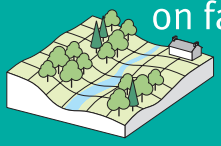
the creation of
small woodlands
on farms



3
Permanent Grassland

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3
Permanent Grassland

3.1 General Objectives for Small Woods

The objectives listed below reflect the role that woodlands play in permanent grassland. When considering where to site new small woodlands, try to identify sites that will add to these cumulative benefits:

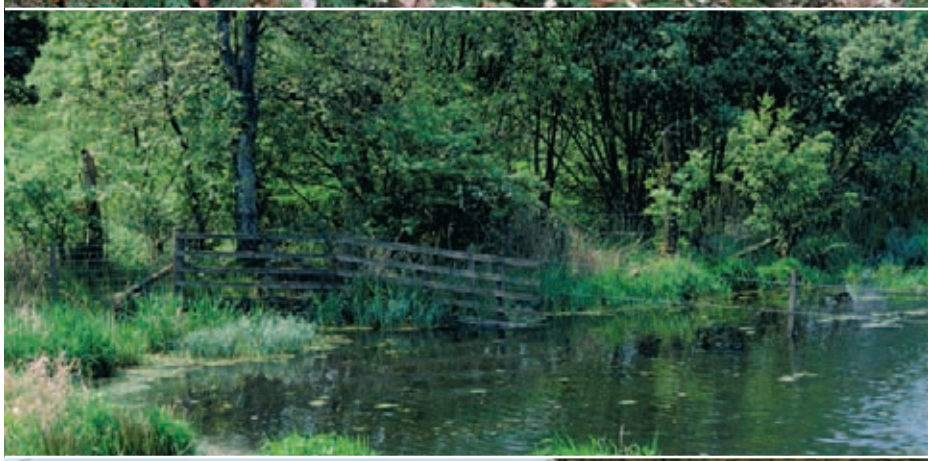
- Reinforce the existing pattern of shelterwoods by establishing new shelterbelts, or planning the replacement of existing ones
- Extend areas of native woodland around farm buildings, access tracks and other infrastructure, as well as along existing field boundaries to increase shelter and create a more extensive habitat network
- Extend areas of riparian woodland adjacent to watercourses, to emphasise these features in the landscape, stabilise river banks, improve water quality, reduce the impact of nutrient runoff, and create habitats for wide ranging species such as otters
- Identify areas where woodland would assist in reinforcing biosecurity and managing stock movements around the farm
- Link existing woodlands and other habitats, such as ponds, field boundary trees, dykes and areas of less intensively managed land
- Use woodland to shelter and help define preferred public access routes between fields, around settlements and on approaches to hills

Grass fields and forage crops are generally managed for raising stock or for dairy farming. Shelterwoods and windbreaks are key features around the fields. Semi-natural woodland is often associated with gullies or cleughs and there may be some additional planting around the farm buildings and along roadsides, to act as both a wind and snow break.

Stock Shelter

Mixed Broadleaved Native Woodland

Riparian Woodland



Policy Woodland

Game Coverts

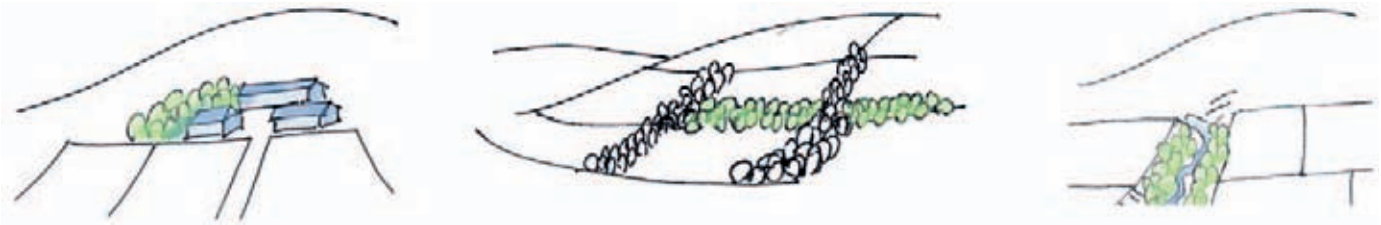
3.2 General Guidance

This section gives general guidance on siting and planning the layout of small woodlands on permanent grassland. The guidance takes into account the type of agricultural management involved, and the wider countryside objectives that relate to managing grassland and forage crops.

3.2.1 Siting Small Woodlands on Permanent Grassland

New planting that is completely detached from existing features will often appear isolated within the wider countryside and contribute less to the existing landscape structure.

In this landscape, small woodlands are therefore often best located next to an existing feature, such as existing woodland, a burn, pronounced gully, farm steading, or field boundary. Such woodlands will integrate more easily into the existing landscape structure.



A survey of your existing farmland is likely to identify existing woodland and natural or built features that could be used as the focus of new planting while still meeting your farming objectives.

A survey also gives you an opportunity to identify existing sensitive habitats, areas of cultural importance and built features that should be not be planted.

