

**HORKESLEY PARK HERITAGE
AND CONSERVATION CENTRE
ECOLOGICAL ASSESSMENT**

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November 2003

QUALITY ASSURANCE - APPROVAL STATUS

This document has been prepared and checked in accordance with BS EN ISO 9001 : 1994

Document StatusDraft.....

AuthorSS.....

CheckedAW.....

ApprovedNM.....DateNov 2003.....



Certificate No: 773/95

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1.0 INTRODUCTION

1.1 Site description

The site is situated at Great Horkesley, Essex to the north of Colchester. In general the surrounding land is intensively farmed arable land with the villages of Nayland and Great Horkesley to the north and south respectively.

The site as a whole mainly consists of arable and improved fields, two heavily managed artificial lakes surrounded by sown grassland and new broad-leaved plantations, and a relatively extensive area of semi-natural broad-leaved woodland. The extension areas mainly consist of arable and improved pasture, bordered by species poor defunct hedgerows.

1.2 Proposed works

There are proposals to establish a Heritage and Conservation Complex, a Suffolk Punch breeding centre, a Food Experience exhibition featuring produce of the region and a Gardening Centre, with outside Planteria and display gardens. The proposed new buildings are predominantly confined to the footprint and working area of the existing Nursery site. In addition to conversion of the 'The Chantry' into a Gallery to display examples of the work of John Constable and other leading East Anglian artists. As an integral part of the development, to complement the Heritage and Conservation Centre, Bunting & Sons also propose to establish a 27ha Country Park within the remaining part of the site. This Country Park will include land principally reserved for grazing as well as areas earmarked for "heritage" husbandry, and a variety of leisure activities, to provide an outlet for low key, informal recreation.

1.3 Aims of study

LDA Ecology has been commissioned to review and update where necessary, the ecological assessment produced by Carter Ecological Ltd in June 2001, and undertake a walkover survey of three new extension areas of land to the north and east of the site in order to provide a preliminary ecological description of the habitats and flora and fauna present. The new extension areas surveyed were The Chantry and surrounding land, a strip of arable land to the south of the site and a road verge to the east of the site.

2.0 METHODOLOGY

2.1 Desk study

No desk study was undertaken as part of the ecological assessment completed in June 2001. No desk study has been undertaken for the extension areas of the site.

2.2 Field survey

Katy Morris (AIEEM) an experienced habitat surveyor and licensed bat roost visitor, undertook a walkover survey of the main area of the site, as surveyed in June 2001, on 5th November 2003. A Phase 1 Habitat Survey was also completed of the three extension areas. During these surveys notes were made on any additional information or changes relevant to the June 2001 ecological assessment and searches for obvious signs of protected species were made, such as bats and badgers. Notes were made on the three extension areas; The Chantry and surrounding land, the arable field strip to the south and the road verge. The habitats present were described and searches were made for obvious signs of protected species, including external inspections of buildings for evidence of bats. The weather during the survey was cloudy, but warm and dry.

3.0 RESULTS

3.1 Field survey

3.2.1 Ecological Review of Phase 1 Habitat Survey: June 2001

See Appendix 1

The Phase 1 Habitat descriptions presented in the ecological assessment have not changed over the past two years. Some minor changes and additions are presented below:

The land to the north of the main glasshouse is arable with approximately 45 poplar trees along the boundary with the glasshouse.

Along the eastern boundary of the above field and along the western boundary of the amenity grassland (playing field) are a number of individual trees, including the species oak *Quercus robur*, ash *Fraxinus excelsior* and cherry *Prunus sp.*

3.2.2 Phase 1 Habitat Survey: November 2003 Extension Areas

See Appendix 2 Phase 1 Habitat Map.

The northern extension area to the site, The Chantry and surrounding land, comprises improved and arable fields with species poor defunct hedgerows bordering the site. The hedgerows mainly consist of field maple *Acer campestre*, bramble *Rubus fruticosus*, blackthorn *Prunus spinosa*, hazel *Corylus avellana*, elder *Sambucus nigra* and hawthorn *Crataegus monogyna*.

The Rectory Grove is a dense area of scrub and trees with remnant old ponds. Although some standing water is present, the ponds are choked with vegetation. The Grove is mainly dominated by sycamore *Acer pseudoplatanus*, elder, holly *Ilex aquifolium*, bramble *Rubus fruticosus* and rhododendron *Rhododendron ponticum*. Common nettle *Urtica dioica*, ivy *Hedera helix* and broad-leaved willowherb *Epilobium montanum* dominated the ground layer. This type of habitat is likely to support a number of breeding birds.

A small area of broad-leaved woodland is also present between the rear of the Chantry garden and the improved field to the west of The Chantry, which mainly comprises holly, oak *Quercus robur*, rhododendrons and yew *Taxus baccata*.

The second extension area is a small strip of land to the east of the A134 road which comprises typical roadside verge vegetation with an overgrown ditch. Species recorded along the length include cock's foot *Dactylis glomerata*, false oat grass *Arrhenatherum elatius*, mugwort *Artemisia vulgaris*, yarrow *Achillea millefolium*, common nettle, bramble, creeping thistle *Cirsium arvense*, tansy *Tanacetum vulgare* and ribwort plantain *Plantago lanceolata*.

The third extension area, a strip of land to the south of the London Road comprises a very small grass verge with similar species to those listed above and a small parcel of arable land.

3.2.3 Protected species

Water voles

In the original June 2001 report it was considered "remotely possible that water voles are present along the stream or around the artificial lakes".

Some areas of the artificial lakes were inspected from the banks for signs of the presence of water voles. No evidence was recorded.

Part of the stream situated in Fishponds Grove was inspected for the presence of water voles. The stream is narrow with relatively fast flowing water and streambeds comprises silt and pebble substrate and mud banks. No aquatic vegetation was recorded, and no evidence of the presence of water voles was observed.

The stream that flows along the length of the western boundary was not inspected for the presence of water voles because of access problems.

A ditch is present in the extension area of land located to the east of the A134 road. At the time of the survey there was no water in the ditch and it was heavily overgrown with bramble. It is therefore not considered likely to support water voles or provide potential water vole habitat.

Great crested newts

In the original report it was considered that "great crested newts may use the artificial lakes, though no evidence of this has been gathered".

The artificial lakes to the west of the site have little marginal or aquatic vegetation (see Target note A1, A2 and A3 in the June 2001 report) and are surrounded by sown grassland and newly planted broad-leaved woodland. There is the possibility that fish are present although none were seen during the survey. Specific surveys for great crested newts were not carried out during either the 2001 or the current survey, therefore the presence of great crested newts cannot be completely discounted, even though conditions for them are suboptimal.

A pond is located in the extension area of land to the north of the site, to the east of The Chantry. At the time of the survey there was little water and the pond was surrounded by oak, sycamore and hawthorn. Specific surveys for great crested newts were not completed, but given the ponds isolation and how heavily shaded it is likely to be during the summer months, it is not considered likely to support great crested newts.

Bats

In the original June 2001 report it was considered "extremely likely that bats feed along the stream-courses and around the artificial lakes. It is therefore likely that some old trees with holes or crevices are bat roost trees, especially in Fishponds Grove, along the western boundary of the survey area, and in the copse described in target note W2".

A specific inspection of trees within the areas described above was not carried out. However it is considered that some of the trees could have potential to support roosting bats due to the presence cracks and crevices in some of the trees and of suitable nearby feeding habitat.

