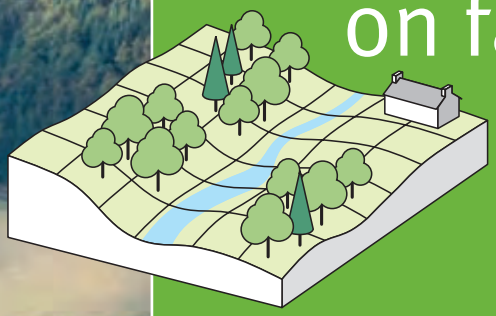
the creation of **small woodlands** on farms

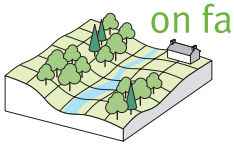


Forestry Commission Scotland

SCOTTISH NATURAL HERITAGE

SCOTTISH EXECUTIVE

the creation of
small woodlands on farms



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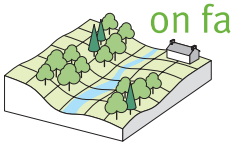

1 Introduction

Small woodlands, woodland features and even individual trees can be an asset on any farm. This guidance describes the benefits of creating new small woodlands, where they can best be sited and offers some advice on planning, layout and species. It focuses on small woodlands of a few hectares in size, say no bigger than five hectares.

1.1 The Potential Benefits of Small Woodlands

Small woods on farms should be seen as practical additions to the farm infrastructure. They can provide shelter, shade and a setting for farm buildings. They can also reduce wind-borne soil erosion and help reduce both the amount and rate of runoff into watercourses, thus contributing to flood prevention measures in susceptible areas.

Increasingly, woodlands are also being used to provide and direct access through farmland and to act as buffers to increase biosecurity. Even avenue, individual marker and hedgerow trees can add to the experience of the landscape, and help guide the visitor. Well placed woodlands can also enhance wildlife habitats and collectively form networks of woodland that allow plants and animals to expand their existing habitat.

Woodlands often contribute to an attractive farmed landscape, and an attractive landscape not only looks good to visitors and the wider public, but can also enhance the value of a property and the view from the farmhouse. Planting can be used to increase seasonal colour, add a feature to the landscape, frame a view or screen an unsightly structure.

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Usually, woodlands are particularly useful because they are multi-purpose. A single woodland can often meet many objectives, and with careful management, those purposes can change over time. The adaptability of woodland and the many uses it can be put to over its lifetime is a potentially valuable addition to any farm.

Examples of the many different uses of small woodlands include:

- Screening unsightly buildings and activities
- Hiding buildings or structures from view for security purposes
- Reducing noise and headlight glare from road traffic
- Creating a setting for new development
- Increasing the value of a property
- Separating farm activities from more publicly accessible activities
- Providing autumn colour
- Framing a view
- Stabilising river banks
- Preventing erosion and the runoff of pollutants into watercourses
- Creating dappled shade for river fish and pond life
- Sheltering and directing public access
- Creating a landscape feature, such as an avenue or roundel
- Shading and sheltering farm roads
- Managing stock movements
- Providing shelter for stock
- Reducing wind-borne soil erosion
- Creating new wildlife habitats
- Linking existing wildlife corridors
- Providing game cover
- Providing fire wood, twiggy plant sticks and pea sticks
- Providing a habitat for edible plants and fungi, such as wild strawberries and brambles
- Creating shelter for free range chickens, ducks and geese
- Creating an orchard

1.2 How to use this Guidance

This guidance advises you on the opportunities for creating new small woodlands in three different types of agricultural settings, reflecting the three main farming enterprises in Scotland. It is therefore tailored to their respective different farmed landscape settings.

Siting small woodland in arable land, for example, offers different opportunities and benefits to siting small woodlands on hill land. The type of woodlands, their purpose and the species choice is also likely to vary depending on the agricultural land use. This guidance is therefore organised into three key sections:

Section 2: Arable Land, which includes fruit growing and horticulture

Section 3: Permanent Grassland, which includes stock rearing, fodder crops and dairy farming; and

Section 4: Hill Land and Unimproved Grazing, which focuses on largely unfenced land in the uplands used for extensive grazing

The guidance in these three sections identifies the type of woodlands most likely to benefit both your farm and the wider countryside in each of these different farmed landscape settings. It highlights key issues that will ensure that the woodland contributes to the farming enterprise and integrates well with the surrounding landscape, ecology and other countryside interests.

To use this guidance effectively, you should go to the section or sections that most closely reflects the farmed landscape of your own holding, and look at the guidance for that type of farmed land.

1.3 Planning New Woodlands

In addition to advising on the most appropriate woodlands for different agricultural enterprises, there is advice on how to plan for new woodlands. This is included in a fifth key section:

Section 5: Woodland Planning, which outlines a step-by-step process on how to assess opportunities, identify constraints and produce an outline plan.

The purpose of this advice is to ensure that you can produce a plan for new small woodlands that meets your objectives and which, if necessary, clearly explains your thinking if you need to discuss your proposals with a woodland adviser.

It is followed by a list of contact details in the Annexes, should you require more help and advice.

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2
Arable Land

2.1 General Objectives

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

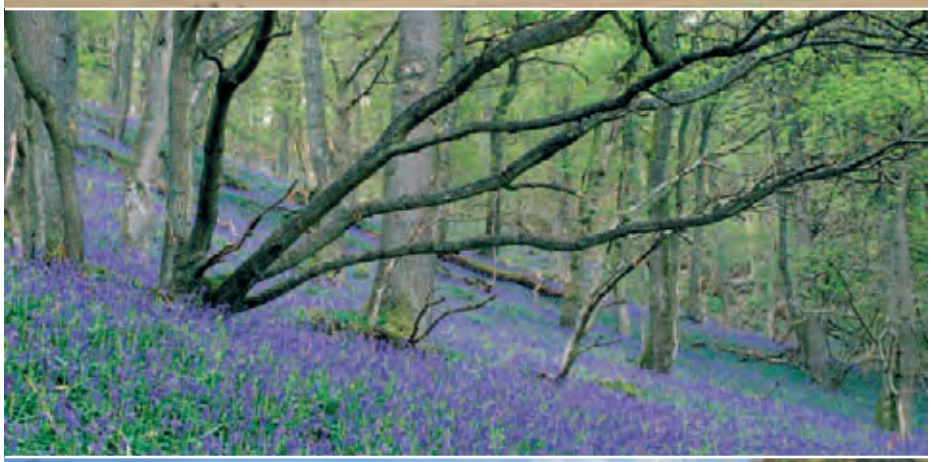
- Extend riparian woodland adjacent to watercourses, to emphasise these features in the landscape, stabilise river banks, improve water quality, reduce the impact of nutrient runoff, and create habitats for wide ranging species such as otters
- Reduce wind-borne soil erosion by planning woodlands with your neighbours
- Increase the number of small woodlands around farm buildings, farm tracks and other infrastructure, screen equipment or storage yards, create a setting for buildings, provide additional shelter and security and add to habitat networks
- Link existing woodlands and other habitats, such as ponds, field boundary trees, hedges and areas of less intensively managed land
- Use woodland to shelter and help define preferred public access routes, particularly around villages and towns

Combining arable land and rotational cropping, this is a seasonally dynamic landscape dominated by the pattern of cultivated fields. Small woodlands reinforce this pattern, and tend to be located near to farm buildings, across slightly steeper slopes and alongside watercourses.

Crop Shelter

Policy Woodland

Lowland Broadleaved Native Woodland



Lowland Riparian Woodland

Lowland Game Coverts

2.2 General Guidance

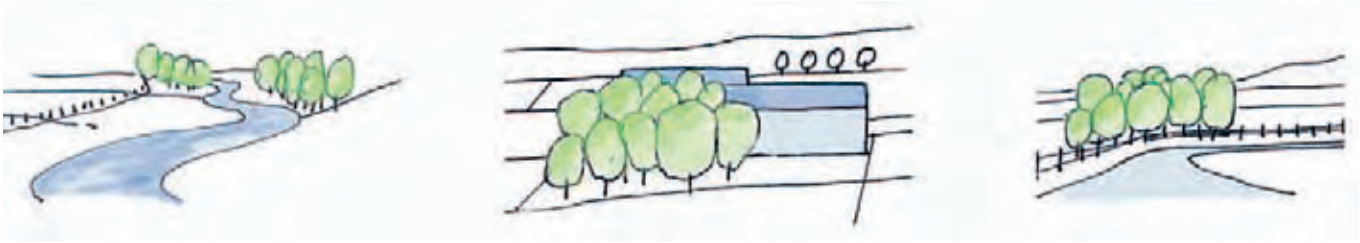
This section gives general guidance on siting and planning the layout of small woodlands on lowland arable land. The guidance takes into account the type of agricultural management involved, and the wider countryside objectives that relate to arable land.

2.2.1 Siting Small Woodlands on Arable Land

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 watercourse, pronounced hillock, farm steading, or field boundary. The woodland will then integrate more easily into the existing landscape structure.

A survey of your arable land 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.

2.2.2 Woodland Types on Arable Land

Small woodlands fit well into an arable farmed landscape. Even individual trees, hedgerow trees, avenues and small groups of trees will make a big impact within this cultivated landscape. Generally, the most appropriate woodland types will be small policy woodlands, shelterwoods for crops, screening and shelter for fruit tunnels, cover for game, lowland native woodland or riparian woodland.

Woodland Types

Crop Shelter (Section 2.3): a woodland established primarily to provide shelter for crops

Policy Woodland (Section 2.4): a diverse and multi purpose woodland, historically associated with plantings around country houses

Lowland Broadleaved Native Woodland (Section 2.5): a woodland which can be used for anything from screening buildings to providing shelter

Lowland Riparian Woodland (Section 2.6): a broadleaved woodland of selected native species appropriate for establishing next to watercourses

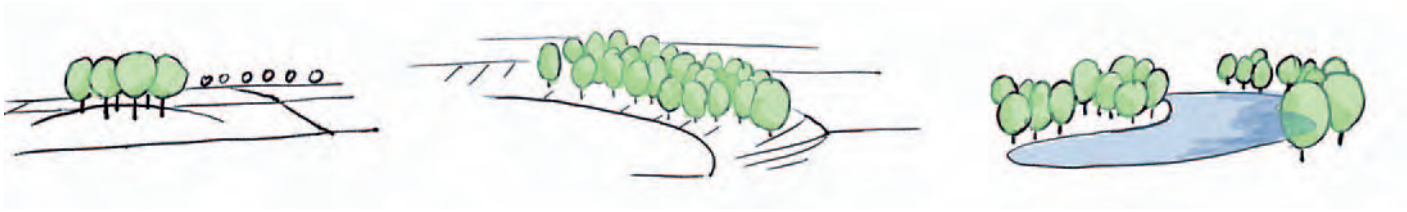
Lowland Game Coverts (Section 2.7): woodland for raising game birds, laid out to provide structure for a driven shoot

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.

2.2.3 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 arable landscapes, field pattern is the most obvious visual feature, and linear shaped woodlands can reflect this pattern by reinforcing the pattern of field boundaries. But the shape of woodlands can also reflect subtle differences in terrain, with beech roundels located on drier knolls, sweeping arcs of broadleaves or pine reflecting the steeper terraces of former riverbanks and irregular clumps of alder and willow providing shelter to wetter land or even a duck pond.



2.2.4 Species Choice

While the choice of species needs to reflect the function of the wood, planting should reflect this fertile and well managed landscape, where large broadleaved trees and mixed policy woodland dominate.

Large broadleaved trees, such as oak, beech, ash and lime, are common in this landscape as they often grow well in the deep soils. They can grow to be impressive in stature, create a sense of maturity and look good in profile across these low-lying landscapes.

