



BEXLEY WOODS

Extended Phase I habitat survey bat survey report, and preliminary management recommendations

November 2010



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I. Introduction

I.1 Background

London Wildlife Trust was commissioned by the London Borough of Bexley to undertake an extended phase I habitat survey of Bexley (Park) Woods on Camden Road, Bexley, with a view to assess appropriate future management options.

The survey was required to assess the extent of semi-natural habitats present by using the GLA Open Space and Habitat Survey for Greater London Methodology. The GLA Open Space and Habitat Survey for Greater London methodology is recommended in *The Mayor's Guide to Preparing Open Space Strategies (A London Plan Best Practice Guide)* and is included in *The Mayor's Biodiversity Strategy*.

This report is in two sections. The first section summarises the habitat types and the significant vascular plant species found at the site. The appendices comprise all the species, photographic and map data.

I.2 Site details

I.2.1 Location

The site is located between Albany Park and Old Bexley in the London Borough of Bexley at TQ 483737. The site is approximately 12.8 hectares in area.

I.2.2 Topography

The Woods predominantly stand on a north facing slope, generally sloping towards the north-western corner, with the highest point near the south-eastern corner. The northern parts, through which flows the River Shuttle, are generally flatter.

I.2.3 Hydrology and soils

No hydrology survey has been undertaken on site. The River Shuttle, a tributary of the River Cray, flows eastwards through the Woods in the north-western corner. A smaller tributary, entering the Shuttle within the Woods as an outfall from a covered drain, carries water from Danson Park to the north. The Woods stand entirely within the Shuttle's catchment.

Groundwater gley soils underpin the River Shuttle and its surrounds, whereas the bulk of the Woods, rising up to the south-east are supported on stagnogley soils, which are poor-draining with gleying¹ in the upper horizons, and mildly acidic.

¹ The process whereby iron in soils is bacterially reduced under anaerobic conditions and concentrated in a restricted horizon within the soil profile.

1.2.4 Access and usage

There are four access points: in the north from Parkhill Road; in the east from Camden Road; in the south via a footpath from Hurst Road; and in the west from Elmwood Drive. The Elmwood Drive and Camden Road entrances allow for authorised vehicular accesses; the other two are pedestrian-only access points. Official footpaths run from the Elmwood Drive entrance to the other three entrances. In addition there are a series of heavily trafficked paths throughout the site which are maintained through regular usage. Some of the surrounding residences have gates that lead straight into the Woods from their properties.

1.2.5 Boundaries

The site is entirely surrounded by fencing of differing types which form the boundaries with surrounding housing. A chain link fence with a padlocked gate surrounds approximately half of the old allotment grounds.

2. Habitat Survey (Extended Phase I)

2.1 Aims of the survey

The aims are to: -

- Identify dominant, characteristic and otherwise unusual vascular plant species and the chief habitats present using the DAFOR scale² for each community;
- Identify and map habitat communities;
- Determine the importance of these features in a local, regional (London) and national context as noted in Biodiversity Action Plans;
- Determine whether or not the site supports notable, rare and/or protected species;
- Make incidental recording of other fauna sightings;

Survey objectives did not include non-vascular plant species (e.g. mosses, algae).

2.2 Habitat survey methodology

A Habitat Survey (phase I extended) was carried out on 28th April and 28th June 2010 by Anthony Wileman, assisted by other staff. The survey followed standard Phase I habitat survey methodology (JNCC, 1993), as modified for Greater London by the former London Ecology Unit (LEU, 1994) and later adopted by the Greater London Authority. The site was divided into 3 habitat compartments.

Characteristic, rare and interesting species and plant assemblages were evaluated for conservation designations and assessed as to whether they were notable for the Greater London area. Notable is defined as species which were recorded from 15% or fewer of the 400 two-kilometre recording squares (tetrads) in Greater London in the *Flora of the London Area* (Burton 1983).

Complex taxa, such as *Taraxacum* (dandelions) and *Rubus* (brambles), are treated as aggregates as there is little value in distinguishing these for determining habitat types, especially in London.

Casual recording of fauna was attempted throughout the duration of the Habitat Survey (Appendix 3).

Photographs of the site were taken on 17th March, 28th April, 27th September and 2nd October 2010, and are found in Appendix 84.

² A standard format for recording relative abundance (Dominant, Abundant, Frequent, Occasional, Rare).

2.3 Limitations of the survey

2.3.1 Seasonal Plants

The timing of the two survey visits was considered highly appropriate to characterise the habitats present on site and locate and identify most of the plant species present. It is possible some autumn flowering species were overlooked.

2.3.2 Access

Most of the site was accessed and surveyed. Half of the old allotment grounds was only partially accessed in June due to heavy scrub cover but was viewed and surveyed as best as possible on both visits from adjacent lands and a pair of binoculars were used to assist with this. All species found were identifiable on site so no off-site identification of species was required.

2.4 Plant nomenclature and rarity

The *New Flora of the British Isles* (Stace, 1997), the standard text, was consulted for plant nomenclature. English names have been used in preference to Latin (only quoted in the first instance) in order to facilitate readability of the report.

Any uncommon vascular plant species were identified in the London context using the *Flora of the London Area* (Burton 1983). For national rarity *The New Atlas of the British & Irish Flora* (Preston, Pearman & Dines, 2002) was referred to (where a taxon appearing in 150 or less 10 x 10km squares was considered rare).

2.5 Habitat rarity

The Bexley and London Biodiversity Action Plans were consulted on local and regional habitat rarity respectively, while the UK Biodiversity Action Plan was consulted on national habitat rarity.

2.6 Habitat descriptions

A map showing the location of the habitats appears in Appendix 1. A full list of plant species recorded at the site during the Phase I survey; along with an assessment of their abundance using the DAFOR scale in each habitat parcel appears in Appendix 2.

2.6.1 Ancient hornbeam woodland (Parcel A)

This habitat, covering 48% of the site, is dominated by hornbeam (*Carpinus betulus*) trees of similar age, many of which show evidence of past coppicing with frequent pedunculate oak (*Quercus robur*) standards which appear to be older than the hornbeam trees. There has been some recent coppicing of hornbeam in places of which all show healthy re-growth. Several silver birch (*Betula pendula*) and a few field

maple (*Acer campestre*) ash (*Fraxinus excelsior*) and sycamore (*Acer pseudoplatanus*) make up the rest of the woodland canopy. Oak is more common in the south-western corner, and along the north-eastern edge. Silver birch are more common in the western half.

The shrub layer is variable across the parcel with areas closer to the main footpaths generally being sparser. Holly (*Ilex aquifolium*) comprises of the bulk of the shrubs with lesser amounts of wild cherry (*Prunus avium*), buckthorn (*Rhamnus cathartica*), and elder (*Sambucus nigra*).

Like the shrub layer the ground flora is sparser nearer to the main footpaths. Bramble (*Rubus fruticosus* agg) species and bluebells (*Hyacinthoides non-scripta*) are the most abundant plants on ground with the latter interspersed with both Spanish bluebells (*Hyacinthoides hispanica*) and hybrid bluebells (*Hyacinthoides non-scripta* x *H. hispanica*). Smaller populations of ivy (*Hedera helix*) associate with these and also climb up into the canopy in places.

Besides the bluebells, the ancient woodland indicator plant species are to be found predominantly along the western edge footpath. These include frequent wood anemone (*Anemone nemerosa*) and wood melick (*Melica uniflora*) with pignut (*Conopodium majus*) and three-nerved sandwort (*Moehringia trinervia*). A clump of common cow-wheat (*Melampyrum pratense*) is found towards the south-east corner.

In areas of sparser vegetation annual meadow-grass (*Poa annua*) and common chickweed (*Stellaria media*) join rather stunted and damaged plants of all three bluebell species indicating soils that are highly compacted and used by human traffic.

Other woodland plants are more typical and include garlic mustard (*Alliaria petiolata*), cow parsley (*Anthriscus sylvestris*), lords-and ladies (*Arum maculatum*), cleavers (*Galium aparine*), wood avens (*Geum urbanum*), red campion (*Silene dioica*) and common nettle (*Urtica dioica*).

In addition a number of species were present around the boundaries that are essentially garden escapes. These include spotted-laurel (*Aucuba japonica*), sowbread species (*Cyclamen* sp.) garden strawberry (*Fragaria x ananassa*) and Irish ivy (*Hedera helix hibernica*).

2.6.2 Ancient hornbeam woodland with riverine bank association (Parcel B)

This habitat is classified as ancient hornbeam woodland, although the presence of the River Shuttle has allowed for fundamental changes in the species present. It also appears to have less human traffic except along some sections of the river bank and along the main footpath. The habitat covers approximately 30% of the site.

Canopy tree species are dominated by hornbeam, as above, but this woodland parcel is frequented with wild cherry with lesser amounts of sycamore, ash and pedunculate oak. Due to the presence of the river alder (*Alnus glutinosa*) is an addition to the canopy species.

The shrub layer is more varied and consists of tree saplings of mostly ash, wild cherry, sycamore and alder with English elm (*Ulmus procera*) scrub and elder. Approximately a quarter of this compartment, north of the Shuttle backing onto the gardens of Bridgen Road was described as scrub in 1986.

The ground flora comprises of a mosaic of bramble, cow parsley (*Anthriscus sylvestris*) and lesser celandine (*Ranunculus ficaria*) with wood anemone, cleavers, ground-ivy (*Glechoma hederacea*), ivy, common nettle and the grass false brome (*Brachypodium sylvaticum*) while in areas of high human traffic, perennial rye-grass (*Lolium perenne*), creeping buttercup (*Ranunculus repens*), and dandelion species (*Taraxacum sp*) join the typical annual meadow-grass and common chickweed composition. Sanicle (*Sanicula europaea*) is present along the drain cover (leading into the confluence with the Shuttle). Bluebells of all types were absent in this area.

Garlic mustard, lords-and-ladies, wood avens, dog's-mercury (*Mercurialis perennis*), hogweed (*Heracleum sphondylium*), wood melick, wood dock (*Rumex sanguineus*), hedge woundwort (*Stachys sylvatica*) and ivy-leaved speedwell (*Veronica hederifolia*) are all occasional within the mosaic.

The riverbank itself, where not devoid of vegetation through human traffic, supports abundant hemlock water-dropwort (*Oenanthe crocata*). Smaller amounts of soft rush (*Juncus effusus*), pendulous sedge (*Carex pendula*), and wavy bitter-cress (*Cardamine flexuosa*) are present in addition to those species above that typify this habitat.

A number of small populations of remote sedge and thin-spiked wood-sedge (*Carex remota* and *C. strigosa*), male-fern (*Dryopteris filix-mas*), hart's-tongue fern (*Phyllitis scolopendrium*), gypsywort (*Lycopus europaeus*) and tutsan (*Hypericum androsaemum*) are also present.

The presence of tutsan and thin-spiked wood-sedge are of significant value as both are very rare in Greater London.

2.6.3 Semi-improved neutral grassland with scrub (Parcel C)

This is an area of former abandoned allotments which have become colonised by grasses with associated species. Some areas around the edges in particular have developed into scrub and tall herb habitat and a number of shrubs have been planted in recent years. It forms about 17% of the site.

The grasslands are comprised of a mix of false oat-grass (*Arrhenatherum elatius*), red fescue (*Festuca rubra*) and perennial rye-grass with creeping bent (*Agrostis capillaris*), cock's-foot (*Dactylis glomerata*), Yorkshire-fog (*Holcus lanatus*), annual meadow-grass and smooth meadow-grass (*Poa pratensis*). Forb³ species consist of frequent creeping buttercup, dandelion species, white clover (*Trifolium repens*) and common vetch (*Vicia sativa*) with occasional horse-radish (*Armoracia rusticana*), common mouse-ear (*Cerastium fontanum*), common cat's-ear (*Hypochaeris radicata*) and ribwort plantain (*Plantago lanceolata*).