3.2.2 Woodland Types on Permanent Grassland

Small woodlands fit well into a landscape pattern of grazed fields and forage crops. Even individual trees, hedgerow trees, avenues and small groups of trees will make a big impact within this managed landscape. Generally, the most appropriate woodland types will be shelterwoods for stock, native woodland, riparian woodland and cover for game.

Woodland Types

Stock Shelter (Section 3.3): a woodland which will specifically create shelter for stock

Mixed Broadleaved Native Woodland (Section 3.4): a woodland which can be used for anything from screening buildings to providing shelter

Riparian Woodland (Section 3.5): a broadleaved woodland of selected native species for establishing next to watercourses

Policy Woodland (Section 3.6): a diverse and multi purpose woodland, historically associated with plantings around country houses

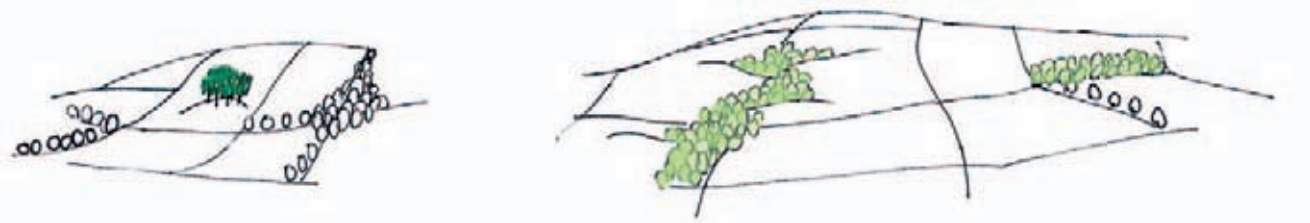
Game Coverts (Section 3.7): woodland for raising game birds, laid out to provide structure for a driven shoot

The type of woodland you choose should reflect your objectives and fit in with the surrounding landscape. In some areas there may be very specific and locally distinctive tree species, woodland habitats or features. These are often easy to identify by looking around your area. Local advisers (who can be identified using the contact list in the Annexes), may also be able to offer additional information on the type of woodlands and species that are important in your area.

3.2.3 Shape and Form

Woodland in this landscape can be designed to fit in with the field boundaries, reinforcing the geometric shapes of the field pattern. This can be particularly successful if woodlands link together, creating a physical network that extends around the fields and through the landscape.

In many areas of permanent grassland, small woodlands appear as a feature, perhaps as a long silhouette of wind clipped beech on a prominent skyline, a circular stand of pine on a distinct knoll or an informal clump of individual sycamore adjacent to the farmhouse.



In this type of farmland woodland is often shaped to reflect rolling topography and natural features such as irregularly shaped cleughs or distinct knolls. More organic shapes are particularly successful where undulating landform shapes are more visually dominant in the landscape than the field boundaries. A more irregularly shaped external edge is also an important contribution to wildlife habitat and helps to provide shelter from wind blowing from any direction.

3.2.4 Species Choice

While the choice of species needs to reflect the function of the wood, planting should reflect the managed character of the landscape and its relatively lowland location.

Pine based shelterwoods, stands and belts of broadleaved trees and some mixed woodland tend to dominate this type of farmed landscape.

Large broadleaved trees, such as oak and beech are also common features in this landscape, although in cleughs and along burnsides, smaller growing species, such as birch, alder, aspen and willow can be found.

This variety of woodland types and tree species reflects the transition between more fertile, deeper soils of the lowlands, which favour the large trees, and the

3 Permanent Grassland

gradual elevation to thinner, rockier soils and more exposed sites that are generally more suitable for the smaller trees.

In some parts of the country, there are particular species that are associated with particular landscapes. Beech trees or Scots pine are a particular feature in parts of the Lothians and Aberdeenshire for example, while small stands of sycamore are associated with farm buildings in the west or north east. These trees do well in the soils and climate of these areas and planting them will reinforce the individuality of the local landscape.

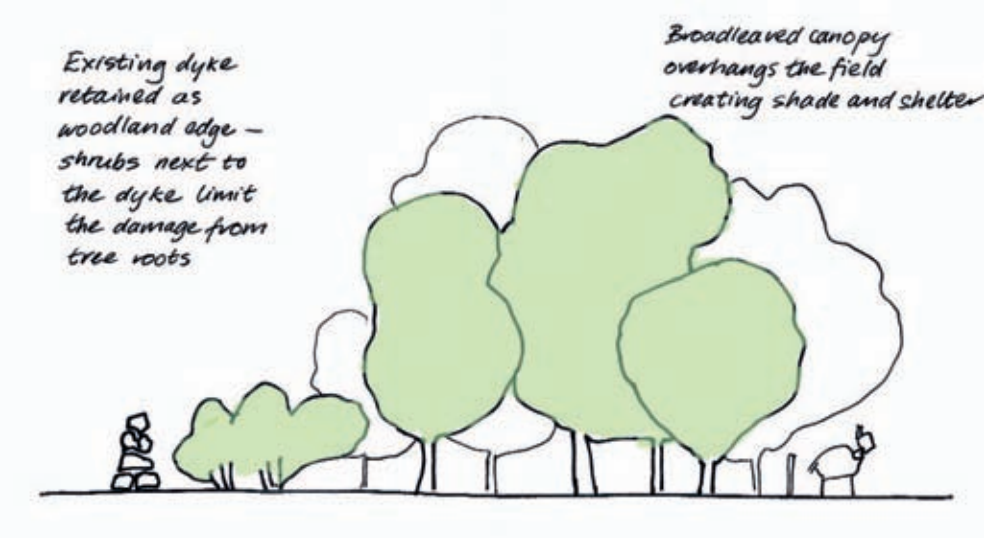
When choosing potentially invasive species however, such as beech and sycamore, avoid planting them where they could seed into existing native woodlands. Invasive shrubs such as rhododendron should be avoided altogether, and beech should also not be planted if it is likely to encourage the spread of grey squirrels.

