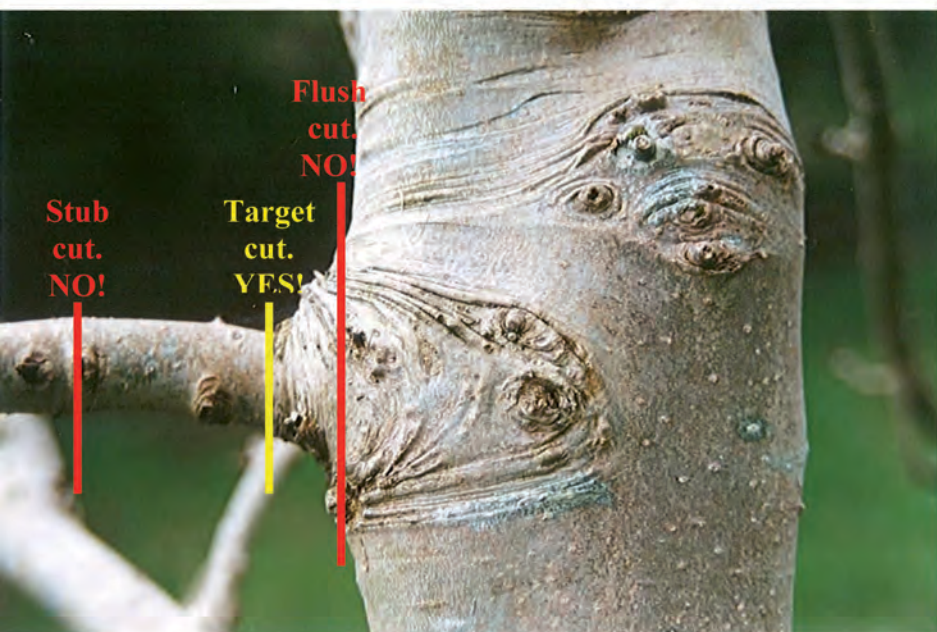


A GUIDE TO PRUNING TREES



WOODLANDS INFORMATION NOTE NO. 2



A Charitable Trust set up to conserve and enhance Shetland's heritage

**SHETLAND
AMENITY TRUST**

IMPORTANT NOTICE

Undertaking anything other than the simplest tree work is a highly skilled task requiring professional training in the use of specialist techniques and equipment, and should not be carried out other than by trained professionals. This guide sets out some guidance for those undertaking simpler tasks in a way that is also applied by professionals in respect of larger jobs, and aims to help readers distinguish between the two types of work. Where this leaflet suggests the use of trained professionals, **we strongly recommend that you consider their use.**

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A GUIDE TO PRUNING TREES: INTRODUCTION

Trees are few and far between in most of Shetland, and where they have become part of the landscape, for example in parts of Lerwick and Scalloway, they are often of such value that some have had Tree Preservation Orders placed on them. Some are situated in Conservation Areas and form an important part of these areas; such trees also have a measure of protection afforded to them.

These designations confer some protection from interference, including pruning...but there are many trees that have no legal protection. Sadly, when they grow to maturity they are not always appreciated – usually because they have outgrown their owners' aspirations: they take up too much light and space, they spoil the view, and their leaves clog up drains in winter, etc. Sometimes they do present genuine hazards to property or people or both, and it is always a tricky – and professional - business to assess correctly the degree of hazard, and the best remedial action.

Sometimes the branch of a tree may just be a nuisance – say you risk getting poked in the face by it every time you mow the lawn – or it's just a few inches from the living room window. On the other hand a tree, like some shrubs, might benefit from a thorough, rejuvenating cut back. In another case, you may have a young tree that appears to have two competing stems, and – quite correctly – you wish to remove one. Or you have noticed some dead branches, perhaps with coral fungus on them – these also should be removed.

There are some basic principles and practices which anyone who wishes to prune a tree should be aware of – some of these are “DON'TS” and are important safety points.

PRINCIPLES

- Rule 1. All cuts to living tree wood are WOUNDS.
- Rule 2. Wounds are potential entry points for disease and decay organisms.
- Rule 3. The larger the wound the more stress for the tree.
- Rule 4. Trees do not HEAL wounds! (Nor do wound dressings or “sealants”.)
- Rule 5. Trees DO have barriers and defences against disease and decay!
- Rule 6. Pruning cuts must NOT penetrate these barriers and defences!

