Arboricultural Association

Guide to Good Climbing Practice – 2005 Edition (First Draft)

First Draft of the new Guide to Good Climbing Practice (incorporating Aerial Rescue Guidance Notes), September 2004

Most of us will recognise the joint AA/FASTCo publications 'Guide to Good Climbing Practice' and 'Aerial Rescue Guidance Notes' as containing the nationally accepted industry standards for tree climbing practices. Now that the regulations governing our practices are changing – principally the Work at Height (WAH) Regulations – so must the associated guidance.

As a consequence the Arboricultural Association is publishing a new Guide, incorporating both climbing and aerial rescue. The following document: Guide to Good Climbing Practice – 2005 Edition (First Draft) has been written by technical authors Mick Cottam, Liam McKeown and Chris White.

As well as commissioning industry leaders as technical authors the AA is seeking consultation with key industry organisations as well as daily practitioners as follows

- LANTRA
- Forestry Commission
- Health and Safety Executive
- Technical Standards Verifiers for arboriculture units
- Other key influencers
- Any one else via the Association's website www.trees.org.uk

The production of this new Guide is running in parallel with the development of the WAH Regulations. The latter are expected to take effect in the industry in the early part of the New Year (2005) and the launch of the new Guide will follow shortly thereafter. The AA is therefore working to a strict timetable to be able to meet this deadline and the first draft will remain open for consultation until 15th October 2004.

Notes

- The new Guide encompasses a considerable number of revisions from the original texts
- Changes relevant to the Work at Height regulations are highlighted in red
- The FASTCo guides have been removed
- The text for the aerial rescue guidance notes has been included towards the end – this has not yet been significantly revised but further work is anticipated
- There is still some text to be added regarding working on utility sites
- All diagrams have been removed and a list of illustrations can be found at the back. These will be inserted in the text where shown
- Please submit comments by email or by post to technical author and co-ordinator Mick Cottam mcottam@myerscough.ac.uk M Cottam, Myerscough College, Bilsborrow, Preston, Lancs, PR3 0RY. The close of consultation is **15th October 2004**

A GUIDE TO GOOD CLIMBING PRACTICE

PREFACE

We are very pleased to welcome this Guide which gives authoritative advice on current techniques which are both effective and safe. This edition has been produced to take into account advances in tree climbing equipment and techniques and the requirements of new legislation such as the Work at Height Regulations 2004. It also incorporates the revised Arboricultural Association/FASTCo "*Aerial Rescue Guidance Notes*".

The Arboricultural association are very grateful for the input to the Guide from arborists too numerous to mention. Their willing participation in a project that benefits all practitioners is valuable and most appreciated.

The Arboricultural Association are also grateful to HSE for their support during the creation of this Guide. Their input to practical workshops and seminars, together with their helpful comments on early drafts of the guide are very much appreciated.

We commend the Guide to Good Climbing Practice to all those involved in aerial tree work. It is a concise summary of techniques and equipment and gives practitioners definitive guidance to enable them to ensure they meet up to date standards which can only enhance their professionalism.

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Chris White

CONTENTS

1.0 INTRODUCTION

This Guide provides guidance for all trained operators who are required to carry out tree climbing operations for Arboriculture and associated work.

It should be read in conjunction with AFAG Safety Guides 401 “Tree Climbing Operations” and 402 “Aerial Tree Rescue”. (See appendix 4).

The Guide is not a substitute for training, but defines current industry best practice concerning procedures, equipment and techniques, where climbing is chosen as the most suitable system of work for a particular task.

It is aimed at the practising arborist:

- To enable current legislation to be complied with.
- To introduce some time and energy-saving techniques and equipment.
- To help make Arboriculture a safer industry.

If this Guide helps to prevent just one climbing accident, then the many contributions and hard work from colleagues in the industry will have been worthwhile.

1.1 RISK ASSESSMENT

Trained and professional operators are aware of the general legal duties regarding Risk Assessment under The Management of Health and Safety at Work Regulations, 1992 (see Appendix 2).

The purpose of the Risk Assessment is to determine the action that needs to be taken to work safely and comply with health and safety legislation. Risk assessment must be undertaken for the task, equipment and site for each work operation.

As well as controlling the hazards and risks associated with tree work in general, (e.g. adequate training of workforce, safe working practices, protecting the general public, etc.), it is essential that a site-specific risk assessment is carried out for each tree work operation.

Basic information about the site should be recorded:

- Location- address or grid reference
- Description of the tree work operation(s)
- Date(s) of operation(s)
- Emergency contacts- nearest phone, nearest Accident and Emergency Hospital
- Site-specific hazards - power lines, public access, terrain etc.
- The structure and condition of trees to be worked on- are they safe to climb? Should another method of access be employed?

(This is not an exhaustive list, but is intended to indicate the breadth of a full Risk Assessment)

As part of the Risk Assessment process, a clear plan of operations, including an effective emergency procedure, must be agreed with the workforce and others on site (see AFAG Safety Guide 802: Emergency Planning and First Aid).

Risk Reduction. Applying some basic principles and developing 'fail-safes' in the climbing system will help the risks to be reduced.

- All equipment used in the system must be selected allowing for a high margin of safety.
- The equipment must be regularly inspected, and any defective equipment must be withdrawn from use.
- All climbing and safety lines must be attached only to approved points on the harness. On no account must tool attachment points be used.
- The anchor points used in the tree to attach either climbing or safety lines must be chosen carefully, and wherever possible manually tested from the ground before climbing commences.
- All anchor points should be load bearing.
- Climbers should have received adequate training in anchor point selection.
- Two separate points of attachment to the tree should be maintained where possible, particularly at key points during the climb such as when changing anchor points, at the work position and when cutting.
- When branch walking and adopting work positions the climbing rope must be kept as tight as possible to prevent the risk of a free fall and the associated arrest forces (see AFAG Safety Guide 401).
- Climbers and their groundstaff must maintain effective communication during climbing operations.

(Picture)

2.0 CLIMBING SYSTEMS

The climbing system and techniques should be chosen so to safeguard against falls at all times.

2.1 WORK POSITIONING TECHNIQUES

Work positioning techniques are accepted as effective, safe and ergonomically efficient for tree work.

Work positioning equipment serves the function of supporting the climber when working in the tree. It is designed to be used only in situations where any potential fall is of limited distance and force.

Work positioning systems for tree work usually consist of a rope and harness, friction hitch and karabiner. Some means of changing anchor points while still attached to the tree is required. This is usually an adjustable lanyard or a 2nd climbing system (which may be on the other end of the rope).

When using work-positioning techniques, the climber must not proceed more than 250mm above the anchor point. The climbing rope should be kept as tight as possible. Any slack must not exceed 500mm, to prevent injury from a free fall and the associated arrest forces.

(Picture x 3)

2.2 DUAL ROPE SYSTEMS

Dual rope systems, consisting of at least two separately anchored lines (a working line and a back-up safety line) are recommended when working at height using rope access and positioning techniques under the Work at Height Regulations 2004.