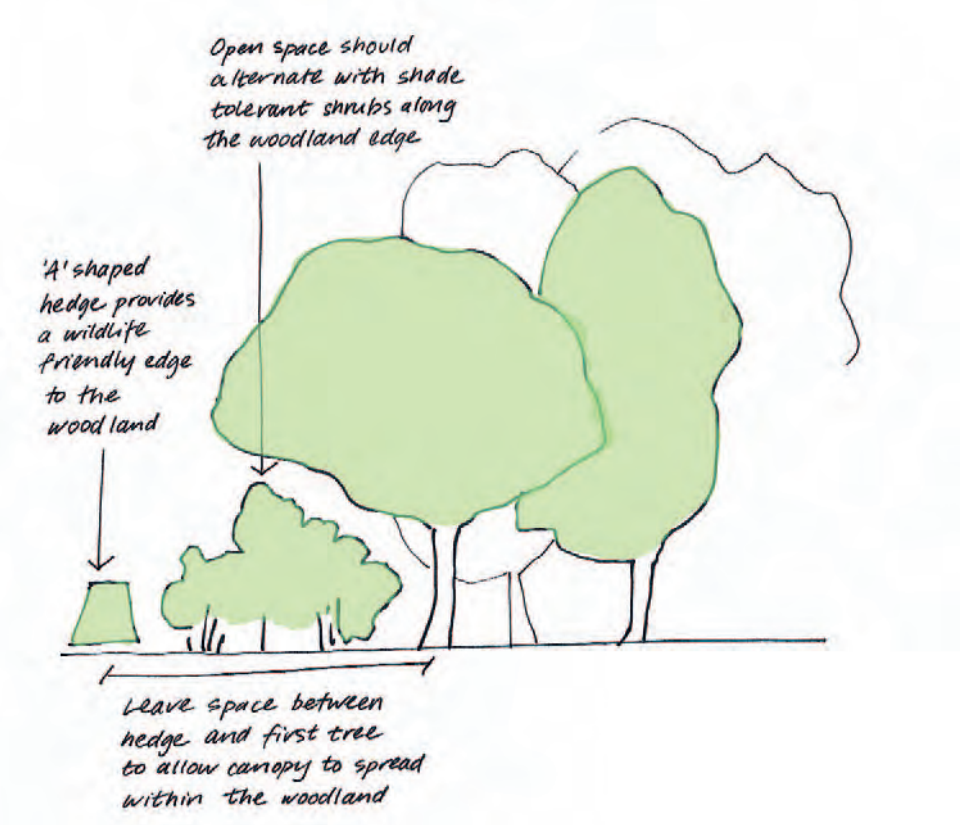
In some parts of the country, there are particular species that are associated with particular landscapes. Beech trees, for example, are a frequent feature in East Lothian and Scots pine is associated with Fife or parts of Aberdeenshire. These trees do well in the soils and climate of the area, and planting them will also reinforce the individuality of the local landscape.

When choosing species, avoid planting invasive species, such as beech and sycamore, 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.

2.2.5 Edge Detail

In lowland arable landscapes, hedges are a consistent and characteristic feature. They also provide shelter and game cover in their own right, as well as contributing to the network of habitats in the wider landscape. Hedges are ideal as edge features to small woodlands in arable landscapes. Mixed native species, including berry-bearing shrubs, will be attractive for local wildlife and game. In some areas beech hedges dominate, providing valuable winter shelter as they retain their leaves.

Edge detail of woodland on arable land



2.2.6 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 – their website **www.snh.org.uk**, by following the link to publications and then typing in 'Natural Heritage Futures Series' into the search link.

2.3 Crop Shelter

On arable land, trees and small woodlands can shelter crops and fruit tunnels, reduce wind borne soil erosion, improve the microclimate and reduce spray and fertiliser drift. To meet these objectives, woodland should be designed to reduce the wind speed over a wide area and minimise turbulence. The key features of a woodland required to shelter crops are therefore:

Woodlands used for shelter will usually be linear in form

Wind breaks aim to shelter the largest areas possible, therefore tend to be long and narrow.
Woodlands for shelter should be planted to link in with other woodlands and landscape features, to create a network of habitats linking to the pattern of the wider countryside.

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.

The woodland should be porous and semi-permeable and can therefore be relatively narrow

For the maximum area of reduced wind speed, create a semi-permeable woodland no more than a few rows of trees wide.
A wide woodland with densely planted trees of any species creates an almost impermeable barrier. The consequences will be a dramatic reduction of wind speed in the immediate lee of the woodland, and then turbulence beyond.

To create a porous woodland, choose species that are less dense in their canopy

Species such as ash, beech, larch and oak maintain a semi-permeable canopy, and their branches continue to reduce winter windspeeds, while some conifers may be too dense, creating an impermeable barrier.

The woodland should include trees that can grow tall to maximise the area of reduced wind speed

Tall trees, such as oak, beech or ash, create the maximum area of shelter, as the area of reduced wind speed will be 20 – 30 times the height of the wood. Oak and ash are tall native broadleaves which will also contribute to biodiversity.

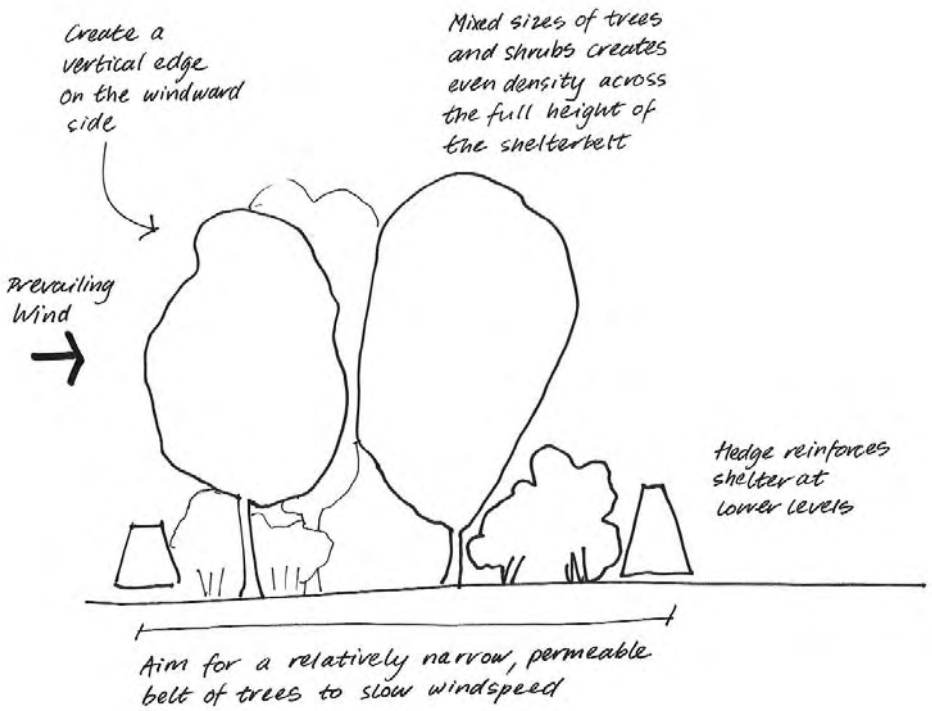
The woodland should include a mixture of shrubs, medium trees and tall trees, and perhaps even a hedge, to ensure consistent porosity at all levels

To create the desired porosity over the entire height of the wood, include shrubs such as blackthorn, hazel, guelder rose, honeysuckle and hawthorn, and small trees such as birch and aspen in the mix, particularly at the edges. Consider selecting trees that can be coppiced to maintain a shrubby layer, such as alder, hazel and ash.
Alternatively, plant a mixed native species or beech hedge (if a local characteristic of the landscape), which will reinforce the shelter at the lower layers.

The woodland should have vertical edges 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 shelterwood for crops 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, provides a useful, illustrated summary of shelter wood design and management, including detailed species recommendations.

2.4 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. 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 this 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. 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 smaller quantities of other exotic species contribute colour and diversity of form to policy woodland.
To help identify appropriate species, look and see what has been growing successfully nearby.

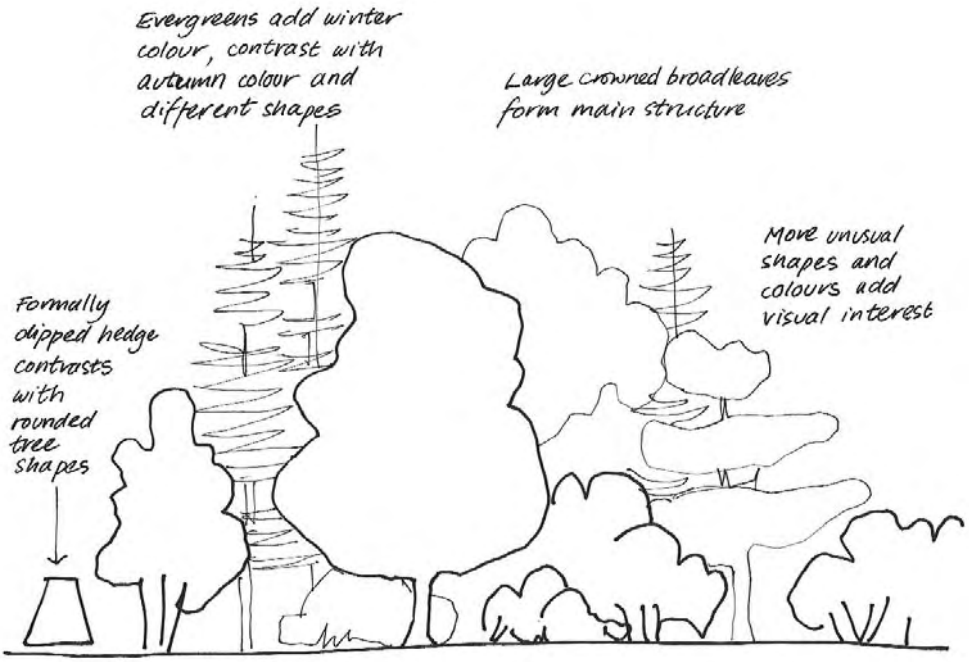
A fine stand of one species can also make a striking feature in the landscape

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 lowland 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 may complement the woodland pattern.

The following publication also provides useful additional advice:

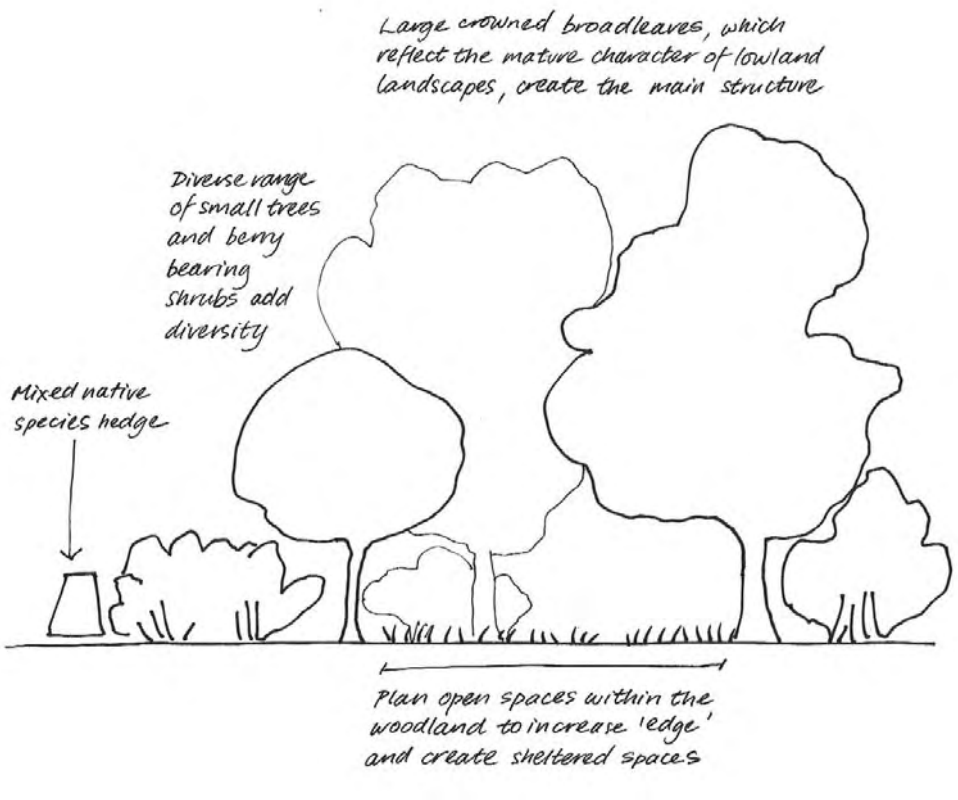
Lowland Landscape Design Guidelines, Forestry Authority, 1992, available from the Forestry Commission, describes how to design and manage woodlands in the lowland landscape.

