



**MIDDLESBROUGH COUNCIL**  
**ARBORICULTURAL**  
**WORKS SPECIFICATION**



# Guidance for Works to Trees

## 1 Purpose of the guide

The aim of this guide is to provide information and advice on tree work, particularly pruning operations, by describing different pruning techniques and how they might be used and for what reasons. It is primarily aimed at the work of the Council's arboriculturalists and contractors are also guided by this document. It also provides additional information to private tree owners and managers, particularly those with protected trees.

## 2 Introduction

Pruning is the most common tree maintenance procedure. Pruning is often desirable or necessary to improve tree structure, limit inconvenience or maintain safety. Bad or unnecessary pruning can do more harm than good since each cut has the potential to change the growth of a tree, cause damage and decay, leave the tree unsightly, or allow the entry of wood decaying organisms. Therefore no branch should be removed without a good reason. Some older trees do not tolerate pruning as well as younger trees and substantial pruning can have a life-limiting impact on the tree. The effect of pruning also varies between species and some are not naturally tolerant of pruning, notably beech, birch, and walnut. Pruning work should be carried out in accordance with BS 3998: 2010 by suitably qualified arboriculturalists. If the level of pruning being considered is likely to severely damage or limit the life of the tree, felling and replanting with a suitable species may be the more appropriate action to take.

It is important to consider pruning over the entire life-span of the tree or trees involved and not as a one-off single operation. Pruning in a single year should not exceed more than a quarter of a tree's leaf area except in very special circumstances.

Many trees generate adventitious sprouts, in response to over-pruning, as they attempt to replace the stored energy. However live-branch pruning is an essential part of forming good crown structure, and is often a necessary procedure in the management of specimen trees within residential areas, parks and gardens.

This good practice guidance outlines the acceptable standards of tree work at the present time. It is based partly on guidance within British Standard Recommendations for Tree Work (BS3998:2010) and the Arboricultural Advisory and Information Service's Arboriculture Research Note 48, 'A Definition of the Best Pruning Position'. Any competent arboriculturalist will be aware of and familiar with these publications, and will be able to carry out work to the required standard.

This guidance deals with the most common procedures undertaken in tree work, however more specialised pruning may occasionally be specified.



### 3 Protected trees

Trees may be protected by Tree Preservation Orders or by virtue of their presence within a Conservation Area, see below. Therefore it is important to check with the Council before proceeding with any tree works. If a tree is protected it will be necessary to make an application to the Council and get written consent before proceeding. The forms and guidance notes for both TPO applications and Conservation Area notifications can be found on the council website.

All trees or groups of trees within a Conservation Area which have a stem diameter 7.5cm (or 10cm if part of a group), measured at 1.5m above ground level are also protected and will need six weeks prior notification to the Council in writing of your intention to undertake works to these trees.

To find out whether or not a tree is protected you can contact the Council's Call Centre on 01642 726001.

### 4 Wildlife

The habitat of all nesting birds and bat roosts are protected by the Wildlife and Countryside Act, 1981 (amended 1984), strengthened by the Countryside and Rights of Way Act, 2000. With regard to birds this means that the felling or pruning of trees must be carefully carried out to avoid any risk of disturbing nesting birds, particularly between the months of March to August inclusive.

Even a dead or dying tree may provide a habitat for plants and wildlife protected under the Wildlife and Countryside Act, 1981. Most notably, trees with hollows and crevices may well provide important natural roost sites for many bat species and nest sites for birds. A cautious approach is required when dealing with trees which provide suitable habitat potential.

All native bats are European Protected Species and it is an offence to kill or destroy such a species or to damage or destroy their breeding site or resting places. When proposing to fell or carry out other work to such a tree, care must be taken to ensure that there are no bats or roost sites present before commencing the work. If in any doubt that a bat roost may be present contact Natural England or the Bat Conservation Trust whose details are at the end of this guidance note. If a bat is

discovered by a contractor whilst undertaking work, all work must cease immediately and the site made safe, then Natural England or the Bat Conservation Trust should be contacted immediately. For guidance refer to Arboricultural Association Guidance Note 1, Bats In The Context Of Tree Work Operations. A new British Standards Institution guide is currently in draft. (as at 2014)

Pruning trees can affect wildlife in more subtle ways, very manicured trees provide less opportunities for wildlife and where possible it is good to leave some deadwood in trees and allow dense crowns and low branches to develop to provide cover. Where trees are pruned or felled it is also important where appropriate to leave some of this dead wood around as a habitat for small mammals and insects.