(Picture)

However the additional risks of entanglement, crossing ropes and confusion at the harness anchor point and the impracticalities of using 2 ropes in certain situations must be taken into account in the risk assessment.

The climber should assess the practicalities and additional hazards that would be caused by using 2 ropes when deciding on the climbing system to be used for the work.

Where the risk assessment identifies that the use of 2 ropes would create an additional hazard, single rope systems may be used.

Where single rope systems are used, an adjustable lanyard should be installed to provide a back-up supplementary anchor point where possible during tree climbing activities.

(Picture)

2.3 FALL ARREST EQUIPMENT

Fall arrest equipment, which comprises a full body harness with thoracic or dorsal attachment together with an energy absorber, is commonly used in other industrial rope access work and sometimes in seed collection from trees.

The tree climbing techniques identified in this guide all adhere to work positioning principles and negate the need for fall arrest equipment. Such equipment will only have an application if the operator has to climb more than 250mm above the anchor point. In that instance the additional hazards of the extension of an energy absorber and the dangers of striking other parts of the tree in a fall, as well as the difficulties in achieving ergonomically acceptable working positions, must be considered in the risk assessment.

3.0 CLIMBING EQUIPMENT

(Picture)

Climbing equipment for tree work is subject to a number of legal requirements as it performs a number of functions at the same time. As “work equipment” it is subject to the Provision and Use of Work Equipment Regulations 1998 (PUWER) and the Work at Height Regulations 2004.

It is also “lifting equipment,” so the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) apply.

It will also be subject to the Personal Protective Equipment at Work Regulations 1992. Please see Appendix 2 for a summary of the key legal requirements.

All new climbing equipment should be sold with a Certificate of Conformity reference, and carry a CE mark.

(Picture)

All climbing equipment must be used in accordance with the manufacturer's instructions and no structural alterations should be made to such equipment.

Climbing equipment must only be used for its intended purpose.

During storage and in transit climbing equipment must be protected from damage and/or contamination.

3.1 INSPECTION OF CLIMBING EQUIPMENT

Climbing equipment must be checked each and every time before use. For example, your climbing rope and rope strops must be given a close visual and tactile inspection along their complete length looking for:

- Cuts
- Frays
- Glazing
- Condition of eye splices
- Contamination
- Any other defects

Check other equipment for excessive wear or damage, for example:

- Check a harness for damaged stitching, cuts or fraying, and the condition of the main anchor point on the harness.
- Check the general condition and stitching on webbing strops and friction savers.
- Check the condition of friction hitch cord, particularly the splices or knots and areas that are subject to high levels of wear.
- Check the general condition of karabiners and that the gates are kept clean and function properly,
- Check all climbing aids for general condition and serviceability.
-

(Picture x 2)

In addition to pre-use checks, LOLER requires that a weekly inspection of items subject to significant wear and tear should be recorded, and that climbing equipment should be 'thoroughly examined by a competent person' every six months (see appendix 2: LOLER).

If there is any doubt about the serviceability of a piece of equipment, consult the manufacturer before use.

Any equipment that becomes defective must be withdrawn from use. Withdrawn equipment should be destroyed or marked, so that it cannot be used inadvertently.

3.2 HARNESSES

Harnesses for tree climbing are generally sit harnesses or full body harnesses.

Sit harnesses comprise a waist belt and leg loops with a pelvic attachment point. Some may also have a sit strap. Sit harnesses are restricted to work positioning situations.

Full body harnesses comprise a waist belt, leg loops and shoulder straps. Some may also have a sit strap. Full body harnesses may have a pelvic and/or chest attachment point.

A pelvic attachment point is more ergonomically suitable for tree climbing than a chest attachment point. Tree climbing techniques also require a great deal of maneuverability while wearing the harness and most climbers prefer to use sit harnesses for these reasons.

(Picture x 2)

3.3 ROPES

Climbing ropes for tree work should have a minimum diameter of 10mm.

They can be of 3 or 8 strand construction, but low stretch braided ropes that are designed for arborist use are ergonomically superior, particularly on long ascents.

New braided ropes should be ‘milked’ to settle the braid over the core of the rope. Excess braid should be removed, and the end re-sealed.

Generally, low stretch ropes are more compatible with tree climbing techniques and climbing aids such as ascenders and descenders.

(Picture)

3.4 KARABINERS

Each karabiner that is used to connect the harness to the lifeline should have a spring-loaded self-locking gate that requires at least three distinct movements to open it.

(Picture)

Remember that the weakest point of a karabiner is the gate. For this reason, make sure that karabiners are kept in alignment (i.e. loaded along their spine) when in use, and not ‘chain linked’ (which can easily lead to twisting and associated pressure on the gate).

To ensure that karabiners are not subjected to a three-way loading, the attachment links on the harness may be connected using a ‘Maillon Rapide’.

(Picture)

Some harnesses have soft eye attachments for karabiners instead of D rings. These help to keep karabiners in correct alignment.

Other means of keeping a karabiner in alignment include the use of captive-eye karabiners, the use of clips or bands that maintain one end of the karabiner captive to the harness and the use of a larksfoot to attach the loop in the end of the rope to the harness.

(Picture x 2)

Particular attention should be given to maintenance of Karabiners. The gate action can easily get clogged with daily use and should be cleaned regularly to ensure that the auto-locking mechanism functions correctly. The gate and locking mechanism can be cleaned with warm soapy water or by using a graphite lubricant.

3.5 FRICTION HITCHES

Friction hitches are generally used by climbers to move up and down the rope. The friction hitch must work in both directions. The friction hitch must lock on the rope when the climber lets go of it.

Rope or cord used for friction hitches must be of a suitable type and have a minimum diameter of 8mm. A diameter of 10 mm is recommended for normal commercial use. Friction hitch materials are subject to high levels of wear and should be replaced regularly, and in any case where significant wear is found.

Climbers must be fully aware of the characteristics and use of any knot, hitch and/or friction system. They should also be aware of how they perform in combination with other aids, e.g. a micro pulley.

A number of friction hitches are used by tree climbers, the most common being the prussic knot and the Blake hitch. Other friction hitches such as the Distil, Valdotain Tresse and Helical are finding more favour with tree climbers, particularly on larger trees where their ease of use increases effectiveness and reduces fatigue. Some mechanical devices such as the ‘Lockjack’ are available.

(Picture x 6)

3.6 MICRO PULLEYS

A micro-pulley allows a number of benefits when attached below the friction knot with the climbing line running through:

It can be used to lift the friction knot, making it self-tending.

It can act as a ‘fair lead’ to maintain the running end of the climbing rope in line with the friction hitch. When used in this way, it allows the friction hitch to be advanced with one hand when the climber is returning from branch extremities.

(Picture x 2)

3.7 ADJUSTABLE LANYARDS

Lanyards (or strops) are generally used when changing anchor point or as a supplementary anchor point when working in the tree.