3.2.5 Edge Detail

Where woodland is placed adjacent to stock grazing, the edge should aim to maximise shelter for animals. In some places an existing dyke can be used as a woodland boundary. More frequently, however, hedges are established to create a sheltered edge, although a gradation of tree species, including shrubs, can provide similar sheltering attributes. In some parts of the country, beech or hawthorn hedges occur frequently, and can also offer cover for game and wildlife.

Often the overhang of trees provides valuable additional shade and shelter, but may suppress the growth of light dependant shrubs. Shade tolerant edge species such as holly, guelder rose, hazel and honeysuckle should therefore be considered.

Edge detail of woodland on permanent grassland



3.2.6 General References

For general advice on planting and managing woodlands and trees, the following publications by the British Trust for Conservation Volunteers are recommended:

Woodlands, A Practical Handbook, BTCV, which provides a systematic guide to managing existing woodlands and planting new woodlands for a variety of objectives. It is available from BTCV Enterprises Ltd, Conservation Centre, Balby Road, Doncaster, DN4 0RH (01302 572200), or can be ordered through the website **www.btcv.org/shop**.

Tree Planting and Aftercare, A Practical Handbook BTCV, which provides a detailed guide to planting and design of new woodlands for a variety of objectives. It is available from BTCV Enterprises Ltd, Conservation Centre, Balby Road, Doncaster, DN4 0RH (01302 572200), or can be ordered through the website **www.btcv.org/shop**.

Advice on current practice and new initiatives in relation to farm woodlands can be found in *Farm Woodland News* a short newsletter edited by the Scottish Agricultural College. Current and back issues are available to download from the SAC website on **www.sac.ac.uk** - type 'Farm Woodland News' into the Advanced Search box.

General advice on the key objectives for managing the natural heritage can be found in the Natural Heritage Futures publication for your area, which can be obtained from SNH publications at Battleby, Redgorton, Perth, PH1 3EW (01738 444177), or can be ordered through, or down loaded from, the website **www.snh.org.uk**, by following the link to publications and then typing in 'Natural Heritage Futures Series' into the search link.

3.3 Stock Shelter

On grazing land, woodland for shelter is primarily aimed at sheltering stock. Where forage crops are grown, these are usually relatively quick growing grass for silage, or crops that are eaten in situ by over wintering stock. To meet the primary objective of stock shelter, woodland should be designed to provide a narrow strip of calm in the immediate lee of the trees. This type of shelterwood will however create turbulence further out in the field, so is less appropriate for fields used for long growing, harvested crops. The key features of a woodland required to shelter stock are therefore:

Woodlands for shelter should be located where they can link in with existing woodland

Creating links within the existing pattern of woodland maximises the efficiency of shelterwoods as a whole and contributes to the wider landscape pattern and habitat network.

Woodlands for stock shelter will inevitably be linear in form, but can also be quite wide to create a dense barrier

Shelterwoods usually aim to provide stock shelter along the greatest length of field edge possible, and therefore tend to be broadly linear in form.
The most efficient linear shelterwoods are at least 12 times longer than the height of the trees at maturity.

Establishing trees for shelter around more than one side of a field will allow for variable wind direction

The greatest degree of shelter is provided when the wind strikes the woodland at right angles, so planting on more than one side of a field enhances the effectiveness of the woodland.

Woodlands for stock shelter should be dense and relatively impermeable, with a particular focus on a dense lower storey

To achieve a significant reduction in wind speed to the immediate lee of a woodland, a dense tree and shrub woodland structure should be established. This type of woodland is particularly useful for lambing fields, areas of permanent grassland, and winter grazing, where very sheltered areas are valued.

A relatively wide shelterwood of a minimum of 30m will create a relatively impermeable barrier, which can be further enhanced by species choice

Beech, spruce and sycamore provide good shelter but create dense shade, which makes it difficult to establish an understorey. These trees should only be used in wider belts, where the width of planting will compensate for the lack of understorey. Native broadleaves can create an almost impermeable barrier, even in winter, if planted in a belt more than 30m wide. Also, with their lighter canopy cover, an understorey can be more easily established to further add to the effectiveness of the shelter.