³ Herbaceous species that are not grasses, rushes or sedges.

The scrub and tall herb habitat consists of predominantly bramble, rose species (*Rosa* sp.), cow parsley, and cleavers while the planted shrubs are of buckthorn, spindle (*Euonymus europaeus*), holly and hawthorn (*Crataegus monogyna*).

The half section surrounded by a chain link fence at the north of the old allotment grounds was predominantly composed of bramble scrub with cleavers and a large number of young trees of ash and pedunculate oak. An area with a few domestic apple (*Malus domestica*) and cherry trees (*Prunus* sp.) are still present

2.7 Incidental fauna

As part of the survey incidental vertebrate and invertebrates were recorded and are listed in Appendix 3. No assessment was made as to whether these were breeding on site.

2.8 Site and habitat evaluation

2.8.1 Bexley Woods

The site comprises the Bexley Woods Site of Borough Grade I Importance for Nature Conservation (SINC) – Site BxBI08.⁴ It adjoins, through the river, Site BxBII09, the River Shuttle and Wyncham Stream. This survey appears to confirm the status of the site.

2.8.2 Biodiversity Action Plans

Parcels A and B (the woodlands) of the site can be considered to fit into the designations ‘Broadleaved, mixed and yew woodlands’ broad habitat for the Bexley (local) Biodiversity Action Plan, the ‘Woodlands’ local habitat for the London (regional) Biodiversity Action Plan and ‘Lowland mixed deciduous woodland’ priority habitat for the UK Biodiversity Action Plan.

The River Shuttle can be considered to fit in the designation ‘Rivers and streams’ habitat for the Bexley (local) and London (regional) Biodiversity Action Plans and ‘Rivers’ for the UK Biodiversity Action Plan.

It is considered good practice that any development having an impact on these habitats is adequately mitigated for.

2.8.3 Woodland

The current woodland habitats are clearly once part of a much wider woodland environment and ancient in origin⁵, although it is likely that the area was once part of a deer park used for hunting. Hornbeam-oak woodlands are historically typical of the London basin although very few exist now in London. Ancient woodlands are

⁴ *Sites of Importance for Nature Conservation in Bexley, 2007.*

⁵ Ancient woodland is defined as that which has remained as such since at least 1600 AD.

considered one of the most important of British habitats, due to their ecological communities that have developed over a long period of time, with features accumulating over hundreds or thousands of years. The result is a complex and integrated system, but three key ancient woodland features can readily be identified:

- Old and veteran trees and deadwood – important in themselves and for the bats, insects, fungi, and lichens that live on them;
- Woodland flora;
- Woodland soils – often undisturbed and home to some of the most hidden, but also functionally important elements of a woodland system such as mycorrhizal fungi.

Surviving remnants of ancient woodland in London have generally suffered over the past century from the impacts of urbanisation, heavy public usage, and/or inappropriate management (often through plantings or under-management).

Management regimes have become less intensive over time, as the economic need for hornbeam coppice products evaporated and the function of the wood as a public open space came into place. Public usage has led inevitably to trampling, albeit mostly along main paths, and in places the adverse impacts of nutrient inputs from dog faeces. Neighbouring gardens adjacent to isolated woodland fragments make the boundaries vulnerable to the colonisation of 'garden escapes' (garden plants that naturalise), and can place pressure on some species through the indirect impacts of lighting, pets and other occasional disturbances. In addition changes to the biodiversity of London over the past 50 years, such as the growth in the numbers of grey squirrel and the decline in, for example, lesser spotted woodpecker, will also have their impact. These issues are typical and Bexley Woods is no exception; the degree to which these occur will vary from site to site.

The vegetation along the western edge suggests that this may have once been an ancient boundary line such as a ditch and bank enclosure or has had less soil disturbance than the rest of the site. Because the features of ancient woodland take a very long time to develop, they also take a very long time to replace, if they can be replaced at all. That is why their protection is considered a priority. This woodland supports a wide diversity of flora and fauna including London rarities and management practices within the woodland should be appropriate to maintain or encourage population expansion of these species.

2.8.4 River Shuttle

The Shuttle affects the woodland as it flows through, providing additional habitats and opportunities for a range of species. The banks support a range of ferns, rush and sedge species, and the increased humidity under the woodland cover allows for a number of ancient woodland indicator species to benefit, including sanicle and tutsan. The river also supports a range of invertebrates, such as damselfly and provides opportunities for riverine birds, such as grey wagtail and kingfisher to use the site. Importantly the survey noted high fish-fry numbers in the Shuttle, and the presence of perch and roach; the gravel beds provide important spawning grounds.

The attraction of the river to site users, however, has also led to high trampling of bankside vegetation and compaction of soils, leading to a loss of habitat quality.

2.8.5 Old allotment

The old allotment area (Parcel C) appears to have been left to develop 'naturally' since its disuse, but how long ago this was is difficult to accurately determine from the vegetation (but at least 20 years). Half of the area (that which is surrounded by a chain link fence) still supports some fruit trees but most of the site now shows little of its former usage. This grassland area now complements the adjacent woodland; the planting of shrubs within this area should be considered as inappropriate; where possible the removal of some of the more recently planted trees and shrubs could be considered. The areas of scrub are not currently a problem but some control of their expansion into the existing grassland could be considered if funding is available.

2.9 Plant species evaluation

The plant species found are typical of an urban ancient woodland given its location and with a high levels of human usage. The presence of several ancient woodland indicator species are of particular value, and these should be encouraged to expand their distribution if possible as many are very localised within the site. However, a number of species pose some threat to the biodiversity of the site. These are spotted-laurel, cotoneaster species (*Cotoneaster sp.*), garden strawberry, Irish ivy, Spanish bluebell, hybrid bluebell, small balsam (*Impatiens parviflora*) and cherry-laurel. All of these species can become invasive and both of the bluebell species are already having a significant impact.

Collectively the species present contribute to a very important habitat within the Borough for invertebrates, birds and mammals and the fact that the site is surrounded by habitats that typically have poorer value for wildlife makes it even more so.

Tutsan and thin-spiked wood-sedge are considered to be London notable species. These are those species that occur in less than 15% of the 400 tetrads as indicated in the *Flora of the London Area* (Burton 1983).

No UK or London (regional) Biodiversity Action Plan vascular plant species were recorded during the survey.

No plant species listed on Schedule 8 of the Wildlife and Countryside Act 1981 were identified during this survey.⁶ It is considered unlikely that any schedule 8 protected plant species were present at the site.

Species not found during the survey, but which were recorded in 2003 and earlier surveys include moschatel (*Adoxa moschatellina*, often hard to find), opposite-leaved golden saxifrage (*Chrysosplenium oppositifolium*), hairy wood-rush (*Luzula pilosa*), pill

⁶ These plants have high levels of protection; it is a criminal offence to pick, uproot or otherwise damage any species listed on Schedule 8.

sedge (*Carex pilulifera*) and, somewhat surprisingly, ramsons (*Allium ursinum*). The possibilities of mis-identification cannot be discounted, but unlikely to affect the overall assessment of the site's habitats.

2.10 Animal species evaluation

A number of bat species are present on site, as revealed by the separate transect and activity surveys carried out, as set out in Section 3. A separate report details the bat surveys and assessments.

The site holds locally important populations of woodland birds such as the nuthatch (*Sitta europaea*). Previous records attest to breeding blackcap, treecreeper, and all three British woodpeckers.

The other animal species found suggest that the site offers good food plants for feeding invertebrates such as bees and butterflies and other nectar feeding species. These invertebrates in turn attract a variety of birds, which also find cover in the trees, shrubs and scrub to breed and/or roost and hide from predators.

Apart from bats, no other animal species fully protected under the Schedule 5 of the Wildlife and Countryside Act were identified during the surveys. No other UK or London (regional) Biodiversity Action plan animal species were recorded during the survey.

It is possible that reptiles such as slow-worm (*Anguis fragilis*) may be present on site as the habitat – the grassland of the old allotment - would be ideal to support them. However, it is considered unlikely that a population is present due to the isolation of the site from other suitable habitat. Despite this we recommend that a reptile survey should be carried out if there any proposals to significantly change the areas of grassland.

3. Bat survey and evaluation

3.1 Survey methodology

The bat survey obtained data from London Bat Group with all known bat records within a 2km radius of the Woods to gain an understanding of bat species known to be present in the area.

An initial daytime walkover survey was carried out to identify and map habitats of potential value to bats in terms of roosting, foraging and commuting. Trees that support features of high or medium potential to support a bat roost will be tagged so that they can be more easily identified; these may require further examination prior to the commencement of any woodland management works that may indirectly affect them nearby. The transect routes for the bat surveys were also mapped.

Two dusk and one dawn bat transect survey of the site were carried out in June and August to assess use of the site by bats. Bat activity data was collected using heterodyne and frequency division BatBox Duet detectors, bat calls were recorded onto a hand held recorder (Edirol R09 or R09HR) and the species verified using Batsound Software.

All surveys were supervised by a licensed bat ecologist and followed guidance set out in *Bat Surveys; Good Practice Guidelines* (Bat Conservation Trust, 2007).

If bats were discovered to be roosting on site, further more extensive surveys may need to be carried out to fully assess the species concerned, the number of individuals using the site, the type of roost and the significance of the roost at a national, regional and local level. A detailed mitigation strategy will also need to be prepared for any works that are likely to impact bats and their roost sites. These additional works would be associated with an additional cost and would be quoted for separately.

Management operations may affect favoured commuting routes, or directly impact roosts. However, the need to manage the Woods for their overall biodiversity (and amenity) should not unnecessarily constrain management operations as long as this meets legislative requirements and follows best practice. Licences maybe required from Natural England to remain within the law, however, most activities (such as coppicing, 'halo-ing' the standard oaks (see 4.3), and thinning) can continue without the need for a licence if best practice is followed.

3.2 Results

The results from the surveys to date are detailed in Appendices 4, 5 and 6. An assessment and evaluation of these will be provided in a separate report and a later version of this report, together with recommendations for best practice.

4. Conclusions and recommendations

4.1 Management; historical context

Bexley Woods supports a mixed biodiversity of terrestrial and riverine habitats and associated species. Of these habitats, the ancient hornbeam woodland and the River Shuttle bankside vegetation provide the most important plant and animal communities.

The key management objective for Bexley Woods is to retain, and if possible further restore, the woodland flora by re-instating a coppice regime, primarily of the hornbeams, and retain the aesthetic – and ecological – benefits of the woodland. The ancient woodland indicator plant species populations are of particular value, and should be considered as priorities for conservation. In addition, the demonstrable presence of bats using the Woods clearly imposes some constraints on management, especially of the trees that are – or may be – used as roosts.

The woodland's management has changed since the time it was actively managed for coppice products. The earlier coppice regime would have been intensive, resulting into periodic large-scale removal of the hornbeam 'spring's around the oak standards. This would have brought in temporary increase in light, and warmth to the woodland floor, with a corresponding growth in the ground flora. A cycle of coppicing will have retained this flora over a period of time; a reduction in coppicing over time will start to adversely impact the ground flora.

4.2 Do nothing?

Bexley Woods has not been coppiced in an intensive manner for a number of decades. Under-management of coppice, that commonly resulted in many such woodlands in the post-war period, has led to the development of a dense canopy and loss of light to the ground flora. However, recent coppicing of hornbeam stools has taken place, and these have responded well. In addition, where clearances in the canopy have occurred, for example through wind-blow, the ground flora has responded with vigour, in some cases through the development of bramble and holly. The frequency of holly is typical in many under-managed woods; in earlier times it would have been cropped for livestock fodder.

