Appendix 3

Ecological survey

October 2003

Catton Park

Ecological Survey
Phase 1 Habitat Survey and review of ecological interest

July 2003

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1 Introduction

Site location and context

1.1.1 Catton Park is situated in the north of Norwich and is bounded by urban development.

1.1.2 The park comprises plantation woodland perimeter belts surrounding open parkland, much of which is presently under arable cultivation.

Survey objectives

1.1.3 This survey was concerned with the ecological value of the park and with identification of requirements for detailed ecological survey work and opportunities for enhancement of the wildlife value.

Purpose of this document

1.1.4 This document details the survey results and presents a series of initial suggestions for the future management of the existing vegetation and habitats and recommendations for further survey work. The intention of these recommendations is to:

- increase knowledge of the ecological value of the park
- improve the park's ecological potential through appropriate landuse change and management

2 Survey

Desktop study

2.1.1 A desktop study was undertaken to identify any existing biological data for the park and any wildlife designations. The desktop study also examined previous survey data from Anthea Taigel of the University of East Anglia (undertaken in 1990), John Arnott, local Tree Warden (undertaken in 1998) and Ray Jones (local ornithologist).

On-site survey

2.1.2 The park has been divided into a series of compartments based upon Anthea Taigel's 1990 survey. This is shown in Figure 1.

2.1.3 A Phase I survey of the site was carried out on 19th March 2003 using the standard methodology (JNCC, 1993). The survey visit was also used to identify features and species of ecological interest and to determine requirement for further survey work.

2.1.4 The Phase I ecological survey is reproduced in Figure 11 This made use of Taigel's survey as a starting point to assist in accurately locating specimen trees and areas of plantation.

3 Survey results

Desktop survey

3.1.1 There is no existing biological data for Catton Park. Catton Park has no wildlife designation. Fiddle Wood, which lies outside the park boundary to the west of Fifers Lane, is a County Wildlife Site (CWS). This woodland comprises deciduous plantation dominated by sycamore *Acer pseudoplatanus* and ash *Fraxinus excelsior*. Hornbeam *Carpinus betulus* and sweet chestnut *Castanea sativa* are occasional to locally frequent and small-leaved elm *Ulmus minor* is present both as coppice stools and regenerated growth.

3.1.2 Fiddle Wood appears to be of similar date and species composition to the woodland to the southeast of Catton Park. Repton's early designs are characterised by planting plans which maximise the apparent extent of landownership, and it is possible that Fiddle Wood was planted at, or close to the time of planting of the southeastern and southern woodland belts.

3.1.3 A list of birds either resident on, or regular visitors to the site was supplied by Mr Ray Jones. This information, which is reproduced in Table 4, has been compiled form casual observations made over the period 1995 to spring 2003. Catton Park is of value for a number of species of bird, particularly woodland and woodland edge species. A total of 37 species have been recorded from the site since 1995.

3.1.4 Species of note include song thrush and bullfinch, both RSPB Red List species. Records for the site include 18 species of Biodiversity Conservation Concern and 10 RSPB Amber List species (see also Table 4), although not all of the species recorded are resident on the site.

3.1.5 Mr Jones also reported the possible presence of great crested newt in the Victorian lily pond near the school. While the pond is by no means ideal for this species, a relict population of great crested newt could be present in the area.

Site survey

3.1.6 A variety of habitat categories were identified as a result of the Phase I survey: tall ruderal vegetation, semi-improved neutral grassland, poor semi-improved grassland, arable, bare ground, hedgerow, scattered scrub, scattered trees (both coniferous and deciduous), deciduous plantation woodland, coniferous plantation woodland, mixed plantation woodland, and introduced shrub. Of these, the most common in terms of area were the arable land and the plantation woodland.

3.1.7 Specific ecological observations are presented under each compartment heading. Recommendations for further study and initial suggestions for management within each compartment and across the park as a whole are set out in Section 4.

Compartment C1

3.1.8 This comprises the vegetation on the boundary to South Lodge and Taigel's notional areas O, P, Q and R.

3.1.9 The plantation woodland is dominated by mature trees including *Taxus baccata, Fagus sylvatica and Quercus robur*. Occasional associates include *Castanea sativa, Aesculus hippocastanum, Pinus sylvestris* and *Tilia sp*. There is some invasive growth of semi-mature *Acer pseudoplatanus*, especially where storm damage has occurred or clear-felling taken place. A number of the mature trees have the potential to support bat roosts. The shrub and ground layer are sparse, although the ground flora is better developed and more diverse along the southeastern boundary of the compartment, where light penetration is greater. The scrub layer is largely comprised of *Symphorocarpus albus, Ribes sp., Cotoneaster sp., Crataegus monogyna, Ilex aquifolium, Taxus baccata, Sambucus nigra* and *Prunus laurocerasus*. Areas of dense *Narcissus sp.* and *Colchicum sp.* planting are associated with footpaths through the woodland.

3.1.10 The woodland edge adjacent to the main drive is dominated by tall ruderal vegetation including *Urtica dioica, Rubus idaeus* and *Rubus fruticosus*. The woodland edge along the margin of the park forms a rather abrupt transition with the arable land, although the stands of *Rubus fruticosus* and *Rubus idaeus* check.

