

# **BROXBOURNE & BENCROFT WOOD**

## **Management Plan 2019-2024**



## OVERVIEW

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### Greenspace Action Plans

Greenspace Actions Plans (GAPs) are map-based management plans which specify activities that should take place on a site over a stated period of time; these activities will help to deliver the agreed aspirations which the site managers and stakeholders have identified for that site.

### Public Engagement

Engagement with stakeholders is at the centre of effective management planning on any site. An initial engagement period was held in July 2018, to establish core aims and objectives for the site; these are reflected in Section 4. A second stage of engagement is currently underway to enable stakeholders to comment on the proposed management actions for the site. We will not respond directly to comments – an engagement response document published online as an appendix to this plan will summarise comments received and any amendments made to the plan as a result.

### Version Control

Version	Issue Date	Details	Author	Reviewed
v0	15/05/2019	Draft plan	AT	LT
v1	17/07/2019	Final plan	AT	

## SITE SUMMARY

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<b>NAME</b>	Broxbourne & Bencroft Wood
<b>GRID REF</b>	TL 328 069 (Broxbourne Wood east car park) TL 331 064 (Bencroft Wood east car park)
<b>SIZE</b>	33.47 ha (Broxbourne Wood) 22.48 ha (Bencroft Wood)
<b>OWNER</b>	Hertfordshire County Council (HCC)
<b>SITE MANAGER</b>	Countryside Management Service Environment and Infrastructure Department County Hall Pegs Lane Hertford SG13 8DN  Tel: 01992 588433 E: <a href="mailto:northeast.cms@hertfordshire.gov.uk">northeast.cms@hertfordshire.gov.uk</a>
<b>DESIGNATIONS</b>	National Nature Reserve (NNR) Special Area of Conservation (SAC) Site of Special Scientific Interest (SSSI) Ancient Semi-Natural Woodland (ASNW) Plantations on Ancient Woodland Sites (PAWS) Local Wildlife Site

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# 1 INTRODUCTION

Broxbourne & Bencroft Wood are part of an extensive complex of publicly and privately owned woodlands in the south of Hertfordshire. Together with Hoddesdonpark and Wormley Woods they form the Broxbourne Woods National Nature Reserve (NNR), Hertfordshire's only NNR. The entire site comprises approximately 236 ha of woodland.

In early 2009, the Countryside Management Service (CMS) assumed day to day management responsibility for Broxbourne & Bencroft Wood on behalf of Hertfordshire County Council (HCC). At this time, the woodland had been undermanaged for a significant period. CMS were asked to prepare and begin implementing a new management plan for the sites. This document was produced in consultation with key stakeholders, including Natural England and the Forestry Commission, and written in the context of the wider NNR. It was followed by a second management plan which will come to an end in 2019.

The two plans have proved to be vital tools, guiding working practices over the last ten years and promoting a structured and closely monitored approach to woodland management. With pressures on the ecological integrity of the NNR ever increasing, and the population of Hertfordshire ever expanding, there continues to be a great need for an effective plan. The plans are supported by a woodland management plan agreed with the Forestry Commission, which is currently being updated.

## *Broxbourne & Bencroft Wood Management Plan 2019-2024*

This document is an updated version of the previous plans and will cover the five year period between 2019 and 2024. It will continue to strive towards the same core aspirations while also taking into account lessons learned over the last ten years and new challenges faced.

This management plan is a simple, map based document intended for use by CMS officers, for the reference of stakeholders and members of the public, and to guide the work of volunteers on site. It is designed to be easy to read and understand, with a structure that aims to show the decision making process behind activities that will be taking place on the ground.

The initial sections of the plan provide an overview of the woodland sites (2) and an analysis of some of the issues faced and lessons learned over the course of the previous ten years (3), including consultation feedback from stakeholders. These points have been used to develop aims and objectives for the management plan (4), which in turn have determined the annual action plans (5), setting out the activities that will be taking place each year. The plan will be monitored and reviewed annually (6) to ensure that it continues to be effective and relevant.

Although Broxbourne Wood and Bencroft Wood are not physically joined, each require a similar management approach which warrants their inclusion in the same management plan document. Site specific information has been included where required, and section 5 sets out separate action plans for each of the woodlands.

The management plan is restricted to the area under the ownership and management of Hertfordshire County Council; however, the wider context has been considered and reference is made to areas beyond the sites' boundaries where relevant. All supporting documents and reference materials in this plan are included as appendices or through links to external resources.



*Fig 1 – Restored SSSI compartment, January 2019*

## **2 SITE DESCRIPTION**

### **2.1 Introduction**

The following paragraphs provide a brief factual summary of both Broxbourne Wood and Bencroft Wood. They intend to give an overview of the current condition of both sites and to provide an understanding of how the actions and management prescriptions set out in the latter part of this document were determined.

Due to the presence of more detailed documents, such as the Forestry Commission Woodland Management Plans, this section has been kept as a concise summary with references to further information provided where relevant.


**Broxbourne and Bencroft Wood**  
**Management Plan 2019-24**  
**Location and NNR Context**

Hoddesdonpark Wood  
 (owned by the Woodland Trust)

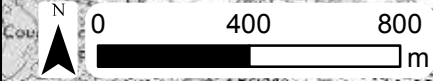
**Broxbourne Wood**  
 Grid Ref: TL326071  
 Nearest postcode: EN10 7QP

Wormley Wood  
 (owned by the Woodland Trust)

**Bencroft Wood**  
 Grid ref: TL329063  
 Nearest postcode: EN10 7QP

**Legend**  
 National Nature Reserve

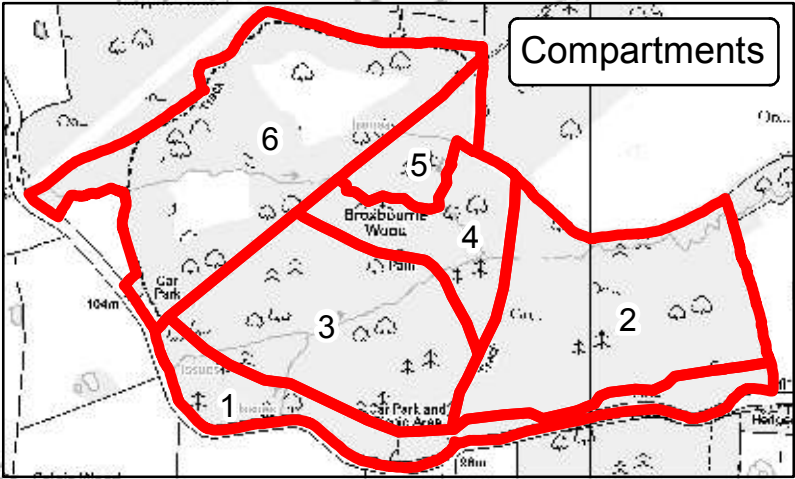
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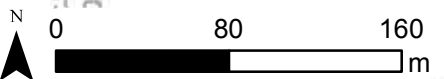


**Broxbourne and Bencroft Wood**  
**Management Plan 2019-24**  
 Site Description - Broxbourne Wood



**Legend**

- Car park sign
- ▲ Entrance sign
- ◆ Existing structures
- Lectern
- Orientation panel
- Stock fence
- Watercourse
- Car park
- Coniferous woodland
- Wood pasture restoration
- Mixed woodland
- New boardwalk
- Old boardwalk
- Pond
- Ride
- Surfaced track
- Unsurfaced path



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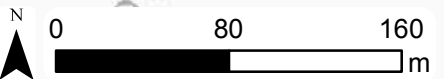
# Broxbourne and Bencroft Wood

Management Plan 2019-24

Site Description - Bencroft Wood

## Legend

- Car park
- Glade
- Mixed woodland
- New boardwalk
- Old boardwalk
- Planted glade
- Pond
- Recent coppice
- Ride
- Surfaced track
- Unsurfaced path
- Watercourse
- Car park sign
- Entrance sign
- New combi structure
- Orientation panel

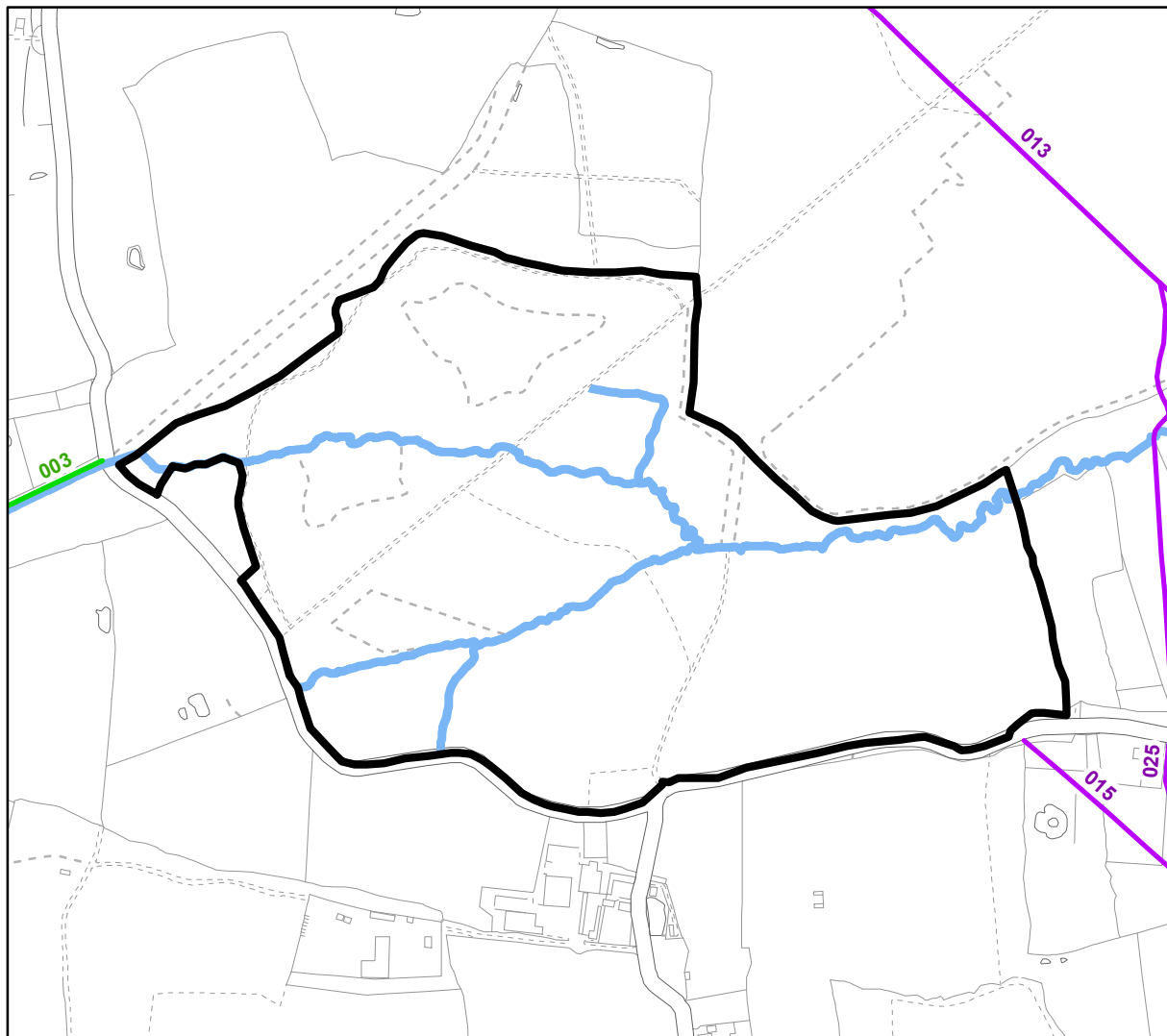
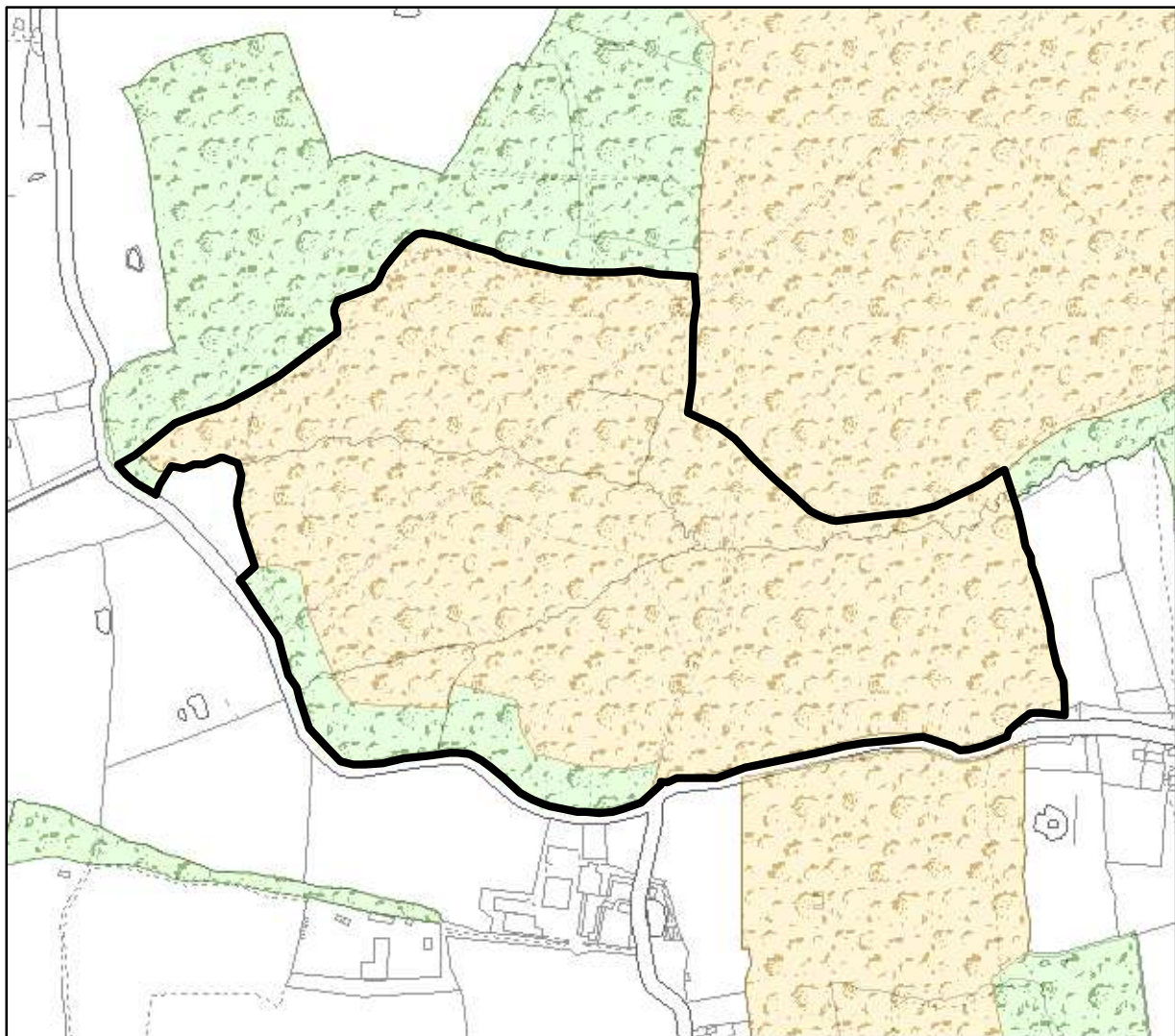
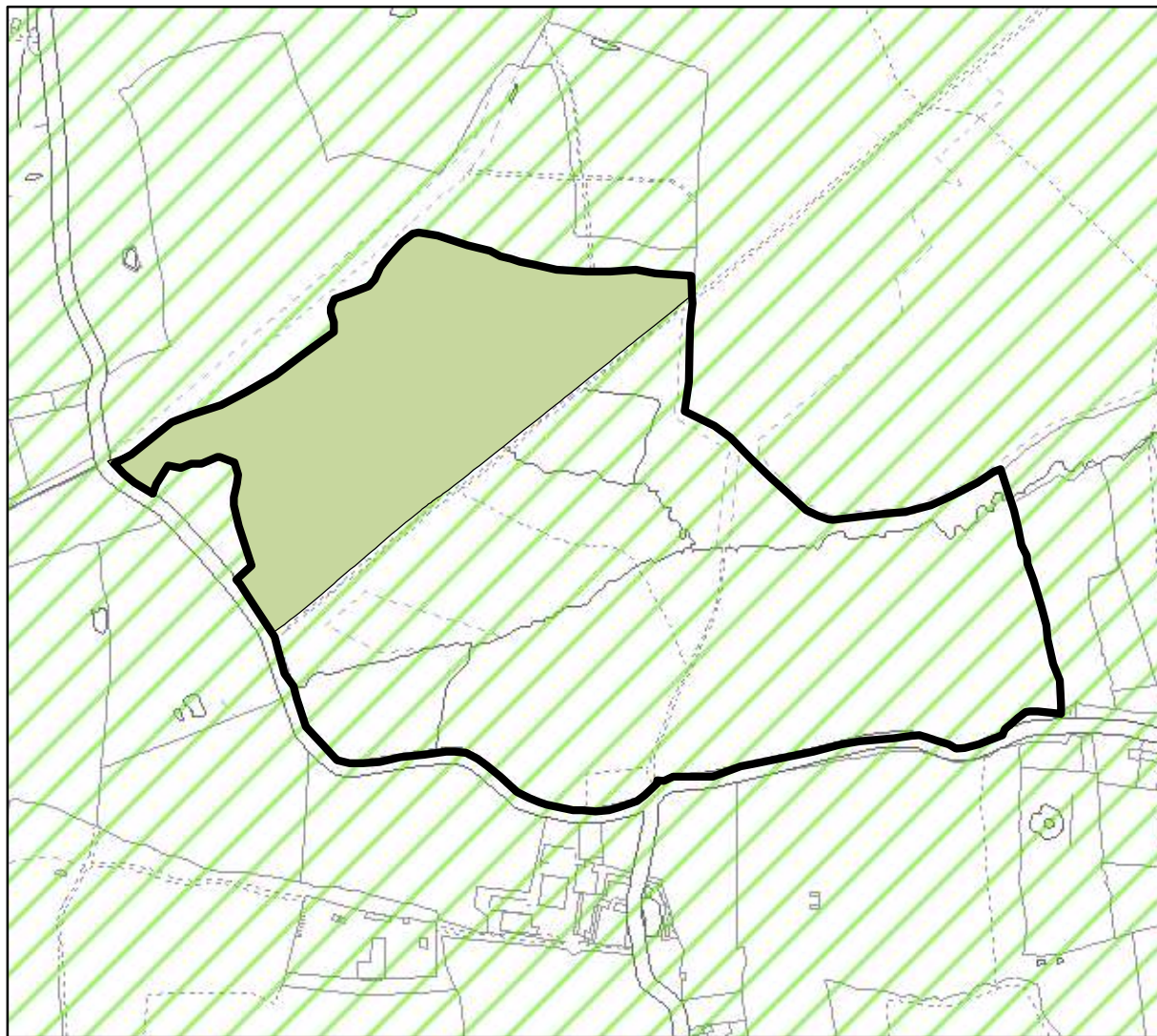
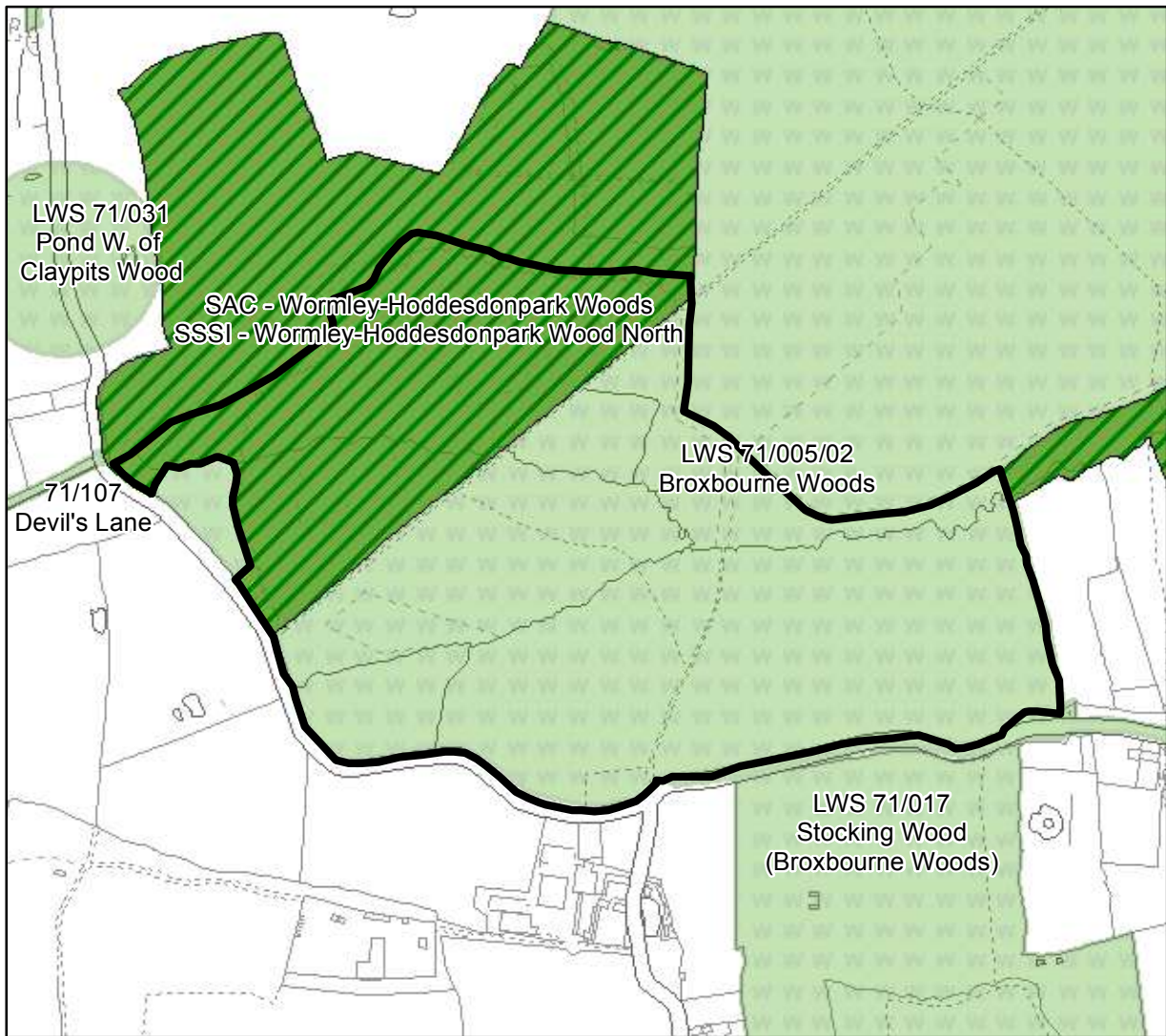


