

Dagnam Park, London Borough of Havering

Phase 1 Habitat and Protected Species Scoping Survey Appendices Report for Strutt & Parker

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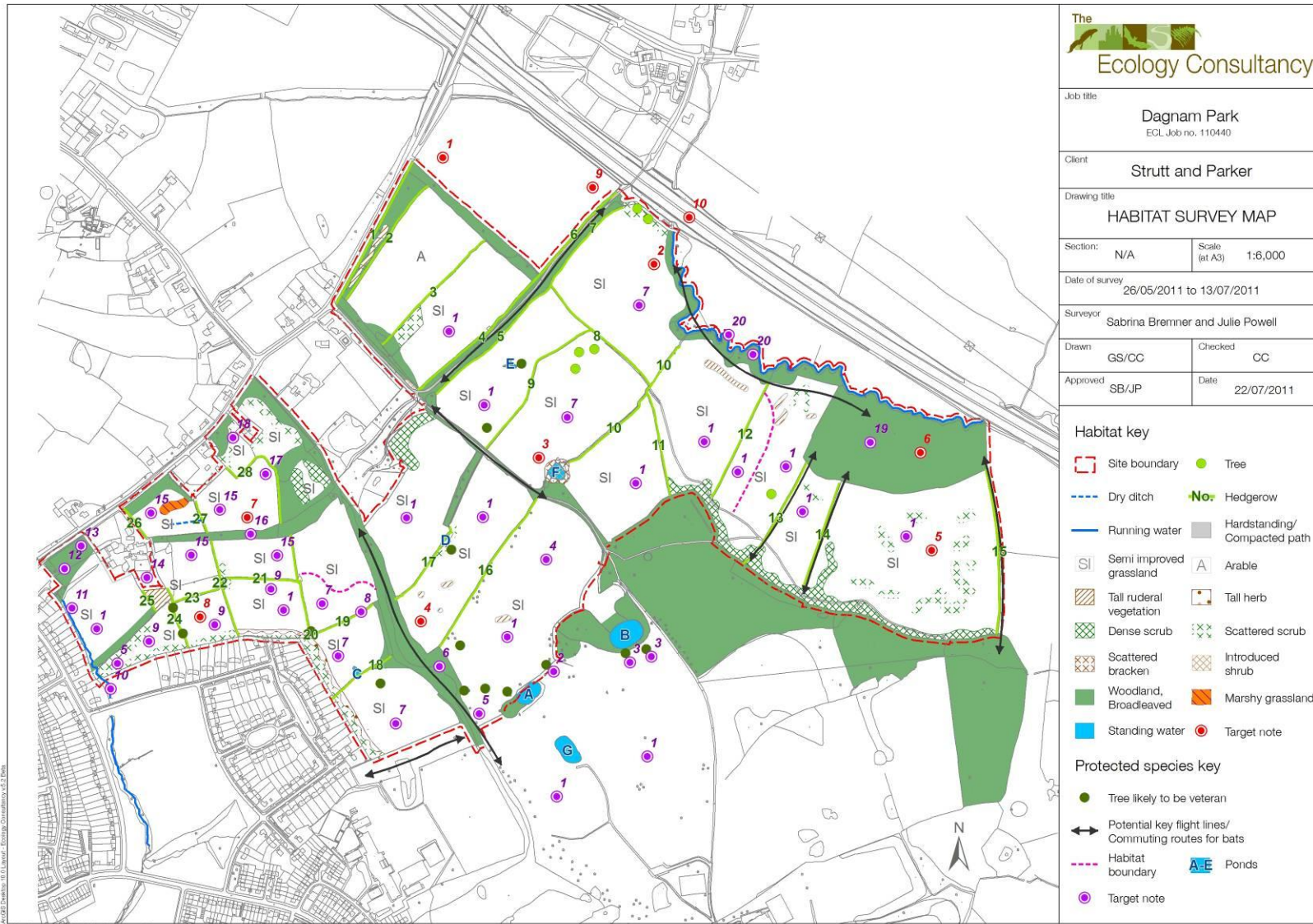
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Appendix 1: Figures & Target Notes

Figure 1: Phase 1 habitat and protected species scoping plan



PROTECTED SPECIES TARGET NOTES (Purple target notes in Figure 1)

Pond A: Very likely to support great crested newts: teaming with tadpoles, substantial submerged, emergent and floating vegetation, little shading, high diversity of peripheral habitats, close to Hatters Wood. Breeding moorhens. Also potentially suitable for water voles. Floating and emergent species include floating pondweed *Potamogeton natans* L., white water lily *Nymphaea* sp. (likely to be *Nymphaea candida* J), yellow flag iris *iris pseudocorus*; bankside species includes bramble *Rubus* sp., and species-rich rough grassland.

Pond B: Fishing lake; unsuitable for breeding great crested newts. Approx 40 x 40m. White waterlily covers circ. 40% of surface; yellow flag iris in thick clumps around edges. Mallard ducks on pond. Rough grassland and woodland around the edges. Stocked with fish but good water quality. Unlikely to support a sustainable population of breeding great crested newts. Overflow pond 100% shading and shallow. Poor water quality as choked with leaf litter and deadwood. Unlikely to support a sustainable population of breeding great crested newts.

Pond C: Almost dry (ephemeral pond), and heavily poached. Water has dropped to circ. 4m x 4m. 100% shading. However, likely to flood during the winter months to approximately 20 x 15m with 60% shading. Pond supported duckweed *Lemnaoideae* sp., no other aquatic species present.

Ponds D & E: Small ephemeral ponds, both are situated within rough grassland fields and immediately surrounded by trees. Heavily shaded with very little water during time of survey (following a period of intense rainfall). May be used by small numbers of breeding great crested newts if support adequate water between February and May, but unlikely to sustain a population.

Pond F: Unsuitable for breeding great crested newts. Concrete-lined ornamental, pond that regularly dries out (continued only a small amount of water following intense period of rainfall). Choked with yellow flag iris. Surrounding tall ruderals comprised bracken, common nettle and bramble.

Protected Species (PS) Target Note 1: Rough, species-rich grassland. Very good quality foraging habitat for great crested newts. Also potentially suitable for (psf) reptiles. Scattered scrub and tall ruderals around the edges of the fields.

PS Target Note 2: Horse chestnut tree, partially hollow trunk, flaking bark, holes, cracks; numerous features potentially suitable for roosting bats.

PS Target Note 3: Substantial pedunculate oaks with numerous features potentially suitable for roosting bats.

PS Target Note 4: as PSTN1 but with areas of wet grassland and sedges. Field edges also have scattered scrub and tall ruderals. Potentially suitable for reptiles. Tree-lines along perimeters support numerous trees psf roosting bats and likely to be an important foraging resource.

PS Target Note 5: Species-rich grassland with scattered scrub. Potentially important for invertebrates and very good reptile habitat. High structural diversity.

PS Target Note 6: Oak and horse chestnut woodland with little understorey (except around the edges) and the odd holly *Ilex aquifolium*, field maple *Acer campestre* and hawthorn *Crataegus monogyna*. Little ground flora: ground elder and bramble only. Substantial well-used path through centre of woodland strip. Dry ditches, few veteran trees. Potentially good flight-line and foraging resource for bats.

PS Target Note 7: Species-poor semi-improved grassland. Shorter and more regularly managed/more intense grazing than that in PSTN1. Scattered scrub around edges. Psf reptiles.

