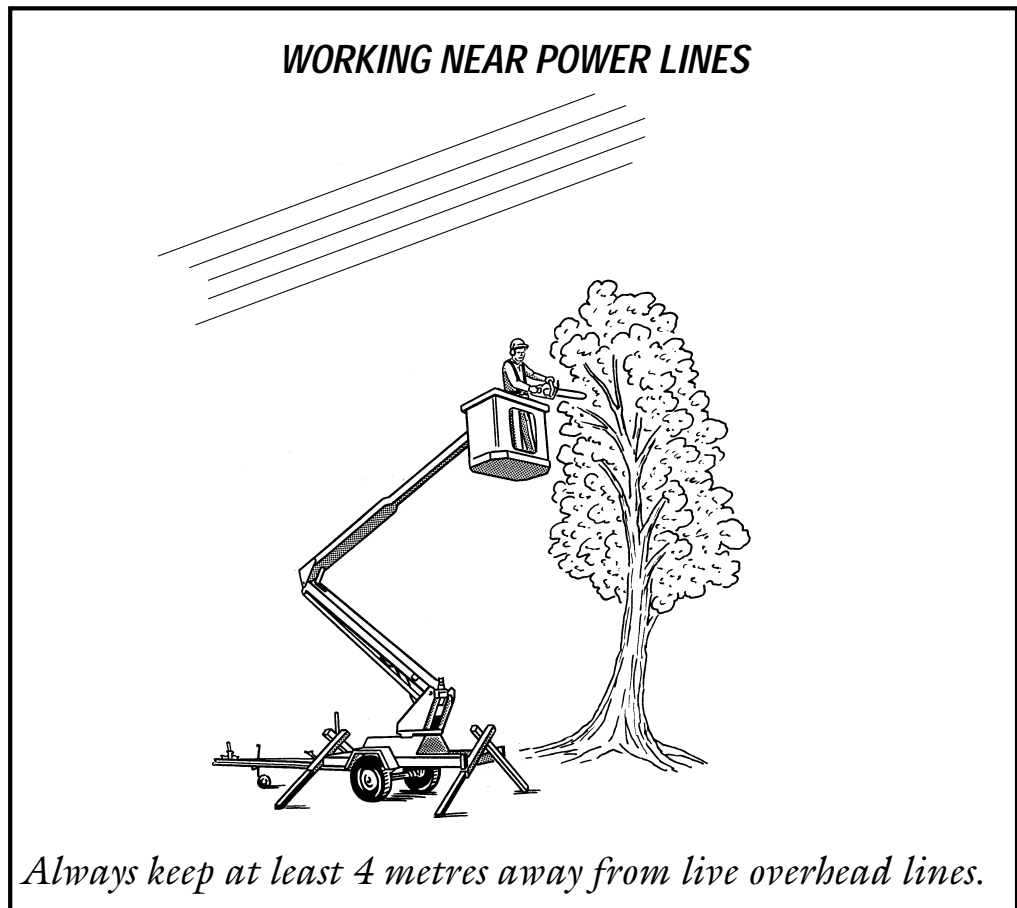
- 13.5** Ensure that fires are not lit under or near overhead power lines as electrical discharge through the smoke may occur.

13.6 Avoid smoke drift across roads, pathways or buildings by using favourable wind direction.

13.7 Make sure fires are extinguished and ashes cold at the end of the day's work.

14. OVERHEAD POWER LINES

14.1 The Electricity Act 1990 and Regulations 1993 and the *Electrical Code of Practice* require that persons working with hand tools or ladders, and owners or operators of any machine working in proximity to live power lines, shall keep the tools or ladders or any part of the machine at least 4 metres away until advice has been received from the owner of the supply line as to



the safe working distance from that particular line.

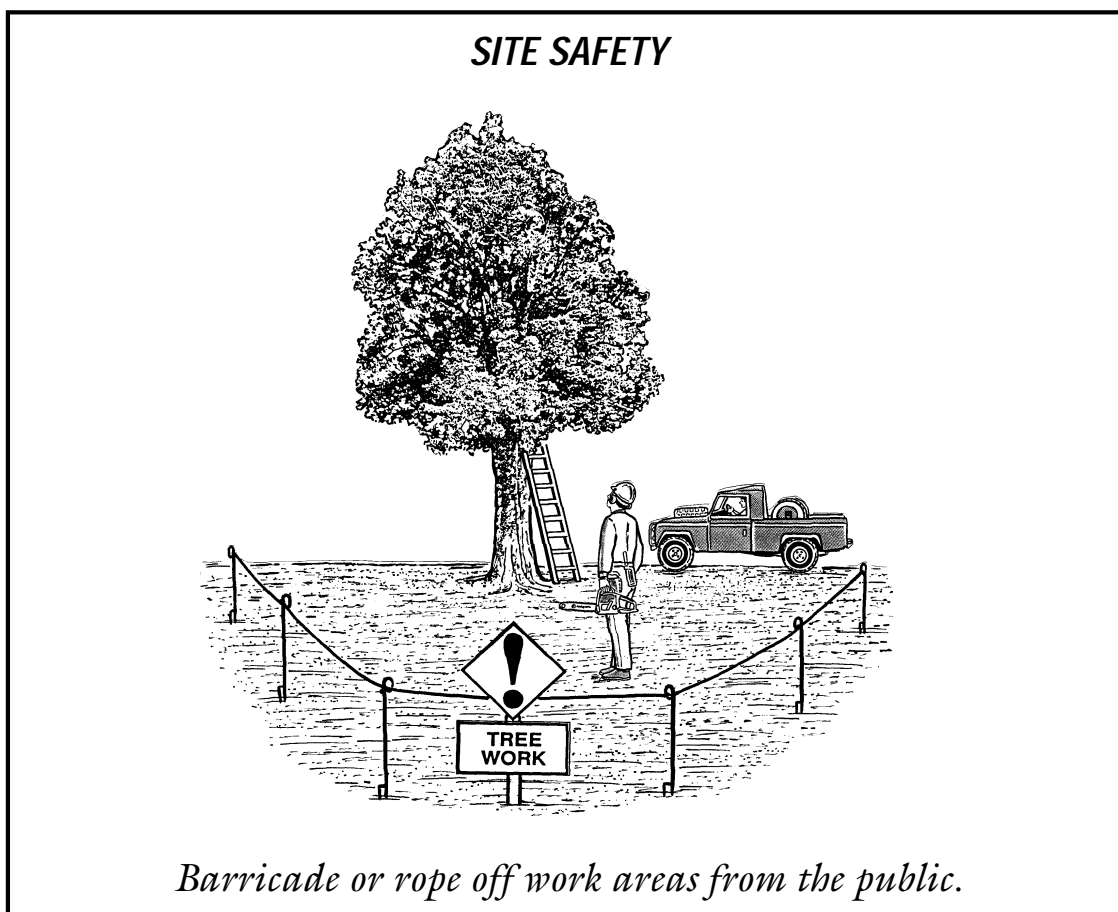
- 14.2** All machinery likely to be used at any time in the proximity of overhead power lines shall display, in a prominent place, an approved warning notice regarding working near overhead power lines.
- 14.3** Before working in the vicinity of power lines, inspect the tree to be climbed or worked to determine if there are wires passing through the tree or in proximity to it.
- If there is any doubt about safe working distances, obtain advice from the local power authority. The power lines may have to be de-energised before work commences.
- 14.4** When working in the vicinity of power lines, particular care must be taken with metal ladders, pruners and hand tools. Do not approach within 4 metres of any live power line until voltages have been confirmed by the supply line owner.
- 14.5** Take particular care with trees or branches that may fall on to live power lines. If necessary, use ropes to ensure that parts of the tree being removed fall away from power lines and, as necessary, follow the instructions as outlined in sections 36 to 39 (Tree Felling) or section 40 (Back-pulling) with trees liable to fall towards power lines.

15. UNDERGROUND SERVICES

- 15.1** If work involves excavation or stump disposal, the appropriate authority is to be contacted as to the exact location of any water main, storm water or sewerage pipes, telecommunication or power cables or gas lines. When free-dropping blocks from sectional felling, the location of these services should also be known.

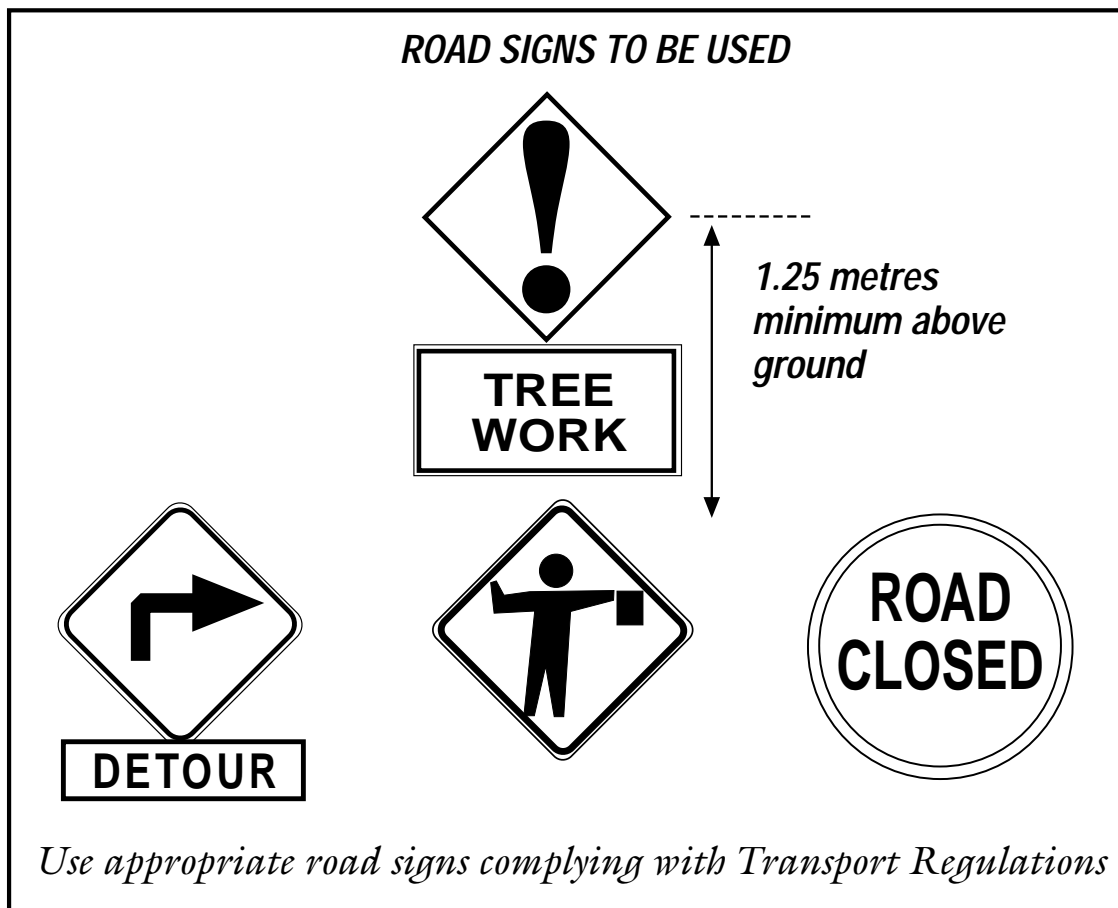
Sound practical advice is given in the OSH publication *A Guide to Safety with Underground Services*.

16. PUBLIC SAFETY



GENERAL PUBLIC

- 16.1** Where the public have access to any operation, a sufficient area shall be designated as the work area and be marked prior to starting work by the erection of warning signs or barricading or roping off. If there is still risk of injury to the public, one person should remain to supervise these precautions.
- 16.2** Branches and debris should be thrown or lowered, where applicable, away from any street and footpath if possible. Otherwise, the material should be removed immediately.
- 16.3** Tools and equipment should be kept off foot-



paths and roads and remain within the designated work area.

WORK NEAR PUBLIC ROADS

- 16.4** Trees within two tree lengths of road and rail traffic shall not be felled unless suitable precautions have been taken to warn oncoming traffic. Such precautions shall include the posting of warning signs and, where necessary, the placement of staff with flags at appropriate safe positions. Section felling may be necessary in some circumstances. (See Section 39.) In these cases, a suitable safety area shall be demarcated. This may be less than two tree lengths from the work area.
- 16.5** The only acceptable sign is the “Other Hazard” (!) sign with the relevant plate “Tree Work” complying with the requirements of the Transit New Zealand handbook *Working on the Road*, a handbook for temporary traffic control and safety.
- 16.6** Where work necessitates the closing or partial closing of a road, the above precautions are to be taken and compliance is required with any additional conditions laid down by the local road controlling authority.

SAFE USE OF CHAINSAWS

GENERAL

All chainsaws shall comply with NZS 5819:1982 Part 2 *Specification for the safe use and design of petrol and electric chainsaws.*

The requirements of NZS 5819: 1982 Part 1 *Code of practice for the safe use of petrol and electric chainsaws* are fully covered in this code.

17. EMPLOYERS' DUTIES AND RESPONSIBILITIES

17.1 Employers shall ensure that no operator works with or uses a chainsaw unless fully instructed as to the dangers which may arise in such an operation and the precautions to be observed and unless the operator:

- (a) has received sufficient training in the use of the chainsaw for a particular operation; or
- (b) holds the valid and approved training

qualification; or

- (c) is adequately supervised by a person who has a thorough knowledge of and experience with chainsaws.