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**Broxbourne and Bencroft Wood**  
**Management Plan 2019-24**  
**Broxbourne Wood Constraints Plan**



**Legend**

- Broxbourne Wood boundary
- Special Area of Conservation
- Sites of Special Scientific Interest
- Local Wildlife Site
- National Nature Reserve
- Greenbelt
- Ancient & Semi-Natural Woodland (ASNW)
- Plantations on Ancient Woodland Sites (PAWS)
- Bridleway
- Footpath
- Ordinary Watercourse



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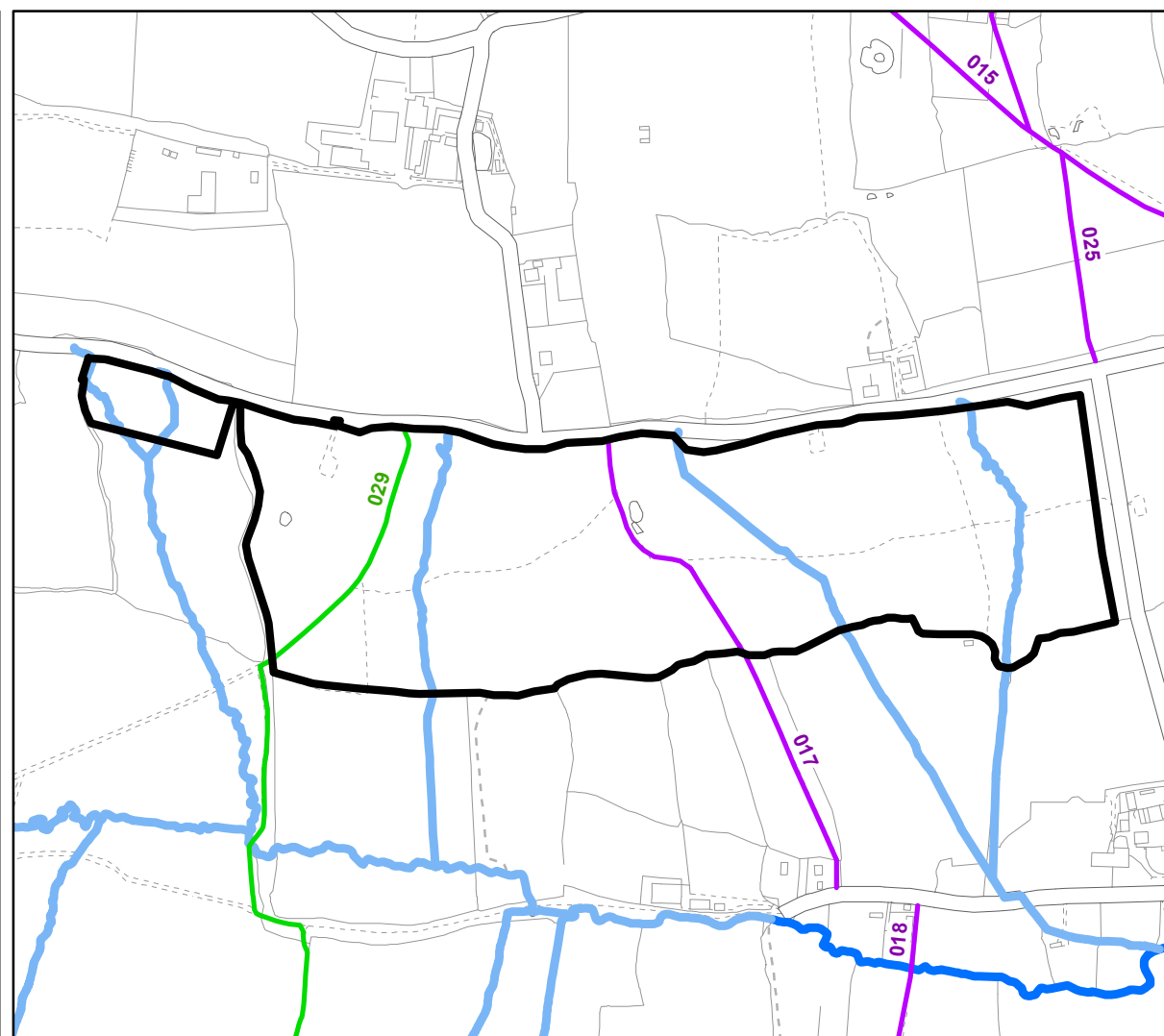
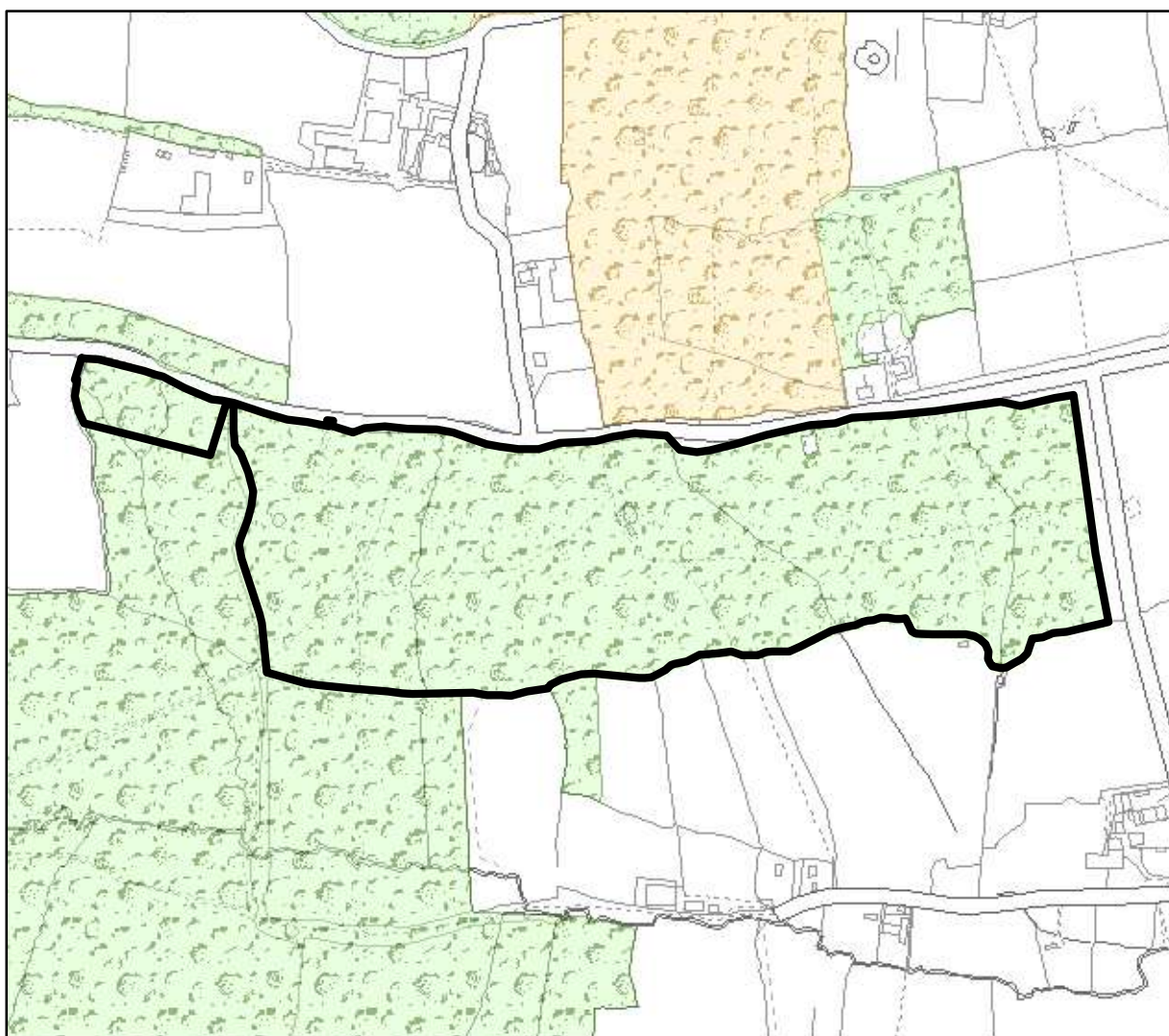
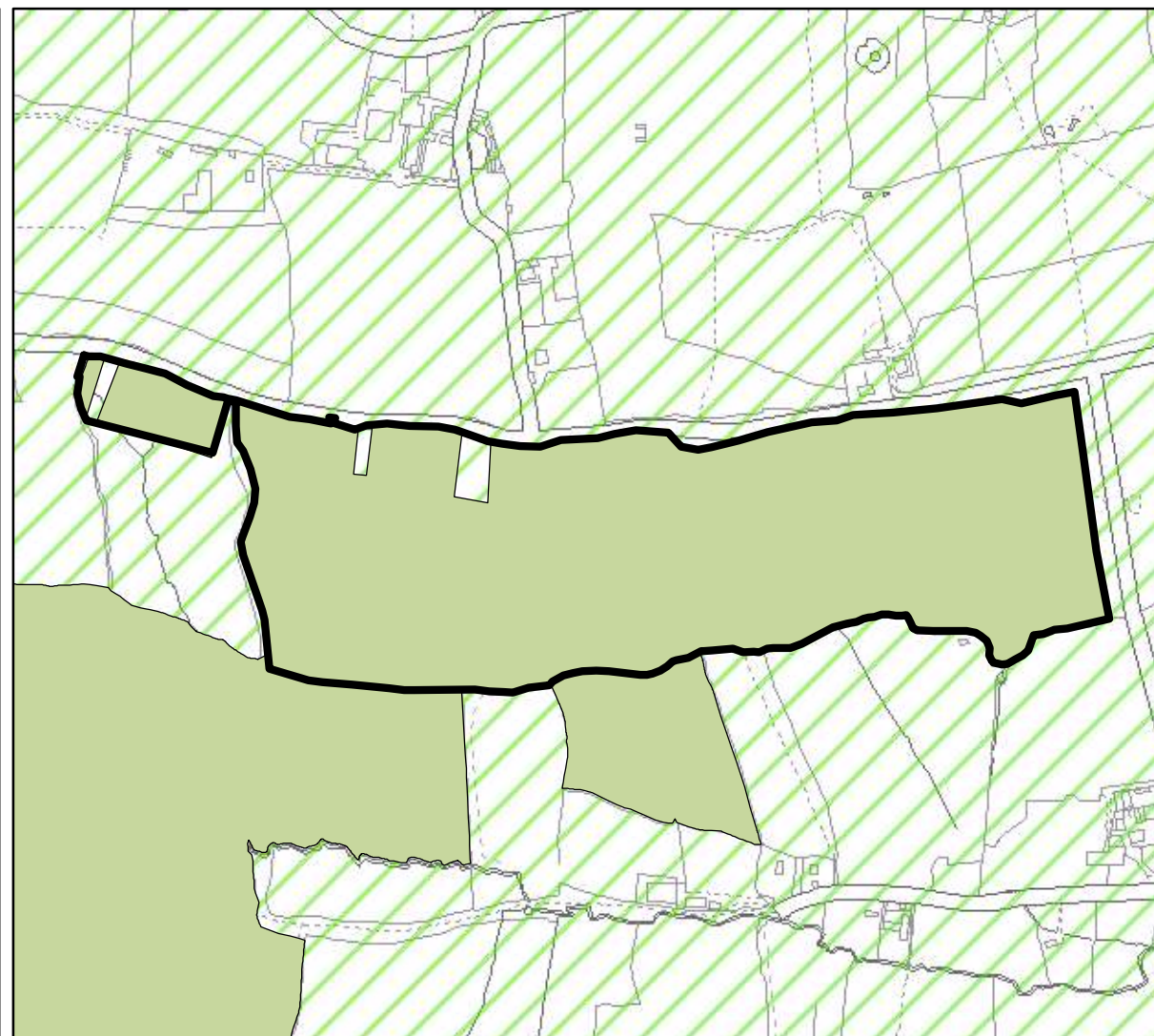
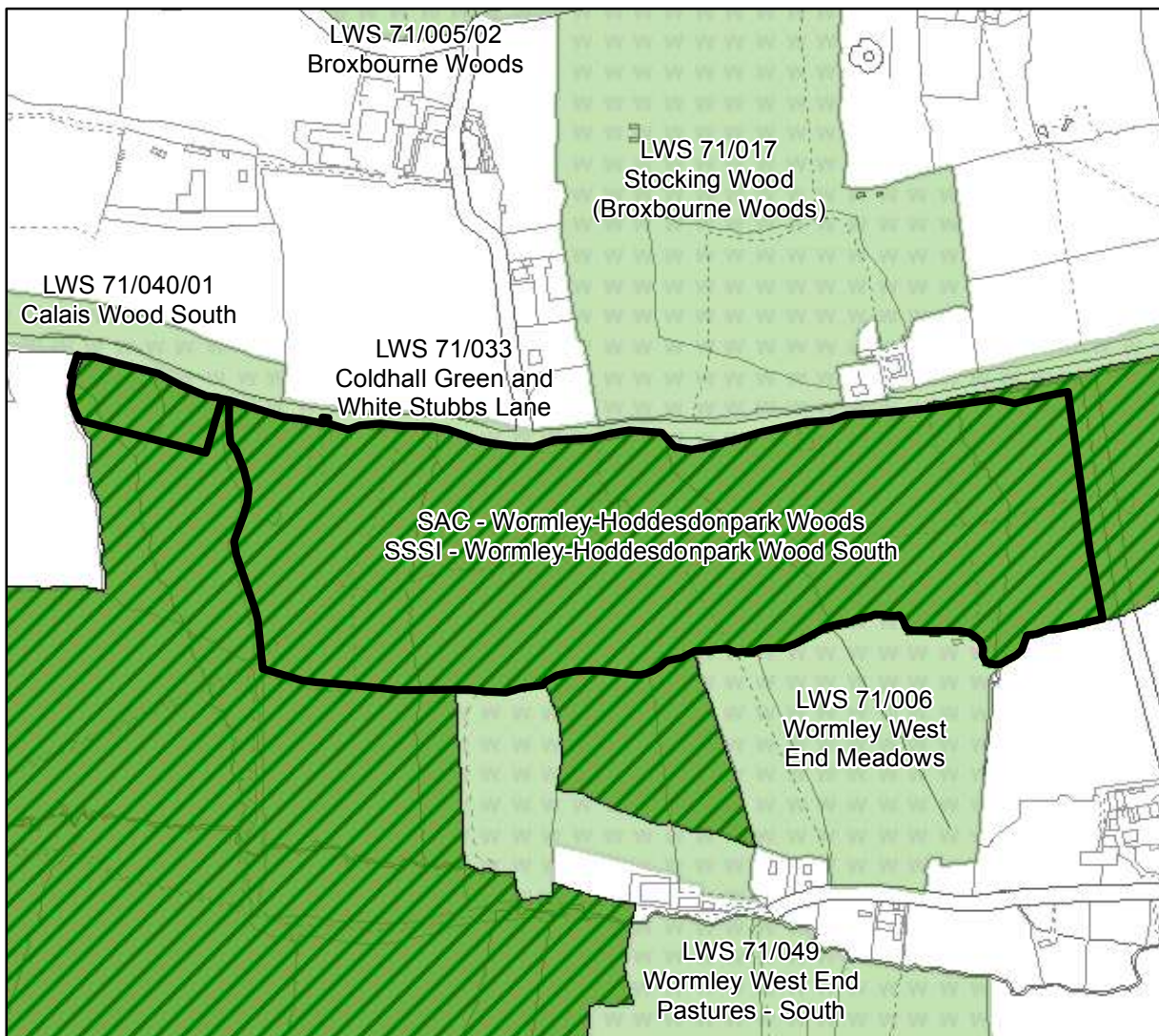
# Broxbourne and Bencroft Wood

Management Plan 2019-24

Bencroft Wood Constraints Plan

## Legend

-  Bencroft Wood boundary
-  Special Area of Conservation
-  Sites of Special Scientific Interest
-  Local Wildlife Site
-  National Nature Reserve
-  Greenbelt
-  Ancient & Semi-Natural Woodland (ASNW)
-  Plantations on Ancient Woodland Sites (PAWS)
-  Bridleway
-  Footpath
-  Main River
-  Ordinary Watercourse



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## 2.2 History and archaeology

### 2.2.1 History

Broxbourne Wood and Bencroft Wood are both seen as part of a “relict landscape” of woodlands that would have covered vast swathes of Hertfordshire in pre-medieval times. Both woods are designated Ancient Semi-Natural Woodland (ASNW) which means that they have been wooded since at least 1600 and likely since the last glaciation.

The woods have a history of hornbeam coppice with predominantly oak standards. They were part of larger estates in post-medieval times and were subsequently divided and leased out, creating revenues that contributed to the estates’ income. They continued to be managed as coppice until the early 20<sup>th</sup> century, with commercial coppicing in Bencroft ceasing after World War II, and Broxbourne being heavily planted with conifers in the 1960s.

In 1975, Hertfordshire County Council bought the current area of Broxbourne & Bencroft Wood in order to maintain its amenity and conservation value, to allow for informal recreation, and to continue to pursue economic forestry.

### 2.2.2 Archaeology

The woods are ancient landscapes and as such contain a number of features of archaeological interest. Bencroft Wood is part of an extensive landscape of co-axial boundaries which is pre-medieval in origin with parts dating to the Bronze Age. It is thought that the c.20 km<sup>2</sup> network of boundaries was constructed in a single operation; they survive today in Bencroft as a number of wood banks, many containing old hornbeam stubs.

One of the more significant linear banks in Bencroft Wood is listed in the Historic Environment Record. This old hollow way, now a path, was once a public road called Gravel Lane (until after 1851) and links with the north/south section of Pembridge Lane.

