

Great crested newt and breeding
bird surveys
Preliminary phase development site,
Northstowe, Cambridge

June 2011

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Issue / revision	Prepared by	Becci Smith
Reference	Signature	
This document is issued for	Date	23/06/11
<input type="checkbox"/> Information	Checked by	L Carrington
<input type="checkbox"/> Approval	Signature	
<input type="checkbox"/> Comment	Date	23/06/11
<input type="checkbox"/> Submission	Authorised by	J Picksley
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SUMMARY

1. Terence O'Rourke Ltd were appointed by Gallagher to conduct great crested newt and breeding bird surveys on land at Station road, Longstanton, Cambridge (Grid reference: TL 403 673) in respect of an outline planning application for the preliminary phase of construction of Northstowe new town.
2. A total of thirty four ponds were identified either within the site or within a five hundred metre boundary of the site.
3. Habitat Suitability Index (HSI) assessment was conducted on a total of thirty one ponds. It was not possible to conduct the HSI on three of the ponds either on account of them being completely dry at the time of the survey or access not being possible. One pond was assessed as providing excellent habitat for great crested newt, five as good, twelve as average, ten as below average and three as poor. Ditches within the site were found to be dry on the 20th April 2011 which makes them unsuitable breeding grounds for great crested newt.
4. Two targeted great crested newt surveys were conducted on all ponds within the site boundary and four ponds on third party land where access was possible. A further two surveys were conducted on five ponds that were categorised as being good or excellent great crested newt habitat according to the HSI assessment. No great crested newts were recorded in any of the ponds surveyed and therefore no further action has been recommended.
5. A total of forty species were recorded with thirteen of these confirmed as breeding species on the Cambridge golf course land. An additional nine species were considered likely to be breeding on site and four as possible. Four of the thirteen species confirmed as breeding on the site are listed as Birds of Conservation Concern and three of these, song thrush, linnet and starling are UK BAP species.
5. A series of mitigation measures have consequently been presented within this report. These include retaining hedgerows where possible, replacing sections of hedgerow that require removal with native species and the appropriate management of hedgerows.

1.0 INTRODUCTION

Terence O'Rourke Ltd were appointed by Gallagher to conduct great crested newt and breeding bird surveys on land at Station road, Longstanton, Cambridge, CB4 3DS (Grid reference: TL 403 673) in respect of an outline planning application for the preliminary phase of construction of a new town. A plan showing the site boundary has been provided as Appendix I to this report.

The great crested newt and breeding bird surveys were undertaken in conjunction with a suite of other surveys including extended phase 1 habitat, badger, bat, reptiles, aquatic invertebrates, butterfly, otter and water vole surveys. These surveys are ongoing and the results will be presented in a series of separate reports.

Section 2 of the report provides some background information on legislative requirements and relevant policy. Section 3 details the methodologies adopted for the various ecological surveys that were conducted and Section 4 provides an account of the survey results. Section 5 provides information on the relevance of the results to the proposed development and makes recommendations for measures to mitigate and compensate for the effects on a particular species.

2.0 RELEVANT POLICY AND LEGISLATION

2.1 Legislation

2.1.1 Great crested newt

The great crested newt is afforded protection under Schedule 2 of The Conservation of Habitats and Species Regulations 2010¹: and under Schedule 5 of the Wildlife and Countryside Act 1981 (and amendments). This legislation makes it an offence to deliberately capture, kill or injure individuals of these species listed on Schedule 2 and to damage or destroy their breeding site or place of shelter. It is also illegal to deliberately disturb these species in such a way as to be likely to significantly affect: (i) the ability of any significant group of the species to survive, breed or rear or nurture their young; or (ii) the local distribution or abundance of the species. This legal protection means that where development has the potential to impact on great crested newts the results of a protected species survey must be submitted with a planning application.²

2.1.2 Nesting birds

All nesting birds are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This Act makes it an offence to intentionally kill, injure or take any wild bird or to take, damage or destroy their eggs and nests (whilst in use or being built). In addition, it is an offence to disturb any nesting bird listed on Schedule 1 or their young.

2.2 Policy

The following policy is of relevance:

- **Planning Policy Statement (PPS) 9: Biodiversity and geological conservation:** This sets out the Government's vision for biodiversity in England with the broad aim that planning, construction, development and regeneration should maintain and enhance, restore or add to biodiversity and geological conservation interests. PPS9 includes sections on legally protected species and sites. It also contains a section on

¹ The Conservation of Habitats and Species Regulations 2010 consolidates the numerous amendments that were made to the Conservation (Natural Habitats, &c.) Regulations 1994. Of particular relevance are amendments made in August 2007 and January 2009 which increased the threshold of illegal levels of disturbance to European Protected Species (EPS). An offence is only committed if the deliberate disturbance would result in significant impacts to the EPS population. However, it should be noted that activities that cause low levels of disturbance to these species continue to constitute an offence under Section 9 of the Wildlife and Countryside Act (see below)

² DEFRA Circular 01/2005: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System.

species listed in the UK Biodiversity Action Plan and requires planning authorities to protect these species from the adverse effects of development.

