Ecological Management Plan: Bentley Priory Open Space

London Borough of Harrow

April 1 2014 through March 2019

Preamble

Bentley Priory Open Space includes a biological Site of Special Scientific Interest and is part of an area registered as a Grade II Listed Park and Garden. This is a five-year ecological management plan which defines the approach and prescribes actions needed to maintain this nationally important site.

A management plan is a living document and not intended to be rigid in nature. It must be responsive to changing circumstances e.g. feedback from biodiversity surveys and any other on-site monitoring might become available which would necessitate a change in management practices. Such changes might be required to maintain or enhance the species interest and condition of habitats within the units which comprise the Site of Special Scientific Interest (SSSI) or to maintain and restore the heritage value of this important landscape.

Restoration of part of the site (Furze Heath and the Greensward) is currently underway via Heritage Lottery Funding (HLF). This includes re-establishment of nationally important species-rich grassland. Funding is due to expire in June 2015.

Bentley Priory Open Space is to be entered under the Higher Level Stewardship (HLS) scheme (which is administered by Natural England). Payments received under the scheme should help finance management of the site for the next 10 years. Generally, management prescriptions under the scheme should link with prescriptions in this document however, some tweaking of detail could be required. HLS payments are not applicable to the area currently being funded by HLF.

As the site lies within a nationally listed Grade II Registered Park and Garden and the heritage landscape is viewed as at risk by English Heritage, a Parkland Plan for the portion of the Park owned by London Borough of Harrow (i.e. Bentley Priory Open Space) is to be prepared to inform the HLS process – recommendations will be considered within HLS prescriptions. This will also determine some detail of the management prescribed within this document.

This will mean that through HLS important aspects of landscape management of Bentley Priory Open Space can be secured for the next ten years in a manner that respects both nature conservation and heritage value of the site.

Contents

1. Description

1.1 General

1.1.1 *Location and Access*

Bentley Priory Open Space (Figure 1) is situated at the northern end of the London Borough of Harrow (national grid reference TQ 156 927). The site is bounded by the former RAF Bentley Priory to the north (now being developed for housing), the private estates of Priory House to the west and Lower Priory Farm to the southwest. There is housing off Stanmore Hill and Uxbridge Road to the east and south.

There is access to the site from: Priory Drive in the north; Aylmer Drive in the east; Old Lodge Way, Bentley Way and Masefield Avenue in the south; and 2 points in the west at Clamp Hill and Common Road.

There are 2 Public Rights of Way through the site, one from Old Lodge Way to Priory Drive and the other from Embry Way to Clamp Hill.

1.1.2 *Status*

Most of the site is notified as a Site of Special Scientific Interest (SSSI) under the Wildlife and Countryside Act 1981 (as amended) by Natural England (ref: 100578)[†]. The condition of the four composite units is currently reported to be 'favourable'. The site is also designated under Section 21 of the National Parks and Access to the Countryside Act 1949 as a Local Nature Reserve (ref: 1064083).

The Mayor of London has designated the entire area as a Site of Metropolitan Importance for Nature Conservation. Bentley Priory Open Space is shown within the Green Belt and an Area of Special Character in the London Borough of Harrow's Local Plan. The Harrow Green Grid map (2012) depicts Bentley Priory as an important hub

[†] The SSSI was re-notified under the 1981 Act in 1990 after significant boundary changes – this superseded an earlier notification made 1976 under the 1949 National Parks and Access to the Countryside **Act**

within the Borough's network of green infrastructure. It is also shown as lying at the southern edge of the Watling Chase Community Forest.

Bentley Priory Open Space falls within Bentley Priory, a Grade II entry in the Register of Historic Parks and Gardens which is maintained by English Heritage.

Summerhouse Lake is designated as a 'Reservoir' under the 1975 Reservoirs Act and as such this feature comes under the auspices of the Environment Agency.

1.1.3 *Ownership and Tenure*

The whole site is owned and managed by London Borough of Harrow and is currently grazed under a tenancy agreement by Mr P Lory of Kings Langley.

A management Committee set up in 1974 meets every 3 – 4 months to determine management policy and to direct regularly held voluntary working parties.

1.1.4 *Map Coverage*

OS 1:50 000 sheet no. 176, OS 1:10 000 sheet no. 19SE, British Geological survey sheets no 256.

1.1.5 *Survey information*

1984/5 GLEU Habitat Survey, LEU Management Brief Survey 1989
2003 GLA Borough Habitat Survey, Records held by Greenspace Information for Greater London (GIGL).

1.2 Physical

1.2.1 *Geology and Soils*

The higher slopes to the north-west are principally London Clay overlain by Claygate Beds. Aside the Priory Drive entrance a small area of Claygate Beds is capped by Pebble Gravel. The soils derived from these underlying strata are chiefly heavy clays of neutral pH on lower slopes, grading to thinner, sandier and more acidic loams over the Claygate Beds and Pebble Gravels of higher reaches.

1.2.2 *Typography*

The highest parts of the site, at 135m OD, are located to the north-west adjacent to the entrance from Common Road. From this point the land generally slopes downwards towards Boot Pond falling to 85m in the south-east corner

The slope is dissected by a central stream valley and its tributaries (some of which are now dry) to produce a series of gently rolling hummocks. The central stream has been dammed at 104m OD to form Summerhouse Lake which now occupies the middle section of the stream valley.

1.2.3 *Hydrology*

The site drains naturally to the south-east (see 1.2.2 above). The junction of the free-draining Claygate Beds with less permeable London Clay produces spring-line conditions. These conditions are typically manifested as numerous local boggy areas feeding seasonal streams found the on the upper slopes.

The central stream-system rises on the northern site boundary and flows south into Summerhouse Lake. The lake has a secondary underground feeder stream entering from the north-east the flow of

which is regulated by a sluice. The outflow stream, called the Stanburn, a tributary of the Silk Stream, winds on to exit the site at the Bentley Way entrance. A tributary stream flows in from the north-east, rising outside the site on Stanmore Hill, to make its confluence with the central stream below Summerhouse Lake not far from the southern boundary.

The water level in Summerhouse Lake was lowered for engineering works in 1980 which involved the reconstruction of the dam. There is a danger that the water depth may be reduced by natural silting and input of organic material from overhanging trees, at present this is being addressed by regular dredging by the Environment Agency.

1.3 Biological

1.3.1 *Vegetation*

The following is a brief summary of the site's flora. Place names and compartment numbers referred to appear on Figure 2 of Appendix 2. Plant nomenclature relies on the vernacular (except where there is no English equivalent). Appendix 1 gives a list of vascular plant species (including historical records) and quotes both scientific and common names.

The site comprises a mosaic of ancient and more recent woodland with associated scrub, neutral to acid grassland, plus various wetland features including the watercourses and seasonally boggy areas, Boot Pond and Summerhouse Lake (the largest body of standing water in the borough).

a) Woodland

Semi-natural woodland occupies roughly a third of the site, the largest blocks being Heriot's Wood and Lake Wood which surrounds Summerhouse Lake and extends northwards up the central valley.

The semi-natural woodland consists chiefly of hornbeam, pedunculate oak, ash and hazel. Other characteristic species include birch *Betula* spp., wild cherry, common and midland hawthorns. The wild service tree (a species notable in Greater London) also occurs. Some old specimens of hornbeam and hazel appear to have been coppiced at some time in the past e.g. the lower section of Heriot's Wood. Such woodland probably originated before 1600 and can be considered ancient. Other areas are more recent in nature having developed from scrub as secondary woodland (e.g. the north of Heriot's wood and parts of Lake Wood) or from ornamental plantings (e.g. around Summerhouse Lake). Thus there are a number of introduced species which are frequent within woodland stands including sycamore, common lime and rhododendron. Additionally, around Summerhouse Lake holly, yew and other evergreen shrubs are frequent. Alder is common to dominant by watercourses and the lake itself.

Bramble is well distributed within the ground flora and sometimes dominant but varies in its extent with light levels reaching the woodland floor: It is sparse below the purest hornbeam stands and much denser elsewhere. Ivy is also present. There are a number of species associated with and bearing testament to the ancient or long-established nature of some Bentley Priory woodlands including wood sedge, remote sedge, pendulous sedge, wood-millet, wood-sorrel, ramsons, sanicle, wood speedwell, yellow pimpernel, goldilocks buttercup, wood anemone, soft shield-fern and native bluebell. Many of these species are rare in Greater London. There are a number of other ground flora species present e.g. barren strawberry and bugle.

b) The Master Oak

The Master Oak is an ancient pollard oak *Quercus robur* that is at least 350 years old and may be much older. It is well loved by the local community and the symbol of the Friends of Bentley Priory, the local support group for the entire nature reserve. The Master is located to the west of Summerhouse Lake approximately 20 m from the Environment Agency's flood storage wall (grid ref: TQ 15484, 92587). In 2012 the Friends of Bentley Priory Nature Reserve commissioned a tree expert, Russell Ball of Arbol Euro Consulting, to survey the tree and give suggestions as to how it might be protected from future damage while maintaining as much public access and experience as possible. He suggested installation of two fences. An outer wooden post and rail fence would be placed roughly at the outer extent of the canopy. This would stop casual visitors from accessing most of the area around the tree. Natural regeneration of bramble and scrub would ensue, helping to dissuade visitors from entering the canopy area. To allow visitors access to the tree bole the outer fence would turn inwards at the northeast corner to create a pathway into the bole, which would be mulched using chopped bark to prevent foot traffic compacting the ground and hence damaging the roots. The recently installed Bentley Priory Nature Trail takes visitors past this northeast corner, where a numbered post gives access to information about the tree. Thus the majority of visitors to the site will not perceive the outer fence as a barrier at all, but rather as enclosing an inviting route to visit the tree. Nevertheless this mulched pathway will discourage casual fire building, since any fire would no longer be in what is perceived as open ground, but rather in a defined walking route to the tree. Furthermore the chopped bark surface will be an uninviting surface on which to create a fire compared with the present bare earth around the tree. An inner metal fence would run around the bole itself, about 50 cm from the surface of the tree. This will protect the tree from those antisocial visitors who still try to light fires even after installation of the outer fence and the explanation of the danger of fire that will be made on an interpretation panel. Any such fires, although damaging, will at least not

directly abut the bole but lie outside the metal fence. The proposals to protect the Master have been reviewed by English Heritage and Natural England has assented to the works. When this proposal is carried out, it will be necessary to manage the vegetation inside the outer fence to prevent it becoming a copse and young saplings growing up through (and competing with) the crown of the veteran. It will also be necessary to review the gap between the inner fence and the bole of the tree since in time it may be necessary to enlarge the inner fence as the trunk grows.

c) Scrub

Scrub forms a transitional habitat in the succession from open grassland towards secondary woodland, and in many places throughout the grassland compartments, scrub species dominated by common hawthorn, roses and bramble are invading. On the upper slopes in compartments 7 & 15, gorse and broom are more frequent components. Scrub stands vary in extent from relatively large agglomerations including young oak and birch trees, to individual hawthorns and blanketing bramble-stems. Three rare rose species are said to occur here: glaucous dog-rose at its only known Greater London locality, small-flowered sweet-briar and short-styled field-rose. Near boggier ground willows have invaded, together with great horsetail especially towards the central stream valley.

d) Grassland

Most of the site's grasslands have been traditionally maintained by grazing and over the years have received little improvement through the application of artificial fertilisers and reseeding. There is however, an area to the south-east where these practices could have occurred to a limited degree in the past (Compartment 1: Old Lodge Meadow). Otherwise traditional management has maintained a rich diversity of grasses and herbs, with plant communities varying subtly according to underlying strata.

Freely draining acidic soils occur over pebble gravel on the highest slopes. These support a sward dominated by common bent, red fescue and Yorkshire fog. Present too are less common grasses such as sheep's-fescue and wavy hair-grass and a variety of herbs including tormentil, heath bedstraw, heath speedwell, sheep's-sorrel and harebell. Lower down, over Claygate Beds, soils grade between acidic and neutral. Typical species include pignut and pepper saxifrage. There is also a small relict community of the rare adder's-tongue fern. Further down slope the heavy clay soils support a sward dominated by creeping bent and tufted hair-grass amongst others. Many forbs are present e.g. creeping cinquefoil, self-heal, common sorrel, common knapweed, great burnet and sneezewort. Damp grassland near boggier areas is dominated by tufted hair-grass with various rushes including jointed and hard rushes, great willowherb, cuckooflower and wavy bitter-cress. Several young to early-mature coniferous plantations have been planted into the grassland in compartments 5, 7 and 8. Species include Scots pine, Corsican Pine and cypress.

e) Wetland

Wetland habitats include the standing water of Summerhouse Lake and Boot Pond (Compartments18 and 2 respectively), together with the running water of the various stream courses.

