



**Dagnam Park Extension Area,
London Borough of Havering**
Management Plan
Report for Strutt & Parker

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1 Introduction

Site name

- 1.1 Dagnam Park Extension Area

Location and context

- 1.2 The survey area included extensive areas of improved grassland, woodland strips including a riparian corridor, a network of hedgerows, scattered trees, dense and scattered scrub, arable fields and tall herb to the north of the existing Dagnam Park, and is located in the Harold Hill area of the London Borough of Havering.
- 1.3 The site is situated in a relatively rural location on the edge of Harold Hill, albeit close to the M25 motorway. The northern boundary is formed by Chequers Road, Noak Hill Road and residential development, the eastern boundary is formed by the M25, a riparian corridor and grassland. The southern boundary is a golf course and Dagnam Park; the western boundary is shared with further residential development along Priory Road and Tees Drive.
- 1.4 The surrounding area was dominated by residential development and Maylands Golf Course to the south, with further patchy residential areas to the west and north including Manor Farm; and the M25 motorway to the east.

Area

- 1.5 81.75 hectares (ha).

Grid Reference

- 1.6 TQ 547 935 (554685, 193549)

Access

- 1.7 The site is open to the public at all times with access points primarily via the existing Dagnam Park along surfaced footpaths extending north from the car park on Settle Road, and from a footpath off Sedgefield Close/Crescent to the south west. Access directly into the proposed extension area is also obtained via a hardened footpath to the north of Priory Road along the western boundary and from Lower Noke Close - an access road off Chequers Road to the north. Dagnam Park is readily accessible on public transport via Sedgefield Crescent and Dagnam Park Drive on the 174, 496, 647 and 674 bus routes, and via Tess Drive on the 256 bus route. A footpath link also provides access from South Weald in Brentwood under the M25.

Vice County

- 1.8 VC21 Middlesex

Map Coverage

- 1.9 1:25000 Sheet 177 London East

Land Tenure

- 1.10 The Dagnam Park Extension Area is owned and managed by the London Borough of Havering.

Status

- 1.11 The Dagnam Park Extension Area lies immediately to the north of the statutory designated nature conservation site The Manor Local Nature Reserve (LNR). This includes Dagnam Park and Duck Wood. This site was designated in 2005 for the historic parkland landscape designed by Humphry Repton in 1812. Dagnam Park is made up of acid and neutral grassland along with ancient and secondary woodland,
- 1.12 Local Nature Reserve is a designation made under Section 21 of the National Parks and Access to Countryside Act (1949). LNRs must be controlled by the local authority through ownership, lease or agreement with the owner. The main aim must be to care for the natural features which make the site special¹.
- 1.13 Additionally the Dagnam Park Extension Area forms part of the Dagnam Park and Hatter's Wood Site of Metropolitan Importance for Nature Conservation (SMI) (74.64ha), a non-statutory nature conservation site designated for ancient and secondary woodland, acid and neutral grassland, ancient trees, hedges and ponds.
- 1.14 Forge House Paddocks and Fishing Lake Site of Borough Grade 2 Importance for Nature Conservation (SINC) lies partially within the site. This non-statutory designation is for the mosaic of neutral grassland (species rich and semi improved), tall herb, scrub, hedges, ponds.
- 1.15 The Osiers - an area of ancient semi-natural woodland in the south eastern corner of the site - is included in the Ancient Woodland Inventory (Provisional) for England. Ancient woodland is defined as land that has had continuous woodland cover since at least 1600 AD. Ancient woodland is specifically mentioned in Planning Policy

¹ <http://www.naturalengland.org.uk/ourwork/conservation/designatedareas/lnr/default.aspx> accessed 19/10/11

Guidance 9 Biodiversity and Geological Conservation and is included within the UK BAP (UK Biodiversity Action Plan) for Lowland Mixed Deciduous Woodland.

Public Rights of Way

- 1.16 There is a public footpath that bisects the centre of the site, running north from Chequers Road at the northern extent of the site, along Lower Noke Close continuing east underneath the M25. This footpath also runs south into the woodland at the southern limit and beyond into Dagnam Park. This coincides with the newly constructed traffic free cycle route.

Planning Authority

- 1.17 London Borough of Havering

Sources of Information

- 1.18 The main source of ecological information for the site is the Extended Phase 1 Habitat Survey and Protected Species Assessment report (Ecology Consultancy, 2011), and the accompanying desk top study. The compartments and projects have been determined using the field survey and report as a basis, and the Harold Hill Ambitions -Dagnam Park Exhibition Boards, produced by the London Borough of Havering. Background and historical accounts have been reviewed from the Friends of Dagnam Park website: <http://www.friendsofdagnampark.org.uk/>, datasets provided by Benjamin Sanderson, Regeneration Officer, London Borough of Havering, the James Blake Associates Veteran Tree Management Report, the James Blake Associates Bat Transect Survey report, Dagnam Park and the London Borough of Havering: Outline Habitat Action Plan for grassland.

Boundaries

- 1.19 The southern site boundary is formed by Dagnam Park and Maylands Golf Course. The western and northern boundaries are formed by adjacent residential properties. The eastern boundary is formed by Lower Noak Close/Wrightsbridge Road and arable fields at the northern extent, and by a riparian corridor, woodland and grassland towards to south. There is open access along much of the southern boundary shared with Dagnam Park, but the Golf Course is screened from the site by hedgerows and woodland. The site boundaries are displayed in the Phase 1 Habitat and Protected Species Scoping Plan –Figure 2 in Appendix 1.

2 Description

GEOLOGY, TOPOGRAPHY AND SOILS

- 2.1 The Dagnam Park Extension Area is largely on London Clay. Soils are slow permeable, seasonally wet acid and basic loams and clays. Overall the site faces south, with drainage ditches in the eastern half running west to east along much of the hedgerows, draining towards Weald Brook. In the north western section ditches run east to west draining down to the stream along the western boundary.

FLOWERING PLANTS:

- 2.2 Due to the presence of limited numbers of ancient woodland indicators² (AWI) such as bluebell, dog's mercury and butcher's broom the Dagnam Park Extension Area is judged to be of Local Importance for its flora. Species of note are provided in Table 1 below. However, the notable concentration of mature and veteran trees is judged to be of at least Borough importance. A full desk study of all botanical records can be made available on request.

Table 1: Plant species of note at site

Species (Latin name)	Notes
Field maple <i>Acer campestre</i>	Noted throughout woodland strips and hedgerows
Ramsons <i>Allium ursinum</i>	From datasearch
Wood anemone <i>Anemone nemerosa</i>	From datasearch
Pendulous sedge <i>Carex pendula</i>	From datasearch
Wood sedge <i>Carex sylvatica</i>	From datasearch
Hornbeam <i>Carpinus betulus</i>	Noted throughout woodland
Bluebell <i>Hyacinthoides non-scripta</i>	Noted throughout woodland strips.
Holly <i>Ilex aquifolium</i>	Noted throughout woodland and scrub
Dog's mercury <i>Mercurialis perennis</i>	Noted throughout woodland strips.
Aspen <i>Populus tremula</i>	From datasearch
Barren strawberry <i>Potentilla sterilis</i>	From datasearch

² AWI – Ancient woodland indicators as listed by Rose (1999) includes 100 species believed to be characteristic of ancient woods in southeast England

Table 1: Plant species of note at site

Species (Latin name)	Notes
Primrose <i>Primula vulgaris</i>	From datasearch
Currant <i>Ribes</i> sp.	From datasearch
Field rose <i>Rosa arvensis</i>	Noted throughout woodland, hedgerows and scrub
Butcher's broom <i>Ruscus aculeatus</i>	From datasearch

FAUNA

- 2.3 The desk study from Greenspace Information for Greater London (GiGL) provided many records for the 2km radius of the site. The Friends of Dagnam Park website and have also been consulted for protected species records made within Dagnam Park and the Extension area. The majority of these records from both GiGL and The Friends of Dagnam Park website were for areas beyond the site, in Dagnam Park and surrounds. Those relevant to the site due to their proximity, or made within the site are described below.
- 2.4 **Bats:** The James Blake Associates bat transect survey report confirmed that common pipistrelle bats *Pipistrellus pipistrellus* were recorded foraging and commuting throughout the site in moderate numbers. Low numbers of soprano pipistrelles *P. pygmaeus*, and an individual noctule *Nyctalus noctula* and *Myotis* sp. (likely Natterer's *Myotis nattereri*) bats were recorded. The report concluded that bat activity was mainly concentrated by woodland edges, veteran trees, hedgerows and lines of trees, and that little activity was observed within the open parkland habitats. The site provided good foraging and commuting habitats for bats and there were a large number of trees with high bat roost potential.
- 2.5 The data search returned records for Leisler's bat *Nyctalus leisleri*, Noctule bat, common pipistrelle and soprano pipistrelle the nearest were 665m from the centre of the site. The Friends of Dagnam Park website refers to records of Pipistrelle bat *Pipistrellus* sp., noctule bat and Daubenton's bat *Myotis daubentonii* (historical record from over 30 years), and to bat boxes in the Park.
- 2.6 Numerous trees with high bat roosting potential were noted at the site. Review of the landscape structure indicates that outgrown hedgerows and woodland edges are likely to comprise important foraging and commuting resources for a variety of bat species. The historic parkland landscape provides habitat potentially suitable for the

Nyctalus group of bats, and woodland edge habitats are favoured by *Pipistrellus* spp. and Myotis group bats.

- 2.7 **Badger:** The Friends of Dagnam Park note that badgers are known in Duck Wood to the south of the site and that they have been seen in the surrounds of the Park. No field signs were observed during the walkover survey. It is considered likely that the Extension Area provides a valuable foraging resource for local badger populations.
- 2.8 **Water vole:** The Weald Brook and Pond A on the edges of the site comprise suitable, although sub-optimal habitat for water voles. The Friends of Dagnam Park website notes that water vole have been noted in Weald Brook in the past. In addition, Anecdotal evidence provided records of water voles within Weald Brook along the eastern boundary of the site in 2009 (pers. comm. Julie Powell, Ecology Consultancy). The citation for Carter's Brook and Paine's Brook SINC indicates it may also be used for water vole, and is located approximately 60m to the west of the site.
- 2.9 **Otter:** No otter records or field signs of otter *Lutra lutra* were observed. Anecdotal evidence provided a record of a dead otter found on the M25 in the proximity of the site (pers. comm. Julie Powell, Ecology Consultancy), although there were no records from the datasearch. No sites (adjacent to water courses of sufficient size and foraging resource) within the Extension Area are potentially suitable for otter holts or to sustain a breeding population. The site may be used by commuting or foraging individuals on an irregular basis however.
- 2.10 **Birds:** The habitats within the site are potentially suitable for notable and protected species including species (listed in Table 2, Appendix 4) that receive full protection under the Wildlife & countryside Act (1981) (WCA Sch. 1), UK and London BAP³ and BoCC⁴ species.