- **Biodiversity Action Plans (BAPs):** BAPs set out policy for protecting and restoring priority species and habitats as part of the UK's response as signatories to the Convention on Biological Diversity. BAPs operate at both a national and local level with priority species and habitats identified at a national level and a series of local BAPs that identify ecological features of particular importance to a particular area of the country. The requirement to consider and contribute towards BAP targets was strengthened through the Countryside and Rights of Way Act 2000 and policy in PPS9. Habitat and Species Action Plans that are likely to be of relevance include:
 - Song thrush (UK BAP)
 - Skylark (UK BAP)
 - Linnet (UK BAP)
 - Starling (UK BAP)
 - Great crested newt (UK BAP).

3.0 METHODOLOGY

3.1 Desk study

The National Biodiversity Network website and the Multi-Agency Geographical Information for the Countryside (MAGIC) website were also used to provide any information they may hold on statutorily and non-statutorily designated sites within a five kilometre radius of the proposed development and previous records of great crested newt and notable bird species within a ten kilometre radius.

3.2 Field study

3.2.1 Great crested newt

Suitable breeding waterbodies such as ponds and ditches are essential to support populations of great crested newt although they actually only spend a relatively short period of the year in the ponds during the spring for breeding. The remainder of the year is spent in suitable 'foraging' habitat such as tall grassland and woodland. During the winter the great crested newt hibernates, often amongst the roots of trees and scrub or in places such as piles of rubble, amongst foundations of buildings or under fallen trees and logs.

Great crested newts are known to forage up to at least five hundred metres from their breeding grounds and suitable habitats that fall within five hundred metres must be considered even in situations where the breeding pond itself will not be affected. Thirty four ponds are present within a five hundred metre radius. A series of ditches are, however, present and these were assessed for their suitability as breeding habitat for great crested newt during the survey.

Habitat Suitability Index

In accordance with the latest Natural England guidelines³, a Habitat Suitability Index (HSI) was derived for the ditches within the site. The HSI for the great crested newt, which was originally developed by Oldham *et al.* (2000), is a numerical index between zero and one. Waterbodies are then categorised in terms of their suitability to support great crested newt according to the following scale:

³

Template for Method Statement to support application for licence under Regulation 44(2)(e) in respect of great crested newts *Triturus cristatus*. (Natural England) Form WML-A14-2 (Version 28 January 2008)

- <0.5 Poor
- 0.5 – 0.59 Below average
- 0.6 – 0.69 Average
- 0.7 – 0.79 Good
- >0.8 Excellent

The HSI incorporates ten indices ranging from water quality to fish stocks, all of which are factors believed to affect great crested newts. However, it should be noted that whilst the HSI provides a measure of habitat suitability for great crested newts, it is not a substitute for amphibian survey.

Presence / absence surveys

The survey was undertaken by Peter Duffy, Oliver Reeves and Michael Deane who are listed as an accredited agent on Lindsay Carrington's Natural England licence, number 20102960. The survey was conducted in accordance with the Great Crested Newt Mitigation Guidelines (English Nature 2001) which recommends that a minimum of three survey techniques are employed, ideally bottle trapping, torch survey and egg search. A description of the survey techniques adopted is provided below:

- **Bottle trapping:** Bottle traps were set approximately 1 metre apart around the margins of the pond in the early evening and were collected the following morning. The contents of the traps were recorded.
- **Torch counts:** The water bodies were visited approximately 1 hour after dark and a torch shone into the water. All species of fauna observed were recorded.
- **Egg search:** Newts lay their eggs in marginal or pond-side vegetation. Where present such vegetation was thoroughly searched.

Access was only possible to thirty one of the thirty four ponds and all of these were surveyed on two occasions between mid-April and mid-May. A further two survey visits were conducted on a total of five ponds that were assessed as providing good or excellent habitat for great crested newt according to the HSI results.

3.2.2 Breeding birds

The standard Common Bird Census methodology as developed by Marchant (1983) for the British Trust for Ornithology (BTO) was adopted. A set route was followed on three occasions during April, May and June 2011. Visits to the site were made by Michael Deane on the 15th April, 12nd May and 3rd June 2011. Any birds encountered were identified either visually or from their vocalizations. A note of species and their behaviour was made on each visit and mapped on a plan which allows breeding territories to be determined.

4.0 RESULTS

4.1 Desk study

Data obtained from the internet resources MAGIC and NBN are presented below.

Statutory and non-statutory sites

Table 1 below lists internationally designated sites, statutorily designated sites and non-statutory sites within a five kilometre radius of Cambridge golf course.

Table 1: Designated sites within a five kilometre radius of Northstowe, Cambridge

Site name	Conservation status	Distance from site	Size (Ha)	Habitat description
Mare Fen	Local Nature Reserve	4km	16.35	Permanent pasture in the floodplain of the Great River Ouse. Mosaic of grassland types and reed fringed ditches and ponds.

The site at Cambridge is located some distance from this Local Nature Reserve and therefore no impact is anticipated as a result of the proposed development.

Protected and notable species records

Table 2 below lists protected and notable species within a ten kilometre radius of the site in the last twenty years highlighted by the NBN.

Table 2: Protected and notable species within a ten kilometre radius of Northstowe, Cambridge

Common Name	Scientific name	Status	Location
<i>Amphibians</i>			
Great crested newt	<i>Triturus cristatus</i>	Schedule 2, Habs Regs ⁴ , Schedule 5, WCA ⁵ , UK BAP ⁶	Historical records dating from the 1980's within 5km and 500m of site but none more recently. One record from the Cambridge golf course and one from the disused airfield from a suite of surveys carried out in 2006.