A variety of marginal and aquatic plant species occur, around and in Summerhouse Lake e.g. water-milfoil and white and yellow water-lilies. There are two main marsh areas at either end of the lake which support a number of marginal species including reed sweet-grass, reedmace, marsh marigold, yellow iris, gypsywort and great willowherb. Less common are the tussock-sedge, marsh woundwort, square-stemmed St John's-wort and lesser reedmace (possibly planted). These four species are uncommon in Greater London.

Boot Pond is fed by a natural spring and supports a range of wetland plant species. Present are reedmace, cyperus sedge, yellow iris, soft

rush, gypsywort, water forget-me-not and water-plantain. Wet marginal vegetation supports water mint, ragged robin, common marsh-bedstraw, greater bird's-foot trefoil and common spike-rush. Brooklime occurs on muddy margins of the pond.

The site's watercourses are generally heavily wooded and consequently have sparse or no associated wetland vegetation. However, streamside margins beneath some previously coppiced alder, willow and ash woodland do have a little pendulous sedge and fool's-watercress present.

1.3.2 *Fauna*

The site's breeding and visiting avifauna is diverse and reflects the range of habitats within the site. Over the past few decades 83 species of birds have been recorded at Bentley Priory.

Breeding species within mature woodland include all three British woodpecker species, nuthatch, willow tit, tawny owl, tree sparrow, sparrowhawk and the nationally scarce hawfinch which is particularly associated with the hornbeam-dominated stands. Siskin and redpoll are regular visitors to stream and lakeside alders in the winter. The scrub supports linnet, goldfinch, garden warbler, spotted flycatcher, yellowhammer, lesser whitethroat and visiting redwing and fieldfare in the winter. Wetland birds include breeding mallard, coot, moorhen, Canada goose and reed bunting, and visiting grey wagtail, kingfisher, tufted duck, various gulls and grey heron.

The most conspicuous of the mammals is grey squirrel; a large population is present on the site. Rabbits are also frequently seen and are largely responsible for the close-cropped nature of large tracts of grassland. Smaller mammals include wood mice, short-tailed field vole, common shrew, mole and hedgehog. Water voles have been reported from both Summerhouse Lake and Boot Pond but a brief survey undertaken in 2011 failed to confirm their presence. Resident

carnivores include weasel and fox. A summer roost of pipistrelle bats was discovered in the nature reserve in 1983.

Reptiles and amphibians include common frog, common toad, smooth newt, grass snake and common lizard, last seen in 2003. The ongoing "Dragon Finder" project, funded by HLF, hopes to survey for common lizard and, if found, improve the habitat for them e.g. by building refuges and basking areas.

Past anecdotal evidence has suggested fish found in the two water-bodies have included pike, roach, bream and possibly carp (introduced by anglers in Boot Pond). A fish survey that was conducted on Summerhouse Lake by Bedwell Fisheries Services prior to the EA dredging works in 2011-12. It would appear that predation by cormorant may have decimated the number of silverfish. Only 9 roach were caught during the survey (6cm-18cm), together with 3 tench (9cm-20cm), 70 perch (8cm-16cm) and one goldfish (31cm).

The invertebrate fauna has not been studied in any detail. Casual records exist for dragonflies, butterflies and moths. Meadow ant-hills are common on the open grassland areas especially in the north and west of the site.

1.4 Land management

1.4.1 *Historical*

The site's history dates back to the 13th Century. Bentley Priory was the home of the Dowager Queen Adelaide in the 1850's.

Since the estate was laid out, the field system below the Priory House has apparently always been used for grazing deer and cattle and perhaps hay making in the lower fields. There is no record of any period of arable production. Coppice with standards is likely to have

been the traditional management in the older woodland areas e.g. Heriot's Wood. Since the intensity of management has declined, scrub species have been allowed to colonise former open areas from woodland edges and boundary hedgerows. In places secondary woodland has become established and coppice has fallen into disuse with individual 'stools' becoming over-mature.

1.4.2 *Current Management*

a) Grazing:
Approximately 30 head of cattle (Belgian Blues) currently graze the site. These are present from June – November and are allowed to roam freely with the exception of Heriot's Wood (Compartment 6) and Lake Wood (Compartment 16), which are fenced and gated to prevent access. In the latter case, however, an access point at the eastern edge of Summerhouse Lake is provided for cattle.

b) Bentley Priory Nature Reserve Management Committee (BPNRMC):
The Committee meets every two to three months to determine management policy, and to direct the regularly held voluntary working parties. The Committee in conjunction with the Volunteer Warden arranges for up to 10 work days by TCV each year. These work days include coppicing, scrub clearance, watercourse works, pond-bank clearance and ragwort pulling. Additionally the Warden coordinates monitoring of species which visit or inhabit the site. Most recently BPNRMC applied successfully to the Heritage Lottery Fund (HLF) for funding a grassland restoration project at Furze Heath and the Greensward. The £60,000 awarded is currently (2013) being used to remove scrub which is invading grassy plains and inoculating cleared areas with green hay (3.1.1b) as well as funding education projects and recruitment of Assistant Volunteer Wardens.

c) Harrow Nature Conservation Forum (HNCF):

There is a strong interaction between HNCF, Bentley Priory Management Committee and the Voluntary Warden. HNCF manages a number of other important wildlife sites in Harrow. This allows a coordinated approach and continuity of management of the borough's wildlife sites whilst facilitating an exchange of resources and experience. HNCF have produced a new site leaflet for Bentley Priory and have been involved in designing and laying out a nature trail funded through Harrow Council's Green Grid initiative.

d) Friends of Bentley Priory:

In liaison with the Volunteer Warden the Friends organise 1 or 2 work days for members each year. The Friends of Bentley Priory facilitate projects to improve the Reserve. Recent projects have included seating, tree planting, scrub clearance etc. Most recently the services of arboriculturalist Russell Ball have been employed to find the best way of maintaining the veteran Master Oak near Summerhouse Lake. The Friends also produce the Four Seasons Newsletter.

e) Environment Agency (EA)

Summerhouse Lake has been classified as a 'reservoir' because of the large quantity of water it retains and as such falls under the Reservoirs Act 1975[‡] under which the EA are the regulatory authority.

Since 2004 the EA have had operational interests in Bentley Priory regarding Summerhouse Lake dam wall and the spillway. It also has an access agreement and permissive powers to carry out work with agreement but no duty to do so. In 2004 the dam to the south of the Lake was heightened and lengthened. Additionally, EA acquired easement to an extended footprint around the area occupied by the

[‡] The Reservoirs Act applies to any water body that has the capacity to hold over 25,000 cubed metres above the invert level of the downstream channel.

present lake likely to be flooded, in the event of a major flood, as part of the Silk Stream Flood Alleviation Scheme. Major removal of leaf litter in the lake and associated works were undertaken over the winter period 2011-2012 to increase its capacity to handle a major flood event.

As a reservoir Summerhouse Lake requires regular statutory inspections by the EA to ensure that the lake and its dam remain safe and that it is able to action any required response. The lake levels are continually monitored - if unusual water levels are measured an alarm is raised within the Agency. Depending on the cause of levels change action on site may then be needed with heavy equipment (or at least a lorry equipped with a grab). At present the only access the EA has to the site is from Clamp Hill in the west, via Lower Priory Farm. Part of this access is along a track bordering the southern edge of a wooded area within the SSSI and is only just wide enough for Land Rover sized vehicles. There are trees on both sides some of which would be lost if it was to be widened sufficiently to be safely used by heavy goods vehicles. Therefore an alternative route to Summerhouse Lake from the public highway is planned and likely to proceed during the period of this management plan. This route is 225m long and runs from the north end of Masefield Avenue across grassland to the short length of track that already runs from the grassland to the Summerhouse Lake control structure and spillway. The route closely follows an informal (sometimes muddy) route used by walkers.

f) Harrow Council

The Council has overall responsibility for the site. It maintains the infrastructure, i.e. paths, signage, fencing as well as carrying out more extensive works including woodland and grassland management.

Harrow Council has provided seating and signage at key entrance points. A circular walk taking in other open spaces in the vicinity passes through the site, while the recently created nature trail guides the public through the site and describes points of ecological interest. The signboards waymarking these routes also have an interpretative role, highlighting the most important points of ecological interest.

2. Analysis and Establishment of Management Aims

2.1 Evaluation of Important Features

A number of locally important features which are crucial to the management of this site have been identified:

a) Unimproved grassland

Neutral to acidic unimproved (species-rich) grasslands of the Bentley Priory's upper and middle slopes are the most regionally-restricted of the site's habitats: Acid grassland constitutes about 0.82% (1,300 ha) of the surface area of Greater London and 1.1% (56.2 ha) of the surface area of Harrow. Other unimproved (neutral) grassland in Harrow accounts O.54% (27.3 ha) of the borough's surface area – the coverage of this type of habitat in Greater London is currently unavailable.

Acid grassland is a London Biodiversity Action Plan Priority Habitat and included in the Harrow BAP under 'Grassland'.

Towards the south-eastern end of the site the quality of the grassland has deteriorated in terms of its ecological interest owing to a degree of past agricultural improvement, although species diversity still remains relatively high.

The grasslands contain several nationally and regionally uncommon plant species, including adder's-tongue, pepper-saxifrage, eyebright, great burnet and betony. Invertebrate interest of these grasslands has not been studied in any detail but is probably of significance.

b) Ancient woodland

Heriot's Wood together with Lake Wood (east) is the largest area of Ancient Woodland in Harrow. Ancient woodland is land that has had a continuous woodland cover since at least 1600 AD. Before this, planting of new woodland was uncommon, so a wood present in 1600 is likely to have developed naturally. In some cases there could be a link with the *wildwood*; the primeval forests which once covered most of Britain after the Ice-age. Once destroyed ancient woodlands cannot be recreated.

Ancient woodland (not converted to plantation) is a rare habitat nationally, regionally and locally: it accounts for only 1.57% (205,000 ha) of the surface area of England, about 1.6% (2,500 ha) of the surface of Greater London and only about 0.4% (20 ha) of the surface area of LB Harrow with most of this occurring in Herriot's, Pear and Weald Woods. Woodland is a London and Harrow LBAP[§] habitat.

c) Secondary woodland and scrub

The secondary woodland of Bentley Priory with its stands of oak, hawthorn and other trees and shrubs is of borough significance in Harrow. It supports a variety of birds and invertebrates. However, if unchecked these wooded areas will continue to invade regionally important unimproved grasslands – a careful balance needs to be struck. Woodland (including secondary) is a London and Harrow LBAP habitat.

[§] LBAP = Local Biodiversity Action Plan

d) Old and Veteran trees

Woodland is a broad habitat acknowledged as of Principal Importance in England[**] under which 'Wood-pasture and Parkland' is a sub-category - this includes veteran and other trees of general antiquity; additionally, the London and Harrow LBAPs includes 'Veteran Trees' in their respective 'Woodland' categories. The inclusion of old and veteran trees in local, regional and national processes reflects the overall high biodiversity value of these features.

A number of trees dotted around the site are between 100 and 200 years in age including old hawthorn, hornbeam and oak. Most notable, however, is the Master Oak immediately west of Summerhouse Lake (Figure 3). The age of this pollard is estimated to be between 350 and 500 years and is the oldest tree in Harrow as well as of note in Greater London.

e) Dead wood

Dead wood of all types, but particularly standing is a valuable habitat and asset for a variety of fauna. For example, woodpeckers, nuthatch and treecreeper are often dependent on this resource for foraging and nesting. Additionally, many insects including Nationally Scarce species are associated with dead wood. Many species of fungi are completely dependent on dead wood.

f) Standing and Running water

Many rivers and streams within Harrow are buried (piped) and there are no large water courses in the borough although tributaries of the rivers Brent, Crane and Colne rise in the area and are regarded by the Environment Agency (EA) as primary/main rivers. Additionally, many Harrow watercourses flow through concrete channels and as a result are of limited biodiversity value. Only about 0.25% of the borough's surface area is attributed to 'running water' and similarly 0.5% to

[**] Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 - Habitats and Species of Principal Importance in England

‘standing water’. Running and standing water are Harrow LBAP habitats.

The Stanburn, a seasonal tributary of the Edgware Brook, rises from springs at the northern end of Bentley Priory SSSI and flows southwards to Summerhouse Lake. South of the lake it is joined by other streams that rise outside the site’s boundaries. Summerhouse Lake itself is the largest body of open water in LB Harrow. Together with the much smaller Boot Pond these water-bodies add an interesting aquatic element to the ecology of the site. Both bodies of water support a number of marginal and emergent species of plant, some of which are regionally uncommon. Additionally, Summerhouse Lake is believed to be visited by water voles. Both lakes support (mostly common) waterfowl and Odonata (dragonflies and damselflies).

g) Marsh

Marsh of any description is a rare habitat in Harrow and Greater London. It accounts for only 1.6% (272.5 ha) of the surface of Greater London and only about 0.11% (5.5 ha) of the surface area of LB Harrow.