## 5 Timing of pruning

Although most minor pruning can be carried out at any time of the year, it is desirable to avoid pruning operations when deciduous trees are coming into leaf. Equally pruning should be avoided in the autumn when the tree's ability to close wounds is reduced and the tree can lose valuable energy reserves if pruning occurs before the leaves are shed. This is particularly important if it is necessary to carry out heavy pruning or work on older trees.



The pruning of maples (including sycamore), lime and birch should be avoided in the early spring when the sap is starting to rise as they will bleed sap from the pruning wound. This bleeding is harmless, but wastes the tree's resources and is unsightly.

The following fruiting and ornamental flowering trees are best pruned after flowering between June and August: Plums, especially the cultivar 'Victoria', cherry, peach, apricot, pear, apple, laburnum, Portugal laurel and rhododendron. Walnut species should not be pruned in spring and are best pruned in July and August.

This information is by no means exhaustive; for further information refer to BS 3998 2010.

## 6 Pruning specifications

Generally most trees that need to be pruned will require one, or a combination of the following pruning techniques. Usually between 15-20% of the crown is removed at any one time. Although in some cases the maximum of 25% may be recommended where justified.



Crown spread

Figure 1: Crown or canopy of tree

## 6.1 Branch removal and appropriate pruning points

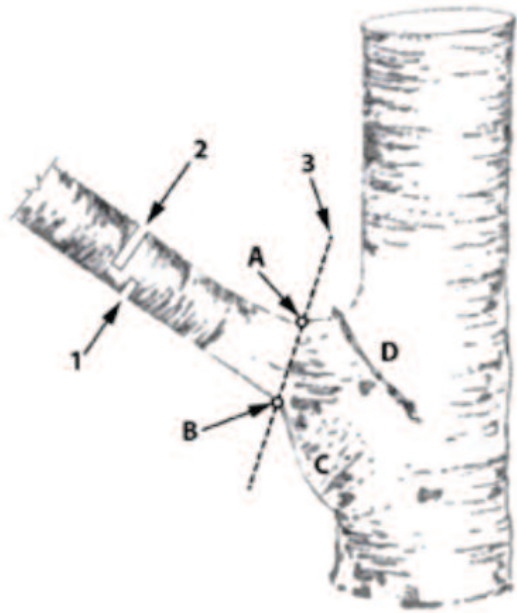


Figure 2: Branch removal

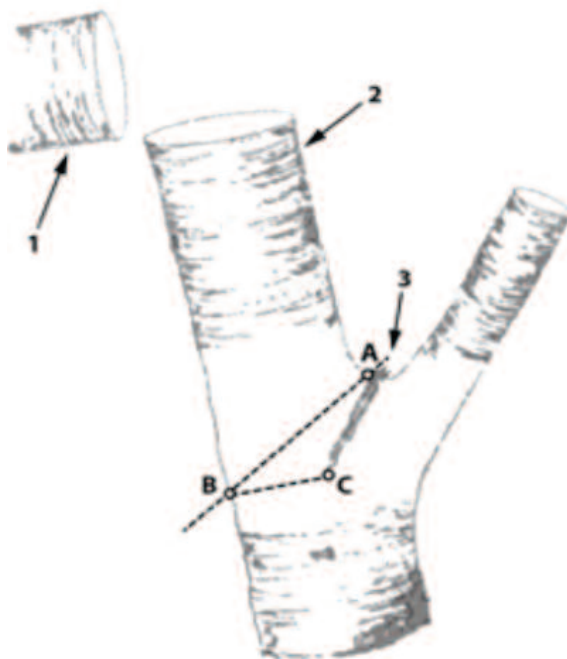


Figure 3: Reduction or shortening of a branch

If the branch is a large one, it is best to remove it in segments to prevent it falling dangerously or damaging the tree by tearing the bark. Following Figure 2:

1. Begin removing each segment with a cut up about a third of the way from the underside of the branch (1).

2. Continue by cutting down about two-thirds of the way through the branch a little bit further up the branch (2).

This should cause the branch to fall or allow it to be removed under control with minimal damage to the tree.