17.2 Attention shall be given to the chainsaw operator's physical qualifications and fitness for the job.

17.3 It shall be the employer's responsibility to ensure that all relevant protective equipment and appliances are provided and used to afford protection and safeguard health.

18. CHAINSAW OPERATORS' DUTIES AND RESPONSIBILITIES

18.1 Operators shall not engage in chainsaw use beyond their physical or operational capabilities.

18.2 Notwithstanding section 17.1, operators shall ensure that they have adequate training in the correct use and safe operation of chainsaws.

18.3 Operators shall not operate defective chainsaws, tools or protective equipment until they have been restored to a safe condition.

19. CHAINSAW SAFETY

19.1 All chainsaws held directly by hand shall have a clearly marked and positive ON-OFF switch and at least one of the following securely attached in place and in good working order

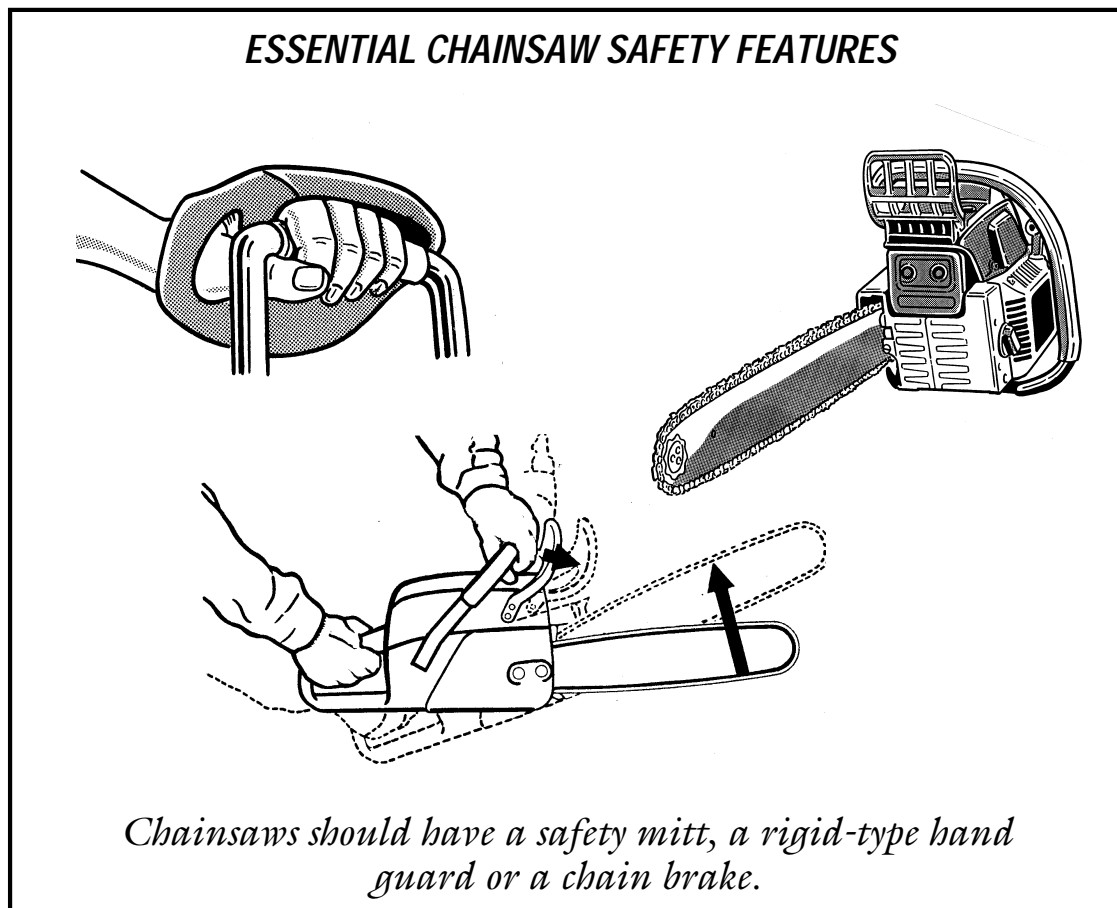
before it is used:

- (a) a safety mitt; or
- (b) a rigid-type hand guard; or
- (c) a chain brake.

19.2 The chainsaw shall be inspected before work is begun to ensure it is in safe working condition.

19.3 Except for the fine-tuning of the carburettor, no cleaning, oiling or adjustments shall be carried out while the motor is running.

19.4 All operations relevant to tensioning the saw chain and any other maintenance shall be carried out in a safe manner and to the manufacturer's specifications or recommendations.



20 STARTING THE CHAINSAW

See section 24 for starting of saws up a tree.

20.1 A chainsaw motor shall only be started when it is clear of all obstructions or people.

20.2 Approved starting methods are:

- (a) Starting a chainsaw on clear ground.
- (b) Step over method for warm starting. The throttle lockout should not be used when using this method.

20.3 Drop starting a chainsaw is prohibited.

20.4 STARTING A CHAINSAW ON CLEAR GROUND

1. Place the chainsaw firmly on the ground.



2. Have the left arm straight, with the front handle bar firmly cradled between the thumb and fingers. If a mitt is fitted, the hand must be in the mitt.
3. Place the front of the right foot in the rear handle. Alternatively, secure the saw by placing a knee on the body of the saw.
4. Place the other leg to provide stability.

20.5 STEPOVER METHOD FOR WARM STARTING

1. Place left hand in safety mitt, if fitted. Keep left arm straight.
2. Position saw on left thigh pointing left.



3. Step over rear handle and secure saw behind a bent right knee.
4. Start with short sharp pulls on starter cord.
5. If the saw does not start, revert to method in section 20.4.

21. CHAINSAW OPERATION

See section 24 for use of chainsaws above ground.

21.1 Operators shall use all protective equipment, appliances or other means provided to afford protection and safeguard health.

21.2 Operators shall not operate or carry a chainsaw in a manner likely to endanger themselves or others.

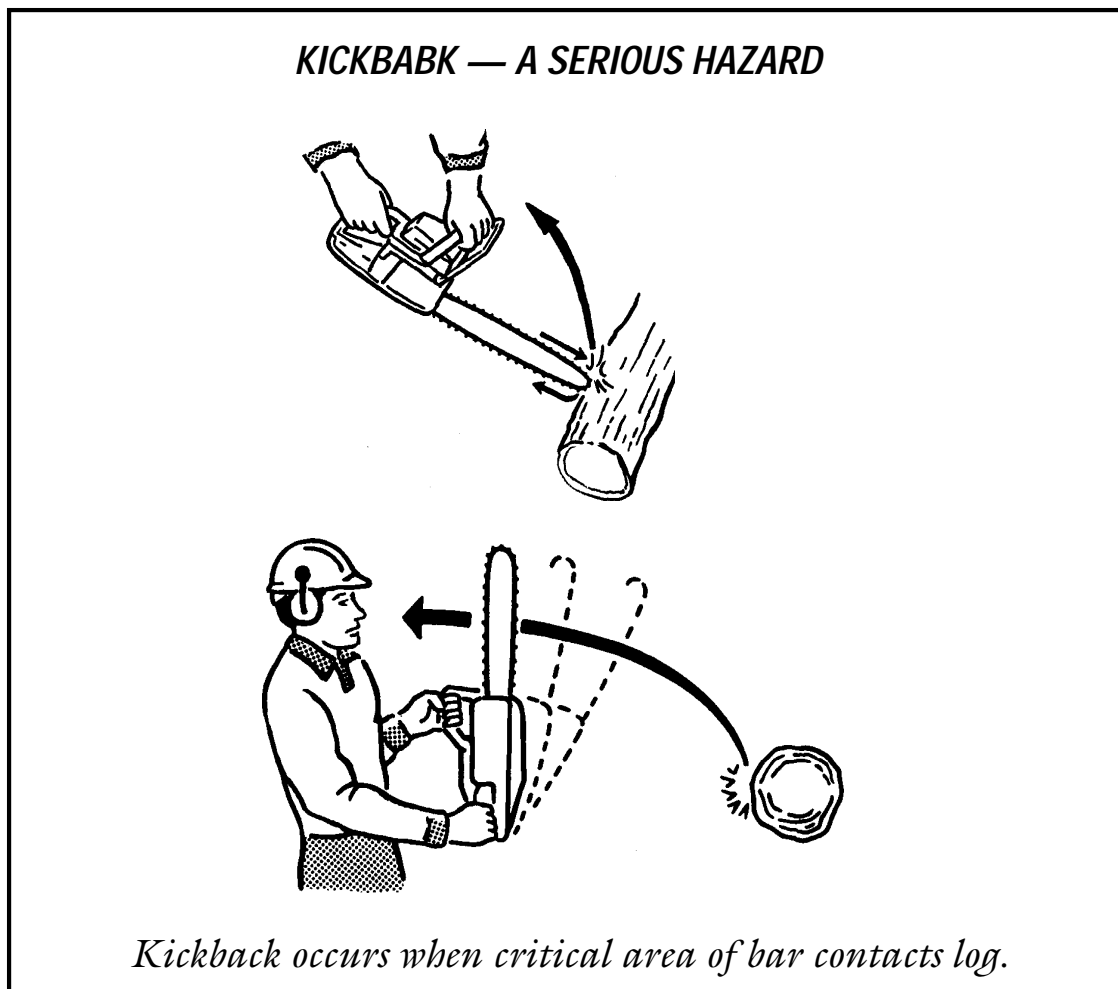
21.3 A chainsaw shall not be used if:

- (a) the saw chain does not remain stationary when the motor is idling;
- (b) the cutter bar, handles or control levers are loose;
- (c) any parts are damaged, missing or ineffective; or
- (d) the saw will not idle correctly.

21.4 Operators shall ensure that, where practicable:

- (a) all obstructions in the path of the chainsaw are removed before cutting operations begin;

- (b) a good footing and safe, comfortable, balanced working position are maintained;
- (c) during operations the chainsaw is held firmly with both hands, with the handles cradled between the thumbs and fingers and mitt used (if fitted);
- (d) they watch what and where they are cutting; and
- (e) they avoid overreaching with the chainsaw.



- 21.5** Where necessary, plastic or soft metal wedges shall be used to keep the cut open, thus reducing the likelihood of binding (pinching or jamming).
- 21.6** 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.
- 21.7** Where a chain brake is the only guard fitted to a chainsaw, it shall be activated by the operator at least every work period to test its effectiveness under operating conditions.
- 21.8** Except for short unobstructed distances, the chainsaw motor shall be stopped while being carried by hand, or the chainbrake activated, if fitted.
- 21.9** To reduce the possibility of kickback and vibration, and to ensure smooth cutting, the manufacturer's instructions for sharpening and maintaining the saw chain shall be adhered to.
- 21.10** 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.
- 21.11** Do not operate a chainsaw above shoulder height. Provide a stable platform to operate off to avoid the situation.

22. REFUELLING THE CHAINSAW

22.1 The following rules shall be observed when refuelling:

- (a) Stop the motor.
- (b) Place the saw on clear ground. Fill the oil tank first to allow the saw to cool down.
- (c) Avoid spilling fuel on hot engine components, as excessive heat can cause ignition.
- (d) Do not smoke or have any sparking or open flame near the fuelling point.
- (e) When completed, wipe excess fuel from the saw.
- (f) Move at least 3 metres away from the refuelling site before restarting.

23. REDUCTION OF VIBRATION DISEASE

23.1 The following points should be observed to minimise the hazard of vibration disease:

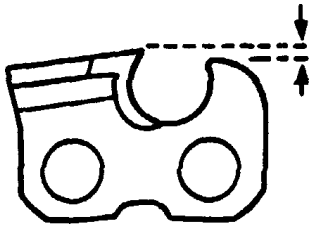
- (a) Maintain and check the fastness of all anti-vibration mounts, absorbers, the guide bar and chainsaw body parts.
- (b) Maintain the correct low- and high-speed carburettor adjustments.
- (c) Maintain a firm but not rigid grip of the chainsaw handles.

- (d) Maintain warm hands.
- (e) Maintain depth gauge settings and chain sharpening to the manufacturer's recommendations.

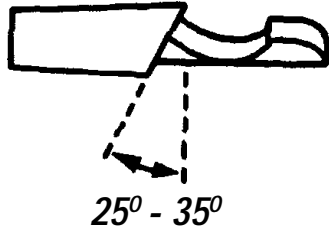
24. USE OF CHAINSAWS ABOVE GROUND

TYPICAL ANGLE SETTINGS

Depth Gauge Setting



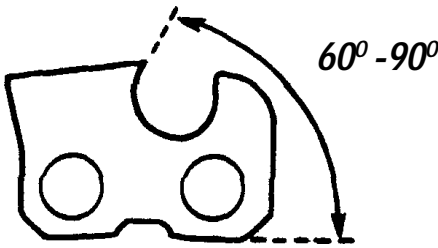
Top Plate Filing Angle



$25^{\circ} - 35^{\circ}$

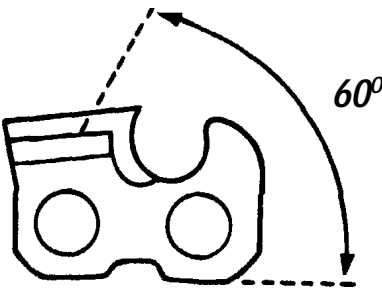
Range of Angles for Cutters of Various Chains and Saws

Side Plate Angle



$60^{\circ} - 90^{\circ}$

Top Plate Cutting Angle



60°

Maintain your chain to the manufacturer's recommendations.