Compartment C2

3.1.11 This comprises Taigel's notional areas S and T.

3.1.12 The woodland in this compartment is rather more open in character than that of C1, with, in places, a well-developed shrub and field layer due to better light penetration through canopy. The woodland is dominated by *Taxus baccata, Fagus sylvatica* and *Quercus robur*, with associates including *Castanea sativa, Aesculus hippocastanum, Pinus sylvestris* and *Tilia sp*. There is a linear planting of *Aesculus hippocastanum* and *Castanea sativa* along the woodland margin.

3.1.13 The scrub layer comprises *Symphorocarpus albus, Ribes sp., Cotoneaster sp., Crataegus monogyna, Ilex aquifolium, Taxus baccata, Sambucus nigra* and *Prunus laurocerasus*, with *Ilex aquifolium* and *Prunus laurocerasus* locally prominent along the fenceline to the east.

3.1.14 The field layer is particularly diverse along the south-eastern boundary with Buttercup Meadow, with species present including *Ficaria ranunculoides, Urtica dioica, Fragaria vesca, Geranium robertianum, Glechoma hederacea, Arum maculatum, Geum urbanum, Silene dioica, Viola sp., Hyacinthoides non-scripta* and *Hedera helix* present in varying quantity. Areas of dense *Narcissus* sp. and *Colchicum* sp. planting are associated with the footpaths through the woodland.

Compartment C3

3.1.15 This comprises Taigel's notional areas U and W.

3.1.16 The plantation woodland is dominated by mature *Fagus sylvatica* with occasional *Quercus robur*. A combination of storm damage and presumed clear-felling have resulted in the creation of open areas within the woodland, which are dominated by *Rubus fruticosus* and *Epilobium angustifolium*.

3.1.17 The woodland edge is overgrown, with dense *Rubus fruticosus.*

Compartment C4

3.1.18 This comprises Taigel's notional area V.

3.1.19 This area of woodland is dominated by mature *Taxus baccata* with *Fagus sylvatica* and occasional *Pinus sylvestris* and *Tilia sp*. The shrub layer is dominated by *Taxus baccata* and *Ilex aquifolium* and consequently ground flora is sparse due to low light penetration.

3.1.20 The ecological value of this woodland is substantially compromised by unrestricted access by cars belonging to the adjoining properties. Vegetation is virtually restricted to mature trees with occasional *Ilex aquifolium* and *Taxus baccata* shrubs and little or no ground flora.

Compartment C5

3.1.21 This comprises Taigel's notional area X and in addition, vegetation east from this area to V.

3.1.22 The principal interest of this area lies in the short, and often species rich acid grassland sward on a south-facing bank along the northern site margin. Dense ruderal vegetation surrounds the pond, and is presumed to have developed on spoil. This vegetation is likely to be of importance for a number of invertebrate groups, and may also be used by reptiles, possibly including slow worm and common lizard.

3.1.23 The boundary hedgerows are described below.

Compartment C6

3.1.24 This comprises the pond in the north east corner of the park.

3.1.25 This pond, which is partially surrounded by scrub and young trees, including *Crataegus monogyna* and *Quercus robur*, is dry and overgrown. Much of the adjacent vegetation appears to be of low ecological value, although there is a stand of ruderal vegetation, presumed to have developed on pond spoil or dumped materials, which may be of importance for reptiles.

Compartment C7

3.1.26 This comprises boundary vegetation west of Compartment 6 as far as The Hall School.

3.1.27 The northern site boundary is hedged by a mixture of native and ornamental species, with a number of mature ornamental trees. The vegetation on the boundary with Catton Hall is mainly limited to brambles sprawling over a chain link fence, although a dense *Rosa rugosa* hedgerow was noted along the boundary of the Hall garden. The acid grassland vegetation along the northern site margin is contiguous with that of the Hall lawns.

3.1.28 The ground along the northern site boundary slopes slightly and where scrub and taller grass is present, is probably of some value for reptiles. Dumped garden waste along this boundary may encourage use of the site by slow worm, although this would have to be confirmed by survey.

Compartment C8

3.1.29 This comprises Taigel's notional area Z and vegetation north of this to the boundary with Catton Hall.

3.1.30 The area of woodland in the corner between Catton Hall and Hall School contains mature tree and shrub planting including mature *Prunus laurocerasus* and *Ilex aquifolium.* The woodland is dominated by *Quercus ilex*, with *Quercus robur* and *Taxus baccata* and there is little light penetration to the ground layer and hence little ground flora. To the southeast of the school is a small copse of plantation woodland dominated by *Quercus robur* and *Fagus sylvatica*, with *Betula pendula*. There is substantial secondary growth of *Acer pseudoplatanus*. The shrub layer includes *Ilex aquifolium*. The area between this copse and Catton Hall was probably open grassland, but in the absence of management has developed a cover of rank nitrophilous vegetation with *Rubus fruticosus* and immature secondary woodland growth.