⁴ Habs Regs: Statutorily protected under the Conservation of Habitats and Species Regulations 2010

⁵ WCA: Statutorily protected by the Wildlife and Countryside Act (1981) (as amended)

⁶ UK BAP: Protected species within the UK Biodiversity Action Plan

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Common Name	Scientific name	Status	Location
Birds			
Skylark	<i>Alauda arvensis</i>	Red list ⁷	1 record at TL370737
Tree pipit	<i>Anthus trivialis</i>	Red list, UKBAP	2 records 4km from site
Lesser redpoll	<i>Carduelis cabaret</i>	Red list, UKBAP	67 records within 10km of site nearest record located 2km away.
Hawfinch	<i>Coccothraustes coccothraustes</i>	Red list, UKBAP	4 records recorded at TL46L
Lesser spotted woodpecker	<i>Dendrocopos minor</i>	Red list, UKBAP	28 records within 10km of site the nearest record located 2km away.
Corn bunting	<i>Emberiza calandra</i>	Red list, UKBAP	100 records within 10km of site nearest record <100m away.
Yellow hammer	<i>Emberiza citrinella</i>	Red list, UKBAP	1 record at TL423680 & 1 record at TL323601
Reed bunting	<i>Emberiza schoeniclus</i>	Amber list, UKBAP	10 records within 3-6km of site, 1 record located on Ouse fen.
Herring gull	<i>Larus argentatus</i>	Red list, UKBAP	2 records located 4km and 7km north of site
Grasshopper warbler	<i>Locustella naevia</i>	Red list, UKBAP	28 records within 10km of site nearest record located 2km away.
Woodlark	<i>Lullula arborea</i>	Amber list, UKBAP	1 record at TL37K
Yellow wagtail	<i>Motacilla flava</i>	Red list, UKBAP	>70 records located within 10 km of site nearest record <100m away
Spotted flycatcher	<i>Muscicapa striata</i>	Red list, UKBAP	>50 records within 10km of site nearest record located < 100m away
Curlew	<i>Numenius arquata</i>	Amber list, UKBAP	>20 records within 10km of site located 4-9km away
House sparrow	<i>Passer domesticus</i>	Red list, UKBAP	>450 records within 10km of site, the nearest record located >100m away.
Tree sparrow	<i>Passer montanus</i>	Red list, UKBAP	20 records located 2-9km from site.
Grey partridge	<i>Perdix perdix</i>	Red list, UKBAP	42 records within 10km of site nearest record located 2km away
Willow tit	<i>Poecile montanus</i>	Red list, UKBAP	4 records at TL36G
Marsh tit	<i>Poecile paulustris</i>	Red list, UKBAP	62 records within 10km of site, 2 recorded at TL46N & TL36G.

⁷ Red, Amber list: List of Birds of Conservation Concern

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Common Name	Scientific name	Status	Location
Dunnock	<i>Prunella modularis</i>	Amber list, UKBAP	>250 records within 10km of site nearest record <100m away
Bullfinch	<i>Pyrrhula pyrrhula</i>	Amber list, UKBAP	18 records located 3-9km from site
Turtle dove	<i>Streptopelia turtur</i>	Red list, UKBAP	>100 records within 10km of site nearest record located <100m away
Starling	<i>Sturnus vulgaris</i>	Red list, UKBAP	>700 records within 10km of site nearest record <100m away.
Song thrush	<i>Turdus philomelos</i>	Red list, UKBAP	>100 records within 10km of site nearest record >100m away
Lapwing	<i>Vanellus vanellus</i>	Red list, UKBAP	45 records within 10km of site, nearest record 2km away.

The records of protected and notable species listed above, in the vicinity of the site increase the likelihood of them being present where suitable habitat is identified in the field survey.

4.2 Field study

4.2.1 Great Crested Newt

The approximate locations of the thirty four ponds assessed are illustrated on the plan provided as Appendix I to this report.

Habitat suitability index

The full results of the HSI that was conducted on the thirty three ponds are provided as Appendix II to this report while a summary of the results is provided in Table 3 below. One pond was assessed as providing excellent habitat for great crested newt, five as good, twelve as average, ten as below average and three as poor.

Table 3: Summary of HSI assessment

Category	Pond numbers	Total
Excellent	34	1
Good	11, 12, 28, 29, 32	5
Average	1, 4, 13, 14, 15, 16, 18, 21, 23, 25, 27, 30	12
Below average	3, 5, 7, 8, 9, 10, 19, 22, 24, 26	10
Poor	2, 6, 17	3
Dry on 20/4/11	20, 33	2
No access	31	1

Presence / absence survey

Twenty nine ponds were surveyed on two occasions between mid-April and mid-May. It was not possible to survey ponds 27, 31 and 32 as they are located on third party land and it was not possible to gain access. In addition it was not possible to survey ponds 20 and 33 as they were dry at the time of the surveys. The full results are provided as Appendix III to this report. To summarise, no great crested newts were recorded during these surveys although small numbers of smooth newt were recorded in four of the ponds. The maximum counts of smooth newts are provided in Table 4.

