

ARBOREAL SERVICES

OPERATIONS MANUAL

And

HEALTH & SAFETY

CODES OF PRACTICE

For

ARBORICULTURAL WORKS

2010

Arboreal Services complies fully with the Health and Safety at Work Act 1974 and recognises a duty of care to ensure the safety of employees and the public. It is equally important for employees to recognise that they too have a duty to ensure their own safety and that of others. It is vital that you should advise, discuss and report any potential risks to your work colleagues and supervisor in order to develop a safe system of work.

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1 Arboricultural Works

- 1 All staff engaged on arboricultural work should realise and appreciate the hazards connected with their job and follow these guidelines to reduce the risk of injury.
- 1.1 Always maintain a Safe System of Work and do not continue working if a safe work practice cannot be maintained.
- 1.2 This manual is not a substitute for training and the need to maintain a programme of continued professional development.
- 1.3 Reference should also be made to the following National Safety Guidelines:

FASTCO:

301	Petrol Driven Chainsaws
401	Tree Climbing Operations
402	Aerial Rescue
403	Mobile Elevating Work platforms
801	Noise
802	Emergency Planning and First Aid
803/4	Electricity at Work
AS20	Chainsaws
GS48	Training and Standards of Competence for Users of Chainsaws in Agriculture, Arboriculture and Forestry

2 Personnel - Physical Condition

- ❖ You must be in good physical condition and mental health and not under the influence of any substance (such as drugs and alcohol) which might impair vision, senses or dexterity of judgement. Remember the influence of substances may last many hours and in to the next working day.
- ❖ Do not operate equipment and machinery when you are tired. Be alert - if you get tired while operating equipment such as a saw, take a break. Tiredness may result in loss of control.
- ❖ Extreme weather conditions (such as hot or cold, wet or windy) will increase operator fatigue. Do not continue if safe work practice cannot be maintained.

3 Personal Protective Equipment (“PPE”)

Clothing must be sturdy and snug fitting, but allow adequate freedom of movement. Our preferred brand names for all PPE is Stihl and Petzl.

Climbers and ground staff using chainsaws or assisting in chainsaw operations must wear or use:-

- 3.1 Non-snag outer clothing.
- 3.2 Safety helmets in order to reduce the risk of injury from falling branches, or branches that spring when cut. A safety helmet with a chin strap must be worn when climbing, preferably Petzl climbing helmet. Ear defenders and visor must be fitted to the helmet if the operator is using a chain saw. Do not use a 'peakless' safety helmet when working with a chain saw on the ground.
- 3.3 Suitable eye protection.
- 3.4 Ear defenders - preferably EN 352 SNR 28 (108 dBA) or 29 (109 dBA).
- 3.5 Chainsaw boots with good grip.
- 3.6 Trousers with all round leg and groin chainsaw protection, preferably Stihl Hi-flex type.
- 3.7 Gloves with chainsaw protection on the back of the left hand when using a chainsaw on the ground. Chainsaw gloves are not essential for using a chainsaw in trees although a glove will provide protection when using a hand pruning saw such as a Silky Fox.
- 3.8 First aid kit.
- 3.9 Hand Cleansing Material.
- 3.10 Fluorescent jackets must be worn at all times when working on or alongside the highway.

4 Preparation and Work Site

- ✓ You should be properly trained to use a chainsaw, top handled chainsaw, wood chipper and winch and hold certificates of competence issued by the NPTC (or other recognised qualifications) relevant to all tree work operations that you are going to undertake.
- ✓ You should be trained in basic first aid techniques and carry a personal first aid kit at all times when using a chainsaw (reference FASTCO 401).
- ✓ A minimum of two people are required to carry out tree climbing operations. At least one member of the ground staff must be a competent climber trained in Aerial Rescue (reference FASTCO 401).
- ✓ Before commencing work a Risk Assessment of the site must be carried out.
- ✓ Overhead electric lines - climbing should not take place in trees within 15 metres (line suspended from steel towers) or 9 metres (line suspended from wooden poles)

of an overhead powerline without prior permission from the Local Electricity Company (reference FASTCO 803/4).

4.1 Risk assessment

The following sheet should be completed before all working activities begin.

Arboreal Services

RISK ASSESSMENT SHEET

This form should be completed before any works begin!

Customer name:

Site address & job location:

.....

Site telephone no:

Client's Work telephone no:

Client's mobile tel. no.

Location of the nearest public phone box

Does the area have public access? **Yes/No** if yes, are the following needed?

Road signs

Road cones

Barriers

--

Barrier tape

Traffic lights

Location of first aid kit

Van /

Location of emergency climbing equipment

Van / Base of tree

Name of nearest hospital, accident and emergency unit

St Albans /

CHECK SITE FOR HAZARDS!