3. Once most of the branch has been removed, make the final cut (3) across the branch collar (AB) to remove the stub.

Leave the collar intact, or this could be the cause of infection to the tree.

4. Make sure the tree is not cut further than the end branch collar (D) – this will cut through the tree's barrier zones and make it extremely prone to disease.

1. When it is necessary to reduce the length of a branch, cut from A to B in Figure 3: (3) after the top has been removed, (1 and 2).

2. Point B is at right angles to the main branch from point C, (the bottom of the branch bark ridge). The remaining branch should be at least one third the diameter of the stem to be cut.

Where a limb, branch or leader is to be shortened it shall be cut back cleanly to a vigorous side branch finishing with a sloping cut leaving the branch bark ridge and branch collar intact. The remaining branch should be at least one third of the diameter of the branch removed. This is to reduce the likelihood of decay or die-back as the lateral branch should be able to produce enough energy to keep the parent branch alive and there should be enough growth regulators present to suppress excessive shoots.

## 6.2 Formative pruning

**Description:** Pruning to improve the shape and form of young trees.

**Reason:** This type of pruning is usually completed when the tree is still relatively young. The main objective of this type of pruning is to encourage the formation of good stem and branch structure, by improving the orientation and spacing of branches and removing any potential weak structures that may fail later in life. Well planned, formative pruning during the establishment of a young tree can reduce the need for pruning later on. Formative or structural pruning can be completed on semi-mature trees, but should be avoided on mature specimens.

**Specification:** Remove or reduce any competing leading shoots to leave one strong, dominant leader. Rubbing, diseased, dead, congested or weak branches must be removed along with epicormic and basal growth on the main stem. Low branches pointed in undesirable directions must also be removed. All work carried out should take into account the species concerned, and the natural form of the tree. Formative pruning should only be carried out with suitable hand tools, such as sharp secateurs, loppers, pull or bowsaws.