Compartment C9

3.1.31 This comprises Taigel's notional areas Y and A.

3.1.32 This compartment comprises species-rich plantation woodland dominated by *Quercus robur* and *Quercus ilex*, with abundant secondary growth of *Acer pseudoplatanus*. Other canopy species include *Taxus baccata, Fagus sylvatica, Pinus sylvestris* and *Larix decidua*. Shrub component includes abundant *Symphorocarpus albus, Prunus lusitanica, Ilex aquifolium, Taxus baccata*. The ground layer is sparse, but includes *Hedera helix* and *Rubus fruticosus*. There is a dense growth of *Symphorocarpus albus*, presumed to be relict planting, along the woodland margin adjacent to the arable land.

Compartment C10

3.1.33 This comprises the pond south west of The Hall School.

3.1.34 The pond, which has been described as a former Victorian Lily Pond, is brick-lined and semi-dry, due to excessive silt and leaf-litter build up. It appears devoid of aquatic vegetation, and there is little marginal wetland plant cover, other than that associated with a small island in the centre. The pond is surrounded by dense shrubs, including *Symphorocarpus albus* and *Sambucus nigra*, and shrubs and trees are beginning to invade the pond margins.

3.1.35 The pond is of little apparent ecological value, but is much-frequented by frogs, and is also the site of a possible great crested newt sighting (Mr. R. Jones pers. comm.)

Compartment C11

3.1.36 This comprises Taigel's notional area B.

3.1.37 This is species-rich plantation woodland dominated by *Fagus sylvatica* with *Tilia sp.*, *Castanea sativa* and *Taxus baccata* locally prominent. Dense secondary growth of *Acer pseudoplatanus* where original planting lost through gales or clear felling. Other canopy species include *Aesculus hippocastanum, Quercus robur, Pinus sylvestris* and *Larix decidua*. The tree cover in this area is generally much more dense than that on the eastern side of the park, with consequently a less-well developed scrub and ground layer. The shrub component includes abundant and apparently invasive *Symphorocarpus albus*, mature *Ilex aquifolium, Taxus baccata, Crataegus sp.*, and locally *Buxus sempervirens*. Ground layer sparse, but includes *Hedera helix, Glechoma hederacea, Viola sp.* and extensive patches of *Rubus fruticosus.* Large quantities of fallen dead wood are likely to provide valuable invertebrate habitat.

3.1.38 Compartments C10 and C11 retain Repton's scalloped woodland edge, including a large stand of mature *Taxus baccata*, specimen conifers and a stand of *Larix decidua, Pinus sylvestris* and *Cedrus sp*. While these are of low ecological value in their own right, with little shrub or ground layer due to the dense shade, they nevertheless contribute to the provision of sheltered areas along the woodland margin which are potentially good for feeding bats.

Compartment C12

3.1.39 This comprises Taigel's notional areas D, E, F, G, H, I, J, K and L.

3.1.40 The vegetation in this compartment is similar to that of Compartment 11, although there is a greater proportion of evergreen species, notably *Taxus baccata* producing dense, dark woodland, with sparse ground and shrub layer. A mound alongside the open grassland is dominated by *Taxus baccata* and there are further stands of *Taxus* throughout the compartment: much of this growth is etiolated and leaning due to insufficient light. A steep south and southwest facing slope above road is also densely wooded with prominent *Taxus baccata*. Remnants of Victorian planting include sections of box hedge.

3.1.41 The edge of the parkland has little transitional shrub layer and the scalloped woodland edge is much less defined than that of Compartment 11.

Compartment C13

3.1.42 This comprises Taigel's notional areas M, N and the pit.

3.1.43 The mature plantation woodland is this area is dominated by *Taxus baccata, Castanea sativa, Larix decidua* and *Fagus sylvatica*. There is some secondary invasion by *Acer pseudoplatanus*. The shrub layer includes *Ilex aquifolium, Corylus avellana* and *Symphorocarpus albus*. *Urtica dioica* is prominent in ground layer. The woodland margins support *Rubus fruticosus* and a variety of shrubs, most of which have

originated form the Victorian planting. The pit alongside Oak Lane is apparently heavily used by children, resulting in virtual elimination of any ground layer, and much of the shrub layer. The canopy is dominated by mature *Fagus sylvatica* with secondary growth of *Acer pseudoplatanus*.

Compartment C14

3.1.44 This comprises the open centre of the park.

3.1.45 Originally this area would have been grassland or pasture with mature trees however all but the southernmost portion is under arable cultivation. The area of grassland in the south appears to comprise species poor mesotrophic vegetation, dominated by rank grasses, including *Dactylis glomerata, Holcus lanatus* and *Arrhenatherum elatius* and tall forbs. This grassland is presumed to be fairly recent in origin. There is a narrow strip of more species rich vegetation, in places resembling acid grassland and presumed to have derived from the parkland grassland, alongside the main drive to the Hall, around the margins of the woodland, and along the edge of the arable land to the north of the site.

4 Hedgerows

Southern boundary along Oak Lane

4.1.1 The boundary edge along either side of South Lodge has a 2m trimmed hedge which is intermittent, with numerous gaps. The hedge, which is dominated by hawthorn *Crataegus monogyna* is partly overgrown with ivy.