If the Wood's habitats are left unmanaged, they will eventually lose their botanical interest through the confluence of slow development of a dense and uniform woodland canopy and external impacts. The typical woodland flora, especially the ancient woodland indicators, is present largely because of the earlier practice of coppicing; as this has largely ceased, the flora will change. It is also under threat from enrichment and human traffic pressure. Garden escapes, although mostly benign, could further adversely affect the characteristic woodland flora if not controlled.

The woodland will require providing a balance between shade and moisture afforded by the tree canopy, together with allowing for regular periods of sunlight to reach

the woodland floor, through the creation of openings in the canopy (e.g. glades). This will need to be informed by the bat survey results and other species data (for example, invertebrates and fungi).

4.3 Coppicing

Traditional practices, for example, rotational coppicing with standards is suggested as the most appropriate management practice to restore the ground flora although the bat survey and the amenity and recreation value of the Wood will undoubtedly inform how these be best carried out. There have been successful attempts to re-introduce coppicing in a number of London woods in recent years but these are often - initially at least - unpopular with many site users.

Ideally, the whole woodland would be put on a rotational coppicing regime with the site divided into 20-30 parcels in which all hornbeams within each given parcel that do not hold bat populations would be coppiced once in any given 20-30 year period. This would result in a series of parcels with differing age structures which would greatly benefit both bats and the ground flora. However, this work is labour intensive, costly, and will have a visual impact on the site. It would likely to be unpopular with local residents and site users.

Therefore, we suggest a more selective rotational coppicing regime is carried out:

- around the standard oak trees, and
- along the main footpaths.

Halo-ing the standard oaks

The coppicing of hornbeams around the standard oak trees has already been undertaken on site at a number of locations. The stools of the cut hornbeams within the created glades have responded favourably and some ground flora species have appeared where little was found before. It is suggested that this method is continued with up to no more than 5 of the hornbeams around any of the given 300 or so oak standards being cut annually. A suggested number of oak trees to have hornbeam coppicing halo-ing carried out on is 20-30 scattered throughout, with no two areas of halo-ing being adjacent to each other. This would put the woodland on a 20-30 year rotation but allow some hornbeam trees away from the oak standards to develop into mature standards themselves. The hornbeams cut in any one year around any given oak standard tree should all be cut on one side, with the hornbeams on the other side not being cut for at least five years after the previous cut to allow for age diversity and minimise the impacts. The glades created by the halos will also provide good habitat for foraging bats within the Wood.

The few hornbeams that have been identified with cavities that may support bat roosts should not be coppiced; these are most likely to be high in the tree, although some species will occasionally roost low down (including root cavities). The majority of the cavities recorded within the Woods are, however, in the standard oaks.

By halo-ing around the oaks, it should provide these trees will more light and thus hopefully increase their life expectancy. This would be good in ensuring longer-term security to any bat roosts within the oaks.

Woodland ride creation

Further coppicing work could be undertaken along the main existing footpaths through the site to encourage vegetational growth on either side of the path thus defining it more clearly and encouraging users of the wood to walk specific routes through and around the site. This will reduce impact and enrichment pressure on areas further away from these paths and encourage a better flora on the bulk of the woodland floor if combined with the glade creation around oak trees. This system of management is often carried out to create 'woodland edge' habitats to benefit some birds and invertebrates, as well as creating a clearly defined sight-line.

We suggest that each of the main paths are coppiced in sections, about 25m long, and up to 6m deep (ideally on the northern side of a E-W path and eastern edge of a N-S path), over a shorter 4-6 year period to define the footpath. This can be followed, in due course, with a 10-15 year rotation coppice to maintain them.

In all accounts of coppicing it is likely that bramble and other shrubs like holly will respond well to the light created and may as a result become dominant in the glades if not managed. Bramble has been found to develop in many of the areas that have been coppiced. Although dense in places this bramble does not appear to have prevented stools reshooting. The density and competitiveness of this bramble reduces as the canopy starts to close. Consideration should be given to cutting some of this bramble where stool re-growth or seedling development is badly affected. Bramble growth along path edges should be encouraged so to help define path and reduce trampling, and provide additional habitat for some birds and invertebrates.

River Shuttle banks

The River Shuttle bankside also needs to be addressed to further reduce the impacts of compaction, trampling and enrichment. Works that have been taken to remove larger trees on the bankside have resulted in a vigorous flourish of re-growth (of alder, for example) and herbaceous species, as well as visually 'opening' out the banks. This should be continued, through cutting of 10-25m stretches every 5-6 years.

Impacts on bats

Given the known use of Bexley Woods by bats, it is imperative that all reasonable effort should be made to minimise impacts on their habitat, and in particular known roosts. Management operations may affect favoured commuting routes, or directly impact roosts. However, the need to manage the Woods for their overall biodiversity (and amenity) should not unnecessarily constrain management operations as long as this meets legislative requirements, and follows best practice.

Legislation requires publicly-owned woods to consider the needs of bats within their management plans. Management practices should take place at appropriate times of year, for example between October and early December for any coppicing, felling and/or clearance. Licences may be required from Natural England to remain within the law, however, most management activities can continue without the need for a licence if best practice is followed.

Best practice, for example, would include carrying out management to enhance the life expectancy of the oaks in the Wood, especially those identified as roost trees, by the halo-ing described above, as well as maintaining and enhancing foraging routes. In addition, an on-going audit and analysis of bats on site to inform progress of management through annual surveys is recommended.

Detailed guidance on necessary constraints and good practice will be provided in a separate report and a later version of this report.

4.4 Grasslands

Without appropriate management the grasslands on the western side are perceived to be under threat on site from successional tree and scrub encroachment. We suggest a rotational mowing regime cut no less than once every three years; 50% of the grassland is cut during the months of March and in October in any year and the other 50% the following year. This means that cut areas will be left for two years before repeat cutting; enough to prevent tree encroachment. All of the arisings are to be removed from the grassland after cutting and either removed from site (if resources permit) or stacked to create habitat piles around the edge of the grassland to rot down naturally.

For the recently planted scrub and trees planted in the meadow area, there are three suggested options:

- that they are retained as a future miniature copse, excluding them from the grassland management regime (although this would further reduce the benefits of the grassland habitats);
- that they are removed from their current location and re-planted around the edge of the meadow as a hedge or as a screen from the garages and neighbouring gardens; or
- that they are removed to ground level and treated with approved chemicals to prevent them from returning (this would bring the greatest benefit to the grassland, if managed as above.

Impacts on reptiles

Given the potential for reptiles to be found on the old allotment, management will need to take account of the likely impacts, such as set out as above (e.g. only 50% of sward cut in any one year), and for operatives to be given guidance, such as visually assessing presence of slow-worm, and avoiding cutting around large tussocks.

We recommend that a reptile survey is carried out in early summer 2011 to assess their presence (or absence), together with any necessary management guidance, to complement the management plan.

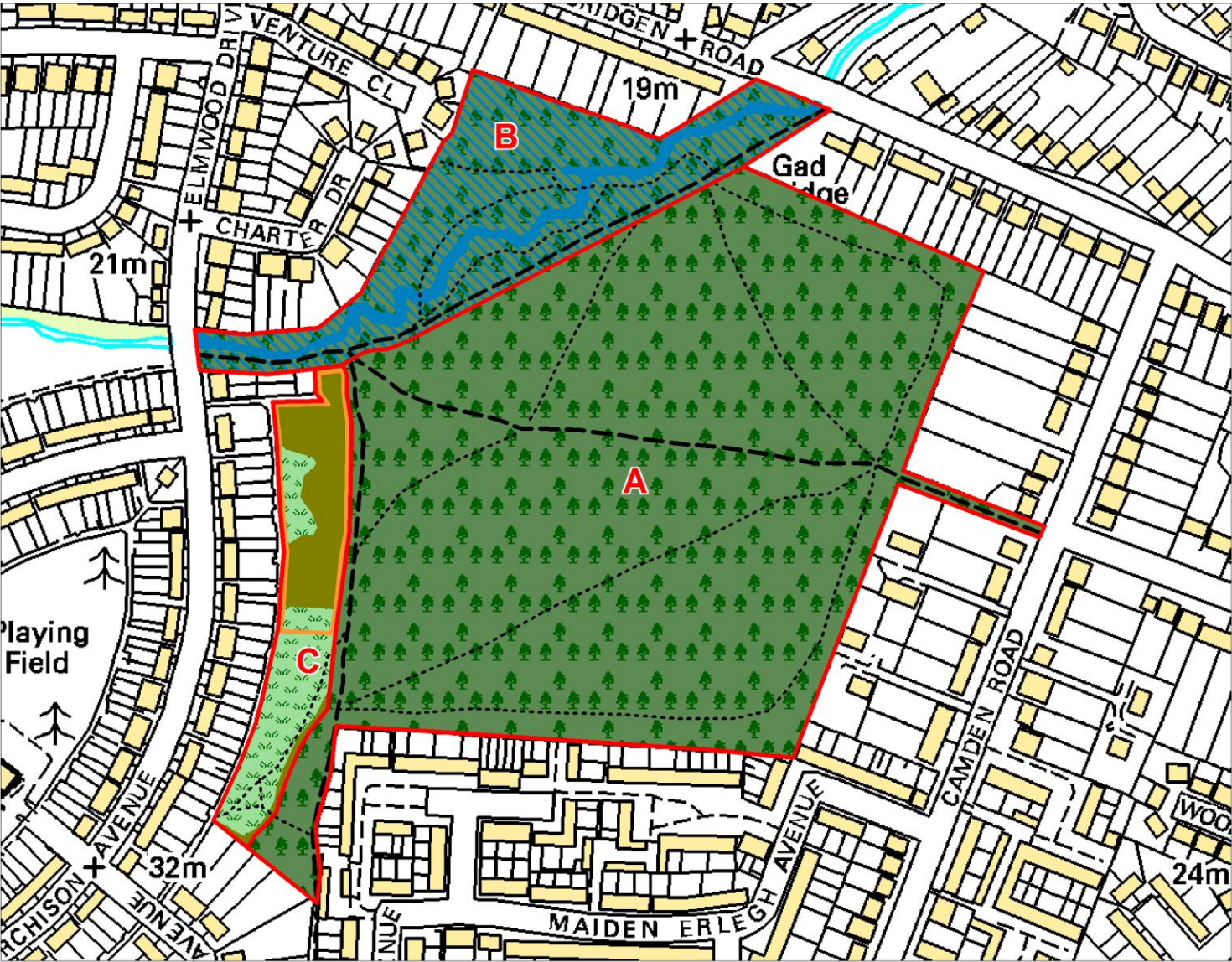
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Appendix I

Site Map

Bexley Woods Phase I Habitat and Compartment Map












Produced by the London Wildlife Trust

Scale: 1: 3000

Based upon the Ordnance Survey 1: 10 000 map with the permission of The Controller of Her Majesty's Stationery Office. © Crown Copyright. All rights reserved. Licence No. AL100023493

Legend

-  Ancient hornbeam woodland
-  Bramble scrub
-  Semi-improved neutral grassland
-  River Shuttle
-  Riverine bank association habitat
-  Main footpaths
-  Minor footpaths
-  Site and compartment boundaries
-  Allotment fence



