



# Arrowthwaite

## Management Plan 2017-2022

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## THE WOODLAND TRUST

### INTRODUCTION

The Trust's corporate aims and management approach guide the management of all the Trust's properties, and are described on Page 4. These determine basic management policies and methods, which apply to all sites unless specifically stated otherwise. Such policies include free public access; keeping local people informed of major proposed work; the retention of old trees and dead wood; and a desire for management to be as unobtrusive as possible. The Trust also has available Policy Statements covering a variety of woodland management issues.

The Trust's management plans are based on the identification of Key Features for the site and setting objectives for their management. A monitoring programme (not included in this plan) ensures that these objectives are met and any necessary management works are carried out.

Any legally confidential or sensitive species information about this site is not included in this version of the plan.

### PLAN REVIEW AND UPDATING

The information presented in this Management plan is held in a database which is continuously being amended and updated on our website. Consequently this printed version may quickly become out of date, particularly in relation to the planned work programme and on-going monitoring observations. Please either consult The Woodland Trust website [www.woodlandtrust.org.uk](http://www.woodlandtrust.org.uk) or contact the Woodland Trust ([wopsmail@woodlandtrust.org.uk](mailto:wopsmail@woodlandtrust.org.uk)) to confirm details of the current management programme.

There is a formal review of this plan every 5 years and a summary of monitoring results can be obtained on request.

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## WOODLAND MANAGEMENT APPROACH

The management of our woods is based on our charitable purposes, and is therefore focused on improving woodland biodiversity and increasing peoples' understanding and enjoyment of woodland. Our strategic aims are to:

- Protect native woods, trees and their wildlife for the future
- Work with others to create more native woodlands and places rich in trees
- Inspire everyone to enjoy and value woods and trees

All our sites have a management plan which is freely accessible via our website

[www.woodlandtrust.org.uk](http://www.woodlandtrust.org.uk). Our woods are managed to the UK Woodland Assurance Standard (UKWAS) and are certified with the Forest Stewardship Council® (FSC®) under licence FSC-C009406 and through independent audit.

In addition to the guidelines below we have specific guidance and policies on issues of woodland management which we review and update from time to time.

We recognise that all woods are different and that the management of our sites should also reflect their local landscape and where appropriate support local projects and initiatives. Guidelines like these provide a necessary overarching framework to guide the management of our sites but such management also requires decisions based on local circumstances and our Site Manager's intimate knowledge of each site.

The following guidelines help to direct our woodland management:

1. Our woods are managed to maintain their intrinsic key features of value and to reflect those of the surrounding landscape. We intervene when there is evidence that it is necessary to maintain or improve biodiversity and to further the development of more resilient woods and landscapes.
2. We establish new native woodland using both natural regeneration and tree planting, but largely the latter, particularly when there are opportunities for involving people.
3. We provide free public access to woods for quiet, informal recreation and our woods are managed to make them accessible, welcoming and safe.
4. The long term vision for our non-native plantations on ancient woodland sites is to restore them to predominantly native species composition and semi-natural structure, a vision that equally applies to our secondary woods.
5. Existing semi-natural open-ground and freshwater habitats are restored and maintained wherever their management can be sustained and new open ground habitats created where appropriate.
6. The heritage and cultural value of sites is taken into account in our management and, in particular, our ancient trees are retained for as long as possible.
7. Woods can offer the potential to generate income both from the sustainable harvesting of wood products and the delivery of other services. We will therefore consider the potential to generate income from our estate to help support our aims.
8. We work with neighbours, local people, organisations and other stakeholders in developing the management of our woods. We recognise the benefits of local community woodland ownership and management. Where appropriate we allow our woods to be used to support local woodland, conservation, education and access initiatives.
9. We use and offer the estate where appropriate, for the purpose of demonstration, evidence gathering and research associated with the conservation, recreational and sustainable management of woodlands. In particular we will develop and maintain a network of long-term monitoring sites across the estate.
- 10 Any activities we undertake will conform to sustainable forest management principles, be appropriate for the site and will be balanced with our primary objectives of enhancing the biodiversity and recreational value of our woods and the wider landscapes.