The woodland should include trees that can grow tall to maximise the area of shelter

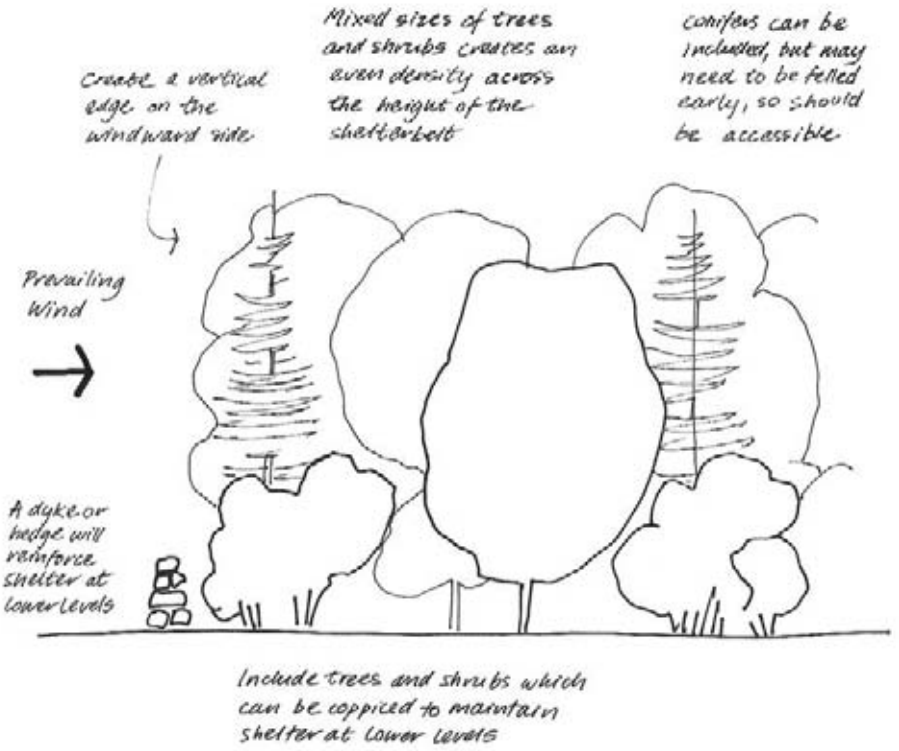
Tall trees, such as Scots pine, Sitka spruce, beech, sycamore, oak or ash, create the maximum area of shelter on the leeward side.
If using only native species, plant oak, ash or Scots pine as the main tall tree species.

The woodland should include a varied height mixture of shrubs, medium trees and tall trees, and perhaps even a hedge, to ensure that shelter is available all year round

To create an even density across the height of the wood, shrubs such as blackthorn, hazel and hawthorn and small trees such as birch and rowan should be included in the species mix.
Consider selecting trees which can be coppiced to maintain a shrubby layer, such as alder, hazel and ash.
Alternatively, plant a mixed native species, hawthorn or beech hedge, all of which will reinforce shelter at the lower levels.

The edges on the windward side of the woodland should be vertical when viewed in cross section

Vertical edges create the largest area of reduced wind speed in the lee of the woodland – a sloping cross section tends to only deflect wind, which then quickly returns to ground level on the leeward side.



Cross section of stock shelter woodland summarising key features

Sources of Help and Advice

If you are planning an extensive network of windbreaks and shelterwoods, you should contact a forestry consultant or agricultural adviser for specialist advice. Details of how to contact these advisers are to be found in the Annexes. They will be able to analyse wind speeds across your land and plan a shelter system that suits your needs and the physical conditions on your farm.

The following publication also provides useful additional advice:

Woodlands for Farm Shelter, SAC, 1992, which provides a useful, illustrated summary of shelter wood design and management, including detailed species recommendations.

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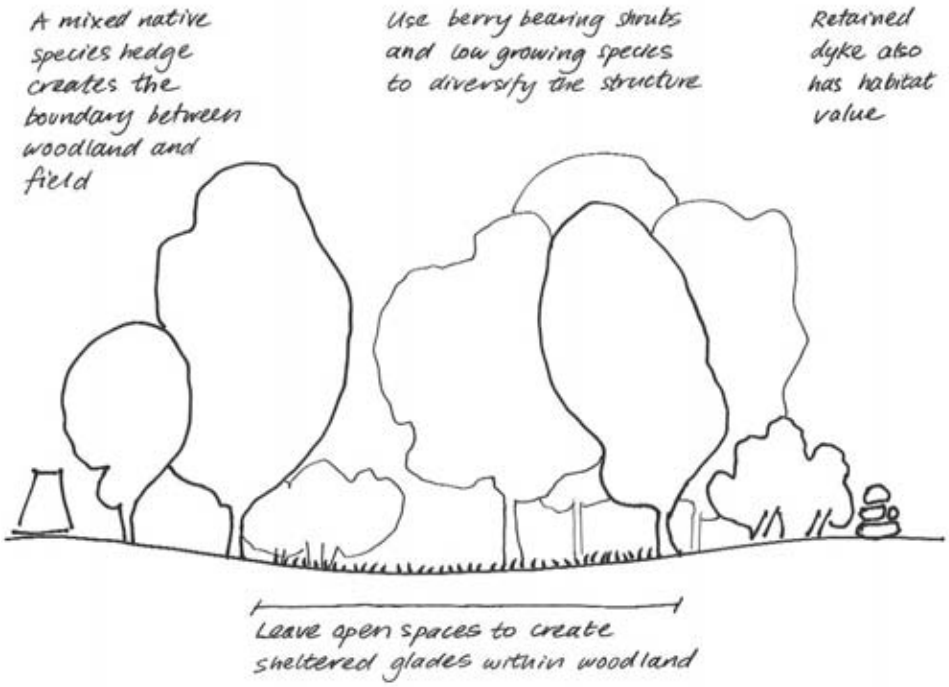
3.4 Mixed Broadleaved Native Woodland