The lanyard should be adjustable to provide sufficient support and not subject the climber to the possibility of a fall. Adjustment is usually by a friction hitch or a mechanical adjuster.

The lanyard may be attached to the front attachment point of the harness or, more commonly, to the side attachment points on the harness. The side attachment points should not be used for the lanyard where the climber may be in a free hanging position.

(Picture x 2)

3.8 MECHANICAL ADJUSTERS

Mechanical adjusters (e.g. micro or macro adjuster, or Gibbs) can facilitate the easy one-handed take-up of slack in the climbing strop.

If a steel-cored flip-line is used in conjunction with a mechanical adjuster, some form of webbing or rope sling must be used between the harness connector (karabiner or snaplink) and the mechanical adjuster. This is essential in case the climber needs to be rescued and the sling needs to be cut. Without this approved sling the strop will not be easy to release if it is under tension, as the positive cams in these devices lock under load.

Mechanical adjusters should have an appropriate sized permanently fastened bolt holding the cam arm in the ascender body. 'Fast clip' pins are not satisfactory, as they may become accidentally unclipped. The manufacturer will supply the appropriate bolts if the micro adjusters are to be used as work positioning equipment.

3.9 CAMBIUM SAVERS

Anchorage devices known as, 'cambium savers' or 'friction savers' or false anchors are used to protect the bark, cambium and climbing rope from friction. This reduces damage to the equipment and to the tree. The reduced friction in the system also makes climbing easier.

(Picture)

Cambium savers may be installed and retrieved from the ground.

(Picture)

They can be double wrapped around the stem where no suitable branch fork exists.

3.10 KNOTS AND SPLICES

A loop is needed in the end of the rope to attach it to the harness. The loop may be created by a spliced eye or a knot. Spliced eyes should be made by someone who has received appropriate training.

(Picture)

Alternatively, various knots may be used to attach the rope to the harness. The main knots currently used are bowline (in conjunction with a stopper knot such as an overhand knot or single figure of eight), double figure of eight, buntline, and double fisherman's.

(Picture x4)

The latter two will cinch up against the karabiner and help keep it in correct alignment. If a spliced eye, bowline or double figure of eight are used the loop should be left large enough to lark's foot it on to the karabiner and maintain the alignment of the karabiner.

4.0 CLIMBER'S PRE-CLIMB INSPECTION

The site-specific risk assessment should be referred to before any pre-climb inspection is carried out.

The visual pre-climb inspection is vital in order to:

- Assess whether the tree is safe to climb
- Select the most appropriate system for safe working
- Choose the most appropriate method of access

Inspect the rooting area and any visible surface roots for signs that might lead to instability of the tree, for example:

- Fungal fruiting bodies,
- Mycelium,
- Rhizomorphs
- Any other defects.

Other physical signs may also indicate decay or weakness of a tree's stability, for example:

- The asymmetry of the lower main stem,
- Evidence of movement or heave of the root plate, i.e. soil cracking or lifting particularly to one side of the tree,
- Open wounds at the base of the main stem,
- Evidence of root pruning/severance, e.g. recent trenching/excavation works within close proximity of the main stem, or
- Any other defects.

The visual pre-climbing inspection of the tree should also assess the trunk and crown for signs of decay or weakness, for example:

- Fungal fruiting bodies, cavities and cankers,
- Major dead wood and hanging branches,
- Potential structural weaknesses that may be indicated by included bark in forks, weak branch unions and abrupt bends,
- Damaged branches with cracks or splits,
- Evidence of previous work, for example: "topping" and "lopping", branch regrowth from a stub which may have a weak branch union because of decay, or
- Any other defects.

(Diagram or table for the above?)

The lists are not exhaustive but indicate the need for a broad understanding of basic tree science and an assessment of the tree as a mechanical structure before climbing commences.

In addition to an understanding of tree science, allowances must also be made for:

- The tree species: some are more prone to splitting, or are more brittle than others,
- The site terrain and location,
- Weather conditions, especially strong winds, electrical storms, rain, snow and ice, as well as very hot weather,
- The possible presence of bees or wasps,
- Any surrounding hazards, such as; vehicular and/or pedestrian traffic, utility services, buildings, structures and other landscape features,
- The experience, training and capabilities of the work force,
- Ecological considerations, e.g.: flora and fauna (and in particular nesting times for birds and roosting times for bats).

Where it is established that climbing is the most appropriate method of working in the tree, it is important that this visual assessment is continued while climbing so that any other

hazards in the crown that were not visible from ground level, can be identified and appropriate control measures applied.

4.1 UTILITY SITES

(Text to be inserted)

5.0 ANCHOR POINTS

Whatever method of climbing or ascent is used, anchor points must be selected carefully, inspected for suitability and weight tested before use.

(Picture)

The choice of anchor involves assessing its timber characteristics, strength and suitability in relation to its intended purpose.

Correct anchor point selection should take into account the following priorities:

- All anchor points, whether main anchor points or supplementary anchor points, should be load bearing.
- Two separate points of attachment to the tree should be maintained where possible, particularly at key points during the climb such as when changing anchor points, at the work position and when cutting.
- A main anchor in the tree must be strong enough to withstand significant lateral (i.e. sideways) force as well as supporting the weight of the climber.
- A high fixed supplementary anchor must be sufficiently strong to support the climber's weight, but will not be subjected to any significant lateral force.
- A supplementary anchor used solely to prevent a pendulum swing on the main anchor rope(s), may only be strong enough to maintain the climber in the work position but not load bearing should the climber's full weight come on to it. In this instance two other load bearing anchor points should be installed where reasonable practicable.

If in doubt about the strength or suitability of a lateral branch to be used as an anchor, the climbing rope (or adjustable strop, or false anchor) should be passed around the main stem, above the anchor branch.

(Picture)

When an anchor point is established high in the tree with a throwbag it can be difficult to see how secure the branch is. In this situation the security of the anchor point must be tested by 'bouncing' on the climbing line to shock load the anchor and test its integrity.

One of the main hazards when climbing is changing anchor points, either during the ascent or to achieve a better work position. The following can help reduce the risks associated with changing anchor points:

- When changing anchor points a visual check should be made that the newly established rope system is correctly attached to the harness.
- The climber's weight must be transferred to the newly established rope system before releasing the previous set-up.

- The climber should make three distinct movements on the newly established rope system before releasing the previous system to ensure the integrity and safety of the new system.
- The climber should make maximum use of the extension of the previous rope system or lanyard attachment until it needs to be released and set higher. This will ensure that two anchor points are maintained for as long as possible.

6.0 METHODS OF ACCESS

Selection of access technique will be influenced by:

- The site specific risk assessment.
- The pre-climb inspection of the tree and surrounding features.
- The tree form and the equipment available.
- The type of work to be undertaken.

Climbers should only use particular access techniques and equipment for which they have been adequately trained.

When any of the factors above have dictated that the tree is unsafe to climb the arborist must use an alternative method to undertake the work, e.g. Mobile elevated work platform. See AFAG Safety Guide 403: Mobile Elevated Work Platforms (MEWP) for Tree Work.

