



# The Sizewell C Project

## 6.4 Volume 3 Northern Park and Ride Chapter 7 Terrestrial Ecology and Ornithology Appendix 7A Ecological Baseline and Method Statements

---

Revision: 1.0  
Applicable Regulation: Regulation 5(2)(a)  
PINS Reference Number: EN010012

---

May 2020

Planning Act 2008  
Infrastructure Planning (Applications: Prescribed  
Forms and Procedure) Regulations 2009



VOLUME 3, CHAPTER 7,  
APPENDIX 7A – ECOLOGICAL BASELINE AND  
METHOD STATEMENTS

Documents included within this Appendix are as follows:

**ANNEX 7A.1 - FIGURES** (provided separately)

**ANNEX 7A.2 - DESK STUDY**

**ANNEX 7A.3 - SECONDARY DATA**

- ANNEX 7A.3 - BAT SURVEY REPORT 2012
- ANNEX 7A.3 - PHASE 1 HABITAT SURVEY 2011
- ANNEX 7A.3 - GREAT CRESTED NEWT SURVEY 2012

**ANNEX 7A.4 - PRIMARY DATA**

**ANNEX 7A.5 - DRAFT GREAT CRESTED NEWT LICENCE**

**ANNEX 7A.6 - NON-LICENSABLE METHOD STATEMENTS:**

- ANNEX 7A.6A - BATS
- ANNEX 7A.6B - REPTILES

**NOTE:**

Please note that the red line boundary used in figures within this document may have since been amended, and therefore does not reflect the boundaries in respect of which development consent has been sought in this application. However, the amendment to the red line boundary does not have any impact on the findings set out in this document and all other information remains correct.



---

## VOLUME 3, CHAPTER 7, APPENDIX 7A: ECOLOGICAL BASELINE

## Contents

Executive Summary.....	1
1 Ecological Baseline.....	3
1.1 Introduction.....	3
1.2 Legislative framework.....	5
1.3 Scope of the baseline.....	8
1.4 Desk-study/baseline data.....	12
1.5 Baseline conditions – ecological features and their importance.....	33
References.....	61

## Tables

Table 1.1: Specific Zol, study area and survey areas for ecological features.....	10
Table 1.2: Statutory sites located within 5km of the site.....	14
Table 1.3: Non-statutory designated site within 2km of the site.....	15
Table 1.4: 2011 HSI scores for ponds at the site (Ref 1.15).....	21
Table 1.5: Desk-study records for notable bird species and their status within 2km....	23
Table 1.6: Species of conservation concern recorded during the breeding bird surveys.....	25
Table 1.7: Species of conservation concern recorded during the wintering bird surveys.....	26
Table 1.8: Number of passes and relative bat activity recorded during transect surveys in 2011.....	28
Table 1.9: Relative activity levels recorded during static detector surveys in 2011.....	28
Table 1.10: Summary of bat tree assessment results.....	30
Table 1.11: Summary of bats seen emerging from or entering Little Nursery Wood during activity surveys in 2015.....	31
Table 1.12: Criteria for assessment of ecological importance.*.....	34
Table 1.13 Criteria for assessing the importance of the bat species within the Zol of the proposed development. Note that Zol differs between species.....	46
Table 1.14 Summary of geographical importance boundaries.....	47
Table 1.15 Summary of the elements considered in determining the geographical context (Ref 1.4) of each species’ importance.*.....	48
Table 1.16 Determination of IEFs to be taken forward for detailed assessment.....	56

## Figures

- Figure 7.1: Location of Statutory Designated Sites within 5km of the Northern Park and Ride at Darsham
- Figure 7.2: Location of Non-Statutory Designated Sites within 2km of the Northern Park and Ride at Darsham
- Figure 7.3: Phase 1 Habitat of the Northern Park and Ride at Darsham
- Figure 7.4: Northern Park and Ride at Darsham Great Crested Newt Surveys
- Figure 7.5: Red List and NERC Species Recorded at Northern Park and Ride at Darsham during Breeding Bird Surveys in April-June 2015
- Figure 7.6: Schedule 1 Species Recorded at Northern Park and Ride at Darsham During Winter Bird Surveys in November-January 2015
- Figure 7.7: Red List and NERC Species Recorded at Northern Park and Ride at Darsham During Winter Bird Surveys from November 2014 to March 2015
- Figure 7.8: Northern Park and Ride at Darsham Bat Tree Assessment Results 2015
- Figure 7.9: Northern Park and Ride at Darsham Bat Surveyor Positions and SM2 Locations

## Appendices

- Annex 7A.1 Figures
- Annex 7A.2 Desk-study
- Annex 7A.3 Secondary Data
- Annex 7A.4 Primary Data
- Annex 7A.5 Draft GCN Licence Application
- Annex 7A.6 Non-licensable Method Statements

## Executive Summary

Baseline ecological conditions were assessed within habitat-, species- or species assemblage specific Zones of Influence (Zol) of the northern park and ride at Darsham (hereafter referred to as the 'proposed development) and wider study area. The ecological baseline has specifically considered designated sites, plants and habitats, invertebrates, amphibians, reptiles, birds, bats and other terrestrial mammals.

A Zol of 5km was assigned for statutory designated sites, and a Zol of 2km was assigned to non-statutory designated sites, plants and habitats, invertebrates, reptiles, amphibians, birds and terrestrial mammals, which is considered to be conservative. Species-specific Zols were assigned to bat species, ranging from 10km (barbastelle (*Barbastellus barbastellus*)) to 2km (common pipistrelle (*Pipistrellus pipistrellus*)), based on the species' Core Sustainment Zones (CSZs) as defined by the Bat Conservation Trust (Ref 1.1).

Desk-study data from the Suffolk Biodiversity Information Service was obtained, within the relevant Zol, for notable species of conservation interest. A range of species considered to be typical of the habitats present within these areas was identified. Surveys were undertaken between 2011 to 2019 and have been used to help assess the current baseline conditions, these included:

- extended Phase 1 habitat surveys in 2011, including an assessment of the proposed development for the four common reptile species;
- targeted amphibian surveys of ponds in 2011, 2015 and 2019;
- breeding and wintering bird surveys in 2014 and 2015;
- bat activity and static detector surveys in 2011 and 2015;
- bat tree assessments in 2015; and
- an updated walkover of the site in 2018 to validate that the baseline conditions haven't changed.

Seven statutory designated sites (one Ramsar site, one Special Protection Area (SPA), two Special Areas of Conservation (SACs) and three Sites of Special Scientific Interest (SSSIs)) were identified within a 5km radius of the site. Six non-statutory County Wildlife Sites (CWS) were identified within a 2km radius of the site.

The site predominately consists of arable farmland bordered by a semi-improved species-poor 2m wide grassland margin. The area is bordered by species-poor hedgerows, interspersed with stands of mature Oak (*Quercus robur*) and Ash (*Fraxinus excelsior*) on three sides, and by a block of broadleaved woodland (Little Nursery Wood) on the western boundary. A small number of ponds were identified within gardens adjacent to the eastern boundary, with a further small, dry pond located within Little

**NOT PROTECTIVELY MARKED**

Nursery Wood. Little Nursery Wood consists primarily of mature Ash with a dry ditch along the eastern boundary and a running stream through the centre.

The site supports an assemblage of plants, invertebrates and terrestrial mammals typical of the habitats present, while habitats within the site are largely suboptimal for reptiles. A small population of great crested newts (*Triturus cristatus*) was identified within a pond on the eastern boundary. The site also supported several Schedule 1 wintering bird species (Ref 1.2), and a number of species listed on the Birds of Conservation Concern (BoCC) Red and Amber lists (Ref 1.3) were recorded during both breeding and wintering bird surveys. The desk-study identified seven species of bat and surveys identified a large number of trees suitable for roosting bats within Little Nursery Wood, including a confirmed brown long-eared bat (*Plecotus auritus*) roost. Bat activity surveys recorded predominantly common and soprano pipistrelle (*Pipistrellus pygmaeus*) activity, with all other species exhibiting low levels of activity, although this did include the nationally rare barbastelle. The timing of activity suggested the potential use of Little Nursery Wood by roosting barbastelle, common and soprano pipistrelle, and noctule (*Nyctalus noctula*). No evidence of badgers (*Meles meles*) was recorded during the 2016 surveys, while other mammals recorded included one water shrew (*Neomys fodiens*) and two to three individuals of brown hare (*Lepus europaeus*).

To ensure a robust Ecological Impact Assessment (EclA) process, species and habitats of conservation interest and/or legally protected or designated species and habitats within the relevant Zol of the Site have been assessed to determine whether or not they would qualify as Important Ecological Features (IEFs) as defined in the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines on EclA (Ref 1.4). In addition, habitats and species have been assessed in accordance with the standard EIA methodology used elsewhere within the Environmental Statement (ES).

The CIEEM guidelines (Ref 1.4) define IEFs on the basis of nature conservation importance as well as legally protected and/or controlled species where there is the potential for a breach in the relevant legislation as a result of the proposed development. This baseline focuses on those IEFs that have been assessed as being sufficiently important (in nature conservation terms) to be a material consideration in the planning decision. Those IEFs that qualify purely on the basis of legislative considerations are discussed in less detail and are addressed separately in the EclA.

Based on these criteria, the following species/habitats within the Zol of the proposed development have been identified as IEFs:

- Great crested newts are an IEF at the local level under the CIEEM guidelines (Ref 1.4), and of low importance following the EIA-specific assessment methodology.
- The bat assemblage is an IEF at the county level under the CIEEM guidelines (Ref 1.4), and of medium importance following the EIA-specific assessment methodology.



## 1 Ecological Baseline

### 1.1 Introduction

#### a) Purpose of this appendix

1.1.1. SZC Co. is proposing to build a new nuclear power station at Sizewell, known as Sizewell C. The new nuclear power station would be located on the Suffolk coast, north-east of the town of Leiston. The proposed site of Sizewell C lies within an area of high landscape and ecological sensitivity.

1.1.2. As part of the development proposals, a number of sites where associated development are required to support construction and operation of Sizewell C. These associated development sites are not located within the Sizewell C main development site (hereafter referred to as the 'main development site'). Further detail is provided in **Volume 1, Chapter 2**. Each of the associated development sites have been subject to a suite of ecological survey work and Desk-study, and the ecological baseline has been developed for each associated development site. This appendix presents the ecological baseline for the northern park and ride at Darsham (referred to throughout this volume as the 'proposed development'). The northern park and ride site (herein referred to as the 'site') is located to the west of Darsham.

1.1.3. To carry out a robust Ecological Impact Assessment (EclA) of the Scheme for the Environmental Impact Assessment (EIA), it is first necessary to determine the ecological baseline, describing the existing conditions for the habitats and species that could be affected by the proposed development. Baseline conditions were determined through a combination of a Desk-study and field surveys undertaken between 2011 and 2019.

1.1.4. This appendix to the proposed development **Chapter 7** of **Volume 3** of the **ES** presents the methodologies employed in carrying out the desk-studies and detailed surveys (as well as the results of this work), and also evaluates the ecological features that could be affected. This then forms the ecological baseline for the impact assessment presented in **Chapter 7** of **Volume 3** of the **ES**.

#### b) Structure of this appendix

1.1.5. This appendix describes the ecological baseline conditions for designated habitats and sites, legally protected species and habitats, and species and habitats of conservation interest within the Zone of Influence (Zol) of the proposed development and wider study area. Zol, study area and survey area are all defined in **section 3**.

1.1.6. Within this appendix, the following terms are used to describe the biological data underpinning the description of baseline conditions:

- Desk study – this refers to any third-party biological data held, for example, by the Suffolk Biodiversity Information Service or Suffolk Wildlife Trust (SWT), and that has been requested for the site and surrounding area.
- Secondary data – where available, this refers to relevant survey work which has been carried out by other parties (undertaken between 2011 and 2012). Whilst these surveys comprised detailed surveys carried out specifically for the site, and is therefore valuable for helping assess the current baseline conditions, the results relate to areas that now differ from the site boundary presented in the Development Consent Order (DCO) application which has been amended as a result of design development and the consultation process, and/or may require updating; therefore, this information has been treated as targeted and detailed secondary data.
- Primary data – this refers to survey work carried out from 2012 onwards specifically targeted at informing the proposed development. This has built upon the secondary data and has been scoped with the consultees to ensure a robust and complete data set.

1.1.7. The remainder of this appendix is set out as follows.

- **section 2:** discusses the legislative framework of designated sites and legally protected and notable species and habitats;
- **section 3:** establishes the site boundary, Zol(s), study area and survey area for the proposed development;
- **section 4:** sets out the approach and methodology used for obtaining the desk-study information, secondary data and primary data used to inform the assessment, as well as the results of this data acquisition. The detail of the Desk-study information acquired is presented in **Annex 7A.2**, whilst the various other secondary data reports are presented in **Annex 7A.3**. Detailed results of any surveys carried out since 2012 are presented in **Annex 7A.4**; and
- **section 5** presents the collated baseline conditions for the relevant ecological receptors within the Zol. This section considers the nature conservation importance and legal protection for each ecological receptor and follows the Chartered Institute of Ecology and

Environmental Management (CIEEM) guidelines (Ref 1.4) to assess whether the ecological receptors considered can be categorised as Important Ecological Features (IEFs). Those IEFs which may be materially affected by the proposed development are taken forward for detailed assessment within the EclA. The value and sensitivity of the ecological features are also assessed in accordance with the wider EIA methodology used elsewhere within the ES.

1.1.8. Figures summarising the ecological baseline with regard to IEFs are presented in **Annex 7A.1**.

## 1.2 Legislative framework

### a) Introduction

1.2.1. This section provides a summary of the legislative and policy context regarding designated sites, legally protected and/or controlled species, and other habitats and species of nature conservation importance that could be affected by the proposed development. The aim is to summarise the key implications of this legislation and policy, particularly with regard to how it influences the assessment of IEFs.

### b) Designated sites

1.2.2. Three classes of designated site are considered within this report.

- European designations: (Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites);
- national designations: (Sites of Special Scientific Interest (SSSIs)); and
- non-statutory Local: (County) designations (County Wildlife Sites (CWSs)).

#### i. European designated sites

1.2.3. SPAs are classified in accordance with Article 4 of the European Community (EC) 'Birds Directive' (Ref 1.5). They are designated for the protection of rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species.

1.2.4. SACs are designated under the EC 'Habitats Directive' (Ref 1.6). Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and

II of the Directive. The listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds).

1.2.5. Ramsar sites are wetlands of international importance designated under the Ramsar Convention (Ref 1.7). They often cover a similar area to that already designated as a SAC and/or SPA, where these sites support a notable amount of wetland habitat.

1.2.6. Before a site can be designated as a European site, it must first have been designated as a SSSI. In many cases, a single European designation may encompass multiple SSSIs. The constituent habitats and species listed within the citations for European sites (often referred to as qualifying features) are considered to be of European/international importance for nature conservation.

ii. **National designated sites**

1.2.7. SSSIs are designated at the national level. Originally notified under the National Parks and Access to the Countryside Act (Ref 1.8), SSSIs were re-notified under the Wildlife and Countryside Act (Ref 1.2). Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act (Ref 1.9). The SSSI network in the UK provides statutory protection for the best examples of the country's flora, fauna, and geological or physiographical features.

1.2.8. These sites are also used to underpin other national and international nature conservation designations (SACs, SPAs, Ramsar sites and National Nature Reserves (NNRs)). NNRs are declared by the national statutory nature conservation agencies under the National Parks and Access to the Countryside Act (Ref 1.8) and the Wildlife and Countryside Act (Ref 1.2).

1.2.9. The constituent habitats and species listed within SSSI and/or NNR citations are of national importance for nature conservation.

iii. **Local designated sites**

1.2.10. CWSs are non-statutory sites supporting habitats and/or species considered to be rare or vulnerable across the county.

1.2.11. In Suffolk they are identified via a panel that includes technical expertise from Natural England, SWT, Suffolk Biodiversity Information Service and Suffolk County Council (SCC). The panel evaluates proposed CWSs against agreed selection criteria to ensure that the sites meet the threshold for designation.

1.2.12. The constituent habitats and species listed within the citations of non-statutory designated sites are of county importance for nature conservation.

c) Legally protected and controlled species

- 1.2.13. Many species of animals and plants receive some degree of legal protection. For the purposes of this study, legal protection refers to species included on Schedules 1, 5 and 8 of the Wildlife and Countryside Act (Ref 1.2), species included on Schedules 2 and 5 of The Conservation of Habitats and Species Regulations (Ref 1.10); and badgers (*Meles meles*), which are protected under the Protection of Badgers Act (Ref 1.11).
- 1.2.14. Species that are fully protected under the Wildlife and Countryside Act (Ref 1.2) and/or Conservation of Habitats and Species Regulations (Ref 1.10), known as protected species and European Protected Species (EPS), respectively, tend to be the focus of impact assessments and nature conservation action in the UK. However, the geographical scale at which they are important varies from species to species. Thus, the designation of a species as an EPS does not necessarily mean that all individuals of that species are of European importance.
- 1.2.15. In addition, Schedule 9 of the Wildlife and Countryside Act (Ref 1.2) lists controlled species of animals that it is an offence to release or allow to escape into the wild, as well as species of plant that it is an offence to plant or otherwise cause to grow in the wild. These species are clearly not of any nature conservation importance (other than with regard to the damage they can do to habitats and species of importance) and are therefore not a material consideration in planning decisions. They do, however, require careful consideration in the design and implementation of development.

d) Priority habitats and species

- 1.2.16. Public bodies have a duty to conserve biodiversity, in accordance with Section 40 of the Natural Environment and Rural Communities (NERC) Act (Ref 1.12). In addition to designated sites and legally protected/controlled species (discussed in **section 2.2** and **2.3**), a large number of habitats and species have been identified as a priority for biodiversity conservation within the UK. These features therefore also need due consideration in any EclA, although the level at which they are considered important will vary.
- 1.2.17. Priority habitats and species groupings considered within this report include:
- Habitats and species of principal importance for the conservation of biological diversity in England, as listed under Section 41 of the NERC Act (Ref 1.12).

**NOT PROTECTIVELY MARKED**

- Species listed as being of conservation interest in the relevant UK Red Data Book (RDB) or Birds of Conservation Concern (BoCC) Red List (Ref 1.3).
- Nationally Scarce species, which are species recorded from 16-100 10x10km grid squares in the UK.
- Ancient woodland (i.e. areas that have been under continuous woodland cover since at least 1600, and which are listed within the relevant County Ancient Woodland Inventory).
- Habitats and species listed on Suffolk’s Priority Species and Habitats list (Ref 1.13).

1.2.18. It should be noted that a large number of habitats and species will qualify under more than one of the above instruments, and will also need to be considered at the correct spatial scale, so the process of assigning importance to these features is therefore a complex one. For example, within Section 41 of the NERC Act (Ref 1.12), habitats and species of principal importance for the conservation of biological diversity in England would be considered to be of national importance, reflecting the fact that these features have been assessed at a national level. However, this status relates to the total amount/population and distribution of habitat/species. The level of importance therefore pertains to the species/habitat concerned as a whole rather than to individual areas of habitat or species populations, which can be difficult to value objectively.

1.2.19. Within this ecological baseline report, detailed consideration is given to the importance assigned to each ecological feature (both habitats and species, and species assemblages), and this necessarily requires a degree of professional judgement.

### 1.3 Scope of the baseline

#### a) Introduction

1.3.1. This section defines the terms ‘site boundary’, ‘ZoI’, and ‘study area’ and ‘survey area’, and the terminology and approach applied to the ecological data.

#### b) Site boundary

1.3.2. Survey work conducted pre-2012 was conducted for an area that differs from the site boundary proposed in the DCO application and upon which post-2012 ecological baseline surveys have been based. Further surveys have

been undertaken to update secondary data (where ecologically appropriate) and to take into account any changes to areas surveyed in relation to the site boundary. Please refer to **Figure 7.1** in **Annex 7A.1** for the site boundary of the proposed development.

#### c) Defining the Zones of Influence

- 1.3.3. The Zol is defined as ‘*the area over which ecological features may be affected by biophysical changes caused by a proposed project and associated activities*’ (Ref 1.4).
- 1.3.4. It is not a simple task to define the extent of the Zol for the proposed development, as it follows that the Zol will be different for each ecological feature and with the biophysical change being considered. For example, disturbance to bird species caused by displaced recreation activities is likely to manifest itself over a larger area than disturbance caused to bird species arising from construction noise, which is likely to be limited to the area in close proximity to the construction activity.
- 1.3.5. An appropriate Zol has been defined for each ecological feature (species, assemblage or habitat) considered, using published information and professional judgement. Given the discrete nature of the associated development site proposals and the likelihood that effects arising from the proposed development will be highly localised, 5km is considered to be a suitable maximum radius over which to considered potential effects, unless otherwise defined for specific species or species groups. Statutory designated sites (SPAs, SACs, Ramsar sites and SSSIs) have been considered within a 5km radius, and CWS within a 2km radius.
- 1.3.6. For interest features of designated sites (i.e. species), only those designated sites falling within the Zol of that species or species assemblage are considered. For example, all statutory designated sites within 5km are considered, but only those falling within the 2km Zol for reptile species are assessed for their specific value to reptile species (i.e. presence of reptile species as a cited interest feature).
- 1.3.7. Full details of the Zol defined for the considered ecological features is provided in **section 3.5**.

#### d) Defining the study area and survey area

- 1.3.8. The study area is the land within the site boundary and Zol (as defined within **section 3.3**) of the proposed development. This includes desk-study data, primary data and secondary data. The study area will differ depending on the type of data and the data sets being considered. For example, desk-study data relating to barbastelle (*Barbastella barbastellus*) extends over

10km, whilst information pertaining to breeding bird species covers a much smaller geographical extent, limited to a 2km radius of the site boundary.

1.3.9. The survey area is defined as ‘*the geographical extent over which a particular field survey activity took place*’. Similarly, it follows that the survey area will differ depending on the type of survey being considered. For example, great crested newt (*Triturus cristatus*) surveys were undertaken within the site boundary and a 500m radius, whilst no surveys were undertaken for invertebrates, reptiles or terrestrial mammals as the Phase 1 Habitat/Protected Species survey identified habitats within the site boundary to be sub-optimal for these species. However, as part of the Extended Phase 1 Habitat/Protected Species surveys, protected species, such as badger, within the site boundary were considered.

1.3.10. Professional judgement has been used to ensure that sufficient ecological information has been obtained within the likely Zol that has been defined for each habitat and species assemblage. The study area for each habitat and species assemblage generally closely corresponds to the Zol, whilst the survey areas are more limited in extent, being targeted at key areas where it is envisaged effects on ecological receptors may manifest themselves. Surveys undertaken at different time periods (see definitions of secondary and primary data in **section 1.2**) may encompass a different geographical area as site boundaries and development plans have developed and altered over time. For some ecological features, it was not considered necessary to undertake specific field survey work. In these instances, the ecological baseline has been informed by desk-study or other secondary data obtained within the defined study area.

e) **Defining Zol, study area and survey area for ecological features**

1.3.11. **Table 1.1** defines the Zol, study area and survey area for the considered ecological features.

**Table 1.1: Specific Zol, study area and survey areas for ecological features**

Ecological Feature		Zol	Study Area	Survey Area
Designated Sites	Statutory designated	5km	5km	
	Non-statutory designated	2km	2km	N/A
Plants and Habitats		2km	2km	Within the site boundary
Invertebrates		2km	2km	Not surveyed as habitat suboptimal



**NOT PROTECTIVELY MARKED**

Ecological Feature		Zol	Study Area	Survey Area
Reptile		2km	2km	Not surveyed as habitat largely suboptimal
Amphibians		2km	2km	Within the site boundary* and a 500m buffer area
Birds		2km	2km	Within the site boundary*
Bats	Natterer's bat ( <i>Myotis nattereri</i> )	4km	4km	Within the site boundary
	Noctule ( <i>Nyctalus noctula</i> )	4km	4km	
	Leisler's bat ( <i>Nyctalus leisleri</i> )	3km	3km	
	Common pipistrelle ( <i>Pipistrellus pipistrellus</i> )	2km	2km	
	Soprano pipistrelle ( <i>Pipistrellus pygmaeus</i> )	3km	3km	
	Nathusius' pipistrelle ( <i>Pipistrellus nathusii</i> )	3km	3km	
	Serotine ( <i>Eptesicus serotinus</i> )	4km	4km	
	Barbastelle ( <i>Barbastella barbastellus</i> )	10km	10km	
	Brown long-eared bat ( <i>Plecotus auritus</i> )	3km	3km	
Terrestrial Mammals		2km	2km	Included as part of Extended Phase 1 Habitat and Protected Species survey

\* This is in accordance with standing advice from Natural England for assessing the impacts of developments on great crested newts (*Triturus cristatus*) (Natural England, 2015).