2.5 Lowland Broadleaved Native Woodland

Native woodlands provide the backbone of important woodland habitats. Areas of semi-natural woodland, ancient woodland sites and opportunities to establish new native woodlands exist within all farmland types. 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 lowland native woodland 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	Expanding the range of habitats cumulatively 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	In lowland Scotland, pedunculate 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 native woodland, although local knowledge should be used to inform your species choice. Hazel, hawthorn, dog rose, blackthorn, holly, guelder rose, elder and willow form a useful understorey of shrubs.
In lowland landscapes, the presence and stature of large crowned broadleaves contributes to the quality of the landscape	Large native broadleaved trees, particularly oak and ash, will contribute both to wildlife and the impression of fine, mature, well established woodland which characterises the lowlands.
There may be locally specific native species that could be incorporated into your planting	Sessile oak, wych elm, 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 lowland 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 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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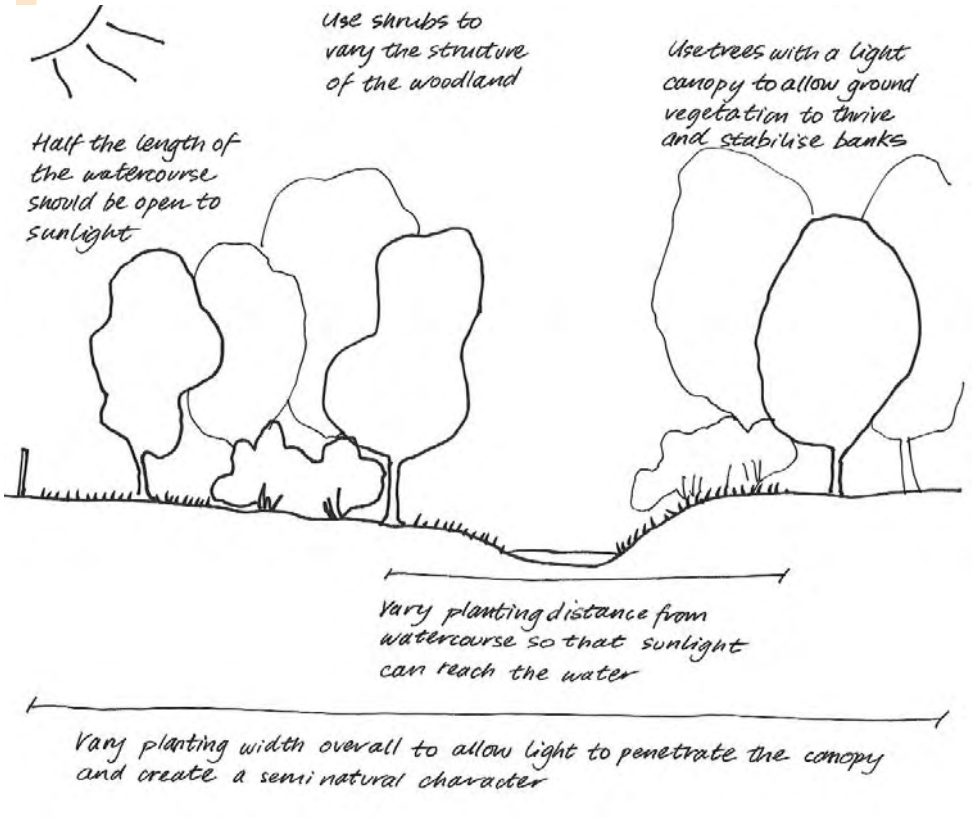
2.6 Lowland Riparian Woodland

Rivers in lowland Scotland are usually relatively slow moving, winding their way through low-lying straths and floodplains, while small streams are often straightened and channelled. 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.
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 lowland riparian woodland summarising key features



Sources of Help and Advice

If you are planning an extensive network of woodlands that include 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.

2.7 Lowland Game Coverts

Woodlands that create shelter for pheasants and other game birds can also be sited 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 lowland game cover are therefore:

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

Pheasants are seldom found more than 50m into 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 are required to 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 rises 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 which allow undergrowth to thrive under their light shade, combined with larch and Norway spruce. Besides providing winter warmth and shelter for game birds, Norway spruce is also a good red squirrel habitat.

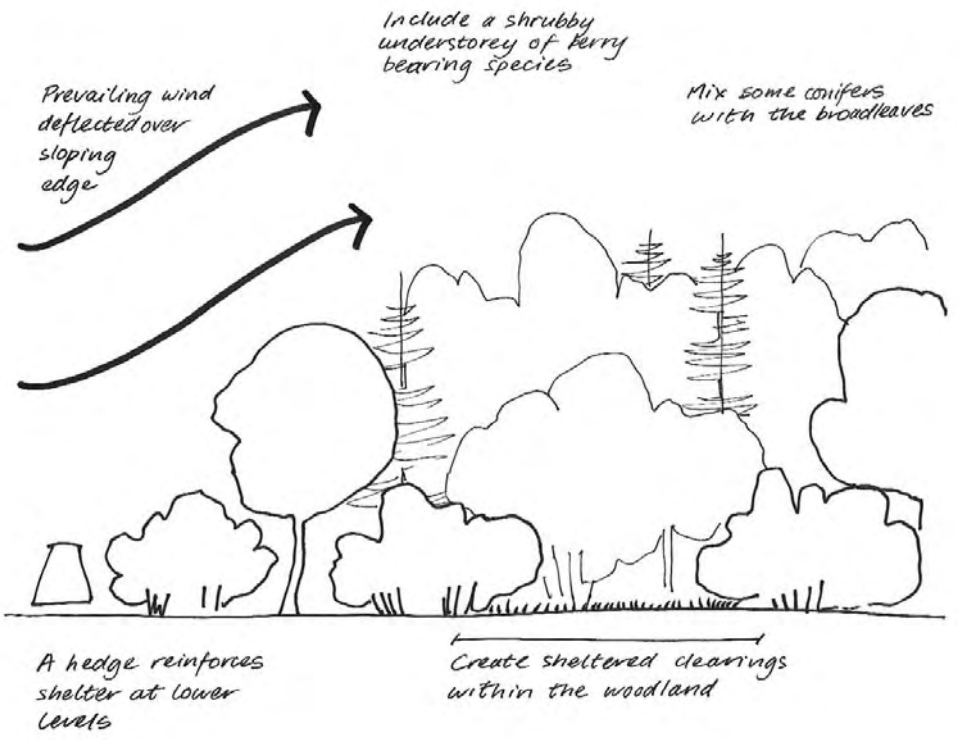
To assist in providing a well managed shoot the woodland should include flushing points, and be planned to encourage birds to rise

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

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.

Cross section of lowland game coverts summarising key features



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 provide 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.

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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:

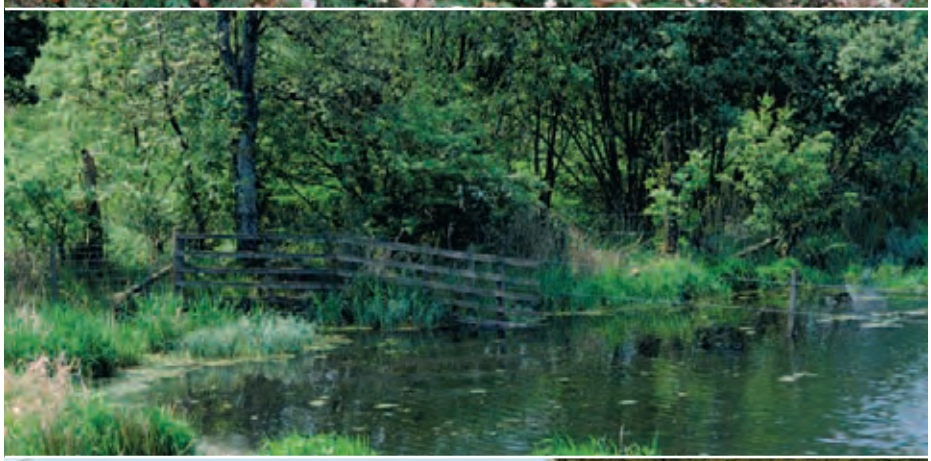
- Reinforce the existing pattern of shelterwoods by establishing new shelterbelts, or planning the replacement of existing ones
- Extend areas of native woodland around farm buildings, access tracks and other infrastructure, as well as along existing field boundaries to increase shelter and create a 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

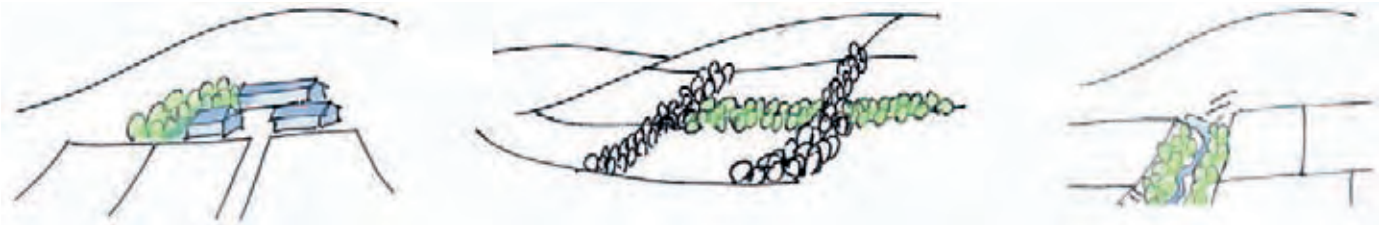
3.2 General Guidance

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.

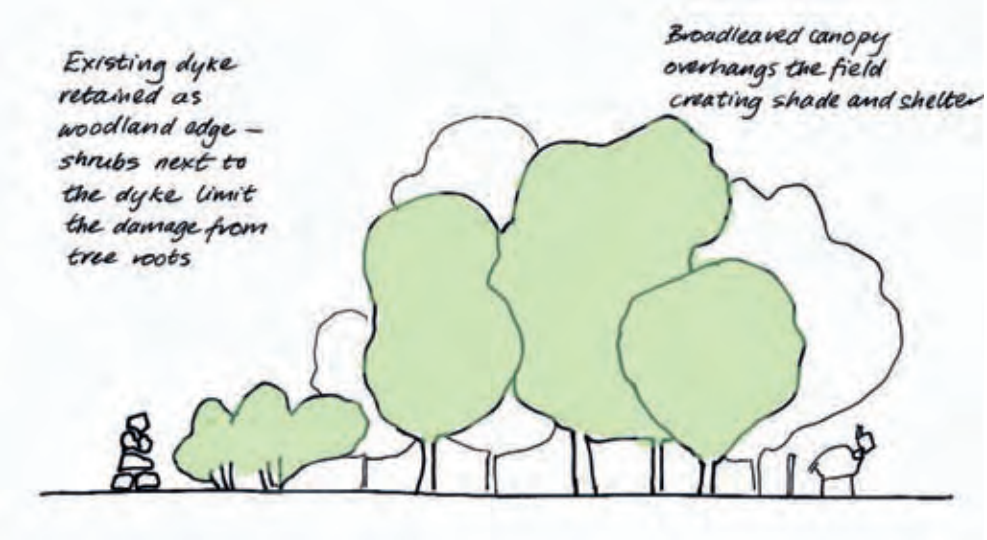
In some parts of the country, there are particular species that are associated with particular landscapes. Beech trees or Scots pine are a particular feature in parts of the Lothians and Aberdeenshire for example, while small stands of sycamore are associated with farm buildings in the west or north 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

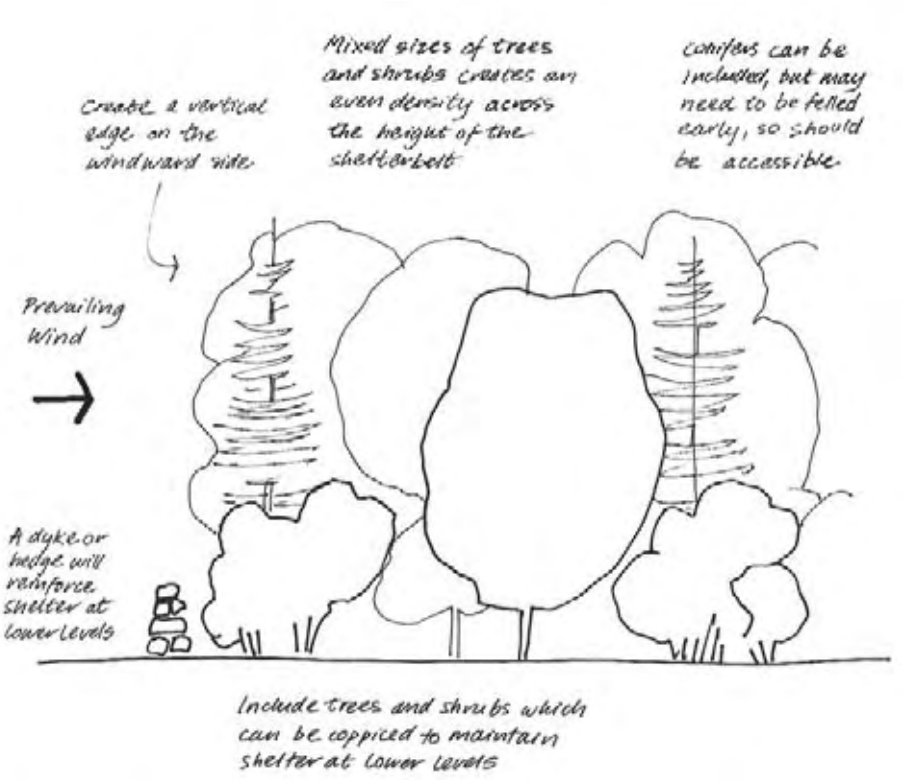
Tall trees, such as Scots pine, Sitka spruce, beech, sycamore, oak or ash, create the maximum area of shelter on the leeward side.
If using only native species, plant oak, ash or Scots pine as the main tall tree species.

