



# Windmill Hill

# Management Plan 2019-2024

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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 Consequently this printed version may quickly become out of date, particularly in relation to the planned work programme and on-going monitoring observations.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>	Windmill Hill
<b>Location:</b>	Runcorn
<b>Grid reference:</b>	SJ550822, OS 1:50,000 Sheet No. 108
<b>Area:</b>	22.80 hectares (56.34 acres)
<b>Designations:</b>	Community Forest, County Wildlife Site (includes SNCI, SINC etc)

## 2.0 SITE DESCRIPTION

### 2.1 Summary Description

Windmill Hill wood is a mixed broadleaf woodland which was once part of the Norton Priory estate owned by the Brooke family. Today, it's in the middle of housing estates although it can still be peaceful and quiet where you can escape the hubbub of town, look out for wildlife, and enjoy the changing seasons. The site is the largest of a cluster of Woodland Trust sites in the immediate area which include nearby Big Wood and Fountains Wood.

### 2.2 Extended Description

Windmill Hill Wood is 3 miles to the east of Runcorn town centre in the Manor Park suburb which has a mix of land uses including housing, industrial estates, office buildings, open spaces and woodlands. The wood is approximately 22ha in size and is surrounded by housing estates and roads. Phoenix Park is situated to the west of the wood, the Bridgewater Canal abuts the northern tip of the wood and there are several other Woodland Trust sites nearby including Fountains Wood, Big Wood and Haddocks Wood. Windmill Hill wood includes St Berteline's Wood, a small new woodland planted in the late 1990's, which is located to the south west of the main block of woodland.

The site is situated on a sandstone ridge which is a prominent feature in the local landscape. The site is undulating and slopes gently North to South. The highest point in the area Norton Hill has an

impressive Victorian water tower (located a few hundred metres from the southern boundary of the wood) which provides a visible landmark in the local area. The underlying geology of the area is sandstone with exposed outcrops of rock in places.

The site was once part of the Norton Priory Estate owned by the Brooke family and was cut off from the main part of the estate by the construction of the Bridgewater Canal in the 18th Century. At this time the area was less wooded and on top of the hill was a wooden windmill where the area got its name. Unfortunately there is no evidence of the windmill on the ground now.

From the 1960's most of the local area was bought by the Runcorn New Town Corporation who built the Windmill Hill housing estate in the 1970's and the nearby Daresbury Expressway next to Norton Priory. Windmill Hill wood was given to the Woodland Trust in 1995 by the Commission for New Towns along with approximately 20 other woodlands in Runcorn.

Windmill Hill Wood is secondary woodland which is a key feature of the site. It contains predominantly mature, native broadleaves with some non-natives including Norway Maple, Corsican pine and Larch. The main canopy species are sycamore, silver birch, oak, beech and alder with occasional ash, lime, Horse Chestnut, cherry, elm, willow, field maple as well as pine and conifer species. The understorey includes natural regeneration and under planting from the 1980's of rowan, beech, hornbeam, birch, oak, ash and sycamore. It has a varied shrub layer consisting mostly of hazel, holly, elder. Rhododendron was present in the shrub layer and has been removed in recent years although some regeneration still occurs. The ground flora is dominated by bramble, bracken with significant areas of bluebell and other woodland flora. On the higher ground there is the remnant of an area of heathland, including heather, gorse, bilberry and bracken.

Two ponds are situated in the northern half of the site. In addition there are three old marl pits in the western part of the wood which are permanently dry. In the southern part of the wood near the western boundary there is the remains of a small disused sandstone quarry which was used to provide building stone for the local area.

In 1997 the Woodland Trust was given 6ha of grassland to the south of Windmill Hill Wood in the Norton Fields area. This was planted with mixed native broadleaves in 1998/99 as part of the Woods on Your Doorstep project. The new woodland was named St Berteline's Wood in recognition of the close involvement of the nearby primary school St. Berteline's Primary School who helped with planting the trees. The main species in this woodland are oak, ash, birch, cherry and woody shrubs (hazel, holly, hawthorn and blackthorn) planted in four distinct blocks with approximately 1.7ha of the site left as open space to develop naturally with scrub species. New Native Woodland is a key feature for this part of the site.

Informal Public Access is a Key Feature of the site. Windmill Hill Wood has more than twenty entrances and an extensive network of surfaced paths which are well used on a daily basis by local residents to access shops and other facilities including nearby Town Park and Phoenix Park. Most of the paths are surfaced with compacted stone, although some are more informal unsurfaced paths. A few short sections of tarmac paths are situated in the northern part of the wood which are adopted footpaths and maintained by Halton Council. St Berteline's Wood has four entrances and unsurfaced grass paths linking to adjoining public open spaces. Due to its urban setting the site suffers from regular issues of fly tipping, litter, vandalism and fires.