1.3.12. Consideration of the Zol, study area and survey area for bats has been undertaken on a species-specific basis to take into account species-specific variations in foraging and commuting distances. The Zol for bat species has therefore been determined on the basis of Core Sustenance Zones (CSZs), which have been defined by the Bat Conservation Trust (Ref 1.1), through an extensive literature review. With reference to planning and development, the CSZ is defined as:

- The area surrounding the roost within which development work can be assumed to impact the commuting and foraging habitat of bats using the roost, in the absence of information on local foraging behaviour. This will highlight the need for species-specific techniques where necessary.
- The area within which mitigation measures should ensure no net reduction in the quality and availability of foraging habitat for the colony, in addition to mitigation measures shown to be necessary following ecological survey work.

1.3.13. CSZs may be used to indicate commuting and foraging areas used by bats in relation to a roost, and to interpret the results of data searches. The only variation that has been made from the use of CSZs is in the case of barbastelle. The CSZ determined for barbastelle is 6km; however, this has been increased to 10km on the basis of the results of radio-tracking surveys across the main development site which showed barbastelle to be using larger areas in that location (**Volume 2, Appendix 14A8 - Bats**).

## 1.4 Desk-study/baseline data

### a) Approach and methodology

#### i. Desk-study

1.4.1. Records for protected species were requested from Suffolk Biodiversity Information Service in December 2014. Records of protected or otherwise notable species of conservation interest within 2km of the site boundary were obtained. A further desk-study data request was made to Suffolk Biodiversity Information Service Suffolk Biodiversity Information Service in March 2016 for bat records within 10km of the site boundary to take into account the CSZ (see **section 3**).

1.4.2. Statutory and non-statutory designated sites were considered within the following radii of the site:

- internationally (SPA, SAC and Ramsar) and nationally (SSSI and NNR) recognised sites within 5km; and
- locally recognised sites (Local Nature Reserves and CWS) within 2km.

1.4.3. Where designated sites were found to fall within the radii detailed above, citations were obtained from Suffolk Biodiversity Information Service /the Joint Nature Conservation Committee and Natural England’s websites. The citations were reviewed to allow for an assessment of the likely presence of any species or habitats of nature conservation importance which may pose a constraint to the proposed development.

1.4.4. Suffolk’s Priority Species and Habitats list (Ref 1.13), and the habitats and species of principal importance included on the Section 41 list of the NERC Act (Ref 1.12), were also reviewed with reference to the habitats and species present, or likely to be present, within the site and wider study area.

ii. Secondary data

1.4.5. Early surveys were conducted from 2011 to 2012 for the associated development sites; however, the site boundary for the proposed development has changed since these were completed. This data was reviewed in order to understand the baseline conditions relevant to the current site boundary. Secondary data used to inform this baseline included:

- extended Phase 1 habitat surveys undertaken in 2011(Ref 1.14) in the area at Darsham ‘designated as associated development site 10’;
- great crested newt surveys in 2011 (Ref 1.15);
- an assessment of the proposed development for the four common reptile species (slow-worm (*Anguis fragilis*), common lizard (*Zootoca vivipara*), adder (*Vipera berus*) and grass snake (*Natrix helvetica helvetica*) as part the 2011 Extended Phase 1 habitat survey; and
- bat surveys conducted in 2011 (Ref 1.16).

1.4.6. Relevant reports detailing the methodology and results for these early surveys are provided in **Annex 7A.3**.

iii. Primary data

1.4.7. Further surveys have been undertaken since 2012, both to update any secondary data (where ecologically appropriate) and to take into account any

changes to areas surveyed in relation to the current site boundary. Further surveys conducted included:

- great crested newt surveys (2015 and 2019);
- breeding bird surveys (April to June 2014) and wintering bird surveys (November 2014 to March 2015);
- bat surveys (2014 and 2015) (tree assessments, and activity and static surveys); and
- an updated walkover to confirm site conditions (2018).

1.4.8. Full details of the methodologies employed can be found in **Annex 7A.4**.

1.4.9. A review of aerial photographs, site visits in association with other protected species surveys in 2014, and a 2018 site visit to check site conditions, showed that there were no significant material changes to the habitats present within the proposed development since the 2011 Extended Phase 1 habitat survey, but it did identified two additional ponds within 500m of the updated site boundary. Therefore, the Extended Phase 1 habitat survey was not repeated, and no targeted invertebrate, reptile or other mammal surveys were carried out; however, additional great crested newt surveys were conducted in 2019.

b) Results

i. Designated and non-designated sites

1.4.10. The following statutory designated sites are located within 5km of the site and are illustrated on **Figure 7.1** in **Annex 7A.1**:

**Table 1.2: Statutory sites located within 5km of the site**

Site name	Distance from site	Reason for designation
Dew's Ponds SAC and SSSI	1.7km north-west	This site comprises a series of 12 ponds set in an area of formerly predominantly arable land. The Annex II species that is the primary reason for the selection of the SAC is great crested newts which has been found in all ponds on site, though the presence of fish seems to have affected newt numbers in recent years in two ponds.
Minsmere - Walberswick Heaths and Marshes SAC,	3.2km east (at its closest point)	Annex I habitats that are the primary reason for selection of the SAC include: annual vegetation of drift lines, which occurs on a well-developed beach strandline of mixed sand and shingle and supports species such as Sea Sandwort

**NOT PROTECTIVELY MARKED**

Site name	Distance from site	Reason for designation
SPA, Ramsar and SSSI (includes Westleton Heath NNR)		<p>(<i>Honckenya peploides</i>) and Sea Beet (<i>Beta vulgaris ssp. maritima</i>); and European dry heaths dominated by Heather (<i>Calluna vulgaris</i>), western gorse (<i>Ulex gallii</i>) and Bell Heather (<i>Erica cinerea</i>). The presence of perennial vegetation of stony banks is an Annex I habitat present as a qualifying feature of the SAC.</p> <p>The SPA qualifies by supporting populations of European importance of the following species listed on Annex I of the Directive: avocet (<i>Recurvirostra avosetta</i>), bittern (<i>Botaurus stellaris</i>), little tern (<i>Sterna albifrons</i>), marsh harrier (<i>Circus aeruginosus</i>), nightjar (<i>Caprimulgus europaeus</i>) and woodlark (<i>Lullula arborea</i>) during the breeding season; and avocet, bittern and hen harrier (<i>Circus cyaneus</i>) over Winter. The site is also a wetland of international importance and is therefore also designated as a Ramsar site under the Ramsar Convention.</p> <p>The SSSI contains a complex series of habitats, notably mudflats, shingle beach, reedbeds, heathland and grazing marsh, which combine to create an area of exceptional scientific interest.</p>
Potton Hall Fields SSSI	4.1km east	A site of special interest due to the presence of nationally rare arable weed Red-tipped Cudweed ( <i>Filago lutescens</i> ).

1.4.11. The development proposals will involve no direct land take from any of these statutory designated sites and the proposed development is not linked to any of the designated sites described in **Table 1.2**. Potton Hall Fields SSSI supports a population of Red-tipped Cudweed, an arable weed species protected under Schedule 8 of the Wildlife and Countryside Act (Ref 1.2). This is a species associated with open sandy ground and arable margins and was not identified during the Phase 1 habitat survey.

1.4.12. Six non-statutory designated CWS were identified within 2km of the site. Details of these sites are provided in **Table 1.3** and the location of these sites illustrated on **Figure 7.2** in **Annex 7A.1**.

**Table 1.3: Non-statutory designated site within 2km of the site**

Site name	Distance from site	Reason for designation
Sillet’s Wood Also an Ancient and Semi-Natural Woodland (ASNW) and on the Ancient	300m north	Site is designated as a CWS for its ancient woodland characteristics. It also contains a number of wet hollows and internal ditches which add habitat diversity to the area.

**NOT PROTECTIVELY MARKED**

Site name	Distance from site	Reason for designation
Woodland Inventory (AWI)		
Yoxford Wood Also an ASNW and on the AWI	900m to the west	Designated for its ancient coppice, mainly hornbeam. Yoxford also contains a number of ponds which support their own flora and add to the variety of habitats present.
Willowmarsh Wood Also an Ancient Replanted Woodland (ARW) and on the AWI	1.2km to the west	This CWS is designated for its diverse and abundant ground flora.
Minsmere Valley	1km south-east	The site includes an extensive area of unimproved marsh, small areas of scrub, mature woodland and fen, the Minsmere River, several ponds and a man-made lake. Regionally rare species such as Bogbean ( <i>Menyanthes trifoliata</i> ) and Bog Pimpernel ( <i>Anagallis tenella</i> ) are found within the marsh areas, as well as various other uncommon plants. The site also supports a number of productive barn owl ( <i>Tyto alba</i> ) nest sites, and European otter ( <i>Lutra lutra</i> ) are often seen throughout the valley.
Darsham Marshes (also a SWT reserve)	1.5km south-east	This extensive area of marsh and fen supports a diverse assemblage of species-rich flora including Yellow-rattle ( <i>Rhinanthus minor</i> ), Bog Pimpernel, Southern Marsh-orchid ( <i>Dactylorhiza praetermissa</i> ) and Marsh-marigold ( <i>Caltha palustris</i> ). Aquatic insects and breeding amphibians are found within a restored pond area, and numerous raptor species such as kestrel ( <i>Falco tinnunculus</i> ), marsh and hen harrier frequently hunt in the area.
Big, Common, and Haw Woods Also an ARW and on the AWI	1.3km north-east	Area of ancient woodland that includes Common Wood, Big Wood and the remnants of Haw and Sixteen Acre Woods.

1.4.13. The majority of these site comprise lowland mixed deciduous woodland with the Minsmere Valley supporting wetland habitat. Lowland mixed deciduous woodland and wetland habitat are listed under Section 41 of the NERC Act (Ref 1.12) and both habitats are also targeted for action on Suffolk’s Priority Species and Habitats list (Ref 1.13).

1.4.14. The development proposals will involve no direct land take from any of these non-statutory designated sites.

## ii. Plants and habitats

- 1.4.15. The desk-study identified a number of records for plant species within 2km of the site. These records have been sorted by location to identify those recorded within or close to the site boundary. The results are presented in **Annex 7A.2** whilst a summary is presented below.
- 1.4.16. The plant species identified by the desk-study data can be divided into two broad categories: species such as Frogbit (*Hydrocharis morsus-ranae*) associated with wetland habitat to the east of the site along the valley of the Minsmere River, and species characteristic of the margins of arable fields, including Dwarf Spurge (*Euphorbia exigua*), Common Cudweed (*Filago vulgaris*) and Corn Spurrey (*Spergula arvensis*).
- 1.4.17. A single species listed under Section 41 of the NERC Act (Ref 1.12) was identified; Greater Butterfly-orchid (*Platanthera chlorantha*) which is a species of species-rich grassland or rides within ancient woodland habitat, and is therefore unlikely to be present within the arable fields or broadleaved woodland (Little Nursey Wood) which comprise the site. Four Nationally Scarce species<sup>1</sup> were identified: Mossy Stonecrop (*Crassula tillaea*), Sulphur Clover<sup>2</sup> (*Trifolium ochroleucon*), Northern Yellow-cress (*Rorippa islandica*) and Dittander (*Lepidium latifolium*). Mossy Stonecrop and Sulphur Clover are species characteristic of open sandy soils, whilst Northern Yellow cress is found within ditches and other aquatic habitats and Dittander is common on disturbed ground in particular close to the coast. These species were not recorded within the site.
- 1.4.18. Six species of non-native invasive plant species listed under Schedule 9 of the Wildlife and Countryside Act (Ref 1.2) we also identified: Wall Cotoneaster (*Cotoneaster horizontalis*); Japanese Rose (*Rosa rugosa*); Indian (also known as Himalayan) Balsam (*Impatiens glandulifera*); Rhododendron (*Rhododendron ponticum*); Yellow Archangel (*Lamium galeobdolon* subsp. *argentatum*) and Giant Hogweed (*Heracleum mantegazzianum*). None of these species were recorded within the site boundary.
- 1.4.19. A detailed extended Phase 1 habitat survey was undertaken in 2011. The full survey report is presented in **Annex 7A.3**, whilst the Phase 1 habitat survey map is presented in **Figure 7.3** in **Annex 7A.1**. A site visit in 2018 which confirmed that habitat type and condition had not material changed since the 2011 Phase 1 habitat survey.

<sup>1</sup> NS – Nationally Scarce (Occurring in 16-100 hectads in Great Britain).

<sup>2</sup> Also listed as 'Vulnerable' within 'A Vascular Plant Red List for England' (Stroh, *et al.*, 2014).

- 1.4.20. The site comprises a single large arable field with a block of broadleaved woodland (Little Nursery Wood) located on the western boundary adjacent to the railway line. During the 2011 to 2016 surveys, a field margin of up to 2m of semi-improved species-poor grassland was present; however, during the 2018 walkover, it was noted that this field margin has since been ploughed, with the exception of the southern portion of the field. This arable margin is dominated by Cock's-foot (*Dactylis glomerata*), Yorkshire-fog (*Holcus lanatus*) and Tufted Hairgrass (*Deschampsia cespitosa*) with forb species including Selfheal (*Prunella vulgaris*), Cleavers (*Galium aparine*) and Germander Speedwell (*Veronica chamaedrys*). Arable margins are on Suffolk's Priority Species and Habitats list (Ref 1.13), but no scarce or notable arable weed species have been identified.
- 1.4.21. Little Nursery Wood is a block of semi-natural broadleaved woodland 2.8ha in extent, comprising predominantly mature Ash (*Fraxinus excelsior*) and Pedunculate Oak (*Quercus robur*) with occasional conifer species. The southern end of the woodland is bordered by a dry ditch along the eastern boundary; this section of woodland presents a species-poor ground flora layer dominated by Dog's Mercury (*Mercurialis perennis*) with an understorey of scattered Hawthorn (*Crataegus monogyna*). The central area of woodland contains a more diverse shrub layer including Moschatel (*Adoxa moschatellina*), Primrose (*Primula vulgaris*), Lesser Celandine (*Ficaria verna*) and Common Dog-violet (*Viola riviniana*). This portion of woodland is more diverse with dead wood piles, dense patches of Brambles (*Rubus fruticosus* agg.), a running stream with a damper woodland habitat to the east, and a dry pond. The northern section of woodland consists of younger Ash trees with a Bramble understorey. Little Nursery Wood is not included within the Suffolk Ancient Woodland Inventory and is therefore unlikely to constitute ancient semi-natural woodland; however, broadleaved woodland is on Suffolk's Priority Species and Habitats list (Ref 1.13)
- 1.4.22. Species-poor hedgerows are present along all three site boundaries, although there are large gaps. The hedges consist predominantly of Hawthorn interspersed with Ash, Pedunculate Oak, Dog Rose (*Rosa canina*) and Bramble. A number of mature Oak and Ash standards are interspersed throughout the hedges and field boundaries of the site. None of the hedgerows are considered to be 'Important' when assessed against the Wildlife and Landscape Criteria of the Hedgerows Regulations (Ref 1.17).
- 1.4.23. One pond was identified within the site boundary and a number of small ponds were located adjacent to, and in some cases within, gardens on the eastern boundary of the site. As noted above, an additional small, dry pond was also recorded within Little Nursery Wood. Ponds are a habitat listed on Suffolk's Priority Species and Habitats list (Ref 1.13).



### iii. Invertebrates

- 1.4.24. Desk-study records revealed a 1997 record for the stag beetle (*Lucanus cervus*), south-west of the site boundary near Darsham at Yoxford (the precise location is not given). This species is listed on Appendix III of the Bern Convention<sup>3</sup>, Appendix II of the Habitat Directive (Ref 1.6), protected under Schedule 5 of the Wildlife and Countryside Act (Ref 1.2), listed under Section 41 of the NERC Act Ref 7A.12), listed on Suffolk's Priority Species and Habitats list (Ref 1.13), and listed as Nationally Notable B<sup>4</sup>. Stag beetle is a woodland specialist and could potentially be present within Little Nursery Wood; however, there are no recent records in close proximity of the site.
- 1.4.25. Desk-study records also revealed two Nationally Scarce aquatic beetle species (*Gyrinus paykulli* and *Peltodytes caesus*) at the Dews Ponds 1.7km north-west of the site boundary, and a Nationally Scarce and Nationally Notable B moss beetle (*Ochthebius (Hymenodes) nanus*) to the east of the site boundary. Both are unlikely to be found within the site.
- 1.4.26. Desk-study records revealed four butterfly species (small heath (*Coenonympha pamphilus*), grayling (*Hipparchia semele*), wall (*Lasiommata megera*) and white admiral (*Limenitis camilla*)) that are Red Data Book (RDB) list species, listed under Section 41 of the NERC Act (Ref 1.12), and on Suffolk's Priority Species and Habitats list (Ref 1.13). All records were outside the site boundary and were largely associated with the Darsham Marshes Nature Reserve 1.5km to the south-east, and therefore are unlikely to be found within the site boundary.
- 1.4.27. Desk-study records revealed 30 moth species (see **Annex 7A.2**) listed under Section 41 of the NERC Act (Ref 1.12), and on Suffolk's Priority Species and Habitats list (Ref 1.13). One of these (White-mantled Wainscot (*Archanara neurica*)) is also an RDB-listed species categorised as Rare. In addition, desk-study records revealed one species (the small eggar, *Eriogaster lanestris*), a RDB-listed species categorised as Endangered; the orange-rayed pearl (*Nascia ciliialis*), that is Nationally Notable A<sup>5</sup>; and three species listed as Nationally Notable B<sup>6</sup> (the waste green-veneer (*Pediasia contaminella*), the giant water-veneer (*Schoenobius gigantella*), and the

<sup>3</sup> The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention), enacted in the UK through the Wildlife and Countryside Act (Ref 1.2)

<sup>4</sup> Taxa that do not fall within RDB categories but are nonetheless uncommon in Great Britain and thought to occur in between 31 and 100 10km squares of the National Grid or, for less-well recorded groups between eight and twenty vice-counties

<sup>5</sup> Taxa which do not fall within RDB categories but which are nonetheless uncommon in Great Britain and thought to occur in 30 or fewer 10km squares of the National Grid or, for less-well recorded groups within seven or fewer vice-counties.

<sup>6</sup> Taxa that do not fall within RDB categories but are nonetheless uncommon in Great Britain and thought to occur in between 31 and 100 10km squares of the National Grid or, for less-well recorded groups between eight and twenty vice-counties

wainscot neb (*Monochroa palustrella*). The majority of these moth records are associated with the wetland habitat of Darsham Marshes Nature Reserve and CWS to the south-east and are therefore highly unlikely to be found within the arable and woodland habitat within the site boundary.

- 1.4.28. Desk-study records revealed one record (dated 2002) for the Nationally Notable A median wasp (*Dolichovespula media*). This is a relatively new colonist of the UK from Europe (Ref 1.18) and was first recorded in Sussex in 1980. It is now widespread and common in southern England and has steadily spread northwards with scattered records into northern England and Scotland. This species is found in most lowland habitats including woodland, and farmland, where its suspended nests are often built in hedgerows. This species could potentially be present within the site boundary.
- 1.4.29. Desk-study records revealed one record for an RDB-Listed Vulnerable species of soldier fly (*Odontomyia argentata*) within Darsham Marshes, to the south-east of the site boundary. It is highly unlikely to be found within the arable and woodland habitat within the site boundary.
- 1.4.30. The 2011 Phase 1 survey (Ref 1.19) highlighted that the majority of the site consists of an intensively managed arable field which was not considered to offer habitat of particular value to invertebrate species. The mosaic of habitats within Little Nursery Wood (including streams, dead-wood piles and a diverse ground flora) could potentially support scarce/notable species of invertebrates, such as the stag beetle mentioned above.

#### iv. Amphibians

- 1.4.31. The desk-study revealed 24 records of amphibians within 2km of the site boundary. Species recorded comprised common toad (*Bufo bufo*) (eight records) and great crested newts (16 records). One great crested newt record was 480m from the site boundary; all others were greater than 500m away. Ten of the 16 records were close to or part of the Dew's Pond SAC (see **Table 1.2**) to the north-west of the site boundary, three were for other records to the north or north-east, one was for Sillet's Wood (480m north of the site), and two were for records to the south of the site. The nearest common toad record was 730m to the east, with other records between 0.9 and 2.3km away, and this species is not considered to be within the site. The full results of the desk-study are presented in **Annex 7A.2**.
- 1.4.32. Suffolk is a stronghold for great crested newts, particularly in the north-east of the county, where there is a higher abundance of ponds (Ref 1.20). A review of Suffolk's Priority Species and Habitats list (Ref 1.13) identified great crested newts as priority species for conservation action in the county (Ref 1.13). Great crested newts are listed under Section 41 of the NERC Act (Ref 1.12) and protected under Schedule 5 of the Wildlife and Countryside Act

(Ref 1.2), and Schedule 2 of the Conservation of Habitats and Species Regulations (Ref 1.10).

1.4.33. In the 2011, great crested newt surveys, 17 ponds within 500m of the site boundary were identified (for associated development Sites 10 and 11) (see **Figure 7.4** in **Annex 7A.1**). Seven of these ponds are to the east of the A12, a major trunk road that acts as a substantial barrier to the dispersal of great crested newts and other amphibians, and they have therefore been screened out of this ecological baseline. Of the remaining ten ponds, access was not granted for four of these. However, Habitat Suitability Index (HSI<sup>7</sup>) surveys were undertaken for five ponds and carried out presence/absence surveys for one pond only (Pond 23 on Figure 3.3 of the **Annex 7A.3** (Ref 1.15)). The HSI scores for the ponds where access was granted are given in **Table 1.4**. Four surveys between 14 April and 8 June 2011 at Pond 23 identified no evidence of great crested newts.

**Table 1.4: 2011 HSI scores for ponds at the site (Ref 1.15)**

Pond ID	Wood Group pond ID	HSI score
78	WB19	0.72 - good
79/80	WB20	0.81 - excellent
81	WB21	0.71 - good
86	WB24	0.89 - excellent
87	WB18	0.41 - poor
100	WB23	0.63 - average

1.4.34. In 2015, 19 water bodies within 500m of the boundary of the site (see **Figure 7.4** in **Annex 7A.1**); and in 2019, an additional two were identified, bringing the total to 21 ponds. Of these, eight ponds (Ponds 88, 89, 90, 91, 92, 93, 94 and 95) were scoped out as they are all east of the A12. Any amphibians using these ponds are therefore unlikely to access the site.

1.4.35. Of the remaining 13 ponds (Ponds 78, 79, 80, 81, 82, 83, 84, 85, 86, 87 and 100, 101 and 102) access was only granted for great crested newt surveys of four ponds (Ponds 78, 100, 101 and 102). Pond 100 was subsequently scoped out as it was found to be dry at the time of survey. Pond 78, 101 and 102 were found to have potential for supporting great crested newts. The HSI results of Pond 78, 101 and 102 were respectively 'average', 'good' and 'poor'.

<sup>7</sup> HSI refers to the suitability of ponds for supporting great crested newts, a score of excellent indicates that the pond is suitable to support great crested newts.

**NOT PROTECTIVELY MARKED**

- 1.4.36. Pond 78 was found to support a population of great crested newts that would be classified as ‘small’ under English Nature (Ref 1.21) guidelines. Other amphibians recorded within this pond included smooth newt (*Lissotriton vulgaris*) and common frog (*Rana temporaria*), neither of which are listed on Suffolk’s Priority Species and Habitats list (Ref 1.13). Great crested newt eDNA surveys were conducted on Ponds 101 and 102 in 2019. Great crested newts were confirmed present in Pond 101, whilst recorded as absent from Pond 102.
- 1.4.37. The majority of the site is of limited suitability for great crested newts as it consists of arable fields. However, the field margins, Little Nursery Wood, and gardens to houses on the west side of the A12 provide habitat that is suitable for great crested newts in their terrestrial phase, for both foraging and hibernation. Additionally, while no access was granted for Ponds 79, 80, 81 and 82 to the east of the site boundary in 2016, from previous surveys, the HSI scores for Pond 79 and 80 were ‘excellent’ while Pond 81 was recorded to be ‘good’; as such, great crested newts would be expected to be present. No HSI score for Pond 82 was available as access was not granted to this pond.
- 1.4.38. A maximum number of four adult great crested newts were recorded in Pond 78. Pond 101 was also positive for great crested newt eDNA. With three other ponds (Ponds 79, 80 and 81) nearby with HSI scores ranging from good to excellent and with gardens that provide good connectivity between the four ponds, it would be prudent to assume that Ponds 79, 80 and 81 also hold a population of great crested newts. It would also be reasonable to assume that the number of adults within these latter three ponds would be similar to those recorded in Pond 78, and therefore a population that would be classified as ‘medium’ under English Nature (Ref 1.21) guidelines. The population found within these ponds (Ponds 78, 79, 80, 81 and 101) would likely represent a meta-population of great crested newts found to the west of the A12.
- 1.4.39. For full details of post 2012 survey results, please refer to **Annex 7A.4**.