Work positioning equipment and techniques should be used where tree climbing is chosen as the most suitable work method. However, if a work plan dictates the need for climbing in excess of 250mm above the main anchor point, or where slack in the climbing system will exceed 500mm, fall arrest equipment should be used.

6.1 USE OF LADDERS

Ladders provide a simple and effective method of accessing the crowns of trees. They are well suited for access to street trees where the ground surface is level, where transport to and between trees is limited and when climbers ascend many trees during the working day.

- Fibreglass or wooden ladders should be used when undertaking electric line clearance work.
- The climber must tie into the tree before leaving the ladder.
- Work from the ladder should not take place unless the climber is anchored to a suitable point in the tree. Refer to AFAG Safety Guide 401.

6.2 BODY THRUST

A rope may be thrown over a branch and a ‘body thrust’ technique used to climb, i.e. pulling the standing part of the climbing rope and sliding the friction knot to take up the slack.

(Picture)

Changing anchor points is possible from hanging below the anchor point in the harness. In this position the adjustable lanyard or 2nd climbing system must be attached to the main central (front) anchor points of the harness as the side anchor points of most harnesses are not designed for free hanging.

(Picture)

You may partially roll over the branch to gain a better position to throw the rope higher into the tree. It is essential that the climbing rope has some minimal slack to allow the climber to roll over the branch into a sitting position but any slack must be kept to a minimum.

(Picture)

From this sitting position the rope can be thrown over a higher anchor point or the climbing rope, or adjustable strop, can be attached around the trunk. It is essential that the system has minimal slack during all parts of this procedure to prevent the risk of a significant free fall.

(Picture)

6.3 THROWBAGS

Throwbags can be a very effective method to install a climbing line high in the tree.

(Picture)

- The limitations of using throwbags must be recognised in terms of tree form, surrounding obstacles and people in the vicinity. For example, a tree covered in Ivy or epicormic growth is likely to cause problems of the bag and/or line getting stuck.
- Hazards may arise from misdirected throws, power lines or the recoil of a snapped line when stretched.
- Training and practice will dramatically improve accuracy and effectiveness!

Different weights of bag and line are available:

- Lighter bags and lines can be thrown further.
- Heavier bags pull the line over the branch and return to the ground more easily
- Heavier lines are usually thicker and are less likely to snag under bark plates and can also be used to pull small hanging branches out of the tree.

Different techniques may be used to launch the bag. A balance must be obtained between the greater accuracy achieved through having a shorter distance between the bag and hand, and the higher targets achieved by having a longer distance between the bag and hand.

(Picture)

An initial throw may send the line over several branches. By using a bag on either end of the throw line you can manipulate them so that the line is installed over a single branch and down to the ground in a direct line.

Once the line is installed, it can be attached to the climbing rope by using a karabiner or a clove hitch and a series of half hitches. The latter will help keep the rope in a straight line and allow the rope to be pulled over a narrow fork or through the rings of a friction saver.

(Picture)

A large catapult known as a ’big shot’ can be used to send a throwbag large distances.

(Picture)

6.4 SECURED FOOTLOCKING

Secured Foot Locking provides a fast and effective means of entering the crowns of large trees.

(Picture)

A double line is set as high as possible in the crown using a throwline. Foot locking is easier if the climbing line is set at least 1 metre from the stem of the tree.

The anchor must be checked and weighted to test its integrity before climbing begins. Where very high anchors are set, binoculars may be useful for inspecting the condition of anchor points from ground level.

A six-wrap prussic knot, klemheist or other friction knot, or mechanical ascenders must be used to secure the ascent up the rope. Gripping the friction knot or placing hands above the knot when ascending, should be avoided as this could cause slippage.

(Picture)

Mechanical ascenders should not be modified and should be used in accordance with the manufacturers' instructions.

Mechanical ascenders can also be used to assist ascent on double ropes by pulling down on each rope alternately.

Care should be taken when foot locking towards the V in a rope caused by the lines parting around a branch, as this can open the friction hitch and cause it to lose contact with the climbing line. Such a branch can only be approached safely up to a distance of five times its diameter. This situation can be avoided by installing a friction saver first.

(Picture)

If mechanical ascenders are used to secure ascent they should not be pushed right up to the branch or friction saver. A gap of 150mm from a cambium saver or five times the branch diameter should be left to enable the ascenders to be removed when a secondary anchor has been established.

The climber should not ascend a line without first having the equipment and knowledge to safely descend on that line if required.

Descent from a double or single foot-locking line is possible using a large rescue figure-of-8 or an Italian hitch. This should be backed up by a friction knot to provide hands-free security.

A foot-locking line can be kept in the crown of a large tree during pruning work. This can provide easy access during break times and reduce response times for crown access in an emergency.

6.5 SINGLE ROPE TECHNIQUES

It is possible to foot lock up a single line, although this is more difficult. The line may be secured by either using a running bowline chokered to the anchor or by passing the line over the fork and securing it back to the base of the stem.

(Picture)

A single rope may be ascended efficiently using a handled ascender with a foot- loop and a chest ascender. Ergonomically, this method of access can save a great deal of energy where dense crown foliage prevents easy installation of double lines. Both the chest and handled ascenders must be attached to the main attachment point on the harness.

(Picture)

When using a single rope technique a second fixed line should be installed with a mobile fall protection system that will follow the movements of the climber.

6.6 CLIMBING IRONS

Climbing Irons should only be used when dismantling or sectional felling unless in exceptional circumstances, such as aerial rescue.

When a tree is safe to climb and is to be removed, climbing irons are often the most effective method of access, particularly in conifers or on stems with few or no sound branches.

A steel-cored adjustable flip-line is easier to move up the back of a large diameter stem.

(Picture)

On very thin stems, when using a strop attached to side D-rings, safety and stability can be increased by crossing the flip-line in front of the stem. The crossed strop will immediately bite on the stem and grip firmly, should the climber slip.

(Picture)

7.0 WORKING IN THE CROWN

Working at height carries with it inherent risks. An error or oversight in climbing technique or a failure of equipment is potentially fatal. The Work at Height Regulations 2004 apply to all tree climbing operations and should be adhered to at all times.

The climber utilizes the tree structure and uses the rope and harness to move around the tree. When branch walking and adopting working positions the climbing line must be kept as taught as possible to prevent the risk of a significant freefall and the associated arrest forces.

(Picture)

The climber must be securely anchored to the tree by the climbing system(s) at all times. The climbing systems must be kept as taut as possible. When changing position the climbing rope must be re-routed as necessary and placed in a safe position.

7.1 BRANCHWALKING

When branch walking the climber should lean away from the line of the rope and use it for support. Keeping low to the branch will help maintain balance. One hand should be used to work the friction hitch with the other hand on the branch or side branches for support and balance. The lanyard may be passed around the branch or a suitable lateral if there is a risk of a pendulum swing.