The buildings at the nursery were inspected for potential to support roosting bats and any evidence of the presence of roosting bats. Many of the buildings within this area are glass houses, which due to their lack of roosting features for bats, are considered to be

unsuitable as potential bat roosts. However some of the buildings are constructed of red brick with corrugated asbestos sheet roofs. No evidence of the presence of bats was recorded on any of the windowsills or walls, but if the buildings have features such as cavity walls, then the presence of bats cannot be completely discounted.

The Chantry and associated buildings in the extension area to the north of the site were externally inspected and assessed for their potential to support roosting bats. The main building (the Chantry) has a pitched slate roof and is a white washed building. Lead flashings are present along the ridges. No evidence of the presence of bats was recorded on any external features and the roof appeared to be in good condition, but given the age of the property, the presence of large roof voids and good bat feeding and commuting habitat in adjacent areas, it is possible that bats could use these buildings on a seasonal basis.

A building adjacent to The Chantry is constructed of red brick with pitched slate roofs and boxed eaves throughout. The roof and boxed eaves are generally in good condition except for a small gap that runs the whole length of one side of the building in the boxed eaves, allowing access into the boxed eaves. At least part of the building has a roof void. No evidence of the presence of bats was recorded on any external features, but the presence of boxed eaves could provide a potential bat roosting opportunity.

Badgers

In the original June 2001 report it was considered that it was "entirely possible that there is a badger sett somewhere, especially in the Fishponds Grove." No signs of badger were seen, but they are relatively difficult to spot in high summer when brambles and nettles may hide the signs."

The boundaries of the site, the woodland copse (as described in Target Note W2) and the majority of the Fishponds Grove were searched for badger signs including setts, hairs, latrines and trackways. No signs were recorded.

The boundaries of the extension area and the Rectory Grove were also searched for evidence of badgers. One outlier sett was recorded on the northern edge of the Rectory Grove, however fungi was growing in the entrance and cobwebs and leaves were abundant, indicating that it had not been used for sometime. No other signs were recorded during the survey.

3.2.4 Other species

During the survey the following bird species were recorded: wren (*Troglodytes troglodytes*), green woodpecker (*Picus viridis*), robin (*Erithacus rubecula*), blackbird (*Turdus merula*) and wood pigeon (*Columba palumbus*). The following mammals and mammal signs were recorded: rabbits (*Oryctolagus cuniculus*) and fox scats. The rabbits and their burrows, and the fox scats were recorded along each hedgerow in the northern part of the site.

4.0 ASSESSMENT

4.1 Constraints on study information

The Phase 1 Habitat Survey carried out in June 2001 was completed at an appropriate time of the year, however the dense vegetation would have made searching for badger signs difficult. No specific protected species surveys were completed. The current Phase 1 Habitat Survey of the extension areas however was completed at an unfavourable time of year when much of the vegetation has finished flowering, but given the types of habitat present this is not considered to be a significant constraint. A data trawl to determine if any protected species are present in the vicinity has not been completed for any of the site, which is considered to be a constraint on the survey information.

4.2 Valuation of Ecological Resources and Potential impacts

4.2.1 Habitats

There are not considered to be any negative ecological impacts on the areas of land to the west of the proposed Heritage and Conservation Centre. The arable and improved fields are of negligible ecological value and all hedgerows and areas of broad-leaved woodland are to be retained.

The extension area to the north of the site has few if any proposed works. All the broad-leaved woodland areas and hedgerows are to be retained.

The areas of land to the east of the A134 and south of the London Road are not considered to be ecologically important and the proposed ditch relocation and footpath creation is not considered to have a negative impact.

There are not considered to be any significant ecological impacts on any of the existing habitats by the proposed development.

4.2.2 Protected species

Water voles

Water voles have limited protection under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to intentionally or recklessly damage, destroy or obstruct access to any place of shelter or protection that the animals are using, or intentionally or recklessly disturb voles when they are using such a place.

No evidence of the presence of water voles was recorded on site, however it should be noted that no specific detailed surveys for water voles have been carried out. The proposed works on site will affect the artificial lakes to the west of the site and a ditch to the east of the site. It is considered unlikely that there will be an impact on water voles with regards to the ditch because the ditch does not provide potential to support water voles, however it is difficult to assess any impact with regards to the lakes.

Great crested newts

Great crested newts and their habitats in water and on land are protected under the Wildlife and Countryside Act 1981 (as amended) and by the Conservation (Natural Habitat &c) Regulations 1994. In summary, it is an offence to damage or destroy a

breeding site or resting place, intentionally or recklessly obstruct any place used for shelter or protection, deliberately, intentionally or recklessly disturb a great crested newt or intentionally kill, injure or take any great crested newt.

No specific surveys for great crested newts have been completed. It is not known if there are great crested newts in the vicinity of the site. The artificial lakes to the west of the site, although not providing optimum habitat for great crested newts, cannot be completely discounted. There are proposals to stock the lakes with fish, which would have a significant impact on great crested newts, if a survey discovered great crested newts subsequently.

Bats

Bats and their roosts are protected under the Wildlife and Countryside Act 1981 (as amended) and by the Conservation (Natural Habitats &c) Regulations 1994. In summary, it is an offence to damage or destroy any bat roost, intentionally or recklessly obstruct a bat roost, deliberately, intentionally or recklessly disturb a bat or intentionally kill, injure or take any bat.

No bat roosts have been identified on site, although thorough searches of all potential roosting sites were not undertaken and it is inappropriate to carry out bat activity surveys in November. There may be potential impacts on bats if trees and buildings (such as the brick nursery buildings and The Chantry) with roosting potential are felled, demolished or are the subject of building alterations.

Badgers

Badgers are protected under the Protection of Badgers Act 1992. This makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it.

A single disused outlier badger sett was recorded to the north of the Rectory Grove. No works are proposed to the Rectory Grove so there are not considered to be any impacts. If any works are proposed within the Rectory Grove at a distance of less than 30 metres to the badger sett, further study would need to be carried out to determine its use.

4.2.3 Other species

No other species are considered to be affected by the proposed development.

5.0 RECOMMENDATIONS

5.1 Further study

5.1.1 Desk study

It is recommended that a desk study is undertaken to determine the presence or absence of protected species near or on the development site.

5.1.2 Field survey

Prior to any works to the artificial lakes it is recommended that a check for water vole records in the area is made and that a water vole survey on site is undertaken, ideally between April and October when water vole signs are obvious and they are active.

Prior to any works to the artificial lakes it is recommended that a check for great crested newt records in the area is made and that great crested newt surveys are carried out at an appropriate time of year (April –May).

If the roof voids or other features such as boxed eaves of the Chantry and outbuildings are to be affected by any of the proposed works, it is recommended that a bat survey is undertaken.

It is recommended that a bat roost survey be undertaken ideally in May/June by experienced bat surveyors, of the brick built nursery buildings prior to their demolition to determine the presence or absence of bats. These buildings should be checked for signs of a roost before being demolished.

If any works are proposed within Rectory Grove, it is recommended that further surveys are completed to determine the status of the badger sett and advice be sought from English Nature.

No further survey work is considered to be necessary on any of the extension areas. However if any works are planned to remove any tree or scrub vegetation on any part of the site, work should either avoid the bird breeding season (generally March – September) or a survey should be carried out prior to their removal.

6.0 CONCLUSION

LDA Ecology was commissioned to undertake a review of the ecological assessment produced in June 2001 and carry out a walkover survey of three new extension areas of land to the north and east of the site to provide a preliminary ecological description of the habitats and flora and fauna present.

The Phase 1 Habitat Survey and report produced in June 2001 is still valid with only minor changes.

No habitats of particular ecological importance were recorded on any of the new areas. One disused badger sett was recorded within the Rectory Grove but no other signs of protected species were recorded.