**v. Reptiles**

- 1.4.40. A review of Suffolk’s Priority Species and Habitats list (Ref 1.13) identified four native, reptile species (adder, common lizard, grass snake and slow-worm) as priority species for conservation action in the county. In addition, all four species are included under Section 41 of the NERC Act (Ref 1.12).
- 1.4.41. The desk-study revealed 16 records of reptiles within 2km of the site boundary. Species recorded comprised slow-worm (three records), grass snake (11 records), and common lizard (two records). The three records of slow-worm were from between 1.2 to 2.2km from the site boundary. The 11

grass snake records were from between 0.7 and 2.3km from the site boundary. The two records of common lizard were from between 1.2 to 1.4km from the site boundary.

1.4.42. While no reptile surveys were conducted, the habitat surrounding the pond in Little Nursery Wood is considered to provide suitable breeding and foraging opportunities for grass snake. Potential hibernation sites are predominantly within Little Nursery Wood, and in brick and rubble on the edge of White House Farm. The majority of this site comprises an arable field with a small portion of grass margin to the south. Field margins of the arable field have the potential to provide sheltering and foraging habitat for all four common reptile species but the arable field itself is considered sub-optimal. The available habitat to support reptile species is considered to be extremely limited and the site considered to be of little value to reptile species.

vi. Birds

1.4.43. The results of the desk-study presented in **Annex 7A.2** has identified records of ten bird species that are protected under Schedule 1 of the Wildlife and Countryside Act (Ref 1.2), ten species of on the Red List of BoCC (Ref 1.3) (species of high conservation value) and five species found on the Amber List of BoCC (Ref 1.3) (species of medium conservation value). In addition, a further 18 species that are either Green List of BoCC or of no conservation status (species of low conservation value) were also identified. All bird records were within 2km of the site boundary. A number of bird species are also listed within Section 41 of the NERC Act (Ref 1.12). The species identified are presented in **Table 1.5**.

**Table 1.5: Desk-study records for notable bird species and their status within 2km**

Bird Species	Sch 1 Wildlife and Countryside Act *	Section 41 NERC Act	Red List (BoCC)	Amber List (BoCC)
Kingfisher ( <i>Alcedo atthis</i> )	✓			
Bittern ( <i>Botaurus stellaris</i> )	✓			
Mediterranean gull ( <i>Ichthyaetus melanocephalus</i> )	✓	✓		
Marsh harrier ( <i>Circus aeruginosus</i> )	✓			
Honey buzzard ( <i>Pernis apivorus</i> )	✓			
Goshawk ( <i>Accipiter gentilis</i> )	✓			
Hobby ( <i>Falco Subbuteo</i> )	✓			
Black redstart ( <i>Phoenicurus ochruros</i> )	✓			
Fieldfare ( <i>Turdus pilaris</i> )	✓			

**NOT PROTECTIVELY MARKED**

Bird Species	Sch 1 Wildlife and Countryside Act *	Section 41 NERC Act	Red List (BoCC)	Amber List (BoCC)
Barn owl ( <i>Tyto alba</i> )	✓			
Turtle dove ( <i>Streptopelia turtur</i> )		✓	✓	
Grey partridge ( <i>Perdix perdix</i> )		✓	✓	
Skylark ( <i>Alauda arvensis</i> )		✓	✓	
Woodlark ( <i>Lullula arborea</i> )		✓	✓	
Corn bunting ( <i>Emberiza calandra</i> )		✓	✓	
Spotted flycatcher ( <i>Muscicapa striata</i> )		✓	✓	
House sparrow ( <i>Passer domesticus</i> )		✓	✓	
Hawfinch ( <i>Coccothraustes coccothraustes</i> )		✓	✓	
Lesser spotted woodpecker ( <i>Dendrocopus minor</i> )		✓	✓	
Song thrush ( <i>Turdus Philomena</i> )		✓	✓	
Kestrel				✓
Bullfinch ( <i>Pyrrhula pyrrhula</i> )		✓		✓
Short eared owl ( <i>Asio flammeus</i> )				✓
Dunnock ( <i>Prunella modularis</i> )		✓		✓
Tawny owl ( <i>Strix aluco</i> )				✓

\*Sch 1 Wildlife and Countryside Act: Schedule 1 of the Wildlife and Countryside Act (Ref 1.2).

1.4.44. Of the ten bird species that are protected under Schedule 1 of the Wildlife and Countryside Act (Ref 1.2), the majority are considered to be passage migrants and therefore unlikely to be breeding within the site. Only hobby and barn owl are considered likely to breed in the vicinity, with fieldfare being recorded as Winter visitors. Of the BoCC Red List bird species recorded, grey partridge, house sparrow, song thrush and skylark are the species considered most likely to be breeding within the arable, woodland and hedgerow habitat present.

1.4.45. Surveys were conducted breeding and wintering bird surveys between April 2014 to March 2015. The results of these surveys are summarised below with the full details presented in **Annex 7A.4**.

**Breeding bird survey results**

1.4.46. No Schedule 1 species of the Wildlife and Countryside Act (Ref 1.2) were recorded over the course of the breeding bird survey. Eleven species listed under Section 41 of the NERC Act (Ref 1.12) were recorded. Of these, nine

**NOT PROTECTIVELY MARKED**

are Red List species of BoCC (Ref 1.3) and two species, Dunnock and Bullfinch, are Amber List species of BoCC (Ref 1.3). The location of these species are displayed in **Figure 7.5** in **Annex 7A.1**. Three Amber List species of BoCC (Ref 1.3) (that are not listed under Section 41 of the NERC Act (Ref 1.12) were also recorded. A summary of these results can be found in **Table 1.6**.

**Table 1.6: Species of conservation concern recorded during the breeding bird surveys**

Bird Species	Sch 1 Wildlife and Countryside Act *	Section 41 NERC Act	Red List (BoCC)	Amber List (BoCC)
Herring gull ( <i>Larus argentatus</i> )		✓	✓	
House sparrow		✓	✓	
Linnet ( <i>Carduelis cannabina</i> )		✓	✓	
Marsh tit ( <i>Poecile palustris</i> )		✓	✓	
Nightingale ( <i>Luscinia megarhynchos</i> )			✓	
Skylark		✓	✓	
Yellowhammer ( <i>Emberiza citronella</i> )		✓	✓	
Mistle thrush ( <i>Turdus viscivorus</i> )		✓	✓	
Song thrush		✓	✓	
Dunnock		✓		✓
Bullfinch		✓		✓
Meadow pipit ( <i>Anthus pratensis</i> )				✓
Stock dove ( <i>Columba oenas</i> )				✓
Swift ( <i>Apus apus</i> )				✓

1.4.47. In addition to the above, 22 Green Listed species of BoCC (Ref 1.3) were recorded. These species are listed in **Table 4.3** in **Annex 7A.4**. Two introduced species with no conservation listing, pheasant (*Phasianus colchicus*) and red-legged partridge (*Alectoris rufa*), were also recorded.

1.4.48. Of the species recorded during surveys, linnet, skylark and yellowhammer are predominantly associated with arable farmland habitat that is abundant in Suffolk. House sparrow, dunnock and starling are often associated with human habitation and hedgerows. Herring gull forage widely over large areas and require a cliff or large flat-roofed building to nest, so will not be breeding within the site boundary. Marsh tit, nightingale, song thrush, mistle thrush, woodcock, and bullfinch are more associated with woodland, such as Little Nursery Wood

Winter bird survey results

1.4.49. Two Schedule 1 species of the Wildlife and Countryside Act (Ref 1.2) were observed during the Winter bird survey. The location of these are displayed in **Figure 7.6** in **Annex 7A.1**. Ten Red List species of BoCC (Ref 1.3) and Section 41 of the NERC Act (Ref 1.12) listed species were also recorded. Dunnock and bullfinch, both Amber List species of BoCC (Ref 1.3) and Section 41 of the NERC Act (Ref 1.12) species were also observed on the site. The location of these species is shown in **Figure 7.7** in **Annex 7A.1**. Four Amber List species of BoCC (Ref 1.3) were recorded within the site. A summary of these results can be found in **Table 1.7**.

**Table 1.7: Species of conservation concern recorded during the wintering bird surveys**

Bird Species	Sch 1 Wildlife and Countryside Act *	Section 41 NERC Act	Red List (BoCC)	Amber List (BoCC)
Fieldfare	✓			
Redwing ( <i>Turdus iliacus</i> )	✓			
Herring gull		✓	✓	
House sparrow		✓	✓	
Linnet		✓	✓	
Marsh tit		✓	✓	
Skylark		✓	✓	
Song thrush		✓	✓	
Starling ( <i>Sturnus vulgaris</i> )		✓	✓	
Woodcock ( <i>Scolopax rusticola</i> )		✓		
Mistle thrush		✓	✓	
Yellowhammer		✓	✓	
Dunnock		✓		✓
Bullfinch		✓		✓
Black-headed gull ( <i>Chroicocephalus ridibundus</i> )				✓
Stock dove				✓

1.4.50. Redwing and fieldfare are widespread Winter visitors that utilise hedgerow and woodland for foraging and are included on Schedule 1 due to the rarity of breeding within the UK, with both species breeding in north Scotland only. All of the species recorded are considered to be using the site as a Winter foraging resource, with the two gull species likely to forage over a wider area.



- 1.4.51. In addition to the above species, 20 bird species considered to be of no conservation interest were also recorded, these are listed in **Table 4.3** in **Annex 7A.4**. In addition, pheasant, an introduced species, was also recorded

vii. Bats

- 1.4.52. The desk-study identified 63 records of bat species within the species-specific Zols as detailed in **section 1.3e**). Species recorded comprised Natterer's bat, noctule, soprano pipistrelle, Nathusius' pipistrelle, serotine, barbastelle and brown long-eared bat. Records were also identified for unspecified species within the *Myotis* spp. and *Pipistrellus* spp. groups.
- 1.4.53. Sixteen records, for four species (Natterer's, serotine, barbastelle and brown long-eared bat,) and an unidentified *Pipistrellus* spp., were identified relating to bat roost locations. None of the roost records were located within the site boundary, with the closest roost record located 1.3km to the south-west within Yoxford (a brown long-eared bat roost). Further information identified five of these records as breeding roosts. Breeding roosts were identified within the relevant Zols for Natterer's bat, serotine and brown long-eared bat. The closest breeding roost(s) were located 1.5km to the south and east within Yoxford and Darsham respectively.
- 1.4.54. No activity records were identified within the site boundary, with the closest record, for a serotine and brown long-eared bat, located approximately 1km to the south in Yoxford.

Pre-2012 survey results

- 1.4.55. The extended Phase 1 habitat survey identified 20 trees within Little Nursery Wood and six trees within hedgerows and field boundaries with the potential to support roosting bats. Grassland, woodland and hedgerow habitat within the site provided a suitable foraging resource for bats. The East Suffolk line to the west of the site and the hedgerows around the site boundary provide good connectivity and commuting routes connecting the site to the wider landscape.
- 1.4.56. Buildings adjacent to the site are considered to have only low roosting potential with farm outbuilding(s) identified as being suitable as only occasional roosts.
- 1.4.57. Four species were identified during activity transect surveys (barbastelle, common pipistrelle, soprano pipistrelle and noctule). A summary of the results of activity transect surveys undertaken in 2011 (Ref 1.16) is provided in **Table 1.8**.

**Table 1.8: Number of passes and relative bat activity recorded during transect surveys in 2011**

Species	Survey date			Total	Bat passes per hour (B/h)
	11.05.11	22.06.11	04.08.11		
Noctule	0	12	3	15	<b>2.6</b>
<i>Nyctalus</i> spp.	1	0	0	1	<b>0.2</b>
Common pipistrelle	12	3	17	32	<b>5.6</b>
Soprano pipistrelle	31	2	1	34	<b>5.9</b>
Common/soprano pipistrelle	3	0	0	3	<b>0.5</b>
Barbastelle	4	0	0	4	<b>0.7</b>
Total	51	17	21	89	
Survey duration (min)	129	125	90	344	
<b>Total bat passes per hour (B/h)</b>	<b>23.7</b>	<b>8.2</b>	<b>14.0</b>	<b>15.5</b>	

1.4.58. Soprano (5.9B/h) and common pipistrelle (5.6B/h) were the most frequently recorded species, with individuals of both species recorded close to sunset. Noctule activity was the third most frequently recorded species with a single individual observed emerging from Little Nursery Wood in May 2011 and two individuals seen re-entering the woodland during the dawn survey in August 2011. A total of four barbastelle passes were recorded, all in May 2011. The earliest barbastelle pass was recorded 46 minutes after sunset.

1.4.59. At least eight species were identified during static detector surveys. A summary of the results of static detector surveys undertaken in 2011 (Ref 1.16) is provided in **Table 1.9**.

**Table 1.9: Relative activity levels recorded during static detector surveys in 2011**

Species	Deployment dates			Total	Deployment dates
	11.05.11-24.05.11	22.06.11	11.05.11-24.05.11		
<b>Group 1 species (all nights)</b>					
Leisler's bat*	4	5	52	61	<b>0.2</b>
Nathusius' pipistrelle	1	0	0	1	<b>&lt;0.1</b>
Barbastelle	90	60	126	276	<b>0.8</b>
<b>Group 1 total</b>	<b>95</b>	<b>65</b>	<b>178</b>	<b>338</b>	
<b>Group 2 species (3x3 nights)</b>					
<i>Myotis</i> spp.	13	2	1	16	<b>0.2</b>

**NOT PROTECTIVELY MARKED**

Species	Deployment dates			Total	Deployment dates
	11.05.11-24.05.11	22.06.11	11.05.11-24.05.11		
Noctule	37	5	2	44	<b>0.6</b>
<i>Nyctalus</i> spp.	2	0	0	2	<b>&lt;0.1</b>
Common pipistrelle	243	107	104	454	<b>6.1</b>
Soprano pipistrelle	265	219	219	703	<b>9.5</b>
Serotine	0	0	7	7	<b>0.1</b>
Serotine/Leisler's*	1	0	0	1	<b>&lt;0.1</b>
Brown long-eared bat	3	1	0	4	<b>0.1</b>
<b>Group 2 total</b>	<b>564</b>	<b>334</b>	<b>333</b>	<b>1,231</b>	

1.4.60. As noted during activity transects, soprano and common pipistrelle were the most frequently encountered species, with detectors recording passes by both species in the 20 minutes after sunset. In contrast to activity transect surveys, barbastelle were noted to be the third most frequently recorded species. Four very early passes, in August 2011, were recorded within 20 minutes of sunset, prior to the typical emergence time of this species. Activity levels in noctule were noted to peak in the 20 minutes after sunset and the 20 to 40 minutes before sunrise.

1.4.61. It was considered that Little Nursery Wood is likely to support roosts of noctule, common pipistrelle, soprano pipistrelle and barbastelle, although it was not possible to determine the size and/or status of these potential roosts. No evidence was identified to suggest that *Myotis* spp, Leisler's bat, Nathusius' pipistrelle, serotine, or brown long-eared bat roosted within or close to the site or that the site is an important foraging resource for these species.

1.4.62. For full details of these survey results, please refer to **Annex 7A.3**.

**Post-2012 survey results**

1.4.63. A summary of the results of bat surveys at the site is provided below. Full details of the results of bat surveys at this location are provided in **Annex 7A.4**.

1.4.64. Forty-four trees were assessed during bat tree assessment surveys as having specific features potentially suitable for use by roosting bats. A further 30+ trees (in addition to the 44 identified above) within Little Nursery Wood were considered to have low potential to support roosting bats, although specific features were not identified. Three of the 44 identified trees were

located along the hedgerow boundary on the eastern extent of the site boundary. The remaining trees were located within Little Nursery Wood, which lies outside of, but immediately adjacent to the western boundary.

1.4.65. A total of 56 features in the 44 trees were identified. A summary of the roost assessment levels assigned to these features is provided in **Table 1.10**. Full details of the results of the bat tree assessment survey are provided in **Annex 7A.4**. The location of assessed trees is illustrated on **Figure 7.8** in **Annex 7A.1**. A single bat roost was confirmed during bat tree assessment surveys; a semi-mature Ash, located within Little Nursery Wood approximately 20m from the eastern edge of the woodland, was found to contain two roosting brown long-eared bats.

**Table 1.10: Summary of bat tree assessment results**

Tree roost assessment level.	Number of features identified
Confirmed roost	1
High potential	26
Medium potential	16
Medium/low potential	3
Low potential	9
Unable to assign potential level	1

1.4.66. Four species (noctule, common pipistrelle, soprano pipistrelle and barbastelle) and species belonging to four species groups ('big bat'<sup>8</sup>, *Myotis* spp., *Nyctalus* spp. and common/soprano pipistrelle) were identified during activity surveys<sup>9</sup> at the site. Recorded activity primarily consisted of common (12.7B/h) and soprano (7.7B/h) pipistrelle passes. Low levels of noctule (3.6B/h) and barbastelle (1.6B/h) activity were also recorded with all other species recorded at less than 1B/h. A peak in overall bat activity was recorded during the July 2015 survey at 72B/h, with a significant reduction in activity levels noted in April 2015 (6B/h) and October 2015 (6.6B/h).

1.4.67. As well as activity within the site boundary, surveys on bats emerging from Little Nursery Wood were conducted. Three species (noctule, common pipistrelle and soprano pipistrelle) and two species groups (*Nyctalus* spp.<sup>10</sup> and 'big bat' spp.) were recorded emerging from Little Nursery Wood.

<sup>8</sup> The 'big bat' species group includes calls identified specifically to noctule or serotine as well as those identified to the 'big bat' group (noctule, Leisler's and serotine).

<sup>9</sup> The 'detectability' of different bat species differs, please refer to S-EX213 Sizewell C Ecology: Automated (SM2) bat detector monitoring report 2013/2014 for further information.

<sup>10</sup> *Nyctalus* species are noctule/Leisler's bat and, as serotine do not roost in trees, are probably equivalent to 'big bats' at this location.

Common and soprano pipistrelle were also recorded entering the woodland during the course of activity surveys.

1.4.68. Emerging bats were primarily recorded by surveyors located in Positions 2 and 3 (**Figure 7.9** in **Annex 7A.1**), with all but one emerging bat recorded at these locations. A single emerging soprano pipistrelle was recorded by a surveyor located in Position 1 (**Figure 7.9** in **Annex 7A.1**). Bats returning to the wood were primarily recorded at Position 2 (**Figure 7.9** in **Annex 7A.1**), flying from the east over the arable field within the site and entering the woodland at the south-east corner. A single soprano pipistrelle was recorded returning to Little Nursery Wood by a surveyor located in Position 1 (**Figure 7.9** in **Annex 7A.1**).

1.4.69. **Table 1.11** summarises the species and number of individuals seen emerging from or re-entering Little Nursery Wood.

**Table 1.11: Summary of bats seen emerging from or entering Little Nursery Wood during activity surveys in 2015**

Survey Visit	Species	Number emerging recorded	Number entering recorded
13.04.15	Common pipistrelle	2	0
11.05.15	Soprano pipistrelle	1	0
16.06.15	Soprano pipistrelle	3	0
	Common pipistrelle	1	0
08.07.15	<i>Nyctalus</i> spp.	1	0
	'Big bat'	1	0
	Common pipistrelle	3	4
05.08.15	Soprano pipistrelle	1	0
10.09.15	Soprano pipistrelle	0	1
	Common pipistrelle	0	1
13.10.15	N/A		

1.4.70. During the course of static detector surveys, six species were recorded (Natterer’s bat, noctule, common pipistrelle, soprano pipistrelle, barbastelle and brown long-eared bat) as well as unidentified species belonging to three species groups (*Myotis* spp., common/soprano pipistrelle and ‘big bat’). Although not recorded emerging or entering Little Nursery Wood, three barbastelle passes were recorded in the hour following sunset, the earliest at 33 minutes after sunset. Barbastelle activity indicated that this species was using the eastern edge of Little Nursery Wood; however, the survey data did not indicate that this was being used a regular commuting route. Full details

of the mean passes per night (mppn) recorded for the six species groups into which these results were grouped are provided in **Annex 7A.4**.

- 1.4.71. Recorded activity levels largely reflected those recorded during (manual) activity surveys. Activity was dominated by common and soprano pipistrelle, with a peak of 867.71mppn at MS01 in August 2015. However, despite the common/soprano pipistrelle group recording activity levels greater than 50mppn on over two-thirds of occasions, significantly reduced levels of activity were recorded in April 2015 (MS01 at 5mppn and MS02 at 0.43mppn), May 2015 (MS02 at 4.14mppn) and October 2015 (MS03 at 7.43mppn).
- 1.4.72. A small peak in activity was recorded for barbastelle during the June 2015 survey at 6 mppn (MS02). Recorded activities levels were less than 2mppn on all other occasions. Low numbers of passes (11) were recorded, primarily on MS02 and MS03 in the hour after sunset with the earliest pass (in October 2015) recorded 38 minutes after sunset. In addition, a low number (13) of passes were also recorded in the hour prior to sunrise by detectors located within Little Nursery Wood (June 2015 only).
- 1.4.73. A similarly notable peak was recorded for long-eared bats, on this occasion at MS01 in July 2015, at 11.43mppn. Long-eared bats use very quiet echolocation calls.
- 1.4.74. ‘Big bat’ activity was recorded on only four occasions, at MS01 in July 2015 and MS03 in June, July and August 2015, with a peak at MS03 in July of 29mppn. *Myotis* spp. activity was recorded at only very low levels throughout survey work in 2015. No *Nathusius*’ pipistrelle activity was recorded at any point during the survey period.

#### viii. Terrestrial Mammals

- 1.4.75. The desk-study revealed 28 records of terrestrial mammals within 2km of the site boundary. Species recorded comprised European otter (six records), Western European hedgehog (*Erinaceus europaeus*) (four records), brown hare (*Lepus europaeus*) (12 records), water shrew (*Neomys fodiens*) (one record), and water vole (*Arvicola amphibius*) (five records).
- 1.4.76. Five of the six European otter records were associated with the river Yox to the south and all records were between 750m to 1.4km from the site boundary. Two of the five water vole records were associated with the Minsmere New Cut to the south-east, one with the river Yox to the west, one within Dew’s Ponds to the north-west and one to the south-east. All records were between 1.8 and 2.2km from the site boundary. Due to the lack of suitable waterbodies, European otter and water vole are not considered likely to be present within the boundaries of the site. In addition, no evidence for

their occupation was identified during the Phase 1 habitat survey, and these species have been scoped out of this ecological baseline.

- 1.4.77. The four Western European hedgehog records were between 1.0 and 1.4km from the site boundary. Little Nursery Wood and the hedgerows present provide potentially suitable habitat for hedgehogs and this species could be present within the site boundary. Hedgehog is a Suffolk Priority Species and Habitats listed species (Ref 1.13) and listed under Section 41 of the NERC Act (Ref 1.12).
- 1.4.78. One of the 12 brown hare records was within the site boundary. Additionally, the arable and hedgerow habitat present provide potentially suitable habitat for hares and this species could be present within the site boundary. The Suffolk BAP (Ref 1.22) states that brown hare is widespread in Suffolk, however, recent reports in the east of England in 2018 suggest brown hare are suffering from a disease epidemic with records of sick or dead animals (Ref 1.23), and with rabbit haemorrhagic disease type 2 now confirmed in brown hare from Dorset and Essex (Ref 1.24).
- 1.4.79. The desk-study revealed one water shrew record 2.2km to the south-east of the site. One record of water shrew was reported in Pond 78 (**Figure 7.4** in **Annex 7A.1**) during surveys for great crested newts in 2015. Water shrews are reported as declining in Suffolk (Ref 1.25). The water shrew is on Suffolk's Priority Species and Habitats list (Ref 1.13) and considered locally important.
- 1.4.80. In 2011, two badger outlier setts with fresh spoil and clear, debris-free entrances. Latrines were found near the sett entrance, and mammal paths. In May 2016, no evidence of badger setts were identified, although there were rabbit holes in the location where outlier setts were identified in 2011.