There is a small marsh area to the north-west of the site (Compartment 15a), two main marshy areas to the north and south of the Summerhouse Lake and a strip of marginal vegetation which surrounds Boot Pond.

h) Ivy-clad trees

Ivy is a valuable resource during the autumn and winter months providing a late source of nectar for insects and foraging and shelter for birds at a time of year when deciduous trees are dormant.

2.2 Site Potential

2.2.1 *Ecological interest:*

Through positive conservation management, the opportunity exists to increase the total area of open grassland habitat whilst maintaining the variation and quality of the overall habitat mosaic. This will potentially increase the size of individual populations of constituent species, including the rare and uncommon ones, thereby lessening their vulnerability to local extinction through overgrazing, undergrazing, scrub invasion or maturation.

In woodland, reinstatement of traditional management in selected areas would enable these to support the large and diverse numbers of dependent plants and animals associated with coppiced woods. Alien species control in areas worst affected would promote the regeneration and recovery of native species as dominants in the canopy, where this has ceased to be the case. It must be stressed however, that continued management of a significant proportion of woodland as high forest is essential in order to maintain the full range of existing habitats within the site.

Open water areas, especially Summerhouse Lake, have the potential to become much richer ecologically. Over the years the lake's aquatic flora has shown an ongoing but gradual decline in species diversity. The build up of silt was suspected as a major cause of this deterioration. In the past silting from the inflow streams was controlled by silt-traps but these have not been emptied for a number of years. Over the winter period 2011-2012 the Environment Agency had dredging conducted directly from the lake. However, what was removed was mostly decaying leaf-litter (with relatively little silt). Overhanging trees and shrubs bordering the lake are responsible for this accumulation as well as casting shade over its margins, both of

which will have a detrimental effect on flora. Thus, a continued programme of dredging[††], coupled with controlled tree and shrub thinning/removal at the lake's edge, are likely to have a positive impact on its aquatic flora.

2.2.2 *Recreational and Educational facilities:*

Access to interpretation centre with classroom and toilet facilities would be an asset for the site. Access for the disabled, push-chairs and older people might be improved. Some waymarking and interpretation now requires renewal. Interpretation should not only the site's ecological significance but also historic designed landscape and heritage at risk. The provision of up-to-date facilities would help to fulfil the potential for the site's controlled use as a formal and informal educational resource for the study of natural sciences at all levels. The appointment of a full-time warden with managerial and interpretational responsibilities for the whole site would also assist in the realisation of this potential.

2.3 Management Objectives.

Broadly, management should:

- Maintain the favourable condition of all four special conservation interest units comprising Bentley Priory Site of Special Scientific Interest;
- reflect relevant species and habitat targets set in Biodiversity Action Plans (BAPs) applicable to the area;
- consider the Grade II Listed Park and Garden status of this site and its registration with English Heritage as 'Heritage at Risk';
- promote appreciation of site's heritage and biodiversity by the public.

Management at Bentley Priory should aim to achieve the following objectives:

[††] There is no established program of works or duty put upon the EA to continue this activity.

a) To maintain and improve the general quality of the habitats present and to preserve the overall mosaic nature of the site
b) To increase the area of grassland in compartments 7, 8, 10 & 15 and to enhance its quality where this has suffered overgrazing or scrub invasion
c) Effect the exclusion of cattle from the most important woodland areas (see 2.1 above)
d) Reinstate appropriate coppice and pollard, or high forest management in woodland
e) Ensure an adequate quantity of dead wood microhabitats, both standing and fallen
f) Maintain ivy-clad trees and banks wherever it is safe and applicable to do so
g) To control/eradication of invasive species (listed under Schedule 9 of the W&CA) and other invasive/pest species.
h) Deter littering on site and removal of rubbish/fly-tipping as and when required
i) Maintain/improve standing and running water habitats associated with the Summerhouse Lake, Boot Pond and streams and seek to achieve improvements in water quality where appropriate
j) Effect specific conservation measures for certain rare and uncommon species, where required
k) To improve access, recreation and interpretative facilities, and to encourage the continued biological recording of the site

2.4 Rationale

The balance of scrub and grassland communities depends on the type and level of management:

Over the years scattered trees, scrub and aggressive weeds have taken over previously important grassland communities particularly in the central area (compartments 7 and 8b especially) and have now progressed far beyond the boundaries of old thickets and ancient woodland edges situated within these areas. Large swathes of species-rich grassland have been colonised and lost and now require considerable capital work to be restored which should be an aim of this management plan.

Conversely, an analysis of (estimated) scrub coverage for Compartment 15 was performed using aerial photography conducted in 1994 (Figure 5) and 2010 (Figure 6). The same grid was superimposed over each aerial photograph in order to facilitate estimation of scrub coverage. The results suggest that areas of major scrub and trees cover about 60% of the compartment having not significantly changed over the 16 year period (in fact there might be some reduction). Anecdotal evidence suggests it is light scrub, bramble and tall herbs which have increased (not so easily discernable from aerial photographs). Although some work on light scrub and tall herbs is required, in this location the mosaic of scrub, tall herbs and species-rich grassland is controllable and has been held (more or less) in a state of equilibrium. Such habitat mosaics are of great value to a range of wildlife – thus, current management of this area should continue.

Traditional woodland management has not been undertaken in the ancient woodland areas of the site, on any significant scale, for many years. Evidence for this is seen in the neglected state of the coppiced and pollarded trees which are long overmature. Regeneration during this period of neglect has

resulted in a proportion of densely-spaced early mature maiden trees (mostly oak, hornbeam, birch and sycamore) in such areas.

Neglected coppice becomes less diverse both structurally and in its species complement. This happens as the former mosaic of differently-aged regrowth (from the open shrubby growth of newly-coppiced compartments to closed canopy) becomes replaced by an increasingly even-aged stand. Cessation of management also allows formerly coppiced (or pollarded) stools to become top heavy and often break apart in the process. Another cause of both structural and species loss is the undergrazing and poaching of ground flora by livestock.

Scrub, high forest woodland and open water are all important habitat-types at Bentley Priory essential to the overall habitat mosaic of the site and attempts to increase the area of grassland, reinstate coppice management, etc. must be mindful of the need to maintain sizeable areas of these habitats essentially undisturbed.

Invasive introduced shrubs and trees e.g. rhododendron, cherry laurel, sycamore and horse-chestnut, threaten to exclude native species especially around Summerhouse Lake. These require control and possible replacement with suitable native species (sourced on site). It is not just plant species which can become a problem: the stocking of Boot Pond with fish is felt to be responsible for the decline in amphibian populations; grey squirrels and the occasional visits of muntjac deer can damage regenerating coppice, and this will require careful monitoring.

The stream running through Heriot's Wood appears at times to be grossly polluted. This influences the local ecology by encouraging the growth of stinging nettle along the stream margins, possibly to the exclusion of other ground flora species and associated invertebrate populations. Recreationally, this may also constitute a public health hazard. The EA should be approached to investigate /prosecute those for causing pollution incidents – and hold other organisations to their responsibilities.

Certain plant and animal species present are of rare to uncommon status nationally or are regarded as of Species of Principal Importance in England. These include the Marsh Stitchwort, a hoverfly *Pipizella virens*, Lesser Spotted Woodpecker, Song Thrush, breeding hawfinch and hedgehog. A number of bat species i.e. common, soprano and nathusius pipistrelle, noctule and Daubenton's are also recorded, these are 'European Protected Species (EPS), protected under Regulations 40 and 41 of the Conservation of Habitats & Species Regulations, 2010.

The rationale for improving access, recreational and interpretative facilities is provided above (see 2.2.2). Biological recording is an essential and on-going requirement in order to continue to build-up detailed knowledge of the site's ecology. Monitoring of vegetational and faunal changes is necessary to enable adjustments to be made to the management objectives. Local naturalists should be encouraged to assist in these activities.

2.5 Management Constraints

Finance may be an important factor limiting management of this site. All sources of grant aid for such projects should be thoroughly researched and the necessary applications made.

There are several foreseeable problems with the proposed reinstatement of coppice and pollard management. Coppicing is a repetitive process and disposal of the timber each time it is cut may be a problem. Although a certain proportion of timber could be used on site (dead wood "microhabitat" piles, fencing, incorporation into "dead hedges", rustic furniture, bank supports and simple bridges, etc.), regular outlets for the coppiced hornbeam and other timber will still have to be investigated e.g. chipped and used in local authority parks and as 'green energy' fuel for wood chip boilers.

The initial response of members of the public to coppicing in compartment 6 may be negative. People may see tree felling as inherently destructive, and an act that kills beautiful trees. Efforts will need to be made to make the public aware of the reasons for and advantages to coppicing, including the benefits for nesting birds and attractive ground flora. Publicity will stress that the trees are not killed; indeed, coppiced/pollarded trees often outlive untreated trees, as the example of “The Master” shows. Outreach efforts could include posters displayed for a few weeks at the site of scheduled coppicing before the work commences articles in “Four Seasons”, the newsletter of the Friends group, and face to face contact. The recently designed nature trail leaflet indeed specifically describes coppicing work in compartment 6 and its rationale.

3. Management Prescription

3.1 Grassland & Scrub [Compartments 1, 4, 5, 7, 8, 10 & 15]

3.1.1 General:

a) Grazing: Some scrub cutting is required in all of the grassland compartments to a varying degree although in parcels 1, 4, 7a and 8a this minimal. Elsewhere, inadequate grazing has permitted scrub to invade. The current stocking level itself is probably adequate but more robust cattle (e.g. longhorn) with catholic grazing attributes are really required to handle the regrowth of bramble and scrub. For example, an optimum number of longhorns might be 30 to 35. Additionally, cattle tend to graze the areas most convenient to them. Thus further partitioning of the site should be investigated with a view to confine stock to less-grazed compartments (8b, 7, 10 and 15) whilst resting those more readily frequented. A more detailed plan for the rotation of stock between compartments is required, and permanent quadrats could be set up in each of the grassland communities (e.g. in compartments 10, 15, 7a & 4), in order to monitor changes in the composition of the sward. The optimum grazing regime for the different communities might then be discussed. Mowing may be an option if cattle cannot be persuaded into certain areas of scrubbed-up compartments. The unevenness of the ground caused by ant-hills may be problematic here, although brush cutters are suitable for this.

Fences should be monitored for breaches annually before cattle return and mended as necessary.

Generally Meadow areas should be cut once per year in late August-early September. Arisings should be fed to cattle or alternatively left on the ground for 3-5 days and then gathered up and taken off site. This

mowing regime will remove invading scrub and trees and encourage floral diversity by lowering the organic matter returning to the soil and allowing for seed/invertebrate dispersal pre and post mowing.

b) Scrub cutting: The mechanical removal of scrub where necessary should be selective, requiring a distinction to be made between "young" and "mature" scrub based on the size and age of constituent trees and shrubs, and on the paucity of relict grassland beneath them. Blocks of recently-established 'young' scrub where there is still a grassland flora should be removed using strimmers or with hand-tools. The cut stumps of young shrubs may require treatment with a glyphosate (or other permitted) herbicide to prevent regeneration. However, if any such work needs to be undertaken within one metre of watercourses or lakes the Environment Agency's permission must be obtained - there is a form that needs to be filled in: *Agreement to use herbicides in or near water*[‡‡]. Mature scrub of dense hawthorn, blackthorn, bramble and young trees which has completely lost its ground flora should be cyclically cut-back and left to regrow on a 5-10 year rotation, to substitute for the younger, completely cleared scrub. A Forestry Commission (FC), Licence to Fell (FCCS321)[§§] might be required if more than 5 m^3 of timber are to be removed in any one season. The FC should be consulted if there is any doubt. Bare patches thereby exposed might be temporarily fenced from grazing stock and resown using "green hay" cut from nearby flower-rich grassland. In this way, a mix of scrub age-ranges can be maintained in combination with a net gain in the area of grassland. This is particularly important where scrub forms a marginal zone between grassland and woodland, as a graded "woodland edge" is extremely beneficial to certain invertebrates and nesting birds.