³ Criteria for selecting UK BAP Priority Species are: species that are globally threatened; species that are potentially declining in the UK, i.e. by more than 50% on the last 25 years.

London BAP species must include all UK BAP Priority species with native or long-established naturalised populations in Greater London. Further species have been selected using the following criteria:

- Species for which Species Action Plans (SAP)s are currently being implemented in the London BAP;
- Nationally threatened (Red Data listed) species with native or long-established populations in Greater London;
- UK SCC and declining Nationally Scarce species with significant native or long-established naturalised populations within Greater London

- 2.11 **Reptiles:** Anecdotal evidence (Benjamin Sanderson, Regeneration Officer, London Borough of Havering) indicates that grass snake *Natrix natrix* have been recorded within the site. Margins of semi-improved grassland fields in particular, comprised potentially suitable habitat for basking, commuting and foraging reptiles including grass snake, slow worms *Anguis fragilis*, and common lizards *Zootoca vivipara*.
- 2.12 Suitable features for hibernating reptiles exist across the site notably close to ponds, within the woodlands/ copses, and at the base of outgrown hedgerows.
- 2.13 **Great crested newt:** A large number of records for great crested newt, smooth newt *Lissotriton helveticus*, common toad *Bufo bufo* and common frog *Rana temporaria*, were returned by the data search. Anecdotal evidence provided records of great crested newt in ponds within 500m to the south and south east, and within 250m to the east of the site on the opposite side of the M25 in 2009 (pers. comm. Julie Powell, Ecology Consultancy). Pond A (beyond the site boundary but within 500m of the site) has high potential value for breeding great crested newts, smooth and palmate newts. A number of ephemeral ponds are present, but sub-optimal for these species in their current condition.
- 2.14 **Invertebrates:** The data search returned several records for small heath *Coenonympha pamphilus* a UK BAP species, in severe decline. Invertebrates, including the nationally rare and scarce emerald damselfly *Lestes dryas*, are also listed as reasons for designation of some of the designated sites that lie within the project areas. Further species noted on the Friends of Dagnam Park website and provided by Benjamin Sanderson are listed in Appendix 4. The semi-improved grassland, particularly to the west of site where the fields are more tussocky and provide a heterogeneous structure, and the rough, herb-rich field margins to the west and centre of the site, provide habitat of potential value to a diversity of invertebrates including Lepidoptera (butterflies and moths) and Orthoptera (including grasshoppers and crickets). Many of the ancient and veteran trees and dead wood throughout the site, including within the woodlands, provide potentially high-value habitats for saproxylic (dead-wood) invertebrates.

-
- Species with significant native or long-established naturalised populations that are known to have undergone a recent significant decline in Greater London, or for which Greater London holds the majority of the known UK population.

⁴ Birds of Conservation Concern (BoCC): The Population status of birds in the UK –Birds of Conservation Concern: 2002-2007 is an assessment of the population status of the UK’s bird species. This was a review of the 247 species which occur regularly in the UK, Channel Islands and the Isle of Man and divided into three lists: Red, Amber and Green.

2.15 In addition to the notable species discussed above, the woodland appeared during the Phase 1 survey to be heavily grazed by fallow deer *Dama dama*. It is also likely that a large number of grey squirrel *Sciurus carolinensis* are present as several were seen during the survey. Both species potentially pose constraints on the management of the site

HABITAT COMPARTMENTS

Description of compartments

2.16 Compartments identified below have been defined to identify areas where management issues and opportunities exist. Figure 1 shows compartment boundaries which are based on important features such as hedgerows, woodland and scrub, and ponds. Each compartment type is sub-divided to reflect management for existing features and for proposed features within that compartment category. For further descriptions of the habitats within the site, please refer to the Extended Phase 1 Habitat Survey and Protected Species Assessment Report (Ecology Consultancy, 2011). Further features with management opportunities that are not defined by compartments include veteran trees and younger scattered trees throughout the site and localised areas where bramble scrub and bracken are dominant. Recommendations for the management of these features are made below in the Aims and Projects Sections.

Compartment A: Ponds

2.17 This compartment includes a total of 4 existing ponds described within Compartment A1, and 3 proposed ponds described within Compartment A2.

2.18 **Sub-compartment A1: Existing ponds– reinstated.** This sub-compartment represents four ponds within the site (labelled C, D, E and F in the Habitat Plan-Figure 2, Appendix 1). Pond C was almost dry (ephemeral pond) in May 2011, and heavily poached. The wet area of the pond was circ. 4m², with 100% shading. However, it was considered likely to flood during the winter months to approximately 20 x 15m with 60% shading. The pond supported duckweed *Lemna* spp., no other aquatic species were present. Ponds D & E were small ephemeral ponds, both were situated within rough grassland fields and immediately surrounded by trees. They were heavily shaded with very little water during the time of survey (following a period of intense rainfall). Pond F was a concrete-lined, ornamental pond choked with yellow flag iris *iris psuedocorus*. This pond regularly dries out (contained only a small amount of water following intense period of rainfall).

2.19 **Sub-compartment A2: Proposed ponds.** This sub-compartment represents three shallow depressions that are seasonally wet located at junctions of hedgerows. These depressions have become degraded by grazing and trampling of the margins by deer and horses –no emergent vegetation was noted. The waterbodies were congested with leaf litter and shaded by overhanging tree branches.

Compartment B: Woodland

2.20 This compartment represents the broadleaved woodland strips throughout the site and one more extensive area in the south eastern corner along Weald Brook. These were connected within the site by hedgerows and tree and scrub lines. This habitat type was dominated by ancient and mature pedunculate oak *Quercus robur* and mature hornbeam, mature lime *Tilia* spp., with frequent semi-mature ash trees *Fraxinus excelsior*, field maple, elder *Sambucus nigra*, sycamore *A. pseudoplatanus*, young small-leaved elm *Ulmus minor minor* – with numerous dead and dying specimens. More detailed description is provided in the Phase 1 Habitat Report (Ecology Consultancy 2011).

Compartment C: Scrub.

2.21 **Sub-compartment C1: Existing scrub.** This sub-compartment represents dense bramble *Rubus fruticosus* dominated scrub along site margins, predominantly in the western half of the site, and also regenerating willow *Salix* spp. saplings in the south eastern fields. Areas of scrub were adjacent to woodland, scattered trees, hedges and grassland. Species included bramble, elder, holly, hawthorn *Crataegus monogyna*, small-leaved elm, dogwood *Cornus sanguinea* and ivy *Hedera helix*, with the largest areas in the north western section of the site, and the south eastern section bordering extensive woodland beyond the site's boundary.

2.22 **Sub-compartment C2: Proposed scrub.** This sub-compartment represents strips of scrub that should be planted and/or allowed to regenerate as buffers to the woodland strips and site boundaries.

Compartment D: Hedgerows

2.23 **Sub-compartment D1: Existing hedgerows.** This sub-compartment represents 28 hedgerows throughout the site, demarking field edges and woodland strips and those present around the periphery of the site, marking its boundaries.

2.24 Hedgerows were typically dominated by hawthorn, field maple, elder, small leaved elm (also called field elm) *Ulmus minor*, with frequent mature pedunculate oak trees, other frequent woody species included rose *Rosa* spp. and bramble; occasional

blackthorn, dogwood and hazel. The majority of hedges had a sparse ground flora and consisted of species typical of grassland along arable field margins including wood avens *Geum urbanum*, hedge bindweed *Calystegia sepium*, bugle *Ajuga reptans*; many were cut or showed evidence of cutting. Overall the ground flora of the hedgerows was not diverse and bare ground was frequently observed where tree cover created heavy shade, and where deer take shelter. Numerous large gaps were observed, drainage channels were frequently shallow, degraded and silted up or clogged with leaf litter.