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:

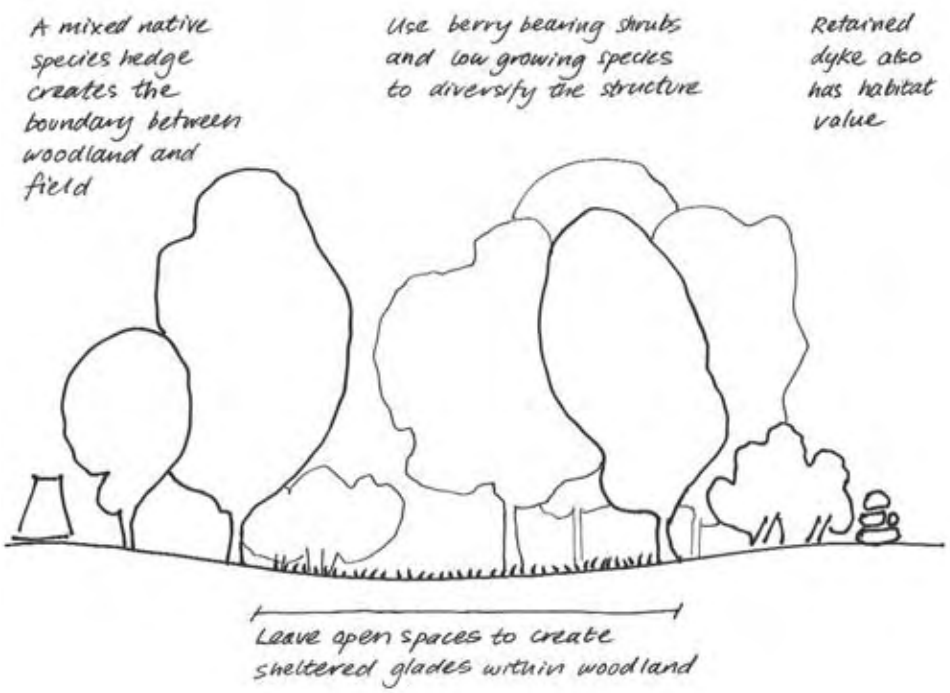
Woodlands for Farm Shelter, SAC, 1992, which provides a useful, illustrated summary of shelter wood design and management, including detailed species recommendations.

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.

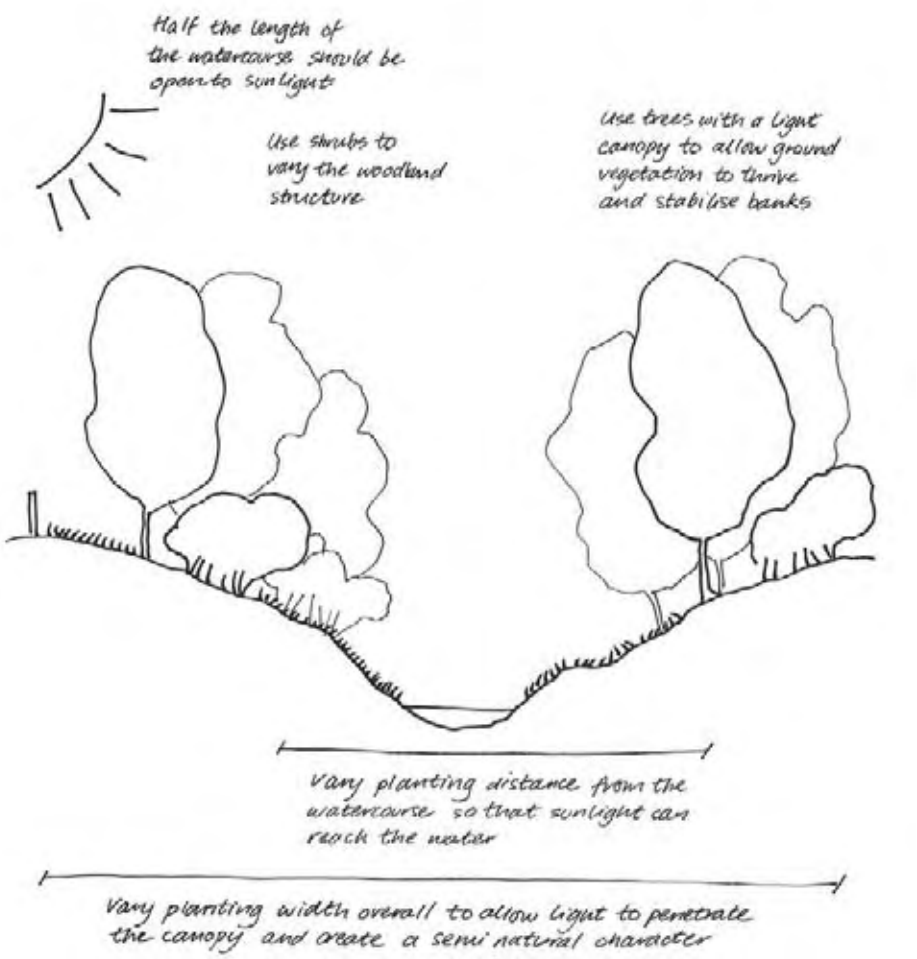
Habitat Networks for Wildlife and People, Forestry Commission and Scottish Natural Heritage, 2003, which provides a general introduction to habitat networks.

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.

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.

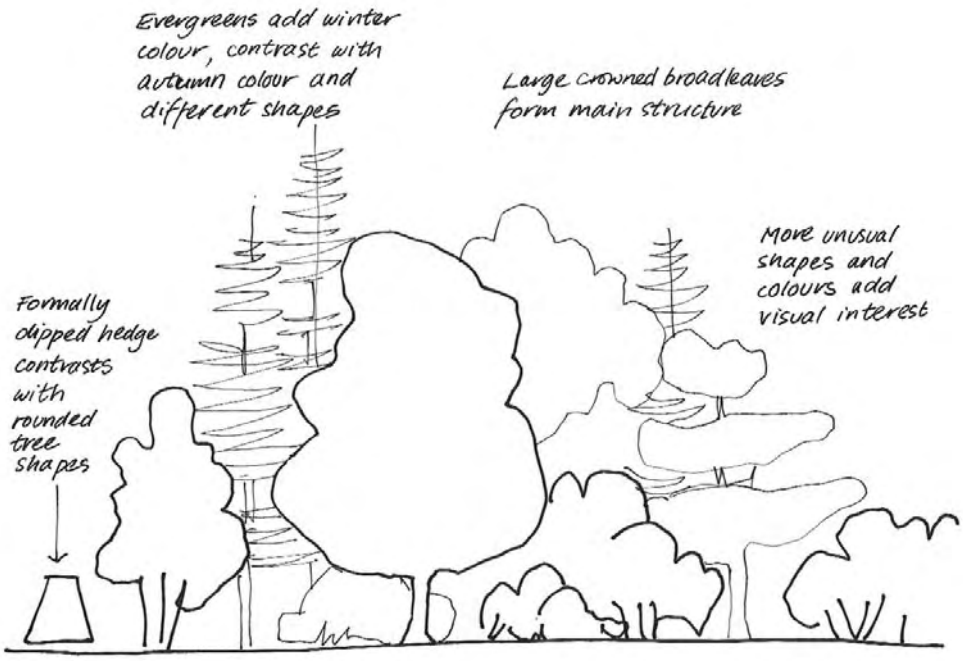
A fine stand of one species can also make a striking feature in the landscape

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.

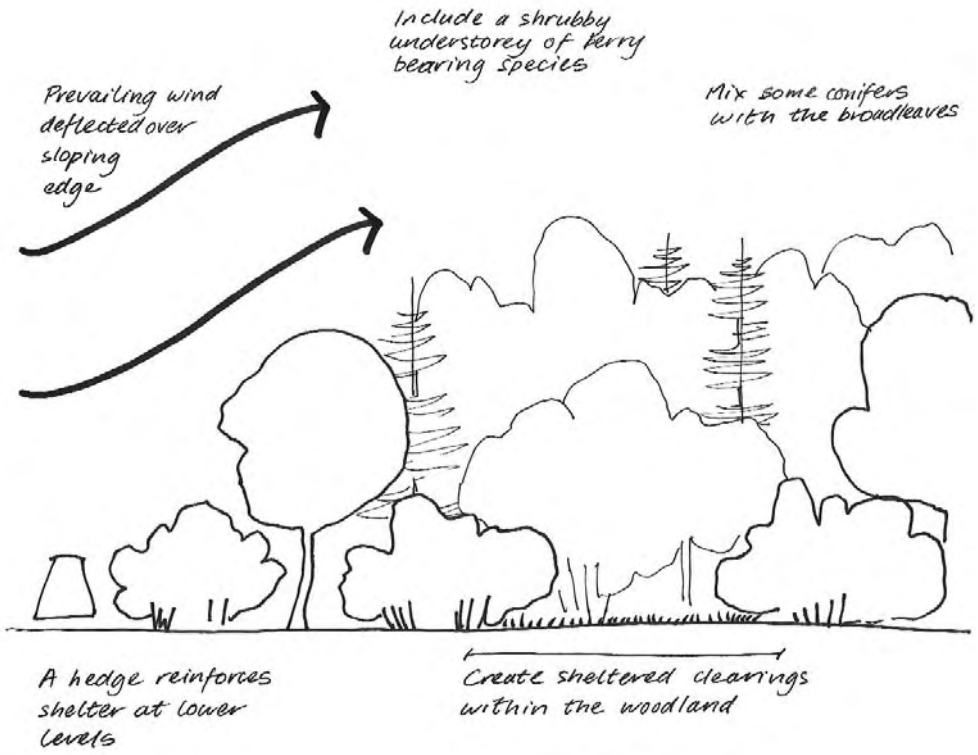
To assist in providing a well managed shoot the woodland should include flushing points, and be planned to encourage birds to rise

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.

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4
Hill Land and Unimproved Grazing

4.1 General Objectives for Small Woodlands

- Create links between existing but isolated shelterwoods on the hill ground and the lowland woodland pattern
- Establish new shelterwoods that extend from the break in slope and tie into the existing pattern of woodland
- Extend areas of riparian woodland adjacent to watercourses, to emphasise these features in the landscape, help improve water quality and reduce the impact of nutrient runoff, and create extensive habitats for wide ranging species such as otters
- Link existing woodlands and other habitats, such as wetland, dykes and scrub
- Use woodland to shelter and define public access routes on the approach to the hill
- Identify opportunities to extend natural regeneration or areas of scrubby vegetation that are good for wildlife

This largely unfenced land is a mosaic of heather, rough grassland, wet land and scrub. There may also be some existing shelterwoods, woodland in gullies and often large areas of forest or semi-natural woodland. This is also likely to be the land where natural regeneration of woodland species may occur when grazing is reduced.

Upland Native Woodland

Upland Riparian Woodland

Upland Stock Shelter

Upland Game Coverts

4.2 General Guidance

This section gives general guidance on siting and planning the layout of small woodlands on hill land and unimproved grazing. The guidance takes into account the type of agricultural management involved, and the wider countryside objectives that relate to managing largely unfenced and often semi-natural landscapes.

4.2.1 Siting Small Woodlands on Hill Land and Unimproved Grazing

Small woodlands are very difficult to site in isolation on unfenced hill land, where they will often appear too small and detached from other landscape features in such a relatively large scale and open landscape.

It is therefore best to locate new small woodlands where they can be associated with other landscape features, such as gullies, or low down on the hill where they can be linked to other woodland in the landscape. In all cases, new woodlands should extend to the head dyke or enclosed fields. The woodland will then integrate more easily into the existing landscape structure.

A survey of your farmland is likely to identify existing woodland or other natural features that could be used for 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.

4.2.2 Woodland Types on Hill Land and Unimproved Grazing

Small woodlands are difficult to site within a relatively large-scale open hill landscape of primarily semi-natural vegetation. Generally, the most appropriate woodland types will be native woodland or riparian woodland. Shelterwoods for stock or game coverts should only be planned if they can form part of broader network of planting, extending uphill from the floor of a glen or existing woodland pattern.