Farmland used primarily for grazing tends to be located between low-lying fertile straths and unimproved hill land. Grazing land associated with dairy farming is largely associated with the wetter climate of the west. Native woodland is a diverse and naturalistic mixture of trees and shrubs that can be planted to provide habitats for native plants and animals, screen buildings, enhance amenity, provide localised shelter and create interest along public access routes. The key features of a native woodland on land used for grazing are therefore:

The woodland can be any shape, although a generous length of 'edge' and a variety of aspect expands the habitat range, therefore an organic shape is often best	An organic woodland shape creates a more naturalistic appearance and may include fenced off areas of uncultivated ground vegetation which increases habitat value. The amount of 'edge' can be increased by retaining open spaces within the woodland.
Woodlands should be linked to other habitats, such as hedges, uncultivated land, species rich grassland and watercourses, to create an extensive habitat network	Expanding the range of habitats increases the ecological value of the farm. Creating woodland links between uncultivated areas enhances the habitat network and the pattern of the wider countryside.
Woodland structure should be as diverse as possible	The woodland should combine tall trees with small trees and shrubs, and dense cover with sheltered open spaces to provide the maximum range of habitats.
Species should be locally native broadleaves, appropriate for the soil conditions of the area	Pedunculate or sessile oak, silver birch and rowan, with alder, downy birch and ash in wetter areas, are the species which form the basis of much of the mixed broadleaved native woodland, although local knowledge should be used to inform your species choice. Hazel, bird cherry, hawthorn, dog rose, blackthorn, holly, guelder rose, elder and willow form a useful understorey of shrubs.
There may be locally specific native species that could be incorporated into your planting	Sessile oak, aspen, gean and common whitebeam are all locally specific species which may occur in your area or on your soil types.
Woodland should aim to contribute to local biodiversity	Local ecological and woodland advisers can advise you on species and habitats which depend upon native woodland in your area.

Cross section of mixed broadleaved native woodland summarising key features



Sources of Help and Advice

If you are planning a network of native woodlands, you should contact a forestry consultant or ecological adviser for specialist advice. Details of how to contact these advisers are to be found in the Annexes. They will be able to look at the range of habitats on your farm and advise on how best to integrate new woodlands.

The following publications and websites also provide useful additional advice:

Native Woodlands of Scotland, Forestry Commission, which provides a good introduction to the range, history and types of native woodlands in Scotland.

Creating New Native Woodlands, Forestry Commission Bulletin 112, 1994, available from the Forestry Commission, outlines the range of native woodland types across the UK, and advises on how to identify the appropriate species combinations for your area and soil type.

Habitat Networks for Wildlife and People, Forestry Commission and Scottish Natural Heritage, 2003, which provides a general introduction to habitat networks.

www.scottishnativewoods.org.uk This website provides some background information on riparian woodland, and the organisation has several publications related to riparian and other native woodland types.