Further surveys are recommended and a data trawl to determine the presence or absence of protected species is advised.

Observations relating to signs of protected species are valid at the time of survey. It is possible that species not noted during the survey may colonise or otherwise utilise the site since it was surveyed.

APPENDIX 1

Horksley Park Heritage and Conservation Centre Ecological Assessment June 2001

**HORKESLEY PARK HERITAGE AND
CONSERVATION CENTRE**

Ecological Assessment

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June 2001

QUALITY ASSURANCE - APPROVAL STATUS

This document has been prepared and checked in accordance with BS EN ISO 9001 : 1994

Document StatusDraft.....

AuthorDB.....

CheckedNM.....

ApprovedNM.....DateJune 2001.....



Certificate No 773/95

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1.0 INTRODUCTION

1.1 Purpose of the report

This report has been prepared by Carter Ecological Ltd on behalf of Landscape Design Associates to provide a preliminary ecological description and evaluation of land at Great Horkesley, Essex. The site is the subject of proposals to establish the Horkesley Park Heritage and Conservation Centre.

1.2 General ecological context

The site is located in intensively farmed countryside north of Colchester, Essex on the edges of the Constable Country. The soils of the district are sandy loams of neutral to very slightly acidic reaction.

The greater part of the site is currently in arable, though in the northern part there are two managed artificial lakes surrounded by sown grassland and newly established broad-leaved plantations. There is also an extensive area of semi-natural broad-leaved woodland in the southern part of the site.

Surrounding areas consist mainly of arable. There are complexes of river-valley land-uses centred on willow cultivation along a stream-course to the north-east, including extensive *Salix alba* var. *caerulea* (Cricket-bat Willow) plantations. To the east there is an area of nurseries, private houses and sports grounds, and there is a concentration of dwelling places in to the south-west. The site also contains a series of species-poor *Crataegus monogyna* (Hawthorn) field boundary hedges.

1.3 Structure of the report

This report is structured as follows:

- *Section 1* provides introductory material.
- *Section 2* describes the survey and evaluation methods used.
- *Section 3* describes the baseline ecological conditions.
- *Section 4* evaluates the nature conservation importance of the species and habitats described in *Section 3*.

2.0 METHODOLOGY

2.1 Survey methodology

This report is based solely on walk-through surveys carried out by a single botanist in mid-June 2001¹. The survey used standard Phase 1 Habitat Survey methodology (England Field Unit 1990) extended for use in Environmental Assessment (Institute of Environmental Assessment 1995). This involves the use of extended target notes to supplement brief habitat description and conventional Phase-1 mapping. In Phase-1 Habitat Survey Methodology, notes relating to specific locations on the Phase-1 map are by convention called target notes. This approach is largely descriptive and involves little specialised methodology.

Plant species lists were compiled for a series of locations within the site where the vegetation was considered to have possible nature conservation value, or where it was considered necessary to establish the character of extensive vegetation types in greater detail. Subjective estimates of the relative abundance of species were added to the plant species lists using a modified DAFOR scale. The DAFOR scale ranks species according to their relative abundance within a given parcel of land as follows: D - dominant, A - abundant, F - frequent, O - occasional, R - rare, the prefixes L - locally and V - very are also used within this report. These estimates of abundance refer only to the given parcel of land and have no relevance to the abundance of the plant species within the wider landscape. DAFOR estimates are used in the tables of data presented in this report.

The National Vegetation Classification (NVC) was used to describe some of the more important vegetation types present (Rodwell 1991, 2000). Diagnosis of NVC types was based simply upon inspection of the vegetation, and quadrat data were not collected to support the NVC diagnoses.

Plant nomenclature (English and scientific names) follows Stace (1997). Plant species were identified as carefully as possible, but at any time of year some species will be indeterminable because they are not in flower, or because only scrappy plants are available. Doubtful identifications are preceded by 'cf' where the plant is very probably the species indicated, but it is impossible to distinguish it from similar members of the genus with certainty.

Phase 1 survey methods are focused on mapping and description of wildlife habitats, and are not principally concerned with providing detailed information on the structure and composition of vegetation and plant communities. However, June is an excellent time of year for general botanical recording, and this has enabled the provision of supplementary details on the composition of distinctive vegetation types within the survey area.

2.2 Criteria for evaluation

The scientific value of habitats for nature conservation is assessed according to widely accepted criteria of which the most important are naturalness, extent, rarity, and

¹ Areas within the curtilage of private premises were not surveyed, and some other areas may have been avoided where there are concentrations of private premises.

diversity. These and others are described in an extensive literature (Ratcliffe 1977, Usher 1986).

In addition, special importance attaches to ancient semi-natural habitats that depend for their survival on traditional types of land management, especially where these have suffered large reductions over the last fifty years due to agricultural intensification and extensification. Habitats in these categories are discussed in Rackham (1986).

Significant species were defined as follows:

- species protected by the Wildlife and Countryside Act 1981
- species protected by European directives
- red data book species (Wigginton 1999)
- species targeted in UK Biodiversity Action Plans (UK Biodiversity Group)
- other species listed as scarce or notable in literature issued by conservation organisations or learned societies *e.g.* vascular plant species listed in Stewart *et al.* (1994)
- Species of more moderate interest in the local context were assessed on the basis of information in the most recent county Floras (Jermyn 1974, Tarpey & Heath 1990).

3.0 HABITAT DESCRIPTION

3.1 General

The survey area consists primarily of intensively farmed land, most of which is under arable. A few hedges were recorded, mostly on the boundaries of the area, and around a complex of nursery buildings, private houses and sports fields in the eastern part. There are however woodlands on the western side of the survey area, and a number of small copses and parcels of scrub and ruderal vegetation scattered around. In addition there are two artificial lakes and a number of small watercourses.

The survey area accordingly contains habitat and vegetation types of the following kinds:

- Fragments of apparently ancient woodland embedded in more recent woodlands.
- Mature secondary and plantation woodlands including wet willow woodlands.
- Recently created broad-leaved plantations.
- Species-poor hedges.
- Small streams wooded at least in part.
- Artificial lakes with a small amount of water-margin and aquatic vegetation.
- Tall-herb ruderal vegetation mixed with open scrub.
- Improved or recently sown grasslands and amenity turf.
- Arable weed communities on set-aside arable land.

Soils in the survey area are sandy loams of perhaps very slightly acidic reaction. This is scarcely reflected in the woodland and grassland vegetation, though a few calcifugous ruderal species typical of sandy soils are present on set-aside arable.

3.2 Woodlands, scrub and tall-herb ruderal communities

3.2.1 General

The woods of the survey area are all located along watercourses. This is reflected in the presence of various types of actively working willow plantation, including withy beds and cricket-bat willow plantations. It is also locally reflected in the field layers of the semi-natural woodlands, but it is not reflected in their tree canopies, mainly because these woods mostly stand on banks sloping down to watercourses, rather than on waterlogged ground *per se*.

In the semi-natural woodlands *Fraxinus excelsior* (Ash) is the commonest tree by far, while *Acer campestre* (Field Maple) and *Quercus robur* (Pedunculate Oak) are also frequent. So too is naturally regenerating *Prunus avium* (Wild Cherry), but it is hard to believe that this has not been artificially introduced at some point in the history of the estate. These woods are broadly referable to the NVC type **W8** *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland, though in many places they have been extensively modified by the planting-in of alien tree-species.