Table 4: Summary of two presence / absence surveys on twenty nine ponds

HSI category	Ponds in which smooth newts have been recorded (max. count)	Total
Good	11 (5♂ and 2♀)	1
Average	1 (2♂) 18 (1♂ and 1♀) 23 (1♂ and 1♀) 26 (1♀)	4
Below average	8 (3♂) 9 (1♀) 26 (1♂)	3
Poor	19 (1♀)	1

A further two survey visits were conducted on ponds that were categorised as being excellent or good according to the HSI assessment. The full results of these are provided in Appendix III. In summary, smooth newt was recorded in two of the ponds, 28 and 29. A maximum count of three juvenile smooth newts was recorded in pond 29 whilst one juvenile smooth newt was recorded during the torch count on pond 28. These results are indicative that these ponds support small populations of smooth newt.

No further recommendations have been made.

4.2.2 Breeding birds

Table 6 below lists the species recorded and their breeding status whilst the distribution of confirmed breeding species territories is shown on the plan provided as Appendix IV. This shows the estimated position of individuals or groups of birds confirmed as breeding on the site. Birds were considered as confirmed breeding species if they were recorded singing, defending nest sites or in the case of non-singing species (e.g. woodpeckers) when a nest was located. A total of forty species were recorded with thirteen of these confirmed as breeding species. An additional nine species were considered likely to be breeding on site and four as possible. All other species recorded were considered to be non-breeding, most likely to be using the site for feeding, roosting or commuting across the area. It is worth noting that breeding kingfisher which has previously recorded nesting on the banks of the lake on the golf course was not recorded during the survey. Potential nest holes were

identified although these were not active. It is likely that these are the sites of kingfisher nests in the past and it can be concluded that kingfisher was not breeding on the site during 2011.

Table 6: Summary of the breeding bird survey results on golf course

Common name	Scientific name	Breeding status			Non-breeding
		Confirmed	Likely	Possible	
Mallard	<i>Anas platyrhynchos</i>		•		
Goldfinch	<i>Carduelis carduelis</i>	1			
Greenfinch	<i>Carduelis chloris</i>	1			
Stock dove	<i>Columba oenas</i>				•
Wood pigeon	<i>Columba palumbus</i>			•	
Carrion crow	<i>Corvus corone corone</i>	2			
Jackdaw	<i>Corvus monedula</i>		•		
Rook	<i>Corvus frugilegus</i>	1			
Skylark	<i>Alauda arvensis</i>			•	
Moorhen	<i>Emberiza citronella</i>	1			
Robin	<i>Erithacus rubecula</i>		•		
Greater black-backed gull	<i>Larus marinus</i>				•
Chaffinch	<i>Fringilla coelebs</i>		•		
Jay	<i>Garrulus glandarius</i>	1			
Swallow	<i>Hirundo rustica</i>		•		
Meadow pipit	<i>Anthus pratensis</i>				•
Black-headed gull	<i>Larus ridibundus</i>				•
Blue tit	<i>Parus caeruleus</i>	1			
Great tit	<i>Parus major</i>		•		
Linnet	<i>Carduelis cannabina</i>	2			
Pheasant	<i>Phasianus colchicus</i>			•	
Chiffchaff	<i>Phylloscopus collybita</i>		•		
Willow warbler	<i>Phylloscopus trochilus</i>	1			
Collared dove	<i>Streptopelia decaocto</i>				•
Green woodpecker	<i>Picus viridis</i>			•	
Dunnock	<i>Prunella modularis</i>				•
Cuckoo	<i>Cuculus canorus</i>				•
Starling	<i>Sturnus vulgaris</i>	1			
Blackcap	<i>Sylvia atricapilla</i>	1			
Whitethroat	<i>Sylvia communis</i>		•		
Wren	<i>Troglodytes troglodytes</i>				•
Blackbird	<i>Turdus merula</i>	2			
Song thrush	<i>Turdus philomelos</i>	2			
Coot	<i>Fulica atra</i>				•
Lesser whitethroat	<i>Sylvia curruca</i>				•
Barn owl	<i>Tyto alba</i>				•
Swift	<i>Apus apus</i>				•
Pied wagtail	<i>Motacilla alba</i>				•
Tawny owl	<i>Strix aluco</i>				•
Canada goose	<i>Branta canadensis</i>				•

Four of the forty species confirmed as breeding on the site are listed as Birds of Conservation Concern (BoCC) (Eaton *et al.* 2009) and one of these is a UK

Biodiversity Action Plan (UK BAP) species. Table 7 below provides details of the conservation status of birds recorded on the site.

Table 7: Conservation status of confirmed breeding bird species

Species	Number of territories	UK BAP priority species	Birds of conservation concern
Willow warbler	1		Amber
Starling	1	UK BAP	Red
Linnet	2	UK BAP	Red
Song thrush	2	UK BAP	Red

The results of the breeding bird survey has identified the site as providing nesting habitat for a wide range of species including a number of birds of conservation concern and three BAP species. Mitigation to ensure that opportunities for these species are provided within the design of the master plan to be submitted in relation to the outline planning application has therefore been made in Section 5.

5.0 CONCLUSIONS & RECOMMENDATIONS

A number of ecological constraints or potential constraints associated with proposals to develop the site have been identified during this survey. Mitigation strategies for these have been presented below along with recommendations to enhance the developed site for wildlife through management and habitat creation.