(Picture)

In large, broad crowned or forked trees, it is often easier to install two main anchors and two main rope systems (this may be using both ends of the same rope). Whilst it may not be possible to use both systems throughout the work, the improved positioning by triangulation from two anchors should be considered wherever possible. This is especially important at the work position, if there is any risk to either of the lines or anchor points.

(Picture)

7.2 USE OF SUPPLEMENTARY ANCHOR POINTS

Supplementary anchor points may take the form of a short adjustable strop, a steel cored adjustable flip-line or a complete secondary rope system.

Once in the tree a load bearing supplementary anchor should normally be installed to ensure that your safety is not put at risk. This is particularly important in the following instances:

- Where there is a risk of the climbing rope being cut.
- Where the strength of the main anchor point may be compromised or uncertain.
- Where there is risk of a pendulum swing.

(Picture)

It is expected that supplementary anchors should normally be used.

However, if the risk Assessment identifies the need for the climber to be able to move quickly, for example where there is a risk of a cut section striking the climber, the use of supplementary anchors to hold the climber closely to the work position may not be appropriate. In this instance consideration should be given to the use of two main anchor points so that the climber can still move out of the way but is supported by two lines.

(Picture)

7.3 USE OF A RE-DIRECT

The climber may also be able to use a re-direct to improve support. A re-direct consists of a webbing or rope sling passed over a branch with two karabiners attached. The climbing line passes through the karabiners to improve the angle of support for the climber and reduce the possibility of a pendulum swing from branch extremities.

Consideration must be given to the additional lateral stress that may be put on the main anchor point when using a re-direct away from the main stem.

Using two different sized karabiners on the re-direct, one for each side of the rope, allows the re-direct to be retrieved.

(Picture)

A re-direct does not perform the function of a supplementary anchor point as the climber is still only attached to one rope system.

7.4 WORKING AT THE TOP OF THE TREE

When working in the crown it is sometimes necessary to carry out work above the main anchor point. In some situations it may be possible to use a pole saw to reach higher into the crown.

(Picture)

Another method is to establish a second supplementary anchor point above, and in addition to, the existing anchor point and supplementary anchor point. The purpose of this 'high fixed supplementary anchor point' is to give temporary support for work in a small area of the crown.

On completion of the work, the climber should return to climbing from the original anchors.

(Picture)

7.5 WORKING IN THE CROWN WITH CLIMBING IRONS

Climbing Irons should only be used when dismantling or sectional felling unless in exceptional circumstances, such as aerial rescue.

When using climbing irons, observe the principle of work positioning and the use of two anchor points to prevent the risk of a free fall and safeguard against failure of any one rope system.

When sectional felling with a chain saw, use a strop around the stem that resists cutting e.g. a steel cored adjustable flip-line, or a wire-reinforced adjustable strop.

Both the steel-reinforced strop and the climbing rope should be used to attach to load bearing anchor points on the tree. The steel strop resists cutting by the chain saw and provides the main anchor point. The climbing rope gives a better grip on the stem, can facilitate immediate descent in an emergency and provides the second anchor point to safeguard in case the wire strop fails.

For increased stability, the strop will normally be running from the two side D rings on the harness. However, both sides of the strop should be attached to the central point on the harness if there is any risk of the stem splitting as the cut section falls.

(Picture)

8.0 DESCENT

The route for descent should be planned taking into consideration the position of tools and equipment and how the rope(s), friction saver etc. will be retrieved once the climber is on the ground.

Before descending the climber must check the climbing system(s) is of a suitable length. The climbing system(s) must be terminated in a way which prevents accidental release of the climbing knot or descender.

The descent from the tree must be controlled. Excessive speed (or deceleration) will load the anchor unnecessarily.

The heat generated by friction may cause glazing damage to many types of rope as well as the contact surfaces in the friction knot.

9.0 GROUNDSTAFF

Groundstaff play an important role in tree climbing operations. A good groundperson will make the climber's job easier and can improve efficiency of the task by the following actions:

- Plan the job with the climber before the work starts and be aware of the tasks involved.
- Maintain effective communication with the climber(s).
- Maintain concentration and watch the climber(s). Anticipate their needs, passing up tools and other equipment.
- Provide an extra pair of eyes for the climber and advise where appropriate on the correct route of ascent, work position and anchor point selection.
- Keep climbing and work ropes on the ground free of knots, kinks, tangles, debris and branch wood, and clear of machinery.
- Keep ropes in safe positions away from obstructions, vehicles, equipment and colleagues.
- Ensure the precautions taken to exclude the public and traffic from the work area are maintained while work is in progress.
- Keep tools and equipment not in use away from the immediate work area.
- Control working ropes and lowering systems, but do not wrap a rope around any part of the body to gain extra grip or purchase.

10.0 AERIAL RESCUE

Tree climbing operations are potentially fatal. It is important that climbers receive thorough training in climbing techniques and aerial tree rescue methods.

This section aims to give guidance on basic methods of aerial tree rescue without the need to use specialised equipment. The techniques require competence in the use of harness, prussic knot, rope and lanyard systems.

Tree surgery operations normally involve the use of chainsaws and other tools off the ground which may lead to further hazards for the rescuer. Operators should be familiar with AFAG Safety Guide 401.

Climbers may fall casualty to a number of accidents such as:

- Having their rope cut
- Falling from branches (if rope system is not kept taut)
- Becoming unconscious (various reasons)
- Becoming stuck/frightened, e.g. inexperienced climbers
- Cutting themselves
- Pendulum impact or any other reason beyond their control
- Impact of severed and/or deadwood arising from operations
- Electrocution

When carrying out aerial tree rescue it is vital to ensure the members of the rescue team are not put at risk themselves. Therefore before undertaking recovery of the casualty the rescue team should make a risk assessment to select a procedure which avoids endangering themselves. The team should be qualified in First Aid and be able to promptly call for assistance from appropriate specialists.

Aerial rescue should be practised regularly, once a month is suggested, so that all members of the team are familiar with the techniques and are kept aware of the guidelines given by general risk assessment of aerial tree rescue operations together with specific advice in AFAG Safety Guides:

401 Tree Climbing Operations
402 Arial Tree Rescue
802 First Aid
804 Electricity at Work Forestry and Arboriculture

10.1 COMMUNICATION

It is important that the location of the nearest telephone is known to all staff on site, and noted down. Mobile telephones are now widespread, with varying levels of reception. Check that your telephone functions on the work site, that all staff can use it and know its number in case you have to be called back. Operators should ensure that they can quote their location accurately, i.e. either a grid reference or street names to be able to give the emergency services adequate details of site access points. When necessary a rendezvous point should be agreed together with arrangements to conduct emergency services to the site. Emergency communication details should be recorded on the site-specific risk assessment.

10.2 EQUIPMENT REQUIRED

The following equipment is considered essential for aerial rescue and must always be available at the operational site.