Willow woodlands stand on waterlogged ground where there are more extensive low-lying areas along the watercourses. Two types are present: first, working withy beds consisting of old *Salix viminalis* (Osier) coppice stools; and second, open stands of *Salix alba* var. *caerulea* (Cricket-bat Willow), a few mature, but mostly semi-mature. These woodlands are referable to the type **W6c** *Alnus glutinosa-Urtica dioica* woodland, *Salix viminalis triandra* sub-community.

3.2.2 Target Notes

Target Note W1

Fishponds Grove is a strip of woodland located on relatively steep slopes falling to a small but fast-flowing stream that bounds the survey area on the southern side (where it flows through Fishponds Grove) and on the western side. It is called Fishponds Grove because in times past there were two large artificial fishponds astride the stream in the western part of the wood. The huge earth-dams that impounded the stream remain, but it now flows unimpeded through very narrow breaches that descend to the natural level of the stream-bed. Large trees on the lower parts of the dams suggest that they were breached long ago – perhaps over a hundred years ago. Today the lake-beds are occupied by withy plantations comprising old stools of *Salix viminalis* (Osier) that appear to have been cut for harvest during the year 2000. They are probably worked commercially, since tied bundles of osier-rods were lying around during this survey. The eastern part of Fishponds Grove occupies a distinct valley, and consists mainly of plantation woodland. However, there are many indications that there may be some sort of ancient woodland along the stream, including banks at the wood-edge, large *Fraxinus excelsior* (Ash) coppice stools near the stream, and ancient woodland indicator species in the field-layer.

- *Target Note W1a.* Woodland dominated by *Fraxinus excelsior* (Ash), *Prunus avium* (Wild Cherry) and *Acer campestre* (Field Maple). Much of the *Fraxinus excelsior* (Ash) is coppiced, and a few large stools up to 2m in diameter are present near the stream. The shrub layer consists mainly of *Corylus avellana* (Hazel) coppice-stools with frequent *Sambucus nigra* (Elder). The field layer consists mainly of the woodland herbs *Hyacinthoides non-scripta* (Bluebell) and *Mercurialis perennis* (Dog's Mercury) with scattered *Arum maculatum* (Lords-and-Ladies), *Glechoma hederacea* (Ground-ivy) and *Poa trivialis* (Rough Meadow-grass). This is probably ancient woodland, though it may have been little more than a wooded streamcourse. Low banks around 50m up the slope on the northern side could be old wood-banks, or they could be old field boundaries. This woodland is referable to the NVC type **W8a** *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland, *Primula vulgaris-Glechoma hederacea* sub-community though it is a rather species-poor example.

- *Target Note W1b.* Either plantation woodland, or else secondary woodland with alien tree-species planted-in. The canopy consists mainly of *Populusx canescens* (Grey Poplar) with some *Fraxinus excelsior* (Ash). The well-developed shrub layer consists mainly of *Sambucus nigra* (Elder) with some small *Corylus avellana* (Hazel) coppice stools and occasional bushes of *Symphoricarpos albus* (Snowberry). The eutrophic and deeply shaded field-layer consists of patches of the clonal woodland herb *Mercurialis perennis* (Dog's Mercury) mixed with sparse stands of *Urtica dioica* (Common Nettle). There is a nearly continuous ground-cover of the mosses *Brachythecium rutabulum* and *Eurhynchium praelongum*. Like the woodland described in *Target Note W1a* this is best referred to the NVC type **W8a**. However, the abundance of *Sambucus nigra* (Elder) in the shrub layer, and the lack of diversity among vernal woodland herbs suggests that it may have some affinities with the type **W8d** *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland, *Hedera helix* sub-community.
- *Target Note W1c.* The stream occupies a steep-sided channel around 1.5m deep. The partly bare sides are extensively carpeted with mosses, mainly the common species *Eurhynchium praelongum*, though there are patches of *Atrichum undulatum*, *Fissidens* cf. *bryoides*, *Isopterygium elegans*, *Plagiomnium undulatum* and *Plagiothecium* cf. *sylvaticum* (mosses were not recorded in any detail, and many other species are likely to be present). Locally there are herbs typical of wet stream-sides in woods, especially *Adoxa moschatellina* (Moschatel) and *Chrysosplenium oppositifolium* (Opposite-leaved Golden-saxifrage). Other frequent species include *Cardamine flexuosa* (Wavy Bitter-cress), *Dryopteris filix-mas* (Male-fern), *Galium aparine* (Cleavers), *Primula vulgaris* (Primrose), *Rubus fruticosus* agg. (Bramble), *Silene dioica* (Red Champion) and (rather locally) *Veronica montana* (Wood Speedwell).
- *Target Note W1d.* The southern side of the wood occupies a slope falling to the stream from the road called Fishponds Hill. The soils are slightly drier than elsewhere in the wood, and large areas are dominated by *Hyacinthoides non-scripta* (Bluebell) while *Mercurialis perennis* (Dog's Mercury) is less frequent than elsewhere. Towards the top of the slope some areas are dominated by *Pteridium aquilinum* (Bracken), and woodland herbs that are scarce in the wetter parts of the wood appear in small quantity, e.g. *Brachypodium sylvaticum* (False Brome), *Stellaria holostea* (Greater Stitchwort). This woodland too is best referred to the NVC type **W8a**, but an increase in *Quercus robur* (Pedunculate Oak) and planted trees such as *Castanea sativa* (Sweet Chestnut), together with an increase in *Rubus fruticosus* agg. (Bramble) and *Pteridium aquilinum* (Bracken) in the field-layer suggest the beginnings of a transition to the NVC type **W10** *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland.
- *Target Note W1e.* Withy-beds in the bottom of the former fishponds. They consist mainly of quite old *Salix viminalis* (Osier) stools that had been coppiced in the season prior to this survey when the rods were around two or three years old. To the west the trees appeared to have been coppiced two or three years ago. At the edges of the withy-beds there is scrub consisting mainly of *Prunus spinosa* (Blackthorn) and *Sambucus nigra* (Elder), though scattered *Corylus avellana* (Hazel) and *Fraxinus excelsior* (Ash) trees increase in frequency as the scrub grades into the woodland. The field layer is dominated by tall stands of *Urtica dioica* (Common Nettle) with occasional *Galium aparine* (Cleavers), *Poa trivialis* (Rough Meadow-grass), *Ranunculus repens* (Creeping Buttercup) and *Silene dioica* (Red

Campion). In more shaded areas towards the edge this grades into a lower sward dominated by the grass *Poa trivialis* (Rough Meadow-grass) with some *Urtica dioica* (Common Nettle) and a ground carpet of *Chrysosplenium oppositifolium* (Opposite-leaved Golden-saxifrage), *Cardamine flexuosa* (Wavy Bitter-cress), *Galium aparine* (Cleavers) and *Ranunculus repens* (Creeping Buttercup). The withy-bed vegetation is referable to the NVC type **W6c** *Alnus glutinosa-Urtica dioica* woodland, *Salix viminalis**triandra* sub-community though in places it grades into fragmentary stands of **W22a** *Prunus spinosa-Rubus fruticosus* scrub, *Hedera helix-Silene dioica* sub-community (though *Hedera helix* itself is rare).

- *Target Note W1f*. An open area of *Salix alba* var. *caerulea* (Cricket-bat Willow) plantation below the bottom dam in the chain of former fishponds. Trees are confined to the edges, and vegetation in the centre consists of dense stands of *Urtica dioica* (Common Nettle) with small quantities of shade-tolerant grasses and herbs, e.g. *Galium aparine* (Cleavers), *Poa trivialis* (Rough Meadow-grass), *Rumex sanguineus* (Blood-veined Dock). This could simply be regarded as a **W6c** *Alnus glutinosa-Urtica dioica* woodland, *Salix viminalis**triandra* sub-community field-layer, or the area could be regarded as a fringe of **W6c** around a central stand of **OV24a** *Urtica dioica-Galium aparine* community, typical sub-community perhaps transitional to **OV26c** *Epilobium angustifolium* community, *Filipendula ulmaria-Angelica sylvestris* sub-community.