## 1.5 Baseline conditions – ecological features and their importance

### a) Assessment methodology

- 1.5.1. The purpose of this final section is to describe the distribution and relative abundance of the habitats and species present within the Zol of the site boundary, and to use this information, in the context of the wider distribution, to assess the importance of the habitats and species that could be affected by the proposed development. This assessment will then be used, in conjunction with a description of the extent and magnitude of the predicted impacts of the scheme, to carry out the detailed ecological impact assessment presented in **Chapter 7 of Volume 3** of the **ES**.
- 1.5.2. To comply with both the CIEEM Guidelines for Ecological Impact Assessment (Ref 1.4) and with the standard EIA methodology used

elsewhere within the ES, both methodologies have been used to assess the habitats and species within the Zol of the site.

1.5.3. Under the CIEEM guidelines (Ref 1.4), the first stage is to identify IEFs, to include habitats, species and ecosystems, including ecosystem function and processes, with reference to the geographical context in which they are considered important. An assessment is then made of whether these IEFs will likely be subject to impacts and, if so, these are taken forward into the EclA as a material consideration in the planning decision. Where protected species are present and there is the potential for a breach of the legislation, those species are also considered to be IEFs to be included in the EclA.

1.5.4. Those IEFs that qualify purely on the basis of legislative considerations (such as badgers) rather than as a result of their conservation status, are addressed separately in the EclA from those that are of material concern, with the latter being assessed in greater detail. For both, the ES will outline what measures are required to prevent any contravention of the legislation.

1.5.5. In line with the CIEEM guidelines (Ref 1.4), the importance of an ecological feature, as determined with reference to legal, policy and/or nature conservation considerations, has been assessed within the following geographical context:

- International and European importance;
- National importance (i.e. UK or England);
- Regional importance (i.e. the East of England);
- County importance (i.e. Suffolk); and
- Local importance (within Zol of the scheme).

1.5.6. The following table has also been used in order to assess the ecological features in accordance with the wider EIA methodology (**Table 1.12**).

**Table 1.12: Criteria for assessment of ecological importance.\***

Importance	Criteria	
<b>High</b>	International; UK; National (England)	Very high importance and rarity. Feature/resource possesses key characteristics which contribute significantly to the distinctiveness, rarity and character of the site (for example designated features of international/national importance, such as SACs, SPAs, Ramsar sites and SSSIs).



Importance	Criteria	
<b>Medium</b>	Regional (East Anglia); County (Suffolk)	Medium importance and rarity, regional scale. Feature/resource possesses key characteristics which contribute significantly to the distinctiveness and character of the site/receptor (for example designated features of regional or county importance, such as CWSS, County BAP habitats, etc.).
<b>Low</b>	Local - district/borough (Suffolk Coastal)	Low or medium importance and rarity, local scale. Feature/resource possesses characteristics which are only locally significant. Feature/resource not designated or only designated at a district or local level (for example local nature reserve).
<b>Very low</b>	Within the Zol	Feature/resource characteristics do not make a significant contribution to local character or distinctiveness. Feature/resource not designated.

\*As part of the assessment process, the sensitivity of the ecological features should also be assessed. Sensitivity has not been addressed within the ecological baseline. Sensitivity and a detailed rationale explaining how a particular sensitivity rating has been arrived at for each ecological features will be dealt with in the Environment Statement. [Note that Importance and Sensitivity should be assessed separately, as they are to an extent independent of each other (e.g. a feature of high value could be of low sensitivity, and vice versa)].

**b) Description and assessment of ecological features**

**1.5.7.** This section sets out the relevant ecological features and their importance and discusses each in turn. For each feature, its importance is described by:

- Description and distribution: the habitat or species is described in terms of its distribution and abundance locally, regionally and nationally.
- Assessment: the habitat or species is described by its protected/nature conservation status, and other measures of value, to determine its relative importance both in terms of the CIEEM guidelines (Ref 1.4) and the wider EIA assessment methodology.

**1.5.8.** As outlined in **section 2**, the legislative and policy framework for each ecological receptor is considered in full and, together with professional judgement, is used to assign a value to each ecological receptor. This appendix gives a detailed rationale for the value assigned to each ecological receptor and the conclusions reached.

## ii. Feature: Designated sites

## Description and distribution

1.5.9. Three statutory designated sites were identified within a 5km radius of the site boundary, and six non-statutory CWS were identified within a 2km radius of the site boundary. These sites are detailed in **Table 1.2** and **Table 1.3**.

## Assessment

1.5.10. Given that:

- two of the statutory designated sites (Dew's Ponds SAC and Minsmere to Walberswick Heaths and Marshes SAC, SPA and Ramsar) support habitat and species of European importance listed on Article 4 of the EC Birds Directive (Ref 7A.5) and Article 3 of the EC Habitats Directive (Ref 1.6) and that the sites identified as SSSIs (Potton Hall Fields SSSI) support habitats and species of national importance; however,
- no direct land take of these sites will occur and no obvious impact pathways have been identified;

then these statutory sites within the Zol would:

- be an IEF at the international (SPA, SAC and Ramsar sites)/national (SSSI sites) level under the CIEEM guidelines (Ref 1.4);
- be of high importance, following the EIA-specific assessment methodology; but
- be scoped out of the detailed assessment as there would be no direct or indirect impacts.

1.5.11. Given that:

- CWSs and their cited interest features within 2km of the site are designated on the basis of habitats, plant, reptile and/or bird assemblages of county importance; however
- the distance of these sites and the proposed development, along with the implementation of primary and tertiary mitigation measures, ensures there are no direct or indirect impacts on these designated sites.

then these sites within the ZoI of the proposed development would:

- be an IEF at the county level under the CIEEM guidelines (Ref 1.4);
- be of medium importance, following the EIA-specific assessment methodology; but
- scoped out of the detailed assessment as there would be no direct or indirect impacts.

iii. **Feature: Plants and habitats**

**Description and distribution**

1.5.12. Arable habitat is widespread in Suffolk and no botanically rich arable margins were identified. Hedgerows are on Suffolk's Priority Species and Habitats list (Ref 1.13) and have been targeted for action in the Suffolk BAP (Ref 1.26). At the last assessment (2004), there were an estimated 12,500 to 15,000km of species-rich hedgerow in the county (Ref 1.26); however, no species-rich hedgerows were identified. Little Nursery Wood is a 2.8ha broadleaved woodland and this habitat is on Suffolk's Priority Species and Habitats list (Ref 1.13). At the last assessment (2007), the Suffolk broadleaved woodland BAP estimated there were 15,466ha of deciduous woodland within Suffolk (Ref 1.27). Little Nursery Wood is not recorded on the ancient woodland inventory and is therefore likely to be relatively recent in origin. Ponds are a habitat on Suffolk's Priority Species and Habitats list (Ref 1.13). There is one pond (Pond 78) located within the site boundary while a number of other ponds are located within the wider area. Pond 78 will be retained within the site and is not considered a significant contributor to the wider pond assemblage.

**Assessment**

1.5.13. Given that:

- arable habitat is widespread in Suffolk and no botanically rich margins were identified;
- hedgerows are widespread in Suffolk and that no species-rich sections were identified; and
- the pond on site will be retained and is not considered a significant contributor to the wider assemblage of ponds. In addition, there will be

a 10m buffer and 3m high landscape bund screening this pond from the car park and buildings / structures on the site.

then the habitats present (arable field, hedgerows and pond habitat) within the Zol would:

- not be an IEF under the CIEEM guidelines (Ref 1.4); and;
- be of very low importance, following the EIA-specific assessment methodology.

1.5.14. Given that Little Nursery Wood:

- is of some ecological value and supports species such as bats, reptiles and breeding birds;
- is limited in extent and does not constitute ancient woodland;
- will be retained in its entirety, and protected through primary mitigation such as a 20m buffer will be maintained between the proposed development and Little Nursery Wood;

then Little Nursery Wood would:

- not be an IEF under the CIEEM guidelines (Ref 1.4); and;
- be of low importance, following the EIA-specific assessment methodology.

#### iv. [Feature: Invertebrates](#)

##### [Description and distribution](#)

1.5.15. The majority of the site comprises a large arable field, with no species-rich margins or other features of particular importance to invertebrate species. Little Nursery Wood supported features of some benefit to invertebrate species including dead and decaying wood, and a diverse ground flora. There are no recent desk-study records for invertebrate species within the site boundary, but there is an historic record for stag beetle, a woodland specialist from Yoxford (2km away) and a record for the median wasp which is a hedgerow and woodland species. This is a species that has recently colonised the UK and is expanding its range.

## Assessment

### 1.5.16. Given that:

- the majority of the site comprises an arable field of limited value to invertebrate species and that there are no recent (within 10 years) records for stag beetles in close proximity of the site;
- that median wasp, if present, is expanding its range, and
- that Little Nursery Wood woodland will be retained in its entirety;

then the invertebrate assemblage within the Zol would:

- not be an IEF under the CIEEM guidelines (Ref 1.4); and;
- be of low importance, following the EIA-specific assessment methodology.

### v. Feature: Amphibians

#### Description and distribution

1.5.17. There is one pond (Pond 78) located within the site boundary while a number of other ponds are located within the Zol. A 'small' population of great crested newts was confirmed within Pond 78 and great crested newt eDNA was confirmed in Pond 101. The ponds in the gardens of house west of the A12 (Ponds 78, 79, 80 and 81) had HSI scores ranging from average to excellent, and had good connectivity between them. In addition, Ponds 101, to the west of the A12, has good connectivity with Ponds 78, 79, 80 and 81. The population found within these ponds (Ponds 78, 79, 80, 81 and 101) would likely represent a meta-population of great crested newts found to the west of the A12.

1.5.18. Although the site comprises largely arable fields, considered to be suboptimal terrestrial habitat for great crested newts, the field margins, Little Nursery Wood, and gardens to houses on the west side of the A12 provide habitat that is suitable for great crested newts in their terrestrial phase. The woodland also provides suitable hibernation sites. There are desk-study records of great crested newts within 480m of the site in Sillet's Wood to the north, and other records both to the south, north-west, north and north-east of the site, including those in the Dew's Pond SAC which is designated for great crested newts.

- 1.5.19. Suffolk (along with Cheshire) boasts the highest density of ponds in England, and is considered to be a stronghold for great crested newts, particularly in the north-east of the county (which covers the EDF Energy estate) (Ref 1.28). Analysis of 900 of Suffolk's 22,000 estimated ponds between 2004 to 2007 (Ref 1.25), revealed that whilst over 14% of the ponds surveyed contained great crested newts, large and established populations were only recorded at a small number of ponds (sunny, well-vegetated ponds with good surrounding habitat), and the majority of Suffolk's ponds were found to be unsuitable for newts (due to heavy shade and organic matter, and/or the presence of predatory fish or damagingly high duck populations).
- 1.5.20. Other amphibians recorded within the Zol included smooth newt (*Lissotriton vulgaris*) and common frog (*Rana temporaria*), both of which are not on Suffolk's Priority Species and Habitats list (Ref 1.13).

#### Assessment

- 1.5.21. Given that the great crested newt:
- is on Suffolk's Priority Species and Habitats list (Ref 1.13), is listed within Section 41 of the NERC Act (Ref 1.12), and are protected under Schedule 5 of the Wildlife and Countryside Act (Ref 1.2), and Schedule 2 of the Conservation of Habitats and Species Regulations (Ref 1.10);
  - is widespread but patchily distributed with populations of conservation interest in the UK, and has a population stronghold in the Suffolk;
  - has been found within the site boundary, there are desk-study records surrounding the site, and there exists optimal habitat adjacent to the site;
- then the population of this species located within the Zol would be:
- an IEF at the local level under the CIEEM guidelines (Ref 1.4); and
  - of low importance, following the EIA-specific assessment methodology.
- 1.5.22. Given that common frog and smooth newt:
- have low nature conservation status; and
  - have relatively low abundance and populations within the Zol of the proposed development.

then the population of these species within the Zol would:

- not be an IEF under the CIEEM guidelines (Ref 1.4); and
- be of low importance, following the EIA-specific assessment methodology.

vi. **Feature: Reptiles**

**Description and distribution**

1.5.23. On the basis of the 2011 Extended Phase 1 habitat survey there is only a small area of suitable habitat for reptiles within the site boundary, as most of the site is a large intensively managed arable field. There are no desk-study results of reptiles nearer than 700m from the site. If present, reptiles are only likely to occur in small numbers.

1.5.24. A review of the Suffolk's Priority Species and Habitats list identified adders, grass snakes, common lizards and slow-worms as a priority species (Ref 1.13). In addition, adders, grass snakes, common lizards and slow-worms are included within Section 41 of the NERC Act (Ref 1.12).

**Assessment**

1.5.25. Given that:

- no reptiles were recorded within 700m of the site boundary, and the habitat is considered predominantly to be sub-optimal;

then the reptile assemblage within the Zol would:

- not be an IEF under the CIEEM guidelines (Ref 1.4); and;
- be of very low importance, following the EIA-specific assessment methodology.

vii. **Feature: Birds**

**Description and distribution**

1.5.26. Only two Schedule 1 species of the Wildlife and Countryside Act (Ref 1.2), redwing and fieldfare, were recorded during the Winter bird surveys. None were recorded during the breeding season surveys. Redwing and fieldfare are widespread Winter visitors that utilise hedgerow and woodland for

foraging and are included on Schedule 1 due to the rarity of breeding occurring within the UK.

1.5.27. A total of 16 species listed on either Section 41 of the NERC Act (Ref 1.12) and/or included on the Red List or Amber List of BoCC (Ref 1.3) were observed during the breeding and the wintering bird surveys. The majority of these species are considered likely to be breeding and to be present during the Winter months too.

1.5.28. The breeding bird species recorded can be divided into those species requiring the woodland of Little Nursery Wood as a nesting and foraging resource and those species that utilise arable farmland and hedgerow habitat. Arable farmland is extensive within Suffolk and the distribution of farmland bird species such as the red listed species discussed above will to a large extent be dependent on the diversity of the arable habitat. Fields with large diverse margins or crops sown to benefit as wild birds are likely to support a greater number and diversity of bird species than intensively managed arable farmland as is found on site. Small discrete areas of broadleaved woodland such as Little Nursery Wood are also relatively widespread within Suffolk, see the plants and habitats features described above.

#### Assessment

1.5.29. Given that:

- no Schedule 1 breeding bird species of the Wildlife and Countryside Act (Ref 1.2) were recorded;
- intensively managed arable habitat, and the breeding and wintering bird assemblage it supports is widespread in Suffolk and the arable habitat is not being managed specifically to benefit breeding birds; and
- that the nesting and foraging resource of Little Nursery Wood is being retained;

notwithstanding the legal protection afforded to breeding bird species, then the breeding and wintering bird assemblage within the ZOI would:

- not be an IEF under the CIEEM guidelines (Ref 1.4); and
- be of low importance, following the EIA-specific assessment methodology.



### viii. Feature: Bats

#### Description and distribution

- 1.5.30. At least seven species were reported within the desk-study; however, no records were identified within the site boundary with the closest records approximately 1km (activity) and 1.3km (roost) to the south-west of the site.
- 1.5.31. Habitat within the site boundary primarily consists of open arable land of limited value for bats. However, edge areas of the site, primarily in the form of hedgerows, as well as the block of woodland directly adjacent to the west of the site boundary, Little Nursery Wood, are considered to provide suitable foraging, commuting and roosting habitat.
- 1.5.32. Assessment of tree roost potential identified a significant number of trees with the potential to support roosting bats. However, these trees are primarily located outside of the site boundary, within Little Nursery Wood. A single tree, a semi-mature Ash, was confirmed as a bat roost with two brown long-eared bats identified using the roost at the time of surveying.
- 1.5.33. Activity and static detector surveys identified big bat spp., *Nyctalus* spp., common pipistrelle, and soprano pipistrelle as emerging from Little Nursery Wood, suggesting the potential for these species to be roosting in this location. Significant activity was also recorded throughout the night within this woodland block and common and soprano pipistrelle were recorded entering the woodland during the course of activity surveys. It is therefore considered that Little Nursery Wood is likely to be used as a foraging as well as a roost resource by a number of species. Surveys undertaken in 2011 also suggested the potential presence of roosting barbastelle within Little Nursery Wood. Static detector surveys in 2015 provided some support, with low numbers of barbastelle passes recorded in the hour after sunset and hour before sunrise; however, no barbastelle were observed emerging from Little Nursery Wood during activity surveys. Additionally, barbastelle were observed using the eastern edge of Little Nursery Wood, but data did not indicate that this was being used as a commuting route.

#### Assessment

- 1.5.34. Given that:
- Activity and static detector surveys identified big bat spp., *Nyctalus* spp., common pipistrelle, and soprano pipistrelle as potentially using Little Nursery Wood as a roosting location.

**NOT PROTECTIVELY MARKED**

- Little Nursery Wood is likely to be a foraging as well as a roost resource for a number of species.
- Although barbastelle only account for a small proportion of the overall activity recorded at the site and within the adjacent Little Nursery Wood, they were regularly recorded, with the timing of activity suggesting the potential for roosting barbastelle to be present within Little Nursery Wood. Barbastelle are nationally rare with a restricted distribution. Barbastelle are listed on the Suffolk's Priority Species and Habitats list (Ref 1.13), Section 41 of the NERC Act (Ref 1.12) and on Annex II of the Habitats Directive (Ref 1.6).
- Natterer's bat may forage and roost within the Zol (defined as 4km for Natterer's bat). This species is common and widespread in the UK but is not common in Suffolk and was recorded in only very low numbers within the site and adjacent Little Nursery Wood.
- Noctule roost and forage within the Zol (defined as 4km for noctule). Noctule are widespread in Suffolk and were recorded in low to moderate numbers on the site.
- Common and soprano pipistrelle were the most frequently recorded species within the site and the adjacent Little Nursery Wood and roost and forage within the Zol (defined as 2km and 3km for common and soprano pipistrelle respectively).
- Although Nathusius' pipistrelle may roost and forage within the Zol (defined as 3km for Nathusius' pipistrelle) the species is scarce in Suffolk, having only recently been classified as a resident rather than a migrant Winter visitor. No Nathusius' pipistrelle activity was recorded within the site or the adjacent habitat of Little Nursery Wood. A single record of this species was recorded within the Zol.
- Brown long-eared bats are often under-recorded and are known to roost within Little Nursery Wood. Brown long-eared roosts (maternity and unknown type) were identified within the Zol (defined as 3km for brown long-eared bats) with a variety of potential roost resources present. However, the species is common and widespread in the UK and within Suffolk though recorded entirely within Little Nursery Wood.

then the bat assemblage within the Zol would be:

- an IEF at a county level under the CIEEM guidelines (Ref 1.4), and

- of medium importance, following the EIA-specific assessment methodology.

1.5.35. Full details of the criteria considered during the assessment of bats at the site are provided in **Table 1.13** to **Table 1.15**.

**Table 1.13 Criteria for assessing the importance of the bat species within the Zol of the proposed development. Note that Zol differs between species**

Source of data	Published data		Information derived from project data (inc local desk-study information) supported by professional judgement based on known species ecological traits			
KEY SCORE	Conservation status	Status UK/Suffolk	Status within the site	Breeding roosts (maternity) within the Zol	Hibernation within the Zol	Use of habitats within the Zol for foraging/commuting
Red [score 3]	+ Habs. Dir. Annex II [additional importance applied if species is qualifying feature of a SAC]	Nationally rare	Population apparently centred on the site (for at least part of the year); 50+ individuals rarest/rarer species.	Maternity colony of rarest/rarer species within the site.	Majority of individuals likely to hibernate within the site and adjacent areas.	High reliance on habitats present within the site (inside or outside the construction site boundary).
Amber [score 2]	+ NERC Act	Nationally uncommon /less common	Fewer than 50 rarest/rarer species; 50+ more common species. <i>Note these are very broad estimates.</i>	Maternity colony of more common species within the site; rarer species outside the site but within Zol.	Hibernation within Zol very likely; within the site probable	Moderate reliance on habitats present within the t site (based on data and species preferences); higher reliance on habitats outside of the site.

**NOT PROTECTIVELY MARKED**

Source of data	Published data		Information derived from project data (inc local desk-study information) supported by professional judgement based on known species ecological traits			
KEY SCORE	Conservation status	Status UK/Suffolk	Status within the site	Breeding roosts (maternity) within the Zol	Hibernation within the Zol	Use of habitats within the Zol for foraging/commuting
Green [score 1]	EPS only	Common/widespread	Present in lower numbers than above (in low or very low numbers).	No evidence of maternity roost within the site; more common species outside the site but within Zol	Majority of individuals are likely to hibernate outside the site (or outside the Zol)	Low reliance on habitats present within the site; species considered to be generalist and adaptable.

**Table 1.14 Summary of geographical importance boundaries**

Geographic importance: Local	Geographic importance: County	Geographic importance: Regional	Geographic importance: National
A score of 6-10 This matrix does not allow for finer definitions of Local importance (district, borough, Zol, site) for which professional judgement is required.	A score of 11 to 13	A score of 14 to 16	A score of 17+ International if species is qualifying feature of a SAC
The boundaries between these are subjective based on an even distribution of possible scores between the three categories.			

NOT PROTECTIVELY MARKED

**Table 1.15 Summary of the elements considered in determining the geographical context (Ref 1.4) of each species' importance.\***

Species**	Conservation Status	Status UK/Suffolk (Ref 1.29)	Recorded within the site	Activity	Breeding (maternity)	Roosts	Hibernation	Use of habitats for foraging/commuting	Geographic context of importance
Barbastelle	Habs. Annex II Dir. EPS NERC Act	Nationally rare	Recorded in 2011 and 2015 but less than 1.5% of total activity on static detectors <sup>11</sup> . Activity higher within the adjacent Little Nursery Wood but only low numbers; little activity in the first hour after sunset.		No evidence within or adjacent to the site; these areas support very few trees with features preferred by barbastelle. Five roosts (of unknown type) within Zol.		No evidence within or adjacent to the site; these areas support very few trees with features preferred by barbastelle. Five roosts (of unknown type) within Zol.	Habitats within the site unsuitable. Activity suggests Little Nursery Wood may be used as occasional foraging habitat. Habitat mosaic in Zol offers reasonable connectivity and foraging opportunities.	County (score of 12)
Natterer's bat	EPS	Nationally common, widespread in the UK and Suffolk	Only very low numbers identified specifically to Natterer's (<10% of <i>Myotis</i> spp. calls) <sup>12</sup> .		No evidence within Site and activity recorded indicate unlikely within Site or Little Nursery Wood. A variety of potential roost resources are present in the Zol.		No evidence within Site and roosting preferences strongly indicate unlikely within Site or Little Nursery Wood. A variety of potential roost resources are present in the Zol.	Known to use a wide range of habitats. The site is open and sub-optimal. May use Little Nursery Wood but unlikely to be large enough for reliance. The Zol may provide habitat on which Natterer's bat rely.	Local (score of 6)
Noctule	EPS NERC Act	Common in England and widespread in Suffolk	Recorded in low to moderate numbers, but absent from within the		Large number of trees with roost potential within Little Nursery Wood. 2011 but not		Large number of trees with roost potential within Little Nursery Wood	Use almost all landscape types and less reliant on linear features. Unlikely to be heavily reliant on the	Local (score of 8)

<sup>11</sup> In 2015. Unable to compare to data collected in 2011 due to a disparity in the number of nights analysed per species

<sup>12</sup> Note. Low numbers of *Myotis* spp. calls were recorded but most could not be identified to a specific species.

NOT PROTECTIVELY MARKED

Species**	Conservation Status	Status UK/Suffolk (Ref 1.29)	Recorded Activity within the site	Breeding (maternity) Roosts	Hibernation	Use of habitats for foraging/commuting	Geographic context of importance
			adjacent Little Nursery Wood during 2015. Accounted for almost half of big bat calls (48%) <sup>13</sup> in that year.	2015 data suggested roost(s) present. Woodland blocks within Zol may support breeding roost(s).	Woodland blocks within Zol may support hibernation roost(s).	Site or immediately adjacent habitat but Zol may provide habitats on which noctule rely.	
Common pipistrelle	EPS	Common and widespread in the UK and Suffolk	Common and widespread across site. Considerable activity within Little Nursery Wood with individuals emerging and entering.	Habitat within the site largely unsuitable. Activity suggests roost(s) (in some form) may be present within Little Nursery Wood. Range of potential breeding roost resources in Zol.	Few winter roosts are known; these tend to be solitary individuals. Hibernation within tree roosts in Little Nursery wood possible.	Generalist, widespread and common.	Local (score of 6)
Soprano pipistrelle	EPS NERC Act	Common and widespread in UK and Suffolk	Common and widespread across site. Individuals emerging and entering Little Nursery Wood.	Activity suggests roost(s) (in some form) may be present within Little Nursery Wood. Range of potential breeding roost resources in Zol.	Few winter roosts are known; these tend to be solitary individuals. Hibernation within tree roosts in Little Nursery wood possible.	Habitat within the site largely unsuitable. Generalist, though with a bias towards riparian habitats.	Local (score of 7)
Nathusius' pipistrelle	EPS	Uncommon, sparse in Suffolk,	No activity recorded within Site.	No evidence within Site and largely unsuitable habitat.	No evidence within Site and largely unsuitable habitat.	Generalist, though with a bias towards riparian habitats	Not considered of sufficient importance in

<sup>13</sup> Note. 'big bat' calls may contain additional noctule passes that cannot be identified to a specific species.