- Rescue rope long enough to complete rescue, (AFAG 401).
- Prussic system and Strop(s).
- Harness and a minimum of 3 karabiners (AFAG 401).
- First Aid Kit (AFAG 802).
- Appropriate Personal Protective Equipment for climbers and groundstaff (AFAG 401).
- Sharp knife with retractable blade

ADDITIONAL ITEMS

The following equipment may also be of use:

- Climbing irons (for faster access and pole rescue)
- Topping Down strop or appropriate alternative
- Chest strop (spare long strop or purpose made)
- Any additional climbing aids which may be available and which the rescue team has been trained to use e.g. ladders, mechanical ascent and descent equipment.

10.3 EMERGENCY PROCEDURE

All operatives should have attended an HSE recognised First Aid course, and be trained in basic techniques (AFAG 802).

A risk assessment must be carried out before starting work. The appropriate equipment and number of operators must be decided and emergency procedures agreed by all staff.

Everyone engaged in tree climbing operations must receive appropriate training in all the tasks they are asked to undertake.

In the event of an accident to a climber keep calm, stop all other work at once and make a thorough assessment of the situation.

Reassure the casualty at all times, notifying him/her that help is on the way and that they are in safe hands (this can only be realistic if the team has practised aerial rescue). Further guidance is given in AFAG Safety Guides 401, 402 and 802.

The rescuer may have to administer primary first aid to the casualty who, if they are able, can assist the rescuer.

Send for help from the appropriate emergency services giving them your contact telephone number. They will require specific details of:

- The exact location
- Site access or rendezvous point
- Casualty’s injuries
- Special problems, e.g. power lines

Select the most appropriate rescue method and agree roles with the rescue team members. If possible advise the casualty of the rescue team's intentions.

Having completed a rescue, ensure the incident is reported promptly to relevant authorities (RIDDOR) and management.

10.4 FIRST AID TO THE CASUALTY

- Do not move the casualty until you have assessed their condition thoroughly.
- If spinal injuries are suspected do not move the casualty until specialist help arrives.
- Secure the casualty to the tree if required.
- Remove any immediate hazards, e.g. chainsaws and/or tools.
- Check the casualty's condition and apply primary first aid.
- If necessary, attach chest harness/strop to support casualty's upper body.
- Lower the casualty to the ground as quickly as possible giving constant reassurance.
- Put casualty into the recovery position and keep warm and dry, using an exposure bag/space blanket or spare jackets, etc. Do not give him/her anything to eat/drink.
- Wait for medical assistance or remove the casualty to hospital continuing to monitor, record the condition and reassure the casualty.

10.5 RESCUE METHODS

RESCUE METHOD A:
2 or 3 person team, where casualty's rope is undamaged and long enough to descend on.

RESCUE METHOD B:
2 or 3 person team, where casualty's rope is damaged, trapped or too short to descend on without re–tying into a lower anchor point.

RESCUE METHOD C:
3 person team as per Method B.

RESCUE METHOD D:
From a pole, 2 or 3 person team.

RESCUE METHOD A

2 or 3 person unit where casualty's rope is undamaged and long enough to descend on.

The rescuer climbs to a suitable anchor point above the casualty.

The rescuer descends to the casualty, assesses and makes safe any hazards which threaten the casualty or would impede the rescue, e.g. chainsaw, other equipment/tools, tree debris.

The rescuer assesses the casualty's condition making safe where necessary and administers first aid if appropriate.

Where possible the rescuer should attach the casualty to the rescuer's harness to aid descent and prevent separation of casualty and rescuer.

The rescuer operates his/her own and the casualty's prussic knot to give a controlled descent whilst guiding the casualty through branches.

Diagram

If the casualty is conscious then the rescuer should be aware that the casualty is in a position to 'help' during the rescue – this keeps the casualty occupied and aids rescue.

The casualty can be carried away from the tree whilst still attached to the rope, if assistance is available.

Rescue teams need to practice methods regularly, to be effective in actual emergency situations.

RESCUE METHOD B

2 OR 3 person unit where casualty's rope is damaged, trapped or too short to descend on without re-tying into a lower anchor point

Diagram

The rescuer climbs to a suitable anchor point above the casualty.

The rescuer descends to the casualty, assesses and makes safe any hazards which threaten the casualty or would impede the rescue, e.g. chainsaw, other equipment/tools, tree debris.

The rescuer assesses the casualty's condition making safe where necessary and administers first aid if appropriate.

The rescuer connects the casualty to the rescuer's rope to transfer the casualty's weight to the new connection, taking up any slack to prevent the casualty falling any distance when his/her rope is cut/disconnected.

The rescuer attaches a second (back-up) connection from the casualty's harness to their own system. This may take the form of a short sling connected by karabiners to both harnesses.

The rescuer disconnects or severs the casualty's rope or strop using a retractable knife.

The rescuer descends with the casualty attached to his/her own harness and climbing system.

If the casualty is conscious then the rescuer should be aware that the casualty is in a position to 'help' during the rescue – this keeps the casualty occupied and aids rescue.

The casualty can be carried away from the tree whilst still attached to the rope, if assistance is available.

Rescue teams need to practice methods regularly, to be effective in actual emergency situations.

ADDITIONAL NOTES

When connecting the casualty to the rescuer a long prussic strop should be connected from the casualty's harness to the rescuer's rope on the bowline/soft eyed side.

Heavily loaded prussic knots can jam especially when using cable laid rope and particularly if the rope is wet. Prussics using sheathed rope, tied loosely or over a karabiner can help to prevent jamming. Incorporation of additional friction into the rescuer's anchor point can also alleviate this problem.

RESCUE METHOD C

3 person unit only

Diagram

The rescuer climbs to a suitable anchor point above the casualty taking the rescue rope up with him/her. The rescue rope is passed over a suitable anchor point.

The rescuer descends to the casualty, assesses and makes safe any hazards which threaten the casualty or would impede the rescue, e.g. chainsaw, other equipment/tools, tree debris.

The rescuer assesses the casualty's condition making safe where necessary and administers first aid if appropriate.

The rescuer attaches the casualty to the rescuer's harness to aid descent and prevent separation of the casualty and rescuer. This may take the form of a short sling connected by karabiners to both harnesses.

The rescue rope is attached to the casualty's harness.

The groundperson ties a prussic loop on the rescue rope attaching this to a suitable anchorage (groundperson's harness, vehicle, tree, ground anchor, etc). This must have sufficient friction to help the rescuer make a controlled descent.

The rescuer transfers the casualty's weight to the new connection, taking up any slack to prevent the casualty falling any distance then disconnects or severs the casualty's rope/strop.

The casualty is gently lowered by the groundperson whilst the rescuer guides him/her through the branches or supports an injured limb.

If the casualty is conscious then the rescuer should be aware that the casualty is in a position to 'help' during the rescue – this keeps the casualty occupied and aids rescue.

The casualty can be carried away from the tree whilst still attached to the rope, if assistance is available.

Rescue teams need to practice methods regularly, to be effective in actual emergency situations.