- 24.1** No person shall use a chainsaw for tree work unless they have fully demonstrated their competence and practical knowledge in chainsaw operation and tree climbing.
- 24.2** As a guide, the person should have reached the level of competency in climbing and chainsaw use equivalent to the Waikato Certificate in Arboriculture.
- 24.3** All training in the use of chainsaws above ground shall be given on a one-to-one basis.
- 24.4** Where applicable, chainsaws should be a light-weight type, fitted with a top control handle to give good balance and not exceeding the cc rating required for the job in hand.
- 24.5** The bar length should be kept to the minimum required for the work to be carried out.
- 24.6** Where it is necessary to use a large chainsaw because of branch or trunk size, the operator must be in a stable position so that the chainsaw can be operated with both hands. To aid stability and assist control, large saws should be supported by a rope running to a higher point in the tree.
- 24.7** Warm up chainsaw on the ground for ease of starting in the tree.
- 24.8** Attach the saw to the climbing harness by means of a strop for general use but not if there is danger of the chainsaw being trapped and taken with the severed section.

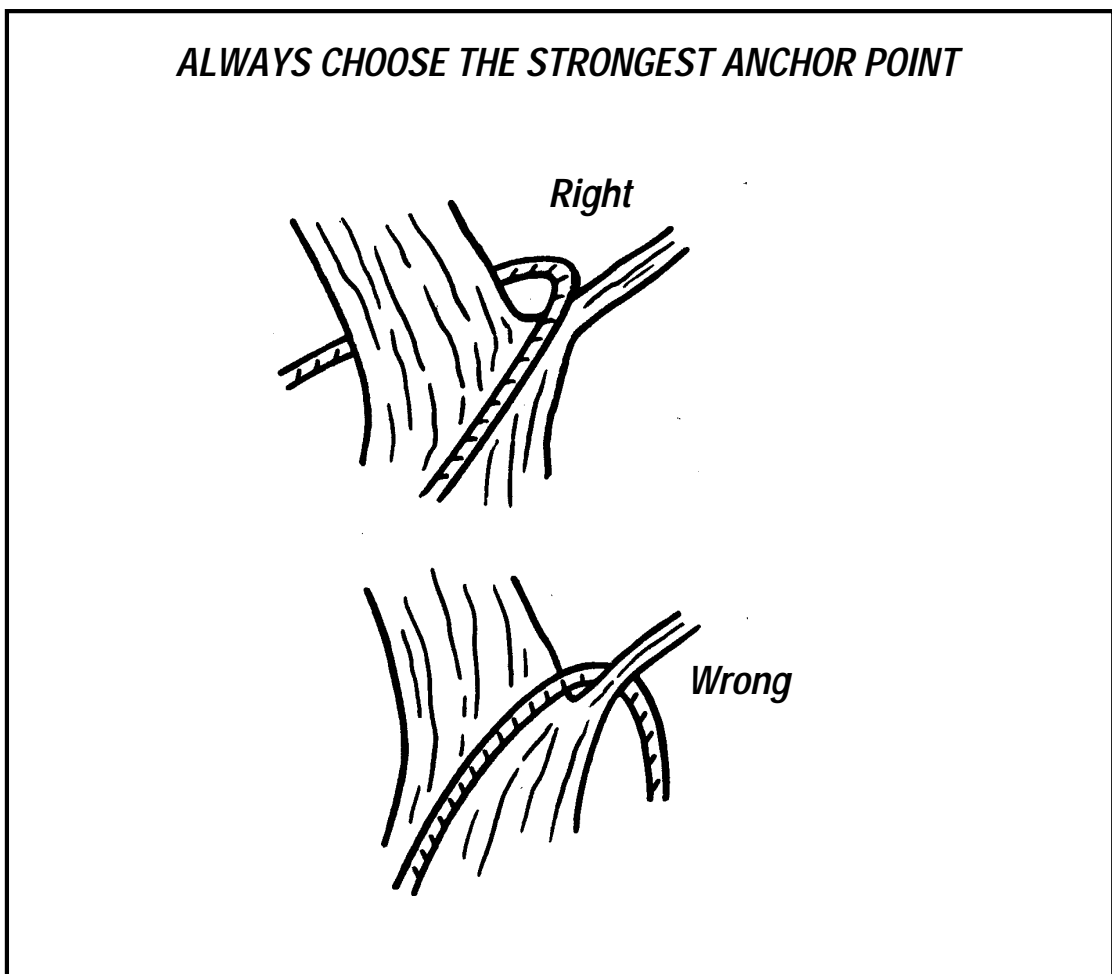
- 24.9** Before operating the saw, adopt a secure position at or above the level of the cut where practicable.
- 24.10** Start the saw by supporting on a branch, or if this is not possible, position the saw on the other side of the trunk or branch or get in a safe and stable position. Hold the saw with a straight arm and start with short sharp pulls of the starter cord. Start the saw with the chainbrake on.
- 24.11** If in making a cut, the operator has not a suitable back rest or something to lean on, they should be secured, if possible, by two anchor points. Footing should be secure on branches or climbing spikes where practicable.
- 24.12** Generally the saw should be operated using two hands. However, in some circumstances, e.g. cutting ends of long lateral branches, the operator may for safety or feasibility hold the saw in one hand to make the cut.
- 24.13** Stop the saw or activate the chainbrake while changing working positions.
- 24.14** Minor adjustments to the saw may be made in a tree. A major malfunction necessitates lowering the saw to the ground person or returning to the ground to carry out repairs.

CLIMBING AND CLIMBING EQUIPMENT

25. CLIMBING

- 25.1** Persons climbing shall be competent and fully trained in the use of climbing equipment.
- 25.2** Generally at least two persons should be employed when climbing is being carried out, one as the climber, the other as the groundsperson. However, the conditions outlined in section 3.7 allow one person to climb and carry out tree work in certain circumstances.
- 25.3** Working techniques and work progression shall be fully discussed and understood by ground staff before climbing commences. Rescue procedures shall be outlined and understood.
- 25.4** Effective communication shall be maintained with the climber. Noisy machines which effect communication must be either shut down or moved away. Helmets with built-in radios are a possible alternative.

- 25.5** The climber shall be securely attached to a suitable anchor point at all times by means of climbing rope, slings or safety line. The anchor lines should be kept taut at all times and secured around the main stem or branch.
- 25.6** Anchor points shall be sufficient to take the climber's weight. Be aware that some trees are more brittle than others, e.g. poplars, willows, and select the appropriate diameter. Do not rope into dead branches.
- 25.7** Whenever the working position is changed the climbing rope should be re-routed to ensure the free end has a straight fall to the ground. The



ground person shall ensure that the rope is free of knots and kinks.

- 25.8** Supplementary anchor points shall be used where a fall or swing that may cause injury is possible.
- 25.9** Knots should be untied and never slipped off carabiners.
- 25.10** When descending, ensure that the rope is as straight as possible and use both hands to control a smooth descent.

26. CLIMBING EQUIPMENT

- 26.1** All climbing equipment shall be of the highest quality and comply with the New Zealand Standard where applicable.
- 26.2** Climbing equipment must not be used for any other purpose and must be replaced if worn, damaged or inoperative.
- 26.3** All equipment must be used in compliance with the manufacturer's conditions or instructions.

27. ROPES

- 27.1** Nylon climbing ropes shall be a minimum of 12mm diameter and comply with or be equivalent to NZS/BS 2052:1989 *Specification for ropes made from manila, sisal, hemp or cotton*.
- 27.2** All climbing ropes shall be free of joining splices. Spliced eyes are to have the rope end tucked at least four times. Rope ends shall be

secured to prevent unravelling.

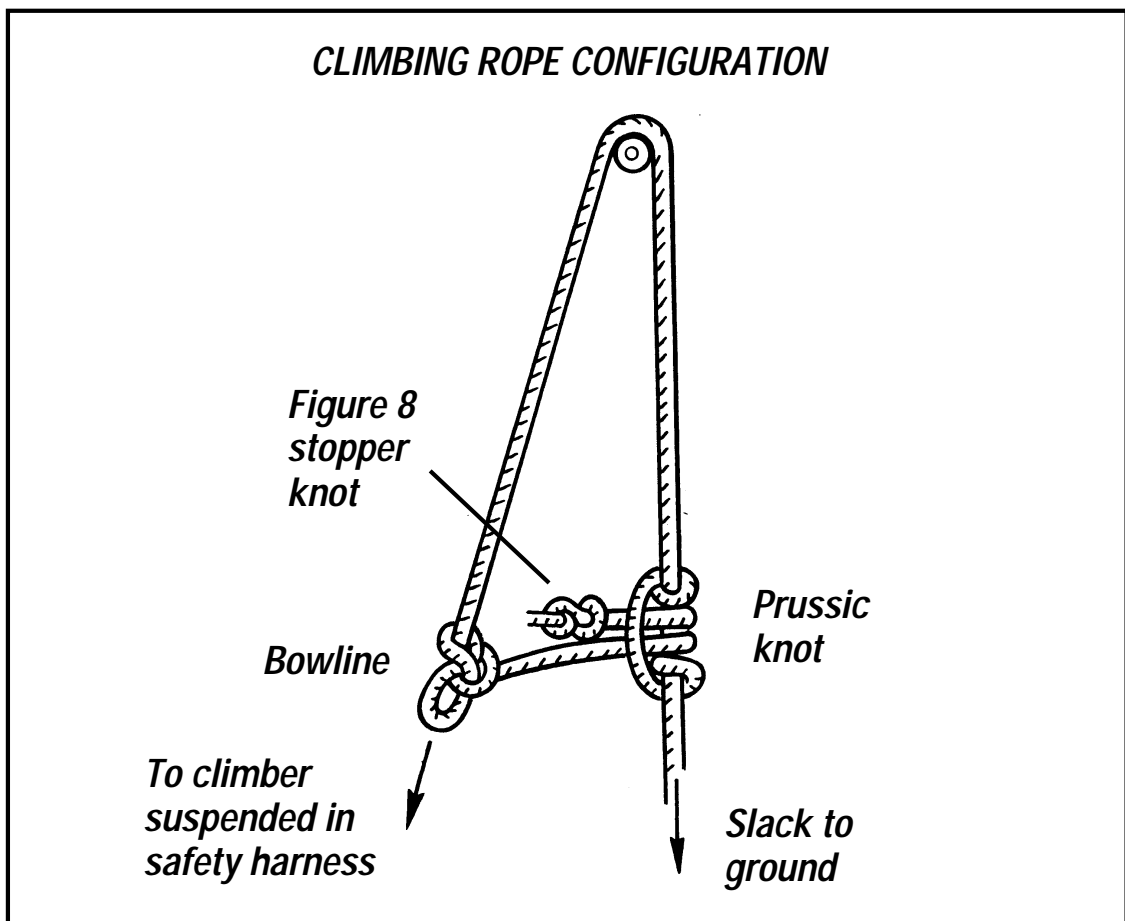
27.3 Never use a climbing rope for any other purpose.

27.4 Coil ropes with the lay of the rope to avoid kinking. Remove any kinks as they occur by working free to the end as the rope is gathered.

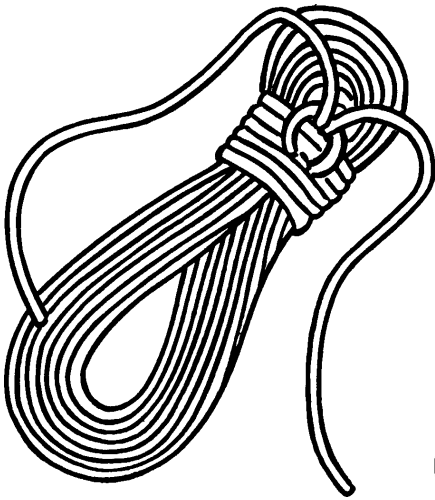
27.5 Provide a suitable bag or box, or hang up climbing ropes to avoid contact with harmful substances or damage while being transported.

27.6 When descending with a figure 8, carabiner hitch or other descender, the rope should not be allowed to slip too rapidly as friction may burn and weaken the rope.