PRACTICES

- Rule 1. DO NOT climb a tree to prune it! This is highly dangerous, and should only be done by a professional.
- Rule 2. DO NOT use a ladder to achieve the necessary height from which to prune! If you think you need one, then you need a professional.
- Rule 3. NEVER use a chainsaw unless you have been properly trained! This piece of machinery can easily be lethal – to you, to the tree - and to anyone nearby.
- Rule 4. Be aware that large branches (often the ones you think would be easier cut by a chainsaw), or long ones are HEAVY. (The Arboricultural Association, which recommends standards for tree pruning, advises that anything over 50 mm. (2 inches) in diameter “is probably too big for you”.
- Rule 5. Use tools, e.g., pruning saws, that are made for the job.
- Rule 6. Avoid cuts that tear bark or wood from the tree (see below, undercutting).
- Rule 7. NEVER prune close to power or telephone lines; call the relevant service providers.

The theory and practice of tree pruning were revolutionised by the work of Dr. Alex Shigo, who investigated the biology of trees in the 1960s, and discovered their ability to “compartmentalise” decay. Since then, approved methods of pruning – which are to be found in British Standards, number 3998:1989 Recommendations for Tree Work – have changed substantially.

- Gone are “**flush cuts**”, which severed branches from as close to the stem as possible. (See cover photograph)
- Gone are “**stubs**”, which were made by (often indiscriminate) lopping of branches away from the stem. (See cover photograph)
- Gone are practices such as filling cavities in trees with concrete and – except in a few cases – applications of “wound sealants”, such as Arbrex.

Instead we are advised to observe and imitate, as close as possible, nature. A branch that dies will eventually fall from or, more accurately, be shed by the tree, and where and how it breaks off from the stem is critical. How the tree tissues act around this break-off point is also important.

BARK RIDGE AND BRANCH COLLAR



Figure 1; Bark ridge and branch collar

Figure 1 above illustrates well these two physical characteristics: the **bark ridge** (red line) is formed at the upper union of branch and stem, and extends diagonally, down the stem of the tree. It is an effect of the progressive, year-by-year “knitting together” of tree and branch wood and bark tissue. The **branch collar** (yellow arrows) is situated between bark ridge and the blue line, which is here approximately at a right angle to the bark ridge, and to the branch itself. The branch collar in this picture is considerably “swollen” beyond the circumference of the actual branch, but the swelling is not indicative of any abnormality or disease; rather it contains those properties of the tree that are able to compartmentalise and resist decay. Unfortunately not all collars are so easily distinguished.

If the branch were to die off, its natural break-off point would be where it meets branch collar. Callus wood would form a circular “lip” around this point and might eventually completely seal the resulting hole (see *Figure 2*). Any decay that had set in would moreover be contained within the circumference of the branch *at that time*, and would be prevented from spreading up and down,

laterally, or inwards and outwards, within the tree. Such decay would effectively be walled off, or compartmentalised. **It is at the outer edge of the branch collar, following the blue line in *Figure 1*, that a final pruning cut should be made.**



Figure 2: Callusing



Figure 3: Severely lopped tree

Penetrating the branch collar or bark ridge with a pruning cut, however, effectively breaches the compartment walls, allowing decay to spread within the tree unobstructed. Flush cuts, which also expose a large area of stem wood, both vertically and horizontally, to the atmosphere, are particularly bad in this respect.

Stubs cut or “lopped” away from the branch collar have no protective wood tissue and are easily decayed: they also prevent the rapid callusing that can occur when the branch is “**target pruned**”, i.e., at the collar (*Figures 2 and 3*). The practice of indiscriminate lopping also enables adventitious or “**epicormic**” growth of several new branches close to the pruning cut. These new branches are only attached to the surface tissue of the “parent” branch and are weak, although vigorous in growth. They are thus not only potentially hazardous, they also rapidly

defeat the usual reasons for lopping in this manner – to let in light or create more space (see *Figure 4*).



Figure 4: Lopped tree with epicormic growth

“**Crown reduction**” – reducing the canopy area and height of the tree - or **thinning** should therefore not be done without target pruning. In practice this means always pruning back an unwanted branch to where it is joined to another branch, or to the stem (using the method described above). The same goes for **crown lifting** – the removal of branches close to the base of the tree.

Painting the cut surfaces with a wound dressing is now not recommended, except in a very few cases where diseases can spread from tree to tree. The reasons being that the anti-fungal and anti-bacterial agents in the dressing may kill off as many beneficial micro-organisms as harmful ones - and many of the latter are not destroyed, or withstood by so-called wound sealants.