## 3.0 PUBLIC ACCESS INFORMATION

### 3.1 Getting there

**By bus:** There are a number of buses from Runcorn, stopping at the shops on Windmill Avenue and on the bus route running adjacent to the north and western boundaries of the wood.

**By train:** The nearest station is Runcorn East (2.1km/ 1.3 miles).

For up-to-date information on public transport, visit [traveline.org.uk](http://traveline.org.uk) or telephone 0871 200 22 33.

**By car:** From Runcorn, head east along the A533 and join the A558 (Daresbury Expressway). Take the exit towards Windmill Hill. At the roundabout, take the first exit onto Manor Park Avenue, then at the next roundabout take the second exit onto Windmill Hill Avenue North. At the third roundabout, take the first exit to Windmill Hill Avenue East. Turn right onto Norton Lane and then at the next roundabout take the first exit onto Norton Gate. Turn right onto Broadfields, where there are two entrances.

Roadside parking is permitted. Alternatively, the local district shopping centre on Windmill Hill Avenue West on the eastern side of the wood has a free car park.

### 3.2 Access / Walks

The wood has more than 20 pedestrian entrances from the neighbouring housing estates, some of which are barrier free and others with either squeeze gap access or Centrewire kissing gates suitable for buggies and wheelchairs. There is barrier free access at the entrance off Broadfields, to the south of the woodland on the Norton Cross housing estate, at several entrances close to local shops on Windmill Hill Avenue West and from the Bridgewater Canal entrance at the northern end of the wood.

The main woodland has an extensive network of surfaced footpaths. Most are suitable for buggies and wheelchairs although they can be muddy in winter.

The footpaths link the wood to surrounding green spaces including Runcorn Town Park, Big Wood, Fountains Wood, the Bridgewater Canal and the Sandymoor Valley.

St Berteline's Wood is accessed from Broadfields in the Norton Fields housing estate or from Norton Lane. The site is gently sloping with kissing gates at entrances.

There are fantastic opportunities for lovely woodland walks of various lengths, taking from 20 minutes to one hour.

More information on these routes is available to download from [woodlandtrust.org.uk](http://woodlandtrust.org.uk)

## 4.0 LONG TERM POLICY

The long-term intention for Windmill Hill and St Berteline's Wood is to create and maintain a site with a rich mosaic of habitats comprising predominantly native broadleaf woodland, open ground areas, scrub and ponds that provide a valuable conservation and amenity feature within the local landscape. The woodland areas will be managed as a mixed, native species, high forest.

Guided by the Woodland Trust's woodland management principles, conservation and access policies, the long term management will continue to seek a balance between conservation and public access. Where possible it will be allowed to develop naturally with the retention of mature trees to become future veterans and dead wood will be retained where it is safe to do so and doesn't increase the fire risk on site. Other habitats (ponds and open areas) will be managed with minimal intervention.

Management operations will be driven by the need to maintain public access, tree safety and to make the woodland as resilient as possible to cope with future pressures from climate change, pests and tree diseases. Silvicultural management will be for long term tree safety and stand stability focusing along boundaries next to houses, roads and footpaths. Woodland edges will be managed with a programme of coppicing over the long term to create a more graduated edge structure where possible.

The current level of public access will be maintained and where possible enhanced in the future. The Trust's duty of care to visitors and neighbours will continue to be addressed through on-going tree safety and site risk assessment inspections.

Monitoring will be undertaken on a regular basis to identify any threats to the woodland from fly-tipping, litter, tree disease, pests, invasive species, and appropriate action taken where it is practicable to do so.

Consultation and involvement of the local community and organisations will be important to try to encourage greater community ownership and care for the wood.



## 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

Windmill Hill Wood has 22 public access points and more than 2km of surfaced footpaths within the woodland. St Berteline's Wood has four public access points with approximately 300m of unsurfaced grass/ unsurfaced paths. Most of the entrances are open access with no barriers, although some main entrances have kissing gates and vehicle barriers to prevent unauthorised vehicle access. There are some tarmac footpaths and two road subways and a set of concrete steps near the busway and Windmill Hill Avenue which are maintained by Halton Borough Council. A sandstone wall (varying from 0.5 to 2m high) runs around the perimeter of most of the wood.