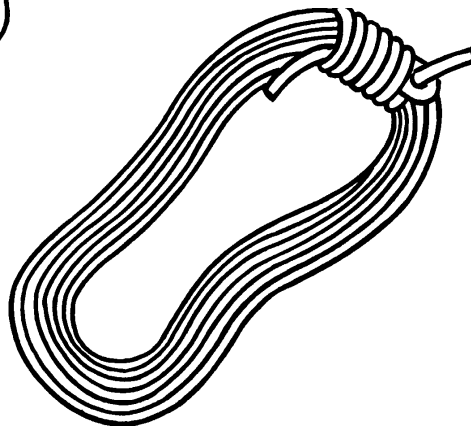
27.7 When ropes are run through crutches, over



ROPE STORAGE



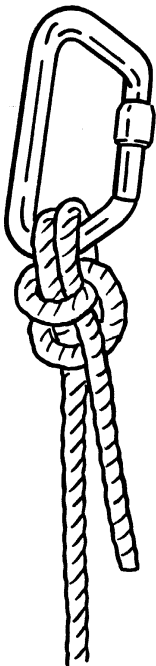
Rope hank



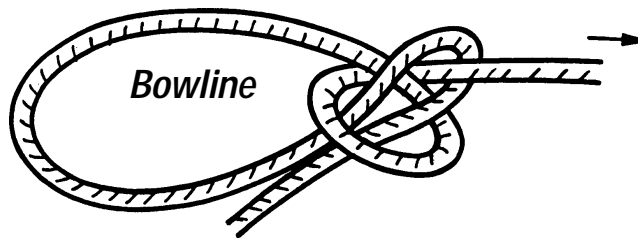
Rope coil

Coil ropes to avoid kinking.

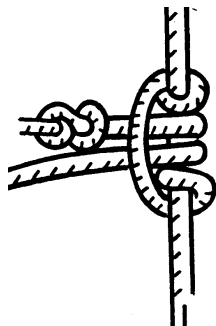
ESSENTIAL KNOTS



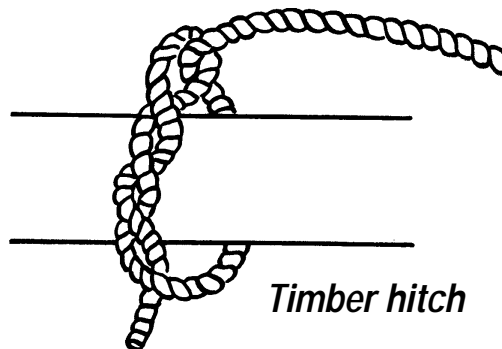
Fisherman's hitch



Bowline



Prussic knot



Timber hitch

branches or against bark, they should be moved slowly to avoid friction. Avoid tight crutches.

- 27.8** The working breaking strength of a rope is determined by the knots used to fasten it. Knots must be simple, easily tied and readily untied. The same knots must be used by climber and ground personnel to avoid confusion. Rope ends of knots should be at least 50mm long.
- 27.9** Check ropes daily for damage before use. Pay particular attention to cuts or sheath damage as these can be an indicator of damage to the core. Run ropes through your hands to detect damage.
- 27.10** Replace a climbing rope when:
- (a) It has been damaged mechanically;
 - (b) It has held a severe fall;
 - (c) It has come into contact with petrol, diesel, grease or acids;
 - (d) It is older than five years.
- 27.11** Store ropes coiled and hung in a cool and dry place away from sunlight. Provide protection to avoid contact with harmful substances.
- 27.12** Wet ropes should be hung in a shady place to dry.
- 27.13** Dirty ropes should be washed and cleaned in lukewarm water using a gentle detergent, rinsed well and hung to dry in a shady place.

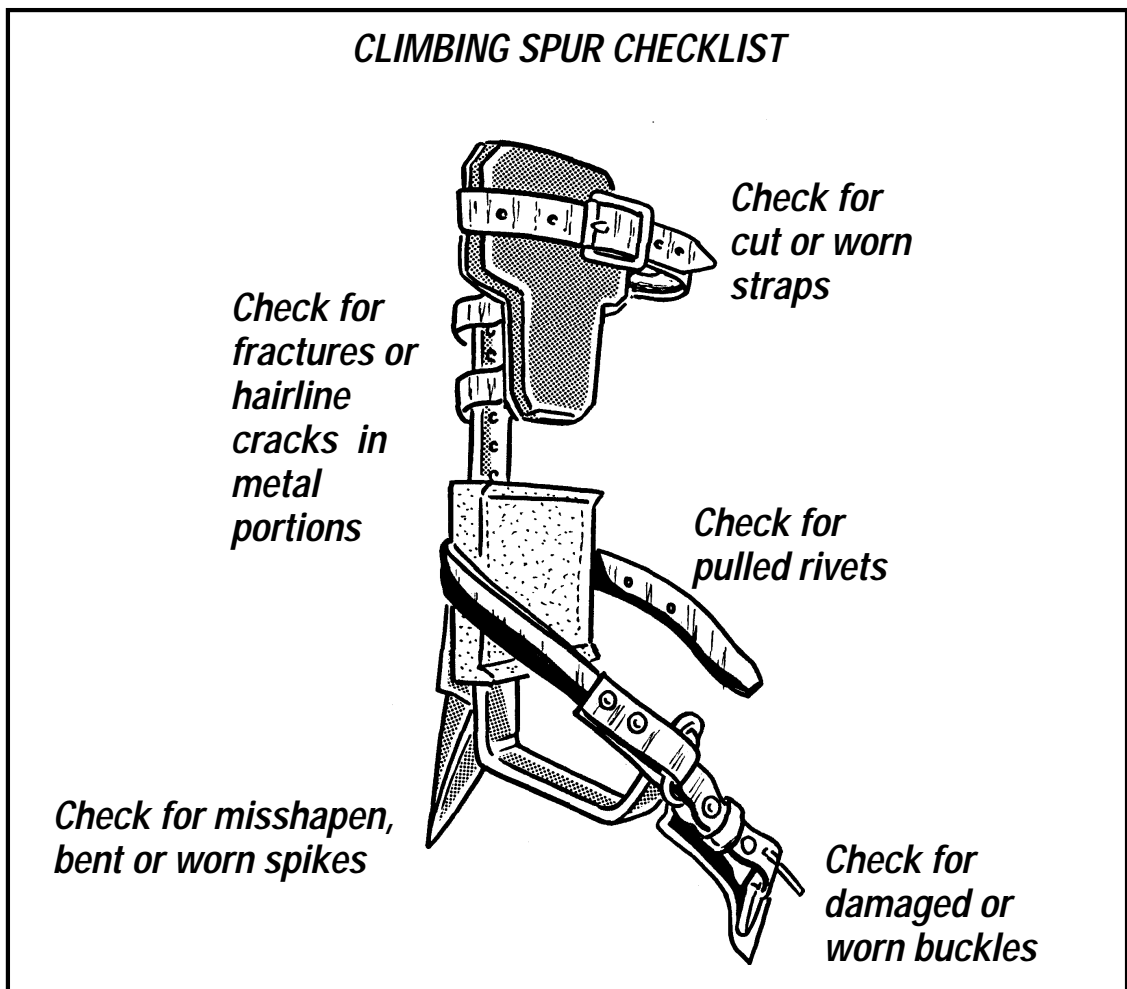
28. SAFETY HARNESESSES

- 28.1** All safety harnesses shall comply with or be equivalent to NZS 5811: 1981 or AS1891: 1983 *Industrial safety belts and harnesses*.
- 28.2** Before use, harnesses must be checked to ensure that webbing, leather stitching and rivets are in good condition and are secured, and rings and clips are serviceable and free from defects or damage.
- 28.3** The most suitable harness for tree work combines a saddle with a waist or body belt which minimises fatigue and allows free movement.
- 28.4** Leather harnesses should be cleaned with saddle soap and dressed with dubbin after use. Webbing belts can be cleaned by washing in mild detergent, rinsing and hanging to dry.
- 28.5** Safety harnesses should be kept in compartments or suitable containers while being transported to avoid harmful substances or damage.
- 28.6** Safety harnesses should be stored by hanging on hooks or pegs in a dry place away from excessive heat or sunlight.

29. TREE CLIMBING SPURS

- 29.1** All tree climbing spurs shall be manufactured from best-quality materials by competent tradespeople.

- 29.2** Spurs shall be inspected before use for fractures or hairline cracks in the metal portions; misshapen, bent or loose spikes; cut or worn straps; pulled rivets and damaged or worn buckles, rings and pins.
- 29.3** Spikes should be kept properly sharpened, avoiding needle points or reducing the cross-sectional area by over-filing.
- 29.4** Spurs should be firmly strapped to the climber's feet and legs, with the top of the shank fitting firmly and comfortably to the calf just below the knee.
- 29.5** The climber must ensure that when climbing



the tree, the spikes are set at sufficient angle to the stem to prevent slipping or gouging of the bark.

- 29.6** When climbing, the safety strap is never unclipped except to bypass branches too heavy to break off. A second safety strap or line should be fastened free of the obstructive branch before the first strap is unclipped.
- 29.7** If spurs are removed while working up a tree, they should be lowered to the ground to avoid damage to the spikes or danger to ground personnel.
- 29.8** Climbing spurs should be worn only when needed and must not be worn when working on the ground, walking or riding in vehicle.
- 29.9** A suitable box or container should be provided for the transportation and storage of tree climbing spurs. The spikes should be covered to prevent damage to the points and avoid injury in handling or damage to other equipment. Straps and pads require regular maintenance to keep them soft and pliable.

30. 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.

STRUCTURE OF LADDERS

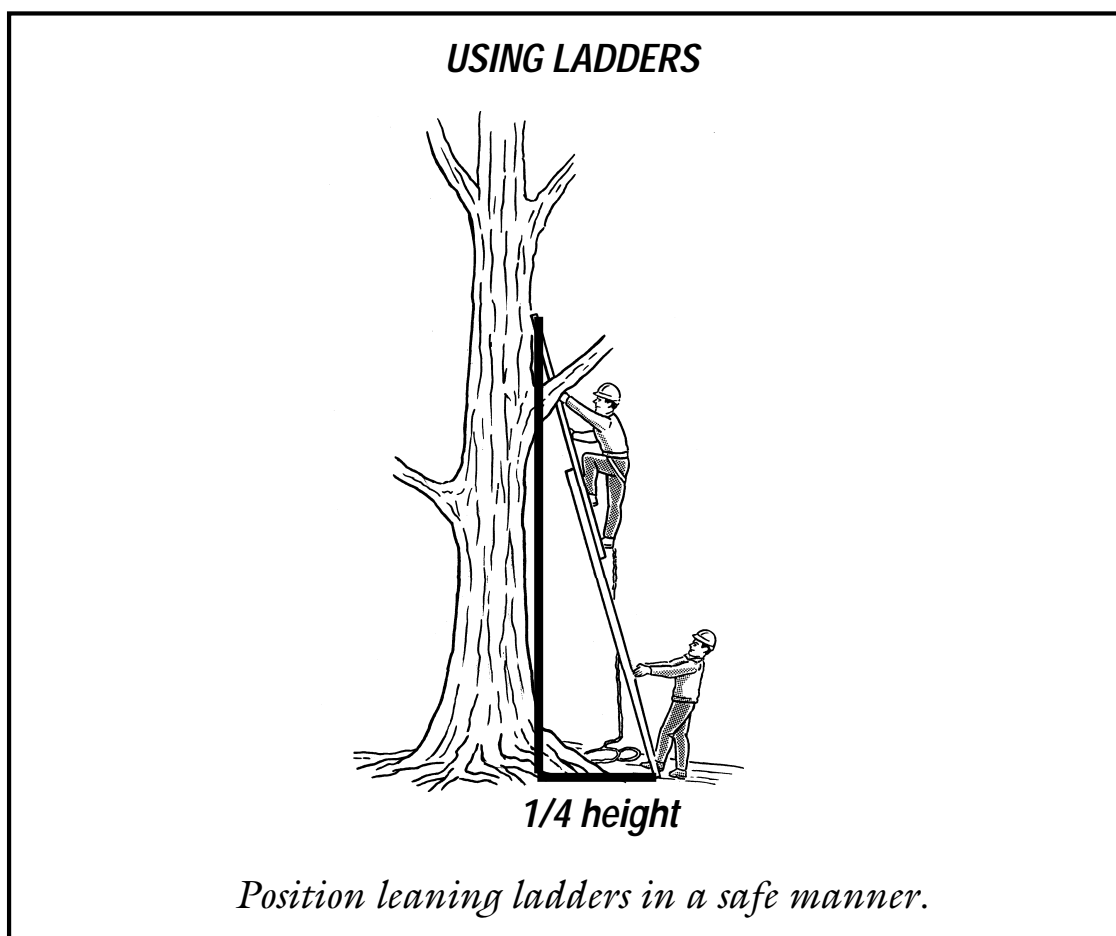
- 30.1** All ladders must comply with either NZS 3609:1978 *Specification for timber ladders* or NZS 5233:1986 *Specification for portable ladders other than timber*. Job-made ladders must be at least equivalent to the NZ Standard.
- 30.2** Ladders made of metal or other electrically conductive material shall not be used in the vicinity of power lines.

CARE AND MAINTENANCE

- 30.3** Never paint a ladder as painting can obscure defects.
- 30.4** Inspect wooden ladders regularly for loose or cracked rungs or stiles. Make sure nuts and bolts are tight, locks work correctly, extension locks work as intended and rope and other accessories are properly fixed and in good condition. Lubricate any moving parts.
- 30.5** Metal ladders should be checked regularly for metal failure or corrosion. Particular attention should be given to the junction of the stiles and the rungs, interlocking joints and chains and pins. Ensure that stile plugs, if fitted, are tight.
- 30.6** Store ladders where they are protected from the weather, in a dry location and away from excessive heat.
- 30.7** Wooden ladders stored horizontally shall be supported at both ends and in the middle to prevent sag.