Western boundary along St Faith's Road:

4.1.2 This boundary is marked by a 2m intermittent mixed deciduous hedge

Northern boundary along Church Street:

4.1.3 The boundary with Holiday House has a 2m high mixed hedge comprised of *Ilex aquifolium, Quercus ilex* and *Prunus laurocerasus* of moderate ecological value. There are short lengths of hedgerow bordering a number of the gardens further to the west. These are mostly composed of non-native species. The existing boundary to Catton Hall is marked by a *Rosa rugosa* hedge of low ecological value.

Eastern boundary along Spixworth Road

4.1.4 A 3m high, unmanaged deciduous hedgerow separates the park from Spixworth Road. This hedgerow, which is approximately 35m in length, is dominated by hawthorn *Crataegus monogyna* and is of probable moderate to high ecological value.

5 Initial assessment of ecological interest

5.1.1 Upon initial assessment, the ecological value of this site is quite high within a local context, given the urban setting. The significant features of interest at this site can be summarised as follows, but are detailed further below:

- Species rich/ancient hedgerows
- Mature plantation woodland and associated scrub
- Mature parkland trees
- Breeding birds
- Bats (as yet unconfirmed)
- Reptiles (as yet unconfirmed)

5.1.2 The plantation woodland is of ecological value within the urban context and provides habitat for birds associated with the woodland and woodland edge. A number of woodland and woodland edge species were noted exhibiting breeding behaviour during the initial survey visits. The mature woodland trees and many of the parkland trees offer opportunity for roosting bats, while the woodland margins and clearings are considered likely to be of importance for hunting bats. All 15 species of bat which are found in this country are protected under the 1981 Wildlife and Countryside Act, Schedule 5 of which prohibits any kind of deliberate injury or disturbance to the animal or its shelter and are listed on Schedule 4 of the 1994 Conservation Regulations.

5.1.3 Several of the hedgerows bordering the site are Biodiversity Priority Habitat (Ancient / Species-rich hedgerows), on the basis of antiquity. Ancient hedgerows, which tend to be those which support the greatest diversity of plants and animals, may be defined as those which were in existence before the Enclosure Acts, passed mainly between 1720 and 1840.

6 Further requirement for ecological survey

6.1.1 The following elements of survey work are proposed:

Phase III survey of woodland

6.1.2 A Phase III survey of the plantation woodland is recommended in order that those areas of greatest wildlife interest and management potential can be identified.

Hedgerow survey

6.1.3 All boundary hedgerows should be surveyed to provide further information on age, condition, species composition and ecological value. This work would be used to inform replanting and hedge maintenance works.

Breeding bird survey

6.1.4 A survey of the breeding bird interest of the site is proposed. This is necessary to identify those areas of the plantation woodland and lengths of hedgerow which are of particular value to breeding woodland and woodland edge birds and to identify any constraints to management of the plantation and parkland trees.

Bat survey

6.1.5 A survey to determine which species of bat use, or are resident on the site is proposed. It would also be advantageous to identify which habitat types and which parts of the site are of particular importance for feeding or as flyways.

6.1.6 The majority of the standard parkland trees, and a number of the mature woodland trees have the potential to support populations of roosting bats. Those trees which have suffered damage, creating splits and cracks, or which have rotten boughs are more likely to support bats than those which are in good condition. It is therefore essential that tree surgery is always preceded by a bat survey and that all arboricultural works are undertaken by contractors with experience of working with bats.

Amphibian survey

6.1.7 A relict population of great crested newt could be present in the area. The presence of great crested newt on the site could necessitate mitigation works being undertaken and would influence the design and maintenance of any waterbodies. It is proposed to

undertake a simple presence/absence survey in the first instance based upon torching, bottle trapping and egg-searches.

Reptile survey

6.1.8 The site is likely to support common species of reptile, including slow worm and common lizard. Since the presence of these species may constrain possible site restoration and management works, it is proposed to undertake a survey to establish the presence/absence of the various species of reptile, and their distribution.

Invertebrate survey

6.1.9 A survey of the invertebrate interest of the plantation woodland and parkland trees is proposed. This is necessary to identify those areas which are of particular value to invertebrates. It is suggested that the survey work focuses on one or two 'indicator' groups, for example, butterflies and moths, beetles and flies

7 Initial management recommendations

7.1.1 The following types of management intervention are proposed:

Plantation woodland

7.1.2 Large areas of the woodland are dominated by self-sown secondary *Acer pseudoplatanus* growth. This effectively prevents colonisation by species of greater ecological value and restricts development of the ground and scrub layers. It is proposed that all *Acer pseudoplatanus* should be felled in stages, excepting those specimens which formed part of the Reptonian or Victorian planting plans.

7.1.3 In general, the structure of the plantation woodland is poor in ecological terms. Management work should aim to increase the structural diversity by increasing the amount of underplanting (this may require increased light penetration to ground level, which could be achieved by removal of much of the non-native self-sown *Acer pseudoplatanus*, retaining that which forms part of the formal planting). Ideally, species used would be native ones, however given the history of the site, there are good arguments for using species which formed part of the landscape planting, avoiding excessive use of non-native invasive species such as *Symphorocarpus albus* and *Prunus lusitanica/laurocerasus*.