PS Target Note 8: Wide bramble hedgerow. Psf dormice and bats.

PS Target Note 9: East-facing slope (not ideal for reptiles) but very rough, tussocky grassland.

PS Target Note 10: Stream. This section is heavily poached, with nettles along banks and dense shading. Flowing water. Section to the west is lined with grass and ruderals and is psf water voles

PS Target Note 11: Stream, heavily poached and heavily shaded. Little vegetation.

PS Target Note 12: Scrubby woodland. Little groundflora, no veteran trees. Adjacent stream is better quality in small sections than PSTN11, and psf water voles; heavily shaded along other sections. Culverted under road.

PS Target Note 13: Strip of reedbed but dry at time of survey. Potentially valuable to nesting birds and water voles (when wet). Starting to become encroached by nettles

PS Target Note 14: Large patch of dense nettles. Poor quality for herpetofauna.

PS Target Note 15: Heavily grazed wet grassland. Moderate potential for herpetofauna. Field edges provide very good quality foraging and commuting resource for bats

PS Target Note 16: Double line of mature common limes with some field maple. No understorey. Not suitable for dormice but potentially good flight-line for bats.

PS Target Note 17: Very old outgrown hawthorn hedge. Field to NW has a south-facing slope (ideal for reptiles) but short grass.

PS Target Note 18: Very low-grazed, but field edges are potentially suitable habitat for reptiles

PS Target Note 19: Woodland dominated by mature pedunculate oak (possibly veterans) and mature lime, with frequent ash trees, field maple, elder, sycamore, young small-leaved elm– with numerous dead and dying specimens. The understorey supported a good structure in places and was dominated by Holly and hazel with some honeysuckle *Lonicera periclymenum*. The ground flora was typically poor, with occasional bluebell, hedge woundwort and dog's mercury. This habitat was potentially suitable for dormice, included numerous trees with features suitable for roosting bats, and is likely to be an important foraging resource for bats.

PS Target Note 20: Wooded stream corridor (the Weald Brook). Stream is approx 1-3m wide, heavily shaded with poor bank-side vegetation in general; patches of grass and ruderals where canopy opens up. Ground flora within surrounding pedunculate oak woodland corridor comprises tall ruderals including soft brome and hairy brome *Bromus hordeaceus* and *B. ramosus*, dog's mercury, wood melick *Melica uniflora*, giant fescue *Festuca gigantea*, shield-ferns *Polystichum spp.*, figwort *Scrophularia sp.*, great willowherb *Epilobium hirsutum*, cleavers *Galium aparine*, common nettle, and wood dock *Rumex sanguineus* (Section 3, TN2).

Appendix 2: Photographs

Photograph 1

Woodland strip in centre of site, path leading to access road. Sparse understorey, occasional ornamental shrub. Young elm, hawthorn, hazel and elder, predom mature oak canopy, bramble etc



Photograph 2

Old hedgebanks and ditch within woodland strip path



Photograph 3

Road leading to Chequers Road



Photograph 4

H2 and field to south



Photograph 5

Woodland strip adjacent to hedges H1 and H2 – lime predominantly



Photograph 6

Mature oak in hedge H2



Photograph 7
Gap in hedge H3



Photograph 8
Road between hedges H6 and H7



Photograph 9
Hedgebank in H6



Photograph 10
H8 looking west across field



Photograph 11
Riparian corridor-looking east



Photograph 12
Riparian corridor -looking west



Photograph 13

Woodland in south eastern section
of site



Photograph 14

Hedge H11, looking north west



Photograph 15

Hedge H14 looking south east



Photograph 16

Hedge H15 looking south across tussocky grassland, scrub and woodland to west (right hand side)



Photograph 17

Hedge H17



Photograph 18

Hedge H19 looking north



Photograph 19
Hedge H22



Photograph 20
Hedge H24



Appendix 3: Plant Species List

Plant Species List for Dagnam Park; Havering compiled from the Phase 1 habitat survey carried out on the 26th May and 3rd June 2011.

Scientific nomenclature follows Stace (2010) for vascular plant species. Vascular plant common names follow the Botanical Society of the British Isles 2003 list, published on its web site, www.bsbi.org.uk. Please note that this plant species list was generated as part of a Phase 1 habitat survey, does not constitute a full botanical survey and should be read in conjunction with the associated Phase 1 Report.

Abundance was estimated using the DAFOR scale as follows:

D = dominant, A = abundant, F = frequent, O = occasional, R = rare

e=edge only, p=planted, s=seedling or sucker, t=tree, y = young tree, h=hedge, g=garden escape

Latin Name	Common name	Abundance	Qualifiers
<i>Acer campestre</i>	Field maple	F	tsh
<i>Acer pseudoplatanus</i>	Sycamore	F	t
<i>Achillea millefolium</i>	Yarrow	R	
<i>Aegopodium podagraria</i>	Ground-elder	R	
<i>Agrostis canina</i>	Velvet bent	O	
<i>Agrostis capillaris</i>	Soft bent	O	
<i>Ajuga reptans</i>	Bugle	R	he
<i>Alliaria petiolata</i>	Garlic mustard	O	
<i>Anisantha sterilis</i>	Barren brome	O	
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	F	
<i>Anthriscus sylvestris</i>	Cow parsley	O	
<i>Arctium minus</i>	Lesser burdock	O	
<i>Arrhenatherum elatius</i>	False oat-grass	D	
<i>Ballota nigra</i>	Black horehound	O	
<i>Bellis perennis</i>	Daisy	R	
<i>Betula pendula</i>	Silver birch	R	t
<i>Brassica napus</i>	Rape	R	e
<i>Bromus hordeaceus</i>	Soft-brome	O	
<i>Bromus ramosus</i>	Wood brome	R	e
<i>Calystegia sepium</i>	Hedge bindweed	R	
<i>Cardamine flexuosa</i>	Wavy bitter-cress	R	
<i>Carex hirta</i>	Hairy sedge	R	
<i>Carex pendula</i>	Pendulous sedge	R	

Latin Name	Common name	Abundance	Qualifiers
<i>Carex sylvatica</i>	Wood sedge	R	e
<i>Carpinus betulus</i>	Hornbeam	R	t
<i>Capsella bursa-pastoris</i>	Shepherd's-purse	R	
<i>Chamerion angustifolium</i>	Rosebay willowherb	F	e
<i>Chenopodium album</i>	Fat-hen	R	
<i>Cirsium sp.</i>	Thistle	F	
<i>Clematis vitalba</i>	Traveller's-joy	R	h
<i>Convolvulus arvensis</i>	Field bindweed	O	
<i>Cornus sanguinea</i>	Dogwood	O	ht
<i>Corylus avellana</i>	Hazel	O	hst
<i>Crataegus monogyna</i>	Hawthorn	F	ht
<i>Crepis sp.</i>	Hawk's-beard	R	
<i>Cynosurus cristatus</i>	Crested dog's-tail	R	
<i>Dactylis glomerata</i>	Cock's-foot	F	
<i>Elytrigia repens</i>	Common couch	O	
<i>Epilobium hirsutum</i>	Great willowherb	O	e
<i>Eurhynchium praelongum</i>	Moss	O	
<i>Fagus sylvatica</i>	Beech	R	t
<i>Festuca gigantea</i>	Giant fescue	R	
<i>Festuca pratensis</i>	Meadow fescue	O	
<i>Festuca rubra</i>	Red fescue	F	
<i>Fraxinus excelsior</i>	Ash	F	t
<i>Galium aparine</i>	Cleavers	O	
<i>Galium mollugo</i>	Hedge bedstraw	R	he
<i>Geranium dissectum</i>	Cut-leaved crane's-bill	R	
<i>Geranium robertianum</i>	Herb-Robert	R	
<i>Geranium rotundifolium</i>	Round-leaved crane's-bill	R	
<i>Geum rivale</i>	Water avens	R	e
<i>Geum urbanum</i>	Wood avens	R	
<i>Hedera helix</i>	Ivy	F	
<i>Holcus lanatus</i>	Yorkshire-fog	O	
<i>Hyacinthoides hispanica</i>	Spanish bluebell	O	e
<i>Hyacinthoides non-scripta</i>	Bluebell	O	e
<i>Hypochaeris radicata</i>	Cat's-ear	R	
<i>Ilex aquifolium</i>	Holly	F	s
<i>Iris pseudacorus</i>	Yellow iris	LD	p