	CONTROLS
Overhead power cables Yes/No	
Telephone wires Yes/No	
Gas pipes Yes/No	
Water pipes Yes/No	
Underground cables Yes/No	

OTHER OBSERVATIONS:

Assessment carried out by Date

Who was advised? Date

Name & signature Date

5 Safe Use of Chainsaws

- 5.1 Training in the use and maintenance of chainsaws is essential and will only be undertaken by a suitably qualified member of staff.
- 5.2 A chainsaw is a very dangerous tool in the hands of an inexperienced or untrained operator. Do not lend a chainsaw to anyone who is not a trained operative.
- 5.3 Ensure that the chainsaw is suitable for the type of work to be undertaken, and it is important that you read, fully understand and observe the safety instructions of the equipment manual before using the saw.
- 5.4 Before using a chainsaw, each operator must fully understand the following instruction on the use of such equipment. A chainsaw has a:
 - Clearly marked on-off switch
 - Safety (dead hand) throttle
 - Chain brake

- Chain catcher and breakage guard
- Safety chain with kick-back guard links
- Chain cover for transportation

The chainsaw is designed for right-handed operators and must be used right handed.

- 5.5 All chainsaw users must wear full chainsaw protective clothing as listed in section three above.
- 5.6 Safe use of chainsaws
- 5.6.1 Cold saws should be started and warmed up on the ground before being passed to the operator.
- 5.6.2 Do not work in a position where severed pieces could strike you i.e. do not cut with the saw above chest height.
- 5.6.3 Try to obtain the best available cutting position which ideally should be so that the bar and chain are not in line with the body.
- 5.6.4 If work is to be carried out standing on a ladder, the climber must be secured on to the tree by rope/strop and harness. In such cases the ladder should be secured at the top before work commences.
- 5.6.5 Cut resistant strops must be used if there is a high risk of the rope strop being cut, or if being used in conjunction with climbing irons (reference FASTCO 401).
- 5.6.6 The chainsaw should be switched off or the chain brake applied after each cutting operation. Do not allow the saw to idle for long periods. Noise can hinder communication with ground staff.
- 5.6.7 If operating from an aerial lift the operator should be secured to the bucket anchor point.
- 5.6.8 Kickback occurs when the bar nose near the upper quadrant unintentionally contacts wood or another solid object. This may fling the bar up and back in an uncontrolled arc mainly in the plane of the bar.
- 5.6.9 Under some cutting circumstances the bar moves towards the operator, who may suffer severe or fatal injury. Kickback may occur when the nose of the guide bar is pinched unexpectedly, unintentionally contacts solid material in the wood or is incorrectly used to begin a plunge or boring out. It may also occur when snedding.
- 5.6.10 The greater the force of the kickback reaction, the more difficult it is for the operator to control the saw. Many factors influence the occurrence and force of the kickback reaction. These include chain speed at which the bar and chain contact the object, the angle of contact, the condition of the chain and other factors.
- 5.7 Chainsaw operators - additional responsibilities

- 5.7.1 If the chainsaw does not appear to work correctly, the operator should stop using the machine immediately, and report it to his/her supervisor.
- 5.7.2 Only authorised employees may attempt any repair of a chainsaw.
- 5.7.3 Always keep reserve fuel supplies in approved cans (which must be clearly marked “petrol”) and kept out of reach of members of the public and a minimum of 10 metres from the working areas.
- 5.7.4 If it is necessary to climb a tree with a chainsaw, use a lanyard so that it can be passed up to you and attached to a tool point on the safety harness.
- 5.7.5 Do not make any adjustments to the machine unless authorised to do so.
- 5.7.6 Preventative maintenance of oiling and greasing should be undertaken in accordance with the maintenance handbook.
- 5.7.9 When renewing the chain, check the drive sprocket for wear.
- 5.7.10 Always adjust the chain tension when the bar and chain are cool.
- 5.7.11 Always ensure that the bar groove and oil holes are clean.
- 5.7.12 Check rails for cracks and distortion.
- 5.7.13 Do not smoke, use lighters, matches, etc., within a 10 metre radius of the fuel supply points.
- 5.7.14 Use unleaded fuel and biodegradable chain oil.
- 5.7.15 Keep all fuel caps clean and replace them securely. Always wipe off any spillage of fuel on the machine.

5.8 Top Handled Chainsaws

The following guidance refers to the safe working practices when using a top handled chainsaw off the ground, either from a rope and harness, aerial lift, staging or other means.

THIS TYPE OF SAW SHOULD ONLY BE USED BY TRAINED TREE SERVICE OPERATORS WHEN WORKING UP IN TREES

ONE HANDED USE - THE SAW MUST BE USED TWO HANDED WHEREVER POSSIBLE, ONE HANDED USE CAN BE DANGEROUS. YOU CANNOT CONTROL REACTIVE FORCES AND YOU MAY LOOSE CONTROL OF THE SAW, WHICH CAN RESULT IN INCREASED RISK OF INJURY E.G. FROM SKATING OR BOUNCING ALONG THE LIMB OR LOG. ONE HANDED USE MAY ONLY BE APPLIED IN SPECIAL CIRCUMSTANCES.