7.1.4 The diversity of the ground layer could be increased by allowing increased levels of light penetration to the woodland floor. Removal of self-sown *Acer pseudoplatanus* would be beneficial, and it is further proposed to create rides and glades within the woodland by selective tree clearance, again focussing on species of low ecological value and those which were not part of the formal planting. These rides may require annual mowing management in the long term to enhance species diversity and discourage rank vigorous growth.

7.1.5 Fencing the woodland to exclude dogs (and perhaps people) is recommended, particularly during the restoration/establishment phase in order to minimise disturbance and encourage the establishment of a field and ground layer.

7.1.6 Within the woodland, retain standing dead wood where possible to enhance habitat for invertebrates, woodpeckers and bats. Any existing dead trunks requiring surgery should be checked for bats prior to work commencing.

7.1.7 Fallen dead wood should be left in situ except where there this would compromise public safety.

7.1.8 Habitat piles of felled trunks and branches should be stacked in quiet locations within the woodland.

7.1.9 Install bat boxes in appropriate locations throughout plantation woodland.

Parkland

7.1.10 Convert arable land to open grassland, with a proportion of this area to be used for the creation of species-rich wildflower grassland.

7.1.11 Manage grassland by variety of different methods to enhance species and structural diversity. Suitable methods could include extensive grazing and annual mowing. Rides and footpaths through the grassland should be mown more frequently, and each should incorporate a regularly mown low-sward pathway and a strip of grassland on either side which is mown twice annually.

7.1.12 Consider restricting public access to areas of taller sward to allow ground nesting birds to utilise the site.

7.1.13 Make-up ground around bases of specimen trees where it has been lost through ploughing.

7.1.14 Ensure that any arboricultural work on mature parkland trees is preceded by bat survey.

Hedgerows

7.1.15 Thicken up hedgerow boundaries and plant new lengths of hedgerow with appropriate native species to increase habitat linkage. Maximise height and width of hedgerows to maximise ecological value.

8 Conclusions

8.1.1 Of the habitats found at Catton Park, the most significant in terms of ecological value are the mixed plantation woodland, especially where the understorey and or ground layer are well developed, and the hedgerows which border the site. The hedgerows are a Biodiversity Priority Habitat (Species rich and/or ancient hedgerows).

8.1.2 The known botanical interest and floristic diversity of the site is low, however further survey effort should reveal additional species. In terms of faunal interest, species of note include song thrush and bullfinch, both RSPB Red List species and the site is undoubtedly of value for nesting birds. Given the existence of mature trees, many of which are in poor condition, it is likely that the site also contains a number of bat roosts, and the woodland and woodland edge are possibly of value for hunting bats.

8.1.3 The following types of survey work are required in addition to that already undertaken:

- Phase III survey of woodland
- Hedgerow survey
- Breeding bird survey
- Bat survey
- Amphibian survey
- Reptile survey
- Invertebrate survey

8.1.4 Initial management recommendations are as follows:

- Removal of self-sown *Acer pseudoplatanus*

- Increasing the shrub layer component of the woodland, both in terms of area occupied and species diversity.
- Increasing the diversity of the ground layer of the woodland
- Reducing levels of disturbance in the woodland and grassland
- Retaining standing dead wood wherever possible
- Create habitat piles of felled/fallen wood in plantation
- Excluding dogs, and in some cases, people, from sensitive habitats.
- Precede all tree surgery with checks for bat habitation
- Install bat boxes in appropriate locations throughout plantation woodland.
- Convert arable land to grassland, including species-rich wildflower grassland.
- Maximise variety of mowing/grazing regimes in grassland
- Maintain network of rides and footpaths through the grassland
- Create and maintain rides and glades within the woodland
- Make-up ground around bases of specimen trees in parkland
- Thicken up hedgerow boundaries and plant new lengths of hedgerow

Tables

Table 1: List of Target Notes relating to trees

Target Note	Veteran Tree Survey number	Survey Compartment	Species	Requirement for arboriculturalist
1	-	C1	oak	probably unnecessary
2	-	C1	oak	probably unnecessary
3	9	C14	horse chestnut	some dead limbs - requires attention
4	10	C14	horse chestnut	probably unnecessary
5	21	C14	wellingtonia	probably unnecessary
6	22	C3	wellingtonia	some dead limbs - requires attention
7	13	C14	oak	large dead limbs - requires attention
8	15	C14	oak	- requires attention
9	19	C14	wellingtonia	probably unnecessary
10	38	C7	wellingtonia	probably unnecessary
11	16	C14	oak	some dead limbs - requires attention
12	17	C7	oak	further assessment required
13	11	C14	oak	probably unnecessary
14	12	C14	oak(+ flagpole)	some dead limbs - requires attention
15	18	C14	oak	severe storm damage - requires immediate attention
16	-	C14	sycamore	dead - remove
17	-	C14	sycamore	manage out
18	42	C14	wellingtonia	dead top - requires attention
19	35	C14	oak	some dead limbs - requires attention
20	36	C14	oak	large dead limbs - requires urgent attention
21	8	C14	oak	some dead limbs - requires attention
22	7	C14	oak	some dead limbs - requires attention
23	6	C14	oak	some dead limbs - requires attention
24	5	C14	oak	severe storm damage - requires immediate attention
25	4	C14	oak	some dead limbs - requires attention
26	3	C14	oak	dead - remove
27	2	C14	oak	probably unnecessary
28	-	C14	oak (young)	probably unnecessary
29			oak (young)	some lower limb damage - requires attention
30	-	C14	oak	further assessment required
31	43	C14	oak	further assessment required
32	31	C14	beech	probably unnecessary
33	32	C14	oak	probably unnecessary
34	33	C14	oak	metal fence in trunk - requires advice
35	30	C14	oak	some dead limbs - requires attention
36	29	C13	sweet chestnut	some dead limbs - requires attention
37	-	C14	oak (young)	probably unnecessary
38	-	C14	oak (young)	probably unnecessary
39	-	C14	oak (young)	probably unnecessary
40	-	C14	oak (young)	probably unnecessary
41	-	C14	oak (young)	probably unnecessary
42	-	C14	beech (young)	probably unnecessary