5.1 Summary of findings

A total of forty species were recorded with thirteen of these confirmed as breeding species on the Cambridge golf course land. An additional nine species were considered likely to be breeding on site and four as possible. Four of the thirteen species confirmed as breeding on the site are listed as Birds of Conservation Concern (BoCC) (Eaton *et al.* 2009) and three of these, song thrush, linnet and starling are UK BAP species. A series of mitigation measures have therefore been proposed.

5.2 Implications of survey findings and recommendations for further action

The results of the breeding bird survey has identified the site as providing nesting habitat for a wide range of species including a number of birds of conservation concern and three BAP species. The hedgerows around the boundaries of the site were found to be of greatest importance as breeding habitat for birds and therefore the mitigation below concentrates on the retention and enhancement of this habitat. In addition, although kingfisher was not found to be present during the 2011 surveys as a measure of best practice opportunities for kingfisher will be incorporated within the design of the proposed development.

- Hedgerows will be retained within the design of the development where possible.
- Where it is necessary to remove hedgerows they will be replaced on at least a like for like basis. Planted hedgerows will be composed of at least five native species of shrub including hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), hazel (*Corylus avellana*), field maple (*Acer campestre*), English elm (*Ulmus procera*), wych elm (*Ulmus glabra*), pedunculate oak (*Quercus robur*), ash (*Fraxinus excelsior*) and goat willow (*Salix caprea*).
- All scrub clearance will be undertaken outside of bird nesting season which is considered to run between March and September.
- Retained hedgerows will be managed in a manner that is sympathetic to nesting birds. Management will aim to maintain a varied structure. They will be cut on a two year rotation, whereby sections of hedge are cut in different years to provide varied age and structure within the site. Hedges will be cut using a flail between mid-December and early-March to avoid the bird nesting season and allow any berry crop to be used by wintering birds. Hedges should be cut in an “A” shape or a “topped A” shape in order to create tall bushy hedges with maximum wildlife potential.

- Additional nesting opportunities will be created through erecting a series of bird boxes on trees along the hedgerow. Suitable models of bird box include Schwegler 1B and 2M.

6.0 REFERENCES

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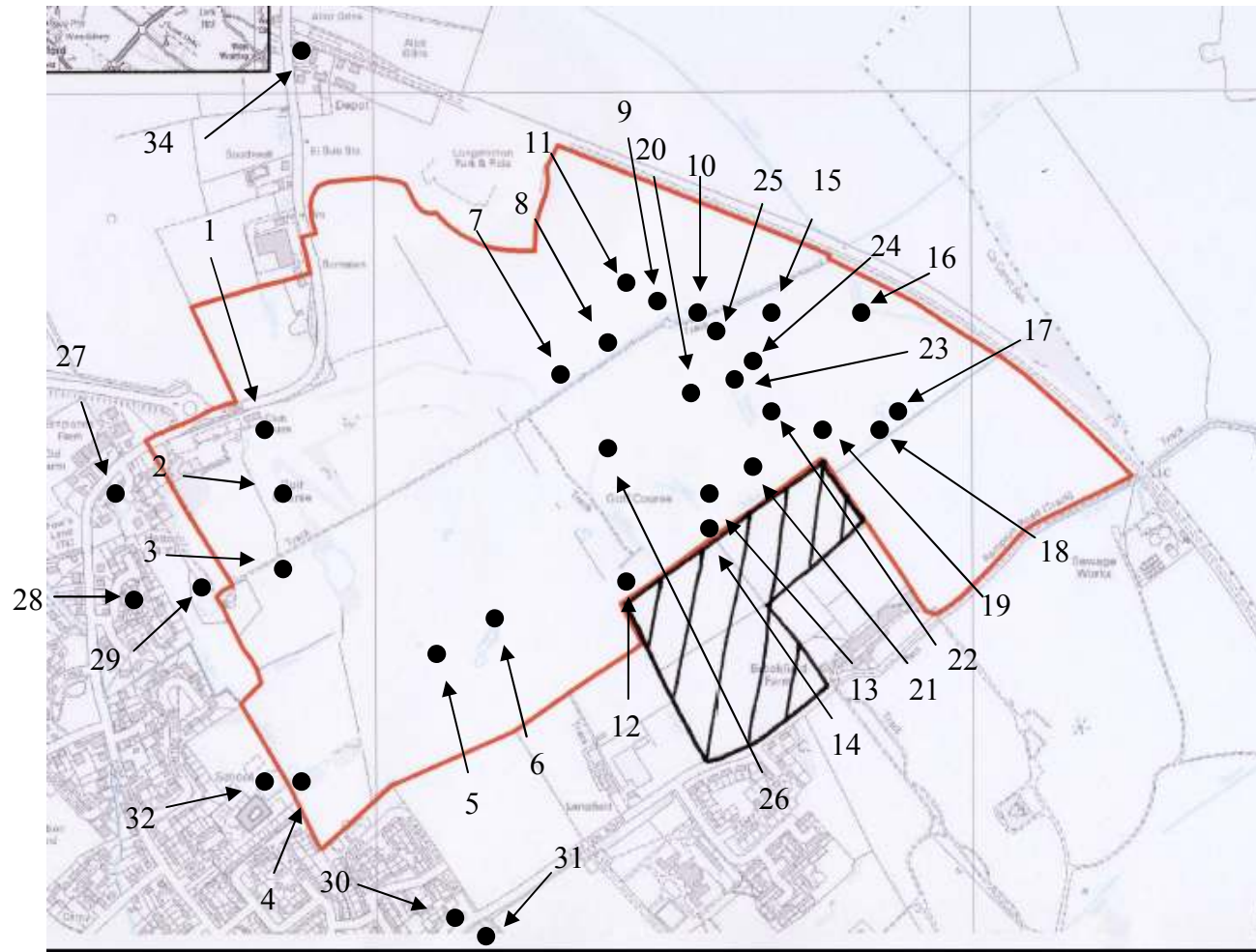
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APPENDIX I: Site boundary and locations of ponds