Amongst these are, when cutting the extremity of limbs it becomes necessary to use one hand to maintain the work position, in such circumstances a top handled chainsaw may be used one handed. For example: an operator, secured to an anchor point above by means of a safety rope and harness, can hold onto an adjacent branch, stem or safety line at shoulder level with the left hand whilst operating the chainsaw with the right arm extended.

UNDER NO CIRCUMSTANCES CUT WITH ONE HAND WHILST HOLDING THE MATERIAL TO BE CUT WITH THE OTHER.

6 Tree Climbing and Pruning

- 6.1 No employee will be asked to climb a tree if there is any doubt as to his ability to do so, safely.
- 6.2 Ladders should be used to gain access only, never work directly from a ladder. As soon as possible establish a safe working position in the crown of the tree, secure yourself to the tree using correct and adequate safety equipment thus leaving both hands free.
- 6.3 All ropes must be inspected for frays, cuts or other obvious defects, before starting to use them. Any defects found must be reported to your supervisor as soon as possible, and the ropes immediately removed from service.
- 6.4 Never over-stretch your confidence or ability.
- 6.5 While working in a tree, tools that are not required should be attached to the operators safety harness or lowered back to the ground. Power tools should hang on the strop, clearing the operator's feet.
- 6.6 Do not attempt to carry tools while climbing a ladder, both hands must be kept free. Tools should be hauled up by means of a tool line.
- 6.7 Make sure the ladder is tall enough to step safely off into the tree. The ladder should be tied securely to the tree. The base should be supported by the groundsperson.
- 6.8 While pruning, under no circumstances should heavy branches be allowed to fall to the ground. Before cutting, heavy branches should be secured by means of a rope which is held by enough people to support the weight of the limb. After cutting, the limb should be carefully lowered to the ground.

7 Grounds person

- 7.1 Grounds persons must wear forestry helmets, ear and eye defenders at all times.
- 7.2 When working with colleagues in a tree, the grounds person must be aware of the climber's requirements at all times.

- 7.3 When a climber is using the ladder, the groundsperson must stay holding the bottom of the ladder firmly and should remove it when the climber has established a safe position in the tree.
- 7.4 While working on a tree, the area around the tree must be kept as clear as possible.
- 7.5 Ensure that the public are kept at a safe distance from the tree while pruning operations are in progress, by carefully enclosing the area by means of a tape, rope, or other form of barrier.
- 7.6 All equipment, when not in use, must be kept at a safe distance from the working area.
- 7.7 Ensure that all works sites, particularly on the highway, have the appropriate warning signs displayed.
- 7.8 Never wrap a rope around any part of the body to gain extra grip or purchase.
- 7.9 Always maintain a clear route along a public highway, for emergency vehicles, even if the road is closed.

8 Ropes

- 8.1 Remove rope properly from coils or reels to prevent kinking. If the rope is in a coil, it should always be uncoiled from the inside as directed by the manufacturer. If on a reel, the rope should be removed by pulling it off the top while the reel is free to rotate. This can be accomplished by passing a pipe through the centre of the reel and jacking both ends up in a horizontal position until the reel is free from the surface. To proceed in any other manner may cause kinks or hockles (strand distortion).

8.2 Handling rope

Never stand in line with rope under tension. If a rope or attachment fails it can recoil with sufficient force to cause physical injury. Synthetic rope has higher recoil/snapback tendencies than natural fibre rope.

Reverse rope ends regularly, particularly when used in tackle. This permits even wearing and assures a longer, useful life. When using tackle or slings, apply a steady even pull to get full strength from rope. For maximum safety and economy, always use slings employing an angle of about 45 degrees.

8.3 Overloading

Do not overload rope. Sudden strains or shock loading can cause failure.

Avoid sudden strains – shock loads can exceed breaking strength. Shock loading can cause failure of a rope normally strong enough to handle the load.

Working loads are not applicable when rope is subject to significant dynamic loading. Whenever a load is picked up, stopped moved or swung, there is an increased force due to dynamic loading. The more rapidly or suddenly such actions occur, the greater this increase will be. In extreme cases the force put on the rope may be two, three, or even more times the normal load involved.

Examples could be picking up a tow on a slack line or using a rope to stop a falling object. However, working loads as given do not apply in all such applications as towing lines, life lines, safety lines, climbing ropes, or the like.

Users should be aware that dynamic effects are greater on a low elongation rope such as manila than on a high elongation rope such as nylon, and greater on a shorter rope than on a longer one. Excessive dynamic loading of a high elongation rope is equally dangerous, because of stored energy which will cause the rope to recoil dangerously if it breaks. When a working load has been used to select a rope, the load must be handled slowly and smoothly to minimise dynamic effects and avoid exceeding the provision for them.

8.4 Winching lines

Proper procedures will prevent kinks and hockles in three-strand twisted rope.

Repeated hauling of a line over a winch in a counterclockwise direction will extend the lay of twisted rope and simultaneously change the twist of each strand. As this action continues, strand hockles or backturning may develop. Once these hockles appear they cannot be removed, and the rope is permanently damaged at the point of hockling.