Table 2: List of Target Notes relating to other features

Target Note	Survey Compartment	Notes
N1	C1	Foundations of small building with secondary growth of sycamore.
N2	C1	Tall ruderal vegetation including *Urtica dioica, Rubus idaeus* and *Rubus fruticosus*.
N3	C3	Combination of storm damage and presumed clear-felling have resulting in creation of open areas within woodland, which are dominated by *Rubus fruticosus* and *Epilobium angustifolium*.
N4	C3	Area of plantation woodland dominated by mature *Fagus sylvatica* with occasional *Quercus robur.*
N5	C2	Linear planting of *Aesculus hippocastanum* and *Castanea sativa* along woodland margin.
N6	C4	Area of woodland dominated by mature *Taxus baccata* with *Fagus sylvatica* and occasional *Pinus sylvestris* and *Tilia sp.* Shrub layer dominated by *Taxus baccata* and *Ilex aquifolium* and consequently ground flora is sparse.
N7	C1 C2	Species-rich ground flora developed on south-east facing bank above meadow. Canopy and scrub layer as N8.
N8	C1 C2	Mature plantation woodland dominated by *Taxus baccata, Fagus sylvatica* and *Quercus robur*. Occasional associates include *Castanea sativa, Aesculus hippocastanum, Pinus sylvestris, Tilia* sp. Secondary, invasive growth of semi-mature *Acer pseudoplatanus*, especially where storm damage has occurred or clear-felling taken place. Sparse scrub layer comprised of *Symphorocarpus albus, Ribes* sp., *Cotoneaster* sp., *Crataegus monogyna, Ilex aquifolium, Taxus baccata, Sambucus nigra, Prunus laurocerasus*. Most of this growth is secondary, rather than part of the parkland planting. Scrub component of woodland becomes more prominent further towards the north. Field layer diverse but generally extremely sparse: *Ficaria ranunculoides, Urtica dioica, Fragaria vesca, Geranium robertianum, Glechoma hederacea, Arum maculatum, Geum urbanum, Silene dioica, Viola* sp., *Hyacinthoides non-scripta, Hedera helix* all present in varying quantity. Areas of dense *Narcissus* sp. and *Colchicum* sp. planting associated with footpaths through woodland.
N9	C1 C2	*Ilex aquifolium* and *Prunus laurocerasus* locally prominent along fenceline.
N10	C4	Woodland in vicinity of track is used for car parking and consequently vegetation is virtually restricted to mature trees with occasional *Ilex aquifolium* and *Taxus baccata* shrubs. Little or no ground flora.
N11	C6	Dense ruderal/nitrophilous vegetation on presumed dump of pond spoil.
N12	C6	Dry pond.
N13	C5	South-facing grassy bank. Likely to be of importance for reptiles.
N14	C6	Dense hedgerow comprised of *Ilex aquifolium, Quercus ilex, Prunus laurocerasus.*
N15	C6	Dense stand of *Hyacinthoides non-scripta.*
N16	C7	*Fagus sylvatica* hedgerow along garden boundary.
N17	C7	*Rosa rugosa* hedgerow alongside boundary of Hall garden.
N18	C7	Short grassy turf contiguous with that of Hall garden.
N19	C8	Nitrophilous vegetation, *Rubus fruticosus* and immature secondary woodland growth.
N20	C14	Rough mesotrophic grassland alongside track. Probably quite recent in origin and likely to have developed on former arable land.
N21	C14	Relict parkland grassland around base of mature parkland trees. *Sambucus nigra* scrub typically found in association with these trees.