Appendix 2

Phase I Habitat Survey Plant Species List

| Plant Species List (DAFOR scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare) | | | | | |
|---|-----------------------|----------------------------------|---|---|----------------------------|
| Species | | Habitats | | | Notes |
| Scientific Name | Common Name | Ancient hornbeam woodland | Ancient hornbeam woodland/Riverine association | Semi-improved neutral grassland with scrub | |
| <i>Acer campestre</i> | field maple | R | R | | |
| <i>Acer platanoides</i> | Norway maple | | R | | |
| <i>Acer pseudoplatanus</i> | sycamore | R | O | | |
| <i>Agrostis capillaris</i> | common bent | R | | O | |
| <i>Agrostis stolonifera</i> | creeping bent | O | | O | |
| <i>Alliaria petiolata</i> | garlic mustard | O | O | | |
| <i>Alnus glutinosa</i> | alder | | O | | |
| <i>Anemone nemorosa</i> | wood anemone | F | F | | ancient woodland indicator |
| <i>Anisantha sterilis</i> | barren brome | R | | R | |
| <i>Anthriscus sylvestris</i> | cow parsley | O | A | O | |
| <i>Arabidopsis thaliana</i> | thale cress | R | | | |
| <i>Armoracia rusticana</i> | horse-radish | | | O | |
| <i>Arrhenatherum elatius</i> | false oat-grass | R | O | A | |
| <i>Arum maculatum</i> | lords-and-ladies | O | O | | |
| <i>Aster species</i> | Michaelmas daisy type | R | | | |
| <i>Aucuba japonica</i> | spotted-laurel | R | | | |
| <i>Bellis perennis</i> | daisy | | R | R | |
| <i>Betula pendula</i> | silver birch | O | R | | |
| <i>Brachypodium sylvaticum</i> | false brome | | F | R | |
| <i>Bromus hordeaceus</i> | soft-brome | | | R | |
| <i>Buddleja davidii</i> | butterfly-bush | R | R | | |
| <i>Calystegia sepium.</i> | bindweed species | | | R | |
| <i>Campanula poscharskyana</i> | trailing bellflower | | O | | |
| <i>Cardamine flexuosa</i> | wavy bitter-cress | | O | | |

| Plant Species List (DAFOR scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare) | | | | | |
|---|---------------------------|----------------------------------|---|---|----------------------------|
| Species | | Habitats | | | Notes |
| Scientific Name | Common Name | Ancient hornbeam woodland | Ancient hornbeam woodland/Riverine association | Semi-improved neutral grassland with scrub | |
| <i>Carex pendula</i> | pendulous sedge | | O | | |
| <i>Carex remota</i> | remote sedge | | R | | |
| <i>Carex strigosa</i> | thin-spiked wood-sedge | | R | | ancient woodland indicator |
| <i>Carpinus betulus</i> | hornbeam | D | D | R | |
| <i>Centranthus ruber</i> | red valerian | | R | | |
| <i>Cerastium fontanum</i> | common mouse-ear | | | O | |
| <i>Cerastium glomeratum</i> | sticky mouse-ear | R | | | |
| <i>Chamerion angustifolium</i> | rosebay willowherb | O | | | |
| <i>Cirsium arvense</i> | creeping thistle | R | | | |
| <i>Cirsium vulgare</i> | spear thistle | R | | | |
| <i>Conopodium majus</i> | pignut | O | | | |
| <i>Convolvulus arvensis</i> | field bindweed | | | R | |
| <i>Conyza canadensis</i> | Canadian fleabane | R | | | |
| <i>Corylus avellana</i> | hazel | | | R | |
| <i>Cotoneaster sp.</i> | cotoneaster species | R | | | garden escape |
| <i>Crataegus monogyna</i> | hawthorn | O | R | O | |
| <i>Crepis vesicaria</i> | beaked hawk's-beard | | | R | |
| <i>Cyclamen sp.</i> | sowbread species | R | | R | garden escape |
| <i>Dactylis glomerata</i> | cock's-foot | R | O | O | |
| <i>Digitalis purpurea</i> | foxglove | O | | | |
| <i>Dryopteris filix-mas</i> | male-fern | | R | | |
| <i>Epilobium montanum</i> | broad-leaved willowherb | R | R | | |
| <i>Epilobium parviflorum</i> | hoary willowherb | R | | | |
| <i>Epilobium tetragonum</i> | square-stalked willowherb | R | | | |

| Plant Species List (DAFOR scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare) | | | | | |
|---|---------------------------|----------------------------------|---|---|----------------------------|
| Species | | Habitats | | | Notes |
| Scientific Name | Common Name | Ancient hornbeam woodland | Ancient hornbeam woodland/Riverine association | Semi-improved neutral grassland with scrub | |
| <i>Euonymus europaeus</i> | spindle | | | O | |
| <i>Festuca rubra</i> | red fescue | | R | F | |
| <i>Fragaria x ananassa</i> | garden strawberry | R | | | garden escape |
| <i>Fraxinus excelsior</i> | ash | R | O | F | |
| <i>Galium aparine</i> | cleavers | O | F | F | |
| <i>Geranium molle</i> | dove's-foot crane's-bill | | R | | |
| <i>Geranium robertianum</i> | herb-robert | R | R | | |
| <i>Geranium sp.</i> | crane's-bill species | | | R | |
| <i>Geum urbanum</i> | wood avens | O | O | | |
| <i>Glechoma hederacea</i> | ground-ivy | | F | | |
| <i>Hedera helix</i> | ivy | F | F | O | |
| <i>Hedera helix hibernica</i> | Irish ivy | R | | | garden escape |
| <i>Heracleum sphondylium</i> | hogweed | R | O | R | |
| <i>Holcus lanatus</i> | Yorkshire-fog | R | | O | |
| <i>Hordeum murinum</i> | wall barley | R | | O | |
| <i>Humulus lupulus</i> | hop | | | R | |
| <i>Hyacinthoides hispanica</i> | Spanish bluebell | O | | | garden escape |
| <i>Hyacinthoides non-scripta</i> | bluebell | A | | | ancient woodland indicator |
| <i>Hyacinthoides non-scripta</i> x <i>H. hispanica</i> | hybrid bluebell | O | | R | |
| <i>Hypericum androsaemum</i> | tutsan | | R | | ancient woodland indicator |
| <i>Hypericum perforatum</i> | perforate St. John's-wort | | | R | |
| <i>Hypochaeris radicata</i> | common cat's-ear | R | | O | |
| <i>Ilex aquifolium</i> | holly | F | R | R | |

| Plant Species List (DAFOR scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare) | | | | | |
|---|------------------------------|----------------------------------|---|---|----------------------------|
| Species | | Habitats | | | Notes |
| Scientific Name | Common Name | Ancient hornbeam woodland | Ancient hornbeam woodland/Riverine association | Semi-improved neutral grassland with scrub | |
| <i>Impatiens parviflora</i> | small balsam | R | | | garden escape |
| <i>Iris sp.</i> | iris species | | R | | |
| <i>Juncus effusus</i> | soft rush | R | O | | |
| <i>Lamium purpureum</i> | red dead-nettle | | R | R | |
| <i>Lathyrus latifolius</i> | broad-leaved everlasting-pea | | | R | garden escape |
| <i>Lavatera thuringiaca</i> | garden tree-mallow | | | R | garden escape |
| <i>Lolium perenne</i> | perennial rye-grass | R | F | A | |
| <i>Lonicera periclymenum</i> | honeysuckle | R | | | |
| <i>Lycopus europaeus</i> | gypsywort | | R | | |
| <i>Malus domestica</i> | domestic apple | | | O | garden escape |
| <i>Melampyrum pratense</i> | common cow-wheat | O | | | |
| <i>Melica uniflora</i> | wood melick | F | O | | ancient woodland indicator |
| <i>Mercurialis perennis</i> | dog's-mercury | | O | | |
| <i>Millium effusum</i> | wood millet | R | | | ancient woodland indicator |
| <i>Moehringia trinervia</i> | three-nerved sandwort | R | | | ancient woodland indicator |
| <i>Muscari armeniacum</i> | garden grape-hyacinth | | | R | garden escape |
| <i>Myosotis arvensis</i> | field forget-me-not | | R | | |
| <i>Narcissus sp.</i> | daffodil species | | | R | garden escape |
| <i>Oenanthe crocata</i> | hemlock water-dropwort | | A | | |
| <i>Pentaglottis semperivens</i> | green alkanet | | | O | |
| <i>Persicaria maculosa</i> | redshank | O | R | | |
| <i>Phyllitis scolopendrium</i> | hart's-tongue | | R | | |
| <i>Plantago lanceolata</i> | ribwort plantain | | | O | |
| <i>Plantago major</i> | greater plantain | R | R | R | |

| Plant Species List (DAFOR scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare) | | | | | |
|---|-----------------------|----------------------------------|---|---|---------------|
| Species | | Habitats | | | Notes |
| Scientific Name | Common Name | Ancient hornbeam woodland | Ancient hornbeam woodland/Riverine association | Semi-improved neutral grassland with scrub | |
| <i>Platanus x hispanica</i> | London plane | | R | | planting |
| <i>Poa annua</i> | annual meadow-grass | A | A | O | |
| <i>Poa pratensis</i> | smooth meadow-grass | | | O | |
| <i>Poa trivialis</i> | rough meadow-grass | | F | | |
| <i>Polygonum aviculare</i> | knotgrass | R | R | | |
| <i>Potentilla reptans</i> | creeping cinquefoil | | | R | |
| <i>Prunus avium</i> | wild cherry | O | F | | |
| <i>Prunus laurocerasus</i> | cherry laurel | R | R | | planting |
| <i>Prunus spinosa</i> | blackthorn | R | | O | |
| <i>Prunus sp.</i> | cherry species | | | O | garden escape |
| <i>Pteridium aquilinum</i> | bracken | R | | | |
| <i>Quercus robur</i> | pedunculate oak | F | O | O | |
| <i>Ranunculus ficaria</i> | lesser celandine | R | A | R | |
| <i>Ranunculus repens</i> | creeping buttercup | | O | F | |
| <i>Rhamnus cathartica</i> | buckthorn | O | | F | |
| <i>Ribes rubrum</i> | redcurrant | R | | | |
| <i>Rosa sp.</i> | rose species | | | O | garden escape |
| <i>Rubus fruticosus agg</i> | bramble species group | A | A | A | |
| <i>Rubus idaeus</i> | raspberry | R | R | | |
| <i>Rumex crispus</i> | curled dock | | | R | |
| <i>Rumex obtusifolius</i> | broad-leaved dock | R | R | R | |
| <i>Rumex sanguineus</i> | wood dock | R | O | | |
| <i>Salix cinerea</i> | grey willow | | R | | |
| <i>Sambucus nigra</i> | elder | O | O | | |

| Plant Species List (DAFOR scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare) | | | | | |
|---|-------------------------|----------------------------------|---|---|----------------------------|
| Species | | Habitats | | | Notes |
| Scientific Name | Common Name | Ancient hornbeam woodland | Ancient hornbeam woodland/Riverine association | Semi-improved neutral grassland with scrub | |
| <i>Sanicula europaeus</i> | sanicle | | R | | ancient woodland indicator |
| <i>Scrophularia auriculata</i> | water figwort | | R | | |
| <i>Scrophularia nodosa</i> | common figwort | R | | R | |
| <i>Senecio jacobaea</i> | common ragwort | R | | | |
| <i>Senecio vulgaris</i> | groundsel | R | | | |
| <i>Silene dioica</i> | red campion | O | | | |
| <i>Sisymbrium officinale</i> | hedge mustard | | | R | |
| <i>Solanum dulcamara</i> | bittersweet | R | | | |
| <i>Sonchus asper</i> | prickly sow-thistle | R | | | |
| <i>Sonchus oleraceus</i> | smooth sow-thistle | R | | | |
| <i>Sorbus aucuparia</i> | rowan | R | | | |
| <i>Stachys sylvatica</i> | hedge woundwort | | O | | |
| <i>Stellaria media</i> | common chickweed | F | F | | |
| <i>Tanacetum parthenium</i> | feverfew | | R | | |
| <i>Taraxacum sp.</i> | dandelion species group | R | O | F | |
| <i>Taxus baccata</i> | yew | O | | | |
| <i>Trifolium pratense</i> | red clover | | | R | |
| <i>Trifolium repens</i> | white clover | | | F | |
| <i>Ulmus procera</i> | English elm | | O | | |
| <i>Urtica dioica</i> | common nettle | O | F | A | |
| <i>Veronica arvensis</i> | wall speedwell | | | R | |
| <i>Veronica chamaedrys</i> | germander speedwell | | R | | |
| <i>Veronica hederifolia</i> | ivy-leaved speedwell | R | O | | |
| <i>Vicia sativa</i> | common vetch | | | F | |

| Plant Species List (DAFOR scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare) | | | | | |
|---|---------------------|----------------------------------|---|---|--------------|
| Species | | Habitats | | | Notes |
| Scientific Name | Common Name | Ancient hornbeam woodland | Ancient hornbeam woodland/Riverine association | Semi-improved neutral grassland with scrub | |
| <i>Vicia sepium</i> | bush vetch | | R | R | |
| <i>Viola riviniana</i> | common dog's violet | | R | | |