Woodland Types

Upland Native Woodland (Section 4.3): a diverse woodland which can be used for anything from screening buildings to providing shelter

Upland Riparian Woodland (Section 4.4): a broadleaved woodland of selected native species appropriate for establishing next to watercourses

Upland Stock Shelter (Section 4.5): a woodland established primarily to provide shelter for stock

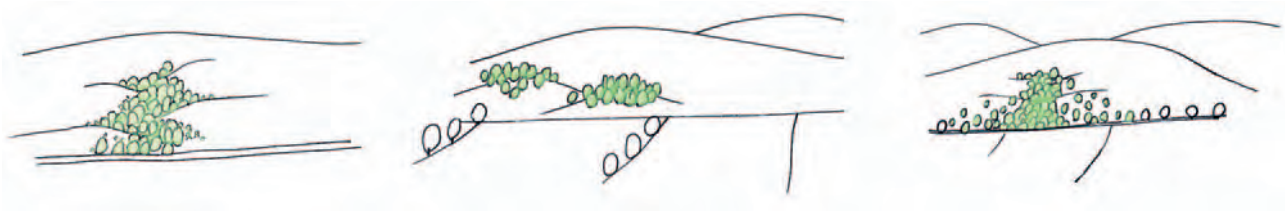
Upland Game Covert (Section 4.6): woodland for raising game birds, laid out to provide structure for a driven shoot

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 an area, but local advisers, who can be identified using the contact list in the Annexes, will be able to offer additional information on the type of woodlands and species that are important in your area.

4.2.3 Shape and Form

Woodland in this landscape can be designed to reflect the undulations of the topography and organic shapes of the semi-natural vegetation patterns. Well sited woodland will be associated with natural landform and features, and should then be shaped to complement their irregular forms.

In many areas of hill land, small woodlands appear as a feature, perhaps as a linear regenerated woodland associated with a gully, a straggly clump of whin scrub extending across less grazed slopes, or as individual point features created by remnant birch or other native woodland. There are also more extensive shelterwoods and upland game coverts, which if well sited and shaped can enhance the landscape. All too often, however, they are sited where they are isolated from any other feature, and geometrically shaped in a way that does not link into the natural topography or vegetation pattern.



In this type of upland farmland, woodland should be shaped to the reflect rolling topography and natural features, such as irregularly shaped cleughs or distinct knolls. Often, establishing less dense planting on the edges of the woodland will create a more natural appearance. 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.

4.2.4 Species Choice

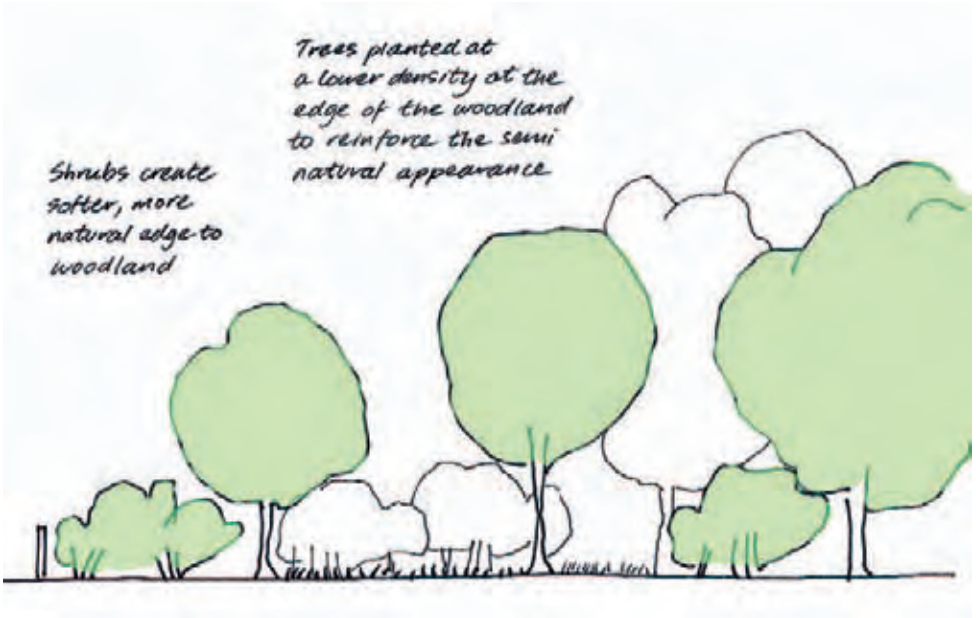
While the choice of species needs to reflect the function of the wood, species choice needs also to take into account the often open and exposed character and poorer soils of this relatively harsh upland environment.

The semi-natural vegetation pattern and the less intensively managed landscape lends itself to the establishment of native broadleaf and conifer species, especially those that are well adapted to growing in this environment. Birch, rowan and willow will often be found in sheltered cleughs and perhaps even regenerating along burnsides, while along the lower slopes of the hills there may be more extensive woodlands of birch, Scots pine and even juniper.

These upland landscapes are often where existing forests of commercially grown conifers dominate. These are primarily composed of non-native species that have also been used in the past for establishing shelterwoods and game coverts in the uplands. Such non-native conifers are not recommended for small woodlands on upland farms because although they grow quickly, they require thinning and eventual felling and replacement, all of which can be uneconomic on a small scale.

In some parts of the country, there are particular species that are associated with particular landscapes. Stands of Scots pine, or mature birch trees, can be found in elevated parts of Aberdeenshire and the higher reaches of the Border hills. These trees do well in the soils and climate of the area, and planting them will also reinforce the individuality of the local landscape.

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



Edge detail of woodland on hill land and unimproved grazing

4.2.5 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, a gradation of tree species, including shrubs, can provide similar sheltering attributes. Less dense planting along the edge of a woodland will create a more natural appearance. A mosaic of low shrubs and small trees alongside larger trees creates a more natural appearance by creating a 'soft' edge between the more open moor or grassland and the woodland. This also enhances the wildlife value of the woodland habitat.

4.2.6 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.

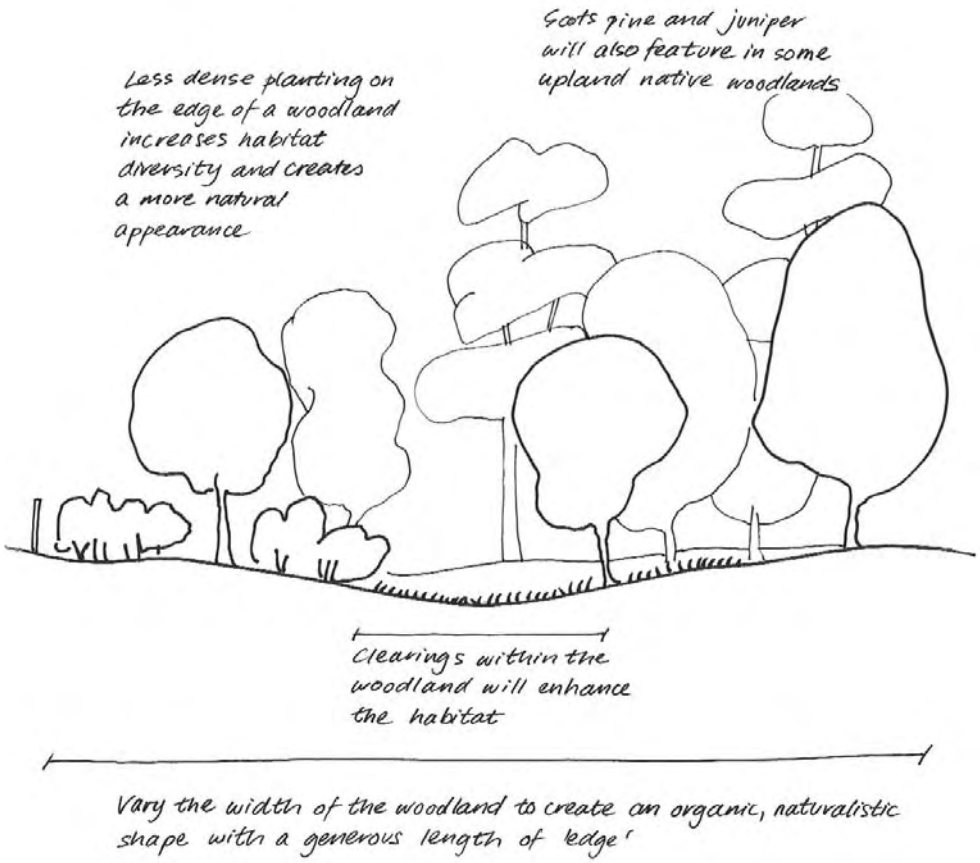
General advice on the key objectives for managing the natural heritage can be found in the Natural Heritage Futures publication for your area, which can be obtained from SNH publications at Battleby, Redgorton, Perth, PH1 3EW (01738 444177), or can be ordered through, or down loaded from, the website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

4.3 Upland Native Woodland

Native woodland in upland areas tend to range from mixed broadleaved woodland with unimproved grassland to Scots pine and juniper woods with an understorey of heather, blaeberry and other native shrubs. Native woodland is a diverse mixture of trees and shrubs that can be used to provide a habitat for native plants and animals, enhance amenity, provide localised shelter and create interest along public access routes. The key features of a native woodland on upland areas used for grazing are therefore:

The woodland should be relatively natural in shape, with curving margins that reflect the landform and provide a generous length of 'edge'	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 dykes, wetland, existing woodlands, 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, appropriate for the soil conditions of the area	Sessile oak, downy birch and rowan are species that form the basis of much of the mixed broadleaved native woodland, although local knowledge should be used to inform your species choice. Hazel, hawthorn and willow form a useful understorey of shrubs. In the north and east, Scots pine and juniper form the basis of native woodland on higher ground.
There may be locally specific native species that could be incorporated into your planting	Sessile oak, aspen, juniper and gean 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 upland 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 woodland 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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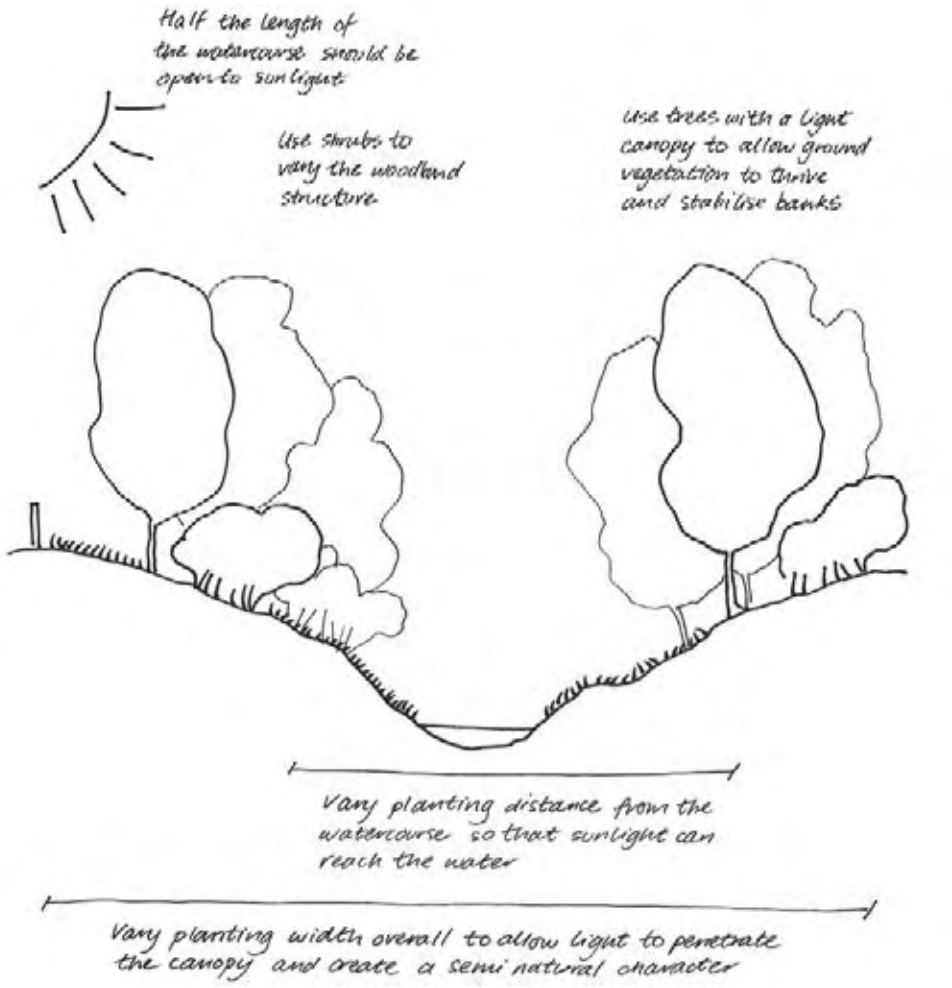
4.4 Upland Riparian Woodland

Hill land tends to be located along the upper reaches of the main river systems, or on steeper land where 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 freshwater 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 upland riparian woodland summarising key features

Sources of Help and Advice

If you are planning an extensive network of woodlands which include 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 is 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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4.5 Upland Stock Shelter

On hill land, woodland for shelter is primarily established for sheltering stock. To meet this objective, woodland should be designed to provide a narrow strip of calm in the immediate lee of the trees. In exposed upland areas, however, growing tall trees may be difficult, and one option is to consider planting areas of woodland which, once well established, can be grazed as woodland pasture, providing shelter within the wood. Alternatively, creating a mosaic of smaller, shrubby woods provides areas of shelter to meet specific management needs, such as feeding areas or land used for turning out young stock. The key features of a woodland required to shelter stock on hill land are therefore:

Woodlands for shelter should be located where they can link in with existing established shelterwoods, or at least extend upwards from the head dyke

Creating links within the existing pattern of woodland and other landscape features maximises the efficiency of the 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 an organic woodland shape will allow for variable wind direction

The greatest degree of shelter is provided when the wind strikes the woodland at right angles, so planting woodlands which provide sheltered corners will give maximum shelter.
Care should be taken not to create pockets where stock may become trapped in poor weather.