See [Appendix I](#) for full information from the Historic Environment Record.

## 2.3 Land Designations

### 2.3.1 Statutory

<i>Designation</i>	<i>Name/ref</i>	<i>Size</i>	<i>Further information</i>
<b>National Nature Reserve (NNR)</b>	Broxbourne Woods	239.4 ha	<a href="https://www.gov.uk/government/publications/hertfordshires-national-nature-reserve/hertfordshires-national-nature-reserve">https://www.gov.uk/government/publications/hertfordshires-national-nature-reserve/hertfordshires-national-nature-reserve</a>
<b>Site of Special Scientific Interest (SSSI)</b>	Wormley-Hoddesdonpark Wood North – Broxbourne Wood (part)	9.88 ha	<a href="https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1002304.pdf">https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1002304.pdf</a>
	Wormley-Hoddesdonpark Wood South – Bencroft Wood	26.4 ha	<a href="https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1000719.pdf">https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1000719.pdf</a>

<b>Special Area of Conservation (SAC)</b>	Wormley-Hoddesdonpark Woods	336.47 ha	<a href="http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUcode=UK0013696">http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUcode=UK0013696</a>
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The SSSI compartment in Broxbourne Wood is considered to be in unfavourable recovering condition. Natural England supports the works which are being undertaken to restore this compartment and acknowledges that it is a work in progress which should reach favourable condition over time:

<https://designatedsites.naturalengland.org.uk/UnitDetail.aspx?UnitId=1005042&SiteCode=s1002304&SiteName=&countyCode=&responsiblePerson>

Bencroft Wood SSSI is considered to be in favourable condition:

<https://designatedsites.naturalengland.org.uk/UnitDetail.aspx?UnitId=1000782&SiteCode=s1000719&SiteName=&countyCode=&responsiblePerson>

### 2.3.2 Non-statutory

<i>Designation</i>	<i>Name/ref</i>	<i>Description</i>
<b>Ancient Semi-Natural Woodland (ASNW)</b>	n/a	Woodland that has had continuous native tree and shrub cover since at least 1600 AD and may have been managed by coppicing or felling and allowed to regenerate naturally.
<b>Plantations on Ancient Woodland Sites (PAWS)</b>	n/a	Woodland where the original tree cover has been felled and replaced by planting, often with conifers, and usually over the last century.
<b>Local Wildlife Site</b>	Broxbourne Wood WS 71/005	<p>A series of woodland blocks lying mainly on acid gravel deposits over London Clay. Parts have developed from ancient wood pasture and heaths and retain many large Oak and Hornbeam pollards along the boundaries and parts are coppice-with-standards. More basic conditions arise from prevalence of boulder clays to the north. This range of geological conditions and the variety of past management regimes has resulted in a varied woodland structure, wide habitat diversity and a correspondingly rich flora.</p> <p>Despite extensive clearance and replanting with conifers the remaining semi-natural woodland is of national importance as an example of lowland south-east Sessile Oak/Hornbeam type with the Pedunculate Oak/Hornbeam variant also present. Scrub areas, small ponds, streams, spring seepages, healthy grassland, bracken patches, rough grassland rides are all habitats present. Regeneration is good with secondary woodland of Silver Birch, Downy Birch and Aspen. The more acidic woodland areas have a flora dominated by Bracken and Tufted Hair-grass with damp patch edges supporting a range of sedges and rushes. Where the soils become more base-rich there is an increasing presence of Ash. Wild Service Tree can also be found. The woodland flora is diverse with ancient woodland indicators such as Dog's Mercury, Wood Meadow-grass, Wood Millet, Yellow Archangel with patches of Primroses and Common Cow-wheat. Several areas of neutral to acidic unimproved grassland provide additional interest with Tormentil, Sheep's Sorrel and Skullcap. The wide range of habitats supports a variety of invertebrate species, a good woodland bird community, a diverse range of mammals, reptiles and amphibians.</p>

## 2.4 Habitats and vegetation

The entire 236 ha tract of Broxbourne Woods NNR is predominantly lowland mixed deciduous woodland comprising sessile oak and hornbeam coppice. This is still the

dominant habitat type in both Broxbourne Wood and Bencroft Wood even though the traditional coppicing management practices were absent for a number of years. At a smaller scale there is a certain degree of habitat variation within the woods, described in the following paragraphs (defined by compartment in Broxbourne Wood and by type in Bencroft Wood). More detailed descriptions of these habitat variants are contained within the Forestry Commission Woodland Management Plans [Appendices B and C](#).

**2.4.1 Broxbourne Wood** *(note: Compartment map included as inset on Site Description drawing)*

**Compartment 1** Linear strip of woodland, roughly 3.49 ha in size. Remnant ASNW with a young canopy (50 years or younger) of sessile and pedunculate oak, old hornbeam coppice, beech, silver birch, some planted poplar, aspen and horse chestnut. Shrub layer of hawthorn, hazel and blackthorn with some flush areas dominated by alder and willow.

**Compartment 2** 8.05 ha area of woodland with a canopy of conifer, including douglas fir and scots pine, and some Norway spruce and Lawson cypress, the majority around 50 years old. In addition to a few scattered pockets of mixed broadleaves there are also four areas of broadleaves planted around 15 years ago. Alder and sallow are more dominant around the stream and wet flushes.

**Compartment 3** A significant 7 ha stand of Scots pine planted 50 years ago with a relatively sparse under-storey dominated by bracken. Some considerable oak restock to the south of the compartment with sallow and birch regeneration.



*Fig 2 – Corsican pine in Compartment 4*



*Fig 3 – Heather in Compartment 6*

**Compartment 4** A 3.08 ha stand of predominantly 50-year old Corsican pine, sparse under-storey dominated by bracken. Avenue of Lawson cypress along the ride and some sallow replanting in the open watercourse valley.

**Compartment 5** 1.63 ha stand of predominantly 50-year old Corsican pine and some Lawson cypress, a central area of which was

cleared and restocked with oak and hornbeam in the early 90s.

### **Compartment 6**

This 10 ha SSSI compartment originally contained two large clearings of acid grassland and heath surrounded by woodland, predominantly young Scots pine, birch, willow and some oak, including the non-native Turkey oak (*Quercus cerris*). Clearance of this woodland has been taking place in stages since 2011 to restore the compartment to its former character as wood pasture, and the compartment is now fenced and grazed by cattle in late summer and autumn. The initial restoration programme is scheduled to continue until 2023. Within this compartment is a pond, fenced off from the grazed area and supporting populations of smooth, palmate and great crested newt. In addition to amphibians, common lizard is known to inhabit the original grassy glade.

#### **2.4.2 Bencroft Wood**

##### *Older coppice*

There are some dense areas of old hornbeam coppice located to the west of Broom Spring stream, along White Stubbs Lane to the north of the site, and scattered patches throughout the wood. There are occasional oak standards and little ground flora due to the density of the canopy. The old hornbeam stubs along White Stubbs Lane are located on ancient wood banks; some of the stubs have been coppiced over the last few years.

##### *Recent coppice*

There are many patches of more recent hornbeam coppice throughout the woodland. Two areas to the north west of the site have been coppiced and protected by temporary deer fencing, most recently in 2012. The success of regeneration has been closely monitored to determine future coppicing of the woodland, which will now go ahead.

##### *Birch/bracken areas*

Extensive areas of predominantly birch with bracken understorey are located throughout the wood with little regeneration of broadleaves. Some of these areas were cleared as part of the last management plan and restocked with oak grown from seeds collected on site.



Fig 4 – Bencroft Wood ride





Fig 5 – Coppice regeneration after two years, pictured in 2014

- High forest* There is one area to the south of the site that has a predominance of oak standards.
- Wet habitats* There are occasional wet flushes with willow and sedge species associated with the streams that run through the site. There are also two large ponds in the middle of the wood.

## 2.5 Wildlife

The following paragraphs give a brief summary of some of the more notable wildlife populations present within Broxbourne & Bencroft Wood, which is among the most important sites for wildlife in Hertfordshire. More detailed information is provided in Appendix J, and available via the Hertfordshire Environmental Records Centre and specialist groups such as the Herts & Middlesex branch of Butterfly Conservation.

### 2.5.1 Butterflies and moths

The woods provide important habitats for a wide variety of large woodland butterfly species including purple emperor, silver-washed fritillary, and white admiral.

Butterfly populations are monitored each year by the Butterfly Conservation group through formal transects in both Bencroft Wood and, as of 2014, the SSSI compartment of Broxbourne Wood. The results from these transects are shown in Appendix K. These results provide a useful record of population fluctuation and help contribute to the determination of future woodland management.

Management of the woods needs to take into account the specific ecological requirements of the significant butterfly species, in addition to all of the other species present on the site, with particular regard to their larval food plants. The widening of rides in the woodlands has been of benefit to populations of silver-washed fritillary and it is important that effective management of these rides continues, including



Fig 6 – Silver-washed fritillary

the retention of protective bands of trees either side of the rides where possible to provide shelter from prevailing winds, and the retention of violets close to large tree trunks, particularly oak.

Bracken is a particular issue in the valuable glades and rides. A mono-culture of bracken can inhibit the growth of flowering species such as thistle, which benefits peacock butterflies.

The purple emperor requires mature willow for its larval food plant. Although a small number of willow trees have been removed where unavoidable as part of the SSSI restoration, woodland management throughout the woods favours the retention of willow and some re-stocking has taken place.

The white admiral requires shaded honeysuckle for breeding and ride-side bramble for feeding and has declined across Hertfordshire. Its requirement for shaded honeysuckle should be taken into account when planning woodland management to ensure that this habitat type is retained.

In addition to the significant butterfly populations, the woods are also home to a wide diversity of moths. Significant species are detailed in [Appendix J](#).

#### 2.5.2 *Beetles*

Diverse populations of beetle have been identified at Broxbourne Wood, and noted to have been thriving since the restoration of the SSSI began. A variety of wood piles, some in sun and some in shade, and pollarded oak trees provide good habitat for different species. Of particular note are the Buprestid beetle spp. and green tiger beetle.

#### 2.5.3 *Newts*

There are breeding populations of three newt species in the Broxbourne Wood pond; palmate, smooth and great crested. The pond was fenced as part of the SSSI restoration works in order to prevent cattle from damaging this important habitat. Although newts have been known to travel over 1km from their breeding pond, their terrestrial habitat is generally within a few hundred metres of the water body. As such, Natural England has defined an area around the pond of 50m radius within which woodland operations are restricted.

Newt populations in Broxbourne Wood may be at risk from swamp stonecrop (*Crassula helmsii*) which is found in the pond. This non-native succulent plant grows from the muddy pond margins and can spread vigorously to form a dense carpet across the whole surface. Development of the plant needs to be monitored closely and if spread persists, an appropriate solution put in place to ensure the continued survival of newt populations.

#### 2.5.4 *Birds*

The network of woodlands containing Broxbourne & Bencroft Wood provides important habitat for bird populations. Surveys carried out in the woods have recorded a number of significant species including hawfinch, crossbill, nightjar, and woodcock. All three native woodpecker species and tawny owl are resident, as are red kite and buzzard. Other species recorded include marsh tit, dunnock and kestrel.

Woodland management aims to be respectful of bird populations with no felling taking place during bird nesting season and implementing species specific actions such as the retention of clumps of conifer in the SSSI compartment as feeding habitat for crossbill.

#### 2.5.5 *Reptiles*

Reptiles such as common lizard, grass snake and slow-worm are known to inhabit parts of Broxbourne & Bencroft Wood, notably the grassy clearings within Compartment 6 and the main rides. Further surveying of reptile populations will be an important part of monitoring the ecological success of the SSSI restoration works.

#### 2.5.6 *Bats*

It is known that there are populations of bat making use of both Broxbourne and Bencroft Wood but there are no recent local records of the species present.

#### 2.5.7 *Badger*

Although there are not known to be any resident badgers on site, setts have been identified in the surrounding area and evidence of badgers using the woodlands has been recorded.

### 2.6 **Hydrology and geology**

Broxbourne & Bencroft Woods are both gently undulating sites situated on predominantly London clay but with some overlay of acid gravels.

Broxbourne Wood contains one of the headwaters of a tributary stream of the River Lea, Spital Brook. The watercourse runs from west to east and branches out across the site. Bencroft Wood has four small stream beds running from north to south through the site, forming shallow valleys which are either bridged or culverted under footpaths.

All of the watercourses on the sites are classed as Ordinary Watercourses. Hertfordshire County Council's Environmental Resource Planning team has responsibility for the regulation of all Ordinary Watercourses, and as such any structure or feature being installed within or removed from any of these watercourses requires consent.

### 2.7 **Landscape**

The landscape character of Broxbourne & Bencroft Wood is of particular significance to the local area and Hertfordshire as a whole. The woodlands are ancient and form part of a relict landscape, which at one time would have covered much of the county. As such, they are vital to the preservation of local landscape heritage.

The woodlands fall within the National Character Area 111 Northern Thames Basin<sup>1</sup> and form part of the "*wooded Hertfordshire plateaux*". The description for this character area explicitly mentions the importance of the Broxbourne Woods NNR to the landscape with particular regard to its near enough continued management since Roman and medieval times.

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<sup>1</sup> NCA Profile 111 Northern Thames Basin; Natural England; 2013

A more thorough description of the landscape character of the area is contained within the Landscape Character Assessment for the Broxbourne Woods Complex<sup>2</sup>. This document identifies the high value of the woodlands in terms of their importance as linked hornbeam coppice and forestry plantation habitats, and as a distinctive local landscape.

With regards to the conservation of landscape character, key considerations should include the continuation of traditional management practices such as pollarding and coppicing, the management and expansion of broadleaved oak and hornbeam woodlands, and the reintroduction of wood pasture. The ongoing SSSI restoration works at Broxbourne Wood are making a recognisable contribution to these considerations.

## 2.8 Access and recreation

National Nature Reserves were established in post-war Britain under the National Parks and Access to the Countryside Act 1949 with the aim of protecting sensitive features and providing outdoor laboratories for research<sup>3</sup>. Over the years their importance has widened to provide opportunities for the general public to experience, learn and enjoy. Broxbourne & Bencroft Wood is no exception and welcomes large numbers of visitors each year from both near and far. The following paragraphs mention some of the facilities and infrastructure that help to support these visits.

### 2.8.1 Leaflets, trails and interpretation

The focus of recreation within the woodland is somewhat directed towards education and learning, with visitors encouraged to find out about the significance of the National Nature Reserve, the wildlife present, and the purpose of woodland management practices.

A suite of three leaflets is available locally and to download from the CMS website; these include trails around the woodlands and information about the history and wildlife. Interpretation panels are located in each of the car parks.

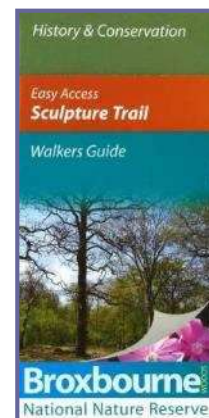


Fig 8 – Leaflets

One of the most popular features of Broxbourne Wood is the sculpture trail which follows an easier access route linking the East and West car parks. The sculptures themselves depict aspects of the area's wildlife and history, including a Roman soldier, wild boar, and a stag. An audio tour was created to enhance the visitor experience; this can be downloaded from the CMS website.

<sup>2</sup> Landscape Character Assessment Area 61 – Broxbourne Woods Complex; Hertfordshire County Council

<sup>3</sup> <https://www.gov.uk/government/collections/national-nature-reserves-in-england>



Fig 9 – Entrance to sculpture trail



Fig 10 – Sculpture

### 2.8.2 Car parks

There are four car parks available for public use in the woodland; Broxbourne East and West on Pembridge Lane, and Bencroft East and West on White Stubbs Lane. These car parks were refurbished in summer/winter 2013 as part of a project to improve visitor accessibility to the NNR. The layout of the car parks was redesigned to accommodate a greater number of vehicles and resurfaced with new drainage, gates, seating and bollards.

### 2.8.3 Public rights of way

Both sites are well supported by a network of public footpaths, bridleways and permissive footpaths. These routes are marked on the [Site Constraints](#) plan. In addition to the routes mapped, a Definitive Map Modification Order has been submitted to Hertfordshire County Council to record a bridleway on a route which includes the main ride at Broxbourne Wood.

## 2.9 Governance and management

The woodlands are owned by Hertfordshire County Council and managed on its behalf by the Countryside Management Service. Much of the work on the ground is carried out by volunteer Wood Wardens and CMS practical conservation volunteers. Larger activities are commissioned out to woodland contractors.

HCC provides a small revenue budget to maintain Broxbourne and Bencroft Woods. This is used to carry out fortnightly litter picking around the four car parks and respond to ad-hoc fly-tipping incidents, which are becoming increasingly frequent. Other ongoing management, including vegetation maintenance on key routes, tree safety and car park repairs, is carried out by CMS officers and volunteers or funded externally.

### 2.9.1 Volunteers

Management operations are well supported by volunteer activity from Wood Wardens, CMS practical conservation volunteers, and Herts Regional College.

The Wood Wardens are a group of local people who are actively interested in the management of the NNR. The group take on a range of activities supported by CMS including practical tasks, walks and events, and helping to implement and monitor the Broxbourne & Bencroft Wood Management Plan. The group meet regularly throughout the year to undertake practical tasks.

CMS midweek practical conservation volunteers regularly carry out tasks in Broxbourne & Bencroft Wood to create and restore wildlife habitats and to improve access to the woods. Herts Regional College run regular educational practical conservation sessions in the woodlands, working in areas to support the management plan.

In addition, a number of individuals kindly undertake regular litter picking, report fly tips and undertake cattle monitoring duties.

### 2.9.2 *Grazing*

The grazed area within Broxbourne Wood covers both an established meadow and the more recently cleared areas within the SSSI. Cattle were first introduced to the site in the summer of 2012.

Grazing is controlled by a legal agreement which is currently between HCC Rural Estates and a commercial grazer. A copy of the outline grazing agreement is included in [Appendix H](#).

As the cleared area has grown, the number of cattle has also increased. In 2018, the grazing agreement was for eight cattle to be grazed for 12 weeks from the week commencing 16<sup>th</sup> July.



*Fig 11 - Cows at Broxbourne Wood*

### 2.9.3 *Long-term funding arrangements*

Two stewardship agreements are currently in place at Broxbourne & Bencroft Wood and provide funding to support some of the woodland management activities.

A Higher Level Stewardship agreement applicable to the SSSI compartment at Broxbourne Wood will end in 2021; extracts from this agreement are included in [Appendix E](#).

A Countryside Stewardship agreement started in 2018 and will continue until December 2022. This covers the entirety of the site with the exception of the SSSI compartment at Broxbourne Wood, and extracts from this agreement are included in [Appendix D](#).

### 3 ANALYSIS AND EVALUATION

The purpose of this section is to evaluate the current situation of Broxbourne & Bencroft Wood following completion of the last five year plan. Building upon this information will help develop relevant aims and objectives for the next five years of management. The section includes a summary of how the last plan met its core aspirations, particular aspects that have been acknowledged as requiring improvement, and an overview of identified ongoing challenges.

As part of the analysis, a stakeholder engagement exercise was carried out. The purpose of the exercise was to gather information and views from key groups and individuals that would add a broader scope to the evaluation of the last management plan. All stakeholders were invited to provide feedback and comments on a briefing document which summarised the last plan and outlined proposals for the next five years.

#### Meeting core aspirations

##### *Wildlife conservation*

Over the last five years, the major project in Broxbourne Wood to restore the 9ha SSSI compartment has continued. During this period, the project involved two more areas of large scale timber extraction and the continuation of summer and autumn grazing by cattle to manage the site as an open landscape of grass and heath with scattered trees. Recovery from these operations has been encouraging. Two new ponds were also created, to provide additional habitat for the newts in the pond affected by *Crassula helmsii*, and a small number of new oaks and sallows were planted to balance the lack of age diversity and open-grown trees in the SSSI compartment. This and other work continued to be supported by external investment and timber sales, allowing works to be completed at minimal cost to the taxpayer.

##### *Woodland management*

Broxbourne & Bencroft Wood now operates under a largely commercially viable self-sustaining system that has resulted in management being supported by the sale of forestry product. The whole process has been established in a way that does not detract from the environmental quality of the woodland, but rather contributes to positive ecological management. Woodland management is regulated by the Forestry Commission and Natural England, and directed in detail by the Forestry Commission Woodland Management Plan, which is currently being updated.