Appendix 3

Incidental fauna list

| Species | |
|-------------------------|----------------------------------|
| Common Name | Scientific Name |
| Invertebrates | |
| freshwater shrimp | <i>Gammarus pulex</i> |
| banded demoiselle | <i>Calopteryx splendens</i> |
| large red damselfly | <i>Pyrrosoma nymphula</i> |
| common pond skater | <i>Gerris lacustris</i> |
| small white butterfly | <i>Pieris rapae</i> |
| large white butterfly | <i>Pieris brassicae</i> |
| orange tip butterfly | <i>Anthocharis cardamines</i> |
| peacock butterfly | <i>Inachis io</i> |
| meadow brown butterfly | <i>Maniola jurtina</i> |
| speckled wood butterfly | <i>Pararge aegeria</i> |
| small/Essex skipper | <i>Thymelicus sp.</i> |
| marmalade fly | <i>Episyrphus balteatus</i> |
| 24-spot ladybird | <i>Subcoccinella 24-punctata</i> |
| harlequin ladybird | <i>Harmonia axyridis</i> |
| weevil species | <i>Curculionidae</i> |
| black garden ant | <i>Lasius niger</i> |
| honey-bee | <i>Apis mellifera</i> |
| early bumblebee | <i>Bombus pratorum</i> |
| Vertebrates | |
| <u>Fish</u> | |
| perch | <i>Perca fluviatilis</i> |
| roach | <i>Rutilus rutilus</i> |
| <u>Birds</u> | |
| woodpigeon | <i>Columba palumbus</i> |
| ring-necked parakeet | <i>Psittacula krameri</i> |
| green woodpecker | <i>Picus viridis</i> |
| grey wagtail | <i>Motacilla cinerea</i> |
| wren | <i>Troglodytes troglodytes</i> |
| robin | <i>Erithacus rubecula</i> |
| blackbird | <i>Turdus merula</i> |
| chiffchaff | <i>Phylloscopus collybita</i> |
| blackcap | <i>Sylvia atricapilla</i> |
| blue tit | <i>Cyanistes caeruleus</i> |
| great tit | <i>Parus major</i> |
| long-tailed tit | <i>Aegithalos caudatus</i> |
| nuthatch | <i>Sitta europaea</i> |
| magpie | <i>Pica pica</i> |

| Species | |
|------------------------|-----------------------------|
| Common Name | Scientific Name |
| <u>Birds Continued</u> | |
| carrion crow | <i>Corvus corone</i> |
| greenfinch | <i>Carduelis chloris</i> |
| goldfinch | <i>Carduelis carduelis</i> |
| <u>Mammals</u> | |
| grey squirrel | <i>Sciurus carolinensis</i> |

Appendix 4

Bat transect survey

Evening Bat Transect Survey; 6th July 2010

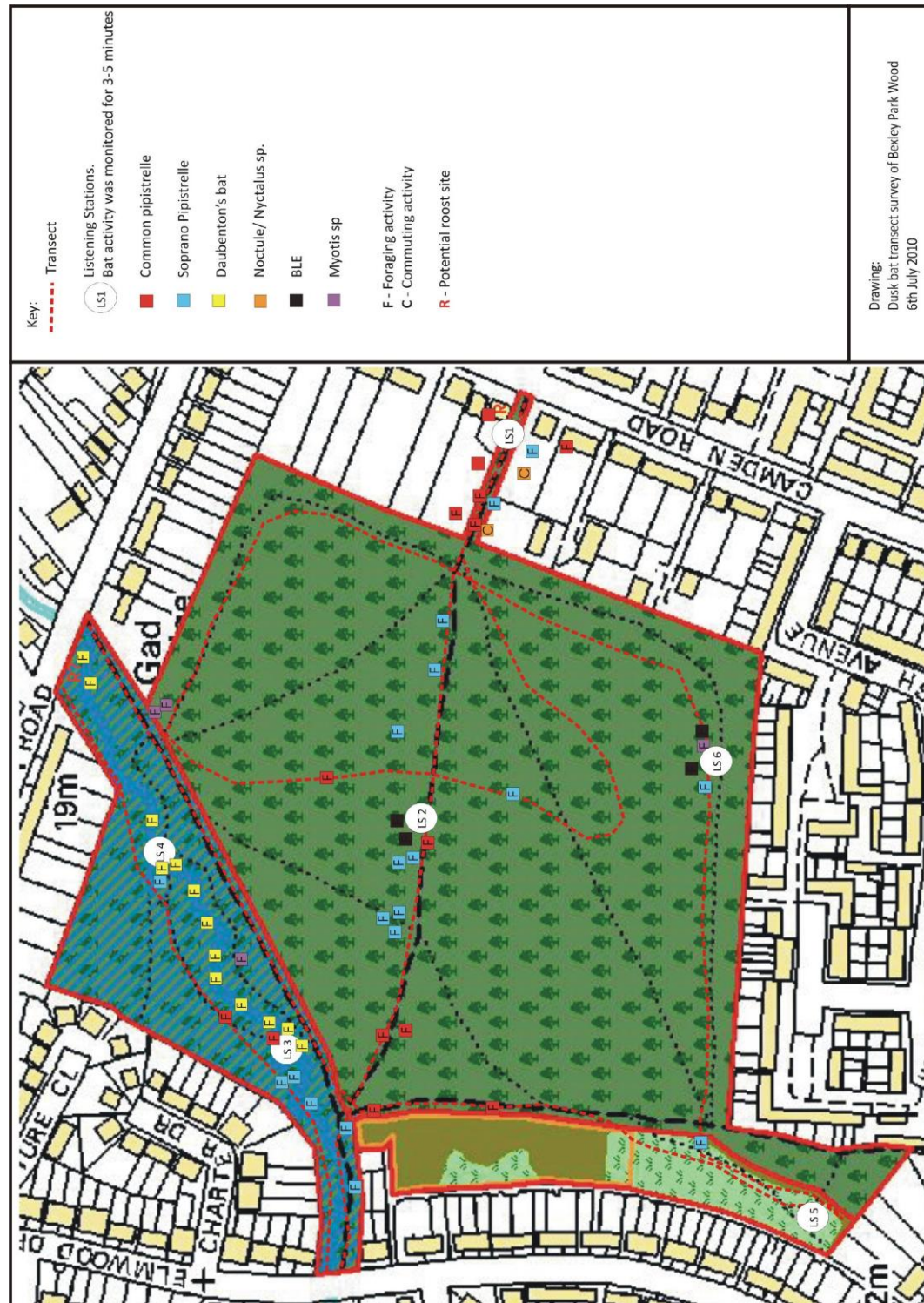
Sunset: 21:18 Start time: 21:30 End time: 23:05

Weather conditions: 17.3°C, 10% cloud cover, dry, calm

| Time | Species | Comments |
|---------------|----------------------------|--|
| 21:37 – 21:39 | Common pipistrelle | Several bats seen flying close to the house adjacent to the site at the Camden Road entrance - roost in house – bats seen emerging from gable apex |
| 21:37 | Noctule | Bat pass across the site |
| 21:40 | Soprano pipistrelle | 2 passes by soprano pipistrelle close to the entrance at Camden Road |
| 21:40 - 21:44 | Common pipistrelle | Feeding over rear garden and along the avenue of oak trees along the footpath entrance at Camden Road |
| 21:43 | Noctule | Faint record of a bat pass |
| 21:45 – 21:47 | Soprano pipistrelle | Feeding at canopy height within the woodland – just west of the entrance at Camden Road and along the main east-west path approx 1/3 of way down. |
| 21:50 – 21:51 | Soprano pipistrelle | Feeding within a small glade to the north of the main west-east path. Social calls recorded |
| 21:52 – 21:56 | Brown long-eared | Recorded within closed canopy towards the western section of site along the main east-west path (Listening Station 2) |
| 21:54 | Common pipistrelle | Bat feeding pass at Listening Station 2 |
| 21:55- 21:58 | Soprano pipistrelle | Feeding at canopy height around Listening Station 2 |
| 21:59- 22:00 | Common pipistrelle | Feeding at canopy height close to the western entrance |
| 22:00 – 22:01 | Soprano pipistrelle | Feeding at canopy close to the western entrance |
| 22:02 – 22:04 | Soprano pipistrelle | Feeding over amenity grassland close to the stream at the western end of the site |
| 22:04- 22:19 | Daubenton's bat | Feeding over channel at Listening Station 3 and along channel as far as the outlet Listening Station 4 |
| 22:05 | Common pipistrelle | Bats feeding at canopy close to the channel |
| 22:12 | Common pipistrelle | Feeding at canopy over the channel |
| 22:14 | Soprano pipistrelle | Feeding by the outlet into the channel Listening Station 4 |
| 22:22 – 22:23 | Daubenton's bat | By bridge at northern entrance to site (possible roost site?) |
| 22:26 | Myotis sp/Brown long-eared | Faint feeding pass at the boundary of the site just south of the north entrance |
| 22:29 | Myotis sp | At bend in channel close to outflow pipe |
| 22:31 | Common pipistrelle | Bat pas close to the western entrance of the woodland |
| 22:33 | Common pipistrelle | Feeding in woodland clearing close to the open area of grassland |
| 22:39 | Common pipistrelle | Brief record at the far end of the grassland Listening Station |

| Time | Species | Comments |
|------------------|------------------------------|---|
| 22:40 | Soprano pipistrelle | Feeding at canopy of large oak and ash trees which bound the grassland area to the east |
| 22:46 | Brown long-eared? | Recorded along the footpath along the southern boundary of the site |
| 22:46 | Soprano pipistrelle | Brief feeding record along the southern footpath |
| 22:48 – 22:49 | Brown long-eared? /Myotis | Recorded along southern footpath by listening station 6 |
| 22:55 | Myotis sp/ Brown long-eared | Close to the northern entrance |
| 22:59 | Common pipistrelle | Brief feeding record within the northern central part of the wood |
| 23:01 | Soprano pipistrelle | Social calls. Within the southern central part of the wood |
| 23:03 – 23:05 | Soprano pipistrelle | Feeding along the footpath and adjacent gardens that leads out to the east to Camden Road |
| 23:03 – 23:05 | Common pipistrelle | Feeding along the footpath and adjacent gardens that leads out to the east to Camden Road |

Evening Bat Transect Survey; 6th July 2010



Appendix 5

Bat activity surveys

Evening activity survey; 4th August 2010

Sunset: 20:43 Start at: 20:44 End at:22:50

Weather conditions: 14.3°C. rain 45 minutes before survey, but dry throughout.
 80% cloud cover, calm.