## SUMMARY

This public management plan briefly describes the site, specifically mentions information on public access, sets out the long term policy and lists the Key Features which drive management actions. The Key Features are specific to this site - their significance is outlined together with their long (50 year+) and short (5 year) term objectives. The short term objectives are complemented by a detailed Work Programme for the period of this management plan. Detailed compartment descriptions are listed in the appendices which include any major management constraints and designations. A short glossary of technical terms is at the end. The Key Features and general woodland condition of this site are subject to a formal monitoring programme which is maintained in a central database. A summary of monitoring results is available on request.

## 1.0 SITE DETAILS

<b>Site name:</b>	Arrowthwaite
<b>Location:</b>	Whitehaven
<b>Grid reference:</b>	NX970175, OS 1:50,000 Sheet No. 89
<b>Area:</b>	8.27 hectares (20.44 acres)
<b>Designations:</b>	

## 2.0 SITE DESCRIPTION

### 2.1 Summary Description

Arrowthwaite lies south of Whitehaven Harbour, sitting on a steep slope. There are three terraces where colliers' cottages used to sit to the east. Part of the wood is open scrub and heather and, if you go right up the field at the far end and walk through, there are views of the harbour.

## 2.2 Extended Description

Arrowthwaite Wood (8.45ha), owned by Copeland Borough Council and leased to the Woodland Trust in 1995, is situated a kilometre south of Whitehaven Harbour between the Kells housing estate and Preston Street. The wood is on a steep eastern facing slope, with an average slope of 35 degrees with an elevation of 75m down to 25m and is an intrinsic feature in the landscape, highly visible from the town and surrounding area. The underlying geology is Westphalian Coal Measures and it is exposed as shaley sandstone in the old quarry to the north of the site.

The history of Whitehaven for many years involved coal mining and mining took place at Arrowthwaite (previously the Manor of Arrowthwaite covered the present electoral wards of Kells and Sandwith) since the early 13th century. No relics remain of the pits within this site but three terraces of collier's cottages known, as 'New Houses' remain derelict on the eastern boundary. On the first OS maps (1862) the area is shown as pasture land. However it is likely that the site was previously wooded as a charter of 1230 grants monks of Wetheral the right to take firewood in the territory of Arrowthwaite.

The north east of the wood is open scrub and heather and provides fine views over Whitehaven and the harbour. The wood was planted (P1949) by many local schoolchildren and is oblong in shape. The major canopy species are Corsican pine (*Pinus nigra*), larch (*Larix decidua*), beech (*Fagus sylvatica*), Scots pine (*Pinus sylvestris*), oak (*Quercus petraea*), Norway maple (*Acer platanoides*), sycamore (*Acer pseudoplatanus*) and some Norway spruce (*Picea abies*) and silver birch (*Betula pendula*). The under storey is sparse with hawthorn (*Crataegus monogyna*), holly (*Ilex aquifolium*) and rowan (*Sorbus aucuparia*) rare. The ground flora is indicative of the dense shade and with male fern (*Dryopteris filix-mas*) and bramble (*Rubus fruticosus*) being the major species with rosebay willowherb (*Chamerion angustifolium*), bracken (*Pteridium aquilinum*). However, in more open areas celandine (*Ranunculus ficaria*), bluebells (*Endymion non-scriptus*), wood sage (*Teucrium scrodonia*) and bilberry (*Vaccium myrtillus*) can be found. Around the edges of the wood at the north west corner and other localised patches there is colonisation of Japanese knotweed (*Polygonum cuspidatum*).

Several entrances, four to the west, one to the south, one to the north and two from the east give access to the wood. There are a number of public footpaths, including the main tarmac and Whitehaven brick path route that runs from the middle of the western boundary down through the woodland heading north and into the town centre. There are a number of benches located through the wood. The wood is in an urban location and is heavily used by local people for recreation and as a through route into the town.