**NOT PROTECTIVELY MARKED**

Species**	Conservation Status	Status UK/Suffolk (Ref 1.29)	Recorded within the site	Activity	Breeding (maternity)	Roosts	Hibernation	Use of habitats for foraging/commuting	Geographic context of importance
		under-recorded	A single record of this species was identified within the Zol.		Variety of roost resources within Zol including Little Nursery Wood.		Variety of roost resources within Zol including Little Nursery Wood.		this location to merit a valuation
Serotine	EPS	Uncommon but widespread in UK	No activity recorded within Site <sup>14</sup> . A single record of this species was identified within the Zol		No evidence within Site and roosting preferences strongly indicate unlikely within Site or Little Nursery Wood. A variety of potential roost resources are present in the Zol.		No evidence within Site and roosting preferences strongly indicate unlikely within Site or Little Nursery Wood. A variety of roost resources are present in the Zol.	Site open and sub-optimal. May use Little Nursery Wood but unlikely to be large enough for reliance. The Zol may provide habitat on which serotine rely.	Not considered of sufficient importance in this location to merit a valuation
Brown long-eared bat	EPS NERC Act	Common and widespread in UK and Suffolk	Very low activity levels recorded only within Little Nursery Wood with a single peak in July <sup>15</sup>		Two roosting bats identified within Little Nursery Wood and large number of trees with roost potential present. Three breeding roosts in Zol.		Four roosts (of unknown type) in Zol. Use a range of habitats for hibernation so may hibernate within Zol.	Often under-recorded, generalist	Local (score of 7)

\*The different elements that make up the assigned 'importance' have been broadly categorised and colour-coded to show how each element contributes to the assessment (key provided above: Red scores 3; Amber scores 2; Green scores 1)

\*\*Only those species for which calls were identified to the species level are considered in this table. Species groups are not considered here due to the variation in the considered parameters (in each column) between species within a species group.

<sup>14</sup> Note. 'big bat' calls may contain serotine passes that cannot be identified to the species level.

<sup>15</sup> Note that this species is often under-recorded due to the nature of its echolocation calls.



For example, no calls were assigned by the auto-ID software to Daubenton's bat within *Myotis* spp. group (this is not unusual, as *Myotis* calls are rarely possible to identify to a species). However, those calls identified as *Myotis* are more likely to be Natterer's bat (and therefore are included within the Natterer's bat assessment above) because of the lack of suitable habitat for Daubenton's bat.

x. Feature: Terrestrial mammals

Description and distribution

- 1.5.36. The 2011 Extended Phase 1 habitat survey located two badger outlier setts, however these were not found to be present in 2016. The arable fields of the site are considered sub-optimal foraging habitat for badgers, although the field margins and Little Nursery Wood provide potential foraging habitat. National badger surveys were undertaken between 1985-1988 and 1994-1997 to detect changes in the badger population (Ref 1.30, Ref 1.31). The national surveys detected a large increase in badger numbers over a ten-year period, and evidence from other surveys between 1996 and 2002 suggests that populations may still be increasing, although there was limited information to confirm any trends (Ref 1.32). A further survey of badger setts across England and Wales between 2011 and 2013, concluded there had been a 103% increase in social groups over the last 25 years (Ref 1.33, Ref 1.34). There has also been an increase in Suffolk's badger population since the 1980s (Ref 1.25).
- 1.5.37. No desk-study records for otters or water voles were found within the site and no habitat suitable for either species was identified within the site during the surveys.
- 1.5.38. Desk-study records demonstrated records for hedgehog within the Zol. Little Nursery Wood and the hedgerows present provide potentially suitable habitat for hedgehogs and this species could be present within the site. Hedgehog is on Suffolk's Priority Species and Habitats list (Ref 1.13) and listed on Section 41 of the NERC Act (Ref 1.12). Little Nursery Wood is being retained in its entirety, however there will be some loss of hedgerows. While hedgehog is likely to be found within or adjacent to the site, there is sufficient adjacent habitat to support this species as well as Little Nursery Wood and the majority of hedgerows being retained as part of the site.
- 1.5.39. One desk-study record for brown hare was within the site, and a population comprising two to three individuals was recorded incidentally during the ornithology survey work. East Anglia is a reservoir for brown hare, holding approximately 20% of the national population across the three counties (Cambridgeshire, Suffolk and Norfolk) (Ref 1.25). Brown hare is widespread in Suffolk (Ref 1.13); however, recent reports in the east of England in 2018 suggest brown hare are suffering from a disease epidemic with records of sick or dead animals (Ref 1.23). The two to three individual recorded on site would not comprise a significant contribution to the wider population of this highly mobile species.
- 1.5.40. One water shrew record was recorded in Pond 78 during surveys for great crested newts in 2015. Water shrews are considered to be declining in

Suffolk (Ref 1.22). The water shrew is on Suffolk's Priority Species and Habitats list (Ref 1.13), considered locally important, but is not included within Section 41 of the NERC Act (Ref 1.12), so is not identified as a species of principal importance for the purpose of conserving biodiversity in England. Pond 78 will be retained in its entirety within the site and this record is not considered to provide significant contribution to the potential wider population.

#### Assessment

##### 1.5.41. Given that:

- there was an absence of current survey records for badgers within the site boundary;

then the badgers within the Zol would:

- not be an IEF under the CIEEM guidelines (Ref 1.4); and
- be of very low importance, following the EIA-specific assessment methodology.

##### 1.5.42. Given that;

- there was an absence of desk-study and survey records for hedgehog within the site boundary;
- the most suitable habitat within the site for this species is being retained (Little Nursery Wood and the majority of hedgerows); and
- there is sufficient adjacent habitat to support this species.

then the hedgehog within the Zol would:

- not be an IEF under the CIEEM guidelines (Ref 1.4); and
- be of very low importance, following the EIA-specific assessment methodology.

##### 1.5.43. Given that:

- the brown hare is on Suffolk's Priority Species and Habitats list (Ref 1.13) and is listed on the NERC Act (Ref 1.12);

- exist within the site and has suitable habitat both within the site and the wider area; and
- the population on site (two to three individuals) would not be a significant contribution to the wider population of this highly mobile species.

then the brown hares within the Zol would:

- not be an IEF under the CIEEM guidelines (Ref 1.4); and
- be of low importance, following the EIA-specific assessment methodology.

1.5.44. Given that:

- the water shrew is legally protected, and is on Suffolk's Priority Species and Habitats list (Ref 1.13);
- is considered to be declining in Suffolk;
- exist within the site boundary within a habitat that will be fully retained within the proposed development; and
- the population within the site is not a significant contributor to the wider population

then water shrews within the Zol of would:

- not be an IEF under the CIEEM guidelines (Ref 1.4); and
- be of low importance following the EIA-specific assessment methodology.

c) [Summary of ecological features/receptors](#)

1.5.45. Following a review of the known baseline within the Zol, **Table 1.16** lists the ecological features/receptors and details which will be carried forward into the detailed assessment. Those carried forward are IEFs of sufficient conservation value that will be sufficiently affected by the proposed development to require material consideration within the assessment.

There are a number of ecological receptors that, while not of significant nature conservation value within the Zol, do require some consideration because of the legislative protection afforded to them. While not taken forward for detailed assessment, these are considered further in the ES, where appropriate secondary mitigation is prescribed to ensure legislative compliance.

**Table 1.16 Determination of IEFs to be taken forward for detailed assessment**

Feature/Receptor	Importance (CIEEM/ EIA Methodology)	Justification	Scope in/Out
Statutory designated sites within 5km of the site boundary	International and National/High	These statutory designated sites support a range of habitats and European protected species. Given the distance of these sites from the site (the closest of which is 1.7km north-west), no direct land take of these sites will occur, and no obvious impact pathways have been identified. Dew's Ponds SAC and SSSI, Minsmere to Walberswick Heaths and Marshes SAC, SPA and Ramsar site, and Potton Hall Fields SSSI have therefore been scoped out of the detailed assessment.	Scoped out
Non-statutory designated sites within 2km of the site boundary	County/Medium	CWS support a range of habitats types that are listed on Section 41 of the NERC Act (Ref 1.12) and which are targeted for action in the Suffolk BAP (Ref 1.22). Given the distance of these sites from the site, no direct land take of these sites will occur, and no obvious impact pathways have been identified. All six CWS (Sillet's Wood, Yoxford Wood, Willowmarsh Wood, Minsmere Valley, Darsham Marshes, and Big, Common and Haw Woods) have therefore been scoped out of the detailed assessment.	Scoped out
Pond within the site boundary and Zol	Local/Very Low	Ponds are a habitat listed on Suffolk's Priority Species and Habitats list (Ref 1.13). One pond (Pond 78) is located within the site boundary while a number of other ponds are located within the wider study area. Pond 78 will be retained within the site and is not considered a significant contribution to the wider assemblage of ponds. Pond 78 would be further protected from construction and operational impacts through the creation of a 3m high landscape bund along the north-west and southern boundaries as well as a 10m buffer between the pond and construction works as part of the primary mitigation measures detailed in <b>section 7.5 of Chapter 7 of Volume 3 of the ES</b> . Additionally, this pond is known to support a population of great crested newt, which will be assessed as an IEF in its own right. Ponds have therefore been scoped out of the detailed assessment.	Scoped out
Hedgerows	Local/Very Low	Hedgerows are a habitat listed on Suffolk's Priority Species and Habitats list (Ref 1.13); however, hedgerows are widespread in Suffolk and no species-rich sections were identified. There would be loss of species-poor hedgerow to accommodate the access road to the A12 and Willow Marsh Lane but all remaining hedgerows would be retained and protected as part	Scoped out

**NOT PROTECTIVELY MARKED**

Feature/Receptor	Importance (CIEEM/ EIA Methodology)	Justification	Scope in/Out
		<p>of the primary mitigation measures detailed in <b>section 7.5 of Chapter 7 of Volume 3</b> of the <b>ES</b>.</p> <p>Hedgerows are widespread in Suffolk and it is not considered that the loss of a small section of species-poor hedgerow would be significant. Therefore, hedgerows have been scoped out of the detailed assessment.</p>	
Arable fields and arable field margins	Local/Very Low	<p>Arable field margins are on Suffolk's Priority Species and Habitats list (Ref 1.13); however, no scarce or notable arable weed species have been identified within the site boundary. Arable habitat is also widespread in Suffolk and of limited ecological value. These habitat types have therefore been scoped out of the detailed assessment.</p>	Scoped out
Little Nursery Wood	Local/Low	<p>Little Nursery Wood is a semi-natural broadleaved woodland that has some ecological diversity. It is not recorded on the ancient woodland inventory and is therefore likely to be relatively recent in origin.</p> <p>Little Nursery Wood would be retained in its entirety and a 20m buffer would be maintained between the proposed perimeter fence and Little Nursery Wood during construction and operation. Given the primary and tertiary mitigation detailed within <b>section 7.5 of Chapter 7 of Volume 3</b> of the <b>ES</b> no significant effects are envisioned. Additionally, the species that are supported by this habitat (notably the bat assemblage, reptiles and breeding birds), have been considered as separate ecological features. This habitat has therefore been scoped out of the detailed assessment.</p>	Scoped out
Great crested newt	Local/Low	<p>Pond 78 within the site boundary supports a population of great crested newts and great crested newt eDNA was confirmed in Pond 101. Both of which would be retained. While other nearby ponds (Ponds 79 to 82) were unable to be accessed to confirm presence of great crested newt, there are historic records within the study area, and it is assumed that this species exists within the wider Zol and that these ponds hold a population of this species. The population found within Ponds 78 to 82 and Pond 101 is likely to represent a meta-population of great crested newts .</p> <p>Great crested newts are a priority species for conservation action in the county (Ref 1.13), is protected under Schedule 5 of the Wildlife and Countryside Act (Ref 1.2), and Schedule 2 of</p>	<b>IEF Scoped in</b>

NOT PROTECTIVELY MARKED

Feature/Receptor	Importance (CIEEM/ EIA Methodology)	Justification	Scope in/Out
		<p>the Conservation of Habitats and Species Regulations (Ref 1.10), and are included within Section 41 of the NERC Act (Ref 1.12).</p> <p>Although the area of site comprises largely arable fields, considered to be sub-optimal terrestrial habitat for great crested newts, the field margins, Little Nursery woodland, and gardens to houses on the west side of the A12 provide habitat that is suitable for great crested newts in their terrestrial phase, for both foraging and hibernation.</p> <p>Great crested newts have therefore been scoped into the detailed assessment.</p>	
Reptile assemblage	Local/Very Low	<p>Habitat within and adjacent to the site boundary is of little value to reptile species. From the review of available baseline data, the reptile population is predicted to be fragmented within the wider landscape and the population within the ZOI of the site would not be significant to the wider reptile population within Suffolk. Overall, it is considered that any impacts that may affect foraging and/or hibernating reptiles are unlikely to be significant.</p> <p>Reptiles have therefore been scoped out of the detailed assessment, but details of the mitigation measures that should be employed to safeguard reptiles have been detailed within <b>section 7.5 of Chapter 7 of Volume 3 of the ES.</b></p>	Scoped out
Breeding and wintering bird assemblage	Local/Low	<p>The breeding and wintering bird assemblage identified within the site is representative of the habitats present and the populations observed on site are considered comparable to the populations within the wider area. The intensively managed arable habitat, and the breeding and wintering bird assemblage it supports, is widespread in Suffolk and the arable habitat is not being managed specifically to benefit birds. Additionally, the nesting and foraging resource of Little Nursery Wood is being retained. It is therefore considered unlikely that any significant effects would occur on the breeding and wintering bird populations as a result of the proposed development. Breeding and wintering birds are therefore scoped out of the detailed assessment.</p> <p>However, breeding birds are protected under the Wildlife and Countryside Act (Ref 1.2) and there may be the potential for impacts on breeding birds, should works be undertaken during the breeding bird period (end of February to end of August inclusive). Details of the mitigation measures that would be employed to safeguard birds have been detailed within <b>section 7.5 of Chapter 7 of Volume 3 of the ES.</b></p>	Scoped out



NOT PROTECTIVELY MARKED

Feature/Receptor	Importance (CIEEM/ EIA Methodology)	Justification	Scope in/Out
Roosting, foraging and commuting bats	County/Medium	<p>At least seven bat species have been recorded within the site or the relevant Zol during the Desk-study and surveys undertaken. Little Nursery Wood contains a large number of trees with the potential to support roosting bats and a bat roost with two brown long-eared bats was confirmed at the time of surveying.</p> <p>Activity was recorded of ‘big bat’ spp., <i>Nyctalus</i> spp., common pipistrelle, and soprano pipistrelle as emerging from Little Nursery woodland, suggesting the potential for these species to be roosting in this location. Survey recordings also included the presence of the nationally rare barbastelle, a species with a restricted distribution and receiving additional protection under Annex II of the Habitats Directive (Ref 1.6); this species is potentially roosting within the woodland.</p> <p>The degree of sensitivity bats display varies between species; however, it is recognised that all bat species can be negatively impacted by anthropogenic activities. All bat species in the UK are protected under Annex IV of the Habitats Directive (Ref 1.6), transposed to UK law under the Conservation of Habitats and Species Regulations (Ref 1.10). Additional relevant legislation includes the Wildlife and Countryside Act (Ref 1.2), and Section 41 of the NERC Act (Ref 1.12). The bat assemblage is therefore scoped into the detailed assessment.</p>	IEF Scoped in
Brown hares	Local/Low	<p>A population of two or three individuals were recorded on site during surveys. While a limited number of brown hare are likely to be found within or adjacent to the site, there is sufficient adjacent habitat to support this species, and the population found within the site boundary is not considered to be a significant contribution to the potential wider population within the Zol. The effects of the proposed development on this highly mobile species are unlikely to be significant and brown hare have therefore been scoped out.</p> <p>The brown hare is included on Suffolk’s Priority Species and Habitats list (Ref 1.13) and is listed as a NERC Act (Ref 1.12) species of principal importance for the purpose of conserving biodiversity. Details of the mitigation measures that would be employed to safeguard this species have been detailed within <b>section 7.5 of Chapter 7 of Volume 3 of the ES.</b></p>	Scoped out
Water shrew	Local/Low	<p>This species is known to occur within Pond 78 within the site boundary. The population found within this pond is not considered to be significant to the wider population of the species, and</p>	Scoped out

NOT PROTECTIVELY MARKED

Feature/Receptor	Importance (CIEEM/ EIA Methodology)	Justification	Scope in/Out
		<p>this habitat type is being retained in its entirety with a 10m buffer as part of the proposed development.</p> <p>Water shrews are considered to be declining in Suffolk (Ref 1.22). The water shrew is also a Suffolk BAP species (Ref 1.13) and considered locally important, but is not included within Section 41 of the NERC Act (Ref 1.12), so is not identified as a species of principal importance for the purpose of conserving biodiversity in England.</p> <p>The mitigation measures described for Pond 78 and great crested newts included in <b>section 7.5 of Chapter 7 of Volume 3</b> of the <b>ES</b> would be sufficient to mitigate for any potential impacts on water shrew. This species has therefore been scoped out of the detailed assessment.</p>	Scope in/Out
Hedgehog	Local/Very Low	<p>Little Nursery Wood and the hedgerows that surround the site provide potentially suitable habitat for hedgehogs. Little Nursery Wood would be retained in its entirety but there would be some loss of a small section of hedgerow to accommodate the access road to the A12. While hedgehogs are likely to be found within or adjacent to the site, there is sufficient adjacent habitat to support this species and the effects of the proposed development on this species is unlikely to be significant.</p> <p>Hedgehog has therefore been scoped out of the detailed assessment.</p> <p>Hedgehog is included on Suffolk's Priority Species and Habitats list (Ref 1.13) and listed on Section 41 of the NERC Act (Ref 1.12) and details of the tertiary mitigation measures that would be employed to safeguard hedgehogs are described in <b>section 7.5 of Chapter 7 of Volume 3</b> of the <b>ES</b>.</p>	Scoped out

## References

- 1.1 J. Collins (ed.). 2016. Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3<sup>rd</sup> edition. London: The Bat Conservation Trust, 2016
- 1.2 Wildlife and Countryside Act, as amended. 1981. (Online) Available from <http://www.legislation.gov.uk/ukpga/1981/69> (Accessed 1 March 2016).
- 1.3 M.A. Eaton. N. Aebisher. A. Brown. R. Hearn. L. Lock. A. Musgrove. D. Noble. D. Stroud. & R. Gregory. 2015. Birds of Conservation Concern 4: Population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds, 2015, 94:452-504.
- 1.4 Chartered Institute of Ecology and Environmental Management. Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland. Terrestrial, Freshwater, Coastal and Marine. Winchester: CIEEM, 2018.
- 1.5 European Parliament and of the Council. Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (Bird Directive). Official Journal of the European Union. 2009.
- 1.6 Council Directive 92/43/EEC Conservation of Natural Habitats and of Wild Fauna and Flora (The Habitats Directive). 1992. (Online). Available from: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043> (Accessed 1 March 2019).
- 1.7 Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance of the Convention on Wetlands (Ramsar, Iran, 1971) (Resolution VII.11).
- 1.8 National Parks and Access to the Countryside Act. (Online) Available from <http://www.legislation.gov.uk/ukpga/Geo6/12-13-14/97/part/I> (Accessed 1 March 2019).
- 1.9 Countryside and Rights of Way Act. 2000. (Online) Available from <http://www.legislation.gov.uk/ukpga/2000/37/contents> (Accessed 1 March 2016).
- 1.10 Statutory Instruments 2017 No. 1012. The Conservation of Habitats and Species Regulations 2017.
- 1.11 Protection of Badgers Act. 1992. (Online) Available from: <http://www.legislation.gov.uk/ukpga/1992/51/contents> (Accessed 1 March 2019).

- 1.12 Natural Environment and Rural Communities Act. 2006. (Online). Available from: <http://www.legislation.gov.uk/ukpga/2006/16/contents> (Accessed 1 March 2019).
- 1.13 Suffolk Biodiversity Information Service. 2015. Priority Species and Habitats. (Online) Available from: <https://www.suffolkbis.org.uk/biodiversity/speciesandhabitats> (Accessed 2 February 2019).
- 1.14 Amec. NNB Generation Company. Land West Side of A12, Darsham. Associated Development Site 10. Draft Extended Phase 1 Habitat Survey. December 2011.
- 1.15 Amec. NNB Generation Company. Sizewell Associated Development Sites. Great Crested Newt Survey Report April 2012.
- 1.16 Amec. NNB Generation Company. Associated Development Site 10. Draft Bat Survey Report. February 2012.
- 1.17 The Hedgerows Regulations. 1997. (Online) Available from: <http://www.legislation.gov.uk/uksi/1997/1160/contents/made> (Accessed 1 March 2019).
- 1.18 Hymettus Information sheet: Median wasp (*Dolichovespula media*) April 2010. (Online). Available from: [http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0ahUKEwjr3bGJlb7MAhWCJhokHeqFALAQFggiMAE&url=http%3A%2F%2Fwww.bwars.com%2Fsites%2Fwww.bwars.com%2Ffiles%2Finfo\\_sheets%2FDolichovespula-media-infosheet.pdf&usq=AFQjCNEAmh9Sdp5yP9x474gH0mK\\_5RxTTw&sig2=IkK7zWXOhi6NLWzZY55g-Q](http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0ahUKEwjr3bGJlb7MAhWCJhokHeqFALAQFggiMAE&url=http%3A%2F%2Fwww.bwars.com%2Fsites%2Fwww.bwars.com%2Ffiles%2Finfo_sheets%2FDolichovespula-media-infosheet.pdf&usq=AFQjCNEAmh9Sdp5yP9x474gH0mK_5RxTTw&sig2=IkK7zWXOhi6NLWzZY55g-Q) (Accessed 1 March 2019).
- 1.19 Amec. NNB Generation Company. Land West Side of A12, Darsham. Associated Development Site 12. Draft Extended Phase 1 Habitat Survey. December 2011
- 1.20 SWT (2003) Great Crested Newt (*Triturus cristatus*). Suffolk BAP, Available from: <http://www.suffolkbiodiversity.org/content/suffolkbiodiversity.org/PDFs/action-plans/greatcrestednewt.pdf>
- 1.21 English Nature. 2001. Great Crested Newt Mitigation Guidelines. English Nature, Peterborough, 2001.
- 1.22 Suffolk Biodiversity Partnership. Suffolk Local Biodiversity Action Plan. May 2012. (Online). Available from: <https://www.suffolkbis.org.uk/sites/default/files/biodiversity/priorityspeciesha>

- bitats/actionplans/Planning\_BAP\_Final%2018%20May%202012.pdf  
(Accessed 7 February 2019)
- 1.23 Norfolk Wildlife Trust. Wildlife Trusts join with University of East Anglia to identify cause of hare deaths. Article dated 11 October 2018. (Online) Available from: <https://www.norfolkwildlifetrust.org.uk/news-and-articles/news/all-news/2018-10-11-wildlife-trusts-join-with-univ> (Accessed 23 February 2019).
- 1.24 The Guardian. Deadly rabbit virus threatens UK brown hare population. (Online) Available from: <https://www.theguardian.com/environment/2019/jan/25/deadly-rabbit-virus-threatens-uk-brown-hare-population> (Accessed 26 February 2019).
- 1.25 S. Bullion. 2009. The Mammals of Suffolk. Suffolk Wildlife Trust.
- 1.26 Suffolk Biodiversity Information Service. Ancient and/or Species-rich Hedgerows. December 2004. (Online). Available from: <https://www.suffolkbis.org.uk/sites/default/files/biodiversity/priorityspecieshabitats/actionplans/hedgerows.pdf> (Accessed 5 February 2019)
- 1.27 Suffolk Biodiversity Information Service. Suffolk Local Biodiversity Action Plan. Suffolk Lowland Mixed Deciduous Woodland. 2007. (Online). Available from: <https://www.suffolkbis.org.uk/sites/default/files/biodiversity/priorityspecieshabitats/actionplans/MixedDeciduousWoodland.pdf> (Accessed 5 February 2019)
- 1.28 T. Langton, G. Millins & C. Langton. 2007. On the status of ponds and great crested newt (*Triturus cristatus*) in Suffolk. Transactions of the Suffolk Naturalist Society, 2007. 43: 43-57.
- 1.29 Natural England. 2018. A Review of the Population and Conservation Status of British Mammals. June 2018.
- 1.30 Harris, S., Cresswell, P., and Jefferies, D. 1989. Surveying Badgers. Mammal Society.
- 1.31 Wilson, G., Harris, S., and McLaren, G. 1997. Changes in the British badger populations 1988 to 1997. People's Trust for Endangered Species.
- 1.32 Battersby, J. 2005. UK Mammals: Species Status and Population Trends. First Report by the Tracking Mammals Partnership. Joint Nature Conservation Committee /Tracking Mammals Partnership.
- 1.33 Judge, J., Wilson, G.J., Macarthur, R., Delahay, R.J., and MacDonald, R.J. (2014). Density and abundance of badger social groups in England and Wales 2011 – 2013. Scientific Reports, 4.