Surveyor 1: Huma Pearce (surveyors walked together after 21:00 until survey end.)

| Time | Species | Comment |
|---------------|---|--|
| 20:48 | Pipistrellus sp | Faint call recorded along the eastern boundary of the site |
| 20:50 | Common pipistrelle | Feeding activity recorded at north-east corner of the site |
| 20:52 | Soprano pipistrelle | Brief faint record of bat along the northern boundary of the site, approx 1/3 rd of way along |
| 20:53 | Noctule | Feeding activity recorded from along the northern boundary of the site |
| 20:55-20:57 | Soprano pipistrelle Common pipistrelle | Feeding at canopy height within a small clearing along the northern boundary. Joined by a common pipistrelle and social calls heard. 2-3 bats seen at any one time |
| 20:57 | Common pipistrelle | Bat feeding along footpath that runs parallel to the channel and leads up Parkhill/Bridgen Road |
| 21:00 – 21:02 | Common pipistrelle Soprano pipistrelle | Bat seen flying into woodland from the adjacent residential gardens and feeding over the gardens and along the woodland edge and channel. Social Calls recorded. |
| 21:02 | Noctule | Faint record heard along the western boundary |
| 21:04 – 21:06 | Soprano pipistrelle Common pipistrelle | Bat feeding over the adjacent gardens that are located just before the path opens into the small area of amenity grassland by the channel. 2-5 bats between the garden , over the amenity grassland and trees along the channel. |
| 21:07 | Common pipistrelle | Feeding over the garden immediately adjacent to the western entrance to the site |
| 21:08 | Soprano pipistrelle | Feeding adjacent to the water course close to the western entrance |
| 21:09-21:10 | Soprano pipistrelle Common pipistrelle | 2-5 bats seen feeding at canopy height at the corner of the site with the community/childrens club centre. |
| 21:11 | Noctule | Bat heard along the western boundary close to the old allotment site |
| 21:12 | Common pipistrelle | 3 bats feeding over the fenced off section towards the western boundary of the site |
| 21:13 | Common pipistrelle | Feeding at canopy within small clearing just by track that leads to old allotment site |
| 21:22 | Serotine? | Along the eastern section, south of Camden Road entrance |
| 21:24 | Pipistrellus sp | Pipistrellus species feeding along the path an adjacent gardens to Camden Road entrance – Two species recorded possible soprano pipistrelle and Nathusius' pipistrelle |
| 21:28 – | Brown long- | Feeding below canopy close to the vegetation, within woodland down main |

| Time | Species | Comment |
|---------------|---------------------|---|
| 21:30 | eared | path from Camden Road |
| 21:31 | Common pipistrelle | Faint record about ½ way down main track |
| 21:43 | Common pipistrelle | Feeding adjacent to the channel in a section of the bank that s heavily trampled |
| 21:54 | Common pipistrelle | Recorded along the central path. Section to the west of the site where there is scrub vegetation either side of the path |
| 21:56 | Common pipistrelle | Recorded along the central path. Section to the west of the site where there is scrub vegetation either side of the path |
| 22:01 | Common pipistrelle | Faint record at corner of site close to the western entrance that leads to Murchison Avenue/Elmwood Drive |
| 22:03 – 22:04 | Common pipistrelle | Feeding along western boundary of the site within a clearing just before the footpath enters into the allotment area. Social calls recorded |
| 22:04 | Common pipistrelle | Bat recorded feeding in dense woodland in the south-western part of the site |
| 22:06 | Common pipistrelle | Bat recorded in southern part of the site towards the easter boundary |
| 22:08 – 22:09 | Common pipistrelle | Feeding with social calls |
| 22:10 – 22:12 | Common pipistrelle | Feeding at the south-eastern part oof the site, where the canopy is less closed |
| 22:21 | Common pipistrelle | Bat feeding in the north-eastern corner of the site |
| 22:30 – 22:32 | Common pipistrelle | Recorded at canopy height and within the adjacent gardens in the west of the site |
| 22:37 | Common pipistrelle | Feeding at the corner of the site between the allotment and western entrance |
| 22:40 | Soprano pipistrelle | Faint brief record along central track |
| 22:42 | Myotis | Along main track about ½ way |
| 22:43 | Soprano pipistrelle | Recorded along the main track about ½ way |
| 22:44 | Brown long-eared | Along the main track about ½ way |
| 22:45 | Soprano pipistrelle | Social calls recorded along the main track towards the Camden Road entrance |
| 22:47 | Common pipistrelle | Feeding at the Camden Road entrance |

Surveyor 2: Laura Murray

| Time | Species | Comment |
|---------------|---|---|
| 20:49 | Common pipistrelle | Bat pass (possible emergence from nearby properties) 6 minutes after sunset |
| 20:52 | Noctule | Bat flying above house to the north of the path |
| 20:53 | Pipistrellus sp | Bats seen flying close to trees along footpath and adjacent garden |
| 20:58 – 20:59 | Soprano pipistrelle Common pipistrelle | Bat feeding over large oak along the footpath |
| 21:01 | Nyctalus sp | Bat heard, not seen |
| 21:05 | Noctule | Bat seen commuting from woodland to road |
| 21:05 | Soprano pipistrelle Common pipistrelle | Feeding along pathway between Camden Road and woodland edge |

| | | |
|------------------|---|---|
| 21:09 – 21:13 | Soprano pipistrelle Common pipistrelle | 2-3 bats feeding over the house and garden |
| 21:12 | Noctule | Bat pass, not seen |
| 21:16 – 21:19 | Common pipistrelle | Bat feeding along entrance track |
| 21:20 | Noctule | Bat heard, not seen |
| 21:21 | Common pipistrelle | Bat pass |
| 21:21 | Noctule | Bat heard, not seen |
| 21:23 | Common pipistrelle Nathusius' pipistrelle? | Bat feeding passes along Camden Road entrance track |
| 21:41 | Soprano pipistrelle | Bat feeding in a clearing the western part of the site close to the channel |
| 21:45 | Common pipistrelle | Bat feeding along the western boundary close to the fenced allotment area |
| 21:49 | Common pipistrelle | Bat flying at canopy height within a clearing close to western entrance |
| 22:03 – 22:06 | Common pipistrelle | 2-3 bats feeding close to allotment social calls |
| 22:08- 22:11 | Common pipistrelle | Bat feeding along the southern section of the woodland |
| 22:20 | Common pipistrelle | Bat feeding along the northern boundary of the site |
| 22:29 – 22:30 | Common pipistrelle | Bat feeding close to the channel |
| 22:35 | Common pipistrelle | Feeding at the corner by the western entrance |
| 22:37 | Soprano pipistrelle | Bat feeding at the western end of main track within a clearing |
| 22:40 | Brown long- eared? | Recorded along the main track |
| 22:42 – 22:43 | Soprano pipistrelle | Recorded along main track close to east entrance. Social calls recorded |
| 22:45 | Common pipistrelle | Feeding along Camden Road entrance track |

Evening activity survey; 4th August 2010



Dawn activity survey; 5th August 2010

Sunrise: 5:30 Start at 03:29 End time: 05:30
 Temp: 13.4°C, 60% cloud cover, dry, calm

Recording from both surveyors walking together up until 04:45. Surveyor I (Huma Pearce) after 04:45

| Time | Species | Comment |
|--|--|---|
| 03:32 | Soprano pipistrelle | Bat feeding at the edge of the woodland by the Camden Road entrance. Social calls recorded |
| 03:33 | Noctule | Brief feeding pass heard at the edge of the wood |
| 03:34 | Common pipistrelle | Feeding inside the woodland, just in from Camden Road entrance. Social calls recorded |
| 03:40 – 03:41 | Common pipistrelle | Feeding at canopy height along the main path approximately 2/3 of the way down |
| 03:42 – 03:44 | Common pipistrelle Soprano pipistrelle | Bat feeding along channel about mid-way up towards the northern entrance. Common pipistrelle recorded more frequently. |
| 03:51 – 03:52 | Common pipistrelle | Bat feeding records heard along the channel close to area of amenity grassland towards the north-western end of the channel |
| 03:54 | Common pipistrelle | |
| 03:54 – 03:58 | Myotis sp | Likely to be Daubenton's bat recorded feeding over the channel |
| 04:00 – 04:01 | Common pipistrelle | Recorded feeding close to the channel, along the east bank |
| 04:02 | Myotis | Within woodland just south-east of the channel |
| 04:05 – 04:06 | Common pipistrelle | Recorded within northern part of the site where the ground is raised |
| 04:12- 04:13 | Myotis/ Brown long-eared Soprano pipistrelle | Feeding with a small clearing within the northern part of the site |
| 04:22 | Myotis | Faint record by the eastern bank of the channel |
| 04:23 | Pipistrellus sp | Faint brief record towards the southern end of the channel |
| 04:23 – 04:24 | Soprano pipistrelle Noctule | Large bat flying within the clearing close to the channel – recently cleared area |
| 04:28 – 04:29 | Common pipistrelle | Recorded adjacent to the channel |
| 04:35 – 04:37 | Soprano pipistrelle | Bat feeding record within clearing close to footpath that enters into the allotment plot |
| 04:39 | Soprano pipistrelle | At corner of allotment and woodland |
| 04:41 - 04:42 | Common pipistrelle | Faint records in more open canopy along the southern boundary |
| Part of survey only carried out by Surveyor I | | |
| 04:48 | Common pipistrelle | Feeding at the eastern end of the central footpath |
| 04:49 | Brown long-eared? | Very faint brief record at the eastern end of the central pathway |
| 04:52 | Brown long-eared? | Towards the western end of central track where there are pathways |

| Time | Species | Comment |
|-------|--|---|
| | | crossing |
| 04:55 | Common pipistrelle Noctule | Western end of the central track |
| 04:59 | Myotis sp/Brown long-eared Noctule | Brief record within clearing at western end of central track Noctule social calls – possible roost calls |
| 05:03 | Common pipistrelle | Faint record along channel within clearing |
| 05:04 | Soprano pipistrelle | Close to the outlet along the western bank of the channel |
| 05:05 | Common pipistrelle | Faint record along the western bank of channel feeding within the open amenity grassland towards the northern entrance |

Surveyor 2 (Laura Murray):

Start at 04:46 End Time: 05:30

| Time | Species | Comment |
|-------|-----------------------|---|
| 04:49 | Common pipistrelle | Bat feeding record at the eastern end of the central track. Bat pass from roadside into the woodland |
| 04:52 | Noctule | Faint record hear along track leading from Camden Road into Bexley Park Wood |
| 04:53 | Pipistrellus sp | Brief record at wood entrance |