Latin Name	Common name	Abundance	Qualifiers
<i>Juncus effusus</i>	Soft-rush	R	
<i>Juncus inflexus</i>	Hard rush	R	
<i>Lamium album</i>	White dead-nettle	O	
<i>Leucanthemum vulgare</i>	Oxeye daisy	R	
<i>Lolium perenne</i>	Perennial rye-grass	F	
<i>Lonicera periclymenum</i>	Honeysuckle	O	hs
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil	R	
<i>Medicago lupulina</i>	Black medick	R	
<i>Melica uniflora</i>	Wood melick	O	e
<i>Mercurialis perennis</i>	Dog's mercury	O-F	e
<i>Myosotis sp.</i>	Forget-me-not	R	
<i>Narcissus sp.</i>	Daffodil	R	g
<i>Papaver sp.</i>	Poppy	R	
<i>Phleum pratense</i>	Timothy	O	
<i>Picris echioides</i>	Bristly oxtongue	R	
<i>Plantago lanceolata</i>	Ribwort plantain	R	
<i>Plantago major</i>	Greater plantain	R	
<i>Poa annua</i>	Annual meadow-grass	O	
<i>Poa pratensis</i>	Smooth meadow-grass	O	
<i>Poa trivialis</i>	Rough meadow-grass	O	
<i>Polystichum aculeatum</i>	Hard shield-fern	R	
<i>Polytrichum spp.</i>	Hair mosses	R	
<i>Prunus avium</i>	Wild cherry	R	
<i>Prunus lusitanica</i>	Portuguese laurel	R	pe
<i>Prunus spinosa</i>	Blackthorn	O	sh
<i>Pteridium aquilinum</i>	Bracken	O	e
<i>Quercus robur</i>	Pedunculate oak	D	t
<i>Ranunculus acris</i>	Meadow buttercup	F	
<i>Ranunculus bulbosus</i>	Bulbous buttercup	O	
<i>Ranunculus ficaria</i>	Lesser celandine	R	
<i>Ranunculus repens</i>	Creeping buttercup	F	
<i>Reseda luteola</i>	Weld	R	
<i>Rhus typhina</i>	Sumach	R	pe
<i>Rorippa nasturtium-aquaticum</i>	Water-cress	R	e
<i>Rosa arvensis</i>	Field-rose	F	

Latin Name	Common name	Abundance	Qualifiers
<i>Rosa canina</i>	Dog-rose	R	
<i>Rubus fruticosus agg.</i>	Bramble	F	
<i>Rumex acetosa</i>	Common sorrel	O	
<i>Rumex obtusifolius</i>	Broad-leaved dock	O	
<i>Rumex sanguineus</i>	Wood dock	R	
<i>Rumex sp.</i>	Dock	F	
<i>Salix caprea</i>	Goat willow	F	ts
<i>Salix sp.</i>	Willow	R	t
<i>Salix x sepulcralis</i>	Weeping willow	R	t
<i>Sambucus nigra</i>	Elder	A	sth
<i>Scrophularia sp.</i>	Figwort	R	
<i>Senecio jacobaea</i>	Common ragwort	R	
<i>Senecio vulgaris</i>	Groundsel	R	
<i>Silene dioica</i>	Campion	R	h
<i>Solanum dulcamara</i>	Bittersweet	R	
<i>Sorbus aucuparia</i>	Rowan	R	t
<i>Stachys sylvatica</i>	Hedge woundwort	O	
<i>Stellaria media</i>	Common chickweed	R	
<i>Symphytum officinale</i>	Common comfrey	LD	e
<i>Taraxacum sp.</i>	Dandelion	O	
<i>Tilia sp.</i>	Lime	O-LD	t
<i>Trifolium pratense</i>	Red clover	R	
<i>Trifolium repens</i>	White clover	R	
<i>Ulmus minor minor</i>	Small-leaved elm	O-F	st
<i>Urtica dioica</i>	Common nettle	A	
<i>Verbascum sp.</i>	Mullein	R	
<i>Veronica hederifolia</i>	Ivy-leaved speedwell	R	
<i>Veronica persica</i>	Common field-speedwell	F	

Appendix 4: Legislation & Planning Policy

Important notice: This section contains details of legislation and planning policy applicable in Britain only (i.e. not including the Isle of Man, Northern Ireland, the Republic of Ireland or the Channel Islands) and is provided for general guidance only. While every effort has been made to ensure accuracy, this section should not be relied upon as a definitive statement of the law.

A NATIONAL LEGISLATION AFFORDED TO SPECIES

The objective of the EC Habitats Directive¹ is to conserve the various species of plant and animal which are considered rare across Europe. The Directive is transposed into UK law by The Conservation of Habitats and Species Regulations 2010 (formerly The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)) and The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended).

The Wildlife and Countryside Act 1981 (as amended) is a key piece of national legislation which implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and implements the species protection obligations of Council Directive 2009/147/EC (formerly 79/409/EEC) on the Conservation of Wild Birds (EC Birds Directive) in Great Britain.

Since the passing of the Wildlife & Countryside Act 1981, various amendments have been made, details of which can be found on www.opsi.gov.uk. Key amendments have been made through the Countryside and Rights of Way (CRoW) Act (2000).

Other legislative Acts affording protection to wildlife and their habitats include:

- Deer Act 1991;
- Countryside and Rights of Way (CRoW) Act 2000;
- Natural Environment & Rural Communities (NERC) Act 2006;
- Protection of Badgers Act 1992;
- Wild Mammals (Protection) Act 1996.

Species and species groups that are protected or otherwise regulated under the aforementioned domestic and European legislation, and that are most likely to be affected

¹ Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora

by development activities, include herpetofauna (amphibians and reptiles), badger, bats, birds, dormouse, invasive plant species, otter, plants, red squirrel, water vole and white clawed crayfish.

Explanatory notes relating to species protected under The Conservation of Habitats and Species Regulations 2010 (which includes smooth snake, sand lizard, great crested newt and natterjack toad), all bat species, otter, dormouse and some plant species) are given below. **These should be read in conjunction with the relevant species sections that follow.**

- In the Directive, the term ‘deliberate’ is interpreted as being somewhat wider than intentional and may be thought of as including an element of recklessness.
- The Conservation of Habitats and Species Regulations 2010 does not define the act of ‘migration’ and therefore, as a precaution, it is recommended that short distance movement of animals for e.g. foraging, breeding or dispersal purposes are also considered.
- In order to obtain a European Protected Species Mitigation (EPSM) licence, the application must demonstrate that it meets all of the following three ‘tests’: i) the action(s) are necessary for the purpose of preserving public health or safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequence of primary importance for the environment; ii) that there is no satisfactory alternative and iii) that the action authorised will not be detrimental to the maintenance of the species concerned at a favourable conservation status in their natural range.