- 1.34 Natural England Joint Publication JP025. 2018. A Review of the Population and Conservation Status of British Mammals. Natural England.



VOLUME 3, CHAPTER 7, APPENDIX 7A:  
ANNEX 7A.2: DESK-STUDY

## Contents

1	Desk Study .....	1
1.1	Methodology .....	1
1.2	Plants.....	2
1.3	Invertebrates.....	4
1.4	Amphibians.....	13
1.5	Reptiles.....	17
1.6	Birds .....	19
1.7	Bats .....	25
1.8	Terrestrial mammals.....	34

## Tables

Table 1.1:	Desk study results for plants.....	2
Table 1.2:	Desk study results for invertebrates.....	4
Table 1.3:	Desk study results for amphibians .....	13
Table 1.4:	Desk study results for reptiles .....	17
Table 1.5:	Desk study results for birds.....	19
Table 1.6:	Desk study results for bats.....	25
Table 1.7:	Desk study results for terrestrial mammals.....	34

## Plates

**None provided.**

## Figures

**None provided.**



## 1 Desk Study

### 1.1 Methodology

- 1.1.1. Desk study records of protected or otherwise notable species of conservation interest within 2km (unless otherwise stated) of the northern park and ride at Darsham site (hereafter referred to as the site) boundary were obtained from Suffolk Biodiversity Information Service (SBIS) in December 2014. A second data request was made in March 2016 for records of bats within 10km of the proposed development.

## 1.2 Plants

1.2.1. **Table 1.1** below summarises the desk study results for plants within the 2km Zone of Influence (Zol) of the site.

**Table 1.1: Desk study results for plants**

Species Common Name	Location	Grid Reference	Year	Distance from the Site*
Frogbit ( <i>Hydrocharis morsus-ranae</i> )	Bramfield	TM47B	2005	N/A*
Greater Butterfly-orchid ( <i>Platanthera chlorantha</i> )	Bramfield	TM37W	2006	N/A*
Round-fruited Rush ( <i>Juncus compressus</i> )	Darsham	TM47F	2003	N/A*
Mossy Stonecrop ( <i>Crassula tillaea</i> )	Darsham Marshes	TM46J	2012	N/A*
	Darsham	TM46E	2000	N/A*
Sulphur Clover ( <i>Trifolium ochroleucon</i> )	Kelsale-cum-Carlton	TM36Y	2005	N/A*
Hoary Cinquefoil ( <i>Potentilla argentea</i> )	Darsham Marshes	TM46J	2012	N/A*
Dwarf Spurge ( <i>Euphorbia exigua</i> )	Bramfield	TM37W	2006	N/A*
	Bramfield	TM47B	2005	N/A*
	Bramfield	TM3872	2003	N/A*
Heath Dog-violet ( <i>Viola canina</i> )	Yoxford	TM3868	2004	N/A*
Wild Pansy ( <i>Viola tricolor</i> )	Thorington	TM47G	2002	N/A*
Northern Yellow-cress ( <i>Rorippa islandica</i> )	Darsham Marshes	TM46J	1993	N/A*
Dittander ( <i>Lepidium latifolium</i> )	Darsham	TM416716	1997	1.5km north-east
Corn Spurrey ( <i>Spergula arvensis</i> )	Thorington	TM47G	2002	N/A*

**NOT PROTECTIVELY MARKED**

Species Common Name	Location	Grid Reference	Year	Distance from the Site*
	Westleton	TM47F	2001	N/A*
Field Woundwort ( <i>Stachys arvensis</i> )	Bramfield	TM47B	2003	N/A*
	Thorington	TM47G	2003	N/A*
Common Cudweed ( <i>Filago vulgaris</i> )	Darsham Marshes	TM46J	2012	N/A*
	Bramfield	TM47B	2003	N/A*
	Thorington	TM47G	2002	N/A*
Stinking Chamomile ( <i>Anthemis cotula</i> )	Kelsale-cum-Carlton	TM36Y	2004	N/A*
Corn Marigold ( <i>Glebionis segetum</i> )	Bramfield	TM47B	2001	N/A*
Shepherd's-needle ( <i>Scandix pecten-veneris</i> )	Yoxford	TM389705	2002	1.7km west

\*Distance from the red line boundary can only be calculated where the grid reference has been received in full

### 1.3 Invertebrates

1.3.1. **Table 1.2** below summarises the desk study results for invertebrates recorded within 2km Zol of the site.

**Table 1.2: Desk study results for invertebrates**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
<i>Gyrinus paykulli</i>	Dew's Ponds	Pond 4	TM38827183	1.502508301	52.29220747	2001	1 count	2.2km north-west
<i>Gyrinus paykulli</i>	Dew's Ponds	Pond 6	TM38847184	1.502808112	52.29228852	2001	1 count	2.0km north-west
<i>Gyrinus paykulli</i>	Dew's Ponds	Pond 8	TM38877170	1.503147959	52.29101905	2001	1 count	1.9km north-west
<i>Peltodytes caesus</i>	Dew's Ponds	Pond 6	TM38847184	1.502808112	52.29228852	2001	1 count	2.0km north-west
<i>Ochthebius (Hymenodes) nanus</i>	Darsham Marshes	Pond, Darsham Marshes SWT reserve	TM423688	1.551263153	52.26349289	2000	adult count of several	1.9km south-east
Stag beetle	Yoxford		TM3968	1.50242907	52.25775689	1997		2.2km south-west
Small heath ( <i>Coenonympha pamphilus</i> )	Yoxford	Yoxwood Community Wood (planted 2008)	TM3969	1.503137091	52.26673142	2012	1 count	1.6km south-west
	Yoxford	Yoxford WCBS square	TM4069	1.517764684	52.26629601	2010	1 count	850m south
	East Suffolk		TM4272	1.549171544	52.29234196	1999	1 count	2.0km north-east
	East Suffolk		TM4270	1.54773597	52.27439385	1995	1 count	1.3km east

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
Grayling ( <i>Hipparchia semele</i> )	East Suffolk		TM4268	1.546301904	52.25644566	1999	1 count	2.4km south-east
	Darsham		TM421689	1.548409682	52.26447835	1995		1.8km south-east
	Darsham		TM424703	1.553803373	52.27690988	1995		1.6km east
	East Suffolk		TM4270	1.54773597	52.27439385	1995	1 count	1.3km east
Wall ( <i>Lasiommata megera</i> )	Yoxford		TM4069	1.517764684	52.26629601	2011	1 count	850m south
	East Suffolk		TM4072	1.519899814	52.29321904	1999	1 count	1.5km north-west
	East Suffolk		TM4268	1.546301904	52.25644566	1999	1 count	2.4km south-east
	East Suffolk		TM4272	1.549171544	52.29234196	1999	1 count	2.0km north-east
	East Suffolk		TM4070	1.51847602	52.27527037	1999	1 count	370m west
	East Suffolk		TM4270	1.54773597	52.27439385	1997	1 count	1.3km east
White admiral ( <i>Limenitis camilla</i> )	East Suffolk		TM4268	1.546301904	52.25644566	1995	1 count	2.4km south-east
	Darsham		TM421689	1.548409682	52.26447835	1995	1 count of present	1.9km south-east
<i>Dolichovespula (dolichovespula) media</i>	Yoxford	Chapel Cottage, High Street	TM3968	1.50242907	52.25775689	2002		2.2km south-west
Garden Tiger ( <i>Arctia caja</i> )	Darsham Marshes		TM420693	1.547233876	52.26811199	1995		1.5km south-east

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
	Darsham Marshes		TM421689	1.548409682	52.26447835	1995		1.8km south-east
White ermine ( <i>Spilosoma lubricipeda</i> )	Darsham Marshes		TM4268	1.546301904	52.25644566	1998	3 count	2.4km south-east
	Darsham Marshes		TM420691	1.547090454	52.26631717	1997		1.8km south-east
	Darsham Marshes		TM420693	1.547233876	52.26811199	1995		1.5km south-east
	Darsham Marshes		TM421689	1.548409682	52.26447835	1995		1.8km south-east
Buff ermine ( <i>Spilarctia luteum</i> )	Darsham Marshes		TM4268	1.546301904	52.25644566	1998		2.4km south-east
	Darsham Marshes		TM420691	1.547090454	52.26631717	1997		1.8km south-east
	Darsham Marshes		TM420693	1.547233876	52.26811199	1996		1.5km south-east
Cinnabar ( <i>Tyria jacobaeae</i> )	Darsham Marshes		TM4268	1.546301904	52.25644566	1998		2.4km south-east
	Darsham Marshes		TM420691	1.547090454	52.26631717	1997		1.8km south-east
Orange-rayed pearl ( <i>Nascia ciliaris</i> )	Darsham Marshes		TM420691	1.547090454	52.26631717	2007		1.8km south-east

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
Waste grass-veneer ( <i>Pediasia contaminella</i> )	Darsham Marshes		TM420693	1.547233876	52.26811199	1995		1.5km south-east
	Darsham Marshes		TM421689	1.548409682	52.26447835	1995		1.8km south-east
Giant water-veneer ( <i>Schoenobius gigantella</i> )	Darsham Marshes		TM420693	1.547233876	52.26811199	1996		1.5km south-east
Oak hook-tip ( <i>Watsonalla binaria</i> )	Darsham Marshes		TM4268	1.546301904	52.25644566	1998	1 count	2.4km south-east
	Darsham Marshes		TM420693	1.547233876	52.26811199	1995		1.5km south-east
	Darsham Marshes		TM421689	1.548409682	52.26447835	1995		1.8km south-east
Wainscot neb ( <i>Monochroa palustrellus</i> )	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.7km south-east
	Darsham Marshes		TM420691	1.547090454	52.26631717	2007		1.8km south-east
Latticed heath ( <i>Chiasmia clathrata</i> )	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.7km south-east
	Darsham Marshes		TM4268	1.546301904	52.25644566	1998	1 count	2.4km south-east

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
Small phoenix ( <i>Ecliptopera silaceata</i> )	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.7km south-east
	Darsham Marshes		TM421689	1.548409682	52.26447835	1995	4 count	1.8km south-east
	Darsham Marshes		TM420693	1.547233876	52.26811199	1995		1.5km south-east
Dusky thorn ( <i>Ennomos fuscantaria</i> )	Darsham Marshes		TM420691	1.547090454	52.26631717	2000	1 count	1.8km south-east
Small emerald ( <i>Hemistola chrysoprasaria</i> )	Darsham Marshes		TM4268	1.546301904	52.25644566	1996		2.4km south-east
	Darsham Marshes		TM420693	1.547233876	52.26811199	1996		1.5km south-east
Shaded broad-bar ( <i>Scotopteryx chenopodiata</i> )	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.7km south-east
	Darsham Marshes		TM421689	1.548409682	52.26447835	1995	1 count	1.8km south-east
	Darsham Marshes		TM420693	1.547233876	52.26811199	1995		1.5km south-east
Blood-vein ( <i>Timandra comae</i> )	Darsham Marshes		TM4268	1.546301904	52.25644566	1997		2.4km south-east



**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
	Darsham Marshes		TM420691	1.547090454	52.26631717	1997		1.8km south-east
	Darsham Marshes		TM421689	1.548409682	52.26447835	1995	1 count	1.8km south-east
Ghost moth ( <i>Hepialus humuli</i> )	Darsham Marshes		TM4268	1.546301904	52.25644566	1998		2.4km south-east
	Darsham Marshes		TM420693	1.547233876	52.26811199	1996		1.5km south-east
Small eggar ( <i>Eriogaster lanestris</i> )	Yoxford	North Boundary Farm	TM397699	1.514015837	52.27450379	1996	1 count of adult	1.7km south-east
Grey dagger ( <i>Acronicta psi</i> )	Darsham Marshes		TM420691	1.547090454	52.26631717	2007		1.8km south-east
	Darsham Marshes		TM4268	1.546301904	52.25644566	1998	1 count	2.4km south-east
	Darsham Marshes		TM420693	1.547233876	52.26811199	1996		1.5km south-east
Knot grass ( <i>Acronicta rumicis</i> )	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.7km south-east
Ear moth ( <i>Amphipoea oculea</i> )	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.7km south-east
Mouse moth ( <i>Amphipyra tragopoginis</i> )	Darsham Marshes		TM420691	1.547090454	52.26631717	2000	1 count	1.8km south-east

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
Large nutmeg ( <i>Apamea anceps</i> )	Darsham Marshes		TM4268	1.546301904	52.25644566	1998		2.4km south-east
White-mantled wainscot ( <i>Archanara neurica</i> )	Darsham Marshes		TM420689	1.546947047	52.26452235	2011	2 count	1.7km south-east
Centre-barred sallow ( <i>Atethmia centrago</i> )	Darsham Marshes		TM420691	1.547090454	52.26631717	2000	6 count	1.8km south-east
Minor shoulder-knot ( <i>Brachylomia viminalis</i> )	Darsham Marshes		TM421689	1.548409682	52.26447835	1995		1.8km south-east
	Darsham Marshes		TM420693	1.547233876	52.26811199	1995		1.5km south-east
Mottled rustic ( <i>Caradrina morpheus</i> )	Darsham Marshes		TM420691	1.547090454	52.26631717	2007		1.8km south-east
	Darsham Marshes		TM4268	1.546301904	52.25644566	1998		2.4km south-east
	Darsham Marshes		TM421689	1.548409682	52.26447835	1995	1 count	1.8km south-east
	Darsham Marshes		TM420693	1.547233876	52.26811199	1995		1.5km south-east
Crescent ( <i>Helotropha leucostigma</i> )	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.7km south-east

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
Small square-spot ( <i>Diarsia rubi</i> )	Darsham Marshes		TM420691	1.547090454	52.26631717	2000	1 count	1.8km south-east
	Darsham		TM41016956	1.532938141	52.27087998	2007	1 count	650m south-east
	Darsham		TM41006961	1.53282757	52.27133307	2007	1 count	500m south-east
Autumnal rustic ( <i>Eugnorisma glareosa</i> )	Darsham Marshes		TM420691	1.547090454	52.26631717	2000	1 count	1.8km south-east
White-line dart ( <i>Euxoa nigrofusca</i> )	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.7km south-east
Double dart ( <i>Graphiphora augur</i> )	Darsham Marshes		TM4268	1.546301904	52.25644566	1996		2.4km south-east
	Darsham Marshes		TM421689	1.548409682	52.26447835	1995	2 count	1.8km south-east
	Darsham Marshes		TM420693	1.547233876	52.26811199	1995		1.5km south-east
Rustic ( <i>Hoplodrina blanda</i> )	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.7km south-east
	Darsham		TM41016956	1.532938141	52.27087998	2007		650m south-east
	Darsham Marshes		TM420691	1.547090454	52.26631717	2007		1.8km south-east
	Darsham Marshes		TM4268	1.546301904	52.25644566	1998		2.4km south-east

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
Rosy rustic ( <i>Hydraecia micacea</i> )	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.7km south-east
	Darsham		TM41016956	1.532938141	52.27087998	2007	1 count	650m south-east
	Darsham Marshes		TM420691	1.547090454	52.26631717	2000	1 count	1.8km south-east
Dot moth ( <i>Melanchra persicariae</i> )	Darsham Marshes		TM420693	1.547233876	52.26811199	1995		1.5km south-east
	Darsham Marshes		TM421689	1.548409682	52.26447835	1995		1.8km south-east
Rosy minor ( <i>Litoligia literosa</i> )	Darsham Marshes		TM4268	1.546301904	52.25644566	1996		2.4km south-east
Feathered gothic ( <i>Tholera decimalis</i> )	Darsham Marshes		TM420691	1.547090454	52.26631717	2000	1 count	1.8km south-east
<i>Odontomyia argentata</i>	Darsham Marshes		TM4268	1.546301904	52.25644566	1997		2.4km south-east

## 1.4 Amphibians

1.4.1. **Table 1.3** below summarises the desk study results for amphibians recorded within 2km Zol of the site.

**Table 1.3: Desk study results for amphibians**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
Common toad ( <i>Bufo bufo</i> )	Darsham Marshes		TM422688	1.549800556	52.26353693	2000	1 count of adult	East of A12, 1.9km south-east
	Darsham Marshes	Horse Pond, Darsham Marshes	TM4268	1.546301904	52.25644566	2005		East of A12, 2.3km south-east
	Dew's Ponds	Bramfield, Shallow Pond, Dew's Farm	TM388718	1.502194317	52.29194692	2001		2.0km north-west
	Bramfield	Bramfield, Grove Farm Lane	TM407720	1.53014509	52.29291289	2001		870m north
	Thorington	Thorington Pit Pond 7 - Main Settlement Lagoon	TM4272	1.549171544	52.29234196	2001		East of A12, 730m east
	Dew's Ponds	Bramfield, Deep Pond, Dew's Farm	TM388717	1.502123453	52.29104948	2001		2.0km north-west

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
	Blythburgh	Blythburgh, Haw Wood Farm Lane	TM424717	1.554809923	52.28947347	2001		East of A12, 910m east
	Bramfield	Dew's Farm	TM391719	1.506656086	52.29271393	1999	1 count of Breeding confirmed	1.8km north-west
Great crested newt ( <i>Triturus cristatus</i> )	Bramfield	Hill Farm	TM3923072008	1.508635478	52.29362659	2012	10 count of present	1.8km north-west
	Thorington	11 Entrance track pond, restored in 2009	TM417724	1.545067822	52.29606361	2012	10 count	890m north
	Bramfield	Near/Pasture pond Bulls at BrightÆs Farm,	TM392719	1.508119713	52.29267041	2009		1.7km north-west
	Bramfield	Large/Swimming pond Bulls at BrightÆs Farm,	TM393719	1.509583335	52.29262687	2009		1.6km north-west
	Bramfield	South Manor Farm	TM398718	1.516830229	52.29151149	2009		1.2km north-west
	Darsham	Darsham Field Pond	TM406719	1.528610088	52.29205926	2009		1.1km north

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
	Silletts Wood	Darsham Silletts Wood, Darsham	TM4036271263	1.52467248	52.28644679	2006		480m north
	Bramfield	Brights farm House pond	TM399727	1.518934663	52.29954473	2005		1.9km north
	Yoxford	Pond at Bark barn, Main Road	TM394681	1.508349878	52.25848045	2003		East of A12, 2.0km south-west
	Dew's Ponds	Bramfield, Deep Pond, Dew's Farm	TM388717	1.502123453	52.29104948	2001		1.9km north-west
	Thorington	Thorington Pit Pond 3 - Swamp Pond	TM4172	1.534535867	52.29278141	2001		1.3km north
	Thorington	Thorington Pit Pond 1- Track Pond	TM4272	1.549171544	52.29234196	2001		East of A12, 1.0km north-east
	Dew's Ponds	Bramfield, Hill Pasture, Dew's Farm	TM391719	1.506656086	52.29271393	2001		1.8km north-west
	Dew's Ponds	Bramfield, Shallow Pond, Dew's Farm	TM388718	1.502194317	52.29194692	2001		2.0km north-west
	Yoxford		TM3968	1.50242907	52.25775689	1999		1.8km south

**NOT PROTECTIVELY MARKED**

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
	Dew's Ponds	Dew's Half Moon Pond	TM389717	1.503587032	52.29100601	1997		2.0km north-west



## 1.5 Reptiles

1.5.1. **Table 1.4** below summarises the desk study results for reptiles recorded within 2km Zol of the site.

**Table 1.4: Desk study results for reptiles**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
Slow-worm ( <i>Anguis fragilis</i> )	Yoxford		TM3968	1.50242907	52.25775689	1999		2.2km south
	Bramfield	Manor Farm	TM400719	1.519828589	52.29232161	1999	1 count of adult	1.2km north-west
	Darsham	Sandpit	TM420692	1.547162163	52.26721458	2001		1.3km south-east
Grass snake ( <i>Natrix helvetica helvetica</i> )	Yoxford	Little Street, Cemetery Track	TM388697	1.500706952	52.27310046	2011		1.7km west
	Thorington		TM4183672327	1.54700602	52.29534866	2013	1 count of Adult	1.9km north
	Yoxford	a farm	TM410685	1.532034905	52.26137167	1997	1 count of dead	1.3km south
	Yoxford	Yoxford, Near Cricket Pitch, Old High road	TM394688	1.508846304	52.26476258	2005		1.4km south
	Darsham		TM418702	1.544953415	52.27627665	2002		760m east
	Darsham	Darsham Pit	TM420692	1.547162163	52.26721458	2003		1.5km south-east
	Westleton		TM401691	1.519298569	52.2671498	2002		700m south
	Darsham Marshes	Near frog pond	TM420688	1.54687535	52.26362495	2000	1 count of female	1.7km south-east
	Bramfield	Manor Farm	TM400719	1.519828589	52.29232161	1999	1 count of adult	1.2km north-west

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
	Yoxford		TM3968	1.50242907	52.25775689	1999		2.3km south
	Darsham	Darsham, Cottage near church	TM420699	1.547664231	52.27349644	1999		1.1km east
Common lizard ( <i>Zootoca vivipara</i> )	Darsham		TM420692	1.547162163	52.26721458	2002		1.4km east
	Bramfield	Manor Farm	TM400719	1.519828589	52.29232161	1999	1 count of dead; 1 count of Breeding confirmed	1.2km north-west

## 1.6 Birds

1.6.1. **Table 1.5** below summarises the desk study results for birds recorded within 2km Zol of the site.