[‡‡] Form AqHerb01: Agreement to use herbicides in or near water. http://publications.environment-agency.gov.uk/pdf/GEHO0110BRZI-e-e.pdf

[§§] For more information visit this website: http://www.forestry.gov.uk/forestry/infd-6dfk86

All scrub and tree work should be conducted during late autumn/winter (optimum January-February).

c) Control of invasive weed species listed under Schedule 9, Part 2 of the W&CA[***]: There are clumps of Japanese knotweed west of Bevan's Marsh adjacent to the site boundary (Figure 3). It is possible too that this invasive weed will occur elsewhere on site. Spot treatment with glyphosate herbicide is recommended – 3 individual applications during May through July and in subsequent years as required. If it were to occur near a watercourse (or indeed other bodies of water) the site owner (Harrow Council) must fill in an Agreement to use herbicides in or near water (Form AqHerb01) issued by the Environment Agency and its approval received in writing.

Himalayan (aka Indian) balsam is present at West Spring in Compartment 15, and at the northern border as the drainage enters from the ex-MOD site. It is possible too that this invasive weed will occur elsewhere on site. Hand-pulling before seeding (May to June) is recommended. The plant has a shallow fleshy root system that can be easily pulled-up. An advantage of hand-pulling is the certainty that the plant will not regrow and there is no risk of pollution. However, it is potentially very labour intensive (and consequently can only be carried out on small areas). This method lends itself to utilising volunteer support.

3.1.2 Specific:

a) Compartment 1: Scrub encroaching at the north and western boundary of the area needs to be cut-back (bearing in mind 3.1.1b). Control of creeping thistle is difficult and requires repeated cutting or pulling (before setting seed). If required the use of an appropriate herbicide (currently glyphosate) may be applied by certificated operatives. Bramble can be controlled by cutting, preferably using

[***] Section 14(2) of the Wildlife & Countryside Act 1981 (as Amended) prohibits 'planting' or 'causing to grow' in the wild of any plant listed in Part 2 of Schedule 9

loppers/pruners to cut just below ground level to excise the growing point.

b) Compartment 4: Peripheral scrub requires control and needs to be cut-back (particularly that encroaching at the northern boundary).

c) Compartment 5: More mature trees in this area should be managed by non-intervention except where there are safety concerns. Young conifers should be removed.

d) Compartment 7: Secondary woodland and scrub has spread far from the old/ancient woodland edges and thickets (indicated on maps 2, 4 and 7) at the expense of species-rich grassland. These more recent wooded areas should be opened up. Selected semi-mature trees (not veterans) can be retained and ring-barked (monolithed if safety is a concern). Bare patches thereby exposed might be temporarily fenced from grazing stock and resown using "green hay" cut from nearby flower-rich grassland.

The view across the London Basin from the top of Furze Heath to Box and Leith Hill should be maintained by scrub and tree clearance as required.

e) Compartment 7a: Meadow area should be cut if grazing proves to be insufficient.

f) Compartment 8a: Peripheral scrub should be cutback and then managed as per the proposal by Salix Ecology dated November 2012 (Appendix 3).

g) Compartment 8b: Secondary woodland and scrub has spread far from the old/ancient woodland edges and thickets (indicated on maps 2, 4 and 7) at the expense of species-rich grassland. These more

recent wooded areas should be opened up and then managed as per the proposal by Salix Ecology dated November 2012 (attached).

h) Compartment 10: This area has become progressively more scrub covered over the years – it is recommended that one third of the scrub in this area is removed over the following five years.

i) Compartment 15: This is a very important compartment, both botanically and for birds. It contains many interesting plants. Scrub invasion threatens the flora, and its control needs to continue, both in existing areas (where there is regrowth) and new areas. Wooded areas (particularly to the west and south) require bays and islands of open habitat to be created within their fabric. There is a spring on the western side (Figure 3), which has suffered encroachment by trees and shrubs and has recently (2012-13), been opened up as wetland species were being squeezed out. This has given access to a significant stand of Himalayan balsam which now requires attention. New growth of trees, shrubs and bramble scrub should be controlled elsewhere. Where appropriate, stumps should be treated with (glyphosate) herbicide to inhibit regrowth.

There needs to be a concerted effort to clear ragwort in this area. Although it is quicker to cut the heads off prior to flowering this not particularly effective as removal will extend the plant's lifespan from a biennial to a perennial. Pulling is more effective but it needs to be done earlier in the year before the roots of the plant have become well establish and before the soil gets baked hard. Fragments of roots can develop into new plants. Selective spraying with herbicide (e.g. glyphosate using a knapsack sprayer) is more effective but this must be done carefully to avoid other plant species and applied in the rosette stage (i.e. before flowering) when growth is most vigorous. Reapplication may be required later in the year. The use of 'Lazy Dog' weed removal tools is currently being trialled as part of the Furze Heath and Greensward grassland restoration project and might offer a no

chemical (but still labour intensive) solution. Ragwort infestation is covered by the Weeds Act 1959 and The Ragwort Control Act, 2004. Thistle populations need to be monitored and reduced if expanding, e.g. with weed wiping with gyphosate or use of Lazy Dog weed removal tools.

There is a (locally listed) pill box to the north of the site. It is proposed the entrance is closed off with blocks (which act as thermal insulation) and the building maintained as a potentially bat roost. This will also reduce the likelihood of anti-social usage.

j) Adder's-tongue is found in a restricted area within compartment 15. There is a danger that this rare fern will be out competed by knapweed and other more vigorous plants. Grazing by cattle and rabbits that keeps the sward low will help retain and encourage the adder's-tongue. Glyphosate treatment of knapweed might be necessary. The number of individual adder's-tongue plants should be monitored on an annual basis in the period mid February to end March, so that success in maintaining and enlarging this population can be monitored quantitatively. The total area in which the population resides should also be measured. If the population is declining, expert opinion should be obtained and remedial action taken.

k) Compartment 15a: Bevan's Marsh and the Dragonfly Pond to the north need periodic strimming to remove bramble and young trees. The build up of silt and decaying vegetation will need removal from time to time to help retain water and hold back succession - no more than 50% of the area should be so treated every other winter. Additionally, this area would benefit from a modest increase in depth and area although this is currently not a priority.

3.2 Woodland [Compartments 3, 6, 11, 13, 14, 16 & 17]

3.2.1 General:

a) Minimum intervention: Generally, woodland and trees will be maintained via minimum-intervention over the period of the management plan with the aim of maintaining or producing a high forest structure. Mature trees should only be removed and/or subject to tree surgery:

   i. to improve woodland structure and light penetration (concentrating primarily on non-native species); or
   ii. If invasive e.g. sycamore and Norway maple; or
   iii. where there are concerns regarding health and safety of site users

b) Coppicing: In the case of Compartment 6 the aim should remain to re-convert the young hornbeam woodland into coppice-with-standards as expressed in earlier management plan incarnations (see 3.2.2b below).

c) Dead wood: should remain on site within wooded areas as these constitute valuable habitat for certain invertebrates, fungi, birds and mammals. Standing dead wood (e.g. monoliths) must be considered where safe to retain. Larger trunks and branches can remain *in situ* providing they do not compromise access or the health and safety of site users. Smaller logs should be used to construct loggeries for stag beetles[†††] or stacked in habitat piles. Brashings, not used on site, should be chipped and utilised in local authority parks or as 'green energy' fuel for wood chip boilers.

[†††] English Nature/London Wildlife Trust. Stag Beetle: An advice note for its conservation in London. http://www.wildlondon.org.uk/LinkClick.aspx?fileticket=5mFAexmixeM%3D&tabid=176&mid=1207&language=en-GB

d) Veteran trees: To ensure continuing safety and health of veteran trees checking on a regular basis (every four years) is required and any necessary tree surgery undertaken.

e) Ivy: should not be cut-back or cleared from trees unless it is likely to cause instability during windy conditions, which may lead to tree fall and pose a significant safety risk to site users. Additionally, ivy covering the ground should be cleared if it is adversely impacting on delicate woodland ground flora (e.g. ancient woodland indicator species such as bluebell, wood anemone and wood speedwell).

f) Invasive trees and shrubs: Sycamore and other invasive non-native trees and scrub of cherry laurel and Rhododendron should be cut-back to stumps in agreed areas to help diversify ground flora. Holly should be selectively removed from woodland areas. Timber so removed should be stacked in habitat piles together with any natural debris. If necessary the excess brashings should be chipped and could be used in local authority parks and as 'green energy' fuel for wood chip boilers. To prevent regeneration, stumps should be painted with glyphosate herbicide. If near water, the Environment Agency must be approached by the site owner (Harrow Council), which must fill in an Agreement to use herbicides in or near water (Form AqHerb01) and only undertake work when in receipt of the EA's formal approval in writing. Rhododendron is listed as an invasive weed under Schedule 9, Part 2 of the W&CA[‡‡‡]

Control of invasive weed species listed under Schedule 9, Part 2 of the W&CA[§§§]: There are clumps of Japanese knotweed immediately adjacent to Deer Path in compartment 6. It is possible too that this invasive weed will occur elsewhere on site. Spot

[‡‡‡] Section 14(2) of the Wildlife & Countryside Act 1981 (as Amended) prohibits 'planting' or 'causing to grow' in the wild of any plant listed in Part 2 of Schedule 9

[§§§] Section 14(2) of the Wildlife & Countryside Act 1981 (as Amended) prohibits 'planting' or 'causing to grow' in the wild of any plant listed in Part 2 of Schedule 9

treatment with glyphosate herbicide is recommended – 3 individual applications during May through July and in subsequent years as required. If it were to occur near a watercourse (or indeed other bodies of water) the site owner (Harrow Council) must fill in an Agreement to use herbicides in or near water (Form AqHerb01) issued by the Environment Agency and its approval received in writing.

All tree and scrub removal work should be undertaken between November and February wherever possible.

3.2.2 Specific:

a) Compartment 3: This is to be managed by minimum-intervention. Construction of a board-walk, across boggy ground to the north of the parcel, requires investigation.

b) Compartment 6: Reinstatement of woodland management should aim to re-convert much of this compartment into hornbeam/hazel coppice with occasional oak standards, with standard trees contributing around 50% cover (made-up primarily of existing mature standards, and any deficit of younger maiden trees). The compartment must be sub-divided into parcels of a suitable size to be cut in successive years over a 12-15 year cycle subject to review, (either 1/15th per year or 1/7th every two years).

In the north of the compartment, birch requires thinning (leaving approximately 1 in 10 trees) and restocking with oak, hazel and hornbeam 'whips' transplanted from elsewhere on the site if available. If these are hard to come by, 'layering'[****] might be tried.

Sycamore and Norway maple should ideally be controlled by pulling seedlings and saplings (which are easy to remove) which might

[****] Layering is a means of plant propagation in which a portion of an aerial stem grows roots while still attached to the parent plant and then detaches as an independent plant.

otherwise grow to seed-bearing trees and periodically cutting down more mature trees and subsequently treating the stumps with glyphosate herbicide. Mature horse chestnut and Common Lime should be ringbarked and left as standing dead timber.

Rhododendron occurs sporadically here and will require repeated cutting back and treating with herbicide. Older specimens of less invasive exotic trees ought to be left simply for their aesthetic qualities.

Holly and scrub particularly in the south of the compartment requires control and must be regularly cut-back. Scrub clearance should be extended to include the banks of the stream to encourage marginal and emergent flora.

c) Compartment 11: This is to be managed by minimum-intervention to encourage a high forest structure. If new glades are required the felling of non-native species is strongly suggested. A new bridge is recommended to facilitate crossing the stream, which cuts across the centre of this area and is at present crossed on the remains of Victorian brickwork of uncertain strength.

d) Compartment 13: This is to be managed by minimum-intervention to conserve the existing high forest structure. Management should include the control of sycamore and other invasive species (including yew in this compartment). A new sleeper bridge is recommended to cross the stream which runs through this area.

e) Compartment 14: This is to be managed by minimum-intervention to encourage a high forest structure. Management should include the control of sycamore, rhododendron and other invasive species. The area in the vicinity of the Master oak has recently been cleared – the new open area (which extends into compartment 15) should

be managed so as to maintain good views of the Master, although some regeneration of bramble and other scrub may be appropriate to discourage picnicking and fire lighting in the close vicinity of the tree. If new glades are required the felling of horse-chestnut or other non-native species is strongly suggested.