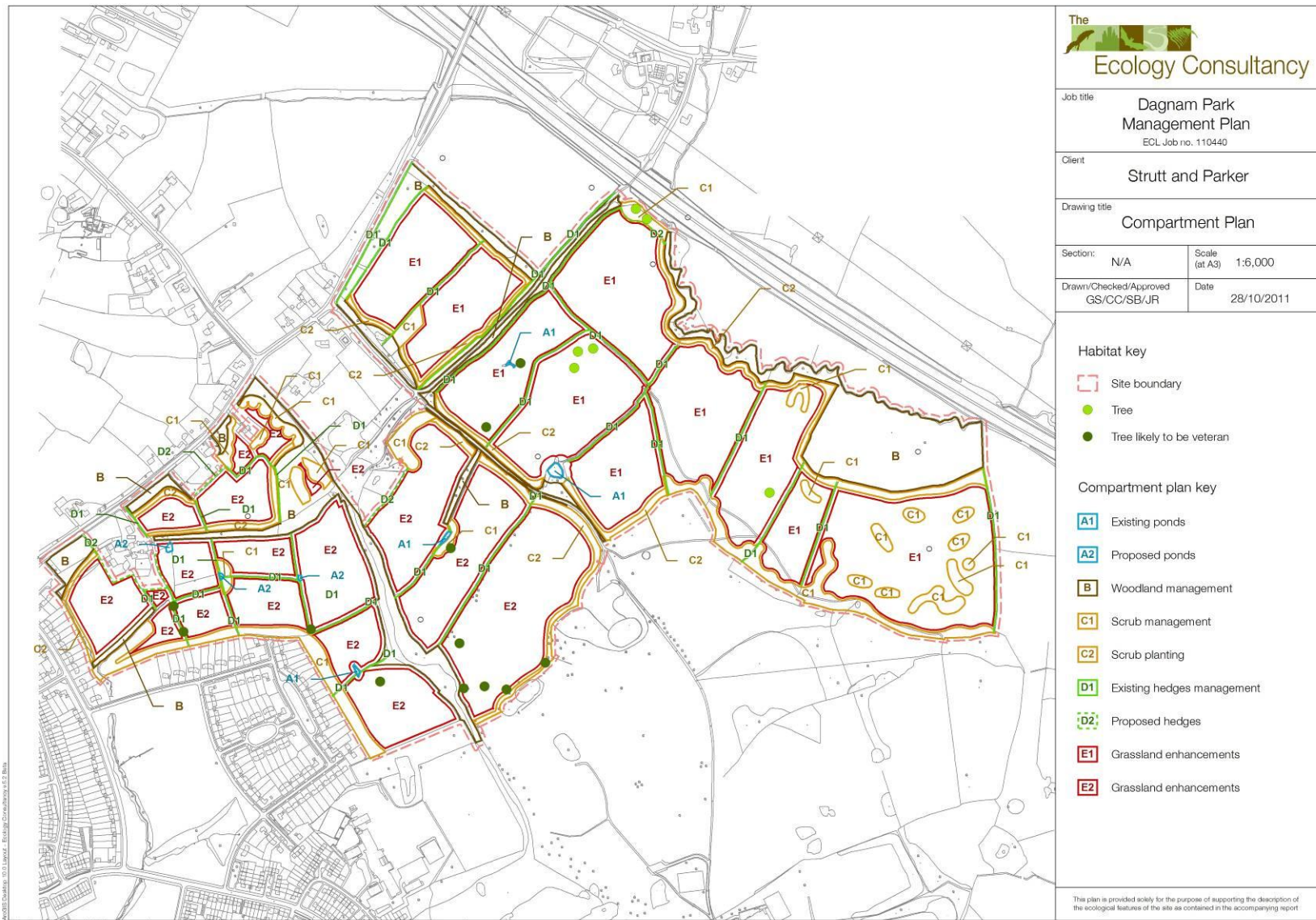
- 2.25 **Sub-compartment D2: Proposed hedgerows.** This sub-compartment represents areas of the site where new hedges could be planted and managed to link existing hedgerows and/or woodland strips. These areas are currently margins of semi-improved grassland with scattered scrub and trees.

Compartment E: Grassland

- 2.26 This compartment was present throughout the majority of the site within fields and amenity areas of various sizes, bordered by hedgerows, woodland strips and tree lines.
- 2.27 **Sub-compartment E1:** semi-improved grassland in the western half of the site. Dominant grass species included false oat-grass *Arrhenatherum elatius*, red fescue *Festuca rubra*, cock's foot *Dactylis glomerata*, common and velvet bents *Agrostis capillaris* and *A. canina*, (a species uncommon in London). Timothy *Phleum pratense* sweet vernal grass *Anthoxanthum odoratum* were frequent. Herbs included cow parsley *Anthriscus sylvestris*, lesser burdock *Arctium minus*, creeping buttercup, garlic mustard *Alliaria petiolata*, black horehound *Ballota nigra*, fat-hen *Chenopodium album*, cleavers, hedge bindweed, and common nettle, dandelion *Taraxicum* sp., docks *Rumex* spp.
- 2.28 In the north western fields the grassland was taller and more tussocky, with steep banks in places. Grassland was noted to be grazed and trampled in places – predominantly by deer, occasionally by horses. In wetter areas to the north west there was a greater frequency of hard and soft rushes *Juncus effusus* and *J. inflexus* and creeping buttercup. Some species indicative of acid grassland including sheep's sorrel *Rumex acetosella* and wavy-hair grass *Deschampsia flexuosa* were noted to be locally dominant.
- 2.29 **Sub-compartment E2:** fields - previously arable - located in the eastern half of the site. Dominant grass species included false oat-grass, red fescue, cock's foot and

sweet vernal grass. Herbs included creeping and meadow buttercups *Ranunculus acris* and *R. repens*. In the south east there was greater frequency of willow scrub, hard and soft rushes and creeping buttercup. These fields were acquired from arable land set aside in the 1980s (according to The Friends of Dagnam Park website). The northern most field had been sowed (possibly silage). The fields were predominantly uncut, with paths mown around the margins, predominantly in the eastern sections.

Figure 1: Map of compartments



3 Aims

SITE MANAGEMENT AIMS

3.1 The principal aims of site management are set out below. They are deliberately broad and cover both the ecological and recreation aspects of the site. They reflect the Policy section (Appendix 2) and form a basis for the more detailed information on conservation features, management objectives and management procedures provided in the following sections:

- To preserve the mosaic of largely semi-natural and ancient woodland, scattered trees, hedgerow, scrub, grassland, and pond habitats and informal 'rural' atmosphere of the Dagnam Park Extension Area;
- To enhance the structural and plant species diversity of woodland, hedgerow, scrub, grassland and pond habitats where appropriate;
- To provide additional opportunities for faunal species (including invertebrates, bats, birds, amphibians) where appropriate;
- To ensure that high standards of amenity management are maintained and to enhance amenity value;
- To maintain and improve aspects of public safety and security where possible;
- To instigate the volunteer led management of the site and increase the involvement of local schools and community groups to maintain and enhance the educational value of the woods;
- To record and monitor wildlife at the site in sufficient detail to inform the management of the site;
- To increase public understanding of the site and its value through talks and walks in the wood; and
- To attain LNR status within the extension area.

Analysis

3.2 Table 3 below provides an overview of the issues and trends that should be addressed in the management plan for the Dagnam Park Extension Area. Rather than the broad management aims stated above, the aims stated in Table 3 below are intended to address more specific management issues based upon the compartment

conditions described in Section 2. They are reflected in the management prescriptions in the following section.

Table 3: Analysis of the main issues affecting management of the Dagnam Park Extension Area

Issue	Aim
<i>Pond condition:</i> Four existing ponds are silted up, over shaded, degraded and trampled. Three further shallow depressions have been trampled, silted up and are shaded.	<ul style="list-style-type: none"> To improve existing ponds and to create new ponds To enhance the terrestrial habitat adjacent to ponds for amphibians
<i>Woodland regeneration:</i> there is limited regeneration of oak and hornbeam in the woodland strips, limited scrub layer and climbers.	<ul style="list-style-type: none"> To protect existing regeneration of desirable tree, scrub and climber species To encourage greater regeneration To provide buffers of scrub along margins of woodland To provide additional roosting and nesting habitat for bats and birds
<i>Ground flora regeneration:</i> ground flora of woodland areas is typically poor and disturbed/trampled by deer.	<ul style="list-style-type: none"> To protect existing regeneration of desirable herb species from deer grazing To encourage greater regeneration of woodland species
<i>Tree management:</i> Several veteran and mature trees have been identified within the site, further younger scattered trees are also present, and will require monitoring and may require protection, pruning or removal	<ul style="list-style-type: none"> To protect veteran trees To ensure all trees are managed to ensure their health and maximum life span To promote development of large parkland oak for the future To retain standing and fallen deadwood as habitats for saproxylic (dead-wood) invertebrates. To manage trees with regard for public health and safety To manage trees with regard to wildlife (bats and birds)
<i>Scrub regeneration:</i> willow and bramble scrub are degraded and grazed heavily in the south eastern fields	<ul style="list-style-type: none"> To enhance willow and bramble scrub in selected areas of grassland to enhance habitat mosaic for birds and reptiles
<i>Hedgerow degradation/fragmentation:</i> hedges are becoming fragmented, scrubby, trampled and over shaded in places. Ground flora was typically poor and not able to regenerate due to shading, trampling and grazing	<ul style="list-style-type: none"> To enhance hedgerow connectivity throughout and beyond the site To reduce gaps, improve structural diversity and drainage To protect existing regeneration of desirable tree, scrub, climber and herb species

Issue	Aim
<p><i>Grassland:</i> grassland areas predominantly in the eastern section (previously arable fields) require management to ensure enhancement of grassland meadow species of plant and invertebrate, and to control the spread of scrub.</p>	<ul style="list-style-type: none"> • To protect existing regeneration of desirable grass and herb species • To reduce scrub dominance in appropriate areas • To encourage greater variety of invertebrate species to the site • Restoration of acid grassland in Compartment E2
<p><i>Trampling and overgrazing:</i> deer are inhibiting the restoration of ground flora in woodland and hedgerows, and of tree and scrub regeneration.</p>	<ul style="list-style-type: none"> • Control of deer by fencing and planting/dead hedging in appropriate areas
<p><i>Invasive species:</i> certain species notably bramble and bracken are locally over abundant</p>	<ul style="list-style-type: none"> • To continue management of bramble, bracken and other invasive species in appropriate areas
<p><i>Visitors and access:</i> visitors are welcomed to enjoy the site, but create problems in managing the ecology of the site</p>	<ul style="list-style-type: none"> • To encourage greater use of the site and to delineate accessible areas from those where work is ongoing (short term fencing) • To manage damage from excessive recreational use • To increase voluntary involvement • To install onsite interpretation • To provide educational walks and talks • To consider providing an education/visitor centre

4 Projects

ELEMENTS OF THE PROJECT

- 4.1 Proposals for the site include management with the aim of improving the nature conservation value and public access within the site, allowing its inclusion within the adjacent Dagnam Park and LNR.
- 4.2 The elements of the management of the site for nature conservation are as follows:
- To excavate and re-profile the existing ponds in Compartment A1 (Ponds C, D, E and F) and shallow seasonally wet depressions in Compartment A2. To enhance with marginal and emergent planting, reduce overhanging branches as appropriate
 - Production of amphibian hibernacula adjacent to ponds
 - To encourage natural regeneration of tree, shrub, climber and herb species in appropriate areas of the woodland strips by selective thinning, felling, coppicing and fencing
 - To monitor, protect and enhance scattered trees including veteran trees
 - To enhance woodland margins by planting buffers of native scrub
 - To provide additional roosting/nesting habitat for birds and bats
 - To encourage regeneration of willow and bramble scrub
 - To enhance hedgerows by 'gapping up', planting of native locally sourced stock, dead hedging to improve structure and reduce trampling, improving drainage by excavating as necessary, fencing in places to allow recovery of vegetation
 - To enhance existing grassland areas (Compartment E1) to increase diversity of the sward, including local acid grassland areas and to attract invertebrates
 - To enhance grassland areas previously managed as arable fields (Compartment E2) to increase diversity of the sward and to attract invertebrates
 - To fence areas of woodland and hedgerow particularly degraded by trampling and overgrazing and planting of shrub and tree species to reduce deer trampling and grazing impacts and to allow native ground flora to recover
 - Removal of encroaching bramble scrub and bracken as required