Cavities in trees used to be cleaned out, to remove decayed wood, but all this achieves is transfer of decay into previously sound wood – by breaching compartment walls. Boring drainage holes to remove water similarly risks further

infection. Cavities also used to be filled with materials such as concrete, either apparently to give structural support, or for aesthetic reasons. Such practices have been discontinued by tree surgeons.

TREE PRUNING IN PRACTICE.

TOOLS.

IMPORTANT! Stout gloves should always be worn with hand tools. Chainsaws require special protective clothing.

Pruning saw. This is a specialised and very efficient hand-operated tool, which cuts on the pull stroke. Its narrow blade can be inserted into acutely angled “crotches” between branches, or branch and stem. Available either with holster, or folding.



Bowsaw: with raker tooth blade for green wood.



Chainsaw. Only required for larger branches (over 75 mm., 3 inches), and should **NEVER** be used by an untrained person.



Secateurs: scissor action: can be used on branches less than 13 mm. (½ inch) diameter.



Loppers: scissor action; for branches up to 30 mm. (1¼ inches) diameter.



Telescopic or long-reach pole pruners. These often combine a pruning saw blade, and a rope and pulley operated lopper. They can be used for higher branches, but need careful use – and should never be used near power lines. Beware also of falling branches. Power-operated pole pruners should only be used by trained personnel.



Knife: can be used to trim ragged edges, or for very small branches and twigs.



All cutting tools should be sharp. Most saw blade teeth are hardened and require replacement when blunted. Secateurs and loppers can squeeze and injure wood tissues – the branch should be held securely in the base of the blades. Anvil-type secateurs are not recommended, as they crush wood tissue.

PRUNING TECHNIQUES

IMPORTANT! This guide refers to large, or mature trees. All the techniques described below can, however, be applied to young and recently planted trees as *formative pruning*, and this is indeed the best time in the life of the tree to wound it, provided it is in good health.

TIME OF PRUNING

There is still debate about the best time to prune trees; in general, doing so at the beginning of the growing season allows the tree to recover lost energy (which is diverted from growth to deal with the wound) through spring and summer. Pruning in autumn and winter, during the dormant season, is more likely to allow disease and/or decay to develop. Early spring just before bud-break is a good time – but some species like sycamore and birch can “bleed” profusely from pruning cuts at this time: this is sap being transported up through the tree, and although unsightly it is not thought to endanger the tree. In practice, a hazardous situation does not permit the luxury of waiting for the optimum time to prune, but remember if there is suspicion of a hazard, a professional tree surgeon should be consulted – such a tree is likely to be too large for amateur action.

UNDERCUTTING

This is essential on branches that are being sawed, except – in the case of small branches - within a few inches of the branch collar, to prevent bark and wood from tearing. A first cut should be made from underneath the branch, upwards into about $\frac{1}{4}$ of the branch diameter. This cut should be one to two inches **INSIDE** (i.e., nearer to the branch collar than) the second, severing cut, which is started from above the branch (see *Figure 3* below). The final cut, 3, is at the branch collar.

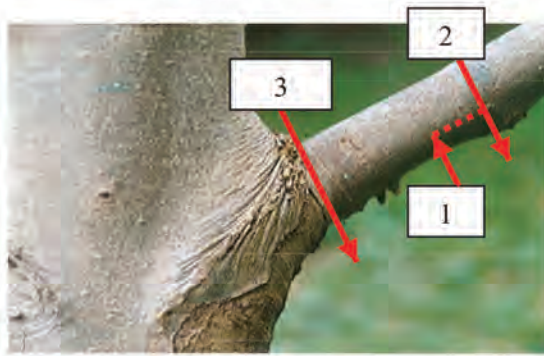


Figure 3

LONG BRANCHES should always be cut in short sections. **LARGE BRANCHES** should be treated in the same manner. If the branch is over 50 mm.(2 inches) thick you should consider professional help. Always be aware that wood is a very heavy material, more so in the growing season, because of the volume of water conducted through its vessels.

CROWN LIFTING

Removing lower branches that are an obstruction is the easiest pruning task as regards access. However it can also be the most destructive to the tree, as large wounds are more likely. Removal of one or more low, large heavy branches can also upset the balance of the tree, or make it top-heavy and unstable. Professional advice is recommended.

CROWN THINNING

Thinning can, if done with care, reduce the volume of branches and foliage in the crown. Dead wood can be cut out. Crossing and close, competing branches can be removed to the benefit of the tree's health, and to admit more light. Target pruning must be undertaken, or the tree will rapidly become denser than before.