**Table 1.5: Desk study results for birds**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
Mediterranean gull ( <i>Ichthyætus melanocephalus</i> )	Darsham		TM4269	1.547018749	52.26541976	2010	2 count	1.8km south-east
Great bittern ( <i>Botaurus stellaris</i> )	Dew's Ponds		TM3883971854	1.502803399	52.2924146	2013		2.1km north-west
Little egret ( <i>Egretta garzetta</i> )	Yoxford		TM3968	1.50242907	52.25775689	2007	1 count	2.3km south-west
European turtle dove ( <i>Streptopelia turtur</i> )	East Suffolk		TM4370	1.562365381	52.27395287	2002	1 count	2.3km east
	East Suffolk		TM4270	1.54773597	52.27439385	2002	2 count	1.3km east
	Darsham Marshes		TM4268	1.546301904	52.25644566	1998	4 count	2.3km south-east
Common kingfisher ( <i>Alcedo atthis</i> )	Darsham		TM422688	1.549800556	52.26353693	1995		1.9km south-east
Northern goshawk ( <i>Accipiter gentilis</i> )	Darsham		TM4170	1.533106183	52.27483302	1993	1 count of female	240m east
Eurasian marsh harrier	Darsham		TM4170	1.533106183	52.27483302	1993	1 count of present	240m east

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
( <i>Circus aeruginosus</i> )								
European honey-buzzard ( <i>Pernis apivorus</i> )	Yoxford	The Pightles, Darsham	TM395697	1.5109478	52.27279605	1998		865m west
Eurasian hobby ( <i>Falco subbuteo</i> )	Darsham	The Wilderness, Darsham	TM428697	1.559223617	52.27134902	1996		2.1km east
Common kestrel ( <i>Falco tinnunculus</i> )	Thorington	Peacock Farm area	TM47A	1.51847602	52.27527037	1995		370m west
	Darsham	Green Farm, Darsham	TM425700	1.555050723	52.27417359	1995		1.8km east
Grey partridge ( <i>Perdix perdix</i> )	Darsham		TM418706	1.545240203	52.27986628	1994	3 count of adult	1.1km east
	Yoxford		TM407692	1.528146427	52.267785	1995	2 count of adult	660m south east
Sky lark ( <i>Alauda arvensis</i> )	East Suffolk		TM4370	1.562365381	52.27395287	2002	5 count	2.3km east
	East Suffolk		TM4167	1.530964471	52.24791028	2002	9 count	2.9km south
Wood lark ( <i>Lullula arborea</i> )	Darsham		TM4170	1.533106183	52.27483302	1995	1 count of calling/vocalising	240m east
Bohemian waxwing ( <i>Bombycilla garrulus</i> )	Yoxford		TM3968	1.50242907	52.25775689	2010	1 count	2.3km south-west
Corn bunting ( <i>Emberiza calandra</i> )	Darsham		TM4170	1.533106183	52.27483302	1994	2 count of adult	240m east

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
Hawfinch ( <i>Coccothraustes coccothraustes</i> )	Darsham		TM4170	1.533106183	52.27483302	1994		240m east
Common bullfinch ( <i>Pyrrhula pyrrhula</i> )	East Suffolk		TM4370	1.562365381	52.27395287	2002	1 count	2.3km east
	East Suffolk		TM4270	1.54773597	52.27439385	2002	2 count	1.3km east
Barn swallow ( <i>Hirundo rustica</i> )	Darsham		TM4170	1.533106183	52.27483302	1993	4 count of present	240m east
Pied wagtail ( <i>Motacilla alba</i> )	Darsham	Priory Farm	TM4170	1.533106183	52.27483302	1995		240m east
Spotted flycatcher ( <i>Muscicapa striata</i> )	Darsham		TM405713	1.526718358	52.28671848	2007	1 count	770m north
	East Suffolk		TM4370	1.562365381	52.27395287	2002	1 count	2.3km east
	Darsham		TM402711	1.522185632	52.2850548	2000	1 count	600m north-west
	Yoxford		TM3968	1.50242907	52.25775689	1995	2 count of calling/vocalising	2.3km south-west
Blue tit ( <i>Cyanistes caeruleus</i> )	Darsham	Priory Farm	TM4170	1.533106183	52.27483302	1995	13 count of adult	240m east
Great tit ( <i>Parus major</i> )	Darsham	Priory Farm	TM4170	1.533106183	52.27483302	1995	6 count of adult	240m east
House sparrow ( <i>Passer domesticus</i> )	Darsham	Priory Farm	TM4170	1.533106183	52.27483302	1995	27 count of adult	240m east

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
Dunnock ( <i>Prunella modularis</i> )	Darsham	Priory Farm	TM4170	1.533106183	52.27483302	1995	2 count of adult	240m east
European robin ( <i>Erithacus rubecula</i> )	Darsham	Priory Farm	TM4170	1.533106183	52.27483302	1995	8 count of adult	240m east
Black redstart ( <i>Phoenicurus ochruros</i> )	Darsham		TM422699	1.550590085	52.27340839	1995		1.5km east
Wren ( <i>Troglodytes troglodytes</i> )	Darsham	Priory Farm	TM4170	1.533106183	52.27483302	1995	2 count of adult	240m east
Song thrush ( <i>Turdus philomelos</i> )	East Suffolk		TM4270	1.54773597	52.27439385	2002	5 count	1.3km east
	East Suffolk		TM4167	1.530964471	52.24791028	2002	1 count	2.9km south
	East Suffolk		TM4370	1.562365381	52.27395287	2002	1 count	2.3km east
	Darsham	Priory Farm	TM4170	1.533106183	52.27483302	1995		240m east
Fieldfare ( <i>Turdus pilaris</i> )	Darsham		TM4170	1.533106183	52.27483302	1994	50 count of adult	240m east
Lesser spotted woodpecker ( <i>Dendrocopos minor</i> )	Darsham		TM4170	1.533106183	52.27483302	1994	1 count of female	240m east
Green woodpecker ( <i>Picus viridis</i> )	Darsham		TM4170	1.533106183	52.27483302	1995		240m east

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
Short-eared owl ( <i>Asio flammeus</i> )	Yoxford	Strickland Manor Hill	TM3968	1.50242907	52.25775689	1993	1 count of present	2.3km south-west
Little owl ( <i>Athene noctua</i> )	Darsham	Darsham (west)	TM4169	1.532391904	52.26585879	2008	1 count	990m south-east
	Yoxford		TM3968	1.50242907	52.25775689	1995		2.3km south-west
	Darsham		TM410718	1.534392831	52.29098657	1995		1.1km north
	Darsham	Mill Hill Farm	TM422692	1.550087604	52.26712655	1994		1.9km east
	Middleton	Peakhill Farm	TM4167	1.530964471	52.24791028	1994		2.9km south
Tawny owl ( <i>Strix aluco</i> )	Darsham		TM423700	1.552124833	52.27426175	1996		1.7km east
	Yoxford		TM394683	1.508491696	52.26027534	1994		1.8km south-west
	Yoxford	A12	TM3968	1.50242907	52.25775689	1994	1 count of dead	2.3km south-west
	Darsham		TM4170	1.533106183	52.27483302	1993	1 count of present	240m east
Barn owl ( <i>Tyto alba</i> )	Yoxford	Yoxford (north)	TM3969	1.503137091	52.26673142	2011	1 count	1.6km south-west
	Middleton Moor		TM4167	1.530964471	52.24791028	2011	1 count	2.9km south
	Darsham	Darsham Station	TM4069	1.517764684	52.26629601	2009	1 count	850m south
	Middleton	Middleton (north-west)	TM4068	1.517053722	52.25732162	2007	1 count	1.8km south

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
	Darsham	Darsham (west)	TM4169	1.532391904	52.26585879	2007	1 count	990m south-east
	Darsham		TM4170	1.533106183	52.27483302	1998	1 count	240m east
	Darsham Marshes		TM4268	1.546301904	52.25644566	1998	1 count	2.3km south-east
	Darsham		TM418692	1.544236706	52.26730254	1996		1.5km east
	Darsham Marshes		TM4269	1.547018749	52.26541976	1998		1.8km south-east
	Darsham		TM422700	1.550661883	52.2743058	1997		1.6km east
	Darsham		TM409701	1.531714603	52.27577426	1997		255m east
	Bramfield		TM3972	1.505263387	52.29365487	1996		1.9km north-west
	Yoxford		TM3968	1.50242907	52.25775689	1995		2.3km south-west
	East Suffolk		TM47A	1.51847602	52.27527037	1995		370m west
	Yoxford		TM405682	1.524508364	52.25889817	1995		1.6km south
	Yoxford		TM399690	1.516301942	52.26633963	1995		850m south
	Darsham Marshes		TM420690	1.547018749	52.26541976	1994		1.8km south-east



## 1.7 Bats

1.7.1. **Table 1.6** below summarises the desk study results for bats.

1.7.2. As detailed in **Section 3 of Appendix 7A Darsham Northern Park and Ride Ecological Baseline** the Zol for individual bat species has been identified based on the recommended Core Sustenance Zones (CSZ) identified by the Bat Conservation Trust (BCT)<sup>1</sup>. The sole exception to this is for barbastelle (*Barbastella barbastellus*) for which the Zol has been extended to 10km based on radio-tracking information gathered on the Main Development Site.

**Table 1.6: Desk study results for bats**

Species (Zol)	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
Barbastelle (10km)	Yoxford	Wolsey House Farm, Yoxford, Suffolk	TM3811568545	1.4898704	52.26303178	2013		2.7km south-west At rest on rafter
	Westleton	Kings Farm Barns, Westleton	TM444688	1.5819768	52.26256397	2011		4.1km east During this survey there was evidence that the barbastelle is still using the roost beside the door frame. One fresh dropping was found in the entrance. A night roost was also found in 'Section A', where

<sup>1</sup> J. Collins (ed.) Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3<sup>rd</sup> edition. London: The Bat Conservation Trust, 2016.

**NOT PROTECTIVELY MARKED**

Species (Zol)	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
								there were 20 fresh Barbastelle droppings (2010)
	Bramfield		TM4073	1.5206123	52.30219335	2011		2.5km north Singleton roosting in agricultural building
	Huntingfield	Valley Farm Barn Huntingfield	TM344736	1.4390447	52.30999647	2009		Roost, 6.9km north-west
	Westleton		TM4469	1.5762713	52.26453628	2003		2 roosting in barn, 3.7km east
	Docwra's Ditch		TM4767	1.6186846	52.24525069	2015		7.2km south-east
	Walberswick National Nature Reserve	Lodge Road	TM473738	1.6280557	52.30613449	2015		7.3km north-east Field survey on Walberswick National Nature Reserve (NNR)
	Old Covert		TM472737	1.6265184	52.30528218	2015		7.2km north-east Field survey on Walberswick NNR
	Great Glemham		TM35306191	1.444077	52.20469322	2013		9.4km south-west Bat detector
	Walpole	River Blyth Walpole	TM378757	1.4903131	52.32738144	2013		5.9km north-west Bat detector record

**NOT PROTECTIVELY MARKED**

Species (Zol)	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
	Thorington Pit	Close to woodland 500m north of proposed wind turbine	TM418729	1.5468904	52.30050664	2013		2.7km north
	Sizewell	Sizewell Wents	TM467628	1.6112359	52.20769648	2013		9.4km south-east
	Dunwich		TM473706	1.6257074	52.27742003	2013		6.6km east Bat detector record
	Church Farm Thorington		TM426744	1.5596817	52.31361483	2011		4.4km north-east Bat detector
	Church Farm Thorington		TM424744	1.5567532	52.31370315	2011		4.3km north-east Seen feeding around scrub at edge of marshes
	Minsmere B. R.	Minsmere Nature Reserve	TM469669	1.6171496	52.24439821	2010		7.0km south-east Bat detector record
	Minsmere B. R.	Minsmere Nature Reserve	TM461677	1.6060374	52.25193526	2010		5.9km south-east Bat detector record
	Minsmere B. R.	Minsmere Nature Reserve	TM463678	1.6090345	52.25274314	2010		6.1km south-east Bat detector record

**NOT PROTECTIVELY MARKED**

Species (Zol)	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
	Minsmere B. R.	Minsmere Nature Reserve	TM469672	1.6173688	52.24709024	2010		6.9km south-east Bat detector record
	Westleton	Barns at King's Farm Westleton	TM4472068920	1.5867439	52.26349856	2009		4.2km east
	Leiston	Upper Abbey Farm barn Leiston	TM454646	1.5935519	52.22442946	2004		7.2km south-east Field record
	Leiston	Upper Abbey Farm	TM453646	1.5920907	52.22447399	1997		2.3km south-west
Brown long-eared bat (Plecotus auritus)	Yoxford	Wolsey House Farm, Yoxford, Suffolk	TM3811568545	1.4898704	52.26303178	2013		2.7km south-west Night perch in main barn and attached former livestock shed.
(3km)	Middleton	2 Beveriche Manor Cottages Middleton Road Yoxford IP17 3LJ	TM40686829	1.527205	52.25962715	2013	40 count	1.5km south Breeding colony
	Darsham Churchyard	Darsham Church Darsham	TM42096992	1.5489952	52.27363631	2013		1.4km east Roost
	Middleton		TM410670	1.5309645	52.24791028	2010		2.9km south

**NOT PROTECTIVELY MARKED**

Species (Zol)	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
								Roost
	Yoxford	The Old Bowling Green High Street Yoxford IP17 3EP	TM393691	1.5075963	52.26749843	2010		1.3km south-west Roost
	Sibton	North Green Farm, Sibton	TM380716	1.4903441	52.29049905	2007	5 count	2.8km north-west Breeding colony
	Darsham	Darsham House, Saxmundham, The Street, Darsham	TM423697	1.5519094	52.27156953	2004		1.6km east Breeding colony
	Thorington Pit	Close to woodland 500m north of proposed wind turbine	TM418729	1.5468904	52.30050664	2013		2.7km north
	Thorington Pit	Edge of Earth Holes Wood	TM419726	1.5481388	52.29777041	2013		2.5km north-east
	Yoxford	Wolseyhouse farm	TM381685	1.4896192	52.26263441	2011	2 count of present	2.7km south-west
	Bramfield		TM404725	1.5261111	52.29753133	2011	1 count	2.0km north Sighted, BatBox Duet recording, AnaBat SD1

**NOT PROTECTIVELY MARKED**

Species (Zol)	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
								recording roost emergence and overnight activity
	Middleton	The Barn, Middleton	TM421674	1.5473342	52.25101721	2005	1 count of hibernating	2.8km south-east English Nature survey
	Darsham	Tideswell Darsham	TM439694	1.5750978	52.26817016	2003		3.3km east
	Bramfield	Hall, IP19 9HX	TM399737	1.5196471	52.30851904	2000		3.3km north
	Westleton	Fisk Cottage, Yoxford Road, Westleton	TM438689	1.5732739	52.26372757	1998		3.3km south-east
	Yoxford		TM394690	1.5089882	52.26655747	1997		1.3km south-west
	Yoxford		TM396692	1.5120557	52.26826527	1997		1.0km south-west
	Middleton	Fordley Hall, Middleton	TM407669	1.5265069	52.24714412	1996		2.8km south
<i>Myotis</i> spp. (4km)	Thorington Pit	Close to woodland 500m north of proposed wind turbine	TM418729	1.5468904	52.30050664	2013		2.7km north
	Thorington Pit	Edge of Earth Holes Wood	TM419726	1.5481388	52.29777041	2013		2.5km north-east
	Thorington Pit	Close to proposed	TM418725	1.5466033	52.29691702	2013		2.3km north-east

**NOT PROTECTIVELY MARKED**

Species (Zol)	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
		wind turbine site						
	Westleton	Charity Farm Barn	TM439705	1.5758931	52.27804134	2000		3.0km east
Nathusius' pipistrelle ( <i>Pipistrellus nathusii</i> ) (3km)	Thorington Pit	Close to proposed wind turbine site	TM418725	1.5466033	52.29691702	2013		2.3km north-east
Natterer's bat ( <i>Myotis nattereri</i> ) (4km)	Middleton		TM410670	1.5309645	52.24791028	2010		2.9km south Roost
	Thorington Churchyard	Thorington Church Thorington	TM423741	1.555073	52.3110551	2007		4.0km north-east Breeding colony
	Thorington Pit	Close to woodland 500m north of proposed wind turbine	TM418729	1.5468904	52.30050664	2013		2.7km north Probable - id by bat detector
Noctule ( <i>Nyctalus noctula</i> ) (4km)	Thorington Pit	Close to proposed wind turbine site	TM418725	1.5466033	52.29691702	2013		2.3km north-east
	Yoxford	Wolsey House Farm,	TM3811568545	1.4898704	52.26303178	2013		2.7km south-west Single registration - no visual.

**NOT PROTECTIVELY MARKED**

Species (Zoi)	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
		Yoxford, Suffolk						
	Thorington Pit	Edge of Earth Holes Wood	TM419726	1.5481388	52.29777041	2013		2.5km north-east
	Middleton		TM435674	1.5678045	52.25039959	2013		3.8km south-east Bat detector record
<i>Pipistrellus</i> spp.	Middleton		TM432677	1.5636341	52.25322443	2011		3.3km south-east Roost
	Middleton		TM410670	1.5309645	52.24791028	2010		2.9km south Roost.
Soprano pipistrelle ( <i>Pipistrellus pygmaeus</i> )  (3km)	Yoxford	Old High Road, Yoxford	TM3940068800	1.5088463	52.26476258	2014	1 count	1.4km south-west Grounded found crawling from path to road near village hall
	Thorington Pit	Edge of Earth Holes Wood	TM419726	1.5481388	52.29777041	2013		2.5km north-east
	Thorington Pit	Close to proposed wind turbine site	TM418725	1.5466033	52.29691702	2013		2.3km north-east
	Yoxford	Wolsey House Farm, Yoxford, Suffolk	TM3811568545	1.4898704	52.26303178	2013		2.7km south-west Commuting and foraging.



**NOT PROTECTIVELY MARKED**

Species (Zol)	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance From the Site Boundary
	Thorington Pit	Close to woodland 500m north of proposed wind turbine	TM418729	1.5468904	52.30050664	2013		2.7km north
	Yoxford	Wolseyhouse farm	TM381685	1.4896192	52.26263441	2011	5 count of present	2.7km south-west
	Bramfield		TM404725	1.5261111	52.29753133	2011	1-2 count	2.0km north sighted + BatBox Duet recording
	Thorington	Thorington Pit	TM420725	1.5495307	52.29682897	2011		2.4km north-east bat detector
	Dew's Ponds		TM387719	1.5008015	52.29288782	2010		2.2km north-west bat detector
Serotine ( <i>Eptesicus serotinus</i> )  (4km)	Thorington Churchyard	Thorington Church Thorington	TM423741	1.555073	52.3110551	2007		4.0km north-east Breeding colony
	Darsham Churchyard	Churchyard of All Saints Church Darsham	TM4210069920	1.5491415	52.27363191	2014		1.3km east Flew over churchyard
	Bramfield	Hall, IP19 9HX	TM399737	1.5196471	52.30851904	2000		3.3km north
	Yoxford		TM396692	1.5120557	52.26826527	1997		1.0km south-west

## 1.8 Terrestrial mammals

1.8.1. **Table 1.7** below summarises the desk study results for terrestrial mammals recorded within 2km Zol of the site.

**Table 1.7: Desk study results for terrestrial mammals**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance from the Site Boundary
European otter ( <i>Lutra lutra</i> )	Yoxford	Minsmere	TM399690	1.516301942	52.26633963	2008		River Yox, 850m south
	Yoxford	Minsmere - Yox	TM399689	1.516230858	52.26544219	2008		River Yox, 1.0km south
	Yoxford		TM39956890	1.516962215	52.26542038	2004		River Yox, 1.0km south
	Yoxford	Yoxford Bridge	TM400691	1.517835801	52.26719345	2004		Close to River Yox, 750m south
	Yoxford	Yoxford Hill Farm	TM391695	1.504954164	52.27117521	1997		River Yox, 1.4km south-west
	Darsham	Darsham Bridge	TM420694	1.547305592	52.2690094	2000		1.4km east
West European hedgehog ( <i>Erinaceus europaeus</i> )	Darsham		TM415694	1.539991628	52.26922917	1997	1 count of dead	1.0km south-east
	Yoxford		TM395685	1.510096142	52.26202671	1997	1 count of dead	1.0km south-east
	Yoxford		TM395688	1.510309006	52.26471905	1996	1 count of dead	1.3km south

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance from the Site Boundary
	Darsham Common		TM420692	1.547162163	52.26721458	1994		1.4km south-east
Eurasian water shrew ( <i>Neomys fodiens</i> )	Darsham Marshes		TM4268	1.546301904	52.25644566	2004		2.2km south-east
Brown hare ( <i>Lepus europaeus</i> )	Darsham		TM4071	1.51918773	52.28424472	2012	2 count of present	520m west
	Bramfield		TM3972	1.505263387	52.29365487	2004		1.9km north-west
	Darsham		TM4072	1.519899814	52.29321904	2004		1.3km north-west
	Darsham		TM403709	1.523506425	52.28321623	2002	1 count	205m north-west
	Darsham	Willow Marsh Lane	TM400711	1.519258922	52.28514215	1996	5 count of present	560m north-west
	Darsham	Near White House Farm	TM406706	1.527682204	52.28039274	1996		Within red line boundary
	Darsham		TM4170	1.533106183	52.27483302	1996		240m east
	Yoxford	Near Martin's Farm	TM403710	1.523577702	52.28411366	1996	3 count of present	250m north-west
	Darsham		TM415694	1.539991628	52.26922917	1995		970m south-east
	Bramfield		TM405720	1.527217887	52.29300045	1994		1.2km north

**NOT PROTECTIVELY MARKED**

**NOT PROTECTIVELY MARKED**

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate Distance from the Site Boundary
	Darsham		TM413705	1.53785288	52.27918854	1993		250m east
	Darsham		TM410718	1.534392831	52.29098657	1993		1.1km north
European water vole ( <i>Arvicola amphibius</i> )	Dew's Ponds	Dew's Farm	TM38827185	1.502522476	52.29238696	2009		Dew's Ponds, 2.0km north-west
	Darsham Marshes		TM4216268878	1.549300729	52.26425363	2009		Close to Minsmere New Cut, 1.8km south-east
	Darsham Marshes		TM4268	1.546301904	52.25644566	2004		2.2 km south-east
	Yoxford		TM38627000	1.498285783	52.27587096	1997		River Yox, 1.8km west
	Darsham		TM42126876	1.548601783	52.26321318	1997		Close to Minsmere New Cut, 1.8km south-east

**NOT PROTECTIVELY MARKED**

VOLUME 3, CHAPTER 7, APPENDIX 7A:  
ANNEX 7A.2: DESK-STUDY, ANNEX 7A.2A DESIGNATED  
SITES CITATIONS

County Wildlife Site Citations

Ramsar Citation

Special Areas of Conservation:

- Citation
- Conservation Objectives

Special Protection Areas:

- Citation
- Conservation Objectives
- Natura 2000 Data Forms

Sites of Special Scientific Interest Citations

# County Wildlife Site Citations

<b>CWS Number</b>	Suffolk Coastal 15
<b>Site Name</b>	BIG / COMMON / HAW WOODS
<b>Parish</b>	THORINGTON
<b>District</b>	Suffolk Coastal
<b>NGR</b>	TM432727
<b>Description</b>	<p>This extensive area of ancient woodland includes Common Wood, Big Wood and the remnants of Haw and Sixteen Acre Woods. The majority of both Sixteen Acre Wood and Haw Wood was grubbed in the early 1980s. The woodland has a sinuous boundary, which is a typical feature of medieval woods. Some parts of the wood are dominated by even aged oak (70-100 years old); some areas have abundant ash. Other tree species which are also present in the wood include field maple, holly, hornbeam and hawthorn. Some parts of the woodland have a species-rich ground flora including bluebell, early purple orchid, primrose and sanicle. Abundant brush wood provides additional habitat for mosses, fungi and invertebrates.</p>
<b>RNR Number</b>	0
<b>Area</b>	33.1

# County Wildlife Site Citations

**CWS Number** Suffolk Coastal 183

**Site Name** YOXFORD WOOD

**Parish** YOXFORD

**District** Suffolk Coastal

**NGR** TM391704

**Description**

This wood is marked on all sides by a ditch and bank boundary system and contains ancient coppice, mainly hornbeam. Other coppiced species are ash, field maple, hazel and hawthorn. Many young oaks are also present. The wood has been underplanted with conifers in parts, but these have been largely unsuccessful and the wood still retains an interesting flora. This includes such species as common spotted orchid, yellow pimpernel and remote sedge which have affinities with ancient woodland and are well distributed here. There are also a few shallow ponds and one deeper pond which add to the variety of habitats present and support their own flora which includes yellow iris and pendulous sedge.

**RNR Number** 0

**Area** 3.88

# County Wildlife Site Citations

**CWS Number** Suffolk Coastal 184  
**Site Name** WILLOWMARSH WOOD  
**Parish** YOXFORD  
**District** Suffolk Coastal  
**NGR** TM395712

**Description**

Roughly half the area of the woodland (4ha) was planted with poplars about 20 years ago, and these trees now form the canopy layer. The other half (6.1ha) was planted with conifers, mainly Norway spruce, at about the same time. In the broadleaf part of the wood the understorey is formed by naturally regenerating oak and ash with hornbeam, hazel, hawthorn, field maple, willow and dogwood. The field layer is dominated by sedges, rushes and tall grasses in open areas. The ground flora is varied and abundant. It includes false oxlip, cowslip, common spotted orchid and dog's- mercury, with lesser spearwort and ragged robin in wetter areas. Under the conifers in the other part of the wood, the ground flora is very limited except in the occasional damp and more open areas. Common spotted orchid occurs here too, as does yellow pimpernel, which might indicate a potential for successful restoration to a diverse broadleaf woodland in the future. However, even as it stands, the existing ground flora makes it a valuable woodland site. The wood is being managed under a Woodland Grant Scheme. A light selective thinning of the coniferous part is planned favouring oak and ash where they are found. The existing rides are to be opened up for access where they have been allowed to become overgrown.

**RNR Number** 0

**Area** 9.73



# County Wildlife Site Citations

**CWS Number** Suffolk Coastal 55

**Site Name** SILLETTS WOOD

**Parish** DARSHAM

**District** Suffolk Coastal

**NGR** TM403713

**Description**

This ancient woodland is mostly oak, ash, hornbeam and hazel coppice with oak, ash and birch standards. Of particular note is a wild service tree on the western boundary. The wood is surrounded by a ditch and bank except to the east where the railway line cuts across the wood. The ride system is good and the ground flora diverse, with common spotted and early purple orchids. Many typical ancient woodland indicators are present, such as yellow pimpernel, sanicle, remote sedge and yellow archangel. Soft shield fern which has a very local distribution in Suffolk also grows here. The numerous wet hollows and internal ditches add habitat diversity to this very attractive wood.