#### Significance

Increasing access to and enjoyment of woodland is one of the Trust's key aims and the network of footpaths through these woods provide opportunities for local people to visit and enjoy woodlands in an urban setting. The Windmill Hill estate is within the top 10% of areas of deprivation in England and so having access to woodland and open space so close to people living here is important for people's health and well-being. The woods and footpaths link to other nearby green spaces (Town Park and Phoenix Park) and woods including Fountains Wood and Big Wood and the Sandymoor Valley a mile to the east.

#### Opportunities & Constraints

The footpaths are well used all year around and require regular maintenance. Management access is difficult at the northern end of the wood due to the subways. Fly tipping and litter is a continual problem at this site.

#### Factors Causing Change

Visitor pressures leading to worn footpaths and damage from mountain bikes/ motor bikes which sometimes ride on the paths.  
Vandalism, fires, fly tipping.

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

The long term objective is to maintain the network of footpaths, public access points and signage on site to provide all year round access for the public.  
The site will be made as safe as practicable for visitors and neighbours through regular safety inspections of trees in high risk zones and site hazards.  
Threats to the wood arising from human impacts (litter, fly tipping, fires, vandalism) will be monitored and appropriate measures taken where necessary.

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

Footpaths will be maintained and kept clear of encroaching vegetation x2/3 times a year.  
All entrances, signage, fencing and walls will be inspected annually.  
Litter and fly tipping will be removed to prevent accumulations of rubbish x 12 times a year.  
Trees in high risk zones (i.e. next to houses, roads and footpaths) and site hazards will be inspected (as per the SRA inspection regime) to ensure safety of visitors and neighbours, and undertake any remedial safety work identified.  
Path / access improvements will be carried out in 2023 to resurface worn paths and replace old gates and access infrastructure.  
The condition of footpaths and access infrastructure will be formally inspected once during the plan period to assess whether the current access provision is adequate, identify any issues or threats from public use of the wood, and take appropriate action to address them if necessary.

## 5.2 Natural Secondary Woodland

### Description

Windmill Hill Wood contains a mix of broadleaf species, predominantly mature & semi-mature sycamore, Silver birch, oak, beech, ash, cherry, elm, cherry, horse chestnut and Corsican/Scots pines. On the lower slopes the canopy is dominated by dense stands of sycamore with oak, beech, ash and rowan and on the higher ground with more acidic soils by Silver birch, pines and oak. There is a well developed understorey of natural regeneration particularly sycamore, Silver birch, oak, rowan and shrub species of hazel, hawthorn, holly and elder. The woodland was extensively underplanted in the late 1980's by the Runcorn New Town Development Corporation although much of this has been suppressed in areas where the canopy is sycamore. The ground flora is quite extensive and includes bluebell, herb robert, nettle, bramble and ground ivy as well as a few garden escapes including daffodil and crocus.

### Significance

Cheshire is one of the least wooded counties in England with less than 5% woodland cover. Windmill Hill Wood is located in a highly urbanised area and provides local people an opportunity to interact with the woodland habitat and wildlife. It is an ecologically rich habitat and is designated as a Local Wildlife Site.

### Opportunities & Constraints

Constraints: the woodland is surrounded by housing and subject to intense usage and regular misuse. The close proximity of houses to many of the boundaries means there is constant pressure to prune and fell trees from neighbours. A cyclical programme of boundary edge tree management and coppicing would help to manage this.

The dominance of sycamore in some compartments has severely undermined the diversity of the ground flora.

Opportunities: working with local communities and organisations to try to educate people about the woodland and try to discourage inappropriate activities.

### Factors Causing Change

Visitor pressures and regular misuse including vandalism and damage to trees and site furniture.

Deliberate fires causing damage to mature trees, natural regen. and ground flora.

Fly tipping, particularly garden waste, resulting in ground flora being covered and the introduction and spread of non-native garden plants.

Rhododendron regeneration will need controlling to prevent it from spreading.

Squirrel damage to some trees although not causing a significant impact.

Sycamore, where it is dominant in the canopy is suppressing natural regeneration and reducing the diversity of other species.

Ash dieback.

### Long term Objective (50 years+)

The long term objective is to maintain a high forest of predominately native, mixed broadleaves, but with non-natives including sycamore, Norway maple and pines retained where appropriate. The woodland should have a diverse structure in terms of species composition, age and size classes. The wood will be allowed to develop as naturally as possible with standing and fallen dead wood retained where safe to do so and natural regeneration encouraged. Tree safety along boundaries next to houses, roads and footpaths will be a priority due to the urban setting of the woodland and this may provide opportunities to promote natural regeneration of desirable species for future canopy trees. Rhododendron and other non-native invasive species will be controlled within the wood to encourage natural regeneration and ground flora.