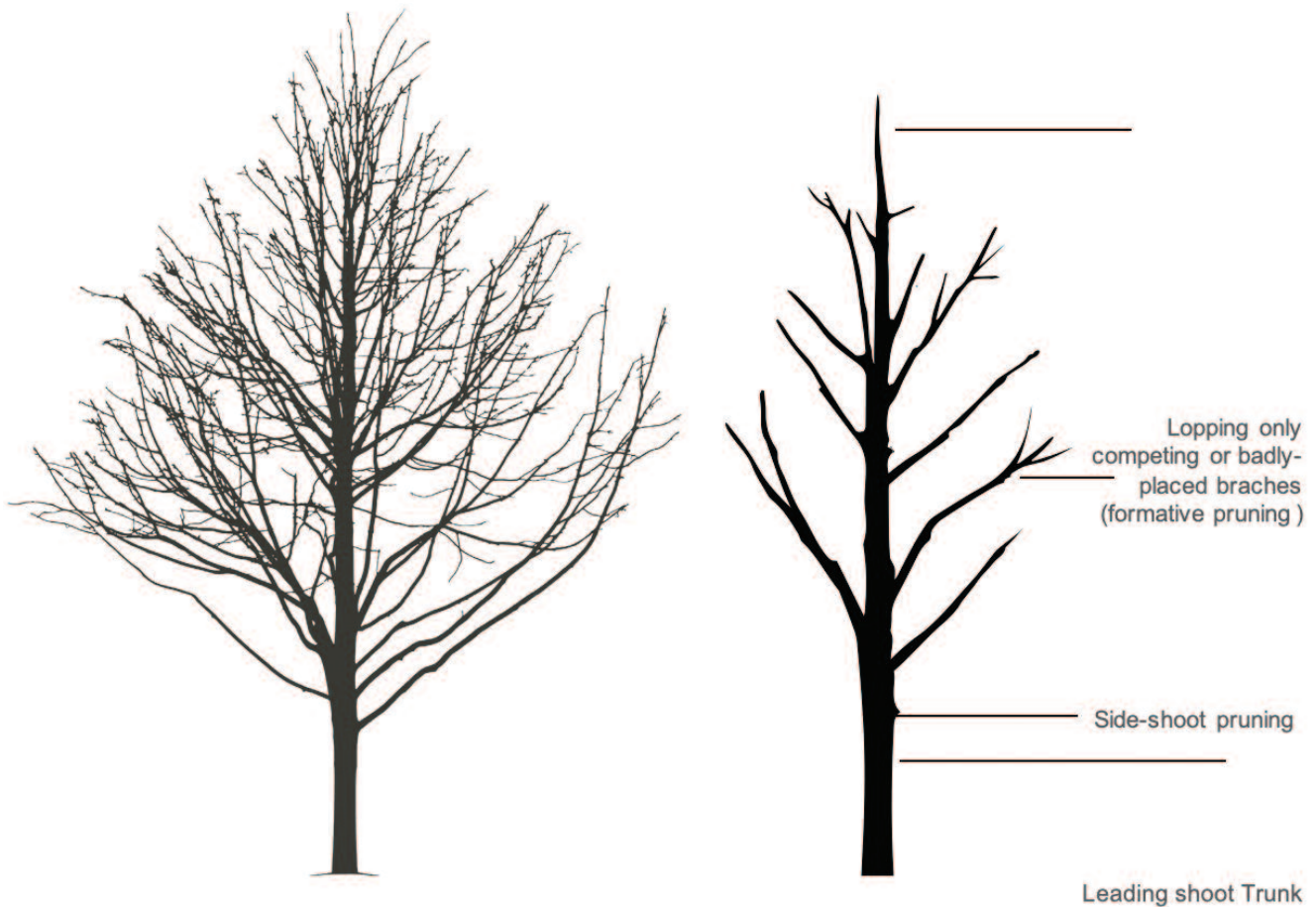


Figure 4: Formative pruning

### 6.3 Crown thinning

**Description:** Crown thinning is the removal of a proportion of secondary and small live branch growth, throughout the crown, to produce as far as possible an even density of foliage around a well spaced and balanced branch structure (see Figure 5). It includes the removal of dead, dying, diseased, crossing, crowded and weakly attached branches of low vigour. Merely removing secondary growth along the limbs and leaving dense branch ends is not an acceptable practice.

**Reason:** Crown thinning reduces the density of the crown without altering the shape of the tree. Thinning allows more light to pass through the crown so reducing shading. A more open crown reduces wind resistance.

**Specification:** The estimated percentage of crown to be removed is normally between 10% and 25% dependent on the circumstances. Most branches removed during a thinning operation are less than 4cm in diameter.