Bats

All species of bat are fully protected under The Conservation of Habitats and Species Regulations 2010 through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species (e.g. all bats)
- Deliberate disturbance of bat species as:
 - a) to impair their ability:
 - (i) to survive, breed, or reproduce, or to rear or nurture young;
 - (ii) to hibernate or migrate³
 - b) to affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

Bats are also currently protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level);
- Intentional or reckless obstruction of access to any place of shelter or protection;
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

How is the legislation pertaining to bats liable to affect development works?

A European Protected Species (EPS) Licence issued by the relevant countryside agency (e.g. Natural England) will be required 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 and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

The legislation may also be interpreted such that, 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 of a local population.

Badger

Badgers *Meles meles* receive protection under The Protection of Badgers Act 1992 which consolidates the previous Badger Acts of 1973 and 1991. The Act makes it an offence to:

- Wilfully kill, injure, take, or attempt to kill, injure or take a badger
- Cruelly ill-treat a badger, including use of tongs and digging
- Possess or control a dead badger or any part thereof
- Intentionally or recklessly damage, destroy or obstruct access to a badger sett² or any part thereof
- Intentionally or recklessly disturb³ a badger when it is occupying a badger sett

² A badger sett is defined in the legislation as "any structure or place which displays signs indicating current use by a badger". This includes seasonally used setts. Natural England (2009) have issued guidance on what is likely to constitute current use of a badger sett: www.naturalengland.org.uk/Images/WMLG17_tcm6-11815.pdf

- Intentionally or recklessly cause a dog to enter a badger sett
- Sell or offers for sale, possesses or has under his control, a live badger

How is the legislation pertaining to badgers liable to affect development works?

A Development Licence⁴ will be required from the relevant countryside agency (e.g. Natural England) for any development works liable to affect an active badger sett, or to disturb badgers whilst in the sett. Depending on the nature of the works and the specifics of the sett and its environs, badgers could be disturbed by work near the sett even if there is no direct interference or damage to the sett itself. The countryside agencies have issued guidelines on what constitutes a licensable activity. N.B. there is no provision in law for the capture of badgers for development purposes and therefore it is not possible to obtain a licence to translocate badgers from one area to another.

Dormouse

Dormouse are fully protected under The Conservation of Habitats and Species Regulations 2010 through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species
- Deliberate disturbance of dormouse such as:
 - a) to impair their ability:
 - (i) to survive, breed, or reproduce, or to rear or nurture young;
 - (ii) to hibernate or migrate³
 - b) to affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place
- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

³ For guidance on what constitutes disturbance and other licensing queries, see Natural England (2007) Badgers & Development: A Guide to Best Practice and Licensing. www.naturalengland.org.uk/Images/badgers-dev-guidance_tcm6-4057.pdf, Natural England (2009) Interpretation of 'Disturbance' in relation to badgers occupying a sett www.naturalengland.org.uk/Images/WMLG16_tcm6-11814.pdf, Scottish Natural Heritage (2002) Badgers & Development. www.snh.org.uk/publications/online/wildlife/badgersanddevelopment/default.asp and Countryside Council for Wales (undated) Badgers: A Guide for Developers. www.ccw.gov.uk.

⁴ Natural England will only consider issuing a licence where detailed planning permission (if applicable to operation) has already been granted

Dormouse are also currently protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level);
- Intentional or reckless obstruction of access to any place of shelter or protection;
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

How is the legislation pertaining to bats liable to affect development works?

A European Protected Species (EPS) Licence issued by the relevant countryside agency (e.g. Natural England) will be required 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 and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

The legislation may also be interpreted such that, 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 of a local population.

Birds

With certain exceptions, all birds, their nests and eggs are protected under Sections 1-8 of the Wildlife and 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 (2009/147/EC). 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.

How is the legislation pertaining to birds liable to affect development works?

To avoid contravention of the Wildlife and 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 August⁵. 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.

Herpetofauna (Amphibians and Reptiles)

The sand lizard *Lacerta agilis*, smooth snake *Coronella austriaca*, natterjack toad *Epidalea calamita* and great crested newt receive full protection under The Conservation of Habitats and Species Regulations 2010 through their inclusion on Schedule 2. The pool frog *Pelophylax lessonae* is also afforded full protection under the same legislation. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of species listed on Schedule 2
- Deliberate disturbance of any Schedule 2 species as:
 - a) to impair their ability:

⁵ It should be noted that this is the main breeding period. Breeding activity may occur outwith this period (depending on the particular species and geographical location of the site) and thus due care and attention should be given when undertaking potentially disturbing works at any time of year.

- (i) to survive, breed, or reproduce, or to rear or nurture young;
- (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate
- b) to affect significantly the local distribution or abundance of the species
- Deliberate taking or destroying of the eggs of a Schedule 2 species
- Damage or destruction of a breeding site or resting place
- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

With the exception of the pool frog, these species are also currently listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

Other native species of herpetofauna are protected solely under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). Species such as the adder *Vipera berus*, grass snake *Natrix natrix*, common lizard *Zootoca vivipara* and slow-worm *Anguis fragilis* are listed in respect to Section 9(1) & (5). For these species, it is prohibited to:

- Intentionally kill or injure these species
- Sell, offer or expose for sale, possess or transport for purpose of sale these species, or any part thereof.

Common frog *Rana temporaria*, common toad *Bufo bufo*, smooth newt *Lissotriton vulgaris* and palmate newt *L. helveticus* are listed in respect to Section 9(5) only which affords them protection against sale, offering or exposing for sale, possession or transport for the purpose of sale.

How is the legislation pertaining to herpetofauna liable to affect development works?

A European Protected Species (EPS) Licence issued by the relevant countryside agency (e.g. Natural England) will be required for works liable to affect the breeding sites or resting places of those amphibian and reptile species protected under The Conservation Habitats

and Species Regulations 2010. A licence will also be required for operations liable to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licences are to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Although not licensable, appropriate mitigation measures may also be required to prevent the intentional killing or injury of adder, grass snake, common lizard and slow worm, thus avoiding contravention of the Wildlife and Countryside Act 1981 (as amended).

B NATIONAL AND EUROPEAN LEGISLATION AFFORDED TO HABITATS

Statutory Designations: Local

Under the National Parks and Access to the Countryside Act 1949 **Local Nature Reserves** (LNRs) may be declared by local authorities after consultation with the relevant countryside agency. LNRs are declared for sites holding special wildlife or geological interest at a local level and are managed for nature conservation, and provide opportunities for research and education and enjoyment of nature.

Non-Statutory Designations

Areas considered to be of local conservation interest may be designated by local authorities as a **Wildlife Site**, under a variety of names such as **County Wildlife Sites** (CWS), **Listed Wildlife Sites** (LWS), **Local Nature Conservation Sites** (LNCS), **Sites of Biological Importance** (SBIs), **Sites of Importance for Nature Conservation** (SINCs), or **Sites of Nature Conservation Importance** (SNICIs). The criteria for designation may vary between counties.

Together with the statutory designations, these are defined in local and structure plans under the Town and Country Planning system and are a material consideration when planning applications are being determined. The level of protection afforded to these sites through local planning policies and development frameworks may vary between counties.