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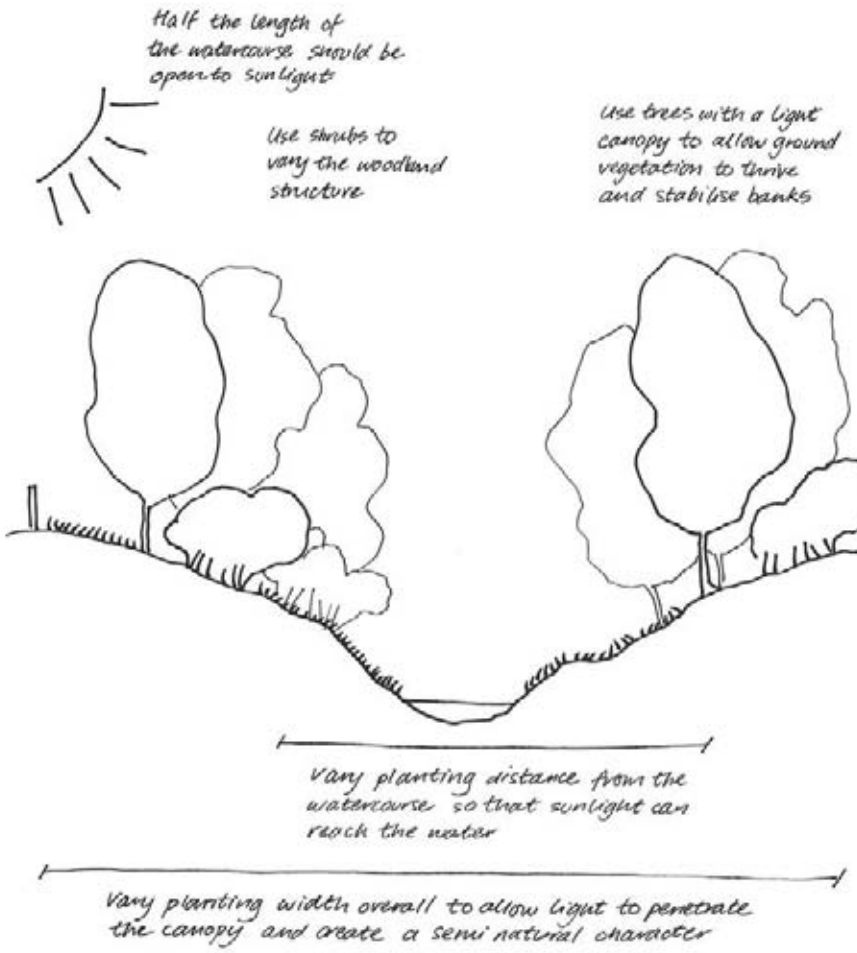
3.5 Riparian Woodland

Land that is primarily used for grazing tends to be located along the upper reaches of the wide, slow moving main river systems, or on steeper land where faster flowing burns and tributaries dominate. Riparian woodland can be used to stabilise riverbanks and help prevent pollution from reaching watercourses, as well as improve water quality and fresh water habitats. Riparian woodland can also contribute to flood plain management. The key features of a riparian woodland are therefore:

Riparian woodland should be linear in form, as it will follow the line of the watercourse	Riparian woodland should ideally extend at least 25m from the edge of the watercourse.
The outer edge of the woodland should vary in distance from the watercourse, to create a relatively naturalistic shape	Woodland planting along watercourses should vary in width and be organically shaped. This creates a more natural appearance, but also increases the length of edge which is good for wildlife.
Tree species should be locally native broadleaves, appropriate for growing in wetter areas and mainly light foliaged to allow ground vegetation to thrive	Species may have to be flood tolerant and are likely to include alder, willow, ash, downy birch, hazel and aspen. Open or partially wooded conditions along the river banks will ensure that ground vegetation thrives and minimises bank erosion. Avoid too many heavily shading trees, such as alder and beech.
Trees should alternate with areas of permanent wetland, seasonal wetland and open space to create a diverse riparian habitat	Existing wetland habitats, species rich flushes, sedges, rushes and other wetland vegetation are likely to be important habitats in their own right which should be maintained within a framework of new woodland.
Alternating areas of open space along the riverside creates important dappled shade	It is recommended that half the length of a watercourse is left open to sunlight, with the remainder in dappled shade, to maintain a good fresh water habitat. In this respect, open ground to the south of a watercourse is the most valuable for improving biodiversity.
It may be that riparian woodland can be established through regeneration	Where native seedling trees have been suppressed by continuous grazing, riparian woodland may become re-established once stock has been removed.
Riparian woodland can be an important component of wider flood plain management	If you are considering undertaking wider flood plain or river habitat management, you should liaise with your riparian neighbours to coordinate a collaborative initiative.



Cross section of riparian woodland summarising key features

Sources of Help and Advice

If you are planning an extensive network of woodlands that includes riparian woodland, or a collaborative initiative on flood plain management, you should contact a forestry consultant or ecological adviser for specialist advice. Details of how to contact these advisers are to be found in the Annexes. They will be able to look at the range of habitats on your farm and advise on how best to integrate riparian woodland with other woodland networks.

The following publications and websites also provide useful additional advice:

Restoring and Managing Riparian Woodlands, Parrott, John and Mackenzie, Neil, 2000, available from Scottish Native Woods. This booklet describes the benefits of riparian woodlands, their relationship with freshwater ecosystems, and gives practical advice on their establishment and management.

Forests and Water Guidelines, Forestry Commission, 2003, describes riparian habitats and their management, as well as offering guidance on forest operations around watercourses and advice on managing riparian vegetation.

Habitat Networks for Wildlife and People, Forestry Commission and Scottish Natural Heritage, 2003, which provides a general introduction to habitat networks.

www.scottishnativewoods.org.uk This website provides some background information on riparian woodland, and the organisation has several publications related to riparian and other native woodland types.