- To improve access across the site by mowing paths, erecting interpretation boards, and by some fencing to ensure vegetation recovers without disturbance

Ponds - enhancement and reinstating, creation of amphibian hibernacula -Compartment A

- 4.3 Ponds in sub-compartment A1 and depressions in sub-compartment A2 should have a section dug at least 60cm deep to protect animals (e.g. frogs) from weather extremes, particularly in winter. Uneven margins will create variable microhabitats; variable grades/slopes to banks will allow animals to enter and leave the waterbodies; shallow banks and shelved areas are important for invertebrates and amphibians. Planting should grade from marshy/damp grassland – marginal vegetation-floating and submerged aquatic vegetation. Pumps and fountains should be avoided as these can damage wildlife/ deter them from colonising waterbodies.
- 4.4 Careful selection of planting should assist in keeping the surface clear of algae. Stocking of ponds/waterbodies with fish should be avoided as fish can quickly dominate a pond, consuming other pond life and limiting the variety of wildlife in the pond. They also reduce water quality by disturbing sediment and eutrophication. All planting should ensure that invasive species such as floating pennywort *Hydrocotyle ranunculoides* are not included within the stock provided. Fully shading waterbodies should be avoided; planting of trees in close proximity to waterbodies is undesirable due to potential shade and leaf litter.
- 4.5 Temporary fencing may be necessary whilst pond vegetation establishes to reduce deer and recreational pressures including trampling.
- 4.6 Once established maintenance will be necessary, i.e. restocking dead/damaged plants, monitoring of oxygen and algae levels, removal of dead leaves from surrounding vegetation (tree leaf litter in particular).
- 4.7 Dredging will be required on a rotational basis; in order to reduce negative impacts on wildlife this should be carried out in stages, late in summer with arising stacked adjacent to waterbodies to allow invertebrates, amphibians etc to escape back into the ponds.
- 4.8 Hibernacula for amphibians should be placed nearby ponds- these can be created in undisturbed areas facing south – southeast, utilising spoil generated by the

management of the site. Further information on ponds and amphibian hibernacula can be found on the Froglife website: <http://www.froglife.org/>.

Woodland management –Compartment B

- 4.9 The majority of the woodland strips have a dense canopy of oak, lime and hornbeam, creating heavily shaded conditions on the woodland floor for much of the year. Excessive shade, grazing and trampling by deer are the main contributing factors to the poor development of the shrub layer, ground flora and poor tree regeneration in the woodland areas.
- 4.10 To reduce management needs and impacts from deer and grey squirrel woodland areas could be allowed to develop to high forest consisting mostly of tall standard trees that develop naturally or can be selected. Over decades canopy gaps would develop due to wind throw, squirrel/deer damage or other causes, and this would allow light to the woodland floor, allowing regeneration of ground flora and shrub layer, and the establishment of young trees. However, the creation of natural gaps would be a slow and unpredictable process, and may not be sufficient to create the conditions to diversify age structure or promote development of woodland ground flora in areas where they are needed. Due to the small extent of the woodland areas this could result in the loss of some species, and, at some point, a lack of mature and over mature trees.
- 4.11 An assessment of woodland areas should be carried out to determine their viability and management needs. Small-scale experimental pollarding of hornbeam and coppicing of hazel would be appropriate for small areas in order to open up the canopy, and removal of selected trees/thinning should be considered. Coppicing should be carried out on a rotational basis (see five year management plan) and may be a suitable project for volunteers. Areas that could be considered for selective felling/ coppicing could include the following (See Habitat Plan – Figure 2, Appendix 1).
- Compartment B: within riparian corridor and The Osiers
 - Compartment B: adjacent to hedges H20, 22 and 28
 - Compartment B: adjacent to hedges H2 and H4
- 4.12 Details on how to carry out coppicing are provided in the BTCV handbook on woodlands <http://www2.btcv.org.uk/display/home>. Deer grazing and trampling and the possible impact of grey squirrel damage must be factored into these strategies.

This may include fencing of, or otherwise protecting new planting and coppice regeneration.

- 4.13 Any tree work should be carried out following advice from the borough's Parks officer (or staff with arboricultural expertise), as to whether the work can be carried out by parks maintenance staff/volunteers, or requires a trained arborist. If the former, then adequate training, PPE and health and safety precautions will be required. Long stumps (1-1.5m) should be left to increase the amount of standing dead wood at the site.
- 4.14 Depending on the numbers, size and species of trees involved a felling license may be required. Further information is available in the Forestry Authority leaflet "*Tree felling: getting permission*" (July 1997):
[http://www.forestry.gov.uk/pdf/wgsfell.pdf/\\$FILE/wgsfell.pdf](http://www.forestry.gov.uk/pdf/wgsfell.pdf/$FILE/wgsfell.pdf).
- 4.15 The recommendations within the James Blake Associates Veteran Tree Management Report, Dagnam Park should be followed. Any management of veteran trees should have regard for their ecological significance and be carried out in accordance with best practice, for example Natural England's Veteran Trees: *A guide to good management* (1999):
<http://naturalengland.etraderstores.com/NaturalEnglandShop/IN13>.
- 4.16 All trees should be inspected annually. Annual inspections and monitoring should continue by the London Borough of Havering Parks officers/volunteers using best practice guidelines: www.treeworks.co.uk/downloads/SSM_HandBook.pdf.
- 4.17 All trees to be felled or requiring maintenance should first be assessed for their potential to support roosting bats. Any tree considered to have value for bats, due to the presence of holes, splits or heavy ivy cover, or considered to be of notable value for nesting birds, should not be felled for reasons other than safety. Any tree with roost potential should be felled only after the presence of bats has been determined. If bats are present, advice should be taken from an ecological consultant and work may require a European Protected Species (EPS) License from Natural England. In other cases, where the risk of bats being present is sufficiently low, section felling may be necessary to avoid killing bats in the process of tree removal. Tree felling should be carried out in the winter, outside of the bird nesting season.
- 4.18 All trunks and branches from tree felling should be retained on site. They should be left as large timbers that cannot be readily moved or rolled down slopes, and in

partially shaded areas where they can provide the best conditions for invertebrates. Where possible, twiggy material (brush) should be retained on-site and used for site management (screening, blocking informal access points and paths etc. However, excessive amounts could be unsightly and a fire risk and should be chipped and removed from site.

Bat boxes

- 4.19 There are many mature and veteran trees with numerous bat roosting features within the extension area –in Compartment B and scattered trees throughout the site. The management of four ponds and the reinstatement/creation of three new ponds will improve foraging habitat and increase the chance of occupancy of new boxes.
- 4.20 Schwegler 'woodcrete' bat boxes offer considerable advantages over wooden boxes as they are long lasting and, due to the density of materials, provide relatively stable temperatures favoured by bats. The following models are recommended: 2F for smaller bats including brown long-eared bat, 1FS large colony box especially suitable for brown long-eared and Nathusius bats. .
- 4.21 Boxes should be situated on a tall mature trees at least four metres above the ground (five or six metres or even higher for noctule bats) with the access facing south west or south east. One or two boxes facing differing aspects should be provided at each location to increase the chance of occupancy. Boxes should be sited in sheltered woodland edge locations, away from possible frost pockets and areas where they are unlikely to attract vandals. Boxes should be monitored for evidence of use and cleaned annually by a licensed bat worker. If they are not occupied in two years they should be moved to a new location. Inspection and maintenance of bat boxes should be carried out in April and October, when they are least likely to be in use.
- 4.22 Bat boxes are recommended at the following locations but numbers and location should be confirmed with an experienced bat ecologist
- Compartment B – close to riparian corridor
 - Compartment B-close to Hedge H18, and scattered trees adjacent to Pond C
 - Compartment B –close to Hedge H17 and veteran tree T15⁵, adjacent to Pond D

⁵ As described in James Blake Associates Veteran Tree Management Report, Dagnam Park

- Compartment B, between Hedges H5 and H9, and veteran tree T12, adjacent to pond E
- Compartment B, close to Hedge H10 , and veteran tree T11, adjacent to Pond F
- Compartment E1- close to Hedge H24 and two veteran trees T13 and T14.
- Scattered trees adjacent to Pond A (beyond south western site boundary)

Bird boxes

4.23 Several types of boxes should be used and all (where required) should have protective metal plates to stop woodpeckers or squirrels breaking into them to steal young birds or eggs.

4.24 Small hole-entrance nest boxes should be used to encourage coal tits and nuthatches. Medium hole-entrance nest boxes should be used for starlings and great spotted woodpeckers. Large hole-entrance nest boxes are suitable for stock dove and tawny owl and small open-fronted nest boxes should be used that could potentially attract spotted flycatchers. Providing nest sites will help to contribute to and improve the success rate of the breeding species and must be maintained. It is recommended approximately 1/3 of nest boxes are inspected in late winter (on a rotational basis) and any repairs carried out. After they have been used they should be cleaned out with the nesting material removed and any parasites larva/eggs present. A useful source of information is The British Trust for Ornithology Nest box Guide by Chris du Feu. ISBN 1- 902576-81-0 (copied from Darrel – Lambert 2008).

Scrub management –control and regeneration

4.25 Scrub within Compartment C1 should be cut back periodically and over late winter/early spring to ensure dense cover is maintained, that over-wintering invertebrate species are not severely impacted, and that flowers and berries are available. Scrub should be fenced where grazing/trampling is inhibiting cover.

4.26 Compartment C2 should be planted with native scrub whips as detailed below in Table 4. These should be fenced to allow development, and once established these areas should be maintained as described for Compartment C1. Further species listed in Appendix 3.