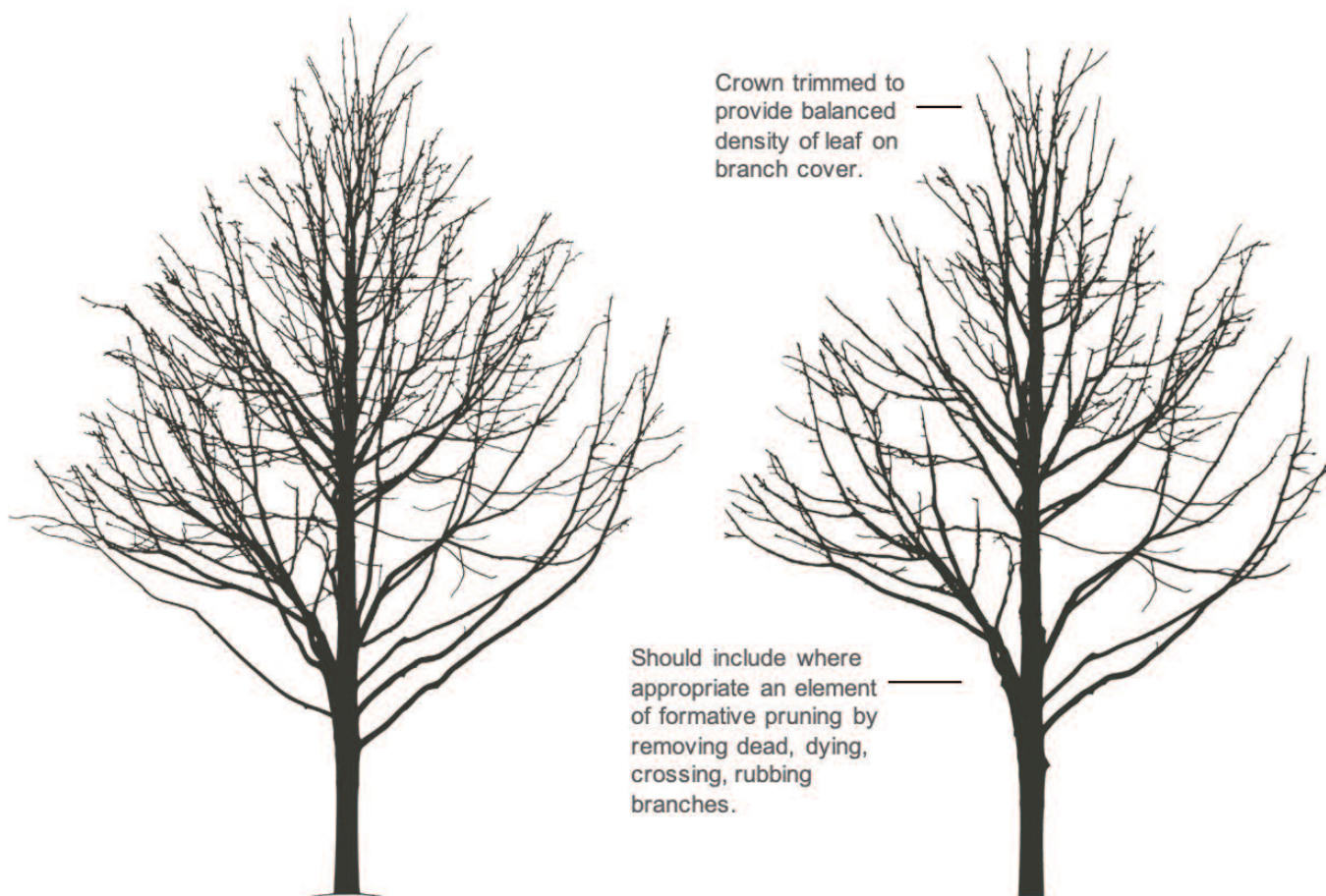


Figure 5: Crown thinning



## 6.4 Crown lifting

**Description:** Crown lifting is the selective reduction and removal of the lower branches. The excessive removal of low branches can lead to the development of poor trunk crown balance, where a tree may become top heavy. Also large wounds around the main trunk of a tree could potentially allow the development of decay which can coalesce and reduce the long term integrity of the tree's main supporting structure.

**Reason:** To allow space under the tree for light, people, vehicles or buildings.

**Specification:** Where possible the number and size of pruning wounds should be limited and well spaced, so there is less chance of decay pockets coalescing combining to form larger cavities within the stem of the tree. To avoid lack of balance after crown lifting the crown should retain at least 85% of the tree's original un-pruned crown. Some circumstances may require a greater percentage of the trees crown to be lifted. In such circumstances some of this can be addressed by the reduction of branches to lateral/secondary growth leaving a flowing outline rather than their complete removal. Crown lifting is specified as the height from the ground to the desired height of lowest secondary branch.

Trees situated along public highways must be maintained at the following minimum clearance height:

- Over footpaths/paved areas - 2.4 metres over kerb height.
- Over carriageways – to allow for the free movement of traffic, or 5.2 metres over kerb height.



Figure 6: Crown lifting





## 6.5 Crown reduction

**Description:** Crown reduction or shaping involves the systematic reduction of peripheral branches to decrease the height or spread of a trees crown area to leave a flowing line.

**Reason:** This is normally specified to reduce the contact between buildings and other infrastructure or to rebalance a tree after storm damage.

**Specification:** When a branch is pruned the diameter of the remaining branch should be at least one third of the diameter of the branch that is removed. The natural shape and form of the species should be maintained and the tree should be balanced and uniform on completion.

Crown reduction work can be specified to cover every branch within a trees crown or it can be limited to just one. However the desired effect should be accomplished by pruning back to an appropriate pruning point (see section 6.1).

This allows more effective healing of the pruning cuts and maintains a good tree architecture. Inappropriate pruning can effectively destroy a trees natural shape, cause decay, increased risk of failure and result in a proliferation of new growth significantly increasing maintenance requirements.