The condition of the Master Oak has recently been assessed by Russell Ball of Arbol EuroConsulting. In his report dated 11th September 2012 he recommends a number of measures to protect the tree, which has recently suffered damage from fires. In particular, he proposes that the tree be protected by two fences. A metal fence would be built close to the trunk while a wooden fence approximately 15 metres out from the trunk would define an exclusion zone where current soil impaction would slowly reverse. A mulched, fenced walkway would allow the public to approach and touch the tree. At present the Friends of Bentley Priory are investigating possible sources of funding for this project. If this proposal is carried out, it will be necessary to cut the vegetation inside the outer fence on a 3-5 year cycle to prevent it becoming a copse and young saplings growing up through (and competing with) the crown of the veteran. At the same time the gap between the inner fence and the bole of the tree should be checked; in time it may be necessary to enlarge the inner fence as the trunk grows. Any vegetation which starts to accumulate within the inner fence should be removed at the same time. The gap between the inner fence and the bole of the tree should be checked for rubbish on a weekly basis and any material removed promptly.

f) Compartment 16: This should be managed by minimum-intervention to conserve the existing high forest structure. To achieve this aim it may become necessary to open up the canopy to encourage the recovery of the ground flora. Management should include the selective removal of mature exotic and introduced trees and shrubs (and possibly some yew) as directed by the Biodiversity

Officer (or other suitably qualified ecologist) and agreed by the management committee. Stumps should be treated with a glyphosate herbicide.

g) Compartments 16 and 17b: The clearance of trees and rhododendron along the western side of the lake, e.g. in and near site of old Summerhouse, should continue.

h) Compartment 17: Rhododendron is to be cleared from this compartment. A staggered method of removal (over the five year period of this management plan) needs to be applied with stumps being treated with glyphosate herbicide. This is to be undertaken in a considered manner: as clearance takes place dog rose and field rose (sourced on site) should be planted, replacing the Rhododendron. The aim should be to maintain a dense cover of vegetation leaving no part of the compartment unnecessarily open.

i) Compartment 11 (running into compartment 1): This compartment suffers from vandalism and fly tipping. To reduce the problem of fly tipping, especially of large appliances, replace boundary fence with metal security fencing, using metal bollards to restrict width at entrance from Chenduit Way.

3.3 Wetlands [Compartments 2, 9, 17a & 18]

3.3.1 General

a) It is important to remember that dredging in any of the wetland compartments should be undertaken in autumn or winter, when the aquatic fauna is largely dormant. Large volumes of dredgings should be removed from the site immediately. Small volumes of dredgings may be piled on the banks where marginal vegetation is sparsest and left to drain before removal. It is recommended that only part of a water-body should be dredged in any one year (bearing in mind the Compartment 18 is the responsibility of the Environment Agency.).

b) Shrub and tree removal should take place over the winter period. Cut stumps of young shrubs may require treatment with a glyphosate herbicide to prevent regeneration. However, if any such work needs to be undertaken next to watercourses or lakes the Environment Agency's permission must be obtained - there is a form that needs to be filled in: *Agreement to use herbicides in or near water*[††††].

3.3.2 Specific

a) Compartment 2 (Boot Pond): Some browsing of marginal vegetation occurs. It is worth remembering that at present levels, this activity is actually beneficial to both floral and invertebrate diversity. Nevertheless the situation should be monitored in case of over use. Pond dredging may become necessary at the southern end where banks are overhung by poplars, willows and alder. Leaf litter input from these should be curbed by cutting back on a regular basis (every 4-6 years).

[††††] Form AqHerb01: Agreement to use herbicides in or near water. http://publications.environment-agency.gov.uk/pdf/GEHO0110BRZI-e-e.pdf

It is proposed that the western arm or toe of the 'boot' of the pond is separated from the main pond by timber shuttering (or similar) backfilled with gravel, sand and planted with reeds and other appropriate marginal plant species (Natural England and English Heritage will need to be consulted). The water level of the toe should also be shallower to make it a seasonal water-body. Appropriate marginal planting should also take place around the edges of the toe. This would make the new area unsuitable for fish and friendlier for amphibians which may use the site. This habitat creation project is to be conducted in collaboration with Froglife (the reptile and amphibian charity) as part of its 'Dragon Finder' project‡‡‡‡.

b) Compartment: 9: alder dominated area and surrounds**:** This is primarily an interesting area of alder woodland. It would be useful either to remove (or at least to coppice) most or all the sycamores and horse chestnuts each side of the alder-dominated marsh. Horse chestnuts in particular give dense shade to the ground beneath and so can be damaging to the marsh ecology. Some of the bushy willows on the banks could also be coppiced, to increase light levels further. The alders themselves could be coppiced in rotation in the longer term.

c) Compartments 17a and 17b: Coppicing of bankside trees along the watercourse will promote the development of marginal vegetation where this presently outshaded. The periodic pollution of the stream is most likely caused by a leaking sewer (running from the ex-RAF site) or illegal connection. The utility company responsible for the sewer should be established as it is tasked with providing/ensuring suitable and operational infrastructure and good service (or the riparian landowner when it applies). The EA should

‡‡‡‡ Dragon Finder is the new flagship project from Froglife. It brings together practical conservation, surveying, data collection and interactive educational activities, to help conserve reptiles and amphibians in the UK.

be approached by Harrow Council or Bentley Priory Nature Reserve Management Committee to investigate /prosecute those for causing pollution incidents –and hold other organisations to their responsibilities.

d) Compartment 18 (Summerhouse Lake): Over-shading and leaf-litter input into the lake should be combated by regular coppicing of the bankside trees, especially on the northern and western banks. Consideration should be given to opening up selected areas in order to restore views to and from the lake. Where ancient woodland is indicated at the southern and eastern margins (Figure 7) care should be taken not to destroy the woodland fabric and character, although coppicing/pollarding of selected specimens might be applicable.

Due to its status as a 'Reservoir' dredging of silt and removal of leaf litter was undertaken by the Environment Agency over the winter of 2011/12. Such a process may provide the only real long-term solution to the continuous reduction in effective water depth.

The northern marsh should not be allowed to encroach further into the open water of the lake. The marsh should be monitored and if it shows signs of drying out, it might be cut-off from the bank by digging a network of ditches emanating from the two feeder streams.

The southern island should be maintained in its current state as a refuge for waterfowl. Therefore the depth and width of the channel separating it from the bank requires monitoring and dredging when necessary.

3.4 Five-Year Management Plan: Schedule and Summary of Projects

Compartment	Project	Notes	Priority	Year (April-March)					Timing	Paragraph
				1	2	3	4	5		
1, 4, 5, 7, 8, 10 & 15	Grazing		1	Y	Y	Y	Y	Y	May through September	3.1.1a
1, 4, 5, 7, 8, 10 & 15	Fence inspection and repair		1	Y	Y	Y	Y	Y	February-March	3.1.1a
10, 15, 7a & 4	Phase 2 survey of grasslands		2		Y		Y		May through July	3.1.1a
1, 4, 5, 7, 8, 10 & 15	Create detailed grazing rotation plan		2			Y				3.1.1a
1, 4, 5, 7, 8, 10 & 15	Consider further dividing site by fences and implement if agreed	Confine stock to less-grazed compartments (8b, 7, 10 and 15)	3				Y		Winter	3.1.1a
1, 4, 5, 7, 7a, 8, 10 & 15	Mowing	Mowing if grazing insufficient	1	Y	Y	Y	Y	Y	August-September	3.1.1a
1, 4, 5, 7, 8, 10 & 15	Glyphosate treatment	As required to treat stumps after brush cutting	2	Y	Y	Y	Y	Y	Late autumn	3.1.1b
1, 4, 5, 7, 8, 10 & 15	Identification and control of Japanese Knotweed	There are clumps of Japanese knotweed west of Bevan's Marsh adjacent to the site boundary in compartment 15; it may appear in other grassland compartments	1	Y	Y	Y	Y	Y	May-July	3.1.1c

Compartment	Project	Notes	Priority	Year (April-March)					Timing	Paragraph
				1	2	3	4	5		
1, 4, 5, 7, 8, 10 & 15	Identification and control of Himalayan Balsam	There are clumps of Himalayan Balsam in the western spring and at the northern border as the drainage enters from the ex-MOD site; it may appear in other grassland compartments	1	Y	Y	Y	Y	Y	May-June	3.1.1c
1	Scrub encroachment	Scrub encroaching at the north and western boundary of the area needs to be cut-back	2	Y	Y	Y	Y	Y	Autumn/ Winter	3.1.2a
4	Scrub encroachment	Peripheral scrub requires control and needs to be cut-back (particularly that encroaching at the northern boundary)	2	Y	Y	Y	Y	Y	Autumn/ Winter	3.1.2b
7	Scrub and secondary woodland encroachment	Significant scrub and young woodland clearance: first two years are funded by Heritage Lottery grant “Furze Heath Project”	1	Y	Y	Y	Y	Y	Autumn/ Winter	3.1.2d
8	Scrub encroachment	Peripheral scrub to be cut back. First two years are funded by Heritage Lottery grant “Furze Heath Project”	2	Y	Y	Y	Y	Y	Autumn/ Winter	3.1.2f,g

Compartment	Project	Notes	Priority	Year (April-March)					Timing	Paragraph
				1	2	3	4	5		
10	Scrub removal	Remove one third of existing scrub over the five year period	2	Y	Y	Y	Y	Y	Autumn/Winter	3.1.2h
15	Survey of adders tongue		1	Y	Y	Y	Y	Y	Mid February through March	3.1.2j
15	Scrub control and woodland edge management	Scrub invasion threatens the flora, and its control needs to continue, both in existing areas (where there is regrowth) and new areas. Wooded areas (particularly to the west and south) require bays and islands of open habitat to be created within their fabric. Where appropriate, stumps should be treated with glyphosate herbicide to inhibit regrowth.	1	Y	Y	Y	Y	Y	Autumn/winter	3.1.2i
15	Assessment of ragwort and control if the number of plants is excessive	By pulling, digging or glyphosate	1	Y	Y	Y	Y	Y	May-August	3.1.2i
15	Assessment of thistle and control if the number of plants is excessive	Thistle populations need to be monitored and reduced if expanding, e.g. with weed wiping with glyphosate or use of Lazy Dog weed removal tools.	2	Y	Y	Y	Y	Y	May-August	3.1.2i

Compartment	Project	Notes	Priority	Year (April-March)					Timing	Paragraph
15	Convert pill box to bat roost		3			Y				3.1.2i
15a	Strimming of dragonfly pond and marsh areas	To be done by volunteers, not Council	2	Y	Y	Y	Y	Y	Autumn	3.1.2k
15a	Enlargement and deepening of dragonfly pond		2		Y		Y		Winter	3.1.2k
3, 6, 11, 13, 14, 16 & 17	Tree safety survey	Visual survey by Council tree officer	1		Y					3.2.1a
3, 6, 11, 13, 14, 16 & 17	Identification and control of Japanese Knotweed	There are clumps of Japanese knotweed immediately adjacent to Deer Path in compartment 6; it may appear in other woodland compartments	1	Y	Y	Y	Y	Y	May-July	3.2.1f
3, 6, 11, 13, 14, 16 & 17	Control of mature invasive trees	By ring barking where safe to do so, otherwise by complete felling	1		Y			Y	Winter	3.2.1f
3, 6, 11, 13, 14, 16 & 17	Control of invasive shrubs	Rhododendron, cherry laurel, holly	1	Y	Y	Y	Y	Y	Winter	3.2.1f
3	Investigate possibility of boardwalk over boggy ground and install if possible		3			Y				3.2.2a

Compartment	Project	Notes	Priority	Year (April-March)					Timing	Paragraph
				1	2	3	4	5		
6	Coppicing	50% of hornbeam are small enough to coppice; half of these by TCV, half by NPTC qualified chain saw user. 1/7 of qualifying trees to be cut every two years.	3		Y		Y		Winter	3.2.2b
6	Understorey maintenance subsequent to coppicing, as necessary		3	Y		Y		Y	Winter	3.2.2b
6	Birch thining and restocking with oak, hazel and hornbeam whips	North of compartment	3				Y			3.2.2b
6	Weeding of sycamore and Norway maple seedlings and saplings	By hand pulling or digging	2	Y		Y		Y		3.2.2b
6	Scrub clearance at margins of The Dell	To encourage marginal and emergent flora.	2	Y	Y	Y	Y	Y		3.2.2b
11	Felling of non-native tree species to create glades		3					Y		3.2.2c
11	Research and, if appropriate, install new bridge across Stanburn		3		Y					3.2.2c
1, 11	Replace existing boundary fencing with metal security fencing		2			Y				3.2.2i