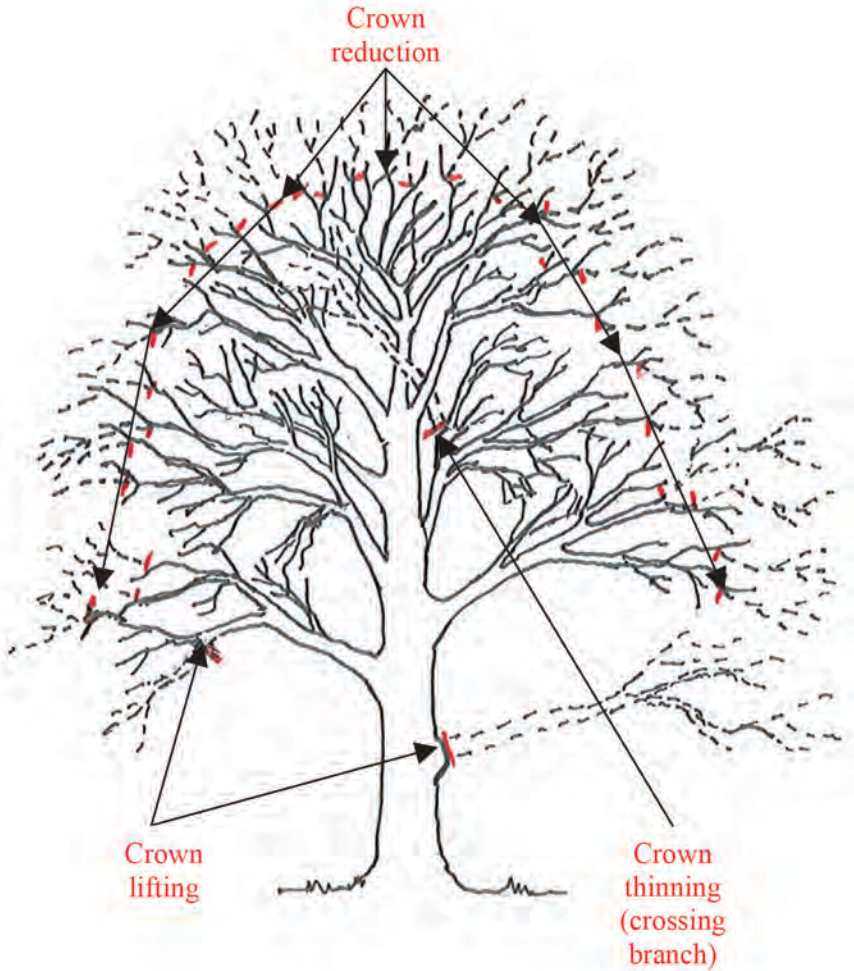


Figure 5: Crown reduction, lifting and thinning. Red marks indicate positions of pruning cuts at branch junctions

CROWN REDUCTION

This is the most skilled type of pruning. It usually requires a tree surgeon, who will need either to climb the tree or to use a mobile elevated work platform to access the uppermost and outermost branches. He or she will also need to keep the overall shape of the tree in mind, and as stated above, not leave any lopped branches, but trim back to branch junctions. No more than one third of the crown should be removed. The sort of practice depicted in *Figure 3* is NOT crown reduction, but disfigurement and injury on a grand scale.

QUANTITY OF PRUNING

This depends on the size, species, and age of the tree, and the size of branches to be pruned. A young willow can be quite severely cut back – nurseries often recommend this, so that a better stem to root ratio will be achieved. In this case the final pruning cut should be a little above a bud and sloping downward away from it, so that water is shed away from the bud (which will produce the new stem). A young forked tree may benefit from one of the stems being removed to prevent a later hazard developing, but to remove one stem of an old forked tree is likely to damage it very severely indeed.

Large branch removal means large wounds. The older the tree the less vigour it is likely to have to cope with such a wound, as well as to stay healthy in other respects. So as a rule of thumb no more than one large branch should be removed at any one time.

Light thinning and crown reduction which involves the pruning of several small branches at the crown's periphery should not damage a tree unduly, provided that the tree is healthy and that no more than one third of the crown is reduced.

WOUND SEALANTS

There is no need to apply a wound sealant to the surface of a pruning cut (there are some exceptions in fruit trees in the cherry family). Research has shown that such sealants can be penetrated by pathogens, and they can actually advance rather than hinder decay.