Dawn activity survey; 5th August 2010



Appendix 6

Bat roosting assessments

Tree assessment; tree numbers and locations



Table 1: List of trees identified as having moderate/ high bat roost potential

| GPS/ Tree No. | Species | Feature | Approx. height above ground level | Orientation of feature | Grid reference | Comments |
|---------------------|---------|---|---|---|-----------------------------|------------------------------------|
| 030 | Oak | Cavity/woodpecker hole | 4 metres | NE facing | N51°26.552' E000°08.145' | Photograph 1 |
| | | Deadwood and raised bark at branch ends | Canopy | Throughout | | |
| 031 | Oak | Cavity/woodpecker hole | 4 metres | North facing | N51°26.551' E000°08.138' | Photograph 2 |
| | | Split immediately above cavity | 4 metres | North facing | | |
| | | Deadwood and raised bark associated with branch ends | Canopy | Throughout | | |
| 032 | Oak | Cavity/woodpecker hole with minor staining and scratch marks at entrance | 7-8 metres | South-west | N51°26.559' E000°08.124' | Opposite bench Photograph 3 |
| | | Shallow crevice features around several boss holes associated with past tree management | | Throughout | | |
| | | Split associated with branch that extends westwards | 5 metres | West | | |
| 033 | Oak | Cavity/woodpecker hole associated with limb that extends south-westwards | 5-6 metres | NE facing | N51°26.560' E000°08.110' | Photograph 4 |
| | | Deadwood and raised bark at branch ends | Canopy | Throughout | | |
| 034 | Oak | Cavity/woodpecker hole | 3.5 metres | South | N51°26.555' E000°08.091' | Photograph 5 |
| | | Cavity/woodpecker hole | 4.5 metres | South-west | | |
| | | Cavity/woodpecker hole | 6 metres | North-west | | |
| | | Downward facing cavity on underside of branch that extends north-west | 6 metres | Downward facing north-west | | |
| | | Deadwood, split limbs and raised bark at branch ends | Canopy | Throughout | | |
| 035 | Oak | Cavity on underside of branch that extends southwards | 8-10 metres | Downwards on branch that extends southwards | N51°26.548' E000°08.090' | Bexley Scout Group plaque |
| | | Splits associated with limb that | 4 metres | West | | |

| GPS/ Tree No. | Species | Feature | Approx. height above ground level | Orientation of feature | Grid reference | Comments |
|---------------------|---------|--|---|---------------------------|-----------------------------|---|
| | | extends westwards | | | | |
| | | Cavity | 5 metres | North | | |
| | | Deadwood, split limbs and raised bark at branch ends | Canopy | Throughout | | |
| 036 | Oak | Cavity within limb that extends north-westwards | 4 metres | | N51°26.541' E000°08.096' | |
| | | Cavity within main stem | 6 metres | North | | |
| | | Deadwood, split limbs and raised bark at branch ends | Cavity | Throughout | | |
| 037 | Oak | Cavity on underside of branch that extends south-westwards | 6-7 metres | Downwards | N51°26.526' E000°08.109' | |
| | | Deadwood, split limbs and raised bark at branch ends | | | | |
| 038 | Oak | Cavity/woodpecker hole | 6 metres | North | N51°26.527' E000°08.122' | Occupied by parakeet on date of survey Photograph 6 |
| | | Deadwood, split limbs and raised bark at branch ends | Canopy | Throughout | | |
| 039 | Oak | Cavity/woodpecker hole | 3 metres | West | N51°26.540' E000°08.139' | |
| | | Deadwood, split limbs and raised bark at branch ends | Canopy | Throughout | | |
| 040 | Oak | Cavity within limb that extends northwards | 8 metres | North | N51°26.573' E000°08.095' | Very dense foliage – view obscured |
| 041 | Oak | Cavity | 5-6 metres | South-west | N51°26.558' E000°08.072' | Appears to open upwards so maybe exposed to rain Dense foliage – view obscured |
| | | Cavity/woodpecker hole on main stem | 5 metres | South-east | | |
| | | Deadwood, split limbs and raised bark at branch end, particularly eastern part of the tree | | | | |
| 042 | Oak | Cavity/woodpecker hole within limb that extends eastwards | 8 metres | North | N51°26.562' E000°08.045' | |
| | | Deadwood, split limbs and raised bark at branch ends | Canopy | Throughout | | |
| 043 | Oak | Cavity/woodpecker hole on main stem | 5-6 metres | North-west | N51°26.558' E000°08.046' | |
| | | Minor woodpecker damage to main stem | 3 metres | | | |
| 044 | Oak | Woodpecker hole | 8 metres | North-west | N51°26.549' | |

| GPS/ Tree No. | Species | Feature | Approx. height above ground level | Orientation of feature | Grid reference | Comments |
|---------------------|----------|--|---|---------------------------|-----------------------------|---|
| | | Deadwood, split limbs and raised bark at branch ends | | | E000°08.017' | |
| 045 | Oak | Cavity/woodpecker hole on underside of branch that extends north-westwards | 4.5 metres | Downwards | N51°26.541' E000°08.027' | |
| | | Deadwood, split limbs and raised bark at branch ends | Canopy | Throughout | | |
| 046 | Oak | Cavity on main stem | 2.5 metres | South | N51°26.529' E000°08.024' | Dense foliage – view obscured. Additional cavities are likely to be present |
| | | Deadwood, split limbs and raised bark at branch ends | | | | |
| 047 | Oak | Cavity/woodpecker hole on main stem | 2 metres | South-east | N51°26.572' E000°08.052' | Close to stump and fallen tree close to central path |
| | | Deadwood, split limbs and raised bark at branch ends | | | | |
| 048 | Oak | Cavity/woodpecker hole on main stem | 5 metres | South-west | N51°26.573' E000°08.040' | |
| | | Deadwood, split limbs and raised bark at branch ends | | | | |
| 049 | Oak | Stem that extends north-west is hollow/significant deadwood | 3 metres | North-west | N51°26.575' E000°08.030' | |
| | | Deadwood, split limbs and raised bark at branch ends | | | | |
| 050 | Hornbeam | Cavity within north-east stem | 5 metres | west | N51°26.571' E000°07.940' | 4 stemmed Photograph 7 |
| 051 | Oak | Significant split to limb that extends southwards | 4.5 metres | South | N51°26.567' E000°07.922' | |
| | | Cavity/woodpecker hole in main stem | 3 metres | West | | |
| | | Cavity/woodpecker hole in main stem | 4.5 metres | South-west | | |
| 052 | Oak | Cavity within main stem | 4 metres | South-west | N51°26.583' E000°07.934' | |
| | | Cavity within main stem | 5.5 metres | South-west | | |
| 053 | Oak | Small opening with staining towards tree base | 0.75 metres | | N51°26.582' E000°07.915' | Photograph 8, 9 and 10 |
| | | Cavity within limb that extends southwards | 4.5 metres | | | |

| GPS/ Tree No. | Species | Feature | Approx. height above ground level | Orientation of feature | Grid reference | Comments |
|---------------------|---------|---|---|---------------------------|-----------------------------|-------------------------------------|
| | | Two woodpecker holes on stem that has been topped in the past | 6 metres | East | | |
| | | Deadwood, split limbs and raised bark at branch ends | | | | |
| 054 | Oak | Two woodpecker holes on the underside of limb that extends southwards | 5 and 6 metres | South | N51°26.597' E000°07.881' | Photograph 11 and 12 |
| | | Large crevice within limb that extends south-west | 4 metres | South-west | | |
| | | Cavity/woodpecker hole within limb that extends south-west on underside | 6 metres | South-west (downwards) | | |
| | | Deadwood, split limbs and raised bark at branch ends | | | | |
| 055 | Ash | Cavity in main stem | 8 metres | south | N51°26.606' E000°07.870' | Adjacent to stream View obscured |
| 056 | | Monolith with extensive splits and deadwood | | | N51°26.632' E000°07.910' | |
| 057 | Oak | Cavity in main stem with staining | 4 metres | South | N51°26.665' E000°07.957' | Photograph 13 |
| 058 | Oak | Cavity within main stem | 4 metres | South-west | N51°26.664' E000°08.024' | |
| | | Cavity within main stem with some staining | 4 metres | South -east | | |
| 059 | Oak | Woodpecker hole/cavity | 6 metres | South-east | N51°26.647' E000°08.088' | |
| 060 | Oak | Cavity in main stem | 5-6 metres | North-west | N51°26.631' E000°08.137' | |
| 061 | Oak | Downwards cavity within main stem | 5 metres | North | N51°26.620' E000°08.155' | |
| | | Deadwood, split limbs and raised bark at branch ends | | | | |
| 062 | Oak | Cavity/woodpecker hole within main stem | 3 metres | South-east | N51°26.614' E000°08.155' | |
| | | Cavity/woodpecker hole within main stem with some staining | 2.5 metres | South-east | | |
| 063 | Oak | Upward facing | 5 metres | North-east | N51°26.592' | |

| GPS/ Tree No. | Species | Feature | Approx. height above ground level | Orientation of feature | Grid reference | Comments |
|---------------------|----------|--|---|---------------------------|-----------------------------|----------|
| | | cavity/ woodpecker hole on limb that extends north-east | | | E000°08.151' | |
| | | Cavity within main stem – possible staining | 4 metres | South-west | | |
| 064 | Oak | Cavity/woodpecker hole in main stem | 4.5 metres | South | N51°26.591' E000°08.139' | |
| | | Crevice above cavity in main stem | 5.5 metres | South | | |
| 065 | Oak | 2 x cavities in main stem | 5 metres | South-west | N51°26.600' E000°08.112' | |
| | | Significant splits associated with limb that extends south-westwards | | | | |
| 066 | Hornbeam | Shallow cavity in main stem below limb that extends southwards | 4 metres | East | N51°26.602' E000°08.097' | |
| 067 | Oak | Cavity/ woodpecker hole within stem that extends north-westwards | 7 metres | North-east | N51°26.607' E000°08.101' | |
| 068 | Oak | Cavity/woodpecker hole in main stem | 4 metres | West | N51°26.619' E000°08.112' | |
| 069 | Oak | Cavity/woodpecker hole within main stem | 8 metres | North-east | N51°26.612' E000°08.078' | |
| 070 | Oak | Woodpecker hole/cavity within main stem | 5 metres | South-east | N51°26.608' E000°08.076' | |
| | | Woodpecker hole/cavity within main stem | 6 metres | South-east | | |
| | | Woodpecker hole/cavity in main stem with possible staining | 6.5 metres | North-east | | |
| 071 | Oak | Upward facing cavity within main stem | 4-5 metres | South-east | N51°26.619' E000°08.018' | |
| | | Boss holes from past tree management with significant crevice features | Throughout | Throughout | | |
| 072 | Oak | Dead tree with significant splits within main stem, lose bark and crevices | Throughout | Throughout | N51°26.617' E000°08.002' | |
| 073 | Oak | Cavity at base | Base | | N51°26.593' | |
| | | Cavity/woodpecker | 3 metres | North | E000°07.994' | |

| GPS/ Tree No. | Species | Feature | Approx. height above ground level | Orientation of feature | Grid reference | Comments |
|---------------------|---------|--|---|---------------------------|-----------------------------|---|
| | | hole in main stem | | | | |
| | | Cavity/woodpecker hole | 4 metres | North-west | | |
| 074 | Oak | 3 x woodpecker holes in main stem | >8 metres | South-east | N51°26.596' E000°07.935' | At edge of newly created clearing in the north-west of site |
| 075 | Oak | Cavity/woodpecker hole in main stem | 2.5 metres | South-west | N51°26.555' E000°07.904' | |
| 076 | Oak | Cavity/woodpecker hole within main stem | 2.5 metres | South-west | N51°26.536' E000°07.923' | Photograph 14 |
| | | Cavity/woodpecker hole within main stem | 4 metres | South-east | | |
| | | 2 cavities/woodpecker holes | 6 metres | south | | |
| 077 | Oak | Cavity on underside of limb that extends south-wards with some staining | 6 metres | South | N51°26.526' E000°07.944' | |
| | | Cavity/woodpecker hole within main stem | 3 metres | west | | |
| 078 | Oak | Small woodpecker investigation | 3 metres | West | N51°26.535' E000°07.905' | |
| | | Cavity within limb that extends northwards | 7-8 metres | West | | |
| 079 | Oak | Cavity/woodpecker hole in main stem | 3 metres | South-east | N51°26.491' E000°07.903' | |
| | | Crevice feature/cavity within boss hole may lead into cavity behind deadwood | 4 metres | South | | |
| | | Woodpecker hole within main stem | 3 metres | West | | |
| 080 | Oak | 2 x woodpecker hole/cavity within main stem with bracket fungi | 4 metres | West South-west | N51°26.494' E000°07.916' | |
| | | Deadwood, split limbs and raised bark at branch ends | | | | |
| 081 | Oak | Woodpecker hole/cavity within main stem | 3 metres | South-east | N51°26.497' E000°07.959' | |
| | | Woodpecker hole/cavity within main stem | 4 metres | East | | |
| | | Woodpecker hole/ | 5 metres | South | | |