Table 4: Scrub/hedge species and percentages for planting

Species	Percentage
Hawthorn <i>Crataegus monogyna</i>	50
Wild cherry <i>Prunus avium</i> or Bird cherry <i>P. padus</i>	10
Field maple <i>Acer campestre</i>	10
Dog rose <i>Rosa canina</i>	10
Hazel <i>Corylus avellana</i>	10
Blackthorn <i>Prunus spinosa</i>	10

Hedgerow enhancements – Compartment D

4.27 ‘Gapping up’ or planting of gaps in hedgerows with native scrub whips –is recommended in Compartment D1 for the following hedges to create continuous cover, improve connectivity and to increase species diversity of scrub. Species/percentages listed in Table 4 above (with further species in Appendix 3), hedges are listed below

- Hedges: H2, H6, H8, H9, H14, H16, H17, H19, H20, H22, H23, H24, H27, and H28. For locations please refer to the Habitat Plan, Figure 2 in Appendix 1.

4.28 It will be important to allow light in to new plants; it may be necessary to cut back or coppice the hedge either side of the gap. Protection from grazing by fencing, or by weed encroachment by mulching will be required.

4.29 Dead hedging can be used to control access and protect uncommon species or vulnerable areas, where planting or scrub clearance has occurred. Dead hedging is proposed for the hedges listed below in compartment D1, to improve the structure of the hedges, to protect existing features such as trees, and to deter walkers and deer trampling and compaction damaging ground flora. The extent of dead hedging that can be carried out may be limited by the amount of material produced by management activities elsewhere at the site. If this is the case chestnut paling could be used as alternative or work can be prioritised according to need (to be determined during the course of the plan).

- Hedges: H3, H8, H9, H17, H18, H20, H21, H22, H23, H24. For locations please refer to the Habitat Plan, Figure 2 in Appendix 1.

4.30 Control of bramble scrub and reduction of shading from trees should be carried out periodically on the following hedges. This will encourage scrubby growth, and allow the establishment of planted hedging.

- Hedges: H3, H4, H5, H6, H7, H18, H22 and H28. For locations please refer to the Habitat Plan, Figure 2 in Appendix 1.

4.31 Excavation of existing drainage ditches along hedgerows will improve overall site drainage, will assist in the reinstatement of ponds, and should be carried out periodically on the following hedges. It is important to avoid damage to the root systems of adjacent trees especially veteran and mature trees; this work should be carried out in conjunction with the tree and woodland assessments, Hedge banks should not be damaged by such drainage works:

- Hedges H3, H10, H13, H15, H17, H18, H19, H21, H21 and H22.

4.32 Fencing of hedges in places to exclude grazing and trampling by deer could also assist in the regeneration of ground flora and creating intact hedge corridors.

4.33 Trimming of hedges should be carried out on a cyclical 2-3 year rotation to give a variety of heights and side growth and ensure plenty of flowers, berries and fruit. To achieve this, alternate sections of hedge could be cut in different years or opposite sides cut in alternate years. Trimming should ideally be carried out in the late winter (although not in severe frost), to avoid the bird nesting season and ensure that the autumn berry crop remains available for as long as possible. It should be noted that many important invertebrate species have stages that over-winter in hedges. Wherever feasible a 0.5 to 2m wide strip of grassland and/or tall-herb should be allowed to develop along either side of the hedgerows and be managed by cutting 1-2 times per year or preferable biennially. The British Trust for Conservation Volunteers (BTCV) "Hedging - A Practical Handbook" should be used as a guideline (<http://www.btcv.org/>).

Grassland management – Compartment E

- 4.34 Management is to be carried out in line with the LB Havering: Outline Habitat Action Plan for grassland and the Acid Grassland Habitat Action Plan⁶. Low intensity grazing is the optimal grassland management technique for both neutral and acid grassland as this creates varied sward conditions and species diversity. As the site is freely accessible to members of the public mowing of Compartment E1 is likely to be the preferred method of management, although the fallow deer and rabbits *Oryctolagus cuniculus* will provide additional grazing.
- 4.35 Compartment E1: Mowing should be carried out in small sections (0.5 to 1.0ha), with variation in the timing of cutting of these area in different years. Grassland should be cut to 10cm in early August and arisings removed and should then be cut as low as 5cm in September, October and early March. Meadow species will then grow, flower and seed in April to July⁷. The relatively early cut will avoid very rank grassland developing in late summer and may reduce incidence of grass fires if vandalism is an issue. However, cutting of 1/3 of compartments should be delayed until late September each year to establishment of a 3 year rotation in which late flowering species can set seed. Cuttings should be removed following the August to avoid over enrichment, if possible.
- 4.36 The proposal for retaining and managing scrub in some areas of the site will result in some over-wintering grass stems of value for invertebrates remaining at the site.
- 4.37 In localised areas of Compartment E1 the creation of narrow, shallow scrapes in early spring to create bare soil on south facing banks will encourage ground boring invertebrates and the removal of nutrient rich soils will provide habitat for annual plants. Temporary fencing may be required to ensure these areas are not over trampled and information should be installed to explain the management strategy to the public
- 4.38 Arable land (Compartment E2) will be mowed as in August as described for Compartment E1. All arisings to be removed so that over successive cuts sward impoverishment will favour greater herb diversity. Hay cuts from Compartment E1 should be strewn over to spread the local seed bank into this area.

⁶London Biodiversity Partnership website: <http://www.lbp.org.uk/AGEducation.html>

⁷ Based on Dixie, Grahame (H.V. Horticulture) and Bisgrove, Richard (1996) Wild Flower Plug Plants in Grass Lands Reading University

Further information on management of habitats including grassland, woodland, scrub and hedges can be found on the Buglife website: <http://www.buglife.org.uk/conservation>.

Trampling and over grazing

- 4.39 As described in Sections 5.4, 5.6, 5.12 and 5.16 fencing (albeit temporary) will be necessary to prevent management work being damaged by grazing deer, and to prevent the public from damaging sensitive areas. Once dead hedging is established these hedges will be stock-proof, and once ponds have a developed bank flora they will be less susceptible to trampling, fencing should not be required except for site boundaries.

Invasive species

- 4.40 Bracken and bramble should be controlled by cutting where they are encroaching into grassland or woodland.

Visitors and Access

- 4.41 Interpretation boards should be erected at major access points to inform members of the public on the main focal points, and access. Paths should be inspected regularly and mowed throughout the growing season. Where paths become waterlogged, or where vegetation is degraded by trampling it will be necessary to reduce access temporarily.

Surveys and monitoring

- 4.42 Monitoring is proposed for species groups that can be identified by non-specialists and that are considered most likely to provide information on the effects of management if carried out regularly and over the entire period of the plan. In all cases the inferences drawn from management can only be indicative as there are a great number of additional variables that will affect the distribution of species at the site.
- 4.43 **Bats:** Bat activity may also provide additional information on the effects of management and provide an indication of good positions for erecting bat boxes. A protocol based on the National Bat Monitoring Programme should be adopted. The location of 12 marked stopping points across the site should be identified, reflecting habitat type, the location of management activities (including bat boxes), and off site commuting routes. Monitoring visits should be carried out on two evenings in July. At each of the 12 stopping points heterodyne ultrasonic detectors should be used to listen for common and soprano pipistrelles for two minutes then re-tuned for Noctule,

Natterer's and Serotine bats whilst walking to the next stopping point. The survey should start twenty minutes before sunset.

- 4.44 **Birds:** Bird monitoring is proposed in order to assess the effects of site management. The presence of nest boxes, planting of scrub, hedgerow and woodland enhancement and changes to grassland management may result in a positive change in the numbers and diversity of breeding species. It is recommended that an approach based on the discontinued Common Bird Census is adopted.
- 4.45 A territory-mapping approach should be used to estimate the number and positions of territories of each species present at the site during the breeding season. Eight to ten visits should be made between late March and early July and all contacts with birds, either by sight or sound plotted on 1:2500 maps. Each bird's species, with sex and age where possible, and also activity such as song or nest-building should be noted. It should then be possible to match the distribution of bird territories with habitat features.
- 4.46 **Plants:** Plant surveys should be carried out in all compartments where management is proposed the year before management is implemented and annually thereafter, ideally by the same recorder. Surveys of particular populations should record the whole compartment using the DAFOR scale and fixed point photography. The extent, number and condition of rare species or those that reflect management aims should be recorded species.

Sight lines maintenance

- 4.47 Dense vegetation can obscure sightlines and should be removed to enhance the public's sense of security and safety. More generally, the Council/Friends of Dagnam Park should carry out an audit to identify if there are any other areas where sight lines should be improved

Education and interpretation

- 4.48 The Friends of Dagnam Park arrange periodic walks and talks relating to The Manor LNR. School groups should be encouraged to visit the site for educational purposes. Activities that do not harm the site's resources could include nature education and simple craft activities, walks, pond dipping, tree climbing and building dens.
- 4.49 Although accessible to huge numbers of people, the potential for involving schools and the general public is limited by a lack of teaching and associated welfare facilities. A resource centre at the site would be readily accessible by local residents

and schools in the borough. Any centre could be used as a classroom and meeting room, office space, storage, toilets.

- 4.50 It is beyond the scope of a conservation management plan to consider how this proposal could be funded or implemented and any proposals should take into account the possible impacts it might have on the funding and sustainability of other environmental education within the borough.

Litter and dog waste bins

- 4.51 Litter and dog waste bins are already present beyond the site, in Dagnam Park. More litter and dog waste bins should be placed in the extension area areas where LB Havering staff can regularly empty them. These should be inspected four times yearly and requirements for repairs or replacement reported to LB Havering's Parks and Open Spaces Service

Fly tipping

- 4.52 Garden and building waste was noted in woodland strips adjacent to Chequers Road in the north eastern extent of the site. This is potentially damaging as it can smother woodland plants, introduce invasive species and cause local changes to soil chemistry, as well as affecting people's enjoyment of the wood. The Friends of Dagnam Park should monitor access or dumping and inform the council's Enforcement Department.