If the line is continuously hauled over a winch in a clockwise direction, the rope lay is shortened, the rope becomes stiff and will kink readily.

To avoid these conditions, the direction of turns over the winch should be alternated regularly.

8.5 Checking rope for wear

Avoid using rope that shows signs of aging and wear. If in doubt, destroy the used rope. If there is a question, do the same.

No type of visual inspection can be guaranteed to accurately and precisely determine actual residual strength. When the fibres show wear in any given area, compacted or hard, the rope should be destroyed and replaced.

8.6 Splicing

Arboreal Services only uses ropes that have been spliced by the rope manufacture and which has a CE mark.

8.7 Abrasion - Avoid all abrasive conditions.

All rope will be severely damaged if subjected to rough surfaces or sharp edges. Chocks, bitts, winches, drums and other surfaces must be kept in good condition and free of burrs and rust. Pulleys must be free to rotate and should be of proper size to avoid excessive wear. Restraining clamps and similar devices will damage and weaken the rope and should be used with extreme caution.

Do not drag rope over rough ground. Dirt and grit picked up by the rope will work into the strands, cutting the inside fibres.

8.8 Chemicals - avoid chemical exposure.

Rope may be damaged by chemicals. Consult the manufacturer for specific chemical exposure, such as solvents, acids and alkalies. Consult the manufacturer for recommendations when a rope will be used where chemical exposure (either fumes or actual contact) can occur.

8.9 Heat - Avoid overheating.

Heat can seriously affect the strength of rope. Consult the manufacturer for recommendations as to the size and type of rope for the proposed continuous heat exposure conditions.

When using ropes on a capstan or winch, care should be exercised to avoid surging while the capstan or winch head is rotating. The friction from this slippage causes localised overheating which can melt or fuse synthetic fibres or burn natural fibres, resulting in severe loss of tensile strength.

Caution: Heat can seriously affect the strength of synthetic ropes. The temperature at which 50 percent strength loss can occur in new and unused ropes is: Polypropylene 150 degrees F, Nylon 350 degrees F, Polyester 390 degrees F.

8.10 Warning

All synthetic rope under load will recoil if a fitting such as a chain, hook, cleat, bolt, pin or ball-hitch and so forth should fail.

The snapback action can propel the fitting and the rope causing serious injury to persons or property anywhere in the vicinity. This danger can exist from failure of the fitting within the rope's safe working load. Check all fittings, bolts, shackles, connectors, pins, mountings, splices and so forth before using.

8.11 Storage and care of rope

All rope should be stored clean, dry, out of direct sunlight, and away from extreme heat. Use the heavy duty rope bags supplied.

Cordage should be stored in a cool, dry and well-ventilated warehouse. It should be kept off the floor, on racks to provide ventilation underneath. Never store on a concrete or dirt floor, and under no circumstances should cordage and acid or alkalies be kept in the same building.

Do not store wet rope in a bag. Ensure that it is laid out, hung and dried after it has been exposed to wet conditions.

Do not store rope in direct sunlight. Some synthetic rope (particularly polypropylene and polyethylene) may be severely weakened by prolonged exposure to ultraviolet (UV) rays unless resistance. UV degradation is indicated by discolouration and the presence of splinters and slivers on the surface of the rope.

9 Ladders

- 9.1 Ladders must be erected as level ground as possible. If a safe angle cannot be gained, an alternative method of ascent must be employed.
- 9.2 Metal ladders, when used on paved surfaces, must be fitted with non-slip feet, i.e. rubber caps or wooden wedges.
- 9.3 Some ladders may prove difficult or awkward to erect, always seek help to aid this operation. Always make sure the ladder is one quarter of its height, away from the tree against which it is to be erected.
- 9.4 When erected, the ladder should extend a minimum of 1.5 m above the limb on which it rests.
- 9.5 No ladder must be left unattended while it is extended up into the tree.

Maintenance and storage of ladders

- 9.6 Ladders must be inspected daily, prior to use and any defects must be reported to the supervisor and the ladder removed from service until the defect has been rectified.
- 9.7 If there is any doubt about the condition of the ladder this must be reported to the supervisor immediately and the ladder removed from service until otherwise notified.
- 9.8 It is the responsibility of the employees who are required to climb trees, to regularly inspect the ladders and other equipment for their use.
- 9.9 Extending ladders, whether metal or wood, must be examined to ensure that the guides and guide rails are able to operate freely and correctly. Ladder ropes, hooks and runners must also be examined.
- 9.10 Ladders must be stored, when not in use, in a dry place, laying flat on blocks or trestles. Ropes on extending ladders should be removed if storage area is conducive to decay. Such ropes must not be for any other purpose.

10 Winching (Hand operated model as used for stump removal)

Anchorage must be carefully selected to ensure stability. If trees are to be used, they must be carefully protected by means of blocks of timber or nylon strops to prevent the cable damaging the bark of the anchor tree.

All moving parts must be kept oiled and greased.