In the eastern part of the wood there are some stands of mature *Picea abies* (Norway Spruce) along the northern edge. Access is difficult due to dense undergrowth, but so far as could be ascertained conifers do not extend into the core of the wood. A plant species list for Fishponds Grove is given in *Table 1*. No definite signs of mammals were seen other than mole and rabbit, but badgers are very likely to be present. Riparian and woodland habitats within this part of the survey area have the potential to support water voles or dormice.

Target Note W2

A secondary woodland copse in a depression where several small streams join. The canopy consists mainly of *Fraxinus excelsior* (Ash) with small amounts of *Quercus robur* (Pedunculate Oak) and *Prunus avium* (Wild Cherry), while the shrub layer consists mainly of *Sambucus nigra* (Elder) with some *Crataegus monogyna* (Hawthorn) and *Prunus spinosa* (Blackthorn). The field layer consists mainly of woodland herbs, especially *Glechoma hederacea* (Ground-ivy), *Hyacinthoides non-scripta* (Bluebell), *Poa trivialis* (Rough Meadow-grass) and *Silene dioica* (Red Campion), with frequent *Rubus fruticosus* agg. (Bramble) and *Hedera helix* (Ivy). Other herbs present include *Alliaria petiolata* (Garlic Mustard), *Anthriscus sylvestris* (Cow Parsley), *Arum maculatum* (Lords-and-Ladies), *Bromopsis ramosa* (Hairy-brome), *Circaea lutetiana* (Enchanter's-nightshade), *Galium aparine* (Cleavers), *Geranium robertianum* (Herb-Robert), *Prunella vulgaris* (Selfheal), *Stachys sylvatica* (Hedge Woundwort), *Stellaria holostea* (Greater Stitchwort), *Tamus communis* (Black Bryony) and *Veronica hederifolia* (Ivy-leaved Speedwell). Species that are locally abundant on wet ground by the streams include *Adoxa moschatellina* (Moschatel), *Cardamine flexuosa* (Wavy Bitter-cress), *Chrysosplenium oppositifolium* (Opposite-leaved Golden-saxifrage), *Ranunculus ficaria* (Lesser Celandine) and *Ranunculus repens* (Creeping Buttercup). This secondary woodland is probably best referred to the NVC type **W8d** *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland, *Hedera helix* sub-community, though the

field layer is rather rich in *Poa trivialis* (Rough Meadow-grass) and *Glechoma hederacea* (Ground-ivy) and poor in *Hedera helix* (Ivy) for this community.

Target Note W3

An area of sparse trees and bushes over dense stands of nettle-bed vegetation in a small valley falling to the north. Woody species present include *Corylus avellana* (Hazel), *Populus* × *canadensis* (Hybrid Black-poplar), *Populus nigra* 'Italica' (Lombardy Poplar), *Salix alba* ssp. *alba* (White Willow), *Salix cinerea* ssp. *oleifolia* (Rusty Willow) and *Sambucus nigra* (Elder). The field layer is dominated by *Urtica dioica* (Common Nettle) with smaller amounts of tall ruderal herbs, especially *Rumex obtusifolius* (Broad-leaved Dock) and also very small amounts of *Cirsium arvense* (Creeping Thistle), *Conium maculatum* (Hemlock), *Silene latifolia* ssp. *alba* (White Campion) and *Sonchus asper*. This vegetation is referable to the NVC type **OV24a *Urtica dioica*-*Galium aparine* community, typical sub-community**. By small water-runnels additional species include *Calystegia sepium* ssp. *sepium* (Hedge Bindweed), *Epilobium hirsutum* (Great Willowherb) and *Glyceria fluitans* (Floating Sweet-grass). Here the vegetation may be transitional to the NVC type **OV26 *Epilobium angustifolium* community** though it is nowhere actually referable to this community. Garden escape species at the edge of the area include *Digitalis purpurea* (Foxglove) cultivars, *Euphorbia lathyris* (Caper Spurge) and *Tanacetum parthenium* (Feverfew).

Target Note W4

A new broad-leaved plantation with very young trees of native British native species including *Acer campestre* (Field Maple), *Corylus avellana* (Hazel), *Fraxinus excelsior* (Ash) as the main component, *Prunus avium* (Wild Cherry) and *Quercus robur* (Pedunculate Oak). The trees do not form a canopy, and the field-layer consists of a short rabbit-grazed grassy sward dominated by *Agrostis capillaris* (Common Bent) and *Holcus lanatus* (Yorkshire-fog) with frequent ruderals characteristic of sandy soils including *Anagallis arvensis* (Scarlet Pimpernel), *Aphanes arvensis* (Parsley-piert), *Arenaria serpyllifolia* ssp. *serpyllifolia* (Thyme-leaved Sandwort), *Cerastium fontanum* (Common Mouse-ear), *Myosotis arvensis* (Field Forget-me-not) and *Veronica arvensis* (Wall Speedwell). Locally there are gravelly patches with only about 50% vegetation cover consisting mainly of the mosses *Brachythecium rutabulum*, *Hypnum cupressiforme* and *Polytrichum juniperinum* with lichens (*Cladonia* species). Also there are scattered patches of *Urtica dioica* (Common Nettle).

Target Note W5

A new broad-leaved plantation similar to that described in *Target Note W4* but slightly older with a partial canopy of *Fraxinus excelsior* (Ash). Other woody species present include *Acer campestre* (Field Maple), *Crataegus monogyna* (Hawthorn) and *Prunus avium* (Wild Cherry). The ground is carpeted by the mosses *Brachythecium rutabulum* and *Eurhynchium praelongum* with an abundance of the annual grass *Poa annua* (Annual Meadow-grass) and the annual herb *Epilobium ciliatum* (American Willowherb). Other grasses and broad-leaved herbs present in small quantity include *Agrostis capillaris* (Common Bent), *Cirsium arvense* (Creeping Thistle), *Holcus lanatus* (Yorkshire-fog), *Myosotis arvensis* (Field Forget-me-not), *Ranunculus repens* (Creeping Buttercup), *Sagina procumbens* (Procumbent Pearlwort), *Urtica dioica* (Common Nettle) and *Veronica serpyllifolia* ssp. *serpyllifolia* (Thyme-leaved Speedwell).

Target Note W6

A very new broad-leaved plantation planted into an improved grassland sward dominated by agricultural strains of *Festuca rubra* (Red Fescue). It consists mainly of *Fraxinus excelsior* (Ash) and *Quercus robur* (Pedunculate Oak) with some *Prunus avium* (Wild Cherry). At the eastern edge there is a line of calcicolous shrubs native to Britain but mostly inappropriate to the district (at least in this chalk-scrub mix) including *Acer campestre* (Field Maple), *Corylus avellana* (Hazel), *Cornus sanguinea* (Dogwood), *Crataegus monogyna* (Hawthorn), *Viburnum opulus* (Guelder-rose) and *Viburnum lantana* (Wayfaring-tree).

Target Note W7

A plantation of young but well-established *Salix alba* var. *caerulea* (Cricket-bat Willow) trees planted in rows into a species-poor improved grassland.