5 Five Year Management Programme

Dagnam Park Extension Area Management Programme 2011 - 5 year management schedule

Management tasks	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Y1	Y2	Y3	Y4	Y5
Pond management									
Compartments A1 and A2 Excavate ponds to de silt and reprofile banks.									
Compartment A1 and A2 –removal of overhanging tree branches as required									
Compartment A1- planting of banks									
Compartments A1 and A2 –pond maintenance. Removal of encroaching plants, including pondweeds (leaving on banks for several days to allow invertebrates to escape).									
Compartments A1 and A2 –pond maintenance. Removal of leaf litter, main pruning back of vigorous plant growth									
Compartment A1 and A2- pond maintenance. Dredging of ponds, in									

Dagnam Park Extension Area Management Programme 2011 - 5 year management schedule

Management tasks	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Y1	Y2	Y3	Y4	Y5
sections on a rotational basis, i.e. every three years. Arising to be stacked adjacent to waterbodies to allow invertebrates, amphibians etc to escape back into the ponds.									
Compartment A1, A2, B and E - Create amphibian hibernacula in woodland and grassland adjacent to all 7 wildlife ponds									
Woodland management									
Compartment B – assess all woodland areas to promote regeneration of canopy, scrub and ground flora species.									
Compartment B – assess oak regeneration and whether thinning, coppicing and/or felling of mature trees to promote saplings is warranted									
Compartment B – remove trees that are excessively shading ground									

Dagnam Park Extension Area Management Programme 2011 - 5 year management schedule

Management tasks	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Y1	Y2	Y3	Y4	Y5
flora, based on previous assessment in year 1									
Tree Management									
Monitor health of scattered trees and veteran trees, for dead wood, disease, storm damage, fire, grazing									
Bat boxes									
Compartment B – provide 1 or 2 bat boxes close to riparian corridor									
Compartment B – provide 1 or 2 bat boxes close to Pond C (TBC by bat ecologist)									
Compartment B – provide 1 or 2 bat boxes close to Pond D (TBC by bat ecologist)									
Compartment B – provide 1 or 2 bat boxes close to Pond E (TBC by bat ecologist)									
Compartment B – provide 1 or 2 bat boxes close to Pond F (TBC by bat ecologist)									

Dagnam Park Extension Area Management Programme 2011 - 5 year management schedule									
Management tasks	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Y1	Y2	Y3	Y4	Y5
ecologist)									
Compartment E1 – provide 1 or 2 bat boxes close to hedge H24 and veteran trees T13 and T14 (TBC by bat ecologist)									
Scattered trees – provide 1 or 2 bat boxes on scattered trees close to Pond A (TBC by bat ecologist)									
Bird boxes									
All compartments - Erect birds boxes on mature trees throughout the site, initially at 10/ha and type (Darrel Lambert 2008) with more subsequently if there are high levels of occupancy									
All compartments - Clear and repair approximately 1/3 of boxes per year (subject to access)									
All compartments – monitor bird and bat boxes and consider moving									

Dagnam Park Extension Area Management Programme 2011 - 5 year management schedule

Management tasks	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Y1	Y2	Y3	Y4	Y5
if there is no evidence of use									
Scrub management									
Compartment C1 – reduce bramble cover by 1/3 alternate years in selected areas with brash cutting to increase potential value for flowering plants and bryophytes.									
Compartment C2 –planting of native scrub species within this compartment, with protective fencing erected.									
Compartments C1 and C2 - Successive cuts to ensure dense growth establishes.									
Compartment C2 –replanting as necessary where scrub does not establish									
Hedgerow management									
Compartment D1 – dead hedge to continue to protect and encourage									

Dagnam Park Extension Area Management Programme 2011 - 5 year management schedule

Management tasks	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Y1	Y2	Y3	Y4	Y5
ground flora, temporary fencing required									
Compartment D1 –gapping up to maintain continuity, temporary fencing, watering and mulching may be required									
Compartment D1 – removal of scrub and shading trees/branches to allow regeneration of hedge.									
Compartment D1 –Clearance of drainage ditches to enhance drainage and provide moist environments in ponds in conjunction with tree and woodland management									
Compartment D2 –planting of hedge species, with temporary fencing									
Compartment D2 – dead hedging/gapping up to maintain continuity, temporary fencing									

Dagnam Park Extension Area Management Programme 2011 - 5 year management schedule

Management tasks	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Y1	Y2	Y3	Y4	Y5
required									
Compartments D1 and D2 – cyclical trimming of alternate sides of hedges									
Grassland management									
Compartment E1 –Mowing small sections at high cut level –10cm–10cm, removal of arisings									
Compartment E1 –Mowing small sections at low cut level –5cm–10cm, removal of arisings									
Compartment E1- creation of shallow scrapes on south facing slopes in localised, acidic areas, fencing and temporary signage. Spoil to be piled away from scrapes.									
Compartment E2 –Mowing small sections at high cut level –10cm, removal of arisings									

Dagnam Park Extension Area Management Programme 2011 - 5 year management schedule

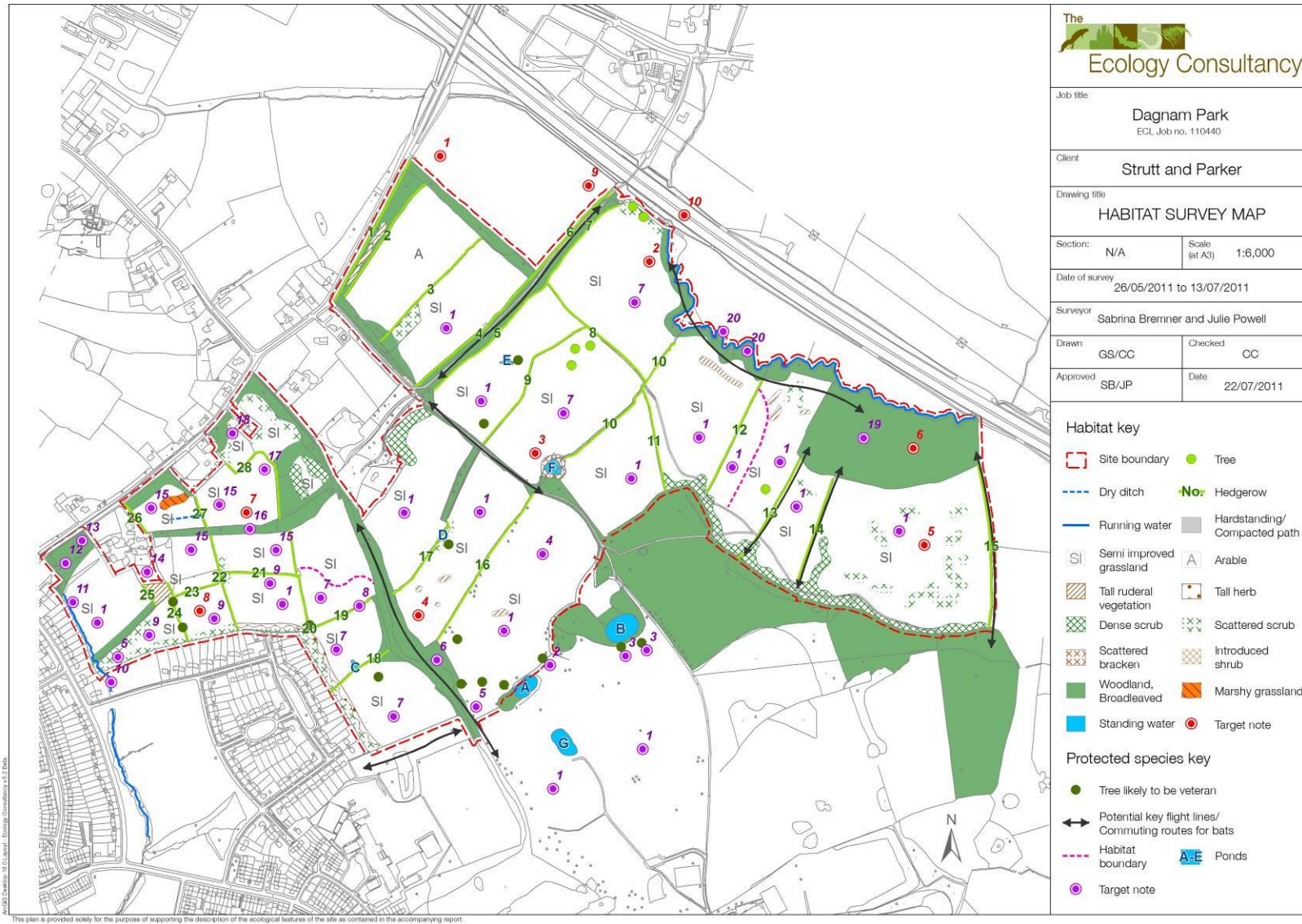
Management tasks	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Y1	Y2	Y3	Y4	Y5
Compartment E2 –Transfer of seed heads from E1 to E2									
Trampling and over grazing – periodic monitoring to be carried out to ensure newly planted areas are protected from encroachment of deer the public and dogs. Temporary fencing may be required.									
Invasive species control –assess bramble, bracken and other invasive species control by cutting as necessary									
Access maintenance									
Carry out condition survey of paths to confirm need for maintenance and upgrading									
Carry out repairs to paths as required.									
Education and interpretation – Interpretation boards to be placed									

Dagnam Park Extension Area Management Programme 2011 - 5 year management schedule

Management tasks	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Y1	Y2	Y3	Y4	Y5
at site entrances									
Sight lines maintenance									
Site wide: maintain clear sightlines throughout site									
General audit and improvements									

Appendix 1: Figures

Figure 2: Phase 1 habitat and protected species scoping plan



Appendix 2: Policies

GENERAL POLICIES ON ECOLOGICAL ISSUES

The following section sets out general policies that inform the remainder of the management plan which is more site-specific. These policies were developed by the London Wildlife Trust (LWT) to inform the management of their reserves and have been adapted below. They include policies on ecological principles and amenity, as well as those on health and safety and volunteering. These policies may not reflect current LWT policy and it is anticipated that they will have to be reviewed and amended to reflect LB Havering's requirements.

Continuity of habitat and community assemblages

The primary interest of the Dagnam Park Extension Area is the mosaic of woodland (including ancient woodland), grassland, hedgerows, ponds and scrub. Ancient woodland is a highly valued and irreplaceable wildlife habitat. This means that the management proposed does not seek to alter the predominantly wooded nature of the site, rather to maintain various ecological and historic aspects of the wood, including the creation of areas of coppice as suitable locations.

Prevention of local extinctions

Management to prevent accidental local extinctions, particularly of plant species, and to encourage natural recolonisation, will be carried out.