##### *Access and recreation*

Improvements to the fabric of the site accelerated over the last five years, making the site increasingly appealing and accessible to visitors. The car parks have been refurbished, a programme of boardwalk replacement is being carried out and new signage constructed from timber harvested on site has been installed to help visitors find their way around. The network of main rides was resurfaced in 2018 through Countryside Stewardship funding, to maintain access for visitors and facilitate site management. Stream culverts in Bencroft Wood were also reconstructed to reduce path flooding and improve stream water quality. Habitat works, in particular the SSSI restoration with its grazing cattle, have also made the woodland a much more diverse place which will appeal to more visitors.

### ***Monitoring and review***

The effectiveness of hornbeam coppicing in Bencroft Wood has now been reviewed following a trial coppice coupe which was cut during the 2009-2014 management plan period. The coupe has regenerated successfully, and this will allow annual coppicing following the same methodology to take place from 2019. The continuation of fixed point photography will support further monitoring of management practices.

### ***Site and tree risk management***

Good maintenance of woodland infrastructure and the prompt management of issues such as fly-tipping and fallen trees across access routes has remained a priority.

A proportionate tree risk management approach has been devised, derived from the National Tree Safety Group publication “Common Sense Risk Management of Trees”, and is implemented by trained CMS staff and volunteers. This approach is intended to manage the risk without being unduly onerous or costly, and without having a negative impact on other objectives. It is described in detail in Appendix G.

### ***Volunteers and community support***

Both the Wood Wardens, managed under the CMS Friends Group umbrella, and the CMS Tuesday volunteer group have continued to play a vital role in the delivery of the management plan. Although some of the works over the last five years have had a further dramatic impact on the woodland, in particular the large scale timber extraction, HCC have not received any formal complaints from members of the public and user satisfaction appears to be very good. This has been attributed to good information dissemination throughout the process with regular news stories, posters and events, and in particular the presence of Wood Wardens on site who have provided an invaluable information point for explaining works to visitors.

## **Ongoing challenges**

### ***Guiding future habitat development in Broxbourne Wood***

Ten years after the first significant management interventions by CMS, there is now a need to revisit areas such as the valley, to retain the planned open spaces in the riparian zone through selective and small-scale clearance. The next challenge in the SSSI restoration project will be to ensure the habitat develops positively through appropriate management. Late summer and autumn grazing will continue, with a gradual increase in cattle numbers to reflect the increasing area of grassland. There will also be a programme of scrub and bracken control to avoid dominance of pioneering plant species as habitats develop across the SSSI compartment, which nevertheless recognises the importance of priority species such as broom, aspen and sallow. Management decisions will reflect the objective to maintain a balance of habitat types across the SSSI, within the context of the NNR as a whole. Collaboration with the Woodland Trust, as owners of the remainder of the NNR, will support this objective.



### ***Balancing forestry with public access woodland***

There is a largely unavoidable conflict between occasional and temporary works that are necessary for forestry and the impact of these works on public accessibility and visitor enjoyment of the woodland. Early and clear communication is important to make visitors aware of the works that are ongoing, the reason for these operations, and the impact this will have on their visit. Where possible, methodologies should be adopted that require minimal closure of footpaths.

A Definitive Map Modification Order has been submitted to Hertfordshire County Council to record a bridleway on a route which includes the main ride at Broxbourne Wood. It is possible that the order will be confirmed during the period of this plan. This will impact legal access rights to the site, but not beyond existing permissive rights, and will make any necessary future path closures more complicated and more expensive. A Section 31(6) deposit should be made with the County Council to record that no further public rights of way exist on the site. This will guard against future claims while allowing a continuation of the positive signage policy on site where routes are not labelled as permissive. Open public access to the whole of these publicly-owned woodlands will be maintained.

### ***Timber extraction***

Physical access to the sites remains challenging, although improvements have been made. The site is very wet during the winter, making timber extraction difficult or impossible. The original construction of the forestry tracks was not known, and these have proven ineffective in terms of modern forestry machinery, with damage caused along the main rides which affected public access. The main tracks were improved and resurfaced to an appropriate Forestry Commission specification in October/November 2018 through Countryside Stewardship funding; nevertheless any forestry works must be limited to September and October to minimise damage to soils and paths.

### ***Maintaining and enhancing visitor infrastructure***

As Broxbourne & Bencroft Wood continues to attract more visitors, it is important that we continue to provide facilities worthy of an NNR. Good maintenance of the car parks will include occasional operations to redistribute materials, and significant repairs to the main tracks carried out in 2018 will be monitored and maintained. The sculpture trail now requires refreshing as many of the sculptures are nearing the end of their life.

### ***Continuing to attract investment***

In order to continue managing and improving the site there is a requirement to continue attracting investment, particularly with regards to capital funding. For example, although the revenue funding to maintain the SSSI restoration area has been secured through Environmental Stewardship, the capital funding required to complete the project has yet to be sourced. A new Countryside Stewardship agreement for Broxbourne & Bencroft Wood has already been approved; this will support some aspects of woodland management until December 2022.

### ***Working to the management plan***

The management plan is a vital tool in helping all the groups active within the woodland to work towards the same aspirations. It is hoped that the support of these groups can be maintained by good engagement early in the process of writing

the document, and continued communication over the next five years. Where tasks require more knowledge or direction, this will be led by specifications within this document and again by good ongoing communication.

#### ***Continued problems related to anti-social behaviour***

There is an ongoing issue of anti-social behaviour on the site, and in parallel a good network of local site users that call CMS when incidents are noted. It is important that this support continues and that more awareness is raised of anti-social behaviour, including with the police, in order to make it increasingly difficult for the site to be misused.

Fly tipping is a particular concern, and is occurring with increasing regularity. Removing fly tips is an unnecessary cost which absorbs much of the small budget assigned to the site, and there is a risk of an impact on the site's biodiversity through the colonisation of invasive species in garden waste. We will take a more proactive approach to this issue, working in positive partnership with the East Herts Council enforcement and inspection team to develop a range of measures including the use of camera traps to identify offenders.

#### ***Finding markets for wood produce***

Variations in the wood produce markets are to be expected and keeping abreast of changes will be central to ensuring the continued viability of commercial forestry. We need to be flexible with regards to both the market for woodland produce, and adopting alternative methodologies for the extraction of materials. This will be supported by engaging a forestry consultant in the first year of this plan. Reintroducing a coppice rotation at Bencroft Wood will also be dependent on finding a market for the produce.

#### ***Plant health and invasive non-native species***

Pests, diseases and climate change are an ongoing challenge to woodland management, and can result in loss of yield, premature death of trees or public health concerns. It is important that all site managers and volunteers are made aware of how to identify the signs of pests and diseases so that problems can be responded to appropriately. The unknown is a particular challenge for woodland management, and it is for this reason that CMS have adopted mixed forestry practices in order to strengthen resilience to any unforeseen problems. This resilience is also important in the context of climate change. Any new planting should consider using a proportion of trees from more southerly seed zones, and incorporating new species such as small-leaved lime to add diversity.

Oak processionary moth (OPM) nests were located close to the site for the first time in 2018. OPM caterpillars can be a hazard to the health of oak trees, people and animals – for more information refer to [this Forestry Commission leaflet](#). We will look for signs of OPM during tree safety surveys and in advance of any woodland management works. Should they be identified on site, the Forestry Commission will be notified and appropriate action taken to advise members of the public. Chalara ash dieback is present on the site. Although ash does not form a major component of the woodland, it should be inspected more carefully during tree safety inspections.

Similar vigilance is important when dealing with invasive non-native species such as *Crassula helmsii*, which occurs in the pond at Broxbourne Wood. Continued monitoring is the best approach for this species, as eradication is currently considered impossible. New interpretation at the pond would help inform visitors and reduce the risk of transferring the plant to other ponds.

#### ***Political awareness***

It is important that we continue to make Council members aware of the significance of the site at a European level as a Special Area of Conservation (SAC) and nationally as an NNR, what it stands for, and what it means to the people of Hertfordshire. The site should be seen as a shining example of the Council delivering high quality cost-effective services to its residents, which is something to be proud of and to publicise.

#### ***Model of good practice***

The experience of the last ten years has had a lasting impact on the way in which CMS approaches woodland management, with benefits to other woodland sites in Hertfordshire such as Oxhey Woods in Three Rivers. Broxbourne & Bencroft Wood is an excellent example of the habitat restoration which can be achieved while maintaining a forestry income, and deserves to be more widely known. More extensive use as a demonstration site, in partnership with other organisations, would help achieve this. If we are successful in improving our response to fly-tipping, this model could be extended to that issue.

## 4 AIMS AND OBJECTIVES

The new Broxbourne & Bencroft Wood Management Plan will lead on from the positive and successful work of its previous iterations. It will be a simple, easy to read plan for use by CMS officers and members of the public, and will guide work of volunteers. The plan will be largely map based, with sequential annual management plan maps to show the actions planned for each year with the resulting change represented on the map for the following year. The document will be reviewed annually to ensure it remains effective and relevant.

The core aspirations for the site remain unchanged and are set out below. The more specific objectives have been updated to reflect progress made during the last five years and areas that need particular focus, as identified in section 3 of this document.

### **A WILDLIFE CONSERVATION** – To manage, enhance and restore Broxbourne & Bencroft Wood, building ecological resilience through diversification of habitats across the site, benefiting the wider NNR and woodland landscape

#### *Objectives:*

- A1 Complete the SSSI restoration project and move towards long term management of the Broxbourne Wood SSSI
- A2 Secure funding to allow the continuation of capital works
- A3 Maintain, restore and/or create habitats of particular value to target species
- A4 Continue to control invasive species and explore new and better methods for management
- A5 Work collaboratively with the Woodland Trust to support a joined up approach to management of the NNR

### **B WOODLAND MANAGEMENT** – To operate under a whole site management approach that effectively balances the environmental quality of the woodland with commercial forestry practices so that the two are complimentary.

#### *Objectives:*

- B1 Shift from large scale tree thinning towards continuous cover forestry, with a woodland management programme that both benefits the wider environmental aims of the NNR and is commercially sustainable.
- B2 Re-establish a hornbeam coppice rotation in Bencroft Wood
- B3 Secure viable markets for woodland produce
- B4 Promote Broxbourne & Bencroft Wood as a model of good practice in woodland management
- B5 Continue to manage all areas of the woodland in accordance with specifications in this document and the more detailed woodland management objectives in the FC Management Plan
- B6 Respond to the threat of new pests and diseases through early identification and proactive management techniques, to improve resilience and reduce susceptibility

### **C ACCESS AND RECREATION** – To continue to make Broxbourne & Bencroft Wood an attractive destination for visitors from near and far

*Objectives:*

- C1 Resurface paths along main rides and replace boardwalks to improve accessibility
- C2 Replace or update sculptures on the sculpture trail to ensure it continues to be a well-visited destination
- C3 Review the path network and develop new routes and connections where identified, including links to the wider rights of way network
- C4 Continue to explore and develop new opportunities to inform and educate

**D MONITORING AND REVIEW – To carry out regular monitoring of habitats, species and operations, and to learn and adapt management accordingly**

*Objectives:*

- D1 Commission and/or coordinate regular surveys of the key species and habitats, using the data to monitor success of projects and to influence future operations; make full use of monitoring and data collection carried out by interest groups
- D2 Maintain systems to carry out simple checks on change and progress that can be easily updated on a regular basis
- D3 Continue to accept and support where possible external offers of research projects within the woodlands
- D4 Learn from the outcomes of management activities and adapt plans accordingly
- D5 Review progress of the management plan on an annual basis and update as required

**E SITE MANAGEMENT – To continue to manage the woodland as a safe and well maintained environment**

*Objectives:*

- E1 Maintain the woodlands and associated infrastructure in a clean, tidy and serviceable condition, ensuring industry biosecurity protocols are upheld by all contractors and volunteers working on site
- E2 Continue the established risk management regime, implemented by CMS staff and regular volunteers with appropriate training
- E3 Ensure that as the Lead Local Flood Authority we employ demonstrable best practice in our management of site water resources
- E4 Continue to have appropriate mechanisms in place to carry out reactionary management, for example the clearance of fallen trees from access routes

**F VOLUNTEERS AND COMMUNITY SUPPORT – To continue supporting volunteer activity within the woodlands and developing links with the community**

*Objectives:*

- F1 Ensure that all volunteer groups are aware of the management plan and only carry out activities which are agreed and contribute to established objectives
- F2 Continue to identify and offer opportunities for training and development to volunteer groups
- F3 Promote management activities using social and traditional media
- F4 Organise a programme of regular walks, talks and events in the woodlands
- F5 Build links with the broader NNR community to share best practice

## 5 ACTION PLANS

The action plans below have been established to achieve the aims and objectives set out in section 4. The plans take the format of annual work sheets, addressing activities that fall outside of the general contracted maintenance operations. They cover the period from April 2014 to March 2019. Actions have been divided into one-off actions specific to the year, and annual operations that will take place every year.

Each task is listed in column 2 of the tables; column 1 contains a reference to the relevant objective(s) in section 4 of the management plan, so that the action can be cross-referenced with the motive. Column 3 indicates the time of year that the activity will take place and column 4 the organisation(s) responsible for delivery (see abbreviations below). Where an estimated cost and funding source is known or relevant, these are include in columns 5 and 6. Column 7 contains a reference to further detailed information about each task, contained in section 7 at the end of this plan. At the end of each annual period, the action plan will be updated to show the progress of the activities for that year, with completed actions and important notes to be marked in columns 8 and 9.

### *Abbreviations used*

CMS	Countryside Management Service
EA	Environment Agency
FC	Forestry Commission
HA	Highways Authority (HCC)
HERC	Herts Environmental Records Centre
HCC	Hertfordshire County Council
HHE	Hatfield House Estate
HMWT	Herts and Middlesex Wildlife Trust
HRC	Hertford Regional College
RoW	Rights of Way (HCC)
WT	Woodland Trust
WW	Wood Wardens

## Broxbourne Wood Annual Operations 2019-2024

Action	Obj. ref	Timing/fr eq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
Seek further funding for SSSI clearance and other management plan operations	A2	Ongoing	CMS	-	Officer time	-		
Take fixed point photographs to monitor development/change, such as spread of <i>Crassula</i> on pond/SSSI restoration	D2	See Appendix L	CMS	-	Officer time	Appendix L		
Bracken control – rolling and mechanical removal	A4	Jun-Jul	CMS vols/ Contractor	£400	HLS grant	16		
Strim car park edges and exit splays	E1	May & Aug	CMS vols	-	Volunteers	-		
Strim sculpture trail	E1	May & Aug	CMS vols	-	Volunteers	-		
Arrival of cows on SSSI compartment	A1	Jul	Grazier	£1300	HLS grant	15		
Daily stock checking	A1	Jul-Oct	Volunteer stock checkers /Grazier		HLS grant	15		
Removal of cows from SSSI compartment	A1	Oct	Grazier		HLS grant	15		
Maintenance of saplings and scrub within SSSI compartment	A1	Oct-Feb	CMS vols/ Contractor	-	Volunteers	11		
Maintenance of rides – zone 1	A3	May/Sep	WW/CMS vols	-	CS revenue grant/ volunteers	4		
Maintenance of rides – zones 2 and 3	A3	Sep-Feb	WW/CMS vols/ Contractor	-	CS revenue grant/ volunteers	4		
Maintenance of permanent open space along stream corridor	A3	Sep-Feb	WW/CMS vols	-	CS revenue grant/ volunteers	5		
Lawson cypress removal	B1	Sep-Feb	WW/CMS vols	-	Volunteers	7		

Action	Obj. ref	Timing/fr eq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
Aftercare of areas of recent tree planting	B1	Ongoing	WW/CMS vols	-	Volunteers	12		
Rotational coppicing of willow, alder and sallow in wet flushes	A3	Sep-Feb	WW/CMS vols	-	Volunteers	14		
Ecological monitoring	D1	Ongoing	Various	-	Volunteers	2		
Implementation of tree risk strategy	E2, E4	Ongoing	CMS/WW	-	Officer time/volunteers	Appendix G		
Maintenance of site infrastructure as required	E1	Ongoing	CMS/WW	-	External	-		
Performance of annual litter contract and collection of fly tipping	E1	Ongoing	Serco	£5000	Site budget	17		
Install temporary camera traps and associated signage to identify fly tipping offenders	E1	Ongoing	CMS	£500	Officer time	-		
Checking culverts for blockages and removal of debris as necessary	E1	Ongoing	WW	-	Volunteers	-		
Maintain deer-fenced exclosures	E1	Ongoing	WW	-	Volunteers	7		
Organise a programme of walks, talks and events throughout the year	F4	Ongoing	CMS	-	Officer time	-		
Publicise management activities using social and traditional media	F3	Ongoing	CMS	-	Officer time	-		



## Broxbourne Wood Year 1 Actions 2019-2020

Action	Obj. ref	Timing/freq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
SSSI restoration – tree felling and removal	A1	Sep-Oct	CMS/Contractor	£7500	External (agreed S106 contribution)	Appendix F		
'Re-veteranise' hybrid turkey oaks in SSSI compartment	A1	Sep-Oct	CMS/Contractor	£500	External	7		
Fell Scots pine and clear encroaching scrub around heather patch	A1	Sep-Oct	CMS vols	-	Volunteers	-		
Restoration of boardwalk in compartment 2	C1	Apr-Aug	CMS vols/WW	£1000	External	3		
Redistribute gravel in car parks to level surface	E1	Jul	CMS/Contractor	£2500	External	-		
Commission repeat Phase 1 habitat survey of SSSI compartment	D1	Jun	CMS/Contractor	£750	External	-		
Construct three leaky woody dams	E3	Sep-Oct	CMS vols/WW	-	CS capital grant/volunteers	19		
Make Section 31(6) deposit for the site	C3	Jul	CMS	-	Officer time	-		
Engage forestry consultant to plan continuous cover forestry works	B1	Jun	CMS	£2000	External	-		
Clear woody vegetation around pond in compartment 2	A3	Aug-Sep	CMS vols/WW	-	Volunteers	6		
Commission the design and production of replacement sculptures for the sculpture trail	C2	Mar	CMS/Contractor	£10000	External	18		

## Broxbourne Wood Year 2 Actions 2020-2021

Action	Obj. ref	Timing/freq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
SSSI restoration – removal of stumps and preparation of ground	A1	Apr-May	CMS/Contractor	£4000	External (agreed S106 contribution)	Appendix F		
Restoration of boardwalk in compartment 2	C1	Apr-Aug	CMS vols/WW	£1000	External	3		
Re-cut old boundary hornbeam stubs in western corner of compartment 6	B1	Sep-Oct	Contractor	£1000	External	10		
Excavate new ponds within compartment 3	A3	Aug-Sep	CMS/Contractor	£2000	External	6		
Carry out continuous cover forestry works within compartments 2, 3 and 4	B1	Sep-Oct	CMS/Contractor	£10000	CS revenue grant, timber sales	7		
Establish deer enclosure plots alongside forestry works using temporary deer fencing	B1	Feb	CMS vols/WW	-	Volunteers	7		
Heavily thin Lawson's cypress in compartment 5	B1	Sep-Oct	CMS/Contractor	£5000	External	7		
Design and install interpretation panel at main pond in SSSI	C4	Sep	CMS/Contractor	£2500	External	20		

## Broxbourne Wood Year 3 Actions 2021-2022

Action	Obj. ref	Timing/freq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
SSSI restoration – tree felling and removal	A1	Sep-Oct	CMS/Contractor	£7500	External	Appendix F		
Installation of new boardwalk in compartment 2	C1	Apr-Aug	CMS vols/WW	£1000	External	3		
Carry out underplanting of broadleaves in areas lacking sufficient natural regeneration	B1	Oct	CMS vols/Contractor	£5000	External	-		

## Broxbourne Wood Year 4 Actions 2022-2023

Action	Obj. ref	Timing/freq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
SSSI restoration – removal of stumps and preparation of ground	A1	Apr-May	CMS/Contractor	£4000	External	Appendix F		
Lay hornbeam boundary hedge on northern boundary of compartment 2	B1	Sep-Feb	CMS vols	-	Volunteers	-		
Thin planted oaks	B1	Sep-Feb	CMS vols/WW	-	Volunteers	7		
Aftercare of broadleaf underplanting	B1	Ongoing	CMS vols/WW	-	Volunteers	-		