30.8 Never store materials on ladders.*USE OF LADDERS*

- 30.9** Whenever practicable, erect the ladder against the trunk rather than the branches of a tree.
- 30.10** Ensure that both stiles are firm and as level as possible, both on the ground and at the top. If work is going to be carried out from the ladder or repeated climbing or long use is envisaged, it must be secured at the top.
- 30.11** When using ladders on concrete or metal surfaces, make sure that non-slip feet or a stabilising base is fitted. If the base cannot be adequately secured, a person must hold the ladder



to prevent movement of the bottom or the ladder secured by a rope at the base.

30.12 Leaning ladders must be positioned in a safe manner. As a general guide, the distance from the ladder base to vertical support should be one quarter of the working length of the ladder.

30.13 The unsupported part of the ladder must not touch any obstructions.

30.14 With extension ladders ensure that:

- (a) Ladders with less than 18 rungs per section have at least two rungs overlap;
- (b) Ladders with 18 rungs or more per section have at least three rungs overlap.

30.15 Always remove an extended ladder from a tree either with a helper or by lowering using a rope tied to the top of the ladder and passed over a branch or through a short strop and pulley.

30.16 Always face the ladder and use both hands to hold on during ascent and descent.

30.17 Do not allow more than one person on a ladder at any one time.

30.18 Do not overreach when working from a ladder. Move the ladder to a new location when you must lean over 300mm to work.

30.19 Do not use ladders as bridges or inclined planes to load or handle logs or other materials.

- 30.20** Do not step from one ladder to another.
- 30.21** Never walk a ladder (stilt fashion) while standing on a ladder.
- 30.22** Never use temporary supports to increase the length of a ladder or fasten ladders together to increase their length unless expressly designed for the purpose.

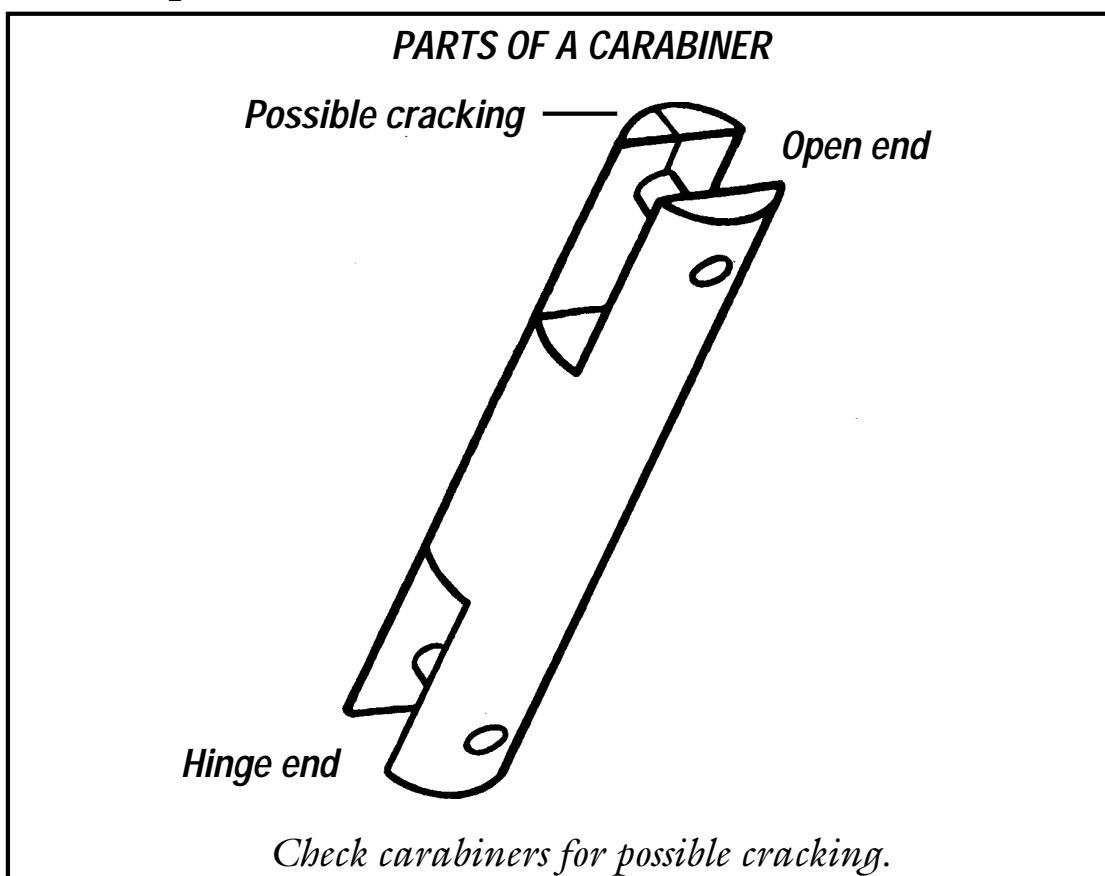
SECTIONAL LADDERS

- 30.23** Sectional ladders should be tested for good fit before a climb is commenced and be numbered to maintain order.
- 30.24** Each section of sectional ladders shall be secured around the tree by chain and a suitable catch provided to ensure tightness at all times.
- 30.25** Sectional ladders shall not exceed 3 metres in length per section.

31. ANCILLARY EQUIPMENT

- 31.1** All carabiners, descenders/ascenders, rings, strops and other ancillary equipment used in climbing operations shall be proof tested to a 2200kg rating and marked with this information and the safe working load.
- 31.2** Always use equipment to the manufacturer's instructions.
- 31.3** Carabiners shall be of spring-loaded screw gate or spring-loaded locking gate construction. All carabiners should be locked when in use.

- 31.4** Avoid sudden jerks or loads on ancillary equipment to prevent shock loading and to prolong its life.
- 31.5** Check ancillary equipment for physical damage such as significant dents or distortion, cracks or forging folds, weak pivots or springs and replace where necessary. Do not modify or repair equipment.
- 31.6** A suitable container shall be provided to protect equipment and prevent contact with cutting tools, chemicals or other hazards while in storage or transit.
- 31.7** Maintain equipment by keeping it clean at all times. Carabiner locking screws and hinges should be oiled occasionally to ensure their free operation.



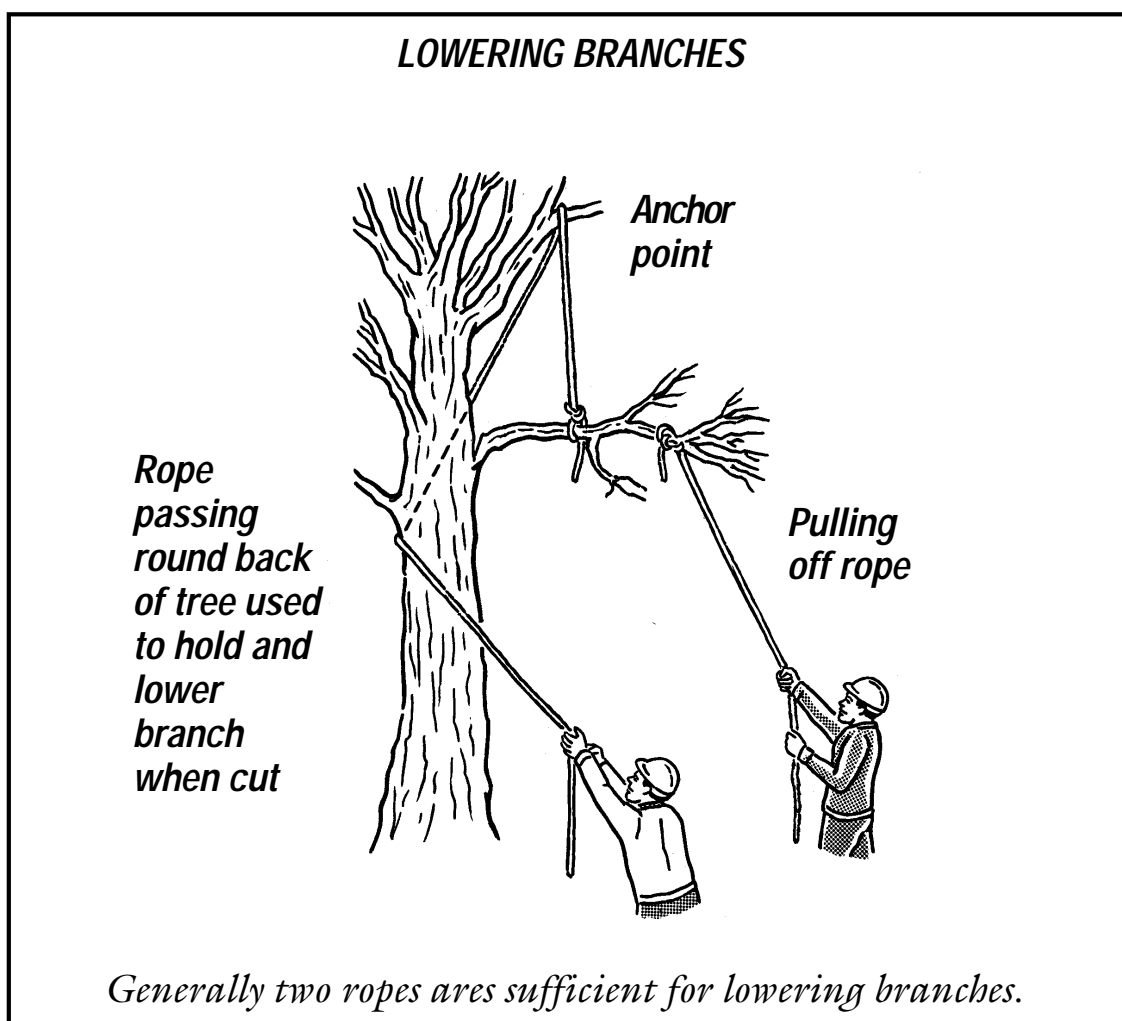
TREE PRUNING

32. GENERAL PROVISIONS

- 32.1 Generally, in a climbing situation, the operator should be positioned above the branch to be removed.
- 32.2 Where there is a likelihood of the branch kicking back or striking the operator, the operator should move to a safe position prior to the severing cut.
- 32.3 Heavy branches should be removed in sections and lowered with ropes. To avoid tearing and damage to the tree or danger to the operator, the final section should be undercut.
- 32.4 Generally, two ropes are sufficient for guiding and lowering large branches. One rope is tied to the branch and passed over an anchor as directly above as possible. The rope is then passed around the trunk and tied off or held by the ground person. Rope may require more than one pass or wrap round the back of the tree, depending on the friction required to control the branch weight. A pulling off rope is attached

further out on the branch.

- 32.5** Three ropes may be necessary for larger branches. Butt and top ropes hold the branch until it is cut and ready to be lowered. The third rope is used as a guide rope to control the branch and bring it into the desired position.
- 32.6** Under no circumstances shall partially cut branches be allowed to remain overnight. If work is not completed at smoko or lunch breaks, the danger area below the branch must be treated as in section 16.



33. JACKSAWS AND BOWSAWS

- 33.1** Always keep blades properly sharpened and tensioned.
- 33.2** The free hand should be held above the level of the branch being cut.
- 33.3** To prevent the saw from falling, it should be provided with a strop or tie rope and secured to tool rings on the worker's harness.
- 33.4** Saws should have a suitable guard with a snap so they can be held by a ring on the worker's belt during work or when changing positions up a tree.

34. POLE PRUNERS

- 34.1** When pole pruning, the operator should wear a safety helmet with a suitable chin strap or combination ear muffs which hold the helmet firmly in position.
- 34.2** Workers must be at least 1.5 pole lengths apart while working.
- 34.3** Never stand directly under limbs being pruned and stand upwind to avoid windblown sawdust.
- 34.4** If raising or lowering pole pruners for tree work, attach the rope to the end of the tool so it is less likely to be caught in branches.
- 34.5** When raising or lowering pole pruners with cutting jaws, the rope must be attached below the cutting jaws and not tied to or run through the jaws to eliminate cutting off the rope.

34.6 Always carry pole pruners with the saw or jaws pointing forward and walk at least 1.5 times the pole length away from other workers.