Survey and monitoring

A survey is carried out to establish baseline ecological interest and monitoring to assess the effects of management. It is important that the protocol adopted is designed to assess the effects of management rather than gather large amounts of species data. For example, moth surveys are of interest in establishing the value of the site and the management requirements for important species, but are too specialised and expensive to be carried out on a regular basis. Conversely bird or butterfly transects carried out regularly over a number of years will yield information on the effectiveness of management and can be carried out cheaply by non-specialists. Bird and bat monitoring should be carried out on an annual basis and vegetation surveys regularly but less frequently. Records should be sent to the local biodiversity records centre (BRC) - Greenspace Information for Greater London (GIGL). Of equal or greater importance to species survey and monitoring is monitoring the quality and timeliness of management and the condition of features such as bird and bat boxes.

Deer and grey squirrel damage

Management proposals should take account of deer and grey squirrel damage, and in particular coppicing and pollarding should be on a small scale and with proposals to compensate for deer and grey squirrel damage, should it occur, if necessary through planting or selection of seedlings of less susceptible species such as silver birch, wild cherry or ash.

Planting and other introductions

Natural regeneration and colonisation is the preferred option for conserving and enhancing woodland, hedgerow, scrub and grassland habitats. However, heavy grazing from deer is restricting the growth of dense shrub, sapling trees and hedgerows, and trampling is preventing the establishment of a ground flora beneath woodland canopies and hedge banks. Ponds have become silted-up, or trampled margins are denuded and over grazed. Planting to exclude grazing animals and/or members of the public will be required in the short term management of certain compartments. Planting will hasten the development of desirable boundaries and the re-establishment of ground flora. Planting of native and ornamental (non-native) trees has been proposed, including holm oak- to replace the 300 year old specimen damaged by lightning and vandalism.

Arboricultural inspection

A walk over inspection of the entire site should be carried out annually by the borough's arboricultural officer, so that there is an up to date risk assessment of potentially hazardous trees near the path and boundaries.

Ivy

Mature, arboreal ivy should always be retained because of its value to birds, bats and invertebrates. Ivy is occasionally perceived as a threat to trees but rarely damages healthy specimens. While ivy removal is not recommended, arboricultural inspections should include monitoring trees with heavy ivy cover close to the pathways and site boundaries.

Dead wood

This is an essential habitat for many species of birds, invertebrates, bats, bryophytes and fungi. Removal of dead wood and 'tidying-up' leads to relatively sterile conditions and takes away an essential part of the woodland ecology. The aim is to provide as much standing and fallen dead-wood as possible without compromising other management aims or safety. Currently there is a limited amount of deadwood in

woodland areas of the Dagnam Park Extension Area, as such, all timber produced through woodland management should be retained on site in order to build up a supply of deadwood in varying stages of decay.

There are good quantities of standing deadwood throughout the site ranging from entirely dead trees to those with small areas of rot and a number of trees are likely to have internal cavities of value to birds and bats. All standing deadwood should be retained and ideally the amount should be increased. Where it is necessary to thin the canopy, for instance to favour a particular species, consideration should be given to killing selected trees in a standing position by ring-barking (i.e. removing a strip of bark around the trunk, which kills the tree but leaves it standing). If this is not appropriate trees should be felled leaving a long stump to provide nesting sites for some species.

However, public safety must always take precedence in areas of high public use, consequently any trees which are in a demonstrably unsafe condition must be made safe (though not necessarily felled) especially where they are near boundaries or footpaths - although a precautionary approach erring on the side of minimising habitat damage must be taken. Information should be provided for visitors about the role of dead wood in the reserve and that they should be aware of the potential hazard that it may pose to those who stray off the designated paths.

Use of herbicides

Herbicides are damaging to the environment to a greater or lesser extent, and can be a danger to the public. Consequently their use should be restricted to necessary tasks and only if other management methods are inappropriate or have failed. Use must be in accordance with the relevant pesticide policy.

Climate change

Appropriate future management of the wood could, to a limited extent, mitigate the predicted effects of climate that could affect the site. These are broadly, an increase in summer droughts, increased winter rainfall, and the potential for new plant pathogens, both due increased climate stress to trees and the possibility that altered climate may favour new pest species. These issues are reflecting in the plan in a number of ways. Recommendations for reinstating drainage ditches along hedgerows and reducing runoff would enable damp habitats a moisture loving species to be retained, if drought becomes more prevalent. A cautious approach to coppicing had been recommended in terms of extent of additional areas. Maintaining

the majority of existing woodland cover is likely to minimise the potential for any invasive and pathogen species to alter the species composition of the wood.

Review of Management Plan

This management plan is written to cover the next 5 years and should be reviewed at the end of this period. In addition, the plan should be reviewed annually by the Wild Space Officer /Council staff and the Friends of Dagnam Park to ensure that the work is being carried out and that it is having the desired effect.

GENERAL PRINCIPLES ON AMENITY ISSUES

General safety

Safety is a priority as there is free public access to the site. All boundaries, footpaths and other visitor facilities need to be inspected regularly and any necessary remedial action taken immediately. Regular inspections must also be carried out of all trees near boundaries and footpaths, to ensure they are in a safe condition, i.e. not about to fall over or shed dead branches onto an area frequently used by the public. Appropriate action should be taken but in recognition that standing dead wood is an essential feature of the woodland ecosystem. Vegetation should be regularly cleared to maintain sightlines in areas which may become very enclosed and create a real or perceived threat to the public. This is most likely to be the case at access points which are often quite narrow and bordered by dense vegetation.

Access

The site has pedestrian access to the public 24 hours a day, 365 days a year. Consequently the local authority has a responsibility to ensure that all footpaths and other visitor facilities are in good condition. Any proposals to alter current access must take account of Dagnam Park's designation as an LNR, and the aim to include the Extension area as management of LNRs must be based principally on the site's nature conservation interest.

There is evidence of informal access, with alternative routes to the main path present in much of the site. Off-path access is causing soil compaction and damage to ground flora at a number of locations and measures to reduce damage, such as dead hedging or the formalisation of access with steps or paths, should be implemented.

Litter and fly tipping

Litter makes a site look untidy and uncared for and can spoil the enjoyment of visitors. Some litter can also be unsafe, or lethal to small mammals and some

invertebrates. Litter will be cleared on a regular basis. Hazardous waste (syringes) must be removed from the site regularly and safely by an approved contractor.

The site also suffers from fly tipping of garden and building waste into the site, along the northern access points along Chequers Road. Fly tipping damages the woodland habitats by smothering ground flora and potentially introducing invasive species and hazardous substances, as well as reducing the aesthetic value of the wood and being a possible health hazard. Fly tipping along public highways should be removed by the Local Authority as soon as it is reported.

Dogs

Dog walking is likely to be among the main recreational activities at the site but the associated issue of fouling is also evident, and disturbance to wildlife and the threat of uncontrolled dogs to people, may also be an issue on occasion. The ancient woodland ground flora at the site is likely to be adversely affected by soil nutrient enrichment caused by dog fouling. It is important that dog bins are placed at access points to the site regularly emptied and well maintained to ensure that dog owners can dispose of dog waste in a responsible manner as easily as possible. Further dog bins should be placed in the proposed car parking area, and at the new entrance points. Relevant byelaws and information on responsible dog walking at the site should be included on information boards.

Fires

Evidence of fires and fire damaged trees were present throughout the Extension area, and within the adjacent Dagnam Park site –some have been the result of lightning strike, others vandalism. Fires are not likely to a major issue at the site except in drought conditions. Fires should be tackled only by the fire service.

Firearms

All incidents of people carrying firearms should be immediately reported to the police; no action should be taken by staff or volunteers against individuals carrying firearms.

Fishing

The Brookside Angling Club who fish on nearby ponds to the Extension Area should be aware of pond enhancement work, and that stocking with fish will not be carried out. Fishing at these ponds will not be encouraged.

Signs and interpretation boards

There is a need for interpretation of Dagnam Park Extension Area both on site and through written material and the website. Interpretation should be addressed by a separate strategy and is not covered in this management plan.

Lighting

The restoration and creation of wildlife ponds is likely to further increase the numbers of foraging, commuting and roosting bats present, and additional recommendations for bats are provided below. Lighting is known to deter some species of bat and some woodland species are particularly sensitive to increased light⁸.

Night time illumination is currently absent from the Extension area, with the exception of what is likely to be minimal light spillage from adjacent residential properties. Any replacement or refurbishment of lighting in these areas should aim to minimise light spillage, for instance by directing light downwards and using hoods to reduce glare. Additional lighting within the woodland areas should not be provided under any circumstances. Any severe light spillage from adjacent properties should be addressed if possible through contacting the owner (in some cases this may be achieved simply by lowering the angle of security halogen lamps).

GENERAL PRINCIPLES OF MANAGEMENT PRACTICE

The following policies relate to management activities carried out by staff or volunteers and are included for guidance only. They will need to be updated and expanded to reflect LB Havering policy.

Health, safety and risk assessment

It is essential that all activities take place with adequate consideration of health and safety. Management of the sites for nature conservation poses a number of potential risks, which anyone working there must be aware of. All tasks must be carried out with a specific risk assessment to highlight any particular dangers, which must be reviewed bi-annually. All tools must be used only after an initial safety induction. Works must be led by an individual with authority to ensure that all health and safety measures are implemented and with the ability and resources to deal with any accidents.

⁸ Refs Jones 2000 and BCT 2009 for woodland bats

Tools

All tools should be of good quality. They should be regularly and properly maintained and they should be securely stored in good dry conditions. Training should be given in the safe use of tools for all new volunteers or where unfamiliar tools are being used. Volunteers using tools should be made aware, or reminded of, safe practice every time they are used. Appropriate tools should be used at all times.

Use of powered tools

There are occasions when use of powered tools is necessary, e.g. strimmers, chainsaws, etc. Powered tools must only be used by a certificated operator having all due regard for health and safety. All power tools must be kept in good working order and stored appropriately when not in use. Vegetable-based chain oils, such as BioSafe, should be used in their operation.

Use of herbicides

There will be a presumption against the use herbicides, although exceptions will be made. Herbicide use must accord to all relevant Health & Safety and COSHH guidelines, and LB Havering Policy and the person administering it need to be qualified and properly equipped.