## 3.0 PUBLIC ACCESS INFORMATION

### 3.1 Getting there

Arrowthwaite Wood is in the the town of Whitehaven in West Cumbria. The wood is to the south of the harbour adjacent to the Kells housing estate and the B5345 Preston Road to the east. The main trunk road serving Whitehaven is the A595.

Several entrances, three to the west: one at the north west corner of the wood from the High Road this has over a hundred steps on the route and a second from Thwaiteville; also with several steps. The third from Old Arrowthwaite is a metalled and brick path route which runs through the wood to Albion Street; there are no steps on this route. It is heavily used as a main route from Old Arrowthwaite into Whitehaven town centre. It is steep but can be used throughout the year. Additional entrances include one to the south from Monkgray Cottages and two from the east off Preston Street and Monkgray Brow give access to Arrowthwaite Wood. All have Woodland Trust welcome signs. Several other footpaths criss-cross the wood but may be stepped and can be steep and muddy in places. Magnificent views over Whitehaven town and the harbour can be gained where the woodland opens up into scrub and heath.

Parking is limited to nearby streets or town centre car parks. The C2C Hadrian's Wall National Cycle Route passes through Whitehaven and along Preston Street to the east of Arrowthwaite Wood. For more information on cycle routes contact [www.cycleroutes.org/hadrianscycleway](http://www.cycleroutes.org/hadrianscycleway) or contact Sustrans [www.sustrans.org.uk](http://www.sustrans.org.uk)

By rail Whitehaven Railway Station is a stop on the scenic Cumbrian Coast Line 63 km (39½ miles) south east of Carlisle and is operated by Northern Rail. Many trains on the route from Carlisle terminate here, including those from Sunderland railway station. There is generally frequent service from Carlisle in the north and an infrequent service from Barrow-in-Furness to the south. Note there are two stations in the town and the nearest to Arrowthwaite Wood is the stop at Corkickle. From the station follow the Coach Road to Ginns. From there pick up public footpath opposite the end of Coach Road this leads up into the wood.

The nearest bus route to the wood is the Kells Bransty service and there are stops on the High Road and Preston Street of for the buses to/from Carlisle the stop is on Lowther Street. Traveline Cumbria provides comprehensive timetable and fare information for all bus, coach, rail and Lakeland ferry journeys to/from and within Cumbria & the Lake District. A journey planner will help you plan your journey regardless of who operates the services Tel: 0871200 22 33 or [www.travelinenortheast.info](http://www.travelinenortheast.info)

There are numerous public toilets in the town centre including facilities on Irish Street and full facilities at the main railway station. For local information try [www.whitehaven.org.uk](http://www.whitehaven.org.uk) or [www.copelandbc.gov.uk](http://www.copelandbc.gov.uk) and [www.visitcumbria.com](http://www.visitcumbria.com) or the Whitehaven Tourist Information Centre, Market Hall, Market Place, Whitehaven Telephone: 01946 598914.

### 3.2 Access / Walks

## 4.0 LONG TERM POLICY

It is the Trust's objective to enhance the typical characteristics of this secondary woodland within the landscape and to maintain and improve the biodiversity of the whole woodland, as well as increase people's awareness and enjoyment of this habitat.

The Trust aims to maintain the overall high forest continuous-cover structure of Arrowthwaite mixed woodland and whilst in the long term there will be retention of both native and non-native canopy species in the short term there will be thinning intervention to move the canopy towards a more predominantly native species composition and improve conditions for natural regeneration. This will increase the dappled shade and produce a lighter woodland, improving conditions for urban access and improving ground light for regeneration and ground flora development. Species regeneration and development of the understorey will develop naturally.

Control of Japanese knotweed will continue. Where possible and safe to do so both standing and fallen deadwood communities will be retained. The Trust will work alongside local agencies to protect the woodland from adverse practices and degradation due to the tipping of garden waste, pollution or vandalism. Thereby sustaining the variety and character of this woodland and the landscape value of a continuously wooded system.