When not in use, the cable must be carefully coiled in an effort to prevent kinks.

The cable must be checked before operating winch for frays or other obvious visual defects. If there is any doubt, the cable must be replaced immediately.

Do not use any equipment that has not recently had its safety certification.

Always follow the manufacturer's operating and maintenance instructions.

- 10.1 The following advice notes deal with the Tirfor T35 model winch that works by pulling directly on a cable, the pull being applied by means of two pairs of self-engaging smooth jaws which grip on the cable in proportion to the load being pulled or lifted. These notes should be read in conjunction with the manufacturer's handbook.

The T35 is fitted with a 2 speed gear change on the forward operating lever (L1). The low ratio is used for medium speeds to give a lifting capacity of about 2 tons. The high ratio enables the unit to be used to full capacity at a slower working speed.

- 10.2 Operating Instructions: Before starting work ensure that the lifting or pulling effort is within the capacity of the machine. For the T35 this is:- 3 tons safe working lift, 5 tons safe working pull.

- 10.3 Inspection: Check machine for defects i.e. cracks, worn pins. Wearing safety winching gloves check strops for tears and cuts (nylon), cables for burs on the wire or kinks and shackles for cracks and wear.

- 10.4 Assembly (read in conjunction with manufacturer's manual):

Wear steel toe-capped safety boots and winching gloves at all times.

Thread safety strops through pin and around anchor. Anchors may be a large tree (protect with wooden planks and sacking if using cable strops); a ground anchor screwed into the soil until only the eye is above ground level; anchor plate and pins or log stakes securely hammered into the ground at an angle. Ensure safety ring on securing pin is clipped over.

To open the jaws, disengage machine by pushing release handle into P into forward notched position.

Uncoil cable, ensuring no kinks or twists and thread fused and tapered end of the cable at A. Push cable through until it emerges at B. Ensure cable protrudes over the strops so that it does not dig into the ground upon winching. Take up slack.

Engage lever P to operating position. The cable will now be firmly fixed in the jaws of the machine.

Place stump strop through the shackle.

Insert shackle pin through unthreaded portion of shackle and through eye of the winch cable.

Screw in pin and loosen a half turn when tight since pin will tighten under tension.

10.5 Stump Preparation:

- a) Cut through major roots around the stump with a mattock.
- b) Cut notch out of the stump 1-1.5m above ground level to prevent strop coming off as the stump is pulled over.
- c) Place a log in front of the stump to act as a pivot.

10.6 Operation:

- (1) Wear safety helmet in addition to winching gloves and safety boots.
- (2) Attach operating handle to lever L1 ensuring it is secured by the notch in the handle.
- (3) Move L1 forward and backwards to pull the cable through the machine.
- (4) Ensure machine is lubricated at regular intervals by squirting oil from an oil gun into the hole at the top.
- (5) To slacken or lower the cable fix the operating handle to stub L2 and move to and fro.
- (6) **DO NOT:**
 - (a) SUBSTITUTE OPERATING HANDLE WITH LENGTH OF SCAFFOLD POLE OR OTHER METAL PIPING.
 - (b) INCREASE LENGTH OF OPERATING HANDLE TO ACHIEVE FURTHER LEVERAGE.
 - (c) OPERATE WITH MORE THAN ONE PERSON AT A TIME.

Safety features on this machine include bending of handle if overloaded or clutch slip preventing cable uptake.

Gear Change:

Fast speed: Lift the button on top of L1 and give pin F a half turn.

Slow speed: Reverse the above operation.





10.7 Releasing, Disengaging and Maintenance:

It is impossible to release the cable release lever P when there is any load on the machine. Therefore:-

- (1) Slacken cable as described in Operation 5.
- (2) Push P into notch to disengage and remove cable.
- (3) Engage P into 'safe' position.
- (4) Dismantle is reverse of assembly procedure.
- (5) Cables should be cleaned off, checked for burs and oiled with oily rag. The cable should be carefully rolled up and cable strops should be stored hanging in a dry place.
- (6) Soft strops are washable and may be wiped over with a damp cloth to remove any mud. Inspect for any damage.
- (7) Winch unit should be cleaned with a degreasing agent and then flooded with clean lubricating oil, preferably by immersing in a bath. DO NOT use oils containing additives such as molybdenum disulphide or old engine oil! It should be returned annually to the supplier for a complete overhaul of the jaws and gear inspection.

10.8 Statutory requirements for winching operations:

Lifting equipment is governed by Law under:-

-  Factory Acts 1937, 1948 and 1961
-  Construction (Lifting Regulations) 1961
-  Docks Regulations 1934
-  Building Regulations 1948

These regulations require that:-

- (1) No piece of lifting equipment shall be used to lift a load greater than the safe working load stamped on it.
- (2) No piece of lifting tackle shall be taken into service for the first time until it has been tested and examined by a competent person and a test certificate issued.

- (3) All lifting tackle should be thoroughly examined by a competent person every fourteen months. All ropes and terminal fittings every six months.
- (4) A Register shall be kept covering all lifting tackle in use (Form 88) showing date of entry into service and subsequent examinations.