Figure 7: Crown reduction



## 6.6 Pollarding

**Description:** Pollarding describes the practice of regulating tree size and shape by training of young trees. It is very different from crown reducing and topping/lopping. To be done correctly, the desired shape is determined when the tree is young, by topping once to establish the desired framework. Once the desired framework is established, all sprouts or shoots are cut back to their base on a cyclical basis between one and four years. It is a methodology rather than a one off operation.

**Reason:** Pollarding is a way to control the ultimate size and shape of a tree, and to allow maximum leaf cover in limited spaces.

**Specification:** All regenerated sprouts/shoots are removed right back to their base, without cutting into the swollen tissue below the origin of the buds (knuckle) over the entire pollard. (With the objective of producing a quantity of vigorous shoots from the knuckle.) All pollarding operations to be completed using hand tools, not power tools.

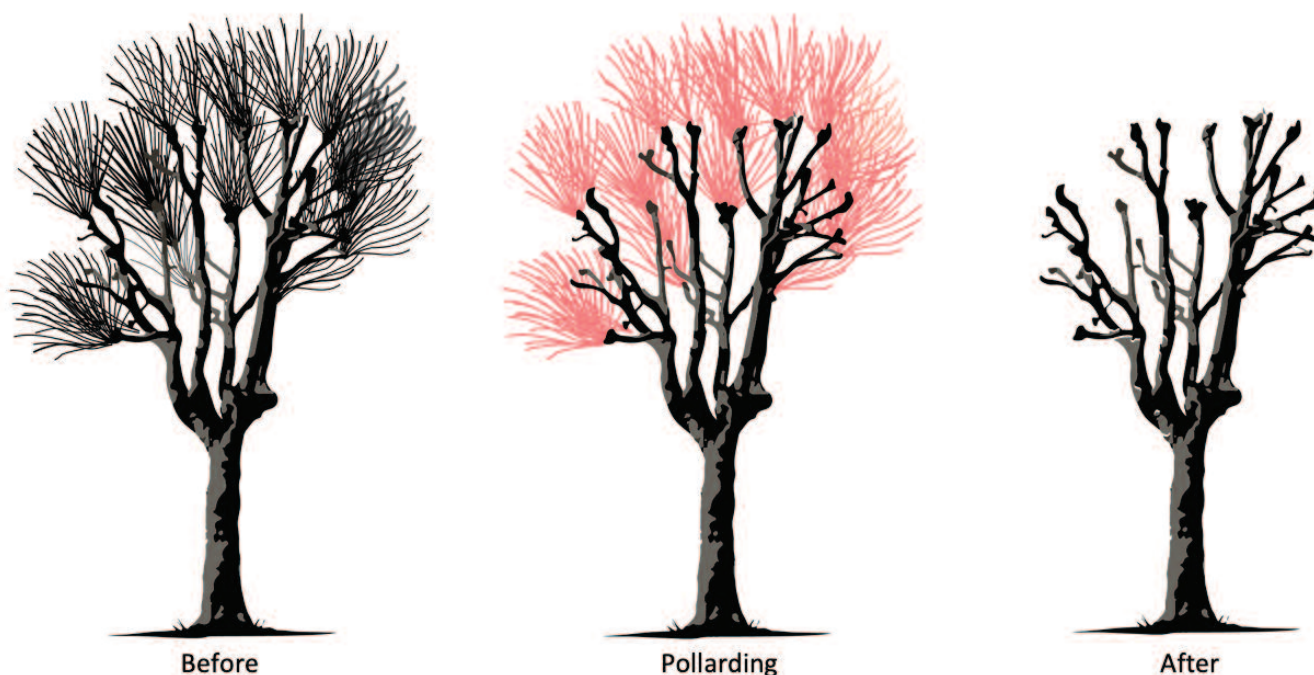


Figure 8: Pollarding

## 6.7 Topping

**Description:** Is the hard pruning, of a mature or semi mature tree, involving the removal of nearly all of the trees branches and foliage. This is nearly always considered unacceptable practice and should not be confused with pollarding. This type of pruning destroys the trees natural shape and introduces decay. This work encourages the development of a weak branch structure and can kill some species, such as beech.