The Trust will maintain the informal access to the woodland on some 1000m of public and permissive paths and the provision welcome signs at the entrances. Public access will be encouraged with paths maintained and improved where necessary and defined views retained so that local users and visitors can continue to share in the wood's beauty, gain an understanding of the woodlands importance in the landscape and enjoy its position in the centre of Whitehaven and the views afforded out to the harbour. Public information and promotion of the woodland both nationally through the Trusts publications and directory's and locally will be enhanced where possible and posters will be used to inform and involve visitors with the woodland.

It is anticipated that this approach will safeguard and enhance the existing environmental value of the wood and maintain and enhance the level of public access in the woodland.



## 5.0 KEY FEATURES

The Key Features of the site are identified and described below. They encapsulate what is important about the site. The short and long-term objectives are stated and any management necessary to maintain and improve the Key Feature.

### 5.1 Informal Public Access

#### Description

Arrowthwaite Wood is well used by local people as a route into Whitehaven town centre but attracts relatively few visitors from further afield. There are 8 entrances to the wood with Woodland Trust signs to welcome visitors. The main Whitehaven brick path connects Old Arrowthwaite, where there is a square of amenity grassland managed by the Council through cpt1b to Albion Street. From this path there are a number of footpaths through the woodland, which in places can be steep, stepped and muddy in places. The internal landscape to the woodland is varied and interesting with spectacular views across Whitehaven town and towards the harbour. The 'New Houses', terraces to the east of the wood, have recently been restored as part of a town trail and offers visitors an extended route.

#### Significance

The Cumbria Biodiversity Action Plan incorporates the action for landowners to give the public the opportunity to experience and appreciate wildlife. Arrowthwaite Wood provides informal recreation opportunities for local people and visitors to the surrounding countryside; this is one of the Woodland Trusts key outcomes and that also of the West Cumbria Woodland Strategy. The woods intrinsic qualities and historical links make it an important local resource and an informal educational resource for visitors and organised groups. Public appreciation of woodlands is good for the well being of those visiting the wood and ultimately, good for the wood. Arrowthwaite Wood is a significant feature within the town's landscape and affords spectacular views out to the harbour. At a national, regional and local level there are objectives to encourage local people to be involved with woodland and this is in an important location to facilitate use and enjoyment of woodland.

#### Opportunities & Constraints

The footpath network at Arrowthwaite is quite extensive and varied. Although limited by size, for a town woodland the area is quite large. The woodland attracts many local users and has a number of well-used routes taking people from the Loop Road directly into Whitehaven town. The surfaced route means the wood can be utilised throughout the seasons. In winter the ground conditions may become muddy and slippery on the unsurfaced routes and there is an opportunity to make improvements. There is an opportunity to inform the public of management practices and landscape and historical interest in the wood through posters and local leaflets. With all urban woodland it gives local people an opportunity to connect with nature on their own doorstep. Vandalism and loitering may deter some people from using the wood.

#### Factors Causing Change

Vandalism and tipping, Degradation of wooden steps, Natural succession of scrub to wood obscuring view, Fire

#### Long term Objective (50 years+)

The Trust will maintain the informal access to the woodland and work with the County Council to maintain standards on the public footpaths. Welcome signs will be maintained at all entrances. Public access will be encouraged with paths, steps and benches maintained and improved so that visitors can continue to enjoy the woodland and its intrinsic features. Viewpoints out to the harbour from the bench will be maintained. Public information and promotion of the woodland both nationally through the Trusts publications and directory's and locally through will be enhanced where possible and posters will be used to inform and involve visitors with the woodland.

#### **Short term management Objectives for the plan period (5 years)**

Maintain the entrances (8) and path network 1000m three times annually to the Woodland Trusts Maintenance Specifications working with the local Council where they maintain responsibilities for public right of way path surfaces and boundaries. Undertake regular safety inspections at defined intervals, ensuring the safety fencing round the quarry is intact - see risk assessment database. Clear litter and garden waste as necessary and where possible (visit frequency is currently monthly). Undertake regular maintenance (once each plan period) to keep vegetation down and retain the viewpoint from the bench. Undertake boundary inspections once during each plan period. Undertake a review of entrance facilities and any requirements for improvement once during each plan period.