## Broxbourne Wood Year 5 Actions 2023-2024

Action	Obj. ref	Timing/freq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
SSSI restoration – tree felling and removal	A1	Sep-Oct	CMS/Contractor	£7500	External	Appendix F		
Request all site records for 2019-24 from the Herts Environmental Records Centre	D1	Feb	CMS/HERC	-	Officer time	-		
Aftercare of broadleaf underplanting	B1	Ongoing	CMS vols/WW	-	Volunteers	-		

## Bencroft Wood Annual Operations 2019-2024

Action	Obj. ref	Timing/freq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
Seek further funding for management plan operations	A2	Ongoing	CMS	-	Officer time	-		
Take fixed point photographs to monitor development/change including hornbeam coppice	D2	See Appendix K	CMS	-	Officer time	Appendix L		
Strim car park edges and exit splays	E1	May & Aug	CMS vols	-	Volunteers	-		
Bracken control – rolling and mechanical removal	A4	Jun-Jul	CMS vols/ Contractor	£300	External	16		
Maintenance of rides – zone 1	A3	May/Sep	WW/CMS vols	-	CS revenue grant/ volunteers	4		
Maintenance of rides – zones 2 and 3	A3	Sep-Feb	WW/CMS vols/ Contractor	-	CS revenue grant/ volunteers	4		
Maintenance of permanent open glade	A3	Sep-Feb	WW/CMS vols	-	CS revenue grant/ volunteers	-		
Aftercare of areas of recent tree planting	B1	Ongoing	WW/CMS vols	-	Volunteers	12		
Ecological monitoring	D1	Ongoing	Various	-	Volunteers	2		
Implementation of tree risk strategy	E2, E4	Ongoing	CMS/WW		Officer time/ volunteers	Appendix G		
Maintenance of site infrastructure as required	E1	Ongoing	CMS/WW	-	External	-		
Performance of annual litter contract and collection of fly tipping	E1	Ongoing	SERCO	£5000	Site budget	17		
Install temporary camera traps and associated signage to identify fly tipping offenders	E1	Ongoing	CMS	£500	Officer time	-		

Action	Obj. ref	Timing/freq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
Checking culverts for blockages and removal of debris as necessary	E1	Ongoing	WW	-	Volunteers	-		
Maintain deer fenced enclosures	E1	Ongoing	WW	-	Volunteers	7		
Organise a programme of walks, talks and events throughout the year	F4	Ongoing	CMS	-	Officer time	-		
Publicise management activities using social and traditional media	F3	Ongoing	CMS	-	Officer time	-		

## Bencroft Wood Year 1 Actions 2019-2020

Action	Obj. ref	Timing/freq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
Redistribute gravel in car parks to level surface	E1	Jul	CMS/Contractor	£2500	External	-		
Restore two ponds by removing surrounding woody cover and reprofiling to original base	A3	Sep-Oct	CMS/Contractor	£2000	CS capital grant + external	6		
Coppice coupe 1	B2	Oct-Feb	CMS/Contractor	£3000	CS revenue grant	8		
Install temporary deer fencing around coupe 1	B2	Feb	CMS vols/WW	-	CS capital grant/volunteers	8		
Make Section 31(6) deposit for the site	C3	Apr	CMS	-	Officer time	-		
Thin regeneration in coupe 24 to aid restoration of coppice	B2	Oct-Feb	CMS vols/WW	-	Volunteers	9		
Approach the Woodland Trust to explore opportunities for collaboration across the NNR	A5	Jul	CMS	-	Officer time	-		



## Bencroft Wood Year 2 Actions 2020-2021

Action	Obj. ref	Timing/freq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
Coppice coupe 2	B2	Oct-Feb	CMS/Contractor	£3000	CS revenue grant	8		
Install temporary deer fencing around coupe 2	B2	Feb	CMS vols/WW	-	CS capital grant/volunteers	8		
Thin regeneration in coupe east of west car park to work towards coppice restoration	B2	Oct-Feb	CMS vols	-	Volunteers	9		
Construct at least one series of three leaky woody dams	E3	Sep-Oct	CMS vols/WW	-	Volunteers	19		

## Bencroft Wood Year 3 Actions 2021-2022

Action	Obj. ref	Timing/freq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
Coppice coupe 3	B2	Oct-Feb	CMS/Contractor	£3000	CS revenue grant	8		
Install temporary deer fencing around coupe 3	B2	Feb	CMS vols/WW	-	CS capital grant/volunteers	8		

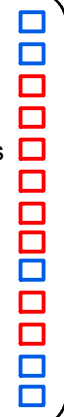
## Bencroft Wood Year 4 Actions 2022-2023

Action	Obj. ref	Timing/freq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
Restoration of boardwalk	C1	Apr-Aug	CMS vols/WW	£1000	External	3		
Coppice coupe 4	B2	Oct-Feb	CMS/Contractor	£3000	CS revenue grant	8		
Install temporary deer fencing around coupe 4	B2	Feb	CMS vols/WW	-	CS capital grant/volunteers	8		

## Bencroft Wood Year 5 Actions 2023-2024

Action	Obj. ref	Timing/freq.	Responsible	Est. cost	Funding	Spec ref.	Status	Notes
Coppice coupe 5	B2	Oct-Feb	CMS/Contractor	£3000	CS revenue grant	8		
Install temporary deer fencing around coupe 5	B2	Feb	CMS vols/WW	-	CS capital grant/volunteers	8		
Request all site records for 2019-24 from the Herts Environmental Records Centre	D1	Feb	CMS/HERC	-	Officer time	-		

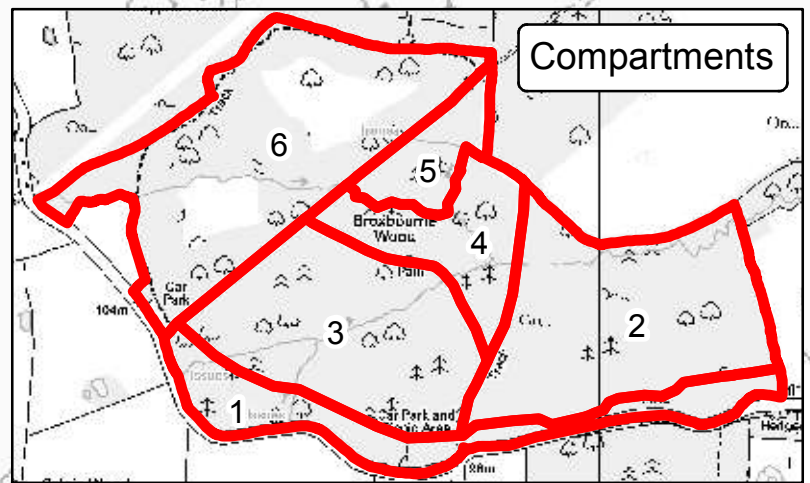
- Seek further funding for management plan operations
- Take fixed point photographs
- Lawson cypress removal
- Aftercare of areas of recent tree planting
- Rotational coppicing of willow, alder and sallow in wet flushes
- Ecological monitoring
- Implementation of tree risk strategy
- Maintenance of site infrastructure
- Performance of annual litter contract
- Check culverts
- Maintain deer fenced enclosures
- Organise programme of walks, talks and events
- Publicise management through social and traditional media



**Broxbourne and Bencroft Wood**  
**Management Plan 2019-24**  
 Annual and Regular Actions  
 Broxbourne Wood

**Legend**

- Car park sign
- ▲ Entrance sign
- ◆ Existing structures
- Lectern
- Orientation panel
- Stock fence
- Watercourse
- Car park
- Coniferous woodland
- Wood pasture restoration
- Mixed woodland
- New boardwalk
- Old boardwalk
- Pond
- Ride
- Surfaced track
- Unsurfaced path



Bracken control - rolling and mechanical removal □

Arrange cattle grazing and daily stock checking □

Carry out maintenance of permanent open space □

Maintain saplings and scrub □

Strim car park edges and exit splays □

Carry out ride maintenance □

Install temporary camera traps and associated signage to identify fly-tipping offenders □

Strim sculpture trail □

**Task Responsibility**

- CMS led, officer/contractor delivered
- CMS led, volunteer delivered

Scale @ A3  
 1:3,500  
 Date  
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 Rev  
 01



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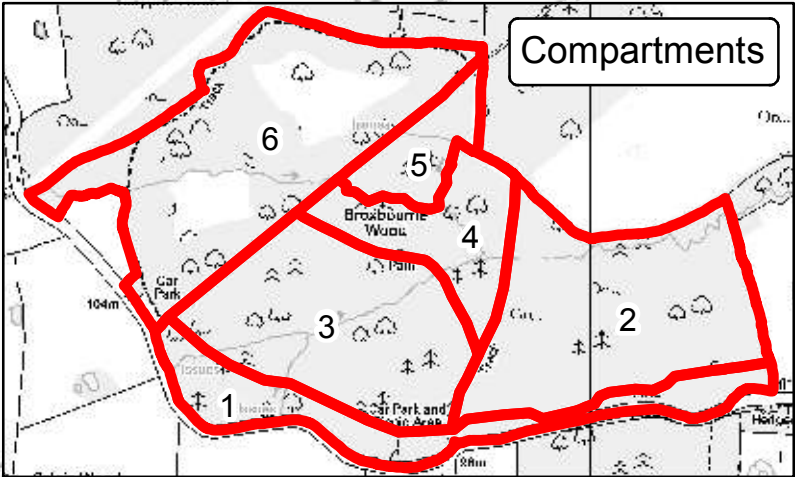
Commission Phase 1 habitat survey of SSSI compartment  
 Make Section 31(6) deposit for the site  
 Engage forestry consultant to plan continuous cover forestry works



'Re-veteranise' hybrid turkey oaks



Fell Scots pine and clear scrub around heather patch



**Broxbourne and Bencroft Wood**  
 Management Plan 2019-24  
 Year 1 Actions  
 Broxbourne Wood

**Legend**

- Car park sign
- Entrance sign
- Existing structures
- Lectern
- Orientation panel
- Stock fence
- Watercourse
- Car park
- Coniferous woodland
- Wood pasture restoration
- Mixed woodland
- New boardwalk
- Old boardwalk
- Pond
- Ride
- Surfaced track
- Unsurfaced path

Construct three leaky woody dams



Commission the design and production of replacement sculptures for the sculpture trail



SSSI restoration - tree felling and removal



Restoration of boardwalk



Clear woody vegetation around pond



Redistribute gravel in car parks to level surface



**Task Responsibility**  
 CMS led, officer/contractor delivered  
 CMS led, volunteer delivered

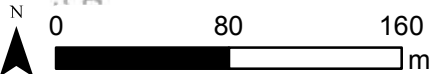
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 July 2019

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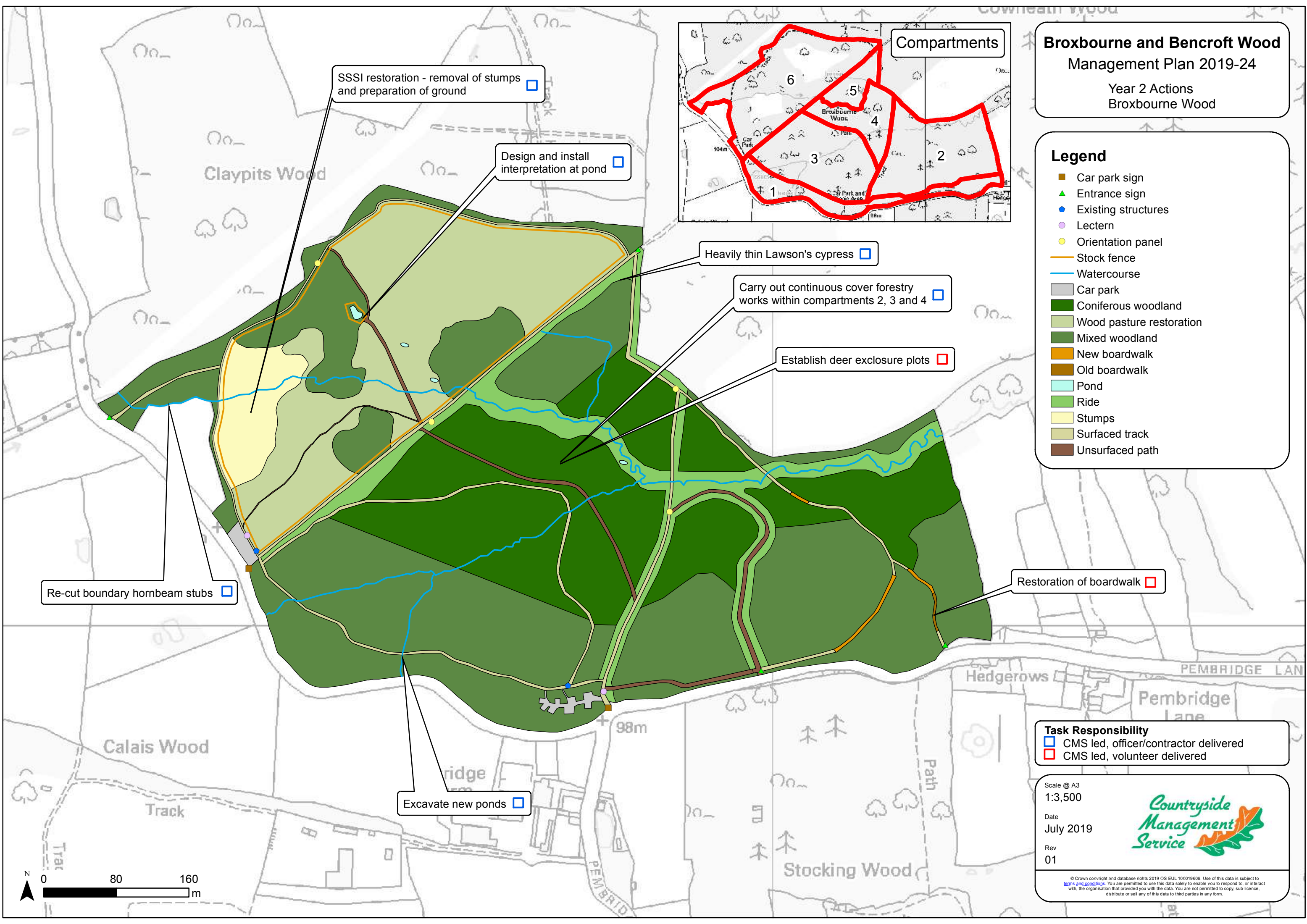
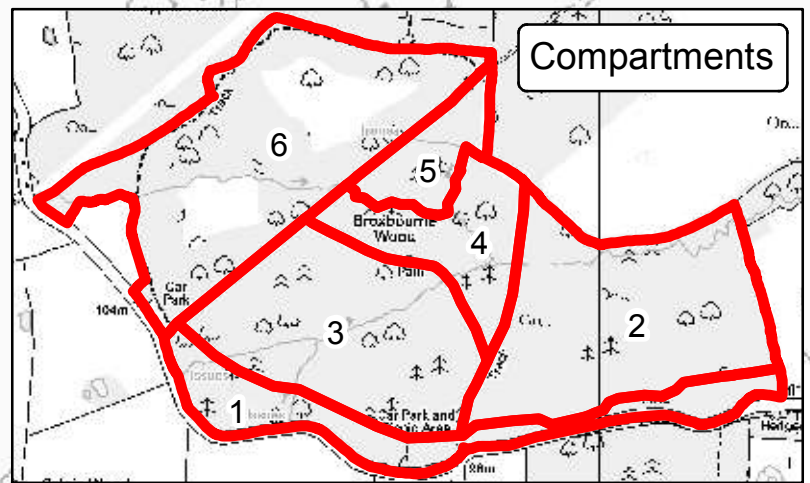
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**Broxbourne and Bencroft Wood**  
**Management Plan 2019-24**  
 Year 2 Actions  
 Broxbourne Wood

**Legend**

- Car park sign
- ▲ Entrance sign
- ◆ Existing structures
- Lectern
- Orientation panel
- Stock fence
- Watercourse
- Car park
- Coniferous woodland
- Wood pasture restoration
- Mixed woodland
- New boardwalk
- Old boardwalk
- Pond
- Ride
- Stumps
- Surfaced track
- Unsurfaced path



SSSI restoration - removal of stumps and preparation of ground □

Design and install interpretation at pond □

Heavily thin Lawson's cypress □

Carry out continuous cover forestry works within compartments 2, 3 and 4 □

Establish deer exclosure plots □

Restoration of boardwalk □

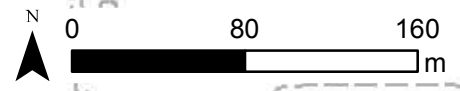
Re-cut boundary hornbeam stubs □

Excavate new ponds □

**Task Responsibility**

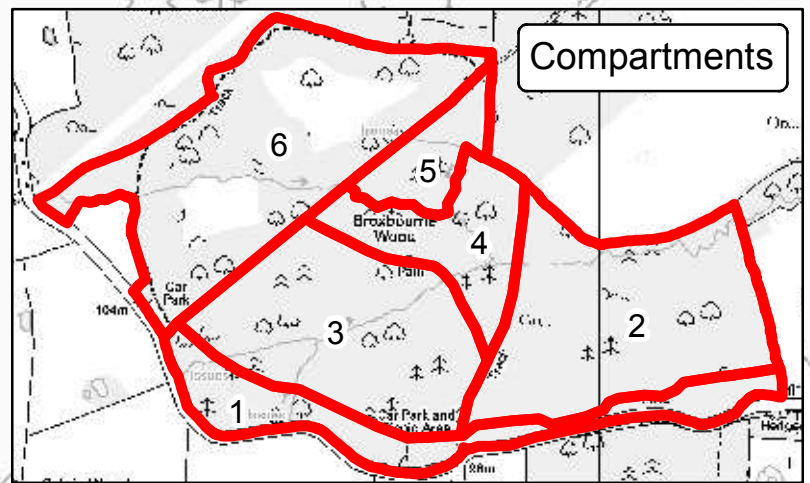
- CMS led, officer/contractor delivered
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**Broxbourne and Bencroft Wood**  
**Management Plan 2019-24**  
 Year 3 Actions  
 Broxbourne Wood



**Legend**

- Car park sign
- ▲ Entrance sign
- ◆ Existing structures
- Lectern
- Orientation panel
- Stock fence
- Watercourse
- Car park
- Coniferous woodland
- Wood pasture restoration
- Mixed woodland
- New boardwalk
- Pond
- Ride
- Surfaced track
- Unsurfaced path

SSSI restoration - tree felling and removal □

Carry out underplanting of broadleaves in areas lacking sufficient natural regeneration □ □