| GPS/ Tree No. | Species | Feature | Approx. height above ground level | Orientation of feature | Grid reference | Comments |
|---------------------|---------|---|---|---------------------------|-----------------------------|---------------------------|
| | | cavity within main stem | | | | |
| 082 | Oak | Woodpecker hole within main stem | 8+ metres | South-east | N51°26.494' E000°07.979' | Occupied by grey squirrel |
| | | Woodpecker hole/cavity within main stem | 3 metres | West | | |
| | | Woodpecker hole/cavity within main stem | 4 metres | South-west | | |
| | | Deadwood, split limbs and raised bark at branch ends | | | | |
| 083 | Oak | Woodpecker hole/cavity within main stem | 6 metres | North | N51°26.497' E000°07.988' | |
| 084 | Oak | Woodpecker hole/cavity within main stem | 3.5 metres | North-east | N51°26.483' E000°08.008' | |
| 085 | Oak | Woodpecker hole within main stem below 'boss' hole with cavity | 3.5 metres | South | N51°26.485' E000°08.013' | |
| 086 | Oak | Dead tree with significant splits and deadwood | Throughout | Throughout | N51°26.494' E000°08.044' | |
| 087 | Oak | Hollow at base | | | N51°26.485' E000°08.086' | |
| | | 2 x woodpecker hole/cavity within main stem | 5 metres | South | | |
| | | Woodpecker hole/cavity within main stem | 6 metres | South-east | | |
| | | 2 woodpecker holes/cavities within main stem | 4 metres | North-west | | |
| 088 | Oak | Cavity at base | Base | | N51°26.502' E000°08.094' | |
| | | Openings into cavity within main stem associated with boss hole/ past management wounds | 5 metres | North-west East | | |

Appendix 7

Legislative framework

Bat Legislation

All bat species in the UK are fully protected under The Conservation (Natural Habitats, & c.) Regulations 2010 (as amended), through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or taking (capture) of bats
- Deliberate disturbance of bats in such a way as to:
 - impair their the ability to survive, breed, or rear or nurture their young; or
 - affect significantly the local distribution or abundance of bat species; or
 - impair their ability to hibernate or migrate
- Damage or destruction of a bat breeding site or resting place i.e. roost
- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

All bat species in the UK are also protected under the Wildlife & Countryside Act 1981 (as amended) through their inclusion on Schedule 5. Under this Act, it is an offence to:

- Intentionally or recklessly disturb any bat while it is occupying a structure or place which it uses for shelter or protection
- Intentionally or recklessly obstruct the access to any place of shelter or protection used by bat(s)
- Sell, offer or expose for sale, possess or transport a bat(s) for the purpose of sale.

A European Protected Species Mitigation (EPSM) Licence issued by the relevant countryside agency (e.g. Natural England) will need to be applied for to allow derogation from the relevant legislation i.e. for works liable to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young, hibernate, migrate). In certain circumstances, important foraging areas and/or commuting routes can be regarded as being afforded *de facto* protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity and long-term viability of a bat roost.

Bird Legislation

With certain exceptions, all birds, their nests and eggs are protected under Sections 1-8 of the Wildlife & Countryside Act 1981 (as amended). Among other things, this makes it an offence to:

- Intentionally kill, injure or take any wild bird
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built
- Intentionally take or destroy an egg of any wild bird
- Sell, offer or expose for sale, have in his possession or transport for the purpose of sale any wild bird (dead or alive) or bird egg or part thereof.

Certain species of bird, for example the barn owl, black redstart, hobby, bittern and kingfisher receive additional special protection under Schedule 1 of the Act and Annex 1 of the European Community Directive on the Conservation of Wild Birds (79/409/EEC). This affords them protection against:

- Intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young.
- Intentional or reckless disturbance of dependent young of such a bird

To avoid contravention of the Wildlife & Countryside Act 1981 (as amended), works should be planned to avoid the possibility of killing or injuring any wild bird, or damaging or destroying their nests. The most effective way to reduce the likelihood of nest destruction in particular is to undertake work outside the main bird nesting season which typically runs from March to August. Where this is not feasible, it will be necessary to have any areas of suitable habitat thoroughly checked for nests prior to vegetation clearance.

Those species of bird listed on Schedule 1 are additionally protected against disturbance during the nesting season. Thus, it will be necessary to ensure that no potentially disturbing works are undertaken in the vicinity of the nest. The most effective way to avoid disturbance is to postpone works until the young have fledged. If this is not feasible, it may be possible to maintain an appropriate buffer zone or standoff around the nest.

Conservation (Natural Habitats etc) Regulations 2010

The species protection provision of the EC Habitats Directive 1992, as implemented by the Conservation of Habitats and Species Regulations 2010, comprises three 'derogation tests' which must be applied by the Local Planning Authority when deciding whether to grant planning permission for a development that could harm a European Protective Species. The three tests are that:

- The activity to be licensed must be for imperative reasons of overriding public interest or for public health and safety
- There must be no satisfactory alternative; and
- Favourable Conservation Status (FCS) of the species must be maintained.

It is the responsibility of the applicant to submit sufficient information to address these tests when applying for planning permission. For development activities, an EPSM Licence application can only be obtained after planning permission has been granted. However, the granting of planning permission does not guarantee that a licence will be issued by the relevant countryside agency

Natural Environment and Rural Communities Act 2006 (NERC)

Part 3, Section 40 of the NERC Act 2006 states that 'every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity', otherwise known as the Biodiversity Duty.

Under Section 41 of the Act, the Secretary of State must publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity. This list is based on those species listed in the UK Biodiversity Action Plan (BAP) as priority species. The S41 list replaces the list published under Section 74 of the Countryside and Rights of Way (CROW) Act 2000.

Biodiversity Action Plan

Biodiversity Action Plans (BAPs) set out actions for the conservation and enhancement of biological diversity at national, regional and local level. They consist of both Habitat Action Plans (HAPs) and Species Action Plans (SAPs) and species and habitats listed within these are defined as being of Principal Importance for the Conservation of Biodiversity under Section

41 of the NERC Act 2006. Local authorities must consider these species and habitats when determining planning applications.

Planning Policy Statement 9

Planning Policy Statements (PPS) set out the Government's national policies on different aspects of planning in England. PPS9 sets out planning policies on the protection of biodiversity and geological conservation. PPS9 states that:

- Development plan policies and planning decisions should be based upon up-to-date information about the environmental characteristics of their areas. These characteristics should include the relevant biodiversity and geological resources of the area. In reviewing environmental characteristics local authorities should assess the potential to sustain and enhance those resources.
- Plan policies and planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests. In taking decisions, local planning authorities should ensure that appropriate weight is attached to designated sites of international, national and local importance; protected species; and to biodiversity and geological interests within the wider environment.
- Plan policies on the form and location of development should take a strategic approach to the conservation, enhancement and restoration of biodiversity and geology, and recognise the contributions that sites, areas and features, both individually and in combination, make to conserving these resources.
- Plan policies should promote opportunities for the incorporation of beneficial biodiversity and geological features within the design of development.
- Development proposals where the principal objective is to conserve or enhance biodiversity and geological conservation interests should be permitted.
- The aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests. Where granting planning permission would result in significant harm to those interests, local planning authorities will need to be satisfied that the development cannot reasonably be located on any alternative sites that would result in less or no harm. In the absence of any such alternatives, local planning authorities should ensure that, before planning permission is granted, adequate mitigation measures are put in place. Where a planning decision would result in significant harm to biodiversity and geological interests, which cannot be prevented or adequately mitigated against, appropriate compensation measures, should be sought. If that significant harm cannot be prevented, adequately mitigated against, or compensated for, then planning permission should be refused.

This means full comprehensive ecological surveys will need to be carried out and suitable mitigation strategies compiled prior to the submission of any planning application. This information will be reviewed by the Local Planning Authority in consultation with the relevant countryside agency and other conservation bodies.

Appendix 8

Site photographs

Eastern (Camden Road) entrance and footpath



Western (Elmwood Drive) entrance and footpath



Minor footpath showing good vegetation coverage on path edges



Western main footpath looking north



Area adjacent to western main footpath showing sparse ground flora



Area near northern entrance again showing sparse ground flora



Distinctive gravel line over drain leading towards back gardens of houses on Charter Drive



River Shuttle towards northern end of site



River Shuttle towards western end of site showing increased bankside erosion.



Drain leading into River Shuttle. Stone walls have good fern populations.



Semi-improved neutral grassland habitat on former allotments with minor footpath visible



Semi-improved neutral grassland habitat on former allotments with planted shrubs visible in background



Fenced off area of semi-improved neutral grassland and scrub habitat on former allotments with fruit trees



Wood anemone (ancient woodland indicator species). Frequently found in patches within woodland



Population of **sanicle** along top of drain walls (ancient woodland indicator species).



Wood melick (ancient woodland indicator species). Only found along western footpath edges.



Three-nerved sandwort (ancient woodland indicator species). This is the only clump found and was located along the western edge footpath.



Common cow-wheat, a clump of which is located with bracken in the south-eastern corner.



Hornbeam



Oak, hornbeam and silver birch, showing recently cut hornbeam coppice stools



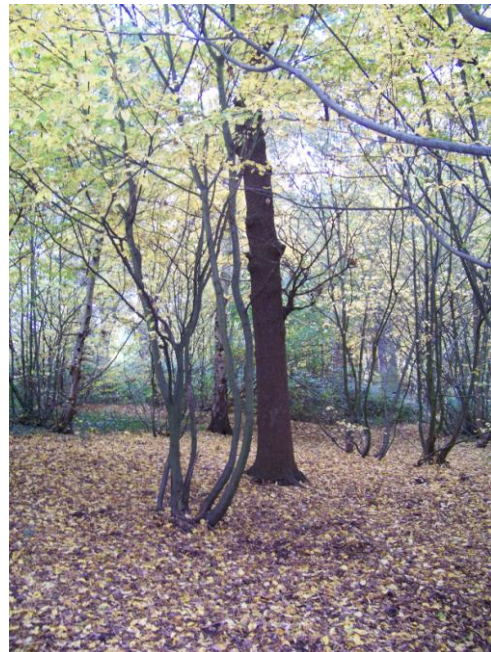
Hornbeam coppice re-growth in spring



Typical oak standard



Oak standard with surrounding hornbeam coppice



Oak standard with recent hornbeam coppice stools showing favourable new growth



Recent vegetational growth around base of recent coppice stool



Riverside main path looking east from western end



Riverside main path looking west from eastern end



Central main path looking east from western end



Central main path in centre of wood showing some vegetational growth along edges due to increased light



Central main path looking west from eastern end showing no defined footpath route





Panoramic view of typical section of woodland showing distribution of oak standards and hornbeam coppice and sparse vegetational cover