35. MECHANICAL PRUNING

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

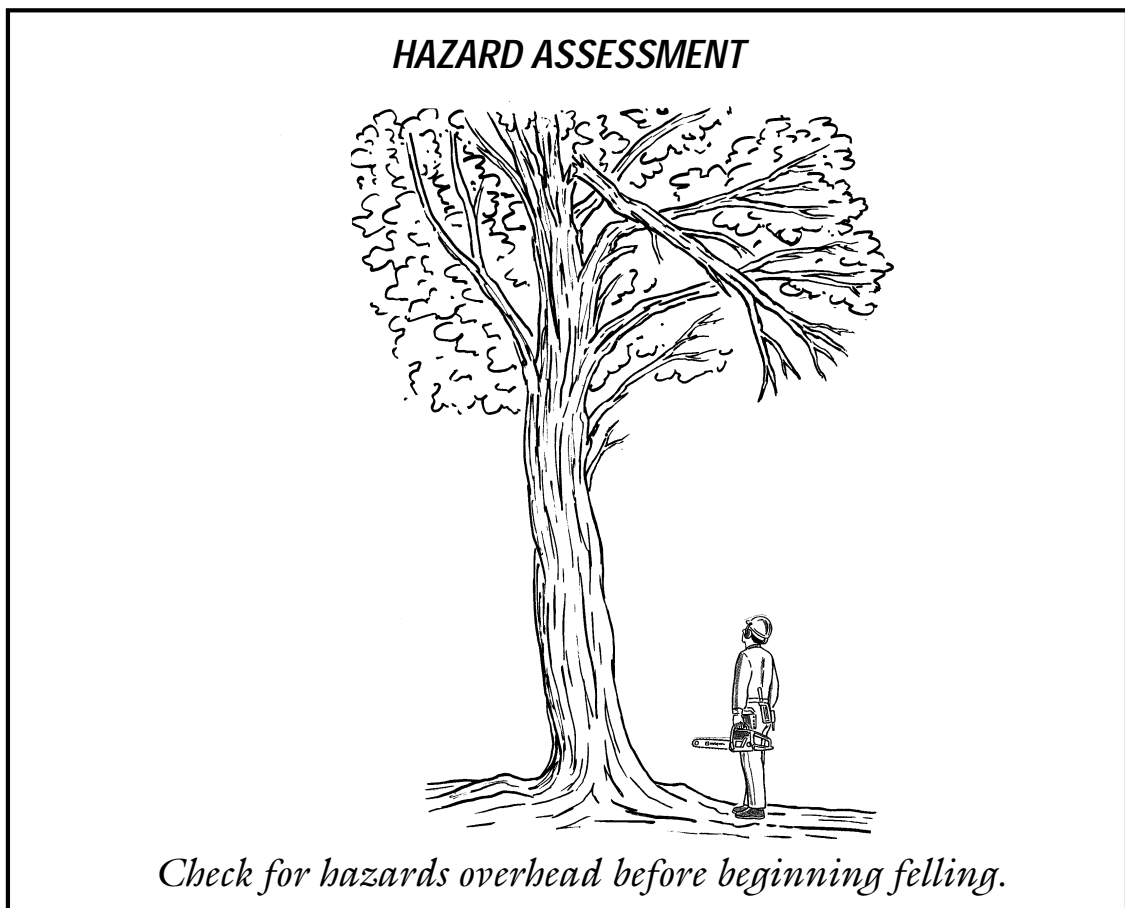
TREE FELLING

36. PREPARATION FOR TREE FELLING

- 36.1** All felling operations shall be under the direct control of a competent person fully experienced in the kind of work to be undertaken. The person in charge of felling operations shall exercise control and supervision of the work to ensure adequate safety precautions are being observed.
- 36.2** Special care should be taken when felling dead trees, as parts may fall into the work area as the tree falls.
- 36.3** Before felling commences, a careful check shall be made to ensure that there is no danger that dead material, branches or dead tops maybe dislodged and fall into the work area. If required, an observer should be present to warn the feller of any danger.
- 36.4** Provide an adequate work space and a clear escape route. The escape route shall be diagonally to the rear at approximately 135° from the

direction of fall. If this is not possible, it shall be as close as practicable to the diagonal and to the side and rear.

- 36.5** The escape route shall be kept clear of tools and other material that would impede a quick exit.
- 36.6** Particular care should be taken when felling uphill as this creates extra hazards with trees likely to roll or slide back towards the operator.
- 36.7** People not assisting with the felling operation, unless supervising, under training, training others or authorised by the person in charge, shall remain at a safe distance of at least twice the length of the tallest tree being felled. On steep slopes this distance shall be, if necessary,

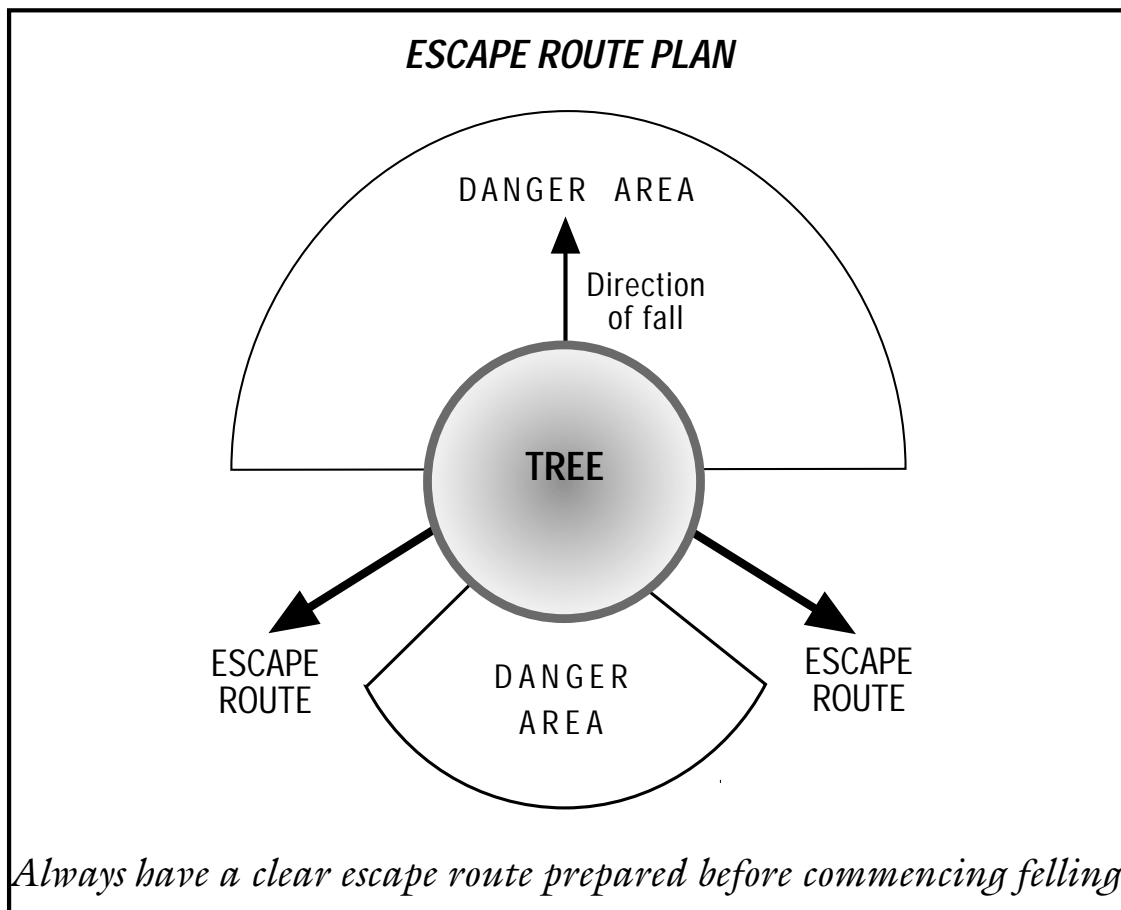


increased to suit the circumstances. Fellers and feller observers shall ensure that this safety area is maintained.

36.8 Every feller shall have with them either:

- (a) At least two wedges suitable for the size of trees being felled and a suitable tool for driving those wedges; or
- (b) For smaller trees, a felling lever or some other felling tool suitable for the size of the trees being felled.

36.9 The employer shall ensure that the required wedges and driving tools are readily available to



the feller.

37. FELLING OPERATIONS

37.1 Wherever possible, trees shall be felled towards a clear open space.

37.2 All scarfing and back-cutting shall comply with the accepted felling methods in sections 38.1 - 38.6.

37.3 When felling of a tree is started, the scarf and back-cut shall be completed before starting on the next tree.

37.4 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.

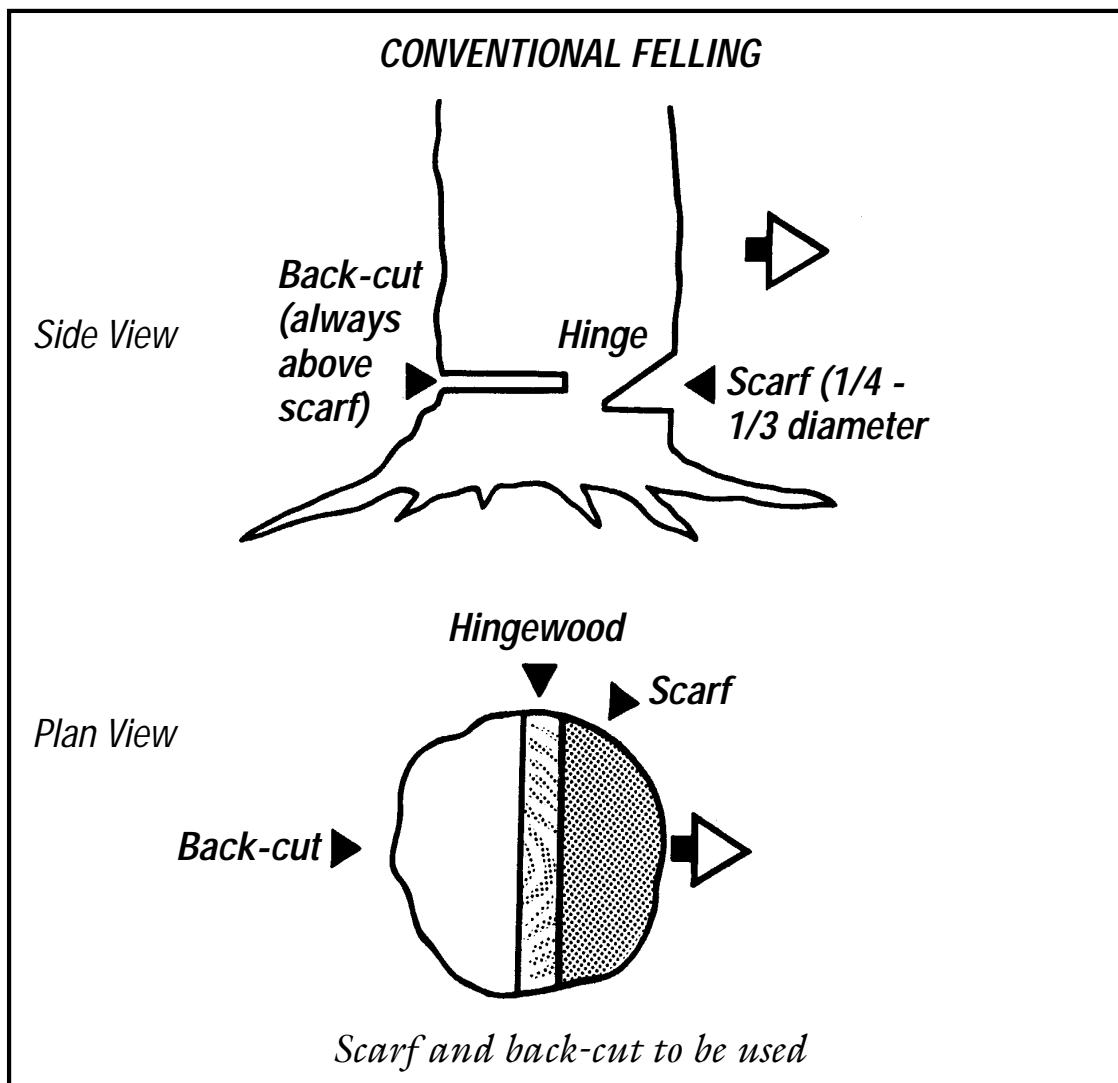
37.5 No person shall move forward within two tree lengths of the intended direction of fall of any hung-up or cut-up tree, or the direction of fall of any hung up tree.

37.6 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.

37.7 Trees that are within two tree lengths of road and rail traffic shall not be felled unless suitable precautions have been taken to warn oncoming traffic. Such precautions shall include the posting of warning signs and, where necessary, the placement of staff with flags at appropriate safe positions.

38. ACCEPTED FELLING METHODS

38.1 The scarf and back-cut shown in the illustration shall be used on all trees over 200mm in diameter.

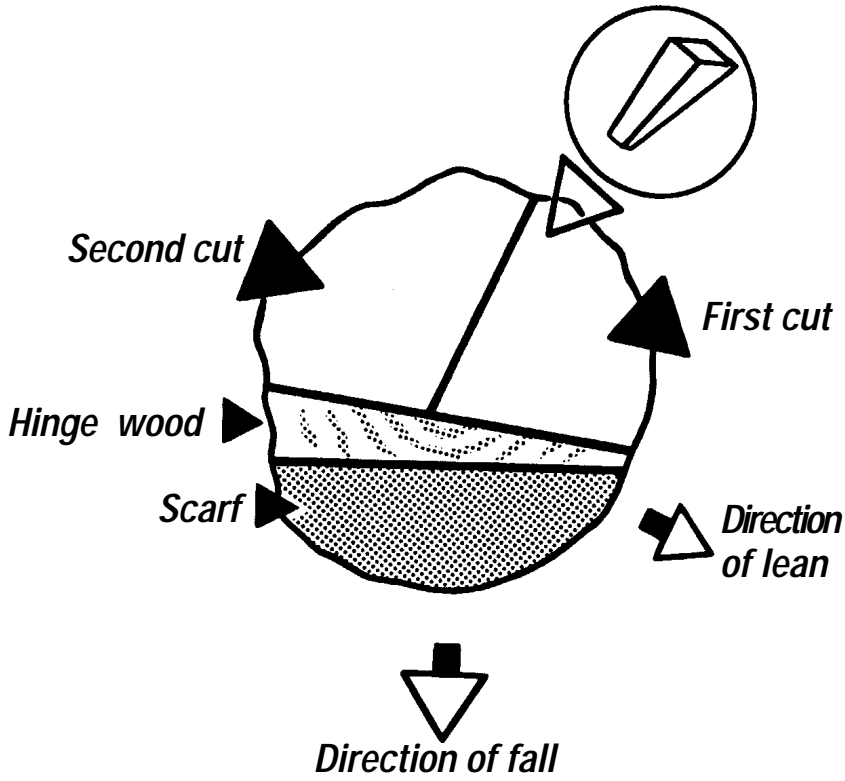


- 38.2** The top cut of the scarf should always be put in first, followed by the bottom cut to avoid risk of overcutting. Ensure the scarf is clean and no overcutting present.
- 38.3** There may be occasions when, because of lean etc., the opening of the scarf may have to be reduced or enlarged to suit unusual circumstances. However, careful consideration should be given before using other than the accepted practices.
- 38.4** Where there is doubt as to the lean of a tree, a wedge shall be inserted in the back-cut and driven home as soon as practicable.
- 38.5** The direction of fall of a tree can be altered from the natural lean by insertion and driving of wedges in the back-cut and variation of hingewood depth. The illustration shows the method.
- 38.6** Forward leaning trees, those with known tendencies to split, or those affected by wind require special techniques. The amount of forward lean dictates the distance between back-cuts. The greater the lean the greater the distance. An example is shown in the illustration.