## 5.2 Secondary Woodland

### Description

Arrowthwaite Wood (8.45ha) is on a steep eastern facing slope, with an average slope of 35%° with an elevation of 75m down to 25m and is an intrinsic feature in the landscape, highly visible from the town and surrounding area. The underlying geology is Westphalian Coal Measures and it is exposed as shaley sandstone in the old quarry to the north of the site. This mixed conifer and broadleaved wood was planted (P1949) the major canopy species are Corsican pine, European larch, beech, Scots pine, sessile oak, Norway maple and Norway spruce and some silver birch. The understorey is sparse and the ground flora is indicative of the dense shade and with male fern and bramble being the major species with rosebay willowherb, bracken. However, in more open areas celandine, bluebells, wood sage and bilberry can be found. Around the edges of the wood at the north west corner along the ditch and other localised patches there is colonisation of Japanese knotweed.

### Significance

The woodland is an important landscape feature in the centre of Whitehaven. Continuity of this wooded canopy is imperative for the ecological maintenance of the present species and to improve the overall woodland biodiversity. At a national, regional and local level woodland within the landscape is credited with importance and within the urban environment can improve the quality of life and reduce carbon dioxide pollution.

### Opportunities & Constraints

Arrowthwaite Wood has been under-thinned in the past, which has produced dense woodland. In recent years The Trust have taken the opportunity to thin the trees to open up the woodland, improve stand stability and increase understory development whilst moving the canopy structure towards predominantly native species. Work has been constrained by wind throw risk, poor extraction routes and by the safety hazards of working in such a busy urban environment.

Arrowthwaite Wood secondary woodland is constrained by size and acts as an island habitat surrounded by an urban environment. This is a limiting factor on its diversity potential but there is an opportunity to improve the woodland conditions to encourage the development of ground flora and aid natural regeneration of tree seedlings. There is an opportunity to retain the landscape value of all the canopy tree species, brought and planted by previous owners as a legacy and a living heritage and for their own ecological merit.

Standing deadwood has ecological importance but retention may be constrained in places by safety however retention of fallen deadwood will improve niche habitats and soil nutrients but the risk of arson is a constraint. Equally vandalism direct to trees can cause early decline.

Garden waste poses a threat to the continuity of ground flora in tipping hotspots through smothering and pH imbalance. Invasive exotic garden species particularly Japanese knotweed are present. The control of garden exotics can help to improve woodland conditions for more specialist woodland plants but needs to be reviewed following WT management guidelines.

Opportunities to work in partnership with the local Council, local community organisations and local people may help to reduce these problems.

### Factors Causing Change

Invasive knotweed, Natural succession to woodland from scrub, Vandalism/fire, Wind damage, climate change, pest & diseases. Note: ash is not a significant component of the canopy or regeneration, and ash dieback (which reached the area in 2017) will have limited impact.

### **Long term Objective (50 years+)**

The long term aim is to further improve the diversity of this wood and maintain continuous cover, whilst aiming to develop the vertical structure throughout, with older trees, well developed shrub layer, regeneration and more diverse good ground flora communities. Controlling garden exotics and garden waste tipping where considered a threat to the woodland communities.

### **Short term management Objectives for the plan period (5 years)**

The steps to achieving the vision include:

Complete control of Japanese knotweed..

Work with the local Council to reduce the impact of garden tipping.

Retention of trees to promote longevity and retention of deadwood both standing and fallen, where safe to do so given the access objectives and safety.

Examine the impact of thinning to waste during the last plan period. Identify those areas which can be selectively felled during the next plan period. These small coupes in Cpt1a will be replanted favouring and introducing more native species to promote sustainability by regeneration, develop an understorey and ground vegetation development and enhance stability.

Monitor woodland conditions throughout and the impact of any management works or factors causing change.