Compartment	Project	Notes	Priority	Year (April-March)					Timing	Paragraph
				1	2	3	4	5		
13	Research and, if appropriate, install new bridge across Stanburn		3				Y			3.2.2d
14	Felling of non-native tree species to create glades		3			Y				3.2.2e
14	Removal of any rubbish between inner fence around Master oak (if built) and trunk		1	Y	Y	Y	Y	Y		3.2.2e
14	Rotational cut of half the vegetation inside outer fence around Master Oak (if built) and removal at least 100m from the Master. All young vegetation inside inner fence should be removed.		2			Y		Y		3.2.2e
14	Review of gap between inner fence around Master oak (if built) and trunk		1			Y		Y		3.2.2e
16	Selective removal of mature exotic and introduced trees and shrubs ± yew, treatment of stumps with glyphosate		2		Y			Y		3.2.2f
16, 17b	Clearance of trees and rhododendron along the western side of the lake		2	Y	Y	Y	Y	Y		3.2.2g
17	Clearance of rhododendron and planting of dog rose and field rose to maintain a dense cover of vegetation		1	Y	Y	Y	Y	Y		3.2.2h

Compartment	Project	Notes	Priority	Year (April-March)					Timing	Paragraph
				1	2	3	4	5		
2	Cutting back overhanging tree branches at the southern end of Boot Pond	To be done on a 4 to 6 year rotation	2			Y				3.3.2a
2	Modification of toe of Boot Pond to improve habitat for amphibians	Expected to be funded by FrogLife as part of the Dragon Finder project	2			Y				3.3.2a
9	Removal of sycamores and horse chestnuts	To improve marsh ecology and let more light onto the ground flora	2		Y					3.3.2b
9	Coppicing of bushy willows	To further increase light levels	3		Y					3.3.2b
9	Coppicing of alders in rotation		3		Y			Y		3.3.2b
17a, 17b	Coppicing of trees on banks of Summerhouse Lake	To promote development of marginal vegetation	2			Y				3.3.2c, d
18	Monitoring of marsh with digging of ditches to increase water content if necessary		2	Y	Y	Y	Y	Y		3.3.2d
18	Monitoring of channel separating Scott Island and mainland; dredging where necessary	Dredging would have to be agreed with the Environment Agency	3					Y	Monitoring: summer Dredging: winter	3.3.2d

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Appendix 1: Species lists

Scientific Name	**Common name**	**Source**
Dryopteris affinis ssp. borreri	Scaly Male-fern	ST
Dryopteris dilatata	Broad Buckler-fern	ST
Dryopteris filix-mas	Male-fern	***
Equisetum arvense	Field Horsetail	***
Equisetum palustre	Marsh Horsetail	ST
Equisetum telmateia	Great Horsetail	***
Ophioglossum vulgatum	Adder"s-tonque	ST
Phyllitis scolopendrium	Hart's-tongue	ST
Polystichum setiferum	Soft Shield-fern	ST
Acer campestre	Field Maple	***
Acer platanoides	Norway Maple	***
Acer pseudoplatanus	Sycamore	***
Achillea millefolium	Yarrow	***
Achillea ptarmica	Sneezewort	ST
Aegopodium podagraria	Ground-elder	***
Aesculus hippocastanum	Horse-chestnut	***
Agrimonia eupatoria	Agrimony	***
Agrostis canina	Velvet Bent	***
Agrostis capillaris	Common Bent	***
Agrostis gigantea	Black Bent	ST
Agrostis stolonifera	Creeping Bent	***
Ajuga reptans	Bugle	***
Alisma lanceolatum	Narrow-leaved Water-plantain	ST
Alisma plantago-aquatica	Water-plantain	***
Alliaria petiolata	Garlic Mustard	***
Allium ursinum	Ramsons	*
Alnus glutinosa	Alder	***
Alopecurus geniculatus	Marsh Foxtail	***
Alopecurus pratensis	Meadow Foxtail	***
Anemone nemorosa	Wood Anemone	***
Angelica sylvestris	Wild Angelica	ST
Anisantha sterilis	Barren Brome	***
Anthoxanthum odoratum	Sweet Vernal-grass	***
Anthriscus sylvestris	Cow Parsley	***
Aphanes arvensis	Parsley Piert	CC
Arctium minus ssp. minus	Lesser Burdock	***
Arenaria serpyllifolia ssp. serpyllifolia	Thyme-leaved Sandwort	ST
Artemisia vulgaris	Mugwort	***
Arum maculatum	Lords-and-ladles	***
Atriplex patula	Common Orache	***
Atriplex prostrata	Spear-leaved Orache	***
Barbarea vulgaris	Winter-cress	ST
Bellis perennis	Daisy	***
Betula pendula	Silver Birch	***

Betula pubescens	Downy Birch	***
Bidens cernua	Nodding Bur-marigold	***
Brachypodium sylvaticum	False Brome	***
Bromopsis erecta	Upright Brome	ST
Bromopsis ramosa	Hairy-brome	***
Callitriche stagnalis	Common Water-startwort	ST
Caltha palustris	Marsh-marigold	***
Calystegia sepium	Hedge Bindweed	***
Calystegia silvatica	Large Bindweed	***
Campanula rapunculoides	Creeping Bellflower	ST
Campanula rotundifolia	Harebell	ST
Capsella bursa-pastoris	Shepherd's-purse	***
Cardamine flexuosa	Wavy Bitter-cress	***
Cardamine hirsuta	Hairy Bitter-cress	***
Cardamine pratensis	Cuckooflower	***
Cardamine x fringsii	Sevan's Bittercress	ST
Carduus crispus ssp. multiflorus	Welted Thistle	ST
Carex hirta	Hairy Sedge	***
Carex nigra	Common Sedge	***
Carex otrubae	False Fox-sedge	ST
Carex ovalis	Oval Sedge	ST
Carex pendula	Pendulous Sedge	***
Carex pseudocyperus	Cyperus Sedge	ST
Carex remota	Remote Sedge	***
Carex spicata	Spiked Sedge	ST
Carex sylvatica	Glaucous Sedge	***
Carpinus betulus	Hornbeam	***
Castanea sativa	Sweet Chestnut	***
Centaurea nigra	Common Knapweed	***
Cerastium fontanum	Common Mouse-ear	***
Cerastium glomeratum	Sticky Mouse-ear	***
Ceratophyllum demersum	Rigid Homwort	ST
Chaerophyllum temulum	Rough Chervil	ST
Chamaecyparis lawsoniana	Lawson's Cypress	***
Chamerion angustifolia	Rosebay	*
Chenopodium album	Fat-hen	***
Chenopodium polyspermum	Many-seeded Goosefoot	***
Circaea lutetiana	Enchanter's-nightshade	***
Cirsium arvense	Creeping Thistle	***
Cirsium palustre	Marsh Thistle	***
Cirsium vulgare	Spear Thistle	***
Comus sanguinea	Dogwood	***
Conium maculatum	Hemlock	*
Conopodium majus	Pignut	***
Convolvulus arvensis	Field Bindweed	***
Corylus avellana	Hazel	***
Crataegus laevigata	Midland Hawthorn	***
Crataegus monogyna	Hawthorn	***
Crepis capillaris	Smooth Hawk's-beard	ST
Cynosurus cristatus	Crested Dog's-tail	***
Cytisus scoparius	Broom	***
Dactylis glomerata	Cock's-foot	***

Daucus carota ssp.carota	Wild Carrot	***
Deschampsia cespitosa ssp. cespitosa	Tufted Hair-grass	***
Deschampsia flexuosa	Wavy Hair-grass	***
Digitalis purpurea	Foxglove	***
Dipsacus fullonum	Wild Teasel	***
Eleocharis palustris ssp. vulgaris	Common Spike-rush	***
Elodea canadensis	Canadian Waterweed	ST
Elytrigia repens	Common Couch	***
Epilobium ciliatum	American Willowherb	***
Epilobium hirsutum	Great Willowherb	***
Epilobium montanum	Broad-leaved Willowherb	***
Epilobium parviflorum	Hoary Willowherb	ST
Euphorbia helioscopia	Sun Spurge	***
Euphorbia peplus	Petty Spurge	***
Euphrasia rostkoviana ssp.	Eyebright	ST
Fagus sylvatica	Beech	***
Fallopia japonica	Japanese Knotweed	***
Festuca arundinacea	Tall Fescue	***
Festuca ovina	Sheep's-fescue	***
Filipendula ulmaria	Meadowsweet	***
Fragaria vesca	Wild Strawberry	***
Fraxinus excelsior	Ash	***
Galeopsis tetrahit	Common Hemp-nettle	ST
Galium aparine	Cleavers	***
Galium mollugo	Hedge Bedstraw	***
Galium palustre ssp. elongatum	Common Marsh-bedstraw	***
Galium saxatile	Heath Bedstraw	***
Galium verum	Lady's Bedstraw	***
Geranium molle	Dove's-foot Crane's-bill	***
Geranium robertianum	Herb-Robert	***
Geum urbanum	Wood Avens	***
Glechoma hederacea	Ground-ivy	***
Glyceria fluitans	Floating Sweet-grass	*
Glyceria maxima	Reed Sweet-grass	*
Gnaphalium uliginosum	Marsh Cudweed	ST
Hedera helix ssp. helix	Common Ivy	***
Heracleum sphondylium ssp. sphondylium	Hogweed	***
Holcus lanatus	Yorkshire fog	*
Hordeum murinum	Wall Barley	*
Hordeum secalinum	Meadow Barley	*
Hyacinthoides non-scripta	Bluebell	*
Hydrocotyle vulgaris	Marsh Pennywort	ST
Hypericum hirsumtum	Hairy St John's-wort	ST
Hypericum maculatum ssp. maculatum	Imperforate St John's-wort	ST
Hypericum perforatum	Perforate St John's-wort	ST
Hypericum tetrapterum	Square-stalked St John's-wort	ST
Hypochoeris radicata	Cat's-ear	***
Ilex aquifolium	Holly	***
Iris pseudacorus	Yellow Iris	*
Juncus acutifiorus	Sharp-flowered Rush	***

Juncus articulatus	Jointed Rush	***
Juncus bufonius	Toad Rush	ST
Juncus effusus	Soft Rush	***
Juncus inflexus	Hard Rush	***
Lactuca serriola	Prickly lettuce	*
Lamium alba	White Dead-nettle	ST
Lamium purpureum	Red Dead-nettle	ST
Lapsana communis ssp. communis	Nipplewort	***
Lathyrus pratensis	Meadow Vetchling	***
Lemna minor	Common Duckweed	***
Lemna trisulca	Ivy-leaved Duckweed	ST
Leontodon autumnalis	Autumn Hawkbit	***
Ligustrum ovalifolium	Garden Privet	***
Ligustrum vulgare	Common Privet	*
Lolium perenne	Perenial Rye-grass	*
Lonicera peridymenum	Honeysuckle	***
Lotus comiculatus	Common Bird's-foot-trefoil	***
Lotus pedunculatus	Greater Bird's-foot-trefoil	***
Luzula campestris	Field Wood-rush	***
Luzula multiflora var. congesta	Heath Wood-rush	*
Lychnis flos-cuculi	Ragged Robin	***
Lycopus europaeus	Gypsywort	***
Lysimachia nummularia	Creeping Jenny	*
Malus domestics	Apple	ST
Malus sylvestris	Crab Apple	ST
Malva moschata	Musk Mallow	*
Malva sylvestris	Common Mallow	***
Matricaria discoidea	Pineapple-weed	ST
Matricaria recutita	Scented Mayweed	***
Medicago lupulina	Black Medick	***
Mentha aquatica	Water Mint	***
Mentha arvensis	Com Mint	ST
Mentha spicata	Spear Mint	ST
Mercurialis perennis	Dog's Mercury	***
Mimulus guttatus	Monkeyflower	***
Moehringia trinervia	Three-nerved Sandwort	ST
Mycetis muralis	Wall Lettuce	ST
Myosotis arvensis	Field Forget-me-not	ST
Myosotis laxa subsp.caespitosa	Tufted Forget-me-not	ST
Myosotis scorpiodes	Water Forget-me-not	***
Myosotis sylvatica	Wood Forget-me-not	***
Myriophyllum spicatum	Spiked Water-milfoil	ST
Nuphar lutea	Yellow Water-lily	***
Nymphaea alba	White Water-lily	ST
Nymphoides peltata	Fringed Water-lily	ST
Oxalis acetosella	Wood-sorrel	***
Papaver rhoeas	Common Poppy	ST
Pdygonum arenastrum	Equal-leaved Knotgrass	ST
Persicaria amphibia	Amphibious Bistort	*
Persicaria hydropiper	Water-pepper	***
Persicaria lapathifdia	Pale Persicaria	ST
Persicaria maculosa	Redshank	ST