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

Boundary thinning and coppicing is planned for 2020-24 for stand stability and long term tree safety focusing on areas next to boundaries with houses, roads and footpaths.

Monitoring for rhododendron regeneration will be carried out during the plan period, in 2023 and any regrowth will be controlled.

The health of trees will be monitored once during the plan period in 2024, through the woodland condition assessment for any diseases, pests or threats.

## 5.3 New Native Woodland

### Description

St Berteline's Wood is as an extension to Windmill Hill Wood which was planted in 1998/99 with a mix of native broadleaves (oak, ash, Silver, birch, cherry and rowan). The land was given to the Woodland Trust by the Commission for the New Towns in 1997. It is bounded by public open space and a play area to the east, a hedge bank and Norton Lane to the south, other woodland and grassland to the west and the Norton Fields housing estate to the north east. Approximately 1.7 ha of new native broadleaved trees were planted in 1998/9 as a WOYD with the remainder of the area left as unmanaged grassland.

### Significance

This new woodland acts as a buffer to the existing secondary woodland at Windmill Hill Wood and adds to the biodiversity of the site. Cheshire is one of the least wooded counties in England with less than 4% woodland cover so even this small area of new woodland helps to increase this valuable and scarce habitat for wildlife.

It provides additional publicly accessible green space for the local community to enjoy and experience nature close to where they live.

### Opportunities & Constraints

Tree establishment has been very successful with ash, alder and birch doing particularly well whilst growth of oak has been slower. Due to the uniform age and structure of the woodland there is an opportunity through selective thinning to create a more varied structure, age and species composition and at the same time increase the amount of deadwood habitat on site.

Opportunities to involve local people and volunteers in woodland management can help to develop a greater sense of ownership and community involvement in the site.

### Factors Causing Change

Growth of young trees overtime will lead to canopy closure.

Transitional open ground areas will develop into transitional scrub and woodland habitat.

Tree disease - Ash dieback will leave gaps in the canopy although other species may benefit from the loss of ash.

### Long term Objective (50 years+)

The long term aim is to create a high forest of native broadleaves with a mix of species, diverse structure and age classes. The wood will be managed predominantly as a recreational and landscape feature. Areas of open ground will be left to develop naturally into scrub, although grass path rides will be managed both for public access and to maintain a more diverse habitat.

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

Thinning work will be carried out in 2023 focusing on where the planted trees abut housing and footpaths, to promote long term stand stability within the wood.

The health of trees will be monitored once during the plan period through the woodland condition assessment for any diseases, pests or threats.

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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	0.91	Sycamore	1950	High forest	Housing/infrastructure, structures & water features on or adjacent to site, No/poor vehicular access within the site, People issues (+tve & -tve), Very steep slope/cliff/quarry/mine shafts/sink holes etc	Informal Public Access, Natural Secondary Woodland	Community Forest, County Wildlife Site (includes SNCI, SINC etc)
<p>This sub-compartment forms the northern part of Windmill Hill Wood. It is bounded to the north by the Bridgewater Canal/ Canal Reach road, to the east and west with housing estates and to the south by Windmill Hill Avenue. A subway provides a pedestrian link from the sub-cpt to sub-cpt 1b to the south of the road. The subway is owned by Halton BC. There is network of surfaced paths through the sub-cpt and a permissive bridlepath that runs southwards from the canal entrance. The canopy is dominated by even aged semi-mature and mature sycamore with occasional beech, horse chestnut, oak and Norway maple with an understorey of holly, hawthorn, hazel, dog rose and elder. Rhododendron was present but was cleared from this sub-cpt in 2014/15. There is good natural regeneration, mainly of sycamore, Norway maple, horse chestnut and holly. Ground flora is generally sparse due to the closed canopy and trampling from visitors although in places there are bluebells, bramble, grasses and bracken with occasional areas of rosebay willowherb..</p>							
1b	0.47	Sycamore	1950	High forest	Housing/infrastructure, structures & water features on or adjacent to site, No/poor vehicular access within the site, People issues (+tve & -tve)	Informal Public Access, Natural Secondary Woodland	Community Forest, County Wildlife Site (includes SNCI, SINC etc)

This small sub-compartment is sandwiched between sub-cpt 1a and 2a. It is bounded by Windmill Hill Avenue and sub-cpt 1a to the north; a small area of open space with trees and grass to the west and a footpath next to the local shopping centre to the east; and a busway to the south. It is connected to sub-cpt 2a on the other side of the busway by a subway which is owned by Halton BC. A surfaced path runs through the sub-cpt between the sub-ways with a path off to the west and the nearby housing estate.

running through the wood to the Windmill Hill housing estate. There are two subways (owned by Halton BC) under the road which provide public access along the main footpath that passes through of the compartment. There is network of surfaced paths through the wood and a permissive bridlepath running north-south.