Target Note W8

A broad-screen planting consisting mainly of *Picea abies* (Norway Spruce) with some *Alnus glutinosa* (Alder) and *Populus × canadensis* (Hybrid Black-poplar) and a shrub layer of *Sambucus nigra* (Elder). The field-layer consists of dense stands of *Urtica dioica* (Common Nettle) and *Cirsium arvense* (Creeping Thistle) in open spots. Beneath the conifers there are sparse stands of shade-tolerant herbs including *Galium aparine* (Cleavers), *Glechoma hederacea* (Ground-ivy) and *Poa trivialis* (Rough Meadow-grass), though in many places the ground is bare.

3.3 Arable

The greater part of the the survey area consists of arable. The cropped areas are weed-free, but there are substantial areas of set-aside with a wide range of weeds. The most abundant are *Chenopodium album* (Fat-hen), *Epilobium ciliatum* (American Willowherb), *Matricaria discoidea* (Pineappleweed), *Matricaria recutita* (Scented Mayweed), and *Urtica urens* (Small Nettle). Several other species are locally abundant including *Geranium pusillum* (Small-flowered Crane's-bill) and the calcifugous annual *Filago vulgaris* (Common Cudweed). Other frequent species include *Anagallis arvensis* (Scarlet Pimpernel), *Atriplex patula* (Common Orache), *Chenopodium ficifolium* (Fig-leaved Goosefoot), *Fallopia convolvulus* (Black-bindweed), *Poa trivialis* (Rough Meadow-grass), *Polygonum aviculare* (Knotgrass), *Senecio vulgaris* (Groundsel) and *Stellaria media* (Common Chickweed). A full list is given in *Table 2*.

3.4 Field boundaries

3.4.1 General

All hedges in the survey area appear to be species-poor hedges consisting entirely of *Crataegus monogyna* (Hawthorn). These would not on ecological grounds qualify as Important Hedges within the meaning of *The Hedgerow Regulations 1997*.

Other boundaries consist of rough grassland strips dominated by coarse grasses with scattered *Rubus fruticosus* agg. (Bramble) and tall ruderal herbs. Here the vegetation is

mostly referable to the NVC type **MG1b** *Arrhenatherum elatius* grassland, *Urtica dioica* sub-community, though where brambles dominate it may be referable to the type **W24** *Rubus fruticosus*-*Holcus lanatus* underscrub.

3.4.2 Target Notes

Target Note B1

The stream along the southern part of the western boundary of the survey area is moderately wooded with trees of *Salix alba* var. *caerulea* (Cricket-bat Willow) and *Alnus glutinosa* (Alder) and bushes of *Salix viminalis* (Osier) and *Sambucus nigra* (Elder). There are some dense patches of brambles, but otherwise the field-layer consists of dense stands of *Urtica dioica* (Common Nettle) forming vegetation referable to the NVC type **OV24a** *Urtica dioica*-*Galium aparine* community, typical sub-community.

Target Note B2

Along the northern part of the western boundary of the survey area the stream is less heavily wooded than it is in the part described in *Target Note B1*. On the other hand a wider range of hedgerow trees and shrubs are present including *Fraxinus excelsior* (Ash) and *Salix alba* var. *caerulea* (Cricket-bat Willow) standards and shrubs of *Acer campestre* (Field Maple), *Crataegus monogyna* (Hawthorn), *Salix cinerea* ssp. *oleifolia* (Rusty Willow) and *Ulmus procera* (English Elm). The field layer consists of *Rubus fruticosus* agg. (Bramble) underscrub and tall-herb grassland dominated by the grasses *Arrhenatherum elatius* (False Oat-grass) and *Poa trivialis* (Rough Meadow-grass) with a range of broad-leaved herbs including *Anthriscus sylvestris* (Cow Parsley), *Arctium minus* (Lesser Burdock), *Chaerophyllum temulum* (Rough Chervil), *Chamerion angustifolium* (Rosebay Willowherb), *Cirsium arvense* (Creeping Thistle), *Glechoma hederacea* (Ground-ivy), *Heracleum sphondylium* (Hogweed), *Lamium album* (White Dead-nettle), *Rumex sanguineus* (Blood-veined Dock) and *Silene dioica* (Red Campion). The stream flows in a steep-sided channel overhung by this vegetation, though towards the water-margin it is dominated by *Urtica dioica* (Common Nettle) with *Epilobium hirsutum* (Great Willowherb), *Calystegia sepium* ssp. *sepium* (Hedge Bindweed) and *Galium aparine* (Cleavers) suggesting affinities with the NVC type **OV26** *Epilobium angustifolium* community.

Target Note B3

A grassy boundary dominated by the grasses *Arrhenatherum elatius* (False Oat-grass), and *Urtica dioica* (Common Nettle) with *Rubus fruticosus* agg. (Bramble) and *Urtica dioica* (Common Nettle). Scattered bushes of *Quercus robur* (Pedunculate Oak) and *Sambucus nigra* (Elder) and occasional *Quercus robur* (Pedunculate Oak) and *Salix alba* var. *caerulea* (Cricket-bat Willow) standards are insufficiently frequent to form anything that could be regarded as a hedge.

3.5 Artificial lakes

3.5.1 Target notes

Target Note A1

An artificial lake with little marginal or aquatic vegetation except for small amounts of *Agrostis stolonifera* (Creeping Bent), *Epilobium hirsutum* (Great Willowherb) and *Typha latifolia* (Bulrush) on the water-margin, and small amounts of *Potamogeton crispus* (Curled Pondweed) and *Ranunculus cf. aquatilis* (Common Water-crowfoot) in the water. A few waterfowl were present at the time of the survey including Coot, Mute Swan, Tufted Duck and Great-crested Grebe, but the lakes are likely to support many more species than this, especially in winter.

Target Note A2

The banks of the lake described in *Target Note A1* support a sown grassland sward dominated by *Festuca rubra* (Red Fescue) with frequent *Cynosurus cristatus* (Crested Dog's-tail) and *Holcus lanatus* (Yorkshire-fog). Other locally abundant grasses include *Elytrigia repens* (Common Couch), *Festuca pratensis* (Meadow Fescue) and *Poa trivialis* (Rough Meadow-grass), and though grassland forbs are not abundant several species are widely scattered including *Cirsium arvense* (Creeping Thistle), *Epilobium ciliatum* (American Willowherb), *Hypochaeris radicata* (Cat's-ear) and *Trifolium repens* (White Clover). On the steepest slopes there are areas with open vegetation cover (bare ground up to about 50%) with a wider range of species including in addition to the above *Agrostis stolonifera* (Creeping Bent), *Arenaria serpyllifolia* ssp. *serpyllifolia* (Thyme-leaved Sandwort), *Cerastium fontanum* (Common Mouse-ear), *Crepis vesicaria* ssp. *taraxacifolia* (Beaked Hawk's-beard), *Filago vulgaris* (Common Cudweed), *Lolium perenne* (Perennial Rye-grass), *Ranunculus repens* (Creeping Buttercup) and *Trifolium dubium* (Lesser Trefoil). Other grassland on the banks supports small amounts of species not otherwise frequently encountered in the survey area including *Sison amomum* (Stone Parsley).

Target Note A3

An artificial lake similar to that described in *Target Notes A1* and *A2* but with far more marginal vegetation consisting of stands of tall emergent graminoids including *Carex riparia* (Greater Pond-sedge), *Juncus effusus* (Soft-rush) and *Typha latifolia* (Bulrush) and tall herbs including *Epilobium hirsutum* (Great Willowherb) and *Iris pseudacorus* (Yellow Iris).

4.0 ANALYSIS

Productive agricultural land within the survey area comprising improved grassland and areas of arable cultivation are of negligible nature conservation interest.