**Reason:** This type of work will only be acceptable in extremely rare cases, for example where a tree has become hazardous and cannot be made safe by normal pruning practice but the retention of the stem or tree in a much reduced form is desirable for biodiversity. Where a tree has previously been topped it may be acceptable to prune back to the previous pruning points as with pollarding.

**Specification:** Topping is considered as a last resort to avoid felling. It should rarely be specified and where it is, should deal with individual trees.



## 6.8 Restoration pruning

**Description:** The principles behind this type of pruning are similar to those used in structural or formative pruning on establishing trees, but more care is required due to the maturity of the specimens involved. Restoration pruning may involve the training of young epicormic shoots to form new branches and allow the re-establishment of new areas of crown. It is therefore important to provide a more detailed pruning specification, which may involve the identification of a specific area of the tree's crown or even a particular branch.

**Reason:** Restoration pruning is necessary where a tree has been damaged, poorly pruned or where a once regular management regime has lapsed, resulting in the formation of poor structural features. This is often a more appropriate pruning option than re-topping previously topped trees.

**Specification:** This type of pruning is likely to need planning over a longer time frame so that the percentage of crown affected is limited to (perhaps only 10%) of a tree's leaf area at each pruning operation.

## 6.9 Crown cleaning and dead wood removal

**Description:** The removal of dead, dying or diseased branches, stumps, snags, broken branches, rubbing branches, unwanted epicormic shoots and climbing plants etc.

**Reason:** This type of pruning is used where a tree is being maintained as a specimen within the context of a formal park or garden. Here the removal of dead, dying, diseased, detached or broken branches is specified to improve crown appearance and the overall tree aesthetics. The removal of such branches may also be considered desirable where they represent a risk to persons or property. However, the formation of dead wood within the crown of a tree is part of the natural system of tree life and should not be considered to be a negative thing that has to be removed to maintain healthy tree growth, it is also important to remember that dead wood is an essential habitat for a large number of organisms in the ecosystem in which the tree lives. So it is important to consider that any removal of dead wood from the crown could potentially be detrimental to the continued viability of the ecosystem in which the tree lives.

**Specification:** This is achieved by systematically climbing throughout the crown of the tree. Cuts into live wood should be avoided when removing dead branches and stubs. Damage to the branch collar and callus tissue should be avoided when carrying out this operation.

## 6.10 Removal of epicormic shoots and basal growth

**Description:** Epicormic growth is the twiggy shoot growth which develops from adventitious buds under the surface of the trees bark and which develops more readily on some species such as lime and sycamore. It often grows from the base or stem of the tree but can also develop within the crown as a reaction to heavy pruning or as a reaction to a decline in the trees health resulting from a number of causes, including root damage and the impact of pest and disease.

**Reason:** This growth, particularly around the base of the tree can cause an obstruction where it is close to footpaths, driveways or the road. Also it may be removed for aesthetic reasons. This type of maintenance will often have to be done annually as the shoots soon re-grow.

**Specification:** Epicormic growth less than 20mm in diameter should be pruned cleanly back to its point of origin, avoiding damaging the bark of the tree. Growth greater than 20mm should be cut back to avoid damage to the branch bark ridge and collar. This must be carried out using a sharp handsaw or secateurs. On no account should a chainsaw be used in this operation due to the nature of the small shoots adjacent to the bark. All shoots must be removed back to, but not into, the branch collar leaving no projections or exaggerating the size of the wound.



## 6.11 Felling

**Description:** The complete removal of the tree.

**Reason:** Felling will only be considered where pruning does not offer an acceptable solution. Where the risk of injury or damage is an issue a risk assessment of the tree will be undertaken. Felling may be required for the benefit of a group of trees, for example it may be necessary to remove diseased trees or to thin out a group of closely planted trees to provide light and space to benefit the strongest individual trees. More detailed guidance on making decisions in relation to felling is given in Guidance Note 2: Guidance for Tree Management.

**Specification:** To cut the tree as close to ground level as possible, unless otherwise specified, sometimes it is desirable to level a taller stump to avoid creating a trip hazard where the tree is in a footpath. It may be necessary to remove the stump. The method of removal should consider the impact on the retained trees. See 6.1.2 for advice on tree stump removal.

## 6.12 Stump removal

**Description:** Removing the stump of the tree and the main roots near the stump.

**Reason:** The stump may be removed for aesthetic reasons so the ground can be reinstated or to remove a tripping hazard.