Install new section of boardwalk □

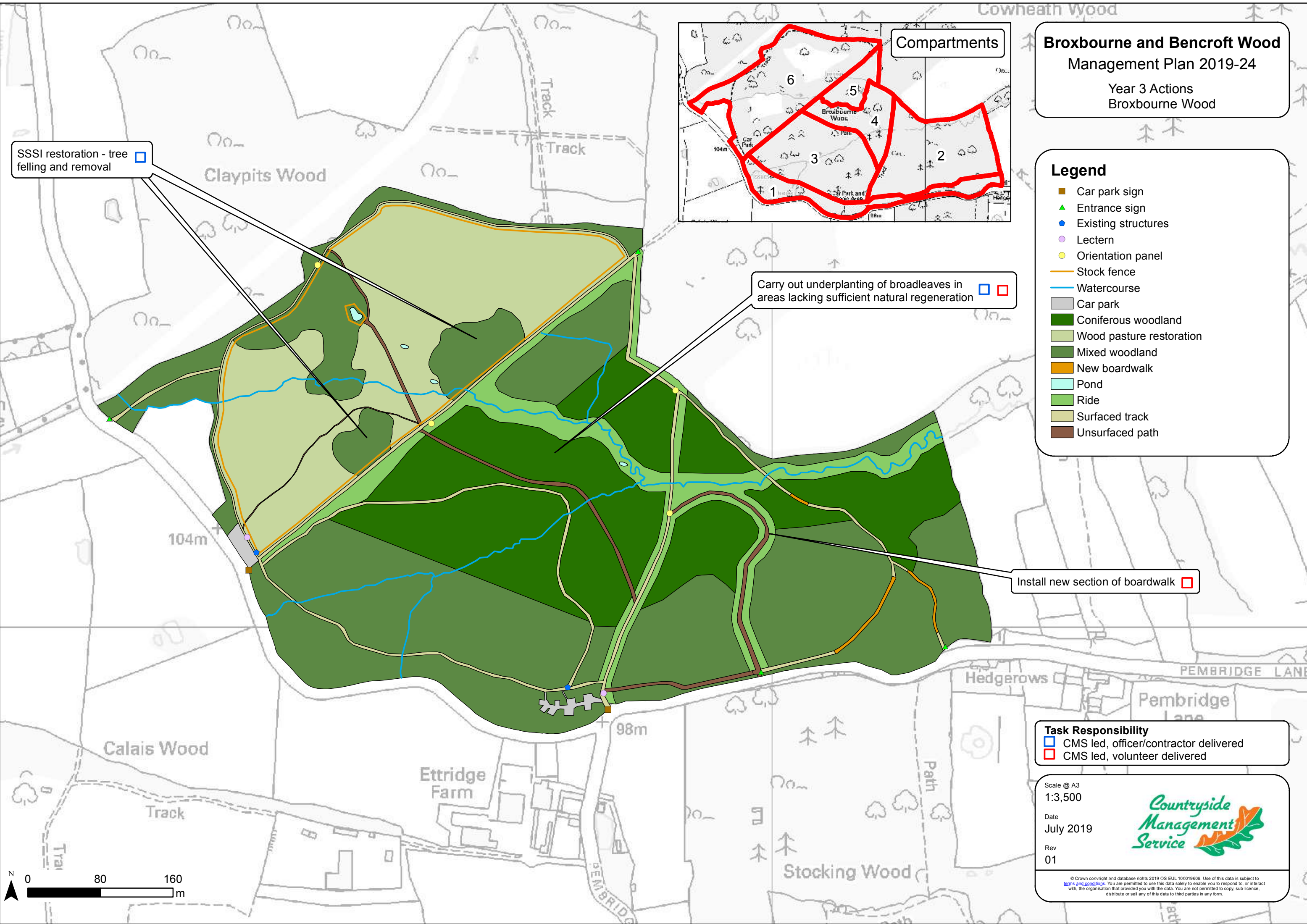
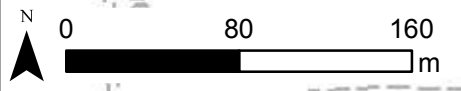
**Task Responsibility**

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- CMS led, volunteer delivered

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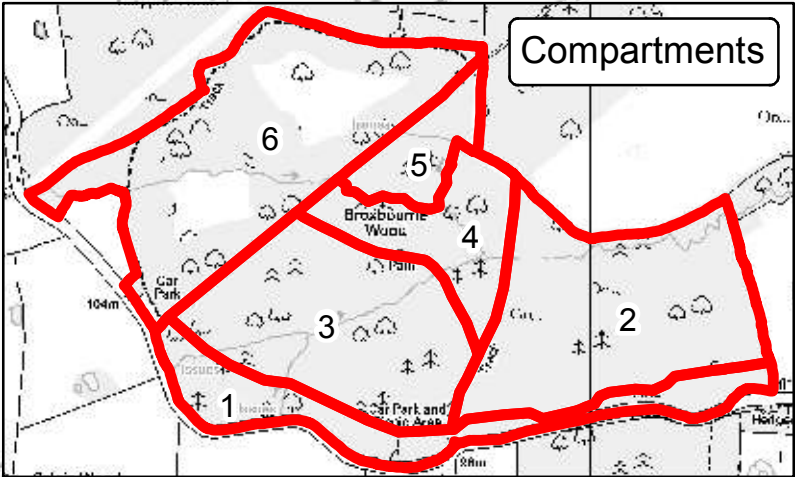


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**Broxbourne and Bencroft Wood**  
**Management Plan 2019-24**  
 Year 4 Actions  
 Broxbourne Wood



**Legend**

- Car park sign
- ▲ Entrance sign
- Existing structures
- Lectern
- Orientation panel
- Stock fence
- Watercourse
- Car park
- Coniferous woodland
- Wood pasture restoration
- Mixed woodland
- New boardwalk
- Pond
- Ride
- Stumps
- Surfaced track
- Unsurfaced path

SSSI restoration - removal of stumps and preparation of ground □

Aftercare of broadleaf planting □

Thin planted oaks □

Lay hornbeam boundary hedge □

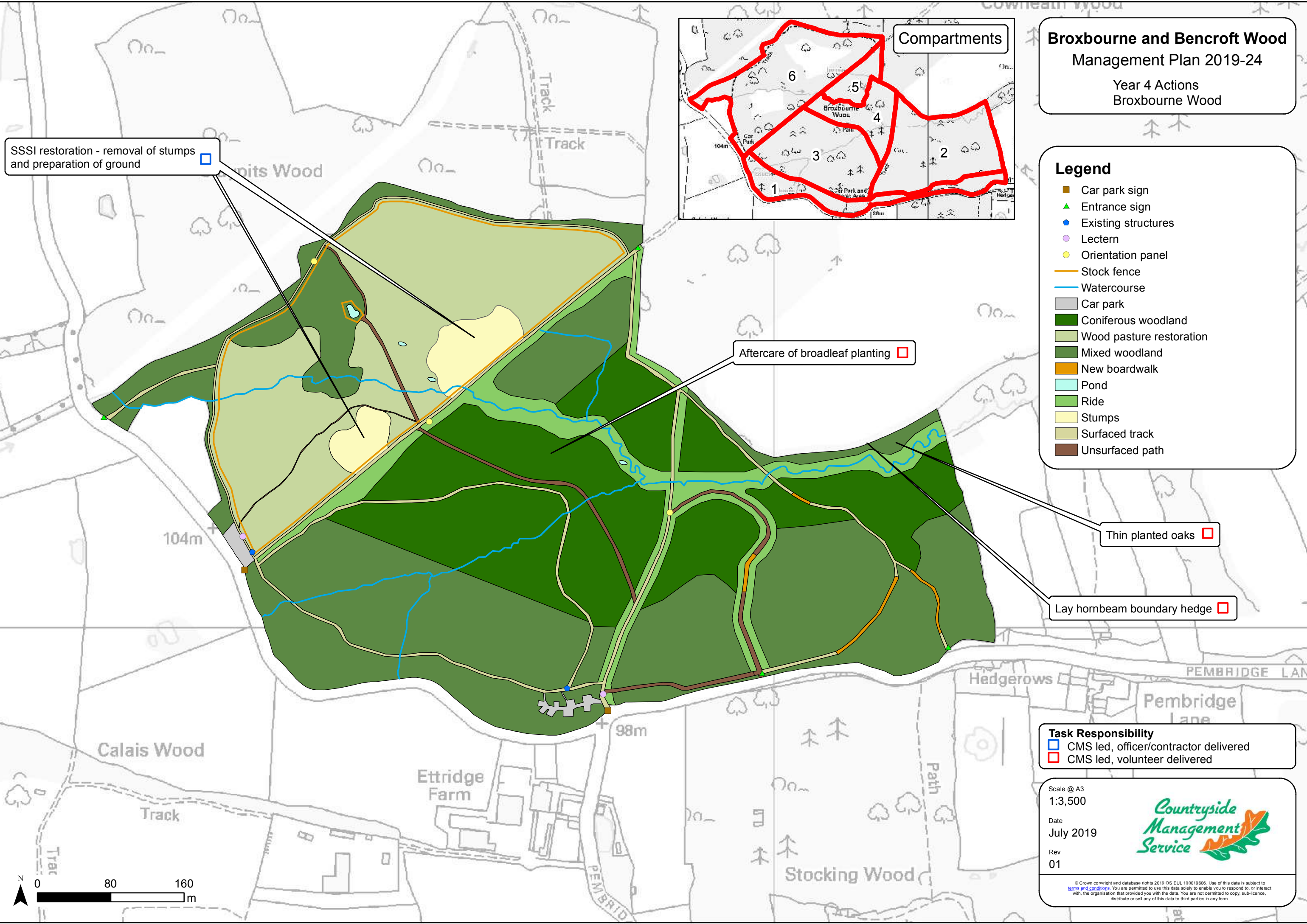
**Task Responsibility**

- CMS led, officer/contractor delivered
- CMS led, volunteer delivered

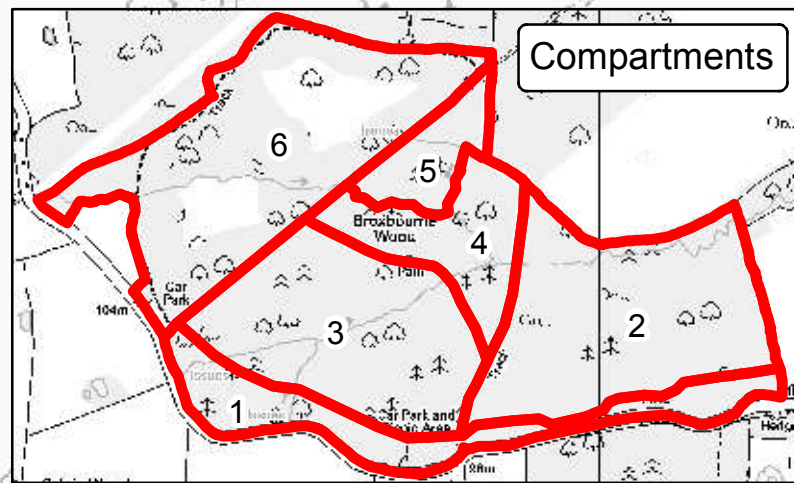
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Request all site records for 2019-24 from the Herts Environmental Records Centre

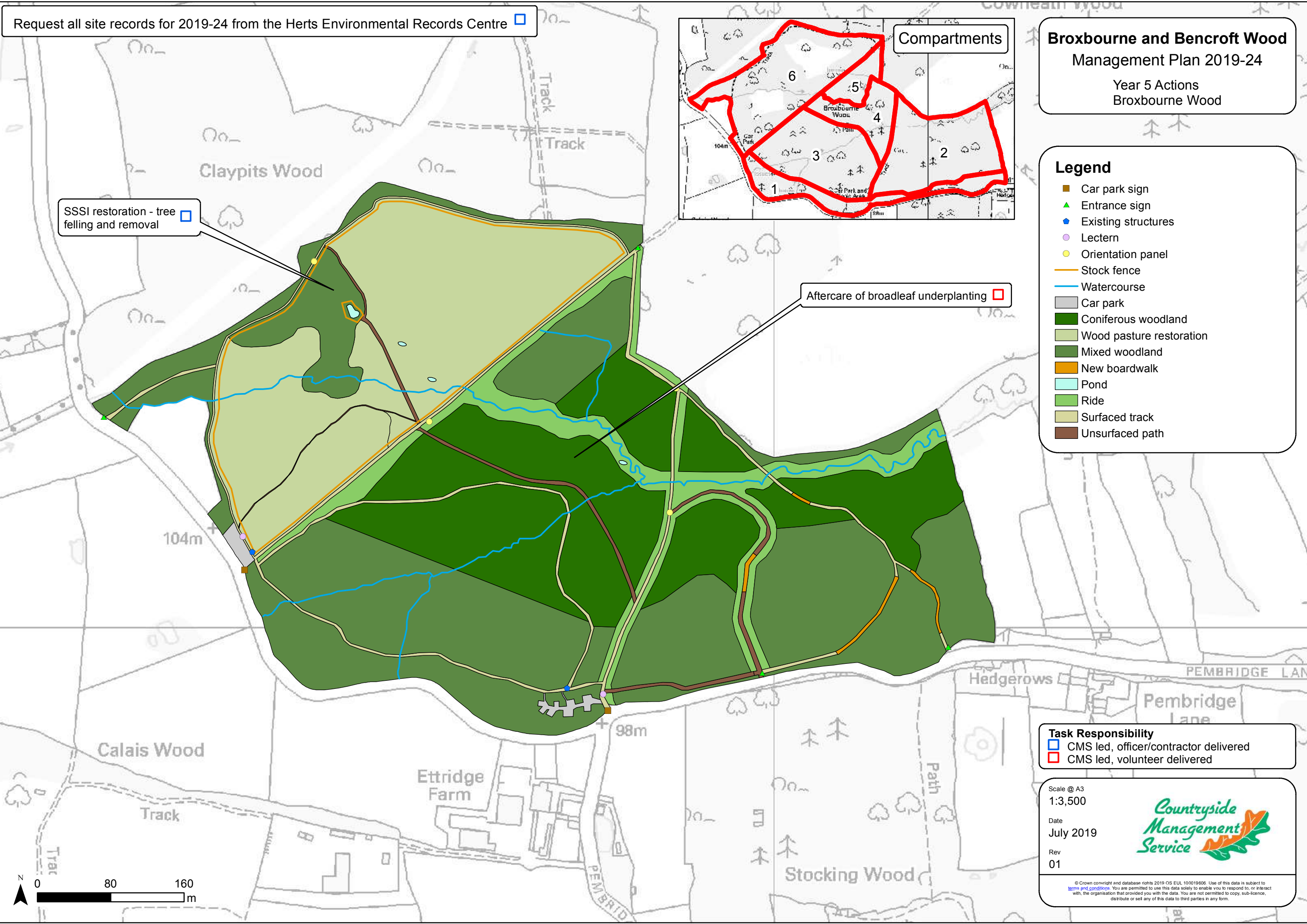


**Broxbourne and Bencroft Wood**  
 Management Plan 2019-24  
 Year 5 Actions  
 Broxbourne Wood

- Legend**
- Car park sign
  - ▲ Entrance sign
  - ◆ Existing structures
  - Lectern
  - Orientation panel
  - Stock fence
  - Watercourse
  - Car park
  - Coniferous woodland
  - Wood pasture restoration
  - Mixed woodland
  - New boardwalk
  - Pond
  - Ride
  - Surfaced track
  - Unsurfaced path

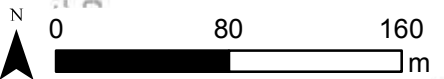
SSSI restoration - tree felling and removal

Aftercare of broadleaf underplanting



- Task Responsibility**
- CMS led, officer/contractor delivered
  - CMS led, volunteer delivered

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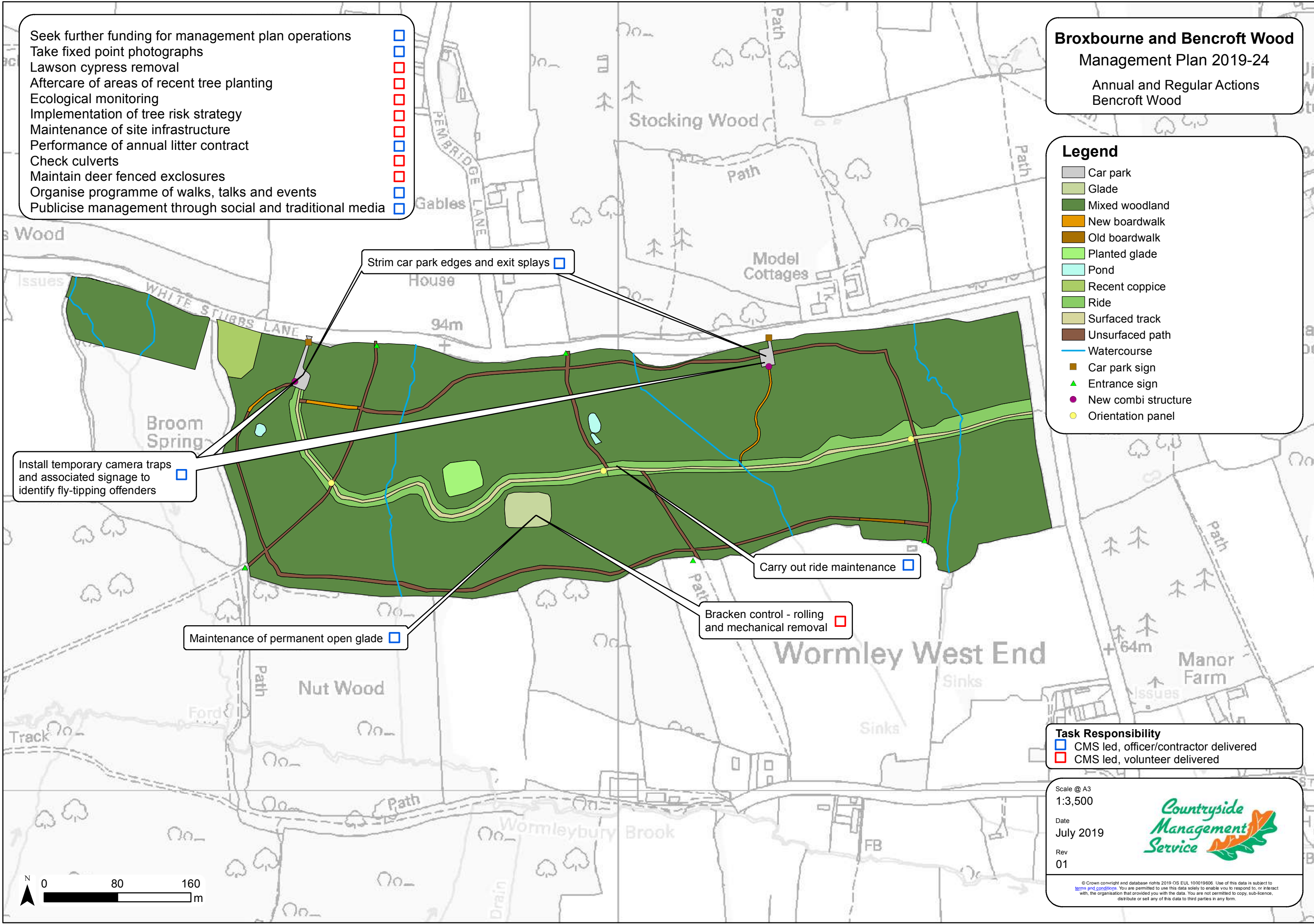
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**Broxbourne and Bencroft Wood**  
**Management Plan 2019-24**  
 Annual and Regular Actions  
 Bencroft Wood

- Seek further funding for management plan operations □
- Take fixed point photographs □
- Lawson cypress removal □
- Aftercare of areas of recent tree planting □
- Ecological monitoring □
- Implementation of tree risk strategy □
- Maintenance of site infrastructure □
- Performance of annual litter contract □
- Check culverts □
- Maintain deer fenced enclosures □
- Organise programme of walks, talks and events □
- Publicise management through social and traditional media □

**Legend**

- Car park
- Glade
- Mixed woodland
- New boardwalk
- Old boardwalk
- Planted glade
- Pond
- Recent coppice
- Ride
- Surfaced track
- Unsurfaced path
- Watercourse
- Car park sign
- Entrance sign
- New combi structure
- Orientation panel



Install temporary camera traps and associated signage to identify fly-tipping offenders □