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## 6.0 WORK PROGRAMME

Year	Type of Work	Description	Due By
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## APPENDIX 1: COMPARTMENT DESCRIPTIONS

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Key Features Present	Designations
1a	6.86	Corsican pine	1949	High forest	No/poor vehicular access to the site, Very steep slope/cliff/quarry/mine shafts/sink holes etc	Informal Public Access, Secondary Woodland	

Compartment 1a (6.86ha), includes all the woodland blocks and incorporates nearly all the site which is on a steep eastern facing slope, with an average slope of 35 degrees. Housing to the west, amenity grassland to the south, housing and industrial buildings to the east and cpt1b to the northeast surround cpt1a. To the north is a rough grazing field and some post and wire fencing. The woodland has a number of footpaths, which criss-cross the site; many are stepped and steep in places. The main Whitehaven brick path connects Old Arrowthwaite, where there is a square of amenity grassland managed by the Council through cpt1b to Albion Street. The public use this track heavily as an access route into Whitehaven town centre. There are 7 entrances with welcome signs into the wood. Where the two compartments meet fine views across the town and harbour can be gained.

The major canopy species are Corsican pine, larch, beech, Scots pine, oak, Norway maple, Norway spruce and some silver birch. The understorey is sparse with hawthorn, blackthorn holly) and rowan. The ground flora is indicative of the dense shade with male fern and bramble being the major species, with localised colonisation of Japanese knotweed. There is a large area of rough grassland to the south east of the wood towards Preston Street.

There is repeated vandalism damage to trees and litter and tipping occurs particularly around the woodland boundaries. Management access by vehicle is limited with access being gained from the south or directly on to the footpath from Old Arrowthwaite. There are a number of underground services through the compartment and an overhead sewer pipe across the path leading from High Road at the northwest corner. There is a disused quarry at the north of the compartment, which has safety fencing (post and wire) across the top and down the southern side.

1b	1.41	Other		Non-wood habitat	No/poor vehicular access to the site, Site structure, location, natural features & vegetation, Very steep slope/cliff/quarry/mine shafts/sink holes etc	Informal Public Access, Secondary Woodland	
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This compartment lies to the east of cpt1a and is delineated by footpaths to the north and west and borders the 'New Houses' terraces to the east. To the north is the entrance from Albion Street and along the footpath is a bench, which affords fine views over Whitehaven. The open ditch from the west sinks in this compartment and travels underground. Much of the area (1.41ha) remained largely unplanted; with to the south between the footpaths some oaks and to the north mixed larch, beech and oak. The west of the compartment above the main footpath is open grassland with scattered clumps (density 10%) of ling (*Calluna vulgaris*), tormentil (*Potentilla erecta*), heath bedstraw (*Gallium saxatile*) and greater stitchwort (*Stellaria holostea*). To the east the area is rough grassland with significant dominant bramble (*Rubus fruticosus*) with rosebay willowherb (*Chamerion angustifolium*), bracken (*Pteridium aquilinum*) with isolated areas of regenerating scrub including hawthorn (*Crataegus monogyna*), gorse (*Ulex europaeus*) and blackthorn (*Prunus spinosa*). Fire damage has occurred to the heather patches in the past.

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**Appendix 2: Harvesting operations (20 years)**

Forecast Year	Cpt	Operation Type	Work Area (ha)	Estimated vol/ha	Estimated total vol.
2022	1a	Thin	6.00	50	300



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## GLOSSARY

### **Ancient Woodland**

Ancient woods are defined as those where there has been continuous woodland cover since at least 1600 AD. In Scotland ancient woods are defined strictly as sites shown as semi-natural woodland on the 'Roy' maps (a military survey carried out in 1750 AD, which is the best source of historical map evidence) and as woodland all subsequent maps. However, they have been combined with long-established woods of semi-natural origin (originating from between 1750 and 1860) into a single category of Ancient Semi-Natural Woodland to take account of uncertainties in their identification. Ancient woods include Ancient Semi-Natural Woodland and plantations on Ancient Woodland Sites (see below). May support many species that are only found in ancient woodland.