No plant species of note were recorded from the survey area.

Fishponds Grove contains a wide range of vegetation types due to its varied topography and chequered history. It is this, rather than the presence of small fragments of probable ancient woodland, that most endows it with interest and value. It is an instructive example of how modern woodlands and woodland vegetation may embody and reflect past land uses. This notwithstanding, all ancient countryside features have some nature conservation value, and the woodland field-layers along the stream are of modest importance for this reason. The field-layers of the withy-beds represent the most semi-natural and attractive of the British nettle-bed communities, and these too have very modest nature conservation value. More importantly, the withy-beds could be of substantial importance for nesting birds.

The artificial lakes do not appear to support plant species or vegetation types of any importance according to the criteria set out in *Section 2.2*. They may be of modest importance for waterfowl, and perhaps for newts and water vole.

The field copse described in *Target Note W2* has modest value for nature conservation by reason of its contribution to local biodiversity, though it contains only common vegetation types and plant species.

No other habitats in the survey area are of any substantial importance for nature conservation. However, protected species of mammal could be present in the survey area as follows:

- It is entirely possible that there is a badger sett somewhere, especially in Fishponds Grove. No signs were of badgers were seen, but they are relatively difficult to spot in high summer when brambles and nettles may hide the signs.
- It is extremely likely that bats feed along the stream-courses and around the artificial lakes. It is therefore likely that some old trees with holes or crevices are bat-roost trees, especially in Fishponds Grove, along the western boundary of the survey area, and in the copse described in *Target Note W2*.
- It is possible that great-crested newts may use the artificial lakes, though no evidence of this has been gathered.
- It is remotely possible that water voles are present along the stream or around the artificial lakes.
- It is very remotely possible that dormice are present in Fishponds Grove since *Corylus avellana* (Hazel) is abundant. However, the site has poor connectivity with other habitats that might in principle support dormice. They generally require unbroken woodland and hedgerow complexes (since they move from tree to tree and seldom across the ground).

- Grass-snake and slow-worm protected against killing only under *Schedule 5* of the *Wildlife and Countryside Act 1981* could be present.

The potential for these fauna species to utilise wildlife habitats present within the survey area is of particular nature conservation interest. This confers additional potential value onto existing areas of wildlife habitat considered to be of interest due in particular to their relatively strong natural character.

Further survey work would be required to fully evaluate and verify the presence of these protected mammal species. It is noteworthy that the potential location identified for these protected species is confined to Fishponds Grove, the artificial lakes, and the stream area on the western perimeter of the site. These areas would remain undisturbed and entirely unaffected by the proposed development. This would therefore ensure full protection of any potential protected mammal species that may be present, and their associated habitats. Furthermore long term land management proposals in association with the development could provide opportunities to enhance and extend the habitats and populations of any fauna species present, including potential protected mammal species.

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Table 1. Plant species recorded from Fishpond Grove.

a) Trees and shrubs

<i>Acer campestre</i> (Field Maple)	f
<i>Aesculus hippocastanum</i> (Horse-chestnut)	vr
<i>Castanea sativa</i> (Sweet Chestnut)	vr
<i>Corylus avellana</i> (Hazel)	a
<i>Crataegus monogyna</i> (Hawthorn)	r
<i>Fraxinus excelsior</i> (Ash)	a
<i>Hedera helix</i> (Ivy)	a
<i>Ilex aquifolium</i> (Holly)	r
<i>Lonicera periclymenum</i> (Honeysuckle)	vr
<i>Malus domestica</i> (Apple)	vr
<i>Picea abies</i> (Norway Spruce)	vr
<i>Populus</i> × <i>canadensis</i> (Hybrid Black-poplar)	vr
<i>P. × canescens</i> (Grey Poplar)	la
<i>Prunus avium</i> (Wild Cherry)	a
<i>P. spinosa</i> (Blackthorn)	la
<i>Pseudotsuga menziesii</i> (Douglas Fir)	vr
<i>Quercus robur</i> (Pedunculate Oak)	f
<i>Rosa arvensis</i> (Field-rose)	vr
<i>Rubus fruticosus</i> agg. (Bramble)	f
<i>Salix alba</i> ssp. <i>alba</i> (White Willow)	vr
<i>S. alba</i> var. <i>caerulea</i> (Cricket-bat Willow)	vr
<i>S. fragilis</i> (Crack Willow)	vr
<i>S. triandra</i> var. <i>hoffmanniana</i> (Almond Willow)	vr
<i>S. viminalis</i> (Osier)	la
<i>Sambucus nigra</i> (Elder)	a
<i>Symphoricarpos albus</i> (Snowberry)	r

b) Field and ground layer species

<i>Adoxa moschatellina</i> (Moschatel)	la
<i>Alliaria petiolata</i> (Garlic Mustard)	vr
<i>Angelica sylvestris</i> (Wild Angelica)	vr
<i>Anthriscus sylvestris</i> (Cow Parsley)	r
<i>Apium nodiflorum</i> (Fool's Water-cress)	vr
<i>Arctium minus</i> (Lesser Burdock)	r
<i>Arum maculatum</i> (Lords-and-Ladies)	r
<i>Azolla filiculoides</i> (Water Fern)	vr
<i>Brachypodium sylvaticum</i> (False Brome)	vr
<i>Callitriche stagnalis</i> (Common Water-starwort)	vr
<i>Cardamine flexuosa</i> (Wavy Bitter-cress)	f
<i>Cerastium fontanum</i> (Common Mouse-ear)	vr
<i>Chrysosplenium oppositifolium</i> (Opposite-leaved Golden-saxifrage)	la
<i>Cirsium arvense</i> (Creeping Thistle)	o
<i>C. vulgare</i> (Spear Thistle)	r
<i>Digitalis purpurea</i> (Foxglove)	r
<i>Dryopteris dilatata</i> (Broad Buckler-fern)	vr
<i>D. filix-mas</i> (Male-fern)	o
<i>Epilobium ciliatum</i> (American Willowherb)	r
<i>Galium aparine</i> (Cleavers)	a
<i>Geranium robertianum</i> (Herb-Robert)	vr

<i>Geum urbanum</i> (Wood Avens)	r
<i>Glechoma hederacea</i> (Ground-ivy)	a
<i>Heracleum sphondylium</i> (Hogweed)	vr
<i>Holcus lanatus</i> (Yorkshire-fog)	o
<i>Hyacinthoides non-scripta</i> (Bluebell)	a
<i>Lamium album</i> (White Dead-nettle)	r
<i>Lapsana communis</i> (Nipplewort)	vr
<i>Lotus pedunculatus</i> (Greater Bird's-foot-trefoil)	vr
<i>Mercurialis perennis</i> (Dog's Mercury)	a
<i>Moehringia trinervia</i> (Three-nerved Sandwort)	r
<i>Myosotis arvensis</i> (Field Forget-me-not)	r
<i>Poa trivialis</i> (Rough Meadow-grass)	a
<i>Primula vulgaris</i> (Primrose)	o
<i>Pteridium aquilinum</i> (Bracken)	la
<i>Ranunculus ficaria</i> (Lesser Celandine)	o
<i>R. repens</i> (Creeping Buttercup)	la
<i>Rumex obtusifolius</i> (Broad-leaved Dock)	vr
<i>R. sanguineus</i> (Blood-veined Dock)	o
<i>Scrophularia nodosa</i> (Common Figwort)	vr
<i>Silene dioica</i> (Red Campion)	f
<i>Stellaria holostea</i> (Greater Stitchwort)	r
<i>S. media</i> (Common Chickweed)	vr
<i>Tamus communis</i> (Black Bryony)	vr
<i>Urtica dioica</i> (Common Nettle)	a
<i>Veronica beccabunga</i> (Brooklime)	vr
<i>V. montana</i> (Wood Speedwell)	o
<i>V. serpyllifolia</i> ssp. <i>serpyllifolia</i> (Thyme-leaved Speedwell)	vr

c) Mosses and liverworts

<i>Atrichum undulatum</i>	r
<i>Brachythecium rutabulum</i>	a
<i>Dicranella heteromalla</i>	r
<i>Dicranoweissia cirrata</i>	r
<i>Eurhynchium praelongum</i>	a
<i>Fissidens</i> cf. <i>bryoides</i>	o
<i>Hypnum cupressiforme</i>	r
<i>Isopterygium elegans</i>	r
<i>Lophocolea heterophylla</i>	o
<i>Mnium hornum</i>	vr
<i>Orthodontium lineare</i>	r
<i>Pellia epiphylla</i>	r
<i>Plagiomnium undulatum</i>	o
<i>Plagiothecium</i> cf. <i>sylvaticum</i>	r