APPENDIX II: HSI results

Our pond Numbers	1	2	3	4	5	6	7	8	9	10
Comment	Golf course	Golf course	Golf course	Golf course	Golf course	Golf course	Golf course	Golf course	Golf course	Golf course
Location	1	1	1	1	1	1	1	1	1	1
Pond area	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.025	0.025	0.025
Pond drying	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.5	0.9	1.0
Water quality	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Shade	1	1	1	1	1	1	1	1	1	2m
Fowl	0.67	0.67	0.67	0.67	0.67	0.01	0.67	1	0.67	0.67
Fish	0.67	0.01	0.01	0.67	0.33	1	0.33	1	0.67	0.67
Ponds	1	1	1	1	1	1	1	1	1	1
Terrestrial habitat	1	0.33	1	1	0.67	0.67	0.67	0.33	0.33	0.67
Macrophytes	0.1	0.85	0.9	0.9	0.55	0.95	0.7	0.9	0.65	1
Total HSI	0.62	0.40	0.54	0.63	0.58	0.45	0.56	0.55	0.51	0.59

Preliminary phase development site, Northstowe, Cambridge
Great crested newt and breeding bird report

Our pond Numbers	11	12	13	14	15	16	17	18	19	20	21	22
Comment	Golf course	Golf course	Golf course	Golf course	Golf course	Golf course	Golf course	Golf course. Almost dry	Golf course. Almost dry	Golf course. Dry	Golf course	Golf course. Almost dry.
Location	1	1	1	1	1	1	1	1	1		1	1
Pond area	0.1	0.1	0.05	0.05	0.1	0.1	0.15	0.05	0.05		0.15	0.05
Pond drying	0.9	0.9	1.0	1.0	0.5	0.9	0.9	1.0	0.5		0.5	0.5
Water quality	0.67	0.67	0.67	0.67	0.67	0.67	0.33	0.67	0.67		0.67	0.67
Shade	1	1	1	1	1	1	1	1	1		1	1
Fowl	1	1	1	1	1	0.67	1	1	1		0.67	1
Fish	0.67	1	1	1	1	0.67	0.01	1	1		0.67	1
Ponds	1	1	1	1	1	1	1	1	1		1	1
Terrestrial habitat	0.67	0.67	0.67	0.67	0.33	0.67	0.33	0.33	0.33		0.67	0.33
Macrophytes	1	1	0.9	0.9	0.65	0.9	0.3	0.85	0.85		1	0.85
Total HSI	0.70	0.73	0.68	0.68	0.60	0.67	0.40	0.66	0.59		0.66	0.59

Preliminary phase development site, Northstowe, Cambridge
Great crested newt and breeding bird report

Our pond Numbers	23	24	25	26	27	28	29	30	31	32	33	34
Comment	Golf course	Golf course	Golf course. Almost dry	Golf course	Hatton House	Lady Walk Road	Brewerys Close	200m from the high street	Cambridge fish preservation and angling society. No access	Saxon pond in school grounds. No access	Dry	Busway
Location	1	1	1	1	1	1	1	1		1		1
Pond area	0.15	0.15	0.1	0.1	0.9	1	0.8	1		0.8		1
Pond drying	1.0	1.0	0.5	0.1	0.67	0.9	0.9	0.1		0.9		0.9
Water quality	0.67	0.33	0.67	0.67	0.67	0.67	0.67	0.67		0.67		0.67
Shade	1	1	1	1	1	1	1	1		1		1
Fowl	1	1	1	1	0.67	0.67	0.67	0.67		0.67		0.67
Fish	1	1	1	1	0.33	0.33	0.33	1		0.67		1
Ponds	1	1	1	1	1	1	1	1		1		1
Terrestrial habitat	0.33	0.33	0.33	0.67	0.67	0.67	1	1		0.67		0.67
Macrophytes	0.95	0.3	1	1	0.3	0.5	0.4	0.4		0.5		0.8
Total HSI	0.66	0.59	0.64	0.58	0.64	0.73	0.71	0.65		0.77		0.86

APPENDIX III: Great crested newt survey results

Visit one:

Pond Number	1	2	3	4	5	6	7	8	9	10	11	12	13
Date	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	4/5/11	4/5/11
PH	8	8.1	8.4	8.3	8.6	8.4	8.1	8.5	8.8	9.1	9	10.6	8.7
Water Temp	15.3	16.3	17	12.3	12.9	8.3	13.9	11	13.4	17	15.1	19.3	15.6
Eve air temp	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	13	13
Night low air temp	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	8.1	8.1
Weather	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Sunny, broken cloud	Sunny, broken cloud
Fish	None	None	None	None	None	None	None	None	None	Lots of small fish.	None	None	None
Newts	2 M Smooth	None	None	None	None	None	None	3 M Smooth	1 F Smooth	None	2 F Smooth 5 M Smooth	None	None
Egg Search	None	None	None	None	None	None	None	None	None	None	None	None	None
Torch	None	None	None	None	None	None	None	None	None	None	None	None	None

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Pond Number	14	15	16	17	18	19	21	22	23	24	25	26	28	29	30	34
Date	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	20/4/11	4/5/11	4/5/11	4/5/11	4/5/11	11/05/11	11/05/11	11/05/11	20/4/11
PH	8.5	8.0	8.7	8.4	8.1	8.5	8.4	8.0	8.4	8.1	8.6	8.6	9.4	8.5	9.2	8.0
Water Temp	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	17.8	16.5	19.1	19.1
Eve air temp	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	13	13	13	13	16.1	16.1	16.1	16.1
Night low air temp	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	8.1	8.1	8.1	8.1	11.2	11.2	11.2	11.2
Weather	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny	Sunny	Sunny	Sunny
Fish	Few small fish seen.	None	Yes, small fish.	Big fish, coy carp seen.	None	None	Small fish seen.	None	Small fish seen.	None	Small fish seen.	None	0	Yes, few small	yes	0
Newts	None	0	None	None	1 M Smooth 1 F Smooth	1 F Smooth	None	0	1 F Smooth 1 M Smooth	None	None	1 F Smooth	0	0	0	0
Egg Search	None	0	None	None	None	None	None	0	None	None	None	None	0	0	0	0
Torch	None	0	None	None	None	None	None	0	None	None	None	1 Smooth newt seen.	0	0	0	0

Preliminary phase development site, Northstowe, Cambridge
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Visit two

Pond Number	1	2	3	4	5	6	7	8	9	10	11	12	13
Date	4/5/11	4/5/11	4/5/11	4/5/11	4/5/11	4/5/11	4/5/11	4/5/11	4/5/11	5/5/11	4/5/11	5/5/11	5/5/11
PH	8	8.1	8.4	8.3	8.5	8.4	8.5	8.5	8.8	9.1	9.1	8.1	8.7
Water Temp	14.8	14.8	14.8	14.8	14.8	13.9	12.3	11.1	13.6	16.1	15.3	16.1	16.1
Eve air temp	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	13	12.3	13	13
Night low air temp	7	7	7	7	7	7	7	7	7	8.1	7	8.1	8.1
Weather	broken cloud	broken cloud	broken cloud	broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud
Fish	None	None	None	None	None	None	None	None	Yes, small fish	Lots of small fish.	None	none	None
Newts	2 M Smooth	None	None	None	None	None	None	1 M Smooth	1 F Smooth	None	4 F Smooth 1 M Smooth		None
Egg Search	None	None	None	None	None	None	None	None	None	None	None	none	None
Torch	None	None	None	None	None	None	None	None	None	None	None	none	None

Preliminary phase development site, Northstowe, Cambridge
Great crested newt and breeding bird report

Pond Number	14	15 DRY	16	17	18	19	21	22 DRY	23	24	25	26	28	29	30	34
Date	4/5/11		4/5/11	4/5/11	4/5/11	4/5/11	4/5/11		5/5/11	5/5/11	5/5/11	5/5/11	12/05/11	12/05/11	12/05/11	12/05/11
PH	8.5		8.7	8.4	8.1	8.5	8.4		8.4	8.1	8.7	8.5	9.7	8.4	9.4	8.0
Water Temp	17.2		15.8	15.3	16.0	15.0	16.2		15.3	15.3	17.2	15.3	17.9	15.8	18.9	18.9
Eve air temp	12.3		12.3	12.3	12.3	12.3	12.3		13	13	13	13	19.9	19.9	19.9	19.9
Night low air temp	7		7	7	7	7	7		8.1	8.1	8.1	8.1	9.9	9.9	9.9	9.9
Weather	broken cloud		broken cloud	broken cloud	broken cloud	broken cloud	broken cloud		Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny	Sunny	Sunny	Sunny
Fish	Few small fish seen.		Yes, small fish.	Big fish, koi carp seen.	None	None	Small fish seen.		Small fish seen.	None	Small fish	none	0	0	Yes	Yes
Newts	None		None	None	None	None	None		None	None		1 F Smooth	0	0	0	0
Egg Search	None		None	None	None	None	None		None	None	None	None	0	0	0	0
Torch	None		None	None	None	None	None		None	None	None	None	0	0	0	0

Preliminary phase development site, Northstowe, Cambridge
Great crested newt and breeding bird report