**Specification:** Stumps can be removed either digging out or by using a suitable stump grinding machine. The stump and exposed buttress roots are normally chipped to a depth of 300mm below the surrounding surface. Consideration should be given to the potential presence of underground services such as electricity cables, and in many cases it will be necessary to contact public utility companies in order to identify any services which may be present.

## 6.13 Stump treatment

**Description:** Treating stumps of felled tree with herbicide to prevent re-growth.

**Reason:** Where stumps are to be left in situ it is sometimes desirable to treat the stumps to prevent them re-growing. This re-growth is more likely in some species than others, for example poplar, willow, lime and sycamore will often shoot again from the stump where as this rarely occurs in conifer species. Stump treatment should not be undertaken where there is a group of trees of the same species growing together, as the herbicide may be translocated from the stump to the roots of a live tree via a root graft. This could potentially kill a neighbouring tree.

**Specification:** This should be undertaken as soon as possible after the tree has been felled to be effective. Approved stump killing herbicide must be applied in accordance with the manufacturer's specifications by suitably trained and qualified personnel in possession of a current certificate of competence under the control of pesticides regulations 1986. It should be applied by drilling holes in the outer cambium layer of the stump, which should then be bunged or covered to keep water out to prevent the chemical being diluted.



## 7 Getting Help

### 7.1 Sources of advice

Options for obtaining further help and advice include:

- Employing an arboricultural consultant or contractor: Choosing an Arboricultural Consultant and Tree Contractor leaflets
- Contacting Middlesbrough Council Contact Centre 01642 726001
- Contacting the Arboricultural Association <http://www.trees.org.uk/>

### 7.2 Employing a Tree surgeon

Tree work requires a high degree of skill and should only be undertaken by suitably qualified Arboricultural Contractors (also sometimes know as Arborists or Tree surgeons). Fully qualified and experienced Tree surgeons will be able to undertake tree work to the standards set in this document. It is your responsibility to ensure that your chosen tree surgeon/consultant is suitably insured. They can also assist you in determining what type of pruning is necessary to maintain or improve the health, appearance and safety of your trees. If tree work is not undertaken properly it could not only lead to injury to people and damage to property but cause permanent damage to trees. The Council produce a Guide to Employing a Tree Contractor that is available on request.

## 8 Summary

- Consider whether the work is really necessary and that the type of pruning specified will achieve the desired aim.
- Check whether consent is required from the Council before commencing with tree works.
- The presence of nesting birds and bats and other wildlife should be considered before undertaking work.
- No more than a maximum of 25% of a trees crown should be removed in a single operation.
- Tree work should only be undertaken by a qualified, competent and insured Arboriculturalist.
- Poor pruning often leads to increased maintenance, risk of failure, and increased future cost.

## 9 More Information

### Useful Contacts

Arboricultural Association	Tel: 01242 522152	<a href="http://www.trees.org.uk">www.trees.org.uk</a>
Bat Conservation Trust	Tel: 020 7627 2629	
	Bat Helpline: 0345 1300 228 (local rate)	<a href="http://www.bats.org.uk">www.bats.org.uk</a>
British Standards	Tel: 0345 080 9000	<a href="http://www.bsigroup.com">www.bsigroup.com</a>
Department of Communities and Local Government	Tel: 020 7944 4400	<a href="http://www.communities.gov.uk">www.communities.gov.uk</a>
Middlesbrough Council	Tel: 01642 726001	<a href="http://www.middlesbrough.gov.uk">www.middlesbrough.gov.uk</a>



## Useful Documents

British Standard BS 3998:2010 Tree Work  
Town and Country Planning Act 1990  
Planning Practice Guidance Tree Preservation  
Orders and Trees in Conservation Areas

## Glossary

**Basal shoot** (a root sprout, adventitious shoot, water sprout or sucker)

- is a shoot or cane which grows from a bud at the base of a tree or shrub or from its roots

**Branch collar**

- the attachment structure in woody plants that connects a branch to its parent branch or to the trunk

**Epicormic growth**

- a shoot growing from an epicormic bud which lies underneath the bark of a trunk, stem, or branch of a plant

**Leader**

- the primary stem of a plant, usually the top stem