### **Ancient Semi - Natural Woodland**

Stands in ancient woods defined as those consisting predominantly of native trees and shrubs that have not obviously been planted, which have arisen from natural regeneration or coppice regrowth.

### **Ancient Woodland Site**

Stands in ancient woods that have been converted to plantations, of coniferous, broadleaved or mixed species, usually for timber production, including plantations of native species planted so closely together that any semi-natural elements of the understorey have been suppressed.

### **Beating Up**

Replacing any newly planted trees that have died in the first few years after planting.

### **Broadleaf**

A tree having broad leaves (such as oak) rather than needles found on conifers (such as Scots pine).

### **Canopy**

The uppermost layer of vegetation in a woodland, or the upper foliage and branches of an individual tree.

### **Clearfell**

Felling of all trees within a defined area.

### **Compartment**

Permanent management division of a woodland, usually defined on site by permanent features such as roads. See Sub-compartments.

### **Conifer**

A tree having needles, rather than broadleaves, and typically bearing cones.

### **Continuous Cover forestry**

A term used for managing woods to ensure that there are groups or individual trees of different ages scattered over the whole wood and that some mature tree cover is always maintained. Management is by repeated thinning and no large areas are ever completely felled all at once.

### **Coppice**

Trees which are cut back to ground levels at regular intervals (3-25 years).

### **Exotic (non-native) Species**

Species originating from other countries (or other parts of the UK) that have been introduced by humans, deliberately or accidentally.

### **Field Layer**

Layer of small, non-woody herbaceous plants such as bluebells.

### **Group Fell**

The felling of a small group of trees, often to promote natural regeneration or allow planting.

### **Long Term Retention**

Discrete groups of trees (or in some cases single trees) that are retained significantly past their economic felling age. Operations may still be carried out within them and thinning is often necessary to maintain stability.

### **Minimum Intervention**

Areas where no operations (such as thinning) will take place other than to protect public safety or possibly to control invasive exotic species.

### **Mixed Woodland**

Woodland made up of broadleaved and coniferous trees.

### **National vegetation classification (NVC)**

A classification scheme that allows an area of vegetation to be assigned to the standardised type that best matches the combination of plant species that it contains. All woodlands in the UK can be described as being one of 18 main woodland types (W1 - W18), which principally reflect soil and climatic conditions. For example, Upland Oakwoods are type W11, and normally occur on well drained infertile soils in the cooler and wetter north and west of Britain. Each main type can be subdivided into numerous subtypes. Most real woods contain more than one type or sub-type and inevitably some woods are intermediate in character and can't be properly described by any sub type.

### **Native Species**

Species that arrived in Britain without human assistance.

### **Natural Regeneration**

Naturally grown trees from seeds falling from mature trees. Also regeneration from coppicing and suckering.

## **Origin & Provenance**

The provenance of a tree or seed is the place where seed was collected to grow the tree or plant. The origin is the geographical location within the natural range of a species from where seeds/tree originally derives. Thus an acorn collected from a Turkey oak in Edinburgh would have an Edinburgh provenance and a southern European origin.

## **Re-Stocking**

Re-planting an area of woodland, after it has been felled.

## **Shrub Layer**

Formed by woody plants 1-10m tall.

## **Silviculture**

The growing and care of trees in woodlands.

## **Stand**

Trees of one type or species, grouped together within a woodland.

## **Sub-Compartment**

Temporary management division of a compartment, which may change between management plan periods.

## **Thinning**

The felling of a proportion of individual trees within a given area. The remaining trees grow to fill in the space created.

## **Tubex or Grow or Tuley Tubes**

Tubes placed over newly planted trees or natural regeneration that promote growth and provide protection from animals such as rabbits and deer.

## **Weeding**

The control of vegetation immediately around newly planted trees or natural regeneration to promote tree growth until they become established. Either by hand cutting or with carefully selected weed killers such as glyphosate.

## **Windblow/Windthrow**

Trees or groups of trees blown over (usually uprooted) by strong winds and gales.