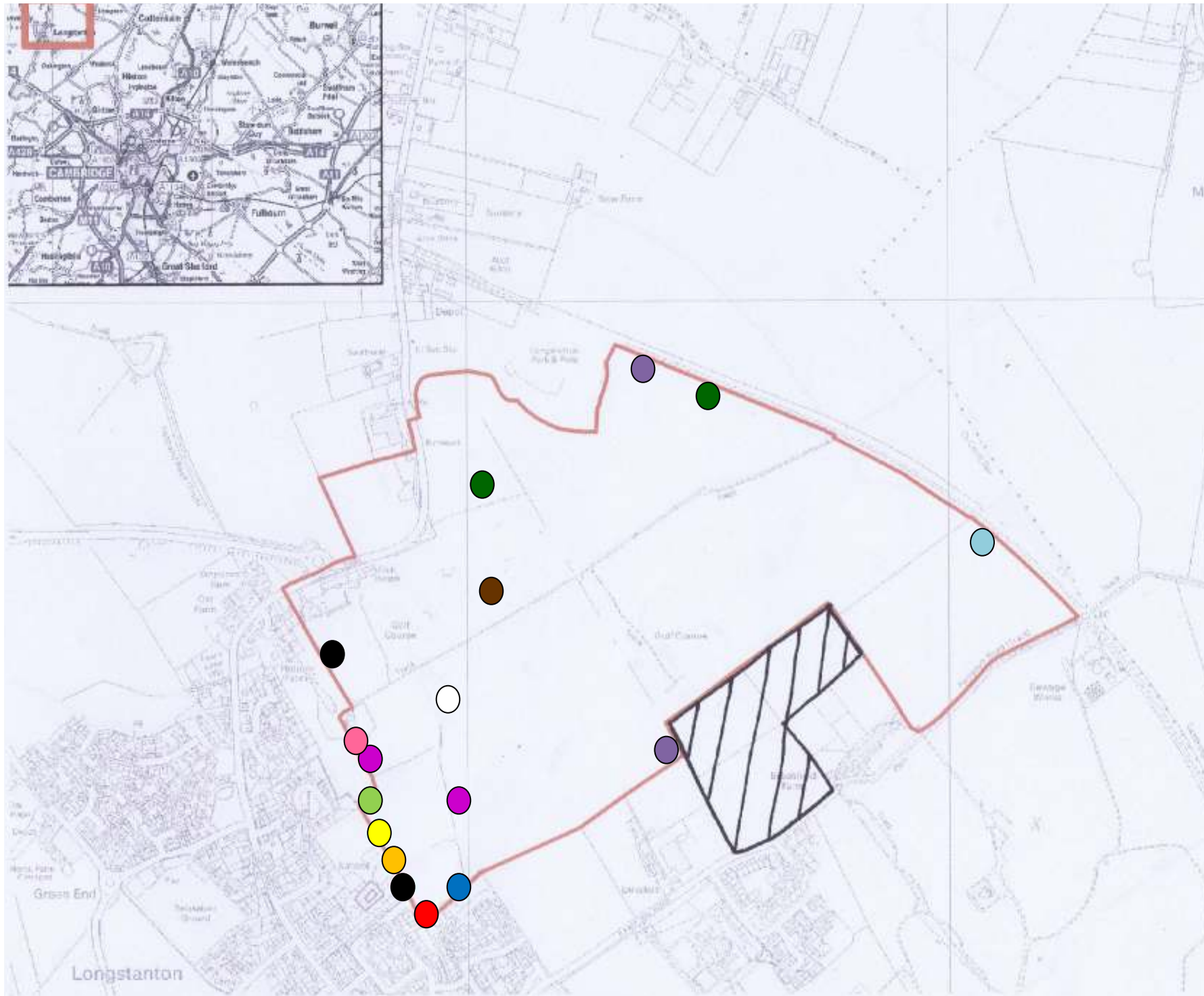
Visit three

Pond Number	11	12	28	29	30	34
DATE	01/06/11	01/06/11	01/06/11	01/06/11	01/06/11	01/06/11
PH	8.2	8.3	10.2	8.7	9.6	9.0
POND TEMP	15.6	15.5	18	17.5	19.3	16.5
AIR TEMP	18	18	18	18	18	18
NIGHT LOW	11.6	11.6	11.6	11.6	11.6	11.6
WEATHER	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud	Sunny, broken cloud
FISH	0	0	yes	0	yes	0
NEWTS	0	0	0	1 f (juvenile smooth)	0	0
EGG SEARCH	0	0	0	0	0	0
TORCH	0	0	1 smooth	0	0	0

Visit four

Pond number	11	12	28	29	30	34
DATE	02/06/2011	02/06/2011	02/06/2011	02/06/2011	02/06/2011	02/06/11
PH	8.6	8.4	10.5	8.7	9.7	9.0
POND TEMP	19.8	20.6	23.6	19.9	24.4	16.5
AIR TEMP	25.2	25.2	25.2	25.2	25.2	25.2
NIGHT LOW	16	16	16	16	16	16
WEATHER	Hot, sunny	Hot, sunny	Hot, sunny	Hot, sunny	Hot, sunny	Hot, sunny
FISH	0	0	Yes	Yes	Yes	0
NEWTS	0	0	0	3 f (juvenile smooth's)	0	0
EGG SEARCH	0	0	0	0	0	0
TORCH	0	0	0	0	0	0

APPENDIX IV: Breeding bird survey results



● Greenfinch	● Jay
● Blue tit	● Starling
● Black cap	● Linnet
● Goldfinch	● Rook
● Blackbird	○ Moorhen
● Willow warbler	● Song thrush
● Carrion crow	