THE HEDGEROW REGULATIONS 1997

The Hedgerow Regulations 1997 are intended to protect 'important' countryside hedgerows from destruction or damage. A hedgerow is considered important if (a) has existed for 30 years or more; and (b) satisfies at least one of the criteria listed in Part II of Schedule 1 of the Regulations.

Under the Regulations, it is against the law to remove or destroy certain hedgerows without permission from the local planning authority. Hedgerows on or adjacent to common land, village greens, SSSIs (including all terrestrial SACs, NNRs and SPAs), LNRs, land used for agriculture or forestry and land used for the keeping or breeding of horses, ponies or donkeys are covered by these regulations. Hedgerows *'within or marking the boundary of the curtilage of a dwelling-house'* are not.

C NATIONAL PLANNING POLICY

Planning Policy Statement 9: Biodiversity & Geological Conservation (PPS 9)

National planning policies relating to biodiversity are set out in Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9) (ODPM 2005) and the associated ODPM Circular 06/2005; DEFRA Circular 01/2005 (ODPM/DEFRA 2005). In 2006 this was supplemented by a Good Practice Guide to PPS9 (ODPM/DEFRA/English Nature 2006).

These documents require local planning authorities to take account of the conservation of protected species when determining planning applications. This makes the presence of a protected species a material consideration when assessing a development proposal that, if carried out, would be likely to result in harm to the species or its habitat. This requirement has important implications for bat surveys as it means that, where there is a reasonable likelihood of the species being present and affected by the development, surveys should be carried out before planning permission is considered.

PPS9 and its associated circular promote the satisfaction of Article 10 of The EU Habitats Directive 1992 and Regulation 37 of the Conservation (Natural Habitats, & c) Regulations 1994. Article 10 of The EU Habitats Directive 1999 states:

"Member States shall endeavour, where they consider it necessary, in their land use planning and development policies and, in particular, with a view to improving the ecological coherence of the Natura 2000 network, to encourage the management of features of the landscape which are of major importance for wild flora and fauna.

Such features are those which, by virtue of their linear and continuous structure (such as rivers with their banks or the traditional systems of marking field boundaries) or their function as stepping stones (such as ponds or small woods), are essential for the migration, dispersal and genetic exchange of wild species.”

The Natural Environment and Rural Communities Act 2006 and The Biodiversity Duty

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 40 of the Act requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the ‘biodiversity duty’.

Section 41 of the Act (Section 42 in Wales) requires the Secretary of State to publish a list of habitats and species which are of ‘principal importance for the conservation of biodiversity.’ This list is intended to assist decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.

D REGIONAL AND LOCAL PLANNING POLICY

The London Plan, Spatial Development Strategy for Greater London, Adopted July 2011 deals directly with biodiversity in Chapter 7.:Policy 7.19 Biodiversity and Access to Nature, includes the following relevant guidance:

“Strategic: A The Mayor will work with all relevant partners to ensure a proactive approach to the protection, enhancement, creation, promotion and management of biodiversity in support of the Mayor’s Biodiversity Strategy. This means planning for nature from the beginning of the development process and taking opportunities for positive gains for nature through the layout, design and materials of development proposals and appropriate biodiversity action plans....”

‘Planning decisions C Development proposals should: (a) wherever possible, make a positive contribution to the protection, enhancement, creation and management of biodiversity; (b) prioritise assisting in achieving targets in biodiversity action plans (BAPs) and/or improve access to nature in areas deficient in accessible wildlife sites.’

'E When considering proposals that would affect directly, indirectly or cumulatively a site of recognised nature conservation interest, the following hierarchy will apply:

- 1 avoid adverse impact to the biodiversity interest;
- 2 minimize impact and seek mitigation; and
- 3 only in exceptional cases where the benefits of the proposal clearly outweigh the biodiversity impacts, seek appropriate compensation.'

Connecting with London's Nature: The Mayor's Biodiversity Strategy complements the London Plan. It sets out how London's biodiversity can be protected, managed and enhanced. It also aims to ensure that people can enjoy and learn about the natural world.

E LOCAL PLANNING POLICY

Havering Core Strategy and Development Control Policies Development Plan Document (Adopted 2008) contains the following saved Development Control policies that are relevant to the site:

CP16 BIODIVERSITY AND GEODIVERSITY

The Council will seek to protect and enhance the borough's rich biodiversity and geodiversity, in particular, priority habitats, species and sites. It will increase public awareness and appreciation of biodiversity and will seek to put in place a strategic framework for the development and delivery of the London Riverside Conservation Park.

Reasoned Justification

1.1 Biodiversity is the diversity, or variety, of plants, animals and other living things in a particular area or region and has social and economic value for human society.

1.2 In line with Planning Policy Statement 9: Biodiversity and Geological Conservation, Planning Policy Statement 7: Sustainable Development in Rural Areas, and the London Plan, this policy aims to maintain, enhance, restore or add to Havering's rich biodiversity and geological conservation interests, and protect valued rural environmental resources.

1.3 The Council has the benefit of the Greater London Authority's audit of sites of nature conservation importance in Havering (March 2003). This identified 93 sites of Nature Conservation Importance in Havering. In addition, Havering's Phase 1 Biodiversity Action

Plan (April 2003) identifies a range of species and habitats which are either regional or national priorities. Naturally, these are not confined to the designated sites, for example, private gardens are a regionally priority habitat. This policy, therefore, not only considers the protection of identified sites of nature conservation importance but looks at enhancing biodiversity, in particular, priority habitats and species. The concept of wildlife corridors will be important in this as they enable wildlife to spread out from areas of high biodiversity value. The Havering Wildlife Partnership has identified seven such corridors.

1.4 Even among the Outer London boroughs, Havering's biodiversity is notable. Its historic parks, its river valleys and its Thames-side marshland hold a significant proportion of London's entire resource of some priority habitats. Over half the Borough is covered by protected countryside, parkland and nature reserves. There are 3 designated Sites of Special Scientific Interest (SSSIs); Rainham and Wennington Marshes, Ingrebourne Marshes and Hornchurch Cutting (which is designated because of its geological importance), and also a large proportion of London's flood plains and hedgerows. At 343, the number of ponds and lakes is the largest for any London borough. Private gardens are home to a national priority species, the stag beetle, and Havering is also the stronghold in London for two other national priority species - water voles and great crested newts.⁸⁸ In implementing the policy the Council will have regard to the UK, GLA and Havering Biodiversity Action Plans.

1.5 Havering is fortunate in having the most important site for nature conservation in London at Rainham/Wennington Marsh and the Council is committed to working in partnership with the Royal Society for the Protection of Birds to create the London Riverside Conservation Park which will become an important visitor destination.

1.6 Havering also includes Thames Chase, one of England's 12 Community Forests established in 1990/91. Thames Chase, in partnership with many organisations, has transformed the landscape and nature conservation value of much of Havering's Green Belt within easy reach of residents; through woodland creation, conserving and enhancing other habitat types and improving access.

DC58 - BIODIVERSITY AND GEODIVERSITY

Biodiversity and geodiversity will be protected and enhanced throughout the borough by:

- protecting and enhancing Sites of Special Scientific Interest, and all sites of Metropolitan, Borough or Local Importance for Nature Conservation as identified in Protecting the Borough's Biodiversity SPD, and shown on the Proposals Map.