N22	C10	Shallow brick-lined Victorian lily pond. Heavily shaded, silted and devoid of aquatic vegetation, but much-frequented by frogs. Site of possible great crested newt sighting (Mr. R. Jones pers. comm.)
N23	C8	*Quercus ilex* dominated woodland, with *Quercus robur* and *Taxus baccata*. Very dense, dark woodland, with little ground flora. Shrub layer dominated by *Prunus laurocerasus* and *Ilex aquifolium*.
N24	C9	Dense growth of *Symphorocarpus albus*, presumed to be relict planting, along woodland margin.
N25	C11	Stand of *Larix decidua, Pinus sylvestris* and *Cedrus* sp.
N26	C9	Species-rich plantation woodland. Dominated by *Quercus robur* and *Quercus ilex,* with abundant secondary growth of *Acer pseudoplatanus*. Other canopy species include *Taxus baccata, Fagus sylvatica, Pinus sylvestris* and *Larix decidua.* Shrub component includes abundant *Symphorocarpus albus, Prunus lusitanica, Ilex aquifolium, Taxus baccata*. Ground layer sparse, but includes *Hedera helix* and *Rubus fruticosus*.
N27	C8	Plantation woodland dominated by *Quercus robur,* with occasional *Fagus sylvatica* and *Betula pendula*. Secondary growth of *Acer pseudoplatanus*. Shrub layer includes *Ilex aquifolium*.
N28	C14	Informal pathway
N29	C14	Track
N30	C14	Relict parkland grassland alongside track
N31	C11	Species-rich plantation woodland. Dominated by *Fagus sylvatica* with *Tilia* sp., *Castanea sativa* and *Taxus baccata* locally prominent. Dense secondary growth of *Acer pseudoplatanus* where original planting lost through gales or clear felling. Other canopy species include *Aesculus hippocastanum, Quercus robur, Pinus sylvestris* and *Larix decidua.* Shrub component includes abundant *Symphorocarpus albus, Ilex aquifolium, Taxus baccata, Crataegus* sp., and locally *Buxus sempervirens*. Ground layer sparse, but includes *Hedera helix, Glechoma hederacea, Viola* sp. and *Rubus fruticosus*.
N32	C11 C12	Large stand of mature *Taxus baccata*. Little shrub or ground layer due to dense shade.
N33	C11	Specimen conifers.
N34	C12	Low mound of unknown origin. Dense, discrete planting of *Taxus baccata*. Little shrub or ground layer due to dense shade.
N35	C12	Steep south and south-west facing slope above road. Densely wooded with prominent *Taxus baccata*.
N36	C13	Gravel/sand/chalk pit. Mature *Fagus sylvatica* with secondary growth of *Acer pseudoplatanus.* Little ground layer due to heavy trampling and presumed erosion of steep slopes.
N37	C13	Mixed plantation woodland with *Taxus baccata, Castanea sativa, Larix decidua* and *Fagus sylvatica*. Secondary invasion by *Acer pseudoplatanus*. Shrub layer includes *Ilex aquifolium* and *Symphorocarpus albus. Urtica dioica* prominent in ground layer.

See also Figure 11 Phase 1 Ecological Survey

Table 3: List of plants

English name	Scientific name	Biodiversity Status
Raspberry	***Rubus idaeus***	**-**
Current sp.	***Ribes* sp.**	**-**
Cotoneaster	***Cotoneaster* sp.**	**-**
Canadian Willowherb	***Epilobium angustifolium***	**-**
Nettle	***Urtica dioica***	**-**
Briar rose	***Rosa rugosa***	**-**
Wood avens	***Geum urbanum***	**-**
Hawthorn	***Crataegus monogyna***	**-**
Cedar	***Cedrus* sp.**	**-**
Red campion	***Silene dioica***	**-**
Moss	***Mnium hornum***	**-**
Ivy	***Hedera helix***	**-**
Moss	***Eurynchium praelongum***	**-**
Daffodil sp	***Narcissus* sp.**	**-**
Cuckoopint	***Arum maculatum***	**-**
Evergreen oak	***Quercus ilex***	**-**
Laurel	***Prunus lusitanica***	**-**
Wild strawberry	***Fragaria vesca***	**-**
Box	***Buxus sempervirens***	**-**
Ground ivy	***Glechoma hederacea***	**-**
Violet sp.	***Viola* sp.**	**-**
Bramble	***Rubus fruticosus***	**-**
Scot's pine	***Pinus sylvestris***	**-**
Yew	***Taxus baccata***	**-**
Horse chestnut	***Aesculus hippocastanum***	**-**
Laurel	***Prunus laurocerasus***	**-**

Sessile oak	***Quercus robur***	**-**
Snowberry	***Symphorocarpus albus***	**-**
Sweet chestnut	***Castanea sativa***	**-**
Larch	***Larix decidua***	**-**
Beech	***Fagus sylvatica***	**-**
Sycamore	***Acer pseudoplatanus***	**-**
Holly	***Ilex aquifolium***	**-**
Lime	***Tilia* sp.**	**-**

Data based upon opportunistic records, Spring 2003.Table 4: List of birds (courtesy of Mr. R. Jones)

English name	Scientific name	WCA1i	Priority Species	Conservation Concern	Red List	Amber List	Notes
Sparrowhawk	*Accipiter nisus*			✓			Resident – a recent breeding arrival reported nesting in the Park in 1999. Nest located in woodland margin in 2000 and reported again in 2001. Two young birds found in 2002
Long-Tailed Tit	*Aegithalos caudatus*						Resident.
Swift	*Apus apus*						Flock of 500 overhead July 2000. c650 south in three days August 2001.
Siskin	*Cardualis spinus*						Rare visitor. One/two in 1998.
Goldfinch	*Carduelis carduelis*			✓		✓	
Greenfinch	*Carduelis chloris*			✓			Resident breeder.
Treecreeper	*Certhia familiaris*						Over-wintering single 2000-01.
Stock Dove	*Columba oenas*			✓		✓	Resident breeding. Several pairs in Catton Park. Feeding flock of 36-40 in Park January 2001.