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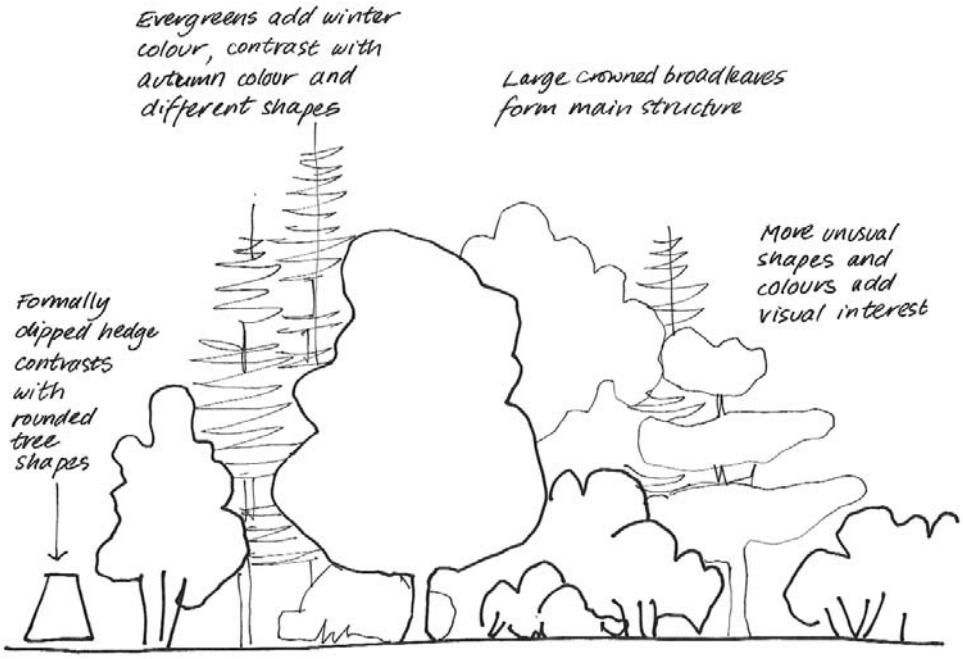
3.6 Policy Woodland

Fine policy woodland is an asset appreciated by the wider public as well as making an attractive contribution to the amenity of individual farms and estates. Policy type woodland is a good all-purpose small woodland with a variety of potential uses, and is most appropriate for establishing on farm land at lower elevations. It can be used to screen structures and public roads, provide a setting for buildings, add autumn colour to a view or manage public access. It can be combined with individual trees, hedgerow trees, avenues and roundels to create an attractive pattern of landscape features. The key features of a small policy woodland are therefore:

The woodland can be in any shape, including roundels, linear or organic forms and geometric shapes that link in with the network of field boundaries	One option is to strengthen the pattern of the field boundaries or the formal layout of buildings and infrastructure. Alternatively, organic shapes can relate to specific natural features, such as low hills, waterbodies or river terraces.
Large crowned broadleaves and tall conifers should dominate the woodland	Core species, such as oak, beech, chestnut, lime and ash, as well as firs, larches and spruce, create the distinctive, mature, well established character of policy woodland and these species should dominate proposed plantings. Relatively small trees, such as birch and rowan, should be used sparingly to add interest around the edges of the woodland.
Unusual and exotic species can often be accommodated within this type of woodland	In many parts of lowland Scotland, horse chestnut, lime, red oak, Norway maple, Douglas fir, Grand fir, European larch and other exotic species in smaller quantities contribute colour and diversity of form to policy woodland. Some of these species may not thrive on exposed sites, and to help identify appropriate species, look and see what has been growing successfully nearby.
A fine stand of one species can also make a striking feature in the landscape	A copse of beech on a low rise, a small stand of larch, an avenue of lime or horse chestnut trees are all examples of how a single species can be used to good effect.
In low-lying landscapes, the edge of a woodland is often the most visually dominant feature and should be planned to maximise its amenity value	The edge of a woodland offers the opportunity to maximise species contrast, such as placing broadleaves with good autumn colour against an evergreen backcloth. Consider edging the woodland with a well clipped beech hedge, which will contrast with the informal shape of the trees.

Cross section of policy woodland summarising key features



Sources of Help and Advice

If you are planning an extensive network of policy woodland and other landscape features you should contact a forestry consultant or landscape architect for specialist advice. Details of how to contact these advisers are to be found in the Annexes. They will be able to consider the cumulative effects of a series of woodlands and offer advice on other features that complement the woodland pattern.

The following publication also provides useful additional advice:

Lowland Landscape Design Guidelines, Forestry Authority, 1992, available from the Forestry Commission, describes how to design and manage woodlands in the lowland landscape.

3.7 Game Coverts

Woodlands that create shelter for pheasants and other game birds can also be located to create a fine driven shoot that will enhance the sporting value of a farm. To meet this objective, well spaced coverts that provide warm shelter, nesting cover and roosting places should be located where a successful drive can flush out fast, high flying birds. The key features required of a woodland to provide game cover are therefore:

Woodlands should be designed to have generous length of 'edge', and therefore tend to be relatively narrow and linear in shape

Pheasants are seldom found more than 50m inside a wood. Narrow woodlands and organic shaped woodlands with long external edges are therefore ideal. Creating open spaces within the woodland can also increase the amount of 'edge'.

Several small woodlands located on higher ground will create the framework for a successful driven shoot

The recommended pattern is a series of small coverts arranged 200m to 500m apart. These coverts should ideally be located on low knolls which allow guns to be placed below the flight line of flushed birds.