Planning permission for development that adversely affects any of these sites will not be granted unless the economic or social benefits of the proposals clearly outweigh the nature conservation importance of the site and only then if adequate mitigation can be provided and no alternative site is available

- not granting planning permissions which would adversely affect priority species/habitats identified in either the London or Havering Biodiversity Action Plans unless the economic or social benefits of the proposals clearly outweigh the nature conservation importance of the site and only then if adequate mitigation measures to secure the protection of the species/habitat can be provided and no alternative site is available
- protecting and promoting the linking of habitats via the wildlife corridors shown in figure 4 (page 83)
- protecting the individual quality and character of, and promoting access to, each Countryside Conservation Area shown on the Proposals Map
- protecting and enhancing the biodiversity of the Blue Ribbon Network including rivers and their associated corridors.

Reasoned Justification

1.1 Biodiversity consists of the rich diversity of flora and fauna which form a critical part of the earth's ecosystem which humans are a part of and depend on. Biodiversity brings other benefits too. It can be important in flood protection, help ameliorate pollution, and can also be important to the local economy. It is important that biodiversity is protected and enhanced. The London Biodiversity Action Plan, Havering's Biodiversity Action Plan and the GLA's Sites of Importance for Nature Conservation in Havering provide a wealth of information on biodiversity which is particularly rich within Havering.

1.2 The London Riverside Conservation Park which is included as a Site Specific Allocation and part of which is already designated as a nature reserve, is forecast to attract over half a million visitors a year when complete. Similarly, the Thames Chase is rich in biodiversity and provides an important asset in Havering's urban fringe and opportunities for enhancement are included in the Thames Chase Plan. As part of the survey of the Borough, the GLA identified three Countryside Conservation Areas which are broad tracts of land where more traditional landscape predominates and there is a high wildlife interest.

1.3 When implementing the policy in respect of species/habitats, reference will be made to the UK, London, and Havering Biodiversity Action Plans.

1.4 The rivers in the borough and their associated corridors are, in the most part, included either in wildlife corridors, SSSIs, Local Nature Reserves or other sites of nature conservation interest. The London Plan stresses the importance of a valuable series of habitats known as the Blue Ribbon Network. The Council will seek to protect and enhance the biodiversity of this network by implementing policy 4C.3 of the London Plan.

1.5 However, biodiversity is not confined to major sites and the countryside. It is also present in private gardens and street trees provide important habitats.

Previously developed land or “brownfield land” may also have biodiversity interest. Therefore, policy should not just be concerned about ensuring new development does not harm biodiversity it can actually represent an opportunity to add to it.

Implementation

1.6 Protecting the Borough’s Biodiversity SPD provides more detailed guidance on:

- Countryside Conservation Areas
- Wildlife corridors
- Priority habitats and species

DC59 - BIODIVERSITY IN NEW DEVELOPMENTS

Enhancements to biodiversity and geodiversity will be sought, in line with London and Havering Biodiversity Action Plan targets, as an integral part of new development.

Reasoned Justification

1.1 Planning Policy Statement 9, Biodiversity and Geological Conservation, 2005, has, as a key principle, the promotion of opportunities for the incorporation of beneficial biodiversity and geological features within the design of development.

1.2 Even small scale developments can increase habitat and benefit biodiversity, for example, by the planting of a single tree or the provision of bird/bat boxes. The opportunities are much greater on larger sites and include, for example, buffer zones to watercourses, planting of native species trees and shrubs, sustainable urban drainage schemes and green roofs.

1.3 The Havering Biodiversity Action Plan identifies action plans for various species and habitats in the borough. This will be a useful guide in deciding how new developments can best contribute to enhancing biodiversity.

Implementation

1.4 Protecting the Borough's Biodiversity SPD provides more detailed guidance on measures to enhance biodiversity in development schemes.

DC60 – TREES AND WOODLANDS

The amenity and biodiversity value afforded by trees and woodland will be protected and improved by:

- where appropriate, retaining trees of nature conservation and amenity value and making tree preservation orders
- ensuring that adequate measures are put in place when granting planning permission to protect trees during construction works
- supporting the implementation of the Thames Chase Plan and ensuring that, development within the area makes a positive contribution towards its implementation
- not granting planning permission for development that would adversely affect ancient and secondary woodland.

Reasoned Justification

1.1 Havering is fortunate in having not only a large number of woodlands but also a large number of trees or small groups of trees interspersed within the built environment. This is particularly so in Harold Hill, Gidea Park and Emerson Park. Woodlands and trees make an important contribution to visual amenity, biodiversity and, in some cases, provide recreation opportunities. Many copses in particular ancient woodland and secondary woodland are protected as either Sites of Special Scientific Interest or of Metropolitan or Local Importance.

1.2 Part of the borough is in the Thames Chase area and this has resulted in the creation of new woodlands as well as other new planting including hedgerows. Thames Chase will continue to add to the tree cover of the Borough in future years.

Implementation

1.3 The SPD on the Protection of Trees during Development provides more detail on the implementation of this policy.

1.4 Where appropriate planning conditions will be imposed on planning permissions to ensure the protection of trees of amenity value while development takes place.

1.5 Tree preservation orders may be made on individual trees, groups of trees, areas of trees, hedges or woodlands which contribute to the character of the area and are of public amenity value.

1.6 The quality of existing trees will be assessed against the current British Standard.

F UK BAP

In 1994 the UK Government published its response to the Convention on Biological Diversity that it signed along with over 150 other nations at the Rio Earth Summit in 1992. Biodiversity – the UK Action Plan (HM Government 1994) and subsequent publications (e.g. UK Steering Group 1995) set out a programme for the national Biodiversity Action Plan (BAP), including the development of targets for biodiversity, and the techniques and actions necessary to achieve them. The national BAP includes lists of species that are of conservation concern, either because they are rare in an international or national context or have undergone serious declines in their populations in recent years. Species Action Plans have been prepared or are in preparation for a many of these species, whilst Habitat Action Plans are being produced for important or characteristic habitats identified in the plan.

G REGIONAL AND LOCAL BAPS

The UK plan also encourages the production of local Biodiversity Action Plans at the County or District level. The London Biodiversity Action Plan contains the following relevant BAPs:

- Parks & Green Spaces
- Woodland;
- Hedgerows;
- Pond and lakes;
- Bats
- Water vole;
- Harvest mouse;
- Hedgehog
- Sky lark;
- Song thrush;
- Grey partridge;
- Reed bunting;
- Barn owl;
- Brown hare;
- Common starling
- Green woodpecker;
- House sparrow
- Song thrush;
- Slow worm;
- Great crested newt;
- Stag beetle;
- Bumblebees.

Appendix 5: Hedgerow Assessment Criteria

Table 2: Criteria To Determine Important Hedgerows (Hedgerow Regulations, 1997).