Under Dock Regulations, wire ropes should be examined every three months.

Further information on these Acts can be obtained from HM Stationery Office, or from page 463 in the British Standards Handbook No 4 - 'Lifting Tackle Part II'.

10.9 Felling With Winches

- (1) Select suitable anchor.
Consider (i) stability (ii) direction of ball (iii) distance from victim (2 x height) (iv) escape routes (v) winch set up (straight or not).
- (2) Suitably protect anchor tree if it is to be retained with hesian, cordwood.
- (3) Position cable and sling at appropriate height in victim prior to felling cuts being commenced. Height of attachment to victim increases pull through leverage but reduces speed of pull.
- (4) Where possible leave cables slack while felling cuts are made. Never commence pulling or alter cable tension except under express instructions of feller.
- (5) General Safety - Heavy gloves and helmets worn at all times. Never walk over tensioned cable. Cable should be clear of all obstructions. Operate winch with smooth action - do not grasp at handle or over strain.

10.10 Checking Wear On Jaws

Periodic inspection to ensure that overwork has not caused any wear on the jaws could be carried out every three or six months, depending on the amount of use the machine has had. This inspection can be performed without dismantling the machine.

1. Mark on the case the position of rope release lever P in its closed position, without any rope in the machine.
2. Insert the rope. Close P and put a second mark on the case. The distance between the marks should never be less than 1/2" for the T7 and T13 Super and 1" for the T35/T35S/T30.
3. If the distance is less than the figure quoted above it means that wear has taken place on the jaws and the machine must be serviced and/or repaired by an official repairer of Tirfor equipment.

10.11 Maintenance and Lubrication

Lubrication should be carried out at regular intervals to ensure that all the rope gripping mechanisms are working freely. Before putting a machine into service after receiving it from the supplier, lubricate generously, and, if convenient, lubricate before each application.

Place the reversing lever L2 mid-way in the slot, and pour a quantity of oil in front and behind the lever. This helps ensure that both jaws receive lubrication. A recommended lubricant for this application is Castrol Duesol Gear EP 140.

A lack of lubricant in a Tirfor sometimes brings about a condition known as ‘pumping’. This occurs when the jaw which is gripping the rope becomes locked onto it preventing the other jaw from taking over the load. As the operating handle is pulled down the machine climbs up the rope about an inch, but when the operating handle is moved up again the machine moves down the same inch in sympathy with the jaw which is locked onto the rope.

It must be stressed that while this situation is inconvenient, it is not in the slightest degree dangerous, as there is no risk of the machine releasing its load and slipping.

The normal procedure is then to lower the machine back to the ground on the lever L2 which is unaffected by the ‘pumping’ action of the lifting gear. The Tirfor should then be thoroughly lubricated with a good quality gear oil and it will recommence working normally.

It is not necessary to lower the machine to the ground if a supply of lubrication is available in the cradle, as the Tirfor can quite easily be lubricated in situ by means of an oil can inserted through the slot for lever L2.

A symptom of lack of lubrication is jerkiness when lowering a load. To lubricate, either pour heavy gear oil into the machine through the slot in the top of the machine, shake the machine and allow to drain, or squirt plenty of oil with an oil gun into the machine. If the machine is very dirty, or contains earth or clay, coal dust or any material which may clog the mechanism, allow the machine to soak in a bath of some proprietary cleansing fluid, and then shake it vigorously to remove foreign matter. After this treatment, ensure that the machine is well lubricated before being put back into service.

Note:

1. Excess lubrication cannot cause the wire rope to slip. Wire rope should also be lubricated to keep it free from rust and in good condition.
2. Grease and oils containing additives such as molybdenum disulphide must not be used in machines.

11 Excavation of Tree Roots

- 11.1 Always erect suitable warning signs/barriers prior to undertaking excavation work.

- 11.2 When planting on new sites, management will obtain details of underground services including electricity, gas, telephone and water. Even when plans have been provided, care still needs to be taken. **Cables may be buried just below the surface.**
- 11.3 Whenever possible, use a spade or shovel, not a pick. Do not spear hand tool into the ground. Excavation by hand is always recommended when digging close to the underground services.
- 11.4 do not use power tools within half a metre of a cable. If you have to go closer, you must obtain advice from your supervisor.
- 11.5 If you find a cable buried in concrete, do not try and break it out, get advice. If a mechanical excavator is in use, stay well clear of the machine.
- 11.6 When driving stakes in to the ground or using mechanical or hand operated augers, this requires the same precautions as for other excavations.

12 Work Adjacent to the Highway

- 12.1 Detailed advice is given the Department of Transport in a document commonly known as "Chapter 8".
- 12.2 Give clear and early warning with the correct signs:-
 - (a) To warn approaching drivers
 - (b) To protect the working area
 - (c) To control traffic
 - (d) To consider and protect pedestrians
- 12.3 The Highways Act 1971, requires such signs to be removed when work is finished or the job closed for the weekend, otherwise drivers may disregard such signs.
- 12.4 There is also the requirement to have warning lights if the hazard remains during the hours of darkness.