RESCUE METHOD D

2 or 3 person unit

Diagram

The rescuer climbs up to the casualty (using climbing irons and a strop) and with care, makes a suitable anchor with a suitable topping down strop to which the rescuer's climbing system or a separate rescue rope is attached.

The rescuer assesses and makes safe any hazards which threaten the casualty or would impede the rescue, e.g. chainsaw, other equipment/tools.

The rescuer assesses the casualty's condition making safe where necessary and administers first aid if appropriate.

The rescuer attaches the casualty to the rescuer's harness as in rescue B or to the rescue rope as in rescue C.

The casualty's weight is transferred to the rescue system and the casualty's spikes and lanyard/climbing system are disconnected or severed.

The casualty is lowered to the ground by the rescuer or by the rescue rope.

If the casualty is conscious then the rescuer should be aware that the casualty is in a position to 'help' during the rescue, this keeps the casualty occupied and aids rescue.

Rescue teams need to practice methods regularly, to be effective in actual emergency situations.

ADDITIONAL ITEMS

3 If the casualty is unconscious or injury prevents him/her assisting the rescuer the gaffs on his/her climbing irons and/or strop tension can severely hinder release by the rescuer. In such cases the ground personnel must relieve the weight on the strop and/or gaffs so that the rescuer can safely release the casualty's strop. Climbing irons should also be removed if circumstances allow.

4 If the casualty's strop has a wire core and has a mechanical adjuster the tension must be released by the groundperson to allow the rescuer to remove the strop.

APPENDIX 1 GLOSSARY

Adjustable lanyard
A short length of rope used as a temporary and/or supplementary anchor, that can be adjusted (using a friction hitch, ascender, descender or 'micro-adjuster') to achieve work positioning with a taut line.

Anchor point
A position in the tree, usually a fork or branch junction, from which the climbing rope or adjustable strop is suspended to support the climber.

Ascender
A mechanical device that will slide forwards on a rope but will grip when pulled in the opposite direction.

Belay line
A 'safety' or 'control' rope used to safeguard the climber, usually controlled by a third party (the belayer).

'Cambium saver'
A 'friction saver' or false anchor (see below) for the climbing rope that reduces friction damage to the tree, as well as reducing friction in the climbing system.

D rings
The points on a climbing harness designed for the attachment of lifeline and/or supplementary anchor

Daisy chain
A tape sling with a series of sewn loops along its length.

Descender
A mechanical device using a smooth cam, roller or other friction system to control descent.

Eye splice
A small loop spliced into the end of a rope or strop.

Fair-lead pulley
A small lightweight pulley which, when integrated with a friction hitch, improves the take up of slack in the rope when ascending or branch walking.

False crotch / anchor
Used as an alternative to passing ropes over branches or forks in the tree. May consist of alloy or steel rings, thimbles, karabiners or pulley blocks, suspended by ropes, strops or slings.

Flip-line
An adjustable strop, usually used in conjunction with climbing irons, that is less flexible than climbing line, allowing easier manipulation of the strop around the stem.

Foot locking
Various methods used to ascend a single or double rope, using the feet to grip the rope.

Friction hitch

Various knots that will slide forwards on a rope but will grip when pulled in the opposite direction, unless controlled by the climber.

High-fixed supplementary anchor point
An anchor point set above the main anchor to allow temporary access to the upper reaches of the crown.

Karabiner
A device used to link rope to harness, with a spring-loaded, locking gate. May be constructed of steel or alloy and must be marked with safe working loads in kN. Locking systems include screwgate, twistlock and “three-way”. Karabiners with a spring loaded, self-locking gate that require at least three distinct movements to open are recommended for tree climbing.

‘Maillon Rapide’
A brand name for a range of attachment devices akin to karabiners, with a non-hinged gate operated by a hexagonal, threaded sleeve.

Main anchor
The anchor point in the tree that provides the optimum strength and accessibility for the work to be carried out. There may be more than one main anchor in the tree.

Micro-adjuster
A lightweight ascender

Micro-pulley
A small diameter, lightweight pulley. (see ‘fair lead pulley’)

P.P.E.
(Personal Protective Equipment) This term applies to any equipment designed to protect the operator at work, e.g. Chain saw safety clothing. In tree climbing operations it also applies to the equipment used to protect the operator from falling, i.e. Rope, harness, strops, karabiners etc.

‘Protected’ system
A climbing system incorporating a ‘hands free’ fail-safe device (e.g. ascender, descender, friction hitch etc.) that prevents the climber from falling if he/she, or the belayer, lets go of the rope.

Prussic loop
A spliced, or tied, loop of climbing rope used to connect the climber’s harness and rope system using a prussic knot.

Rescue pulley
A lightweight pulley that can be used as a climber’s false anchor.

Re-direct
A temporary re-routing of the climber’s line in order to achieve an improved work position.

Split tail
A short length of climbing rope with a soft eye at one end, used to connect the climber’s harness and rope system using a Blake’s hitch or other friction knot.

Strop

A short length of rope or webbing tape, usually with a loop in each end.

Supplementary anchor
An anchor point used in conjunction with the main anchor to improve work positioning and/or increase security of the climber.

Thimble
A nylon or metal insert in an eye splice.

Throw bags
Small, weighted, flexible bags attached to a lightweight line that can be thrown over a suitable anchor point in the tree. False anchors and/or climbing rope can then be installed from the ground.

Work positioning
The term used to describe normal climbing operation in the tree, using rope(s), harness and friction hitch(es), in which the climbing rope is kept taut.

APPENDIX 2 LEGISLATION AFFECTING PROFESSIONAL TREE CLIMBING

The following is a list of the current (1999) main legislative requirements in relation to the use of rope access techniques in arboriculture. Your site specific Risk Assessment should identify any other relevant statutory provisions. Information concerning these legal requirements can be obtained from HSE Infoline – 0541 545500

LEGAL REQUIREMENTS

Health and Safety At Work Act 1974 (HSWA)
Management Of Health And Safety At Work Regulations 1992 (MHSWR)
Work at Height Regulations 2004
Provision And Use Of Work Equipment Regulations 1998 (PUWER)
Lifting Operations And Lifting Equipment Regulations 1998 (LOLER)
Personal Protective Equipment At Work Regulations 1992 (PPE)
Manual Handling Operations Regulations 1992
The Control Of Substances Hazardous To Health Regulations 1994 (COSHH)

Applicable Under Certain Circumstances

Construction (Design And Management) Regulations 1994 (CDM)
Electricity at Work Regulations 1989

SUMMARY OF KEY LEGAL REQUIREMENTS FOR ARBORICULTURE

The Health and Safety at Work Act 1974 places general duties on employers, the self-employed and employees to ensure the health, safety and welfare of persons at work and for protection of other people who may be affected by the work activity. Various sets of regulations are made under The Health and Safety at Work Act and spell out more clearly the specific duties for those in control or managing work activities.