Archaeology and History	
1.	The hedgerow marks the boundary, or part of the boundary, of at least one historic i.e. pre-1850 parish or township.
2.	The hedgerow incorporates an archaeological feature which is; <ul style="list-style-type: none"> • included in the Schedule of Monuments compiled by the Secretary of State under section 1 (schedule of monuments) of the Ancient Monuments and Archaeological Areas Act 1979; or, • recorded at the relevant date in a Sites and Monuments Record.
3.	The hedgerow is; <ul style="list-style-type: none"> • situated wholly or partly within an archaeological site or on land adjacent to and associated with such a site; and, • associated with any monument or feature on that site.
4.	The hedgerow; <ul style="list-style-type: none"> • marks the boundary of a pre-1600 AD estate or manor recorded at the relevant date in a Sites and Monuments Record or in a document held at that date at a Record Office; or, • is visibly related to any building or other feature of such an estate or manor.
5.	The hedgerow is; <ul style="list-style-type: none"> • recorded in a document held at the relevant date at a Record Office as an integral part of a field system pre-dating the Inclosure Acts; or, • part of, or visibly related to, any building or other feature associated with such a system, and that system is; <ul style="list-style-type: none"> ○ substantially complete; or, ○ of a pattern which is recorded in a document prepared before the relevant date by a local planning authority, within the meaning of the 1990 Act, for the purpose of development control within the authorities area, as a key landscape characteristic.
Wildlife and Landscape	
6.	The hedgerow contains species of animal, bird or plant listed in the following documents; <ul style="list-style-type: none"> • Part 1 of Schedule 1 (birds receiving special protection), Schedule 5 (protected animals) or Schedule 8 (protected plants) of the Wildlife and Countryside Act 1981 (as amended) (see Appendix 4A below for detail); • Categorised as a declining breeder i.e. Category 3 of the <i>Red Data Birds in Britain</i> (Batten <i>et al</i>, 1990); or, • Categorised as endangered, extinct, rare or vulnerable in British Red Data Books (Shirt, 1987; Bratten <i>et al.</i>, 1990; Bratton, 1991; Stewart & Church, 1992; Wiggington, 1999).
7.	The hedgerow includes at least; <ul style="list-style-type: none"> • 7 woody species (listed on schedule 3 of the Hedgerow Regulations (1997) and highlighted in Table 4 below) on average in a 30m length; • 6 woody species on average in a 30m length and has at least 3 associated features*; • 6 woody species on average in a 30m length, including either a black poplar <i>Populus nigra</i> ssp. <i>betulifolia</i>, large-leaved lime <i>Tilia platyphyllos</i>, small-leaved lime <i>Tilia cordata</i> or wild service tree <i>Sorbus torminalis</i>; or, • 5 woody species on average in a 30m length and has at least 4 associated features.

Note: in some cities/counties the number of woody species required is one less than the numbers stated above.

* associated features include;

- a bank or wall which supports the hedgerow along at least one half of its length;
- gaps which in aggregate do not exceed 10% of the length of the hedgerow;
- one standard tree, on average, every 50m section;
- at least 3 woodland species (listed on schedule 2 of the Hedgerow Regulations (1997) and highlighted in Table 4 below) within one metre, in any direction, of the outermost edges of the hedgerow;
- a ditch along at least one half of the length of the hedgerow;
- connections with other hedgerows, woods or ponds scoring four points or more (where the connection has a point within 10m of the hedgerow and connections to other hedgerows score one point and connections to other broadleaved woodland or ponds scores two points). Note: these features do not count if a public right of way is being included in the criterion;
- a parallel hedge within 15m of the hedgerow.

8. The hedgerow;

- *is adjacent to a bridleway or footpath, within the meaning of the Highways Act 1980, a road used as a public path, within the meaning of section 54 of the Wildlife and Countryside Act 1981 (as amended) or a byway open to all traffic, within the meaning of Part III of the Wildlife and Countryside Act 1981 (as amended); and,*
- *includes at least 4 woody species, on average, in a 30m length and has at least 2 associated features.*

Table 3: Schedule 2 and 3 species listed in the Hedgerow Regulations, 1997.

Schedule 2 – Woodland Species	Schedule 3 – Woody Species
Barren strawberry (<i>Potentilla sterilis</i>)	Alder (<i>Alnus glutinosa</i>)
Bluebell (<i>Hyacinthoides non-scriptus</i>)	Apple, crab (<i>Malus sylvestris</i>)
Broad buckler fern (<i>Dryopteris dilatata</i>)	Ash (<i>Fraxinus excelsior</i>)
Broad-leaved helleborine (<i>Epipactis helleborine</i>)	Aspen (<i>Populus tremula</i>)
Bugle (<i>Ajuga reptans</i>)	Beech (<i>Fagus sylvatica</i>)
Common cow-wheat (<i>Melampyrum pratense</i>)	Birch, downy (<i>Betula pubescens</i>)
Common dog violet (<i>Viola riviniana</i>)	Birch, silver (<i>Betula pendula</i>)
Common polypody (<i>Polypodium vulgare</i>)	Black-poplar (<i>Populus nigra</i> sub-species <i>betulifolia</i>)
Dog's mercury (<i>Mercurialis perennis</i>)	Blackthorn (<i>Prunus spinosa</i>)
Early dog violet (<i>Viola reichenbachiana</i>)	Box (<i>Buxus sempervirens</i>)
Early purple orchid (<i>Orchis mascula</i>)	Broom (<i>Cytisus scoparius</i>)
Enchanter's nightshade (<i>Circaea lutetiana</i>)	Buckthorn (<i>Rhamnus cathartica</i>)
Giant fescue (<i>Festuca gigantea</i>)	Buckthorn, alder (<i>Frangula alnus</i>)
Goldilocks buttercup (<i>Ranunculus auricomus</i>)	Butcher's-broom (<i>Ruscus aculeatus</i>)
Great bell-flower (<i>Campanula latifolia</i>)	Cherry, bird (<i>Prunus padus</i>)
Greater wood-rush (<i>Luzula sylvatica</i>)	Cherry, wild (<i>Prunus avium</i>)
Hairy brome (<i>Bromus ramosus</i>)	Cotoneaster, wild (<i>Cotoneaster integerrimus</i>)
Hairy woodrush (<i>Luzula pilosa</i>)	Currant, downy (<i>Ribes spicatum</i>)
Hard fern (<i>Blechnum spicant</i>)	
Hard shield fern (<i>Polystichum aculeatum</i>)	