13 First Aid

- 13.1 First aid boxes are to be carried on all vehicles used by the arboricultural section. In addition first aid boxes are also to be carried by each static pruning team, mobile hut, etc.
- 13.2 A qualified first aider must always be available. Martin Ladd is a fully qualified first aider.
- 13.3 The contents of the first aid boxes must be checked fortnightly, by a supervisor and replenished as necessary.

- 13.4 All accidents, however minor, must be reported and entered into the accident book.
- 13.5 In the event of a minor accident involving local first aid treatment:
- (a) The accident must be entered into the site accident book, either by the injured party or by the supervisor. In the latter case the entry should be witnessed by the injured person. The cause of the accident should be stated, as far as practicable, in the works of the injured person. The supervisor can add his own comments after the entry if necessary.
 - (b) It is a statutory requirement that all accidents be investigated to identify the cause, and to recommend a means of prevention.
- 13.6 The procedure to be adopted for reporting a death or injury, resulting from an accident, industrial disease or dangerous occurrence, is contained in the regulations which came into operation on 1st April 1986. This procedure is known by the acronym RIDDOR.

In the event of a death, injury, industrial disease or dangerous occurrence as defined in RIDDOR:-

- (a) Record the incident in the Accident Book
 - (b) Notify the Administrative Assistant
 - (c) The Administrative Assistant will notify the Health and Safety Executive
 - (d) The Supervisor must prepare a full report for the Administrative Manager, within seven days, to enable him to complete the necessary documentation.
- 13.7 “White finger”

The following comments will help reduce hand and arm vibration and the possible condition known as “White Finger”, to chainsaw operators.

It is a condition whereby the fingers are numb and turn white, sense of feeling in the hand is also lost (more common in periods of cold weather. It is caused by vibration and poor blood circulation. It can be reduced by the wearing of gloves, keeping warm, not holding the chainsaw too tightly, and resting the saw on the wood where possible.

14 Use of Light Plant and Other Equipment

14.1 Fuel containers

Reserve fuel supplies must be kept in approved cans only, clearly marked “Petroleum Spirit” with a “Highly Inflammable” warning label.

Do not store in more than 4 gallons per container and check that they are leakproof, particularly from the lid.

Never use old oil cans, plastic drink containers, detergent bottles or similar containers.

14.2 FUEL Supplies

Fuel containers left at work must be kept away from heaters, cookers, fires and any other naked flame. Also these containers must not be accessible to the public.

Never smoke, use lighters, or matches near petrol supplies.

Fuel containers may be left on vehicles overnight under normal circumstances but must be removed if the vehicle is parked where there may be a fire risk, or if they cannot be made secure.

When containers are taken off vehicles at the depot, they must be put in the approved petrol pit and not left lying around in the depot buildings or yard.

14.3 Refuelling equipment

Never have the engine running when pouring petrol.

Never smoke while pouring petrol.

Always use a funnel to avoid spillage, particularly over hot engine exhausts.

Use only fuels as recommended in the manufacturers handbook.

Always pour petrol in the open air, or other well ventilated area and keep well away from any source of ignition.

Replace both caps immediately after filling.

Do not start machinery within 10 metres of filling operations.

14.4 Carrying fuel on vehicles

The maximum permissible quantity of fuel, carried in containers is a total of 8 gallons, (2 containers).

Never carry the fuel in the cabs of vehicles and always secure the containers to prevent them moving while in transit.

14.5 Starting equipment

Never attempt to start any of the equipment unless you are totally familiar with it and can stop it.

Careless use of starting handles when using hand starting equipment causes unnecessary injuries to arms, hands, legs and back.

Keep fingers and thumb together on one side of the starting handle otherwise the thumb will take the full force of the engine kick-back. Make sure the handle is properly engaged on the engine shaft.

Pull ropes should have a proper handle to grip. Do not wrap the rope round the hand or fingers to get a better grip.

14.6 Noisy equipment

Excessive noise is harmful to the hearing and once a person's hearing is damaged there is no cure. If you have to raise your voice when speaking to a person next to you, the noise is approaching a harmful level. If you have to shout, the noise is probably over the harmful limit.

Always wear ear defenders when working with noisy plant. It is equally important that other persons working nearby wear ear defenders.

14.7 Stump grinder

All moving parts must be adequately guarded and checked for tightness, so as to prevent injury.

Always erect suitable barriers prior to commencing work.

Maintain sharp cutters at all times.

Ear and eye defenders must be worn at all times.

Loading and unloading must be carried out by two men.

Never stand in direct line of chipping dispersal.

Make sure the public is kept at a minimum distance of 5 metres from the operating site.

14.8 Jack hammers/drills/lump hammers

When working with jack hammers, safety boots with steel toe caps, ear and eye defenders must be worn at all times.