Tree felling

Tree felling must only be done in accordance with the legislation relating to tree felling licences which are issued by the Forestry Authority. Tree felling is a specialist activity and can be very dangerous. Any felling should only be carried out by experienced persons and only if there is no danger to people or property. If there is any doubt the work should be carried out by specialised contractors. Chainsaws should only be used by fully qualified operators. Felled or windblown trees should be left in situ unless they cross official paths. If large trunks need to be moved this should be usually be carried out through human effort – aided with a mechanical winch if necessary.

Burning

There is a presumption against burning in the site's management plan.

Working with volunteers

Much of the practical management work of the site could potentially be undertaken by volunteers and there is an active voluntary interest in the site through the Friends of Dagnam Park. If volunteer involvement is to be encouraged at the site it should

take place in accordance with LB Havering equal opportunities, health and safety, and volunteer policies and with reference to current best practice provided in the NCVO's Management of Volunteers: National Occupational Standards 2009.

Appendix 3: Recommended Planting List

ORNAMENTAL AND NATIVE SPECIES OF WILDLIFE VALUE

The list below gives some easily sourced plants which are of proven value to wildlife. In informal landscapes the emphasis should be on the use of native species.

Different horticultural varieties of the following species are commonly available, but where available standard stock is advised, especially for native species. Single flowering plants should be chosen over double flowering ('flore pleno') varieties. With exception of those marked as * (biennials) and ** (annuals) all species are perennial. N = Native.

N.B. Care should always be exercised in designing planting schemes. This list includes species that may be harmful if handled or ingested. Numerous sources of further information are available; see for instance *Poisonous Plants and Fungi: An Illustrated Guide* (Cooper, Johnson & Dauncey, 2003). Schedule 9 (Part 2) of the Wildlife and Countryside Act, 1981 (as amended) includes a list of invasive plants, including aquatic species, that should be avoided. Consideration should also be given to other species that may also have a negative effect on native habitats, if planted in the wrong location.

TREE

Cherry *Prunus* spp., *P. avium* (wild cherry), *P. padus* (bird cherry), *P. domestica* (domestic plum) N

Ash *Fraxinus excelsior* N

Apple *Malus* spp., *M. domestica* (edible apple), *M. sylvestris* (crab apple) N

Pear *Pyrus* spp.

Small-leaved lime *Tilia cordata* N

Silver birch *Betula pendula* N

Beech *Fagus sylvatica* N

HEDGING SPECIES

Field maple *Acer campestre*

Hornbeam *Carpinus betulus*

Traveller's-joy *Clematis vitalba*

Hawthorn *Crataegus monogyna*

Broom *Cytisus scoparius*

Beech *Fagus sylvatica*

Ash *Fraxinus excelsior*

Ivy *Hedera helix*

Holly *Ilex aquifolium*
Wild privet *Ligustrum vulgare*
Honeysuckle *Lonicera periclymenum*
Cherry laurel *Prunus laurocerasus*
Pedunculate oak *Quercus robur*
Currant *Ribes* sp.
Field rose *Rosa arvensis*
Dog-rose *Rosa canina*
Bramble *Rubus fruticosus* agg.
Grey willow *Salix cinerea*
Willow *Salix* sp.
Elder *Sambucus nigra*

LARGE SHRUBS

Hawthorn *Crataegus monogyna* N
Blackthorn *Prunus spinosa* N N.B. can produce suckering growth.
Rose *Rosa canina* (dog rose) *R. arvensis* (field rose) *R. pimpinellifolia* (burnet rose) N N.B.
Wild privet *Ligustrum vulgare* N
Common holly *Ilex aquifolium* N N.B. both male and female plants are needed for berry production unless a self-fertile variety such as 'J C Van Tol' is used.
Hazel *Corylus avellana* N
Viburnum *Viburnum* spp., *V. lantana* (wayfaring tree) N, *V. opulus* (guelder rose) N. Note: *V. lantana* can become invasive in more open habitats such as chalk grassland.
Dogwood *Cornus sanguinea* N
Broom *Cytisus scoparius* N
Buckthorn *Rhamnus cathartica* N
Spindle *Euonymus europaeus* N
Yew *Taxus baccata* N

N.B. Some of these shrub species will form small trees when mature

RECOMMENDED PLANTING FOR PONDS

Submerged aquatics

Water crowfoot *Ranunculus aquatilis*

Spiked water milfoil *Myriophyllum spicatum* N.B. a similar species *Myriophyllum aquaticum* (parrot's feather) is a Schedule 9 invasive plant species

Water starwort *Callitriche stagnalis*

Rigid hornwort *Ceratophyllum demersum*

Curly pondweed *Potamogeton crispus*

Floating aquatics

Yellow water lily *Nuphar lutea* (can require control)

White water lily *Nymphaea alba* (can require control)

Fringed water lily *Nymphoides peltata*

Bog-bean *Menyanthes trifoliata*

Amphibious bistort *Polygonum amphibium*

Marginal

Yellow iris *Iris pseudacorus*

Water mint *Mentha aquatica*

Water plantain *Alisma plantago-aquatica*

Arrowhead *Sagittaria sagittifolia*

Brooklime *Veronica beccabunga*

Water forget-me-not *Myosotis scorpioides*

Lesser spearwort *Ranunculus flammula*

Lesser reedmace *Typha angustifolia*

Flowering rush *Butomus umbellatus*

Branched bur-reed *Sparganium erectum*

Purple loosestrife *Lythrum salicaria*

Floating sweet-grass *Glyceria fluitans* (grass)

Reed sweet-grass *Glyceria maxima* (grass)

Reed canary grass *Phalaris arundinacea* (grass)

Marshy/damp grassland

Bugle *Ajuga reptans*

Creeping Jenny *Lysimachia nummularia*

Lady's smock *Cardamine pratensis*

Ragged robin *Lychnis flos-cuculi*

Marsh marigold *Caltha palustris*

Meadow sweet *Filipendula ulmaria*

Meadow buttercup *Ranunculus acris*

Marsh woundwort *Stachys palustris*

Hemp agrimony *Eupatorium cannabinum* N.B. can dominate large areas

Rush species *Juncus* spp.

Plants to avoid in smaller ponds

Greater reedmace *Typha latifolia* (large area required)

Common reed *Phragmites australis* (large area required)

Greater spearwort *Ranunculus lingua* (spreads quickly)

Appendix 4: Protected Species Records

Table 2: Birds recorded in the desk study that may utilise habitats present at the site

Bird Species	Habitat Preferences (RSPB)	Protected / conservation status
Grey partridge	Traditionally found in lowland arable areas of Great Britain.	Red List London BAP
Common kingfisher	Found by still or slow flowing water such as lakes, canals and rivers in lowland areas. Occasionally they may visit garden ponds if of a suitable size.	WCA Sch. 1
Lesser spotted woodpecker <i>Dendrocopos minor</i>	Open woods, copses, parkland, gardens and orchards. Tends to feed on larvae, spiders and wood-boring insects on smaller tree branches.	Red List London BAP
Skylark	Likes open countryside, from lowland farmland to upland moorland. Often inconspicuous on the ground, it is easy to see when in its distinctive song flight.	Red List WCA Sch. 1 London BAP
Northern lapwing <i>Vanellus vanellus</i>	In the breeding season prefer spring sown cereals, root crops, permanent unimproved pasture, meadows and fallow fields. They can also be found on wetlands with short vegetation. In winter they flock on pasture and ploughed fields.	Red List WCA Sch. 1 London BAP
Turtle dove <i>Streptopelia turtur</i>	Woodland edges, hedgerows and open land with scattered bushes.	Red List London BAP
Cuckoo	Especially numerous in southern and central England. Often found in woodland and heathland.	Red List London BAP
Yellow wagtail <i>Motacilla flava</i>	Especially lowland grassland where cattle are being grazed	Red List London BAP
Dunnock <i>Prunella modularis</i>	Any well vegetated areas with scrub, brambles and hedges	London BAP
Fieldfare <i>Turdus pilaris</i>	Along hedges and in fields. Hawthorn hedges with berries are a favourite feeding area. In late winter grass fields, playing fields and arable fields with nearby trees and hedges. (Overwinter only).	Red List WCA Sch. 1
Song thrush	Hedgerow, woodland and urban environments. Gardens are an important habitat for this species.	Red List London BAP
Redwing <i>Turdus iliacus</i>	Hedges and orchards as well as open, grassy fields. Will come to parks and gardens. Often joins with flocks of fieldfares. (Overwinter only).	Red List WCA Sch. 1
Common starling <i>Sturnus vulgaris</i>	Most habitat types	Red List London BAP
Spotted flycatcher <i>Muscicapa striata</i>	Along woodland edges and in parks and gardens.	Red List London BAP
House sparrow	Farmland, hedgerow, woodland and urban habitats; adaptable and able to live in a diversity of environments.	London BAP Red List
Eurasian tree sparrow <i>Passer montanus</i>	Hedgerows and woodland edges.	Red List London BAP
Brambling <i>Fringilla montifringilla</i>	In winter likes beech woodland, farmland fields near woods. Look in flocks of chaffinches and other finches. In autumn look along east coast woodlands and fields. Will visit gardens in winter. (overwinter only)	WCA Sch. 1
Common linnet <i>Carduelis cannabina</i>	Commons, heathland, rough ground, farmland hedges, saltmarshes and in parks and gardens	Red List London BAP

Bird Species	Habitat Preferences (RSPB)	Protected / conservation status
Bullfinch	Woodlands, orchard and hedgerows. Best looked for at woodland edges.	London BAP
Yellowhammer	Open countryside with bushes and hedgerows.	Red List London BAP

Invertebrate records:

The Friends of Dagnam Park note records for marbled white *Melanargia galathea* (1999), ringlet (2001) *Aphantopus hyperantus*, Essex skipper *Thymelicus lineola.*, Roesel's bush cricket *Metrioptera roeseli*, five-spot burnet *Zygaena trifolii*, clouded yellow *Colias croceus*, painted lady *Vanessa cardui.*, brown argus *Aricia agestis*, emerald damselfly *Lestes sponsa* and banded demoiselle *Calopteryx splendens*. Dave Samson notes that a large number of species were observed since the arable land in the eastern section of the site became set aside in the 1980s.



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