Hart's tongue (<i>Asplenium scolopendrium</i>)	Currant, mountain (<i>Ribes alpinum</i>)
Heath bedstraw (<i>Galium saxatile</i>)	Dogwood (<i>Cornus sanguinea</i>)
Herb paris (<i>Paris quadrifolia</i>)	Elder (<i>Sambucus nigra</i>)
Herb-robert (<i>Geranium robertianum</i>)	Elm (<i>Ulmus</i> species)
Lady fern (<i>Athyrium filix-femina</i>)	Gooseberry (<i>Ribes uva-crispa</i>)
Lords-and-ladies (<i>Arum maculatum</i>)	Gorse (<i>Ulex europaeus</i>)
Male fern (<i>Dryopteris filix-mas</i>)	Gorse, dwarf (<i>Ulex minor</i>)
Moschatel (<i>Adoxa moschatellina</i>)	Gorse, western (<i>Ulex gallii</i>)
Narrow buckler-fern (<i>Dryopteris carthusiana</i>)	Guelder rose (<i>Viburnum opulus</i>)
Nettle-leaved bell-flower (<i>Campanula trachelium</i>)	Hawthorn (<i>Crataegus monogyna</i>)
Oxlip (<i>Primula elatior</i>)	Hawthorn, midland (<i>Crataegus laevigata</i>)
Pignut (<i>Conopodium majus</i>)	Hazel (<i>Corylus avellana</i>)
Primrose (<i>Primula vulgaris</i>)	Holly (<i>Ilex aquifolium</i>)
Ramsons (<i>Allium ursinum</i>)	Hornbeam (<i>Carpinus betulus</i>)
Sanicle (<i>Sanicula europaea</i>)	Juniper, common (<i>Juniperus communis</i>)
Scaly male-fern (<i>Dryopteris affinis</i>)	Lime, large-leaved (<i>Tilia platyphyllos</i>)
Small cow-wheat (<i>Melampyrum sylvaticum</i>)	Lime, small-leaved (<i>Tilia cordata</i>)
Soft shield fern (<i>Polystichum setiferum</i>)	Maple, field (<i>Acer campestre</i>)
Sweet violet (<i>Viola odorata</i>)	Mezereon (<i>Daphne mezereum</i>)
Toothwort (<i>Lathraea squamaria</i>)	Oak, pedunculate (<i>Quercus robur</i>)
Tormentil (<i>Potentilla erecta</i>)	Oak, sessile (<i>Quercus petraea</i>)
Wild strawberry (<i>Fragaria vesca</i>)	Osier (<i>Salix viminalis</i>)
Wood anemone (<i>Anemone nemorosa</i>)	Pear, Plymouth (<i>Pyrus cordata</i>)
Wood avens/Herb bennet (<i>Geum urbanum</i>)	Pear, wild (<i>Pyrus pyraster</i>)
Wood false-brome (<i>Brachypodium sylvaticum</i>)	Poplar, grey (<i>Populus x canescens</i>)
Wood horsetail (<i>Equisetum sylvaticum</i>)	Poplar, white (<i>Populus alba</i>)
Wood meadow-grass (<i>Poa nemoralis</i>)	Privet, wild (<i>Ligustrum vulgare</i>)
Wood melick (<i>Melica uniflora</i>)	Rose (<i>Rosa</i> species)
Wood millet (<i>Milium effusum</i>)	Rowan (<i>Sorbus aucuparia</i>)
Wood sage (<i>Teucrium scorodonia</i>)	Sea-buckthorn (<i>Hippophae rhamnoides</i>)
Wood sedge (<i>Carex sylvatica</i>)	Service-tree, wild (<i>Sorbus torminalis</i>)
Wood sorrel (<i>Oxalis acetosella</i>)	Spindle (<i>Euonymus europaeus</i>)
Wood speedwell (<i>Veronica montana</i>)	Spurge-laurel (<i>Daphne laureola</i>)
Wood spurge (<i>Euphorbia amygdaloides</i>)	Walnut (<i>Juglans regia</i>)
Woodruff (<i>Galium odoratum</i>)	Wayfaring-tree (<i>Viburnum lantana</i>)
Yellow archangel (<i>Lamium galeobdolon</i>)	Whitebeam (<i>Sorbus</i> species)
Yellow pimpernel (<i>Lysimachia nemorum</i>)	Willow (<i>Salix</i> species)
	Yew (<i>Taxus baccata</i>)

Appendix 6: Hedgerow Species List

Plants identified as Ancient Woodland Indicator Species (AWIs) by Kirby (English Nature, 2004) are marked in red.

Abbreviation	Scientific Name	Common Name
Aes-hip	<i>Aesculus hippocastanum</i>	Horse chestnut
Ace-cam	<i>Acer campestre</i>	Field maple
Ace-pse	<i>Acer pseudoplatanus</i>	Sycamore
All-pet	<i>Alliaria petiolata</i>	Garlic mustard
All-urs	<i>Allium ursinum</i>	Wild garlic
Ane-nem	<i>Anemone nemorosa</i>	Wood sorrel
Ant-syl	<i>Anthriscus sylvestris</i>	Cow parsley
Aqu-vul	<i>Aquilegia vulgaris</i>	Columbine (introduced)
Aru-mac	<i>Arum maculatum</i>	Lords-and-Ladies
Bra-syl	<i>Brachypodium sylvaticum</i>	False brome
Car-pen	<i>Carex pendula</i>	Pendulous sedge
Car-syl	<i>Carex sylvatica?</i>	Wood-sedge
Car-bet	<i>Carpinus betulus</i>	Hornbeam
Cle-vit	<i>Clematis vitalba</i>	Traveller's-joy
Cra-mon	<i>Crataegus monogyna</i>	Hawthorn
Cro-cro	<i>Crococsmia x crocosmiiflora</i>	Montbretia
Cup-law	<i>Cupressus lawsoniana</i>	Lawson's cypress
Cyt-sco	<i>Cytisus scoparius</i>	Broom
Dac-glo	<i>Dactylis glomerata</i>	Cock's-foot
Epi-hir	<i>Epilobium hirsutum</i>	Great willowherb
Fag-syl	<i>Fagus sylvatica</i>	Beech
Fra-exc	<i>Fraxinus excelsior</i>	Ash
Gal-niv	<i>Galanthus nivalis</i>	Snowdrop
Gal-apa	<i>Galium aparine</i>	Cleavers
Geu-urb	<i>Geum urbanum</i>	Wood avens
Hed-hel	<i>Hedera helix</i>	Ivy
Hol-lan	<i>Holcus lanatus</i>	Yorkshire-fog
Hya-non	<i>Hyacinthoides non-scripta</i>	Bluebell
Ile-aqu	<i>Ilex aquifolium</i>	Holly
Lig-vul	<i>Ligustrum vulgare</i>	Wild privet
Lon-nit	<i>Lonicera nitida</i>	Wilson's honeysuckle
Lon-per	<i>Lonicera periclymenum</i>	Honeysuckle
Nar-pse	<i>Narcissus pseudonarcissus</i>	Wild daffodil (introduced)
Pop-tre	<i>Populus tremula</i>	Aspen

Abbreviation	Scientific Name	Common Name
Pot-ste	<i>Potentilla sterilis</i>	Barren strawberry
Pri-vul	<i>Primrose</i>	Primrose (introduced)
Pru-lau	<i>Prunus laurocerasus</i>	Cherry laurel
Pyr-coc	<i>Pyracantha coccinea</i>	Firethorn
Que-ile	<i>Quercus ilex</i>	Holm oak
Que-rob	<i>Quercus robur</i>	Pedunculate oak
Ran-fic	<i>Ranunculus ficaria</i>	Lesser celandine
Rib-sp.	<i>Ribes sp.</i>	Currant
Ros-arv	<i>Rosa arvensis</i>	Field rose
Ros-can	<i>Rosa canina</i>	Dog-rose
Rub-fru	<i>Rubus fruticosus agg.</i>	Bramble
Sal-cin	<i>Salix cinerea</i>	Grey willow
Sal-sp.	<i>Salix sp.</i>	Willow
Sam-nig	<i>Sambucus nigra</i>	Elder
Sed-rup	<i>Sedum rupestre</i>	Reflexed stonecrop
Sed-spe	<i>Sedum spectabile?</i>	Butterfly stonecrop
Sen-eru	<i>Senecio erucifolius</i>	Hoary ragwort
Ste-hol	<i>Stellaria holostea</i>	Greater stitchwort
Syr-vul	<i>Syringa vulgaris</i>	Lilac
Tar-sp.	<i>Taraxacum sp.</i>	Dandelion
Tax-bac	<i>Taxus baccata</i>	Yew
Ulm-pro	<i>Ulmus procera</i>	English elm
Urt-dio	<i>Urtica dioica</i>	Common nettle
Ver-hed	<i>Veronica hederifolia</i>	Ivy-leaved speedwell
Vib-tin	<i>Viburnum tinus</i>	Laurustinus
Vin-maj	<i>Vinca major</i>	Greater periwinkle
Vio-riv	<i>Viola riviniana</i>	Common dog violet



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