15 Supervisor's Responsibilities

15.1 Ensure that every employee engaged on the arboricultural section is issued with, and wears the appropriate safety clothing i.e. safety helmet, either with face mask or eye defenders, and ear defenders, safety overalls, safety boots, and gloves.

15.2 Ensure that chainsaws are properly and regularly maintained including engine tuning, chain sharpening guide bar and sprocket maintenance.

- 15.3 Ensure that all chainsaw operators are fully conversant with the manufacturer's instructions and that correct fuel mixture is used.
- 15.4 Ensure that all chainsaws are fitted with chain guards when not in use.
- 15.5 Ensure that all site works are clearly indicated by means of cones, signs, ropes, tapes or barriers.
- 15.6 Ensure warning lights are erected and working, around any obstructions at site works, etc., when the site is left unattended or during the hours of darkness.
- 15.7 Ensure that all staff working on or near the highway, wear fluorescent jackets at all times.
- 15.8 Ensure that all newly appointed employees in the arboricultural section are given full training in all aspect of the work.
- 15.9 Bring to the notice of an employee, any failure to comply with these requirements, under the Health and Safety at Work Act.

16 Additional Legislation to be Complied with

- 16.1 The Highways Act 1980 covers everything from road works to tree planting any where on or near the highways. The following are some examples:

The erection of a gate or door which opens outward on to a highway is prohibited.

Trees and vegetation growing in an adopted area are the responsibility of the Highways Authority and are considered as being in their ownership.

An offence is committed if any vegetation is planted in the highways without permission.

If a highway is being damaged by the exclusion of sun by a hedge or a tree, the Highways Authority may ask a magistrates court to order its cutting within 10 days.

No planting must take place within 15 feet of the centre of a carriageway.

The Highways Authorities may enter private land to remove any tree or shrub which poses a threat to the highway or persons using the highway.

It is an offence to allow private vegetation to grow over a boundary and cause obstruction to the highway.

An offence is lit on or near a carriageway resulting in the injury or danger to users of the highway.

- 16.2 The Town and Country Planning Act (trees) regulations 1999

This Act gives local authorities powers to protect trees using tree preservation orders. Any tree covered by such an order, or if it is growing in a Conservation Area, may not be removed or pruned in any way. Certain exemptions may apply but always check with the local authority.

16.3 Occupiers Liability Acts 1957 + 1984

This legislation basically states that owners / occupiers of land have to ensure so far as is reasonably practicable that land does not present a danger to persons on that land whether they are on the land whether they are on that land with authority or not.

16.4 Plant Health Act 1967

This Act puts in place controls and monitoring of the movement of plant material around the country. It is intended to stop the transmission of diseases to parts of the country where they are currently not a problem.

16.5 Prescription Act 1982

This is the only Act which gives a person a right to light. A person must have enjoyed 20 years undisturbed light through a window before they have a right to light. This Act is of importance in cases of disputes concerning large trees blocking light.

16.6 Miscellaneous Provisions Act 1976

This Act gives powers to local authorities to take action to remove dangerous trees on private land. They could take steps to remove a problem in anyway necessary by felling or otherwise.

16.7 Forestry Act 1967

The Forestry Commission is empowered under the Act to control the felling of trees. If in any calendar quarter a landowner wishes to fell more than 5 square metres of timber or to sell more than 2 square metres a licence would be required. There would be exemptions such as in private gardens. Other regulations and Acts also apply so always check before removing trees.

16.8 Wildlife and Countryside Act 1981

This Act relates to issues such as "Sites of Special Scientific Interest" (SSSI sites). Any operations carried out on such sites are subject to these regulations. If you intend to work on such a site consult this Act, as it is almost illegal to even sink a spade in the ground without permission.

16.9 Access to neighbouring land Act 1992

This Act can enable a person to gain an order to obtain access to neighbours' land to carry out works to their own land.

16.10 Environmental Protection Act 1990 + the refuse disposal (amenity) Act 1979

These Acts allow local authorities to prosecute persons found illegally dumping waste. Arboreal Services holds a waste licence for the transportation of arisings and other unwanted materials removed from a client's property, all of which is disposed of at registered waste transfer sites for recycling.

16.11 The Hedgerow Regulations Act 1997

These regulations form part of the Town and Country Planning Act 1990. They form the basis for protecting hedgerows of "importance". There are many reasons for a hedgerow to be covered by this Act, but it suggests that only hedgerows that are older than 30 years, which complies with one or more of the criteria, contained within the Act are covered.

16.12 The Water Act 1989

This Act states that it is an offence to allow poisonous, noxious or polluting matter to escape in to a controlled water source without NRA Approval.

16.13 Food and Environment Protection Act 1985 (FEPA) + the control of pesticides regulations 1986 (COPR)

Most legislation on pesticides is covered under part III of FEPA, to protect humans, creatures and plants, to safeguard the environment. The storage, sale and supply of pesticides are controlled by the COPR regulations.

The control of substances hazardous to health regulations (COSHH) also covers all harmful hazardous materials and states all risks associated must be assessed and controlled.