39. SECTION FELLING

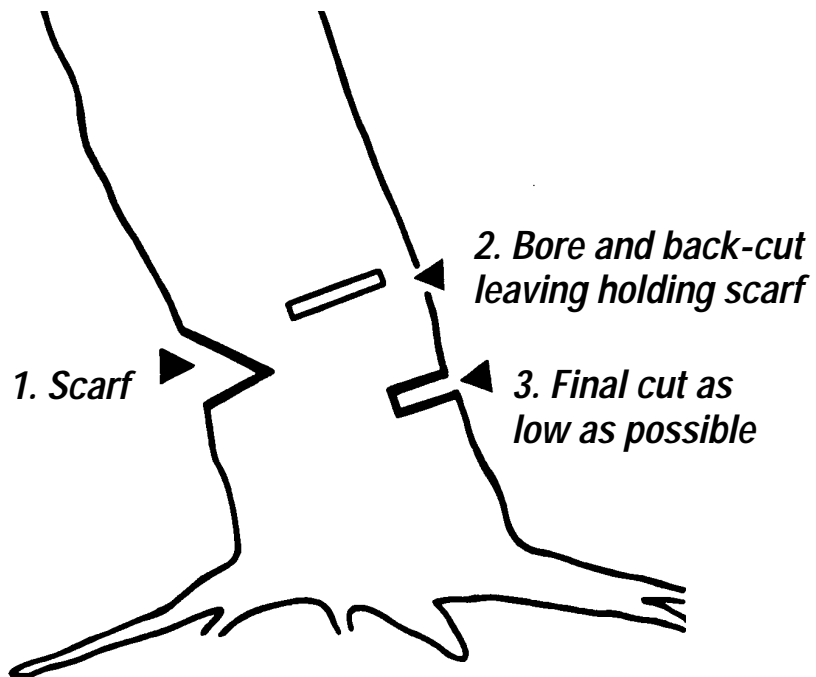
This operation involves dismantling trees by cutting into manageable sections where the situation does not allow felling by conventional techniques.

DIRECTIONAL FELLING



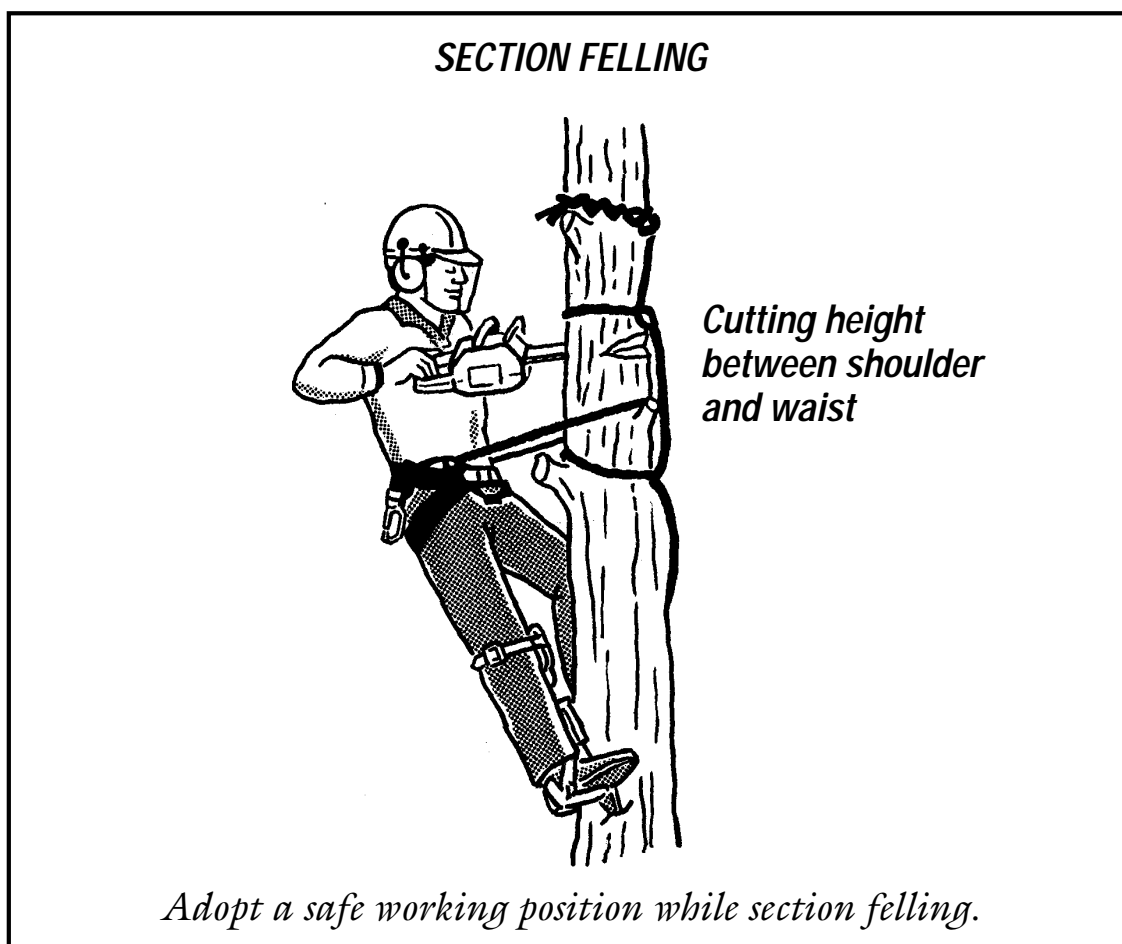
Felling a large tree in variation of natural lean.

BORE CUT FOR LEANING TREES



Felling forward-leaning tree.

- 39.1** No person shall carry out section felling unless they have fully demonstrated their competence and knowledge of section felling techniques.
- 39.2** Clear communications between climber and ground staff must be maintained to ensure an understanding of what is happening or what is required at any given time.
- 39.3** The climber must ensure a safe working position is adopted prior to any cuts being made and shall comply with sections 25-29 of this code.
- 39.4** In roping down and slinging, the weight of sections to be removed should be carefully assessed to ensure the selected ropes have the



capacity to adequately cope with the initial fall and consequent retention of the section.

- 39.5** When lowering sections by rope, it is important to control descent by using appropriate anchor points to act as friction devices if required. Provision must be made to avoid damage to the bark and cambium where other trees are used for this purpose.
- 39.6** Where sections are to be removed by hand, they should be under the control of the operator before their descent to the ground.

40. BACK-PULLING TREES

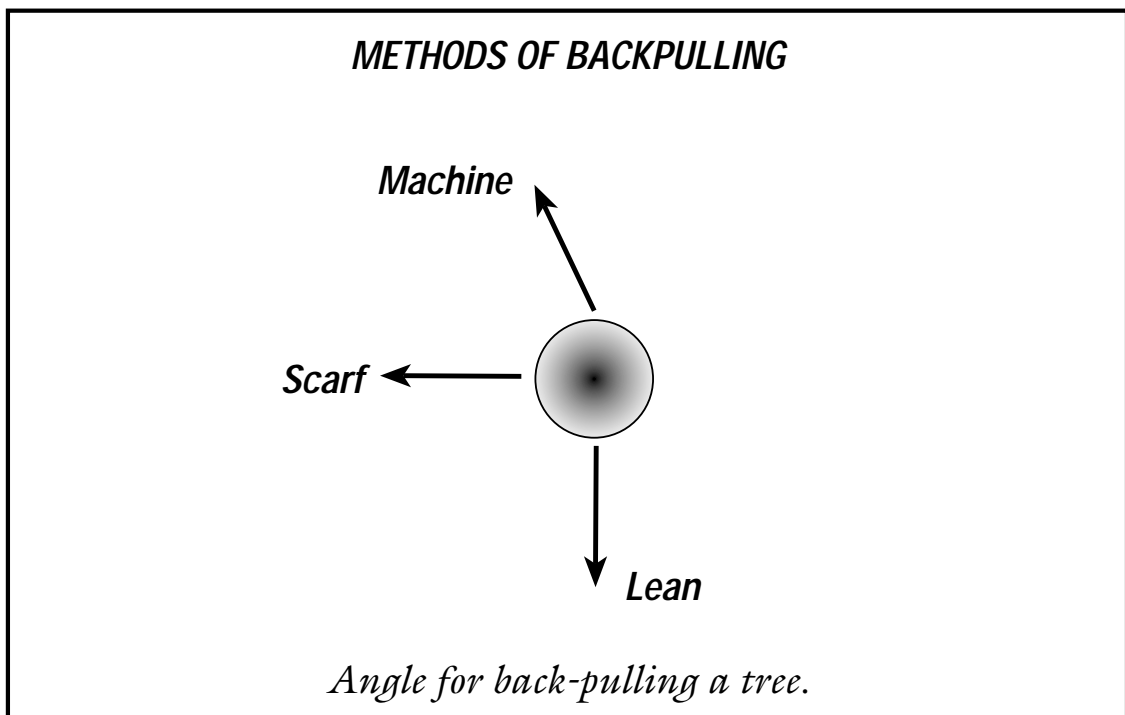
The provisions for tree felling outlined in sections 36, 37 and 38 shall be followed where applicable. In addition, the following special provisions for back-pulling shall apply:

- 40.1** All persons carrying out a back-pulling operation shall be competent or training under adequate supervision. Machinery and equipment shall be adequate to handle all aspects of the operation.
- 40.2** The feller and machine or equipment operator shall have an effective means of communication. This may require the use of an intermediary in some circumstances.
- 40.3** 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.

40.4 If two tree lengths clearance is possible, the tree may be pulled towards the machine or point of equipment anchor as follows:

- (a) Have the equipment or drive the machine to two tree lengths distance in the opposite direction of the lean, and tension the rope just enough to hold the tree in position.
- (b) Scarf the tree in the normal manner but opposite to the lean. Back-cut, ensuring adequate holding wood is retained. Use wedges if necessary.
- (c) Retire to a safe position before signalling for the pull to commence.
- (d) Apply tension on the pulling rope and then commence the pull, slowly at first



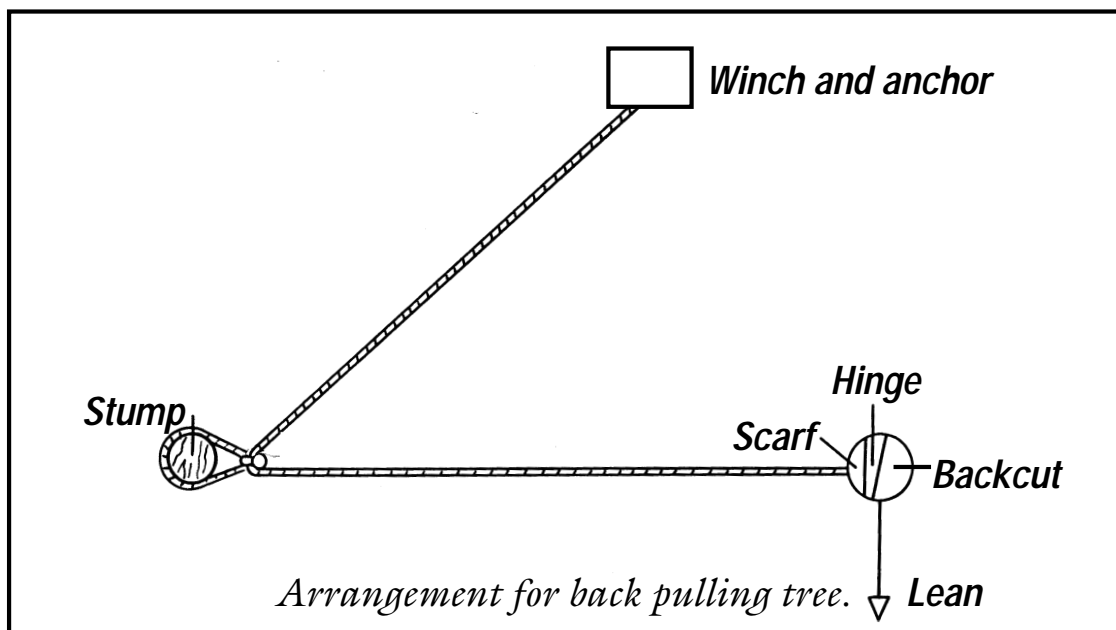
and then increase speed until felling cuts take control.