The canopy consists of even aged semi-mature and mature sycamore with beech, horse chestnut, oak and Norway maple. Understorey is diverse and there is a good variety of species with holly, hawthorn, hazel, dog rose and elder all present, and some small pockets of rhododendron remain. Natural regeneration is frequent and is predominately sycamore, Norway maple, horse chestnut and holly.

Ground flora is generally sparse due to the closed canopy covering most of the compartment. However there are bluebells, bramble, grasses and bracken with occasional areas of rosebay willowherb.

2a	16.94	Mixed native broadleaves	1950	High forest	Housing/infrastructure, structures & water features on or adjacent to site, People issues (+tve & -tve), Very steep slope/cliff/quarry/mine shafts/sink holes etc	Informal Public Access, Natural Secondary Woodland	Community Forest, County Wildlife Site (includes SNCI, SINC etc)
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This is the largest compartment and forms the central part of the wood. It is bounded by a bus way to the north; the Norton Hill Housing estate to the east; Windmill Hill Housing estate to the north west; the Norton Fields housing estate to the south west; and Broadfields / Norton Lane to the south. There are several footpaths and the permissive bridlepath passing through the compartment. This area is particularly prone to fires, the risk from which is heightened by underlying peat, large areas of bracken. Rhododendron has largely been removed from the sub-cpt although in places this has left some large brash piles. This compartment contains some small patches of heathland on the sandstone plateau at the summit of Windmill Hill. Several old marl pits are located in the northern and western parts of the compartment. There are three ponds in the sub-cpt (two in the northern part of the cpt and another in the south western corner near Norton Lane). The two ponds near the busway were de-silted in 1997.

Canopy: The southern half of the compartment comprises semi-mature and mature birch, oak, sycamore, Norway & field maples, Corsican and Scots pine, beech and elm.

To the north the canopy is dominated by almost pure stands of single aged mature sycamore, along with birch and pine with some oak, ash, beech, birch, alder and Scots Pine, European larch and Yew in the east of the compartment.

Understorey: Diverse but generally under developed and suppressed, with some rhododendron present in a few locations. To the south, beech is the main understory species with some cherry, hazel, sycamore, holly and alder. Further north this changes to mainly sycamore with occasional beech, oak, ash, rowan, hazel, elder and holly. There is some natural regeneration in the southern/ middle part of the area with oak birch, rowan, alder, Scots pine, larch, sycamore and beech. At the northern end of the compartment there is little understory or regeneration due to the closed sycamore canopy.

Ground flora is sparse, but where present varied. To the south only sparse patches of bramble and rhododendron and further north bramble, bracken and holly, occasional gorse and patches of grasses and bluebells. In more open areas rosebay willow herb, grasses, bramble and bracken are present. Some bilberry and heather is found towards the summit area of Windmill Hill.

3a	2.62	Mixed native broadleaves	1998	Wood establishment	Housing/infrastructure, structures & water features on or adjacent to site	Informal Public Access, Natural Secondary Woodland	Community Forest
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This compartment, known as St Berteline's Wood, was added to the Windmill Hill Wood in 1997 when the land was gifted to the WT by the Commission for the New Towns. The area is bounded by post and rail fencing to the east, a hedge bank/ Norton Lane to the south, compartment 3 to the west and the Norton Fields housing estate to the north east.

It was planted in 1998/99 (WOYD) with mostly mixed native broadleaves (oak, ash, birch, rowan and cherry) and woody shrubs (hazel, holly, hawthorn and blackthorn), in four distinct blocks.

Approximate 1.7ha of the areas was left as open space to develop naturally into scrub overtime. The compartment is called St Berteline's Wood, due to the close local involvement with St. Berteline's Primary School.

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

Forecast Year	Cpt	Operation Type	Work Area (ha)	Estimated vol/ha	Estimated total vol.
2020	1a	Ride edge Coppice	2.00	3	5
2021	1a	Ride edge Coppice	0.50	4	2
2021	1a	Thin	2.00	5	10
2022	1a	Thin	2.00	5	10
2023	3a	Thin	2.00	10	20
2024	1a	Thin	2.00	5	10

## 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.