The Management of Health and Safety at Work Regulations 1992 require Risk Assessments to be carried out to identify the measures necessary to comply with health and safety legislation. In particular the assessments should cover risks to the health and safety of your employees, the self-employed and others who are not at work i.e. Members of the public. They also require arrangements for managing the work to be put in place.

The Provision and Use of Work Equipment Regulations 1998 apply to all work equipment used in arboriculture including ropes, harnesses, strops etc. The regulations require the selection of suitable work equipment bearing in mind where it is to be used and the purpose for which it is to be used. The regulations also set out requirements for instruction, training and supervision of those using the work equipment.

The Approved Code of Practice to the regulations states that anyone working with chainsaws on or in trees is now expected to hold a recognised certificate of competence or a national competence award relevant to the work being done.

The Lifting Operations and Lifting Equipment Regulations 1998 apply to arboriculture. Detailed guidance is given in ‘LOLER: How the Regulations Apply to Arboriculture.’ Agriculture Information Sheet No 30. Available free from HSE Books- 01787 881165.

Climbers’ ropes and other rope access equipment are defined as lifting equipment. The main aim of the Regulations is to ensure all lifting operations (including arboricultural

operations) are properly planned, appropriately supervised and carried out in a safe manner.

LOLER requires matters such as strength, stability and installation to be addressed as well as setting out how equipment should be marked and thoroughly examined at prescribed intervals.

It requires that suitable devices be used to prevent the carrier (a term used to describe the means of holding the person, i.e. the harness) from falling.

The Information Sheet AIS 30 states that:

- Supplementary anchors should be used where practicable
- Ropes and anchoring strops should have a high margin of safety
- The main climbing rope and associated equipment should be inspected every day by a competent person (i.e. the operator)

In addition to the daily inspection of climbing equipment by the operator, there are requirements under LOLER for:

- Written weekly record of inspection for equipment that is "…subject to high levels of wear and tear (i.e. ropes)"
- Thorough examination of lifting equipment, by a competent person who has genuine authority and independence to make an objective decision about whether the equipment remains in use or not.
- Equipment that is being used for lifting people must be thoroughly examined every six months.
- Other equipment, such rigging equipment, needs to be examined every 12 months

The Personal Protective Equipment Regulations require employers and others to carry out an assessment to determine whether PPE is required and if so what type is required for the job to be done. All PPE should be properly maintained and appropriate information, instruction and training should be given to those using the equipment so they know how to use it.

In Arboriculture, the PPE regulations will apply to Chain Saw clothing, helmets, Safety boots, hi-visibility waistcoats etc. The regulations may also apply to climbing equipment such as ropes, harnesses, strops etc, where these items are not comprehensively covered by other regulations, e.g. PUWER and LOLER.

The Work at Height Regulations 2004 identifies requirements for selection, installation and use of work equipment and techniques for working at height. Tree climbers using a rope and harness must comply with schedule 5 parts 2 & 3 of the regulations which require the use of two anchor points where reasonably practicable.

Insert AFAG contact details

The Arboricultural Association (AA)
Ampfield House
Ampfield
Near Romsey
Hampshire
SO51 9PA
Tel: 01794 368717
Fax: 01794 368978
E-mail: admin@trees.org.uk

Health and Safety Executive (HSE)
Please contact your local HSE office. The address is in the phone book.
HSE Infoline 0541 545500
HSE Books 01787 881165
Website:
Home page:
http://www.open.gov.uk/hse/hsehome.htm
Free leaflets:
http://www.open.gov.uk/hse/news.htm

National Proficiency Tests Council (NPTC)
NAC
Kenilworth
Warks CV8 2LG
Tel: 02476 696552
Fax: 02476 696128
E-mail: information@nptc.org.uk

International Society of Arboriculture (ISA)
ISA Europe Ltd
Troy House Chambers
Suite C & D
Elmgrove Road
Harrow
Middlesex HA1 2QQ
Tel: 020 8861 6852
Fax: 020 8861 6858
Website: http://www.ag.uiuc.edu/~isa/

National Arborist Association (NAA)
PO Box 351
West Byfleet
Surrey
KT14 6YZ
Tel: 01932 349795

Institute of Chartered Foresters
7a St. Colme Street
Edinburgh
EH3 6AA
Tel: 0131 225 2705

Association of Professional Foresters
7-9 West Street
Belford
Northumberland
NE70 7QA
Tel: 01668 213937

Forestry Contracting Association (FCA)
Dalfling
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Aberdeenshire
AB51 5LA
Tel: 01467 651368
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REVISION OF THE GUIDE TO GOOD CLIMBING PRACTICE

ILLUSTRATIONS/PICTURES/DIAGRAMS NEEDED:

Page 4

- General picture showing work positioning and use of 2 anchor points
- Work positioning - correct change of anchor point
- Work positioning - incorrect change of anchor point (>250mm)

Page 5

- Example of dual rope system
- Eg of lanyard as supplementary anchor
- General picture of climbing equipment
- Eg of CE mark

Page 6

- Eg of damaged rope
- Eg of damaged harness

Page 7

- Eg of sit harness
- Eg of full body harness
- Eg of arborist rope
- Eg of triple action karabiner
- Karabiner – correct loading
- Karabiner 3-way loading
- Karabiner used with maillon rapide
- Karibiner used with clip/band
- Karabiner with larksfoot to rope

Page 8

- Prussic
- Blake's hitch
- Distil
- Valdotain
- Helical
- Lockjack
- Pulley as a fair-lead
- Pulley as a slack tender
- Lanyard attached to side 'D's
- Lanyard attached to front (hanging from branch)

Page 9

- Eg of cambium saver
- Installation of cambium saver from ground
- Eg of spliced eye
- Bowland & stopper knot

- Double figure of eight
- Buntline hitch
- Double fishermans (attachment to harness)

Page 10

Tree inspection table or diagram

Page 11

- Correct anchor point selection
- Anchor point over branch & round main stem

Page 12

- Eg of body thrust

Page 13

- Branch rolling
- Changing anchors
- Use of throwbag
- Throwbag handle/release
- Attaching throwline to climbing line
- Bigshot in action

Page 14

- Footlocking
- Footlock prussic, 6-wrap
- Footlock line and ‘V’ caused by branch

Page 15

- Single rope technique
- Single rope technique attachment of ascenders
- Use of climbing irons and steel flipline
- Crossed flipline on narrow stem
- Eg of branch walking

Page 16

- Lanyard use at branch extremities – load bearing
- Lanyard use at branch extremities – not load bearing – plus 2 other attachments
- Eg of supplementary anchor when cutting
- Eg of 2 anchors and need for freedom to move when rigging
- Retrievable re-direct

Page 17

- Use of pole saw at top of tree
- High supplementary anchor point
- Spiking with lanyard attached to front of harness if risk of splitting

Page 21

- Diagram of aerial rescue method A

Page 22

- Diagram of aerial rescue method b

Page 23

- Diagram of aerial rescue method C

Page 24

- Diagram of aerial rescue method D