Petasites hybridus	Butterbur	ST
Pilosella offinarum	Mouse-ear-hawkweed	ST
Pimpinella major	Greater Bumet-saxifrage	ST
Pimpinella saxifraga	Burnet-saxifrage	ST
Pinus nigra	Corsican Pine	*
Pinus sylvestris	Scots Pine	***
Plantago lanceolata	Ribwort Plantain	***
Plantago major ssp.major	Greater Plantain	***
Plantago media	Hoary Plantain	ST
Poa annua	Annual Meadow-grass	*
Poa pratensis	Smooth Meadow-grass	*
Poa trivialis	Rough Meadow-grass	*
Poiygonum aviculare	Knotgrass	***
Populus alba	White Poplar	ST
Populus nigra var. 'Italica'	Lombardy Poplar	***
Populus tremula	Aspen	***
Populus x canadensis	Hybrid Black Poplar	*
Potamogeton crispus	Curled Pondweed	ST
Potentilla anserina	Silverweed	ST
Potentilla erectassp. erecta	Tormentil	ST
Potentilla reptans	Creeping Cinquefoil	***
Potentilla sterilis	Barren Strawberry	ST
Primula vulgaris	Primrose.	ST
Prunella vulgaris	Selfheal	***
Prunus avium	Wild Cherry	ST
Prunus domestica	Wild Plum	ST
Prunus laurocerasus	Cherry Laurel	***
Prunus lusitanica	Portugal Laurel	ST
Prunus padus	Bird Cherry	ST
Prunus spinosa	Blackthorn	***
Pulicaria dysenterica	Common Fleabane	ST
Quercus cerris	Turkey Oak	***
Quercus ilex	Evergreen Oak	ST
Quercus petraea	Sessile Oak	ST
Quercus robur	Pedunculate Oak	***
Ranunculus acris subsp.acris	Meadow Buttercup	***
Ranunculus aquatilis	Common Water-crowfoot	ST
Ranunculus auricomus	Goldilocks Buttercup	***
Ranunculus bulbosus	Bulbous Buttercup	***
Ranunculus ficaria ssp. bulbilifer	Lesser Celandine	***
Ranunculus flammula	Lesser Spearwort	***
Ranunculus lingua	Greater Spearwort	ST
Ranunculus repens	Creeping Buttercup	***
Ranunculus sceleratus	Celery-leaved Buttercup	***
Rhamnus cathartica	Buckthorn	ST
Rhododendron ponticum ssp. ponticum	Rhododendron	***
Rorippa nasturtium-aquaticum	Water-cress	ST
Rosa arvensis	Field-rose	ST
Rosa canina	Dog-rose	***
Rubus fruticosus agg.	Bramble	ST
Rumex acetosa	Common Sorrel	*
Rumex acetosella	Sheep's Sorrel	***

Rumex conglomeratus	Clustered Dock	***
Rumex crispus spp. crispus	Curled Dock	***
Rumex obtusifolius	Broad-leaved Dock	***
Rumex sanguineus var.viridis	Wood Dock	***
Sagina procumbens	Procumbent Pearlwort	ST
Salix caprea ssp. caprea	Goat Willow	ST
Salix cinerea	Grey Willow	*
Salix x sepulcralis	Weeping Willow	ST
Sambucus nigra	Elder	***
Sanguisorba officinalis	Great Bumet	ST
Sanicula europaea	Sanicle	***
Scrophularia nodosa	Common Figwort	ST
Senecio jacobaea	Common Ragwort	***
Senecio squalidus	Oxford Ragwort	ST
Senecio sylvaticus	Heath Groundsel	ST
Senecio vulgaris	Groundsel	ST
Silaum silaus	Pepper-saxifrage	ST
Silene dioica	Red Campion	***
Silene latifolia ssp. alba	White Campion	***
Sinapis arvensis	Charlock	ST
Sisymbrium altissimum	Tall Rocket	ST
Sisymbrium offidnale	Hedge Mustard	***
Solanum dulcamara	Bittersweet	***
Sonchus asper	Prickly Sow-thistle	***
Sonchus oleraceus	Smooth Sow-thistle	***
Sorbus aucuparia	Rowan	***
Sorbus torminalis	Wild Service-tree	***
Stachys officinalis	Betony	ST
Stachys palustris	Marsh Woundwort	***
Stachys sylvatica	Hedge Woundwort	***
Stellaria graminea	Lesser Stitchwort	***
Stellaria holostea	Greater Stitchwort	***
Stellaria media	Common Chickweed	***
Stellaria palustris	Marsh Stitchwort	***
Stellaria uliginosa	Bog Stitchwort	***
Succisa pratensis	Devil's-bit Scabious	***
Symphytum	Comfrey	****
Tanacetum parthenium	Feverfew	ST
Taraxacum sect, ruderalia	Dandelion	***
Taxus baccata	Yew	***
Teucrium scorodonia	Wood Sage	***
Tilia x vulgaris	Lime	***
Torilis japonica	Upright Hedge-parsley	*
Tragopogon pratensis spp. minor	Goat's-beard	***
Trifolium campestre	Hop Trefoil	***
Trifolium dubium	Lesser Trefoil	ST
Trifolium medium	Zigzag Clover	ST
Trifolium pratense	Red Clover	***
Trifolium repens	White Clover	***
Tripleurospermum inodorum	Scentless Mayweed	***
Tussilago farfara	Colt's-foot	***
Typha angustifolia	Lesser Reedmace	*

Ulex europaeus	Gorse	***
Ulmus glabra	Wych Elm	ST
Ulmus procera	English Elm	***
Urtica diodca	Common Nettle	***
Veronica arvensis	Wall Speedwell	ST
Veronica beccabunga	Brooklime	***
Veronica chamaedrys	Germander Speedwell	***
Veronica hederifolia	Ivy-leaved Speedwell	ST
Veronica montana	Wood Speedwell	***
Veronica officinalis	Heath Speedwell	***
Veronica persica	Common Field-speedwell	ST
Veronica serpyllifolia ssp. serpyllifolia	Thyme-leaved Speedwell	***
Viburnum opulus	Guelder-rose	ST
Vicia sepium	Bush Vetch	***
Vinca minor	Lesser Periwinkle	***
Viola reichenbachiana	Early Dog-violet	***
Viola riviniana	Common Dog-violet	***
	Black redstart	HNHS
	Blackcap	*
	Blue tit	*
	Buzzard	*
	Canada Goose	HNHS
	Carrion Crow	*
	Chiffchaff	*
	Common sandpiper	HNHS
	Common tern	*
	Coot	*
	Curlew	HNHS
	Dunnock	*
	Fieldfare	HNHS
	Firecrest	HNHS
	Gadwall	HNHS
	Garden Warbler	**
	Golden Oriole	HNHS
	Goldfinch	*
	Grasshopper warbler	HNHS
	Great Spotted Woodpecker	*
	Great tit	*
	Green Woodpecker	*
	Greenfinch	*
	Grey Heron	*
	Grey Wagtail	**
	Greylag Goose	HNHS
	Hawfinch	**
	Hen Harrier	HNHS
	Hoopoe	HNHS
	House Sparrow	*
	Jack Snipe	HNHS
	Jackdaw	*
	Jay	*
	Kingfisher	**

	Lapwing	HNHS
	Lesser Spotted Woodpecker	**
	Lesser Whitethroat	**
	Linnet	**
	Long-tailed Tit	*
	Magpie	*
	Mallard	*
	Mandarin Duck	HNHS
	Moorhen	*
	Mute Swan	*
	Nuthatch	*
	Osprey	HNHS
	Pheasant	*
	Pied Wagtail	*
	Pintail	HNHS
	Pochard	HNHS
	Red-legged Partridge	HNHS
	Red-backed shrike	HNHS
	Redpoll	**
	Redstart	HNHS
	Redwing	HNHS
	Reed Bunting	**
	Reed warbler	HNHS
	Ring Ouzel	HNHS
	Robin	*
	Rook	HNHS
	Rose-ringed Parakeet	*
	Sand Martin	*
	Sedge warbler	HNHS
	Siskin	**
	Song Thrush	*
	Sparrowhawk	HNHS
	Spotted Flycatcher	**
	Starling	*
	Swallow	*
	Swift	*
	Tawny Owl	*
	Teal	HNHS
	Tree Sparrow	**
	Treecreeper	*
	Tufted Duck	HNHS
	Water Rail	HNHS
	Whinchat	HNHS
	Whitethroat	*
	Willow Tit	**
	Woodcock	HNHS
	Woodpigeon	*
	Wren	*
	Wryneck	HNHS
	Yellow wagtail	HNHS
	Yellowhammer	**

Cheilosia bergenstammi		JRD
Criorhina berberina		JRD
Eristalis arbustorum		JRD
Eristalis pertinax		JRD
Eupeodes luniger		JRD
Melanostoma scalare		JRD
Meliscaeva auricollis		JRD
Neoascia podagria		JRD
Orthonevra nobilis		JRD
Pipizella virens		JRD
Platycheirus albimanus		JRD
Ripponensia splendens		JRD
Xylota segnis		JRD
	Brimstone	*
	Comma	*
	Essex Skipper	*
	Meadow Brown	*
	Orange Tip	*
	Peacock	*
	Red Admiral	*
	Small Copper	*
	Small White	*
	Speckled Wood	*
	Azure Dameselfly	*
	Blue-tailed Damselfly	*
	Broad-bodied Chaser	*
	Common Blue Dameselfly	*
	Large Red Dameselfly	*
	CC=Charlotte Curtis (NE) 2011	
	JRD=John Dobson	
	ST=Sean Tobin's historical plant record 1989-1994	
	*=DJV 2009-2010	
	**=LEU 1993	
	***=DJV/ST	
	HNHS=HNHS Birds of… booklet 1973-1992	

Appendix 2: Maps and Plans

Figure 1: Location

Figure 2: Management Compartments

Figure 3: Desired Management

Figure 4: Historical 1864-1894

Figure 5: Grid highlighting extent of tree and shrub cover 1994

Figure 6: Grid highlighting extent of tree and shrub cover 2010

Figure 7: Extent of ancient woodland

Figure 1: Location

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Figure 2: Management Compartments

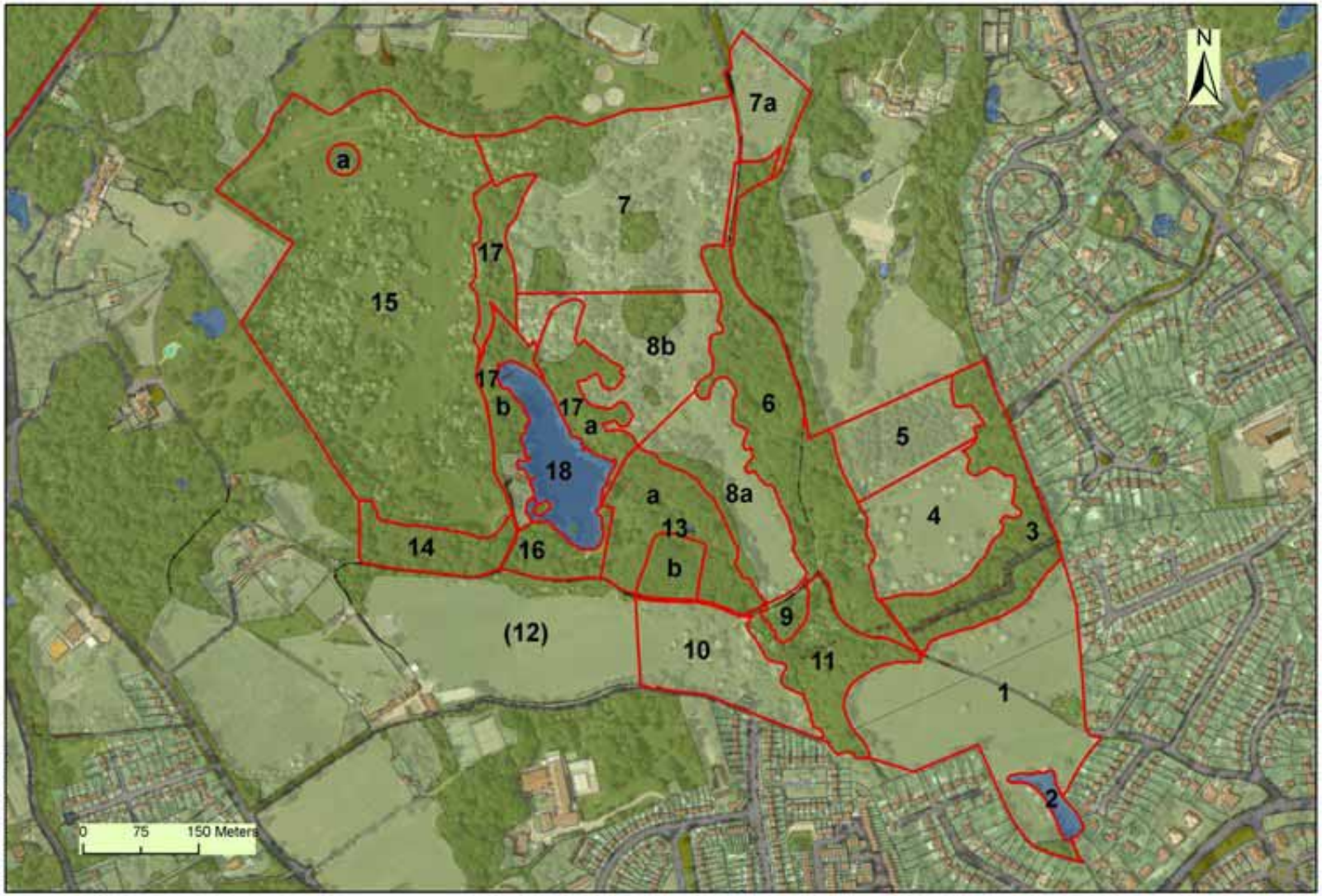

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Figure 3: Desired Management