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. A well grown shrubby layer of willow and scrub species enhances the sheltering value of the woodland. Avoid growing large numbers of conifer species; they tend to suppress any shrub layer and become leggy as they mature, creating a draughty understorey.

A relatively wide shelterbelt of a minimum of 30m will create an impermeable barrier

Even 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, oak and even well established birch, create the maximum area of shelter on the leeward side. In more exposed upland areas, it may be better to establish several small woodlands than aim for tall trees.

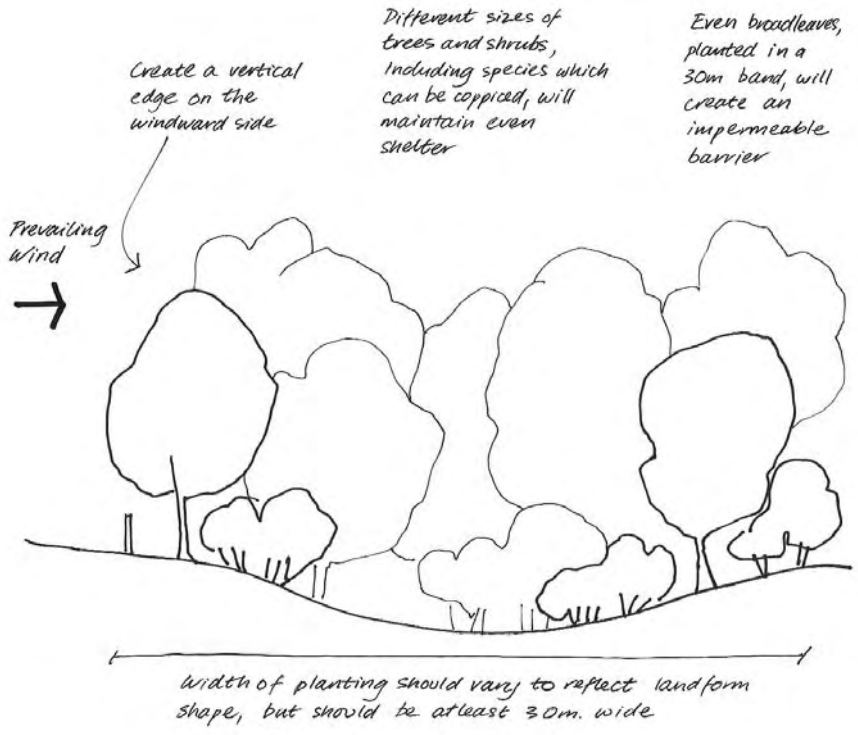
The woodland should include a dense mixture of shrubs, medium trees and tall trees to create an even density

To create an even density across the height of the wood, include shrubs such as willow, juniper, and perhaps even hazel and small trees such as downy birch, rowan, and aspen in the mix.

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 upland shelterbelt for stock summarising key features



Sources of Help and Advice

If you are planning an extensive network of shelterwoods and windbreaks, 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 farm and plan a shelter system that suits your needs and the physical conditions.

The following publication and website 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.

4.6 Upland Game Coverts

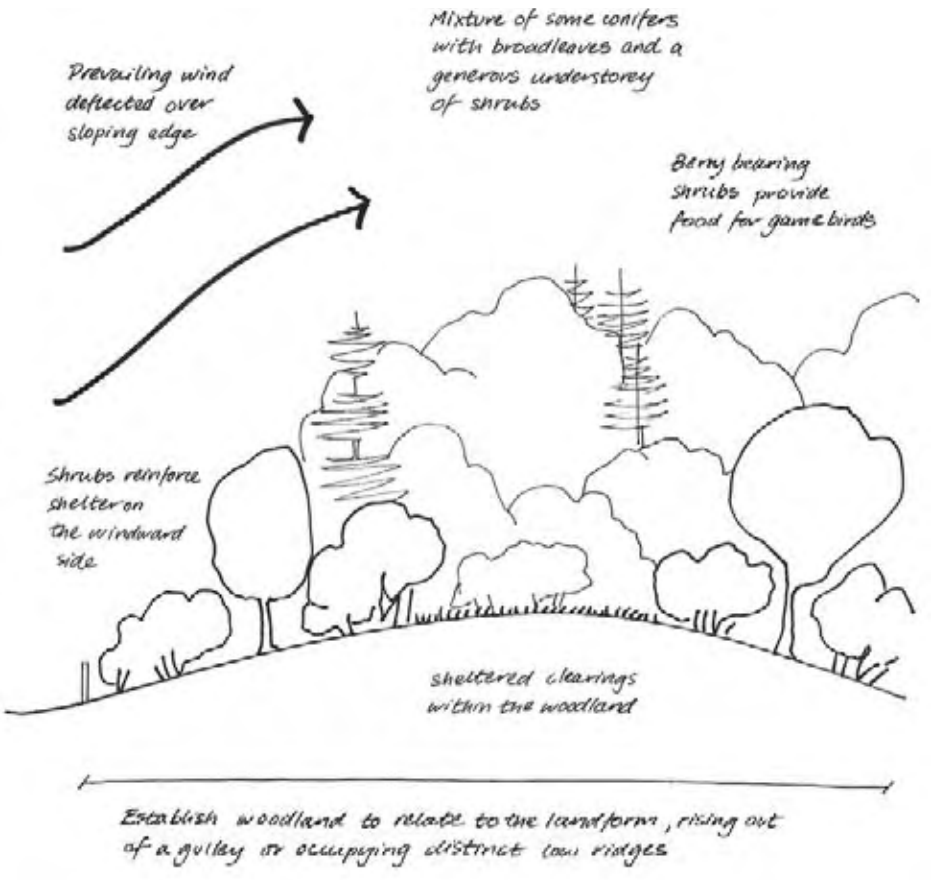
Woodlands that create shelter for pheasants and other game birds can also be located to create a fine driven shoot that will enhance the sporting value of a farm. To meet this objective, well spaced coverts that provide warm shelter, nesting cover and roosting places should be located where a successful drive can flush out fast, high flying birds. Generally, these woodlands will be located on relatively low-lying and more sheltered landscapes, but there may be opportunities to locate coverts along the lower slopes of more open hill land. The key features required of a woodland to provide upland game cover are therefore:

Woodlands should be located where they can link in with small woods on low-lying land	A framework of woodlands provides better support for a driven shoot, therefore linking into woodlands across lower lying land will provide cumulative benefit.
Woodlands should be designed to have generous length of 'edge', therefore tend to be linear or organic in shape	Pheasants are seldom found more than 50m inside a wood. Narrow woodlands and organic shapes are therefore ideal, but spaces within the woodland can also increase the amount of 'edge'.
Several small woodlands located on raised ridges 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 be ideally located on low knolls that allow guns to be placed below the flight line of flushed birds.
Game coverts should link to dykes, watercourses, lowland woods and hedges so that game birds can travel between coverts on foot	Other landscape features also provide additional cover for other quarry species and enhance the network of habitats, increasing the ecological value of the farm and linking into the pattern of the wider countryside. Woodlands linked into other features also appear less isolated in the upland landscape.
Woodland should have a shrubby external edge to provide low level shelter and nesting areas	An internal shrub layer including willow, hawthorn, hazel and evergreens such as holly, yew and juniper, 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 which cast only light shade, allowing undergrowth to thrive, combined with larch, holly, yew and spruce.
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. Berry bearing trees, such as rowan and small trees such as willow and birch, should surround these areas.

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

Cross section of upland 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.



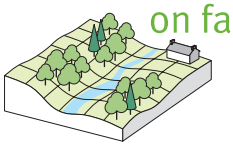
Sources of Help and Advice

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 suits game, and fits in with the rest of your farming enterprise.

The following publications and websites also provide 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.



5 Woodland Planning

This section of the guidance sets out a systematic approach to planning where to site small woodlands on your farm, and how to choose the type of woodland most appropriate for your objectives.

This process for planning new small woodlands allows objectives, opportunities and constraints to be assessed as your woodland plan is developed. Planning a new small woodland requires four key steps; these are summarised in Table 1.

Table 1: Four Key Steps to Planning Small Woodlands on Farms

	What is Involved	Relevant section of this guidance
Step 1: Identify your objectives for planting new small woodlands	You need to identify your objectives for planting trees and woodlands that reflect specific benefits for your farm and its future management. You should also aim to identify where and how new woodlands might contribute to the wider pattern and potential structure of the landscape, as there will then be cumulative benefits for the landscape and wildlife.	The guidance related to different farmed landscapes in Sections 2,3 and 4 will help. A specific list of opportunities can be found in Section 5.1.
Step 2: Survey your farm to identify potential opportunities for new woodlands, and assess the possible consequences of constraints on those new planting areas	A walk-over survey gives you the opportunity to identify potential sites for new woodland, and any practical problems you think might limit your planting options. Besides physical and environmental constraints, potential sites may also have recognised sensitivities, such as areas of habitat value, archaeological or other cultural interest, where woodland planting should not be established.	Refer to Sections 5.1 and 5.2.
Step 3: Select your required woodland type, plan your layout and make the relevant species choice	The type of woodland planted and the species chosen should reflect both your objectives, and the contribution it can make to the wider countryside. You can get help on species choice and layout, but this guidance offers advice on how to plan woodland that meets your aims, so that you can have an informed discussion with your adviser.	The guidance on woodland types related to different farmed landscapes in Sections 2,3 and 4 will help.
Step 4: Map your proposals	Once Steps 1 to 3 have been completed, your proposals should be drawn on a plan at an appropriate scale, usually 1:10000. Each woodland should be shown, with accompanying notes describing both the type of woodland that will be established, and their objectives.	Refer to Section 5.3.

5.1 Identifying Benefits and Opportunities for Small Woodlands on the Farm

There are many benefits to planting woodlands. With careful planning, species choice and management, woodlands can be multi-purpose and provide benefits to both the farm and the wider countryside.

This table below outlines some of the main reasons for planting trees as small woodlands, and can be used to help identify opportunities for your farm.

Checklist 1: Benefits and Opportunities of Establishing Small Woodlands

Benefits	Objectives
Appearance	Screen unsightly buildings and activities Reduce noise and headlight glare from road traffic Introduce autumn colour Create a setting for an existing or new building, road or other infrastructure Frame a view Enhance the value of a property by making it more attractive
Access	Assist in directing public access Provide an attractive environment adjacent to the thoroughfare
Security	Screen buildings or machinery from view Separate publicly accessible activities from farm activities
Biosecurity	Manage parking, public access and movement of stock
Wildlife	Create dappled shade for river fish and pond life Link or extend existing wildlife corridors Create new wildlife habitats
Private Use	Create conditions for edible plants and fungi, such as wild strawberries and brambles Provide a source of fire wood and twiggy pea sticks Create an orchard
Farm Management	Create shelter for free range chickens, ducks and geese Manage stock movements Establish shade and shelter for farm roads Stabilise river banks Reduce wind blown soil erosion Provide shelter for crops or stock Create cover for game