Other landscape features, such as hedges and watercourses, should link woodlands, so that game birds can travel between coverts on foot

Wide hedges also provide additional cover for other quarry species, such as partridge, and enhance the network of habitats. This will increase the ecological value of the farm and provide links into the pattern of the wider countryside.
Woodlands linked to other features also appear less isolated in the landscape.

Woodland should have a shrubby external edge to provide low level shelter and nesting areas

Shelter for pheasants is required at ground level, and a mixed native species hedge around the perimeter is ideal.
An internal shrub layer including hawthorn, hazel and guelder rose and evergreens such as holly and yew, reinforces warmth and year round shelter.
Avoid using invasive species, such as rhododendron.

The central core of the woodland should provide trees that are appropriate for roosting

The ideal mix contains 60 – 70% broadleaves and 30 – 40 % conifers.
Preferred trees for roosting include oak, ash and gean, all of which allow undergrowth to thrive, combined with larch, and Norway spruce.
Besides providing winter warmth and shelter for game birds, Norway spruce is also a good red squirrel habitat.

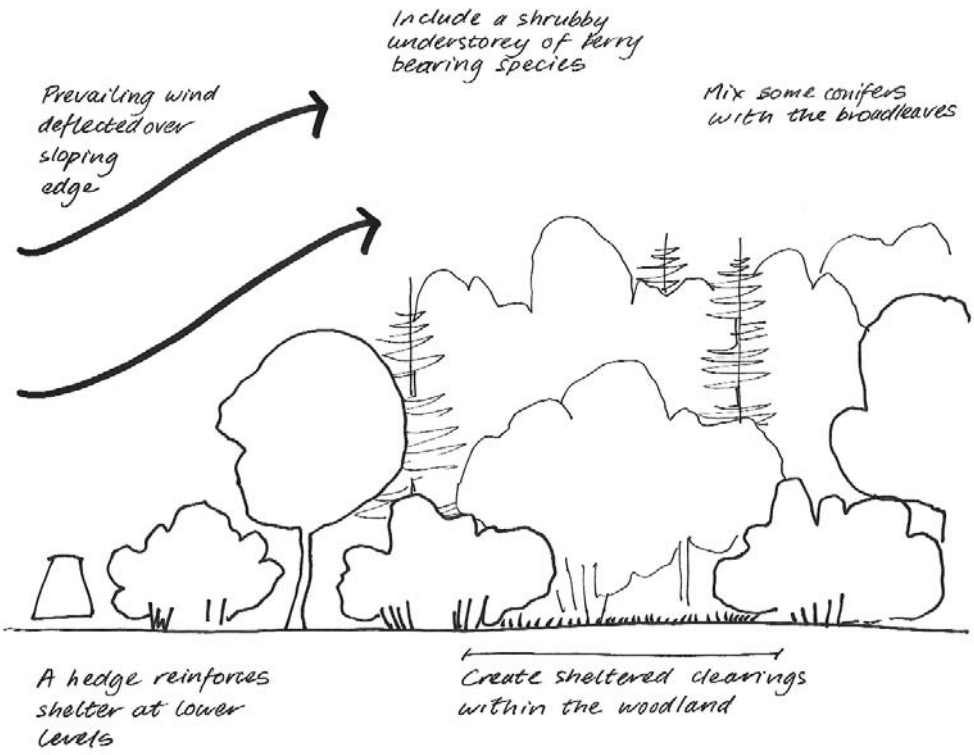
To assist in providing a well managed shoot the woodland should include flushing points, and be planned to encourage birds to rise

Flushing points are groups of open shrubby spaces within the wood, surrounded by medium height trees, from where birds are driven to fly upwards as they leave the woodland.
Berry bearing trees, such as rowan, bird cherry, crab apple and small trees such as willow and birch, should surround these areas.

The woodland should ideally have a sloping edge when viewed in cross section, so that wind is deflected over the woodland, maintaining a sheltered internal environment

Cross section of game covert summarising key features

It is difficult to create permeable shelterwoods which will also be useful game cover, as a game covert should not be draughty.
A sloping cross section will deflect the wind away from the wood, but it will then quickly return to ground level on the leeward side of the woodland.



Sources of Help and Advice

If you are planning a new, extensive network of game coverts, you should contact an adviser at the Game Conservancy Trust, a forestry consultant or agricultural adviser for specialist advice. Details of how to contact these advisers are to be found in the Annexes. They will be able to analyse the terrain on your farm and plan a system of woodlands which is suitable for game, and fits in with the rest of your farming enterprise.

The following publication and website also provides useful additional advice:

Woodland Conservation and Pheasants, A Practical Guide A Game Conservancy Trust Conservation Guide, available to download on line (**www.gct.org.uk**) or from the Game Conservancy Trust. This leaflet provides a good introduction to creating woodlands that will enhance pheasant management.

The Game Conservancy Trust website, **www.gct.org.uk** offers advice and a wide range of publications on managing habitats for game.