Table 2. Plant species recorded from arable set-aside.

<i>Acer pseudoplatanus</i> seedlings (Sycamore)	la
<i>Agrostis stolonifera</i> (Creeping Bent)	vr
<i>Allium cepa</i> (Onion)	r
<i>Alopecurus myosuroides</i> (Black-grass)	r
<i>Anagallis arvensis</i> (Scarlet Pimpernel)	o
<i>Anchusa arvensis</i> (Bugloss)	r
<i>Anisantha sterilis</i> (Barren Brome)	r
<i>Anthriscus sylvestris</i> (Cow Parsley)	vr
<i>Aphanes arvensis</i> (Parsley-piert)	o
<i>Arabidopsis thaliana</i> (Thale Cress)	r
<i>Arctium minus</i> (Lesser Burdock)	r
<i>Arenaria serpyllifolia</i> ssp. <i>serpyllifolia</i> (Thyme-leaved Sandwort)	r
<i>Arrhenatherum elatius</i> (False Oat-grass)	vr
<i>Artemisia vulgaris</i> (Mugwort)	r
<i>Atriplex patula</i> (Common Orache)	o
<i>A. prostrata</i> (Spear-leaved Orache)	f
<i>Bromus hordeaceus</i> ssp. <i>hordeaceus</i> (Soft-brome)	r
<i>Capsella bursa-pastoris</i> (Shepherd's-purse)	r
<i>Cerastium glomeratum</i> (Sticky Mouse-ear)	r
<i>Chamerion angustifolium</i> (Rosebay Willowherb)	r
<i>Chenopodium album</i> (Fat-hen)	f
<i>C. ficifolium</i> (Fig-leaved Goosefoot)	o
<i>C. rubrum</i> (Red Goosefoot)	r
<i>Cirsium arvense</i> (Creeping Thistle)	vr
<i>C. vulgare</i> (Spear Thistle)	r
<i>Convolvulus arvensis</i> (Field Bindweed)	r
<i>Coronopus didymus</i> (Lesser Swine-cress)	vr
<i>C. squamatus</i> (Swine-cress)	r
<i>Dactylis glomerata</i> (Cock's-foot)	r
<i>Epilobium ciliatum</i> (American Willowherb) [1]	a
<i>E. hirsutum</i> (Great Willowherb)	o
<i>E. parviflorum</i> (Hoary Willowherb)	r
<i>E. tetragonum</i> (Square-stalked Willowherb)	vr
<i>Euphorbia helioscopia</i> (Sun Spurge)	vr
<i>Fallopia convolvulus</i> (Black-bindweed)	o
<i>Filago vulgaris</i> (Common Cudweed)	lf
<i>Fumaria officinalis</i> (Common Fumitory)	vr
<i>Galium aparine</i> (Cleavers)	r
<i>Geranium dissectum</i> (Cut-leaved Crane's-bill)	vr
<i>G. pusillum</i> (Small-flowered Crane's-bill)	la
<i>Gnaphalium uliginosum</i> (Marsh Cudweed)	r
<i>Heracleum sphondylium</i> (Hogweed)	vr
<i>Holcus lanatus</i> (Yorkshire-fog)	vr
<i>Hordeum murinum</i> (Wall Barley)	r
<i>Juncus bufonius</i> (Toad Rush)	r
<i>Lamium hybridum</i> (Cut-leaved Dead-nettle)	vr
<i>L. purpureum</i> (Red Dead-nettle)	vr
<i>Lapsana communis</i> (Nipplewort)	vr
<i>Leontodon autumnalis</i> (Autumn Hawkbit)	vr
<i>Lepidium ruderale</i> (Narrow-leaved Pepperwort)	vr

<i>Lolium perenne</i> (Perennial Rye-grass)	vr
<i>Malva sylvestris</i> (Common Mallow)	vr
<i>Matricaria discoidea</i> (Pineappleweed)	a
<i>M. recutita</i> (Scented Mayweed)	a
<i>Myosotis arvensis</i>	o
<i>Papaver rhoeas</i> (Common Poppy)	r
<i>Persicaria maculosa</i> (Redshank) [2]	r
<i>Picris echioides</i> (Bristly Oxtongue)	vr
<i>Plantago lanceolata</i> (Ribwort Plantain)	r
<i>P. major</i> (Greater Plantain)	o
<i>Poa annua</i> (Annual Meadow-grass)	f
<i>P. trivialis</i> (Rough Meadow-grass)	f
<i>Polygonum aviculare</i> (Knotgrass)	f
<i>Ranunculus repens</i> (Creeping Buttercup)	vr
<i>Raphans raphanistrum</i> ssp. <i>raphanistrum</i> (Wild Radish)	vr
<i>Reseda luteola</i> (Weld)	vr
<i>Rumex crispus</i> (Curled Dock)	r
<i>R. obtusifolius</i> (Broad-leaved Dock)	r
<i>Senecio jacobaea</i> (Common Ragwort)	r
<i>S. vulgaris</i> (Groundsel)	o
<i>Silene</i> × <i>hampeana</i> (Hybrid Red-campion)	vr
<i>S. latifolia</i> ssp. <i>alba</i> (White Campion)	r
<i>Sisymbrium officinale</i> (Hedge Mustard)	o
<i>Solanum tuberosum</i> (Potato)	o
<i>Sonchus asper</i> (Prickly Sow-thistle)	o
<i>Stellaria media</i> (Common Chickweed)	o
<i>Taraxacum</i> sect. <i>Ruderalia</i> species (Dandelion)	vr
<i>Tragopogon pratensis</i> (Goat's-beard)	vr
<i>Trifolium dubium</i> (Lesser Trefoil)	vr
<i>Tripleurospermum inodorum</i> (Scentless Mayweed)	r
<i>Urtica dioica</i> (Common Nettle)	r
<i>U. urens</i> (Small Nettle)	a
<i>Veronica hederifolia</i> ssp. <i>hederifolia</i> (Ivy-leaved Speedwell)	vr
<i>V. persica</i> (Common Field-speedwell)	r
<i>Viola arvensis</i> (Field Pansy)	o
<i>Vulpia bromoides</i> (Squirreltail Fescue)	vr

Taxonomic notes. 1 - *Epilobium* hybrids are also present, probably in the area of *E. ciliatum* and *E. parviflorum*,

2 – Vegetative material of a *Persicaria* species, probably *P. maculosa* but *P. lapathifolia* is just as likely, or both could be present.

APPENDIX 2

Phase 1 Habitat Map