Strim car park edges and exit splays □

Maintenance of permanent open glade □

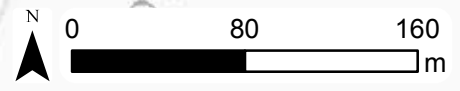
Carry out ride maintenance □

Bracken control - rolling and mechanical removal □

**Task Responsibility**

- CMS led, officer/contractor delivered
- CMS led, volunteer delivered

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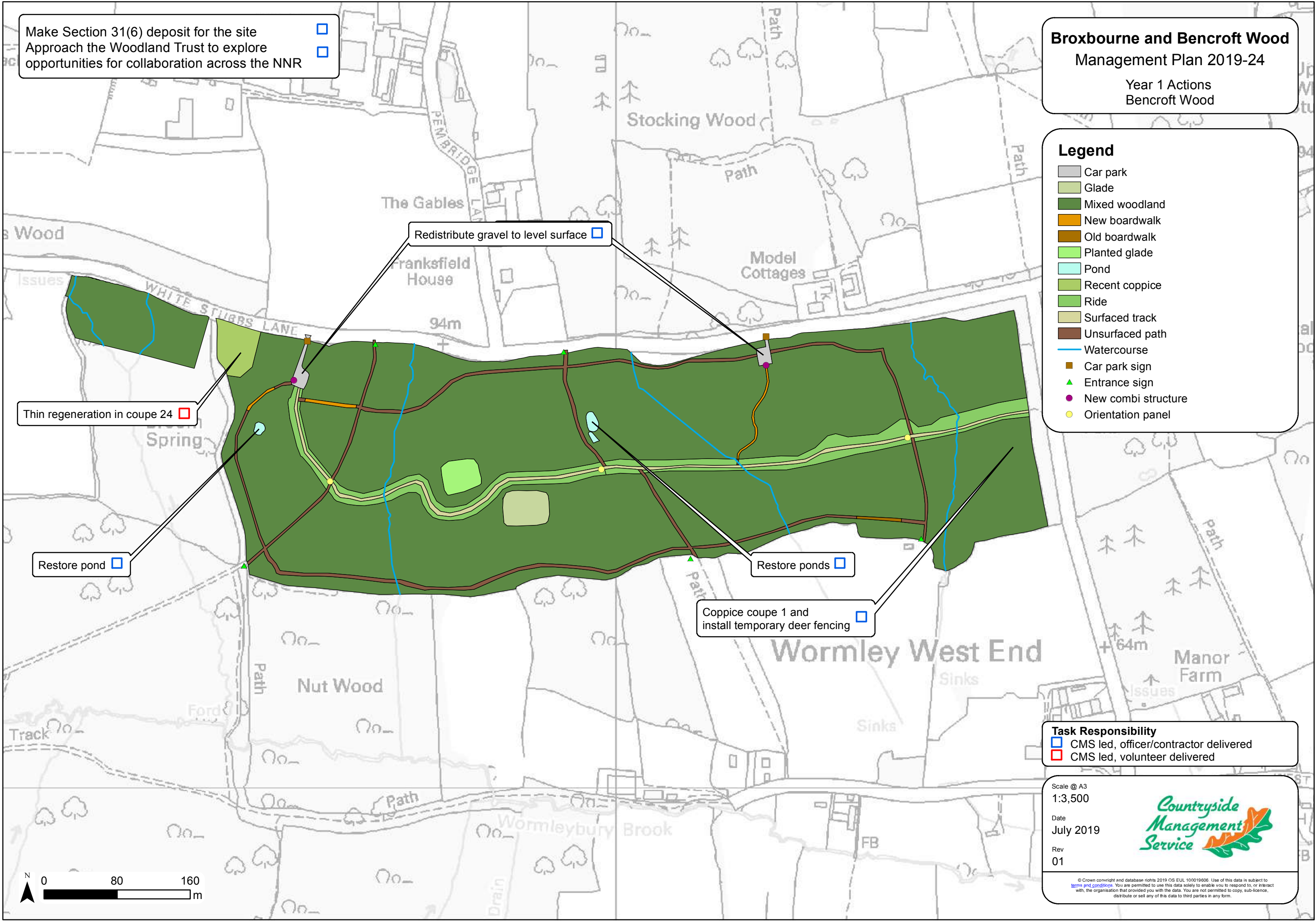
Make Section 31(6) deposit for the site

Approach the Woodland Trust to explore opportunities for collaboration across the NNR

**Broxbourne and Bencroft Wood**  
**Management Plan 2019-24**  
 Year 1 Actions  
 Bencroft Wood

**Legend**

- Car park
- Glade
- Mixed woodland
- New boardwalk
- Old boardwalk
- Planted glade
- Pond
- Recent coppice
- Ride
- Surfaced track
- Unsurfaced path
- Watercourse
- Car park sign
- Entrance sign
- New combi structure
- Orientation panel



Thin regeneration in coupe 24

Redistribute gravel to level surface

Restore pond

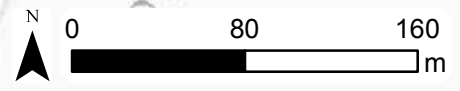
Restore ponds

Coppice coupe 1 and install temporary deer fencing

**Task Responsibility**

- CMS led, officer/contractor delivered
- CMS led, volunteer delivered

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**Broxbourne and Bencroft Wood**  
Management Plan 2019-24

Year 2 Actions  
Bencroft Wood

**Legend**

- Watercourse
- Car park
- Glade
- Mixed woodland
- New boardwalk
- Old boardwalk
- Planted glade
- Pond
- Recent coppice
- Ride
- Surfaced track
- Unsurfaced path
- Car park sign
- Entrance sign
- New combi structure
- Orientation panel

- Task Responsibility**
- CMS led, officer/contractor delivered
  - CMS led, volunteer delivered

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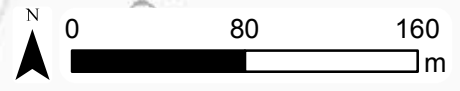


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Thin regeneration east of car park □

















Construct at least one series of three leaky woody dams □

Coppice coupe 2 and install temporary deer fencing □




**Broxbourne and Bencroft Wood**  
**Management Plan 2019-24**  
 Year 3 Actions  
 Bencroft Wood



**Legend**

-  Watercourse
-  Car park
-  Glade
-  Mixed woodland
-  New boardwalk
-  Old boardwalk
-  Planted glade
-  Pond
-  Recent coppice
-  Ride
-  Surfaced track
-  Unsurfaced path
-  Car park sign
-  Entrance sign
-  New combi structure
-  Orientation panel

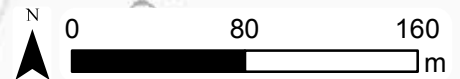


Coppice coupe 3 and  
 install temporary deer fencing 

**Task Responsibility**

-  CMS led, officer/contractor delivered
-  CMS led, volunteer delivered

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**Broxbourne and Bencroft Wood**  
Management Plan 2019-24

Year 4 Actions  
Bencroft Wood

**Legend**

- Watercourse
- Car park
- Glade
- Mixed woodland
- New boardwalk
- Old boardwalk
- Planted glade
- Pond
- Recent coppice
- Ride
- Surfaced track
- Unsurfaced path
- Car park sign
- Entrance sign
- New combi structure
- Orientation panel

Coppice coupe 4 and install temporary deer fencing

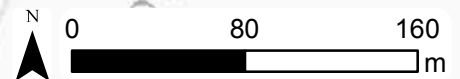
Restore boardwalk

- Task Responsibility**
- CMS led, officer/contractor delivered
  - CMS led, volunteer delivered


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Request all site records for 2019-24 from the Herts Environmental Records Centre 

# Broxbourne and Bencroft Wood Management Plan 2019-24

Year 5 Actions  
Bencroft Wood

## Legend

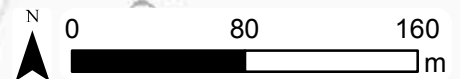
-  Watercourse
-  Car park
-  Glade
-  Mixed woodland
-  New boardwalk
-  Planted glade
-  Pond
-  Recent coppice
-  Ride
-  Surfaced track
-  Unsurfaced path
-  Car park sign
-  Entrance sign
-  New combi structure
-  Orientation panel

Coppice coupe 5 and  
install temporary deer fencing 

- ### Task Responsibility
-  CMS led, officer/contractor delivered
  -  CMS led, volunteer delivered

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## 6 MONITORING AND REVIEW

### *Monitoring the action plans*

The Broxbourne & Bencroft Wood Management Plan is intended to cover a period of five years, from April 2019 to March 2024. It is recognised that developing a management plan is only the start. What is also required is a system to deliver, monitor and evaluate the delivery and effectiveness of the plan, and identify any areas for change.

As actions are carried out, they will be assessed and any issues recorded. An annual review will consider all of the issues recorded throughout the year, feedback received from the public, and any changes to policy, legislation and finance. Key stakeholders will be invited to walk the sites with managers to discuss progress and note any new actions that might be considered for the next year. New actions agreed will be added to the action plan.

The entire management plan and annual action plans will be made available to view and download from the CMS website; site users will be able to monitor the plans and their progress.

### *Measures of success*

Success of the action plans will be evaluated in the following ways:

- The completion of tasks on time and within the resources allocated
- Feedback from stakeholders at annual meetings
- Feedback from site users

### *Management plan review*

At the end of the plan's five year term, the management of Broxbourne & Bencroft Wood will require a more comprehensive review in light of the success and progress of the plan. The process of reviewing and amending the document and the preparation of new action plans is an important and constructive part of the management process.

## 7 SPECIFICATIONS

### Contents

- 1 General prescriptions relevant to all operations
- 2 Ecological monitoring
- 3 Boardwalk construction
- 4 Ride management
- 5 Permanent open space management
- 6 Pond creation/restoration
- 7 Continuous Cover Forestry and reduction in extent of conifers
- 8 Hornbeam coppice – areas of older coppice
- 9 Hornbeam coppice – areas of recent coppice
- 10 Coppicing hornbeam stubs on ancient wood banks
- 11 Scrub management within Broxbourne Wood SSSI
- 12 Tree planting aftercare
- 13 Management of sallow (*Salix caprea*) trees
- 14 Wet flush areas
- 15 Grazing
- 16 Bracken control
- 17 Litter control
- 18 Sculpture trail
- 19 Construct leaky woody dams
- 20 Interpretation

## 1 General prescriptions relevant to all operations

<p><i>Habitat Retention</i></p>	<ul style="list-style-type: none"> <li>▪ All mature <b>sallow</b> to be retained wherever practical. Only coppice 10-20% of <b>sallow</b> in any given area e.g. ride side or glade per annum, in order to retain eggs of the Purple Emperor butterfly undisturbed and promote a varied age structure.</li> <li>▪ <b>Honeysuckle</b> to be retained wherever practical, in particular shaded groups. This may require a tree or patch of trees to be retained if a particularly good area of honeysuckle is found.</li> <li>▪ Significant <b>oak</b> or <b>hornbeam</b> trees to be retained.</li> <li>▪ Extra care is to be employed when working in sensitive stream-side and wetland areas to minimise damage to stream banks and associated vegetation. Wet flushes containing <b>alder</b> should be left and trees retained to maturity.</li> <li>▪ Retain all standing and fallen <b>dead wood</b> where it is safe so to do, and take opportunities to increase dead wood provision.</li> <li>▪ Care should be taken to protect <b>ancient woodbanks</b> from mechanical damage.</li> <li>▪ Within the SSSI at Broxbourne Wood, <b>broom, bramble heaps</b> and <b>scrub</b> are valuable habitats and should be managed rotationally. These habitats are currently developing and it is too soon to plan their management across the compartment, but work towards ten-year rotational management.</li> <li>▪ Within the SSSI, retain stands of mature trees in the bottoms to provide cover and ensure a good age range of <b>aspens</b> is preserved.</li> </ul>
<p><i>Visitor Safety</i></p>	<ul style="list-style-type: none"> <li>▪ Members of the public to be kept a safe distance from active tree works with signs and or banks men. Access routes may require temporary closure. Additional care to be employed when working adjacent to the Broxbourne Wood Sculpture Trail and permissive bridleway. Make use of reinforced crossing points where possible.</li> <li>▪ Where site boundaries may be compromised by tree removal, stumps are to be left higher or timber to be rolled into position to prevent unauthorised vehicular access.</li> <li>▪ Where work is taking place adjacent to the roadside bring this to the attention of Herts Highways prior to work taking place.</li> </ul>
<p><i>Timing</i></p>	<ul style="list-style-type: none"> <li>▪ Unless otherwise stated, all habitat management work will be undertaken between 1st September and 28th February.</li> <li>▪ All woodland management work will be undertaken between 1<sup>st</sup> September and 31<sup>st</sup> October to minimise damage to soils and tracks.</li> </ul>

## 2 Ecological monitoring

SUBJECT	FREQUENCY	TIMING	RESPONSIBLE	CONTACT	NOTES
Butterflies	Annual	April - September	Herts & Middlesex Butterfly Conservation	Andrew Wood <a href="mailto:zoothorn@ntlworld.com">zoothorn@ntlworld.com</a>	Formal transects at both Broxbourne & Bencroft Wood.
Moths	Annual	April - September	Herts Moth Group	Colin Plant <a href="mailto:colinwplant@gmail.com">colinwplant@gmail.com</a>	Moth trapping
Woodland birds	Annual	March - September	Herts Natural History Society	<a href="mailto:birdrecorder@hnhs.org">birdrecorder@hnhs.org</a>	
Reptiles	Annual	April - June	CMS	CMS	There may be an opportunity to establish some ongoing monitoring carried out Wood Wardens or other volunteers
Flora	Annual	April - August	Herts Natural History Society	Alla Mashanova and Ian Denholm (vascular plant recorders) <a href="mailto:a.mashanova@herts.ac.uk">a.mashanova@herts.ac.uk</a>	
Phase 1 Habitat Survey	Every 5 years	May - September	External consultant		
Fixed point photography	Every 15 months	Ongoing	CMS	CMS	Refer to <a href="#">Appendix L</a>

### 3 Boardwalk construction

*Purpose*

To install new sections of boardwalk to replace existing surfaces which are narrow and use various types of mesh and timber.



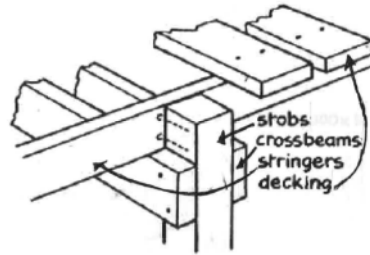
*Method*

- Boardwalk to be of 1.2m width, treated softwood decking planks on top with oak posts for upright legs



**Timber specification (mm)**

Decking	sawn treated softwood	100 x 45 x 1200
Crossbeams	sawn treated softwood	100 x 45 x 900
Stringers	sawn treated softwood	120 x 50 x 3600
Stobs	oak stobs	100 x 100 x 600

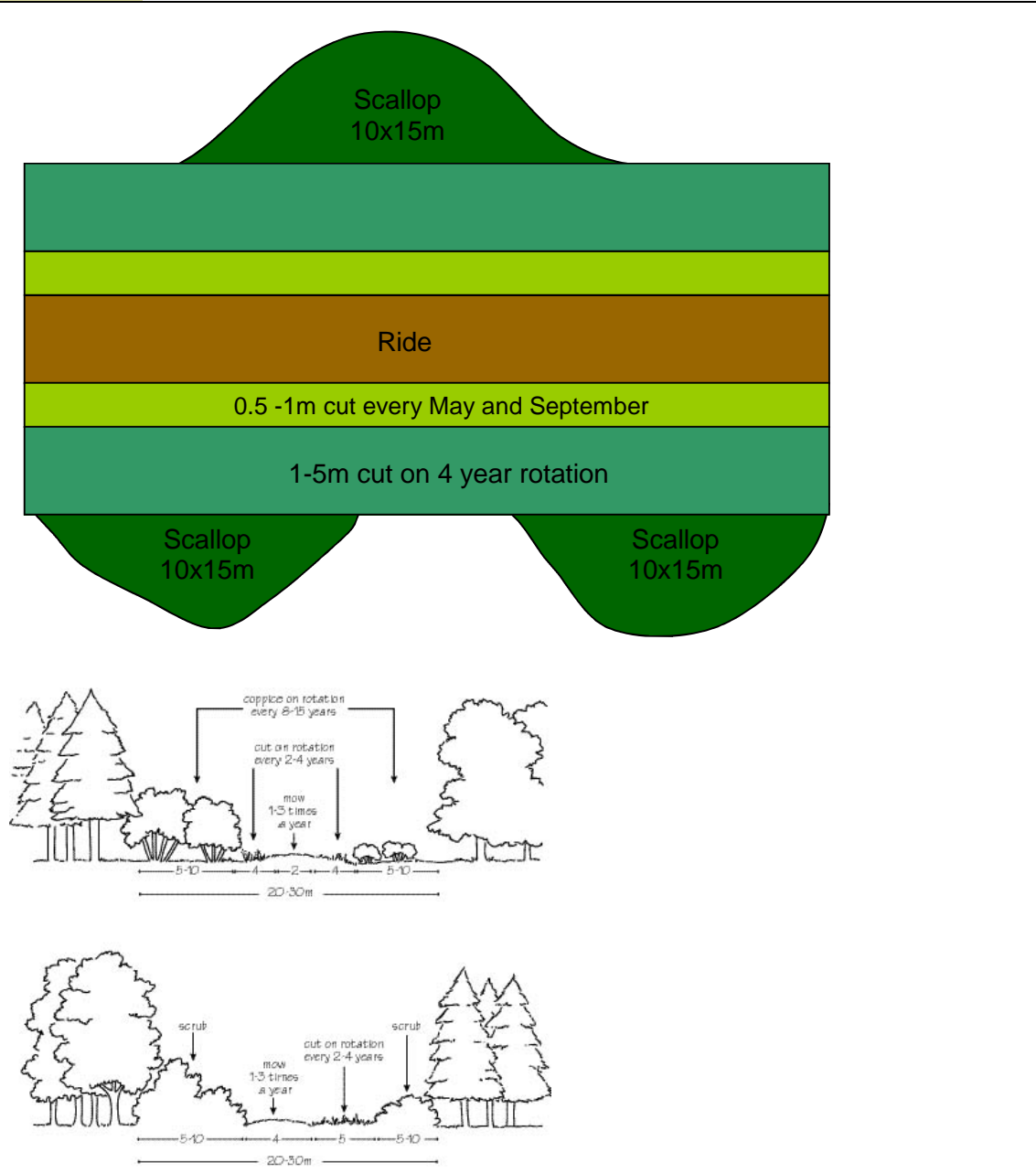


- Bolt two crossbeams to two stobs with M12 220mm coach bolts to form an 'H' structure. Top of crossbeam to be 120mm down from top of stob.
- Two parallel builders lines will be strung out at a width of 1.2m to give the correct line for construction
- 'H' structures to be dug into the ground approx 300mm deep every 1.8m.
- To begin, use a spirit level to get cross sections level and tamp in first 'H' section.
- Dig two more 300mm deep holes 1.8m along the line for next stob/crossbeam section. Stand section in holes and check for level in both directions.
- Lay 3.6 m long stringers on top of crossbeams, check for level and attach with decking screws
- Continue along the length of the line.
- For crossing ditches extra support will be given by using a third stringer in the centre and having closer spacing of 'H' sections as necessary.
- Decking planks screw to the stringers with four 80mm decking screws

<i>Who</i>	CMS volunteers/wood wardens
<i>Future management</i>	Repairs carried out as required by wood wardens and CMS volunteers

## 4 Ride management

<b>Zone 1</b>	The edges of the rides at Broxbourne Wood and Bencroft Wood, as shown on the maps in Appendix D, will be cut once a year in September by 0.5-1m to maintain a clear path for visitors.
<b>Zone 2</b>	The next zone, 2-4m from ride edge will be cut on a 4 year rotation to maintain vegetation in a manageable state whilst providing valuable scrub habitat. One quarter of the total length of ride edge should be cut annually.
<b>Zone 3</b>	The 5-10m zone will be cut rotationally on a long cycle (at least 25 years). Every year scallops (approx 10x15m arcs) will be cut into the woodland edge to increase the width of the ride at certain points. The cut scallop area will then be left to re-grow providing a succession of habitats from scrub back to woodland into the future. Each year new scallops will be cut so that there is a mosaic of growth stages across the woodland. This is essential for birds, butterflies and other invertebrates.



5 Permanent open space management	
<i>Purpose</i>	To maintain open spaces within the woodland.
<i>Method</i>	<ul style="list-style-type: none"> <li>▪ Cut the areas identified as permanent open spaces on the maps in Appendix D on a five year rotation.</li> <li>▪ Different sections should be cut each year.</li> <li>▪ Maintain a range of habitats from low cut sward through to mixed scrub woodland.</li> <li>▪ Select trees to be retained as feature trees within the permanent open space.</li> </ul>
<i>Who</i>	CMS volunteers/wood wardens
<i>Arisings</i>	Brashy material can be cut into small lengths and scattered under existing trees, not within the open spaces. Arisings from cutting grass and other finer vegetation should be collected and removed from site where possible.

6 Pond creation/restoration	
<i>Purpose</i>	To create and restore ponds to provide additional wet habitat within the woodland.
<i>Method</i>	<ul style="list-style-type: none"> <li>• For new ponds, select locations along the streams in compartment 3 of Broxbourne Wood. Carry out soil auger testing to try to ascertain the required depth of the ponds.</li> <li>• Draw up plans and specification for the digging of the ponds, including creating a small glade around the pond and a methodology for dealing with arisings.</li> <li>• For pond restoration, remove surrounding woody cover and reprofile to original base.</li> <li>• Get quotes for work and commission contractor.</li> </ul>
<i>Who</i>	Contractor
<i>Future management</i>	Future maintenance of the ponds to be carried out by Wood Wardens.