CONSERVATION AREAS AND TREE PRESERVATION ORDERS

Under the Town and Country Planning (Scotland) Act 1997, trees in conservation areas are protected if their stems are over 75 mm.(3 inches) in diameter at 1.5 metres (5 feet) above ground (a height often referred to in arboriculture as breast height). Any tree work, including pruning of branches and roots, requires notification to the Council as planning authority, giving at least 6 weeks notice. This means in Shetland contacting the Infrastructure Services Department of Shetland Islands Council, Conservation Section, at Grantfield, Lerwick. Conservation areas exist in Lerwick and Scalloway (see maps on pages 15 & 16).

Trees that have Tree Preservation Orders placed upon them are also individually – or in groups – identified and protected under the same Act, and permission is required before any kind of work is done to them. Presently there are Tree Preservation Orders (TPOs) in operation at Helendale and Montfield in Lerwick.

It is a criminal offence to undertake tree work without either notification or permission respectively, and large fines can be imposed.

USEFUL CONTACTS

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Shetland Horticultural Society:
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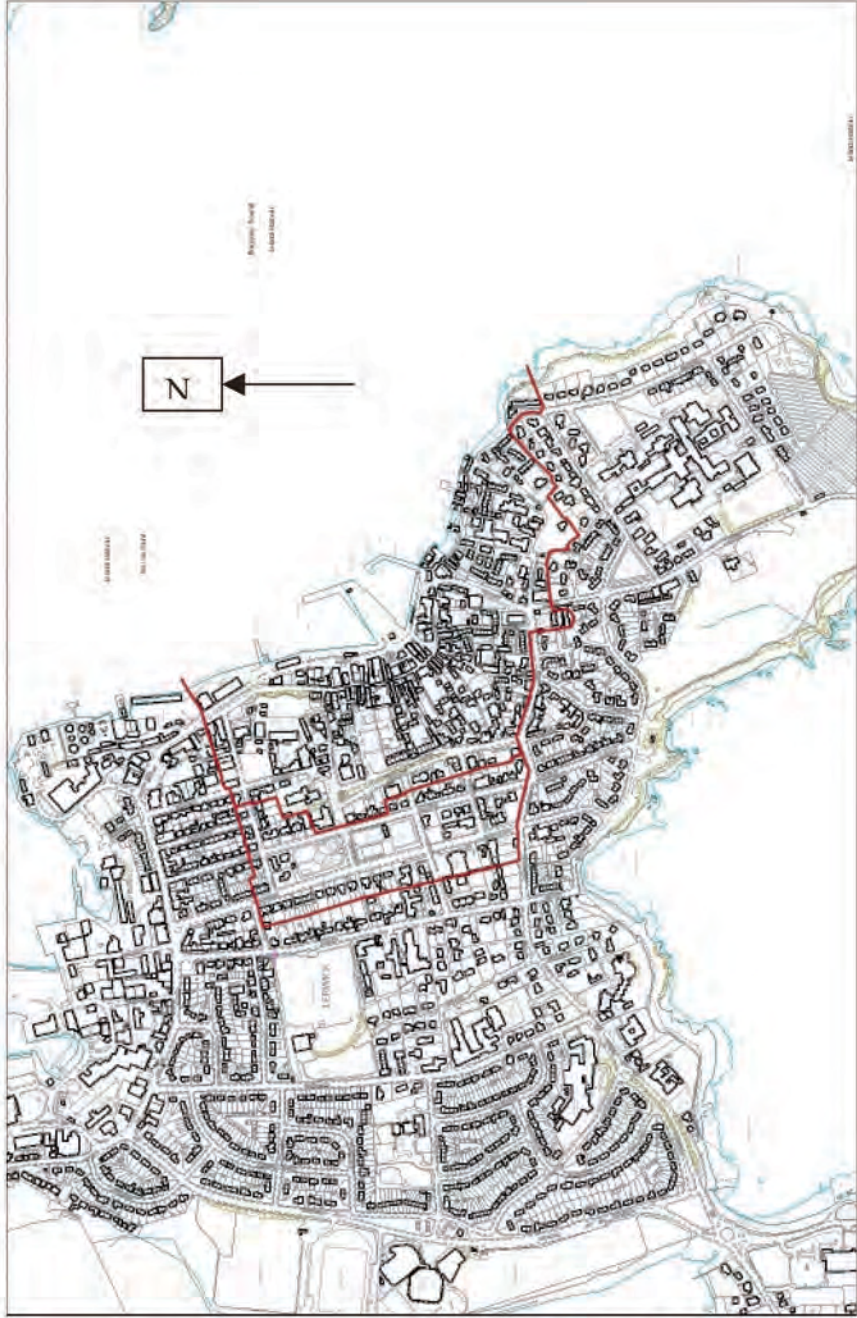
Arboricultural Association:
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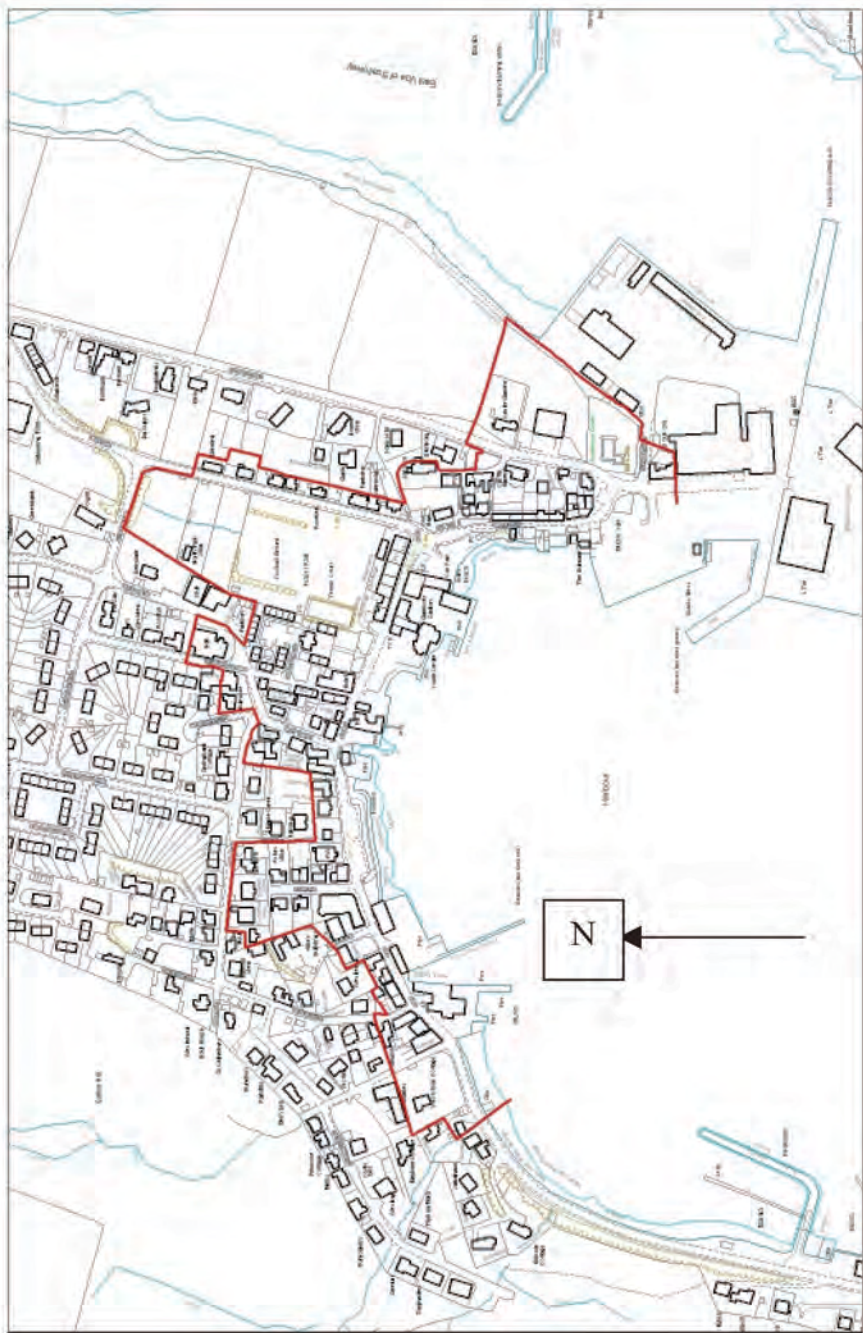
Website: www.trees.org.uk

A note on the maps of Conservation Areas overleaf: these are only indicative. Please contact the Council department noted above, or Shetland Amenity Trust, for more accurate detail and advice.



LERWICK CONSERVATION AREAS

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SCALLOWAY CONSERVATION AREA

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**Woodland Information Note No.1
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