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Figure 4: Historical 1864-1894

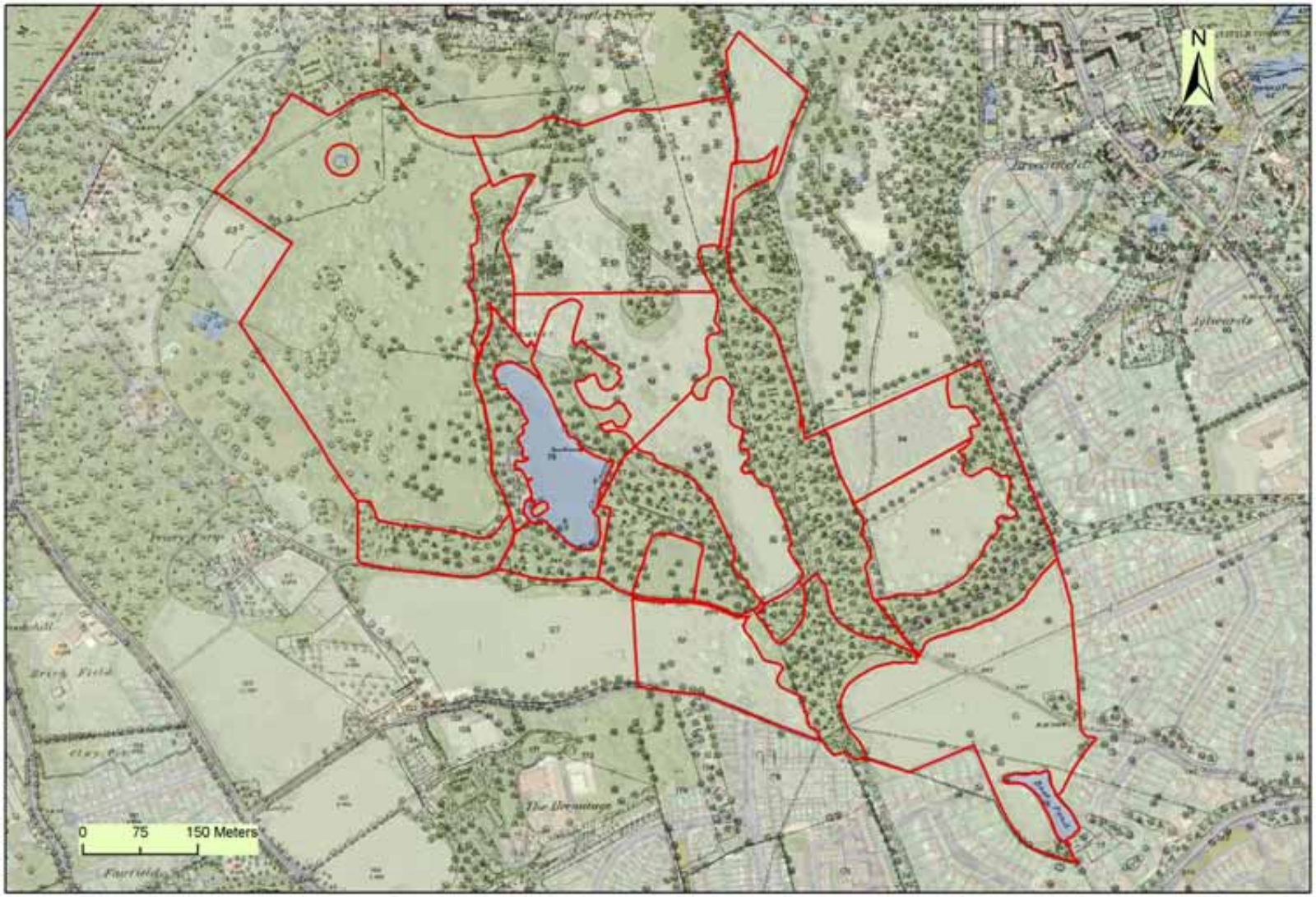

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Figure 5: Grid highlighting extent of tree and shrub cover 1994

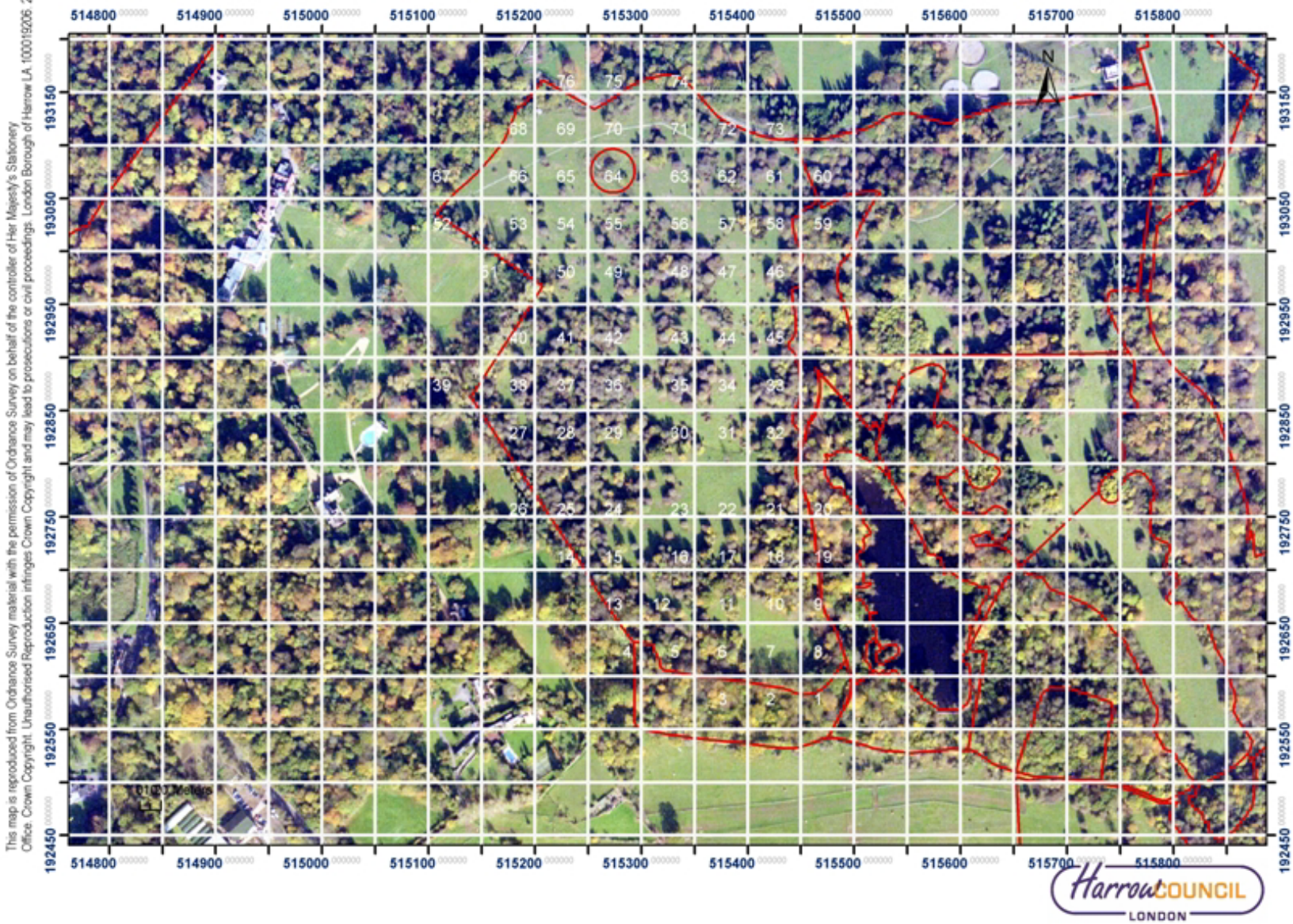

Figure 6: Grid highlighting extent of tree and shrub cover 2010

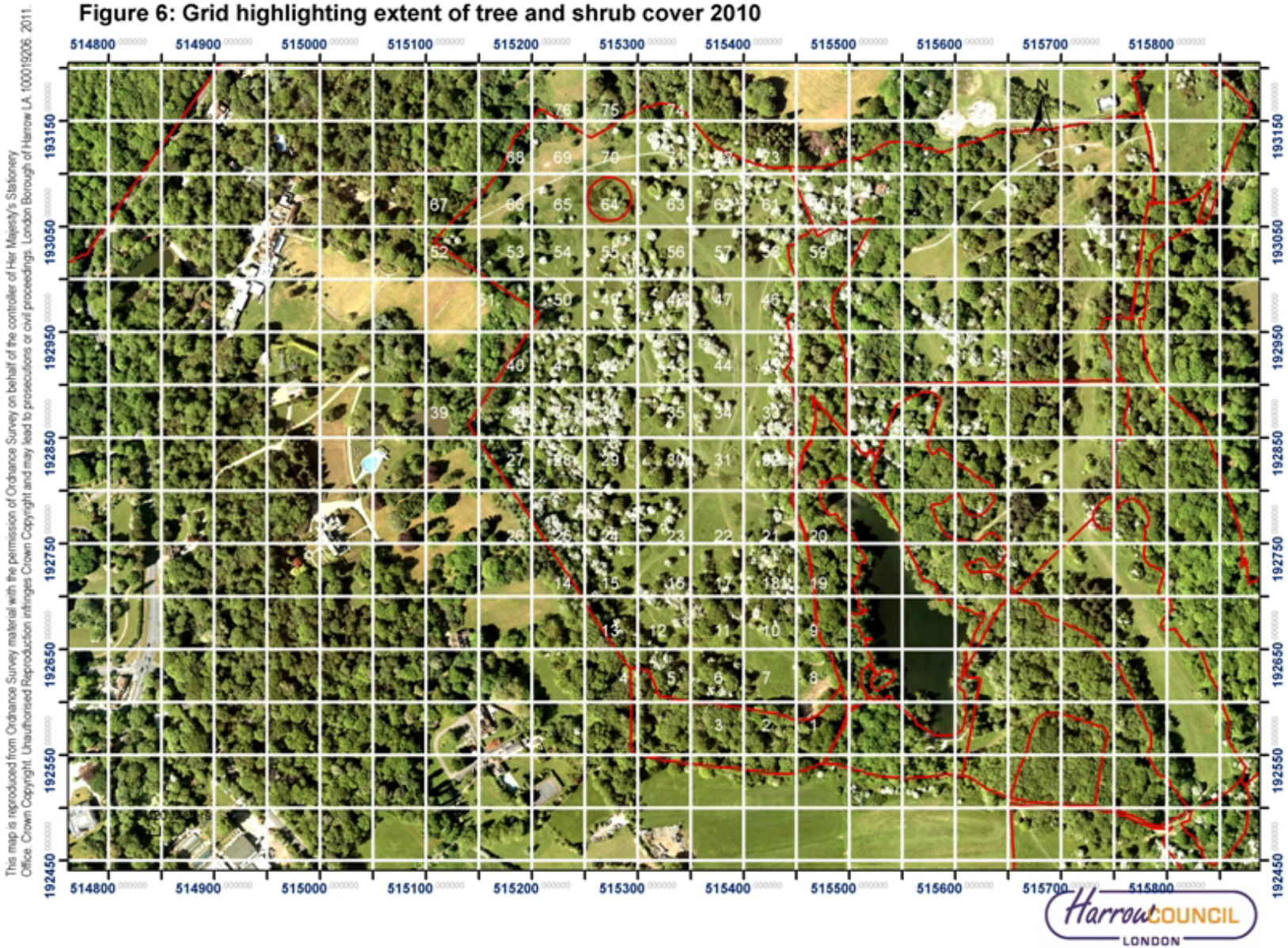

Figure 7: Extent of Ancient Woodland