- (e) If pulling is stopped prematurely, the tree may break sideways.

40.5 If it is not possible to get two tree lengths clearance, two safe methods of back-pulling are outlined below:

40.5.1 If adequate stumps are located in a suitable position, they can be used as an anchor point to pull the tree in the required direction. Alternatively, a ground anchor may be used. Proceed as follows:

- (a) Place the machine at a distance from the tree opposite to the proposed direction of fall.
- (b) Secure block on anchor.
- (c) Attach rope through block and tension



just enough to hold the tree in the position of fall.

- (d) Scarf and back-cut, holding more wood opposite the lean.
- (e) Commence pull and continue while the back-cut advances and until the tree starts to fall and the felling cuts take control.

The layout is shown in the illustration.

This method positions the machine, equipment and operator in a safe position and allows a direct pull and good auditory and visual contact between feller and operator.

40.5.2 If suitable stumps are not present, proceed as follows:

- (a) Drive the machine out or have the equipment anchor to an angle approximately 80° from the intended direction of fall.
- (b) Tension the rope just enough to hold the tree in position of fall.
- (c) Scarf and back-cut, holding more wood on the side opposite the lean.
- (d) The tree will free-fall, swinging on the rope, thus eliminating the need to pull the tree towards the machine or pulling equipment.

41. WINCHES, WIRE ROPES AND ACCESSORIES

These guidelines are for the type of intermittent use

common in arboriculture. Major operations should be carried out in accordance with the relevant sections of *Safety Code for Forest Operations*, as detailed on page 18 of this code.

GENERAL

- 41.1** Rope or tackle which, by virtue of its function and its condition (e.g. corroded, pitted, worn, fatigued), is likely to fail shall be properly repaired or replaced.
- 41.2** No person shall remain in the bight of any working operating rope.
- 41.3** The use of knots in any wire rope is prohibited.
- 41.4** Line pull shall not exceed the SWL (Safe Working Load) of the rope or its accessories.
- 41.5** For all aboricultural operations, the SWL shall be one-sixth (1/6) of the breaking strength.

WIRE ROPE

- 41.6** No wire rope shall be used in an arboriculture operation unless it has been certified as to its breaking strength by the manufacturer or vendor.
- 41.7** All wire ropes shall comply with NZS/BS 302 Part 5 *Specification for ropes for hauling purposes*.
- 41.8** Wire rope which has been burnt, shows signs of excessive wear, corrosion, kinking or stranded wires shall be replaced.

- 41.9** Wire rope shall not be used when, in any length of eight diameters, the total number of visible wires exceed 10% of the total number of wires.
- 41.10** 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.
- 41.11** Eyes in all ropes and strops shall be formed either by splicing with ends tucked in not less than three times on one side and two the other, or held by fitting clamp devices giving at least equal strength. Talurit splices eliminate the risk of hand injuries from protruding wires.
- 41.12** Extend wire rope life by the following maintenance:
- (a) keep rope lubricated as conditions of use require;
 - (b) use correct rope;
 - (c) use correct sheave size;
 - (d) decrease abrasion by avoiding running ropes over rocks or other obstructions;
 - (e) reduce shock loading by smooth operation;
 - (f) coil or spool rope correctly when not in use.

ACCESSORIES

- 41.13** Open-sided “C” hooks shall not be used in an arboriculture operation.

- 41.14** Any accessories or tackle used shall comply with the following requirements:
- (a) be tested and marked with their SWL;
 - (b) have a SWL of not less than 1.5 times that of the rope being used.
- 41.15** “Dee” shackles shall have high-tensile steel pins with either screw pins or pins secured by adequately sized wire or split pin.
- 41.16** Check blocks to ensure smooth operation. Check for sheave wear or excessive clearance between sheave and shell which may damage wire ropes or cause rope to jump off and become jammed between sheave and shell.

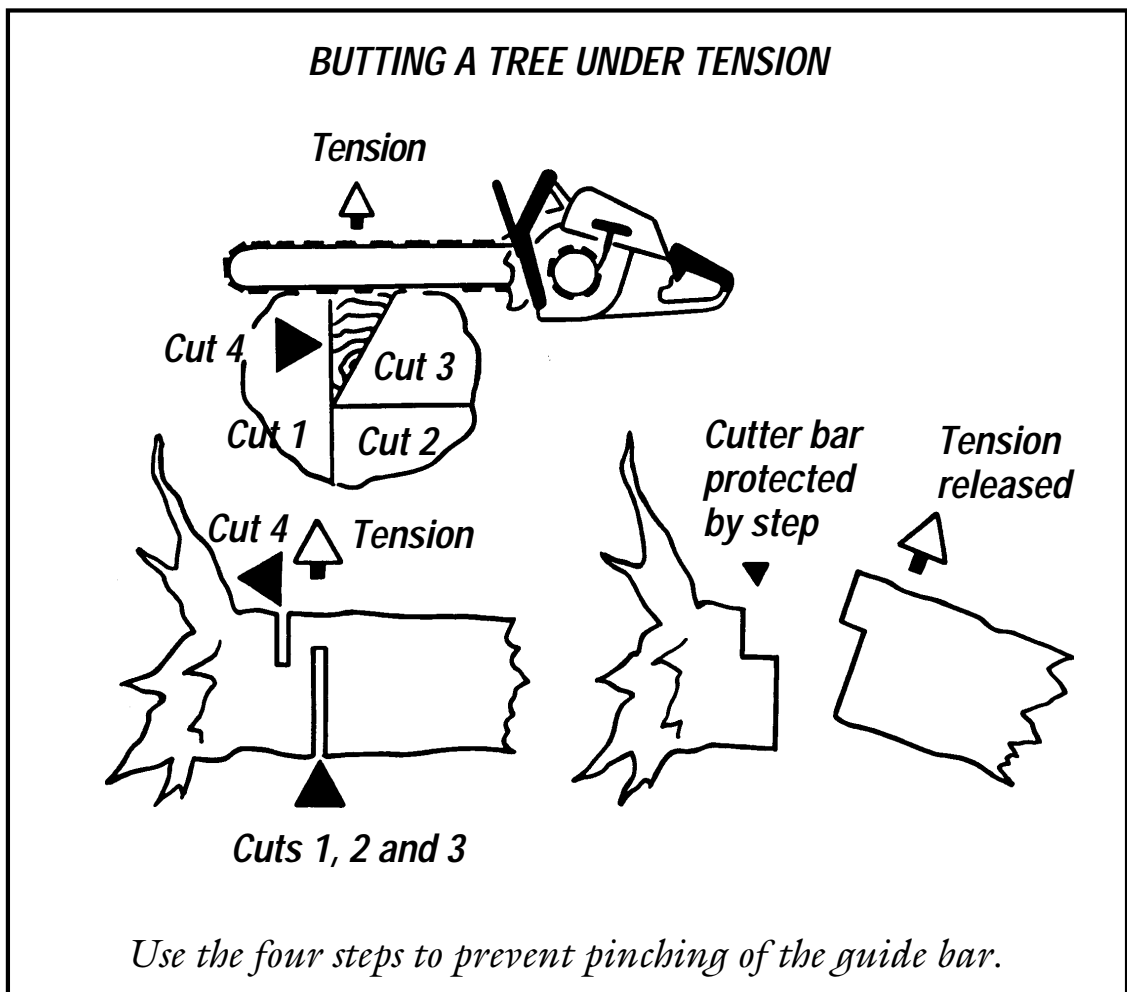
WINCHING

- 41.17** Hand winch, machine winch and hauling machine operators shall be competent and conversant with all facets of winching operations.
- 41.18** Where two persons have applied the load to a hand winch handle or lever, two persons shall be used to release the load.
- 41.19** When back pulling trees, machinery, equipment and personnel must be at least two tree lengths away, except that they may be positioned as detailed in section 40 when it is not practicable to have this safety clearance.
- 41.20** The tree feller shall, before felling commences, advise winch and machinery operators as to

what is required in terms of line tension and winching and pulling speeds. Visual signals and vocal commands shall be determined before felling starts.

41.21 Only sound stumps of sufficient stability or properly buried deadmen or ground anchors shall be used as anchors for winching operations.

41.22 Strops used on stumps to secure blocks shall be notched in to provide security. They shall be at least 1.5 times the SWL of the pulling rope.



42. WINDTHROW

Windthrow trees are those which have been blown down or significantly affected by wind.

- 42.1** 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 mat or the log.
- 42.2** The diagram shows how to butt off a tree under tension. It is important that cutter bars are of adequate length to complete the butting operation from the safe side of the tree. In general, the greater the tension, the larger the step should be.

MACHINE OPERATIONS

43 POWER-OPERATED ELEVATING WORK PLATFORMS

GENERAL PROVISIONS

- 43.1** All power-operated work platforms used shall have an engineer's certificate stating that the work platform is capable of safely elevating, sustaining, lowering and, where applicable, slewing or transporting its designated SWL and that it meets the requirements of the Code of Practice Safety in Construction *No 8 Power-Operated Elevating Work Platforms*.
- 43.2** Employers shall ensure that the work platform is operated by a competent operator and used in accordance with the manufacturer's operating instructions and the code of practice.
- 43.3** Operators shall not exceed the SWL of the platform or approach within 4 metres of overhead power lines until advised by the electrical line's owner.

- 43.4** Workers shall not overreach when working from a platform and shall have an anchorage to which a safety harness or rope can be attached.
- 43.5** Workers should be attached at all times to an anchorage point. This point should preferably be independent of the working platform.
- 43.6** Harnesses shall be used and have a maximum fall distance of 1.5 metres allowed to prevent fall injury.
- 43.7** Do not use the platform over workers or allow workers access under the platform.
- 43.8** 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 guard rails, 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, using the methods outlined in section 24.10.

44 CHIPPERS

PERSONNEL SAFETY

- 44.1** All persons operating wood chippers shall comply with the provisions as to protective clothing and equipment outlined in Section 5 in respect to "General", "Clothing", "Footwear", "Helmets", "Hearing" and "Eye Protection."
- 44.2** All persons operating chippers shall comply

with the provisions of section 4 relating to machinery. Operators shall not leave a running machine unattended.

- 44.3** Persons not engaged in the operation, especially children, shall not be allowed in the vicinity of an operating chipper. The guidelines on public safety detailed in section 16 should be followed where practicable.

GUARDING

- 44.4** In-feed openings shall be guarded to comply with the OSH booklet *The Ergonomics of Machine Guarding* to ensure that operators cannot reach into the danger area containing the chipper's cutting mechanism or in-feed rollers.
- 44.5** Where limb insert chutes are provided on smaller chippers, the chute guarding shall comply with the ergonomic publication above, or a hinged spring-loaded plate, which will close automatically after the material has passed through, shall be fitted.
- 44.6** Discharge chutes shall be guarded to ergonomic principles so that the operator cannot reach the danger area while clearing blockages of out-feed materials. If necessary, ropes or a similar simple barrier shall be used to prevent people moving into the discharge area.
- 44.7** Appropriate warning labels shall be suitably

placed to warn operators of any potentially dangerous operating area.

- 44.8** Before starting the machine, operators shall make certain that the cutting chamber and in-feeds are empty or clear of any material and that all guards are in place and operable.
- 44.9** When feeding the chipper, operators shall keep the face and body away from the in-feed opening and not allow hands or arms inside the feeding chamber. Stand to the side of the cutters to avoid particles thrown back.
- 44.10** 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.
- 44.11** Operators shall stand clear of the discharge opening but not allow processed material to build up in the discharge area. On some machines, this can prevent discharge and result in kickback of material through the in-feed opening.
- 44.12** If the machine becomes clogged at either in-feed or outfeed, or the cutting mechanism strikes a foreign object, the machine shall be stopped and secured against inadvertent starting. Clear the blockage and check if any damage has occurred before the operation is restarted

People shall not exceed the exposure time stated in the above table without wearing personal hearing protection. The grading of personal hearing protection required is as follows:

Hearing protection grade	Equivalent continuous noise level (8-hour)	Type of approved hearing protectors
1	86-91 dB(A)	Earplugs or earmuffs (grade 2)
2	92-97 dB(A)	
3	98-103 dB(A)	Grade 3 earmuffs
4	104-109 dB(A)	Grade 4 earmuffs
5	110-115 dB(A) 115+ dB(A)	Use of earmuffs (grade 5) and ensure duration of exposure is within limits

If in doubt, contact your OSH inspector, who can measure and advise on noise levels, or your nearest area health board occupational health nurse, who can offer advice on the latest approved types of protection and fitting of earmuffs and plugs.

Note: All chainsaw operators shall wear grade 4 (or better) earmuffs while operating a chainsaw. In the case of noise levels above 115 dB(A), a special assessment may be necessary. Seek professional advice.