## 7 Continuous Cover Forestry and reduction in extent of conifers

<p><i>Purpose</i></p>	<p>In Broxbourne Wood in particular, the dominance of commercially planted conifers has a detrimental effect on native wildlife. By removing conifers and helping native broadleaves to recover we will be re-establishing a natural woodland system of diverse structure and species composition.</p> <p>In some areas, such as around the sculpture trail, conifers will be retained for aesthetic reasons. Groups and individual trees will also be retained across the woodland as part of its diverse species composition and to benefit particular species, such as hawfinch and firecrest.</p> <p><b>Continuous Cover Forestry (CCF)</b></p> <p>A term used to describe forest management methods which maintain continuous woodland conditions, rather than periodically removing whole crops of trees as clear felling systems do. In other words, the next tree generation will already be established when the old one is harvested.</p> <p>Primarily this is done by manipulating the over-storey through removal of individual trees or small groups, thus controlling the light regime and allowing natural regeneration to occur, without encouraging detrimental weed growth. This gives rise to uneven aged mixed woodland, where all age classes of tree co-exist within one forest stand. Implicit to this form of management is the favouring of native broadleaves and the reduction of exotic coniferous species. There may also be financial benefits such as savings on planting and pruning costs.</p>
<p><i>Method</i></p>	<ul style="list-style-type: none"> <li>▪ In the 11.38ha area shown on the map in Appendix D, undertake <b>thinning, selective felling</b> and <b>regeneration felling</b>. Engage a forestry consultant to help specify and manage this work in year 1, and manage internally in subsequent years.</li> <li>▪ <b>Thinning:</b> to promote the existing range of tree and shrub species and to maintain a mix of ages within the wood, remove not more than 30% of trees, but at varying densities across the area.</li> <li>▪ <b>Selective felling:</b> create conditions to encourage natural regeneration and the development of mixed age classes through group felling of groups between 0.05ha and 0.1ha in size totalling 1ha across the total area identified for thinning.</li> <li>▪ <b>Regeneration felling:</b> carry out felling to encourage crown development and/or natural regeneration of native species such as oak and hornbeam. Where old trees are present, these will be given additional space by removing competing trees from under their canopies to provide sufficient room to promote a healthy crown.</li> <li>▪ In the 1.47 ha area of planted ancient woodland shown on the map in Appendix D and contained within the above, undertake selective thinning with the specific aim of reducing the percentage of conifer species by around 20%. This will let light in and allow natural regeneration of native trees to occur. Removal of trees will be limited to conifer and non-native broadleaf species. Where appropriate, glades will be created by removal of groups of trees.</li> <li>▪ Within working areas, all Lawson’s cypress are to be removed.</li> <li>▪ In compartment 5, the block of Lawson’s cypress should be heavily thinned, leaving strategic trees to maintain a boundary effect and</li> </ul>

	<p>mulching to promote natural regeneration.</p> <ul style="list-style-type: none"> <li>▪ Leave some stems of felled trees in large sections after felling operations to increase the amount of dead wood towards 20 tonnes per hectare as required within the UKFS.</li> <li>▪ Where possible and away from areas of high public use, trees for removal should be ring barked to provide standing dead wood, towards a recommended density of four standing dead trees per hectare.</li> <li>▪ Establish deer exclosure plots using temporary deer fencing in areas with largest canopy gaps to encourage natural regeneration.</li> <li>▪ Trees will be felled by contractor with a chainsaw or harvester.</li> <li>▪ Stumps to be left as low to ground as possible and left to rot.</li> </ul>
<i>Who</i>	Contractor
<i>Arising</i>	<ul style="list-style-type: none"> <li>▪ All timber will be cut to 3m lengths and stacked at the East car park (Broxbourne Wood) pending removal from site for sale.</li> <li>▪ Commercially unviable brash will be chopped into 1-2m lengths and scattered under remaining trees with some left as habitat piles.</li> </ul>
<i>Future management</i>	<p>Natural regeneration should be reviewed two years after felling to establish the likelihood of success. If required, planting should be of locally appropriate native broadleaved trees (sessile oak and hornbeam) established at a density of 1100 trees per hectare. Natural regeneration should also be encouraged through deer exclosure plots in areas with largest canopy gaps.</p> <p>In the conifer reduction area, remove conifer regeneration in favour of any broadleaved saplings that develop.</p> <p>Inspect deer exclosure plots annually and maintain in a fit state to prevent deer access.</p>

## 8 Hornbeam coppice – areas of older coppice

<i>Purpose</i>	Bencroft Wood has been shaped by the previous management of people. Hornbeam coppice was a valuable source of fuel wood in the past. Large stands of hornbeam coppice now go unmanaged. If this continues the stools will be lost through degeneration and wind-throw. There is financial value in this coppice material as firewood whilst the effect of opening up areas by coppicing benefits wildlife through increased habitat diversity.
<i>Method</i>	<p><b>Coppicing</b></p> <ul style="list-style-type: none"> <li>▪ Coppice native broadleaved species, cutting on an angle above the stub to allow water to run off. Stubs should be cut on good cambium above the previous cut.</li> </ul> <p><b>Protection</b></p> <ul style="list-style-type: none"> <li>▪ Area to be protected by deer fencing as per FC Practice note 9 for at least three years following coppicing and until regrowth and regeneration is sufficiently high to withstand deer damage.</li> </ul> <p><b>Area</b></p> <ul style="list-style-type: none"> <li>▪ 0.25ha coupes (coppice blocks) to be cut annually on a 25 year cycle.</li> </ul>
<i>Who</i>	Contractor
<i>Arisings</i>	<ul style="list-style-type: none"> <li>▪ Timber should be cut to marketable length (min. 3 metres) and stacked adjacent to West End Road entrance at the eastern end of the central, permissive bridleway through Bencroft Wood.</li> <li>▪ Leave equivalent of 3 trees (&gt;200mm diameter) per hectare in the form of log piles</li> <li>▪ Smaller material can be used to dead hedge the boundaries of the coupe or cut into small lengths and scattered under existing trees, not on newly opened areas.</li> <li>▪ Where possible and away from areas of high public use, trees which would otherwise be coppiced should be ring barked to provide standing dead wood, aiming for 1-2 trees per coupe.</li> </ul>
<i>Future management</i>	Inspect deer fencing annually and maintain in a fit state to prevent deer access. After approximately five years, review regeneration and apply specification 9 below.

## 9 Hornbeam coppice – areas of recent coppice

<i>Purpose</i>	To develop commercially viable hornbeam coppice to sustain coppice management in the long term.
<i>Method</i>	<ul style="list-style-type: none"> <li>▪ Around five years after the initial re-coppicing described above, review regeneration of stools and natural regeneration between stools.</li> <li>▪ Where dense natural regeneration has occurred, trial thinning to 1m x 1m spacing between retained trees, leaving 3m x 3m spacing around viable stools. Retain hornbeam wherever possible, and leave non-hornbeam species when this is the only option to fill a gap. Retain clusters of oak saplings as future standards.</li> <li>▪ Leave areas within the same coupe unthinned to compare outcomes.</li> <li>▪ Maintain deer fencing to protect ongoing regeneration in remaining open spaces.</li> <li>▪ If stools fail to regenerate or natural regeneration is insufficient, undertake replanting with hornbeam to achieve a stocking density of 1100 trees/ha at approximately 3m x 3m spacing. Restock oak standards by planting tight groups of five whips and over time thinning to one. No planting within 3m of viable stools.</li> </ul>
<i>Who</i>	CMS volunteers/wood wardens
<i>Arisings</i>	Used to dead hedge the boundaries of the coupe or cut into small lengths and scattered under existing trees, not on newly opened areas.
<i>Future management</i>	<p>Monitor success of this approach in two coupes trialled during this management plan period. Review whether it is necessary or if future coupes can be left to natural regeneration. Also consider the need for further thinning of regeneration to 3m x 3m spacing after 5-10 years.</p> <p>If restocking is carried out, these areas to be maintained in good condition for 10 years following restocking. They will require weed control by removal of bramble and other encroaching species in the first 3 years.</p>

## 10 Coppicing hornbeam stubs on ancient woodbanks

<i>Purpose</i>	<p>Woodbanks with hornbeam stubs are very important archaeological features of the woodlands in this area. They mark the boundaries of the woodland and have remained intact for hundreds of years. Ecologically, they represent the oldest trees in both Broxbourne and Bencroft Wood and due to their age and size are important for bats and invertebrates which inhabit older trees.</p> <p>Traditionally the stubs would have been cut on a regular cycle for fire wood, animal fodder and building materials. As they get older, if unmanaged, they develop large heavy limbs and become more prone to limb failure and wind throw. Due to their roadside location and the underlying archaeology this should be addressed through the reintroduction of a cutting regime. Prior to re-cutting the surrounding area should be opened up to the light by selective removal of shading trees so that subsequent re-growth gets maximum sunlight.</p>
<i>Method</i>	<ul style="list-style-type: none"> <li>▪ Selective felling to achieve 7m of open canopy adjacent to stubs to be cut along the length of the woodbank.</li> <li>▪ Subsequent re-cutting of old hornbeam stubs by cutting on an angle above stub to allow water to run off.</li> <li>▪ Stubs should be cut on good cambium above the previous cut.</li> <li>▪ Protection from browsing</li> </ul>
<i>Who</i>	Contractor
<i>Arisings</i>	<ul style="list-style-type: none"> <li>▪ Where there are sufficient quantities, timber should be cut to marketable length (min. 3 metres) and stacked by the ride side to be taken to Broxbourne Wood East car park by contractor pending collection. Alternatively timber could be stacked adjacent to West End Road entrance at the eastern end of the central, permissive bridleway through Bencroft Wood.</li> <li>▪ Leave equivalent of 3 trees (&gt;200mm diameter) per ha. in the form of log piles</li> <li>▪ Smaller material can be used to dead hedge areas visible to the public or cut into small lengths and scattered under existing trees, not on newly opened areas.</li> </ul>
<i>Future management</i>	Monitor re-growth of stubs and establish a suitable rotation length.

## 11 Scrub management within Broxbourne Wood SSSI compartment

<i>Purpose</i>	To maintain a dynamic balance of scrub and grassland as the SSSI restoration progresses, ensuring that priority species are present in a full range of age classes, and taking into account the rapid changes in the habitat in this area.
<i>Method</i>	<ul style="list-style-type: none"> <li>▪ On an annual basis, remove regenerating saplings, coppice scrub and clear bramble.</li> <li>▪ This work should be undertaken at varying densities across the SSSI compartment, depending on the characteristics of each area. As the habitat develops, aim to have more open habitat on the tops and more cover in the bottoms.</li> <li>▪ As an overall guide, manage retained scrub and bramble heaps on a ten-year rotation to provide a variety of ages.</li> <li>▪ Priority species within the compartment include <b>broom</b>, <b>aspen</b> and <b>sallow</b>.</li> <li>▪ <b>Broom</b>: manage on a ten year rotation. Consider further control if it becomes dominant in areas.</li> <li>▪ <b>Aspen</b>: retain some stands in the bottoms to provide mature aspen. Allow some aspen regeneration to reach maturity.</li> <li>▪ <b>Sallow</b>: see specification 13.</li> </ul>
<i>Who</i>	CMS volunteers/wood wardens.
<i>Arisings</i>	Depending on scale, may be stacked in habitat piles or removed from the site.
<i>Future management</i>	Review at the conclusion of the felling phase of the SSSI restoration.

12 Tree planting aftercare	
<i>Purpose</i>	To restore areas of new planting which have become overcrowded and outgrown their protective tree tubes.
<i>Method</i>	<ul style="list-style-type: none"> <li>▪ Volunteers to use scissors to remove redundant tree tubes.</li> <li>▪ Tube disposal – tubes to be put one inside the other in groups of 5 and taken to car park for collection by SERCO.</li> <li>▪ Gently release suppressed planting – individual trees competing with planted stock to be coppiced where encroaching upon the crown of planted trees. Where competing trees are both planted, the best specimen with straightest stem and best form to be retained.</li> <li>▪ Prune side branches with a clean cut approximately 1 cm away from the “collar” to leave a small stub.</li> <li>▪ In planted wet flushes allow willow and alder to become dominant.</li> </ul>
<i>Timing</i>	<ul style="list-style-type: none"> <li>▪ Formative pruning and thinning to be done between 1<sup>st</sup> November and 28<sup>th</sup> February. Tree tube removal can be done year round.</li> </ul>
<i>Who</i>	Wood wardens/CMS volunteers
<i>Arisings</i>	Arisings to be left in-situ scattered on the ground.
<i>Future management</i>	Re-assess new planting areas in 10 years’ time. Any trees competing with good oak specimens may need to be re-coppiced and planted stock may require further thinning.

### 13 Management of sallow (*Salix caprea*) trees

<i>Purpose</i>	The purple emperor butterfly lays its eggs on the leaves of large sallow in shade; to ensure the species breeds successfully at Broxbourne Woods, sallow must be retained and where possible its distribution increased. It is a sun loving species, often lost through succession of unmanaged woodland as it becomes shaded out by longer lived species.
<i>Method</i>	Depending upon the size, age and condition of individual trees, their position in relation to others and their position in the woodland, one of the following options may be most appropriate: <ul style="list-style-type: none"> <li>▪ Coppicing to reinvigorate mature specimens – 10-20% of specimens within the operational area per year.</li> <li>▪ Coppicing or pollarding individuals which have been damaged through forestry operations.</li> <li>▪ Thinning to maintain a clear area around selected individuals to prevent competition from neighbouring trees.</li> </ul>
<i>Who</i>	Suitable for contractor or volunteers depending on size of tree.
<i>Arisings</i>	Brash and timber should be cut and stacked in semi-shaded position nearby to preserve insects and eggs.
<i>Future management</i>	Monitor re-growth and re-coppice when necessary to prolong life of the tree. Maintain open areas free from competing trees on rides and in glades. Manage areas of newly planted sallow in accordance with specification 12.

### 14 Wet flush areas

<i>Purpose</i>	Wet flush areas of <b>sallow, willow and alder</b> should be coppiced on rotation to provide a variety of ages and structures of growth.
<i>Method</i>	Cut 10-20% of stems to ground level per year in blocks on rotation.
<i>Who</i>	Suitable for volunteers.
<i>Arisings</i>	Scatter brash in among trees. Cut timber to 1m lengths and stack among trees within the wet flush as habitat piles.
<i>Future management</i>	Monitor stump regrowth and manage on annual rotation.



## 15 Grazing

<i>Purpose</i>	<p>The restored open areas require continued grazing to encourage development of heathland/acid grassland and prevent succession to woodland.</p> <p>Extensive cattle grazing has many benefits including: promotion of a varied floral structure through selective grazing habits, reduction in tree establishment through browsing, localised poaching providing habitat for key species such as lousewort, dung from animals creating an important resource for invertebrates and in turn bat and bird species. Use of traditional at-risk or rare breeds is compatible with public access, creates a visitor attraction and supports rural business and food production.</p>
<i>Method</i>	<p>Native breed cattle will be used to graze the SSSI compartment. Longhorn and red poll cattle have been used successfully in the last five years; both have a docile nature and are suited to this public site with high dog presence. The animals will be checked by trained volunteers up to seven days per week.</p> <p>Grazing density will be very carefully monitored and adjusted to ensure that desired vegetation recruitment is achieved. In 2019 the stocking rate will be eight animals for twelve weeks from late July. This will rise to at least ten as the SSSI restoration programme continues, and will be reviewed annually.</p> <p>After the cattle have been removed each year, some follow up work will be required to remove saplings and scrub that have been missed by the cattle, see specification 11.</p>
<i>Who</i>	<p>Specialist grazing contractor or local farmer.</p> <p>Follow up work suitable for volunteers.</p>
<i>Monitoring</i>	<p>Daily stock checking to be carried out by volunteer 'stock checkers' once they have been on a training course. Any issues to be reported back to the grazier.</p>

16 Bracken control	
<i>Purpose</i>	If left uncontrolled bracken will establish quickly on acidic soils and dominate all other vegetation, reducing establishment of target species and making grazing unsuitable due to its toxicity to stock.
<i>Method</i>	<p>Large areas of bracken will be managed through 'bruising' where access permits; this will be carried out using a mechanical roller pulled by a vehicle. This activity was effective during the previous plan, and its impact will continue to be monitored throughout the lifetime of this plan.</p> <p>Presence of bracken's preferred growth medium will be minimised in newly opened areas through removal of accumulated leaf/needle litter. Trampling by stock and increased public access tend to bruise/damage developing stems, which also acts to reduce the vigour of bracken during the growing season.</p> <p>In areas that have been recently cleared and/or planted, small scale hand control may also be effectively employed.</p>
<i>Who</i>	Contractor and volunteers

17 Litter control	
<i>Details</i>	<ul style="list-style-type: none"> <li>▪ Litter and waste up to 1m<sup>3</sup> to be collected from car parks including up to 1m distance into surrounding vegetation around car park edges – car parks are listed in table below.</li> <li>▪ Litter and waste to be collected fortnightly.</li> <li>▪ All collected waste shall be disposed of in accordance with all relevant Acts of Parliament including the Environmental Protection Act 1990, Duty of Care Regulations, The Collection and Disposal of Waste Regulations 1988, relevant Waste Management Papers and all relevant Statutory Instruments and any other requirements laid down by current statute throughout the period of this contract</li> <li>▪ 28 visits per annum.</li> </ul>

18 Sculpture trail	
<i>Purpose</i>	Sculptures along the sculpture trail are increasingly tired and in need of refreshing. Commissioning a new set of sculptures while removing those in worst condition will provide added interest for regular visitors and an attraction for potential new visitors.
<i>Method</i>	<ul style="list-style-type: none"> <li>▪ Set a budget for the scheme and source funding</li> <li>▪ Produce a brief/specification document to be sent to potential designers/artists. Make the budget explicit and award the contract based on quality.</li> <li>▪ Set up a re-launch event for the sculpture trail.</li> </ul>
<i>Who</i>	CMS to lead, contractor to carry out work.
<i>Future management</i>	Ensure that the chosen scheme uses materials that have good resilience to outdoor conditions and other pressures and will require minimal maintenance.

19 Construct leaky woody dams	
<i>Purpose</i>	Broxbourne and Bencroft Woods are at the top of their respective catchments, and the watercourses running through them generally have very low flows. In higher flow conditions, leaky woody dams aim to increase interception and infiltration. This increases the amount of water which is retained in the catchment and does not contribute to flows downstream which may cause flooding.
<i>Method</i>	<ul style="list-style-type: none"> <li>▪ Identify three locations for leaky woody dams along the main watercourse in Broxbourne Wood.</li> <li>▪ Identify a minimum of three locations for leaky woody dams along the watercourses in Bencroft Wood.</li> <li>▪ The dams should be built in series of at least three, at least 10m apart.</li> <li>▪ Secure Ordinary Watercourse Consent for the structures.</li> <li>▪ Dams should be formed of logs large enough to span the channel, and secured by being dug into the bank, braced against live trees or posts and wired together. They should be up to 1m in height.</li> <li>▪ Dams should allow low flows to pass unimpeded at all times.</li> </ul>
<i>Who</i>	CMS volunteers/wood wardens
<i>Future management</i>	Monitor the structures on an annual basis and reinforce if and when necessary.

20 Interpretation	
<i>Purpose</i>	Permanent interpretation at pond in SSSI compartment to replace temporary posters. The interpretation will highlight its ecological value and explain the fencing and restriction on dogs.
<i>Method</i>	<ul style="list-style-type: none"> <li>▪ Design, produce and install an interpretation panel for the pond and provide a PDF version of the same.</li> <li>▪ To include a full colour hand drawn watercolour illustration of the pond, based on notes to be provided.</li> <li>▪ For each panel, provide proof of black and white illustration before colouring.</li> <li>▪ For each panel, provide two proof stages of full colour design in hard copy and PDF format.</li> <li>▪ Supply an A2 lectern frame in oak, twin leg, incorporating a GRP panel.</li> </ul>
<i>Who</i>	CMS to lead, contractor to design and produce interpretation.
<i>Future management</i>	Ensure that the interpretation uses materials that have good resilience to outdoor conditions and other pressures and will require minimal maintenance. Any maintenance required to be carried out by wood wardens.

## 8 APPENDICES

Please refer to accompanying document, which can be accessed via the CMS website:  
[www.hertfordshire.gov.uk/cms](http://www.hertfordshire.gov.uk/cms)