Wood Pigeon	*Columba palumbus*			✓			Resident breeding bird, and present in varying numbers throughout the year on arable land.
Carrion Crow	*Corvus corone*						4-5 in park January 2001. Bred in gardens to east of park 2001.
Jackdaw	*Corvus monedula*						Breed in park oak trees on north part of park (approx six pairs).
House Martin	*Delichon urbica*			✓			Summer visitor.
Great Spotted Woodpecker	*Dendrocopus major*						Resident breeder, one nest located 2001 and probably at least two pairs regularly present.
Robin	*Erithacus rubecula*						Common resident.
Kestrel	*Falco tinnunculus*			✓		✓	Probable breeding bird in last few years. Present on a regular basis. Birds coming to roost in mid 2002 with 5 or 6 present on one evening.
Chaffinch	*Fringilla coelebs*						Resident breeder.
Brambling	*Fringilla montifringilla*	✓				✓	Occasional winter visitor.
Jay	*Garrulus glandarius*						Resident. One or two pairs in park.
Swallow	*Hirundo rustica*			✓		✓	Summer visitor.

Red-Backed Shrike	*Lanius collurio*	✓	✓		✓		Former breeding bird, last recorded in 1968. Location in Catton Park not recorded but possibly in the park.
Common Gull	*Larus canus*					✓	
Lesser Black-backed Gull	*Larus fuscus*					✓	24 in January 2003
Black-headed Gull	*Larus ridibundus*						
Pied Wagtail	*Motacilla alba*			✓			Party of 10-14 in Park early 2001.
Coal Tit	*Parus ater*			✓			Resident.
Blue Tit	*Parus caeruleus*			✓			Resident breeder
Great Tit	*Parus major*			✓			Resident breeder
House Sparrow	*Passer domesticus*						A few straying from adjoining gardens on north side.
Pheasant	*Phasianus colchicus*						Occasional visitor.
Chiffchaff	*Phylloscopus collybita*			✓			Summer visitor. Breeding in Catton Park (c 8 singing males 1998.) Occasional winter sightings.
Magpie	*Pica pica*						
Green Woodpecker	*Picus viridis*			✓		✓	Resident, probable nesting of one pair in Catton Park.

Dunnock	*Prunella modularis*			✓		✓	Resident breeder.
Bullfinch	*Pyrrhula pyrrhula*		✓		✓		Rare visitor. A pair in April 1998.
Goldcrest	*Regulus regulus*			✓			Resident in small numbers, but unobtrusive.
Woodcock	*Scolopax rusticola*			✓		✓	Occasional winter visitor usually in severe weather, although report by a local dog walker March/April 2001.
Nuthatch	*Sitta europaea*			✓			Resident breeding bird in Catton Park and adjoining large gardens. Last recorded nest in Park in 1997 – since then often feeding in Park but appears to nest in gardens adjacent to Woodman PH. Occasional sightings in north-west corner but no nest located.
Collared dove	*Streptopelia decaocto*						Resident breeding in small numbers.
Tawny Owl	*Strix aluco*						Heard in part November 1999 where pair seen in daylight May 2000. Heard? August 2002 and reported by church September 2002.
Starling	*Sturnus vulgaris*					✓	Resident. Breeds in small numbers on old isolated trees.
Blackcap	*Sylvia atricapilla*						Summer visitor and occasional winter presence. Breeding in

							Catton Park (6-8 singing males 1998) and residential areas.
Wren	*Troglodytes troglodytes*						Common resident (12 singing males in May 2001.)
Redwing	*Turdus iliacus*	✓				✓	Passage migrant and occasional winter visitor.
Blackbird	*Turdus merula*					✓	Common resident breeder.
Song Thrush	*Turdus philomelos*		✓		✓		Resident in declining numbers. Two/three pairs.
Fieldfare	*Turdus pilaris*	✓				✓	Passage migrant and occasional winter visitor in small numbers – 10 in Park April 2001.
Mistle Thrush	*Turdus viscivorus*						Resident. Probable 2 pairs in park 1998.
Lapwing	*Vanellus vanellus*			✓		✓	Small flocks passing overhead in spring or autumn.

Data based upon opportunistic sightings since 1995.

Table 5: List of mammals (courtesy of Mr. R. Jones)

English name	Scientific name	Biodiversity Status	Notes
Fox	***Vulpes vulpes***	**None**	**Possibly resident on site**
Grey squirrel	***Sciurus caroliensis***	**None**	**Resident on site**
Muntjac	***Muntiacus reevsii***	**None**	
Mole	***Talpa europaea***	**None**	**uncommon**

Data based upon opportunistic sightings since 1995.