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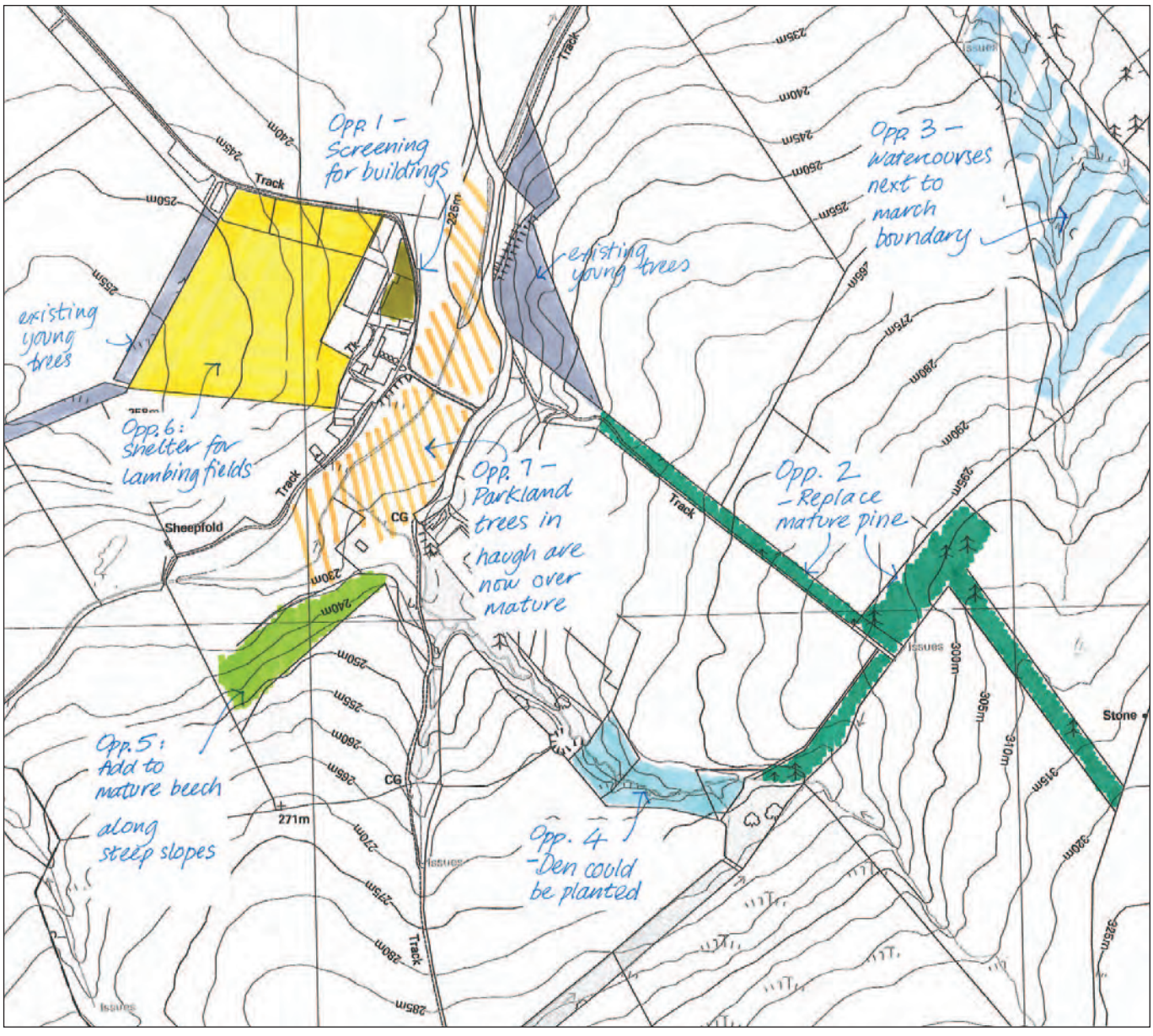
This guidance is aimed at small woodlands that are generally not large enough to provide an economically viable timber crop, although incidental timber harvesting may occur as a result of routine woodland management, such as thinning or as a result of windblow. If however, you are thinking of growing timber, either for softwoods on a commercial scale, or for a high quality hardwood crop, you should seek advice from a forestry consultant.

If you are planning a series of small woodlands on your farm, then it may be helpful to map the areas you are thinking of planting onto a 1: 10 000 scale base plan with contours. This will help you to look at the pattern and arrangement of your proposals as a whole and allows you to make relevant notes on site, starting with the potential benefits and opportunities of planting on your farm when you carry out a walk-over survey.

Example of map with onsite survey notes showing potential benefits and opportunities identified on the walk over survey: photographs of the opportunities identified are shown below.



Left: Opportunity 1: screen buildings and farm equipment by planting in this field in front of the shed

Right: Opportunity 2: plan replacement for mature Scots pine shelterbelts

Left: Opportunity 3: establish riparian woodland along this watercourse and ungrazed land next to march boundary

Right: Opportunity 4: establish riparian woodland along this watercourse and den linking into existing mature woodland

Left: Opportunity 5: extend planting along this steep, north facing bank linking into the mature beech to the left

Right: Opportunity 6: create shelter around these small paddocks used as lambing fields

Left: Opportunity 7: these parkland trees are now mature, and replacements could be established in this haugh

5.2 Identifying Constraints

Trees are not appropriate everywhere and sometimes there are practical and land use limitations on where and what you can plant. There are two broad types of constraint.

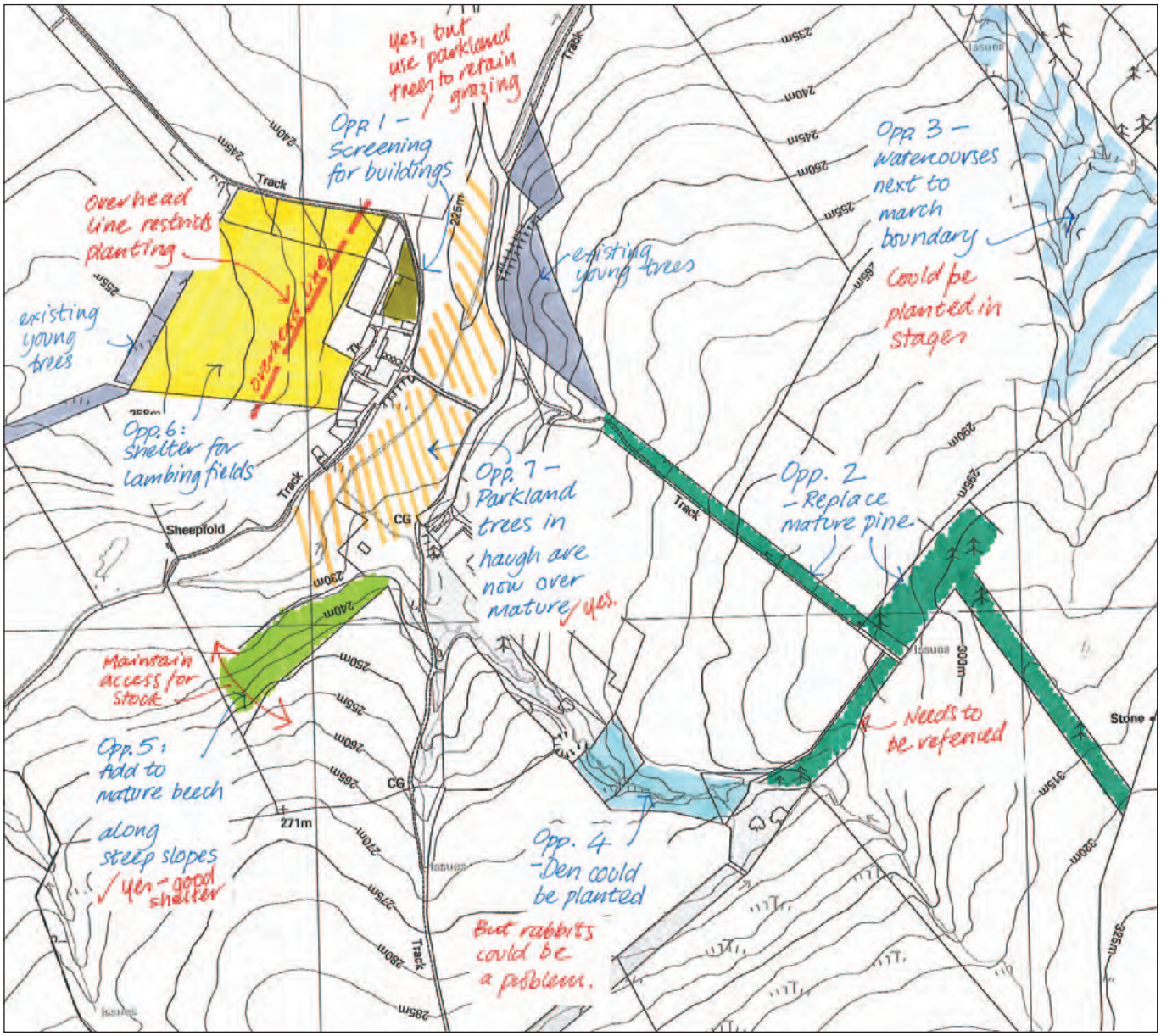
- Firstly, there may be practical and physical limitations to planting trees on your farm. These constraints are summarised in Checklist 2.
- Secondly, there are constraints related to the existing recognised land and landscape sensitivities that may require you to get consent from an agency before you plant. These constraints are summarised in Checklist 3.

Checklist 2: Identifying Practical and Physical Constraints

Issue	Possible Constraint	Action
Appearance	Planting may obscure views	Avoid planting in front of scenic or panoramic views from the public road, access tracks used for recreation, and historic or other viewpoints that are visited by the public.
Conservation	Existing habitats, such as wetlands and herb rich grassland, may already be of high biodiversity value	Avoid planting on areas of wetland and grassland that is herb rich or important for nesting birds. Also, proposed planting areas that are adjacent to an existing ancient or native woodland needs sensitive species selection. Avoid invasive non-native species and preferably establish locally native species. If you are in doubt, you can ask advice from a forestry consultant or ecological adviser.
Cultural	Areas of non-designated archaeological or industrial and farming interest. Also, areas of historic land-use importance, e.g. fields of rig and furrow pattern, historic designed landscapes, parkland or areas associated with local folk lore	Avoid planting on any identified areas of cultural value or local interest. Consider the opportunity to develop planting layouts that avoid direct impacts on such features, and also preserve and enhance their setting.
Buildings and other structures	Private water supplies	Avoid planting adjacent to private water supplies, or where establishing a woodland may intercept runoff to a water supply.
	Sightlines from access roads	Avoid planting up field corners next to a road junction.
	Overhead transmission lines	Do not plant trees near to an overhead line, in case when they are mature they fall onto the line if uprooted. You should instead plan open space within the woodland either side of an overhead line. There may be particular restrictions placed on you in relation to the proximity of planting adjacent to high and low voltage lines, which you should check.
	Underground pipes and services	You should plan open space within woodland either side of domestic pipes and services, but you will need to leave a marked wayleave. There may be particular restrictions placed on you in relation to the proximity of planting adjacent to national and regional pipelines which you should check.
	Accessibility	Whilst you may not need access to manage the woodland very often, you may need access to cut hedges, thin out trees as they grow or manage coppice.
Physical	Poor, thin soils and a harsh environment will limit species choice and growth	Try to choose sites and species that will give the trees the best chance of thriving. Discuss appropriate tree species for the growing conditions you have with your plant supplier or a forestry consultant.

Example of initial proposals with constraints noted on site in red ink

Use your 1:10000 scale base plan to map constraints that might limit planting on your farm.



Designations and Other Land Use Constraints

Checklist 3: Identifying Constraints That Require Expert Advice

Most farmers and land managers will not be affected by any of the constraints listed in Checklist 3 below, although if your land is affected by any of them, this may severely limit your planting options.

Issue	Potential Constraint	Action
Your farm includes land designated for its nature conservation interest	The existing nature conservation interest could be damaged by planting trees	Contact SNH to check whether the land you want to plant or adjacent land is designated for its national or international nature conservation value (SSSI, NNR, SAC, SPA, RAMSAR). Contact the Local Authority Planning department if you want to plant on or near a local nature reserve.
Your farm lies within an area designated for its scenic or landscape quality	You may find that there are restrictions on the type of woodland and species that you can plant	Contact SNH if your farm lies within a National Scenic Area (NSA). Contact the Park Authority if your land lies within a National Park. Contact the Local Authority Planning Department if you think that there may be a local landscape designation (Area of Great Landscape Value (AGLV) or equivalent) on your farm.
There are areas designated for their archaeological or historic significance on your farm	The existing archaeological or historic interest could be damaged by planting trees	You cannot plant trees on or near a Scheduled Ancient Monument (SAM). Contact Historic Scotland or the Local Authority Archaeologist if you think you may have an archaeological feature on the land you want to plant.
Your farm includes land that lies within a Designed Landscape	Land within a Designed Landscape listed in the national inventory should not be planted without prior approval from Historic Scotland	Contact Historic Scotland if your farmland contributes to a designated landscape recorded in the Inventory of Gardens and Designed Landscapes. Other unlisted designed landscapes may be of local or regional importance; guidance on their conservation and management should be sought from your Local Planning Authority.
Some remnant woodland on your farm has an interesting ground flora and may be a long established woodland site	The woodland may be an ancient woodland site or area of semi-natural woodland where species choice could be restricted to native trees	Plantations on Ancient Woodland Sites (PAWS) and areas of sparse semi-natural woodland should not be planted without prior approval of SNH and FCS, who will help advise on the appropriate management.
There are non-designated archaeological sites, field patterns or land use patterns on the land you propose to plant	Establishing woodland will probably damage the historic interest	Contact your Local Authority Archaeologist, who may be able to advise you of the local significance of these features and whether your proposed planting will be appropriate.

Sources of Help and Advice

If you are planning woodlands and are not sure what land use designations or constraints are on your farm, or on nearby land, you can ask your local Forestry Commission Scotland adviser to run a constraints check on your farm and the surrounding area. They will provide a map of all current land-use designations for free. Details of how to contact these advisers are to be found in the Annexes.

You can also carry out your own constraints check by accessing the Forestry Commission Scotland web-site at **www.forestry.gov.uk/scotland** and entering 'Land Information Search' into the search engine.

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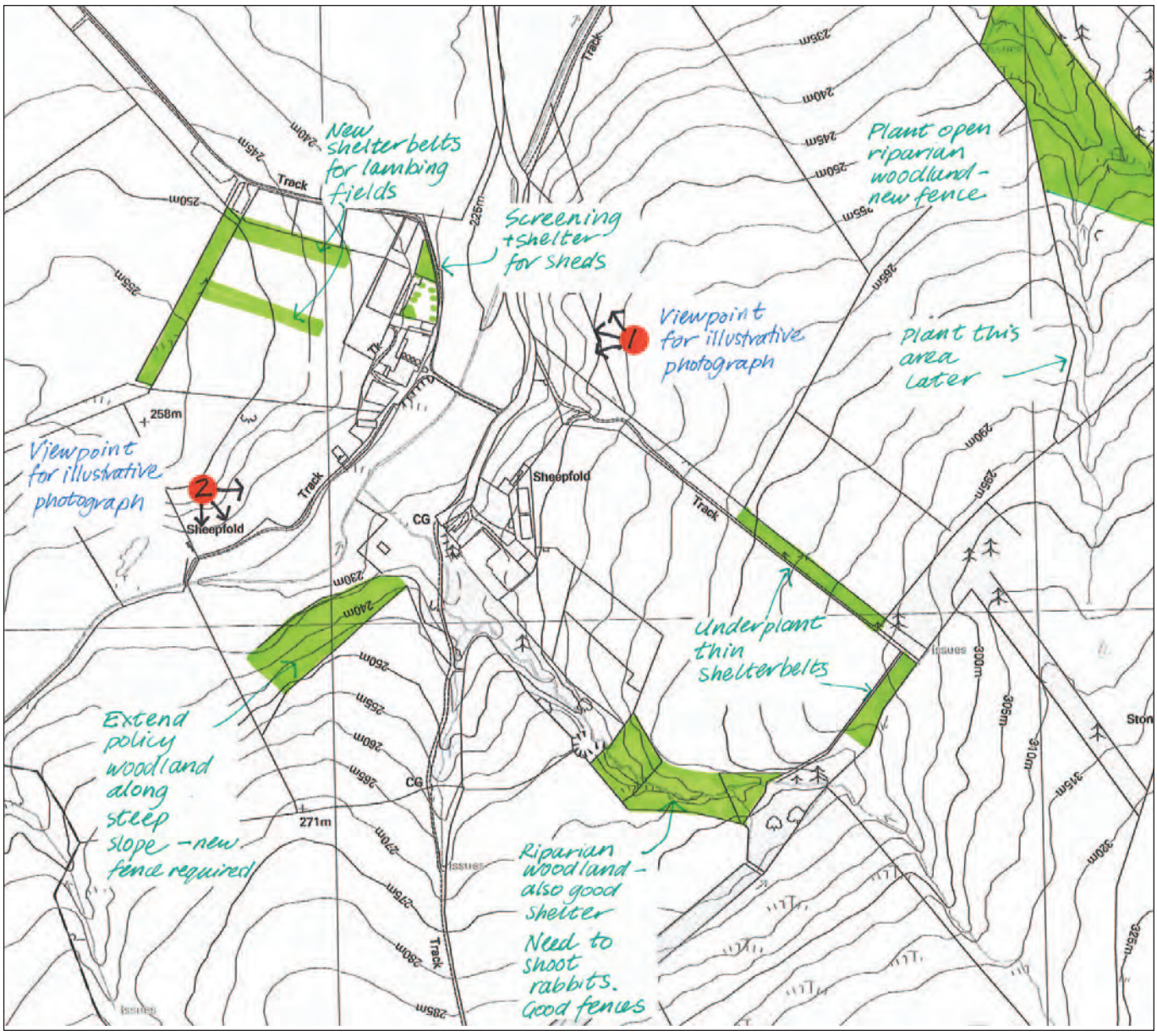
5.3 Mapping Proposals

Use your 1:10000 scale base plan to map your proposals, with each proposed woodland clearly shown and annotated. Describe the objective for each woodland proposed for planting, and any key issues that need to be considered, such as fencing requirements or species limitations.

The main benefit of drawing up your scheme is that if you are applying for financial support, you will have a clear, mapped record of your planting proposals that can be made available for discussion with an adviser and for future inspections.

Proposals map for discussion with adviser, showing preferred planting locations and reasons for planting. For the purposes of this guidance, sketches illustrating the proposals from viewpoints 1 and 2 are shown below.

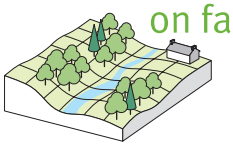


Viewpoint 1, showing the farm buildings with lambing fields in the background, and young planting already established along the ridgeline to replace the pine shelterbelt

The same view, illustrating the proposed screening in front of the farm buildings, and the proposed shelterbelts linked into existing young planting along the ridge

Viewpoint 2, showing policy woodland on the left and over mature shelterbelts in the distance

The same view, illustrating the proposed planting extending new policy woodland along the steeper slopes, riparian woodland in the middle distance, and some under planting of the distant shelterbelts



6 Annexes

6.1 Where to get Help and Advice

6.1.1 Forestry and Woodland Management

Forestry Commission Scotland (FCS)
www.forestry.gov.uk/scotland
Forestry Commission Scotland offers advice on all aspects of woodland establishment and management, as well as funding the current grant systems that support the establishment of new woodland. You can get details of your local Forestry Commission Scotland adviser through the website links, or by contacting Forestry Commission Scotland in Edinburgh on 0131 334 0303.

Private Forestry Consultants
Private forestry consultants are listed in the business pages of the telephone directory under 'Forestry Consultants'. Professional forestry consultants are usually members of the Institute of Chartered Foresters (ICF). They can offer advice on establishing and managing woodlands of all types, and will prepare plans and grant applications on your behalf.

6.1.2 Agriculture

Scottish Executive Environment and Rural Affairs Division (SEERAD)
www.scotland.gov.uk/topics/agriculture
Local SEERAD advisers offer advice on agricultural matters. You can get details of your local adviser by using the 'Agriculture Area Offices' link from the SEERAD website.

Private Agricultural Consultants
Private agricultural consultants are listed in the business pages of the telephone directory under 'Agricultural Advisers' or 'Agricultural Consultants'. They offer advice on establishing and managing woodlands on farms, and will prepare plans and grant applications on your behalf.

6.1.3 Game Management

The Game Conservancy Trust
www.gct.org.uk
The Game Conservancy Trust offers advice on managing all types of game and the habitats on which they depend. They have advisers who will come and offer on farm advice and can be contacted using the website links, or at at Fordingbridge, Hampshire, SP6 1EF, telephone 01425 652381.

6.1.4 Natural Heritage including Wildlife, Ecology, Habitat Creation, Recreation and Access, Landscape and Geomorphology

Scottish Natural Heritage (SNH)
www.snh.org.uk
Scottish Natural Heritage offers advice from their local offices, and publishes a wide range of advice on habitat, landscape and recreation management. You can get details of your local SNH Area office through the website links. Publications can be obtained by either using the website links, or by contacting the Publications Distribution Officer, Battleby, Redgorton, Perth, PH1 3EW (telephone 01738 444177).

Farming and Wildlife Advisory Group (FWAG)
www.fwag.org.uk
The Farming and Wildlife Advisory Group employs regional advisers who will be able to advise you on the habitat value of your existing land and the type of woodland appropriate for encouraging wildlife on your farm. They can also advise you on where existing habitats should not be planted, and will draw up farm plans.

Local Authority Bio-diversity Officers
Many Local Authorities employ Local biodiversity Officers, who can offer advice on the main nature conservation objectives for woodlands in your area. They can be contacted through the main switchboard at most Local Authority offices.

Local Authority Access Officers
Many Local Authorities employ Local Access Officers, who can offer advice on existing and planned networks of new access routes in your area. They can be contacted through the main switchboard at most Local Authority offices.

Private Environmental Consultants
Private ecology consultants are listed in the business pages of the telephone directory under 'Environmental Consultants'. They can assess the habitat value of your existing land and offer advice on where to site appropriate woodland to enhance the wildlife value of your holding. They can also advise you on where existing habitats should not be planted, and will draw up farm plans.

Private Landscape Consultants
Private landscape consultants are listed in the business pages of the telephone directory under 'Landscape Architects'. They can assess the landscape value of your existing land and offer advice on the management of woodlands in historic designed landscapes and other landscape designations. They can also advise you on how to design and establish new woodlands, and will draw up farm plans.

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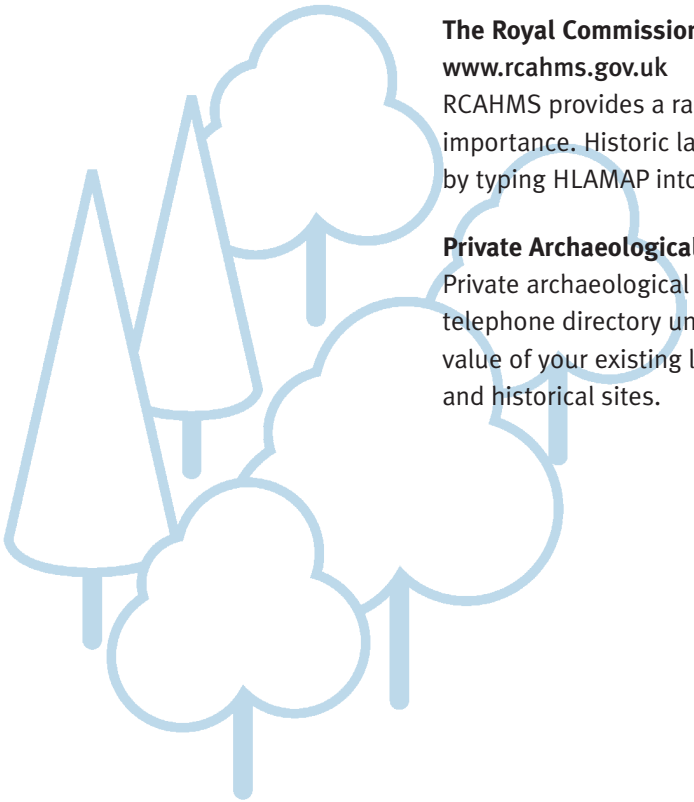
6.1.5 Archaeological and Historical Interest

Historic Scotland
www.historic-scotland.gov.uk
Historic Scotland safeguards the nation's historic environment and is responsible for designating and providing advice on the management of Scheduled Ancient Monuments. Their website offers advice on the management of Scheduled Monuments.

Local Authority Archaeologists
The responsibilities of the Local Authority Archaeological Services are described on the website of The Royal Commission of Ancient and Historical Monuments of Scotland. This site includes a list of local authority archaeological contacts.



The Royal Commission of Ancient and Historical Monuments of Scotland
www.rcahms.gov.uk
RCAHMS provides a range of information on issues of cultural and historical importance. Historic land-use maps for many parts of the country can be accessed by typing HLAMAP into the RCAHMS search engine.

Private Archaeological Consultants
Private archaeological consultants are listed in the business pages of the telephone directory under 'Archaeologists'. They can assess the archaeological value of your existing land and offer advice on the management of archaeological and historical sites.

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Scottish Natural Heritage: pages 7, 8 (all except 2nd from bottom), 10, 15, 18, 19, 21, 23, 24 (all except bottom and 2nd from bottom), 28 (top), 33, 34, 37, 39, 40 (all except bottom), 42, 44 (top), 46, 47

Scottish Agricultural College: pages 8 (2nd from bottom) 12, 26, 35, 48, 49

George Logan: pages 24 (2nd from bottom), 28 (bottom), 31

P&A Macdonald: pages 27, 36, 40 (bottom)

Nicholas Shepherd: pages 56, 62

Simon Jacyna: pages 24 (bottom), 32

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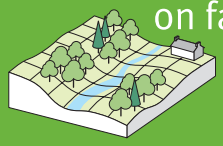
the creation of
small woodlands on farms



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Forestry Commission Scotland
www.forestry.gov.uk

SCOTTISH EXECUTIVE
www.scotland.gov.uk

SCOTTISH NATURAL HERITAGE
www.snh.org.uk/