**RNR Number** 0

**Area** 7.86

# County Wildlife Site Citations

**CWS Number** Suffolk Coastal 56  
**Site Name** MINSMERE VALLEY;RECKFORD BRIDGE to BEVERICHE MANOR  
**Parish** WESTLETON  
**District** Suffolk Coastal  
**NGR** TM404687

**Description**

This area of marsh represents the western third of the Minsmere Valley. The entire valley is of great importance for wildlife forming perhaps the last unspoilt and least improved of Suffolk's large marshland river valleys. Part of this valley forms the nationally important Minsmere/Walberswick Site of Special Scientific Interest. There is an extensive area of unimproved marsh on this site. Such unimproved flower-rich grasslands are becoming increasingly rare as agricultural treatments and intensive farming destroy the flora. In such marshes may be found Suffolk rarities such as bogbean and bog pimpnel, whilst other uncommon plants including yellow rattle, marsh orchids and water violets are frequent. Included in the site are small areas of scrub, mature woodland and fen. Open water is represented by the Minsmere river, the numerous dykes, several ponds and a large man-made lake at Middleton. The site also contains areas of improved marsh, which although not important floristically, provide nesting habitat for waders. In addition, the site is a prime area for barn owl ( a bird protected by Schedule 1, Wildlife & Countryside Act 1981) with a number of productive nest sites, and the whole valley is frequented by otters from the Minsmere group. It is therefore important to maintain the integrity of the whole of the valley site. Developments other than small-scale agricultural changes are likely to be very damaging in this comparatively undisturbed valley.

**RNR Number** 0

**Area** 91.03

# County Wildlife Site Citations

**CWS Number** Suffolk Coastal 57

**Site Name** DARSHAM MARSHES

**Parish** DARSHAM

**District** Suffolk Coastal

**NGR** TM424685

**Description**

This nature reserve, owned by the Suffolk Wildlife Trust, is an extensive area of marsh and fen and an important refuge for wetland wildlife in the Minsmere valley. A main dyke feeds water from the valley side through the reserve to the river. Management work on the neglected marshes has restored the species-rich flora including plants such as yellow rattle, bog pimpernel, southern marsh orchid and marsh marigold. An old horse pond has been restored and now provides habitat for aquatic insects and breeding amphibians. A small reedbed on the northern edge of the reserve provides nesting sites for sedge, reed and grasshopper warblers. Many different raptor species hunt over the marshes including kestrel, marsh and hen harriers. The marshes are also a favourite haunt for owls which feed on the abundant small mammal fauna.

**RNR Number** 0

**Area** 23.48

# Information Sheet on Ramsar Wetlands (RIS)

*Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8<sup>th</sup> Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9<sup>th</sup> Conference of the Contracting Parties (2005).*

## Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

---

## 1. Name and address of the compiler of this form:

### Joint Nature Conservation Committee

Monkstone House

City Road

Peterborough

Cambridgeshire PE1 1JY

UK

Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948

Email: [RIS@JNCC.gov.uk](mailto:RIS@JNCC.gov.uk)

FOR OFFICE USE ONLY.

DD MM YY

--	--	--

Designation date

--	--	--	--	--	--

Site Reference Number

---

## 2. Date this sheet was completed/updated:

Designated: 05 January 1976

---

## 3. Country:

UK (England)

---

## 4. Name of the Ramsar site:

Minsmere–Walberswick

---

## 5. Designation of new Ramsar site or update of existing site:

**This RIS is for:** Updated information on an existing Ramsar site

---

## 6. For RIS updates only, changes to the site since its designation or earlier update:

### a) Site boundary and area:

\*\* Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

### b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

---

**7. Map of site included:**

Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

**a) A map of the site, with clearly delineated boundaries, is included as:**

- i) **hard copy** (required for inclusion of site in the Ramsar List): *yes* ✓ -or- *no* ☐;
- ii) **an electronic format** (e.g. a JPEG or ArcView image) *Yes*
- iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** *yes* ✓ -or- *no* ☐;

**b) Describe briefly the type of boundary delineation applied:**

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

---

**8. Geographical coordinates (latitude/longitude):**

52 18 55 N                      01 38 02 E

---

**9. General location:**

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: Southwold

Composite site situated on the coast of Suffolk, between Southwold in the north and Sizewell in the south.

**Administrative region:** Suffolk

---

**10. Elevation (average and/or max. & min.) (metres):**    **11. Area (hectares):** 2018.92

Min.	-1
Max.	24
Mean	9

---

**12. General overview of the site:**

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

This composite, Suffolk coastal site contains a complex mosaic of habitats, notably, areas of marsh with dykes, extensive reedbeds, mudflats, lagoons, shingle and driftline, woodland and areas of lowland heath. The site supports the largest continuous stand of reed in England and Wales and demonstrates the nationally rare transition in grazing marsh ditch plants from brackish to fresh water. The combination of habitats create an exceptional area of scientific interest supporting nationally scarce plants, British Red Data Book invertebrates and nationally important numbers of breeding and wintering birds.

---

**13. Ramsar Criteria:**

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1, 2

---

**14. Justification for the application of each Criterion listed in 13 above:**

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1

The site contains a mosaic of marine, freshwater, marshland and associated habitats, complete with transition areas in between. Contains the largest continuous stand of reedbeds in England and Wales and rare transition in grazing marsh ditch plants from brackish to fresh water.

Ramsar criterion 2

This site supports nine nationally scarce plants and at least 26 red data book invertebrates.

Supports a population of the mollusc *Vertigo angustior* (Habitats Directive Annex II; British Red Data Book Endangered), recently discovered on the Blyth estuary river walls.

An important assemblage of rare breeding birds associated with marshland and reedbeds including: *Botaurus stellaris*, *Anas strepera*, *Anas crecca*, *Anas clypeata*, *Circus aeruginosus*, *Recurvirostra avosetta*, *Panurus biarmicus*

**15. Biogeography** (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

**a) biogeographic region:**

Atlantic

**b) biogeographic regionalisation scheme** (include reference citation):

Council Directive 92/43/EEC

**16. Physical features of the site:**

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	acidic, neutral, shingle, sand, peat, nutrient-poor, mud, alluvium
Geomorphology and landscape	lowland, coastal, valley, floodplain, shingle bar, intertidal sediments (including sandflat/mudflat), open coast (including bay), estuary, lagoon
Nutrient status	mesotrophic
pH	circumneutral
Salinity	brackish / mixosaline, fresh, saline / euhaline
Soil	no information
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Lowestoft, 1971–2000) ( <a href="http://www.metoffice.com/climate/uk/averages/19712000/sites/lowestoft.html">www.metoffice.com/climate/uk/averages/19712000/sites/lowestoft.html</a> ) Max. daily temperature: 13.0° C Min. daily temperature: 7.0° C Days of air frost: 27.8 Rainfall: 576.3 mm Hrs. of sunshine: 1535.5

**General description of the Physical Features:**

Minsmere – Walberswick comprises two large marshes, the tidal Blyth estuary and associated habitats. This composite coastal site contains a complex mosaic of habitats, notably areas of marsh with dykes, extensive reedbeds, mudflats, lagoons, shingle, woodland and areas of lowland heath. It supports the largest continuous stand of common reed *Phragmites australis* in England and Wales, and demonstrates the nationally rare transition in grazing marsh ditch plants from brackish to fresh water.

### 17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

Minsmere – Walberswick comprises two large marshes, the tidal Blyth estuary and associated habitats. This composite coastal site contains a complex mosaic of habitats, notably areas of marsh with dykes, extensive reedbeds, mudflats, lagoons, shingle, woodland and areas of lowland heath.

### 18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

No special values known

### 19. Wetland types:

Marine/coastal wetland

Code	Name	% Area
Other	Other	30
U	Peatlands (including peat bogs swamps, fens)	30
G	Tidal flats	12.9
E	Sand / shingle shores (including dune systems)	12.4
H	Salt marshes	7.2
M	Rivers / streams / creeks: permanent	4
F	Estuarine waters	2.5
J	Coastal brackish / saline lagoons	1

### 20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

This composite Suffolk coastal site contains a complex mosaic of habitats notably, areas of marsh with dykes, extensive reedbeds, mud flats, lagoons, shingle, woodland and areas of lowland heath. The site supports the largest continuous stand of reed *Phragmites australis* in England and Wales and nationally rare transition in grazing marsh ditch plants from brackish to fresh water. The combination of habitats create an exceptional area of scientific interest supporting nationally scarce plants, RDB invertebrates and nationally important numbers of breeding and wintering birds.

Ecosystem services

### 21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

#### Nationally important species occurring on the site.

#### Higher Plants.

This is one of few sites nationally for red-tipped cudweed *Filago lutescens* (RDB2) which occurs on light, sandy soils.

The nationally rare species *Corynephorus canescens* (RDB3) occurs on coastal dune habitat.

The site supports a range of nationally scarce plant species characteristic of heathland, wetland and coastal habitats, and the transitions between them. *Althaea officinalis*, *Myriophyllum verticillatum*, *Ruppia cirrhosa*, *Sium latifolium*, *Sonchus palustris*, *Ceratophyllum submersum*, *Ranunculus baudotii*, and *Carex divisa* (all nationally scarce) are associated with reedbeds, grazing marsh or ditches. *Hordeum marinum* occurs on sea-walls, *Lathyrus japonicus* on coastal shingle, and *Crassula tillaea* on heathland.

## 22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

### Birds

#### Species currently occurring at levels of national importance:

##### Species regularly supported during the breeding season:

Eurasian marsh harrier , <i>Circus aeruginosus</i> , Europe	16 pairs, representing an average of 10.5% of the GB population (5 year mean 1993-1997)
Mediterranean gull , <i>Larus melanocephalus</i> , Europe	2 apparently occupied nests, representing an average of 1.8% of the GB population (Seabird 2000 Census)
Black-headed gull , <i>Larus ridibundus</i> , N & C Europe	2558 apparently occupied nests, representing an average of 1.9% of the GB population (Seabird 2000 Census)
Little tern , <i>Sterna albifrons albifrons</i> , W Europe	20 apparently occupied nests, representing an average of 1% of the GB population (Seabird 2000 Census)

##### Species with peak counts in spring/autumn:

Great bittern , <i>Botaurus stellaris stellaris</i> , W Europe, NW Africa	3 individuals, representing an average of 3% of the GB population (5 year peak mean 1998/9-2002/3 - spring peak)
Eurasian teal , <i>Anas crecca</i> , NW Europe	3083 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3)
Ruff , <i>Philomachus pugnax</i> , Europe/W Africa	10 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9-2002/3)
Black-tailed godwit , <i>Limosa limosa islandica</i> , Iceland/W Europe	846 individuals, representing an average of 5.4% of the GB population (5 year peak mean 1998/9-2002/3 - spring peak)
Spotted redshank , <i>Tringa erythropus</i> , Europe/W Africa	15 individuals, representing an average of 11% of the GB population (5 year peak mean 1998/9-2002/3)
Common greenshank , <i>Tringa nebularia</i> , Europe/W Africa	9 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3)

##### Species with peak counts in winter:

Greater white-fronted goose , <i>Anser albifrons albifrons</i> , NW Europe	212 individuals, representing an average of 3.6% of the GB population (5 year peak mean for 1996/7-2000/01)
--	---



Gadwall , <i>Anas strepera strepera</i> , NW Europe	261 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3)
Northern shoveler , <i>Anas clypeata</i> , NW & C Europe	238 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3)
Hen harrier, <i>Circus cyaneus</i> , Europe	15 individuals, representing an average of 2% of the GB population (5 year peak mean 1985/6-1989/90)
Water rail , <i>Rallus aquaticus</i> , Europe	5 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Pied avocet , <i>Recurvirostra avosetta</i> , Europe/Northwest Africa	329 individuals, representing an average of 9.6% of the GB population (5 year peak mean 1998/9-2002/3)
European golden plover , <i>Pluvialis apricaria apricaria</i> , P. a. altifrons Iceland & Faroes/E Atlantic	4503 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3)
Common redshank , <i>Tringa totanus totanus</i> ,	1386 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Lesser black-backed gull , <i>Larus fuscus graellsii</i> ,	905 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9-2002/3)

### Species Information

#### Nationally important species occurring on the site.

#### Invertebrates.

*Ethmia bipunctella*, *Aleochara inconspicua*, *Philonthus dimidiatipennis*, *Deltote bankiana*, *Cephalops perspicuus*, *Erioptera bivittata*, *E. meijerei*, *Gymnancycla canella*, *Pisidium pseudosphaerium*, *Archanara neurica*, *Heliothis viriplaca*, *Pelosia muscerda*, *Photodes brevilinea*, *Senta flammea*, *Herminea tarsicrinalis*, *Haematopota grandis*, *Tipula marginata*, *Podalonia affinis*, *Arctosa fulvolineata*, *Eucosma catroptana*, *E.maritima*, *Melissoblaptres zelleri*, *Pima boisduvaliella*, *Acrotophthalmus bicolor*, *Limonia danica*, *Telmaturus tumidulus*, *Vertigo angustior* (a Habitats Directive Annex II species (S1014)).

### 23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

- Aesthetic
- Aquatic vegetation (e.g. reeds, willows, seaweed)
- Environmental education/ interpretation
- Livestock grazing
- Non-consumptive recreation
- Scientific research
- Tourism

**b)** Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

**24. Land tenure/ownership:**

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	+
Local authority, municipality etc.	+	
National/Crown Estate	+	
Private	+	+
Other	+	

**25. Current land (including water) use:**

Activity	On-site	Off-site
Nature conservation	+	+
Tourism	+	+
Recreation	+	+
Current scientific research	+	
Cutting of vegetation (small-scale/subsistence)	+	
Permanent arable agriculture		+
Grazing (unspecified)	+	
Flood control	+	
Transport route	+	+
Non-urbanised settlements	+	+

**26. Factors (past, present or potential) adversely affecting the site’s ecological character, including changes in land (including water) use and development projects:**

*Explanation of reporting category:*

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

*NA = Not Applicable because no factors have been reported.*

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Erosion	2	Coastal squeeze within the Blyth Estuary	+		+
Recreational/tourism disturbance (unspecified)	2	Trampling damage to vegetated shingle and driftline communities, and disturbance of little tern nesting habitat	+		+

For category 2 factors only.

What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?  
 Erosion - English Nature provides advice to the Environment Agency and coastal local authorities in relation to flood and coastal protection management. This will inform the development of the Suffolk Estuaries strategies and the second generation shoreline management plan.

Recreational/tourism disturbance (unspecified) - English Nature to work with owners/occupiers and regulatory authorities to develop a strategy to manage visitor pressure on Suffolk vegetated shingle. These measures are likely to include temporary fencing and provision of boardwalks as well as measures to increase visitor awareness about the sensitivity of the shingle habitat, for example by interpretation, wardening.

Is the site subject to adverse ecological change? YES

**27. Conservation measures taken:**

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	
National Nature Reserve (NNR)	+	
Special Protection Area (SPA)	+	
Land owned by a non-governmental organisation for nature conservation	+	
Management agreement	+	
Site management statement/plan implemented	+	

Area of Outstanding National Beauty (AONB)	+	+
Environmentally Sensitive Area (ESA)	+	+
Special Area of Conservation (SAC)	+	

**b) Describe any other current management practices:**

The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

**28. Conservation measures proposed but not yet implemented:**

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

**29. Current scientific research and facilities:**

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

**Fauna.**

Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.

**Flora.**

NVC and vegetation monitoring, bird and invertebrate surveys/monitoring carried out on EN's NNRs, NT, SWT, RSPB reserves.

**30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:**

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Facilities at National Trust and Royal Society for the Protection of Birds reserves.

**31. Current recreation and tourism:**

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

**Activities, Facilities provided and Seasonality.**

A popular area for tourists as it is an AONB and contains Minsmere bird reserve and Dunwich heath, both with toilets/shop/cafe. There are more visitors in the summer, however it well used throughout the year by walkers and bird watchers.

**32. Jurisdiction:**

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs,

European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

**33. Management authority:**

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

### 34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

#### Site-relevant references

- Axell, HE (1977) *Minsmere: portrait of a bird reserve*. Hutchinson, London
- Barne, JH, Robson, CF, Kaznowska, SS, Doody, JP, Davidson, NC & Buck, AL (eds.) (1998) *Coasts and seas of the United Kingdom. Region 7 South-east England: Lowestoft to Dungeness*. Joint Nature Conservation Committee, Peterborough. (Coastal Directories Series.)
- Batten, LA, Bibby, CJ, Clement, P, Elliot, GD & Porter, RF (1990) *Red Data Birds in Britain. Action for rare, threatened and important species*. Poyser, London, for Nature Conservancy Council and Royal Society for the Protection of Birds
- Bratton, JH (ed.) (1991) *British Red Data Books: 3. Invertebrates other than insects*. Joint Nature Conservation Committee, Peterborough
- Burgess, N, Evans, C & Sorensen, J (1990) Heathland management for nightjars. *RSPB Conservation Review*, **4**, 32-35
- Council of Europe (1980) *Minsmere Nature Reserve, United Kingdom*. Council of Europe, Strasbourg (European Diploma Series, No. 18)
- Covey, R (1998) Chapter 6. Eastern England (Bridlington to Folkestone) (MNCR Sector 6). In: *Benthic marine ecosystems of Great Britain and the north-east Atlantic*, ed. by K. Hiscock, 179-198. Joint Nature Conservation Committee, Peterborough. (Coasts and Seas of the United Kingdom. MNCR series)
- Cranswick, PA, Waters, RJ, Musgrove, AJ & Pollitt, MS (1997) *The Wetland Bird Survey 1995–96: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge
- Day, JCU & Wilson, J (1978) Breeding bitterns in Britain. *British Birds*, **71**, 285-300
- Doody, JP, Johnston, C & Smith, B (1993) *Directory of the North Sea coastal margin*. Joint Nature Conservation Committee, Peterborough
- ESL (1997) *National Vegetation Classification Survey of Walberswick NNR*. ESL, Lincolnshire
- Evans, C, Marrs, R & Welch, G (1993) The restoration of heathland on arable farmland at Minsmere RSPB Nature Reserve. *RSPB Conservation Review*, **7**, 80-84
- McLeod, CR, Yeo, M, Brown, AE, Burn, AJ, Hopkins, JJ & Way, SF (eds.) (2004) *The Habitats Directive: selection of Special Areas of Conservation in the UK*. 2nd edn. Joint Nature Conservation Committee, Peterborough. [www.jncc.gov.uk/SACselection](http://www.jncc.gov.uk/SACselection)
- Musgrove, AJ, Pollitt, MS, Hall, C, Hearn, RD, Holloway, SJ, Marshall, PE, Robinson, JA & Cranswick, PA (2001) *The Wetland Bird Survey 1999–2000: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge. [www.wwt.org.uk/publications/default.asp?PubID=14](http://www.wwt.org.uk/publications/default.asp?PubID=14)
- National Rivers Authority (1996) *Southwold Town Marshes Water Level Management Plan*. National Rivers Authority, Ipswich
- National Rivers Authority (1996) *Tinker's Marsh Water Level Management Plan*. National Rivers Authority, Ipswich
- National Rivers Authority (1996) *Westwood and Dingle Marshes Water Level Management Plan*. National Rivers Authority, Ipswich
- Ratcliffe, DA (ed.) (1977) *A Nature Conservation Review. The selection of biological sites of national importance to nature conservation in Britain*. Cambridge University Press (for the Natural Environment Research Council and the Nature Conservancy Council), Cambridge (2 vols.)
- Royal Society for the Protection of Birds (1994) *Minsmere management plan*. Royal Society for the Protection of Birds
- Shirt, DB (ed.) (1987) *British Red Data Books: 2. Insects*. Nature Conservancy Council, Peterborough
- Smith, K, Welch, G, Tyler, G, Gilbert, G, Hawkins, I & Hiron, G (2000) Management of RSPB Minsmere reedbeds and its impact on breeding bitterns. *British Wildlife*, **12**(1), 16-21
- Stewart, A, Pearman, DA & Preston, CD (eds.) (1994) *Scarce plants in Britain*. Joint Nature Conservation Committee, Peterborough
- Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H & Whitehead, S (eds.) (2001) *The UK SPA network: its scope and content*. Joint Nature Conservation Committee, Peterborough (3 vols.) [www.jncc.gov.uk/UKSPA/default.htm](http://www.jncc.gov.uk/UKSPA/default.htm)
- Suffolk Wildlife Trust (1993) *National Vegetation Classification of the saltmarsh of the Deben, Alde–Ore and Blyth estuaries, Suffolk*. Suffolk Wildlife Trust, Ashbocking

Wiggington, M (1999) *British Red Data Books. 1. Vascular plants*. 3rd edn. Joint Nature Conservation Committee, Peterborough

---

Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**  
Telephone: **+41 22 999 0170** • Fax: **+41 22 999 0169** • email: [ramsar@ramsar.org](mailto:ramsar@ramsar.org)

# EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

## Citation for Special Area of Conservation (SAC)


**Name:** Dew's Ponds  
**Unitary Authority/County:** Suffolk  
**SAC status:** Designated on 1 April 2005  
**Grid reference:** TM387718  
**SAC EU code:** UK0030133  
**Area (ha):** 6.74  
**Component SSSI:** Dew's Ponds SSSI

### Site description:

This site in rural East Suffolk comprises a series of 12 ponds set in an area of formerly predominantly arable land. The ponds range from old field ponds created for agricultural purposes to some constructed in recent years specifically for wildlife. Some of the land has been converted from arable to grassland, with a variety of grassland types present. Other habitats include hedges and ditches. Great crested newts *Triturus cristatus* have been found in the majority of ponds on the site.

**Qualifying species:** The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Great crested newt *Triturus cristatus*

This citation relates to a site entered in the Register of European Sites for Great Britain.  
Register reference number: UK0030133  
Date of registration: 14 June 2005  
Signed:   
On behalf of the Secretary of State for Environment, Food and Rural Affairs

# Dew`s Ponds

## Site details



Location of Dew`s Ponds SAC/SCI/cSAC

<b>Country</b>	England
<b>Unitary Authority</b>	Suffolk
<b>Centroid*</b>	TM387718
<b>Latitude</b>	52 17 31 N
<b>Longitude</b>	01 30 02 E
<b>SAC EU code</b>	UK0030133
<b>Status</b>	Designated Special Area of Conservation (SAC)
<b>Area (ha)</b>	6.74

\* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

## General site character

Inland water bodies (standing water, running water) (4%)

Improved grassland (85%)

Non-Forest areas cultivated with woody plants (including orchards, groves, vineyards, (10%)

Other land (including towns, villages, roads, waste places, mines, industrial sites) (1%)

[Boundary map](#) and associated biodiversity information on the NBN Gateway.

[Natura 2000 data form](#) for this site as submitted to Europe (PDF format, size 30kb).

[Interactive map](#) from MAGIC (Multi-Agency Geographic Information for the Countryside).

### Note:

[https://sizewellcdco.aecomonline.net/book6\\_es\\_text/6.4\\_volume\\_3\\_northern\\_park\\_and\\_ride/ch07\\_terrestrial\\_ecology\\_and\\_ornithology/appendices/annex\\_7a-2\\_desk\\_study/sac/citation/dews\\_ponds\\_sac.docx](https://sizewellcdco.aecomonline.net/book6_es_text/6.4_volume_3_northern_park_and_ride/ch07_terrestrial_ecology_and_ornithology/appendices/annex_7a-2_desk_study/sac/citation/dews_ponds_sac.docx)



When undertaking an appropriate assessment of impacts at a site, **all** features of European importance (both primary and non-primary) need to be considered.

## **Annex I habitats that are a primary reason for selection of this site**

Not applicable

## **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site**

Not applicable.

## **Annex II species that are a primary reason for selection of this site**

### **1166 Great crested newt *Triturus cristatus***

This site in rural East Suffolk comprises a series of 12 ponds set in an area of formerly predominantly arable land. The ponds range from old field ponds created for agricultural purposes to some constructed in recent years specifically for wildlife. Some of the land has been converted from arable to grassland, with a variety of grassland types present; other habitats include hedges and ditches. **Great crested newts *Triturus cristatus*** have been found in all ponds on site, though the presence of fish seems to have affected newt numbers in recent years in two ponds.

## **Annex II species present as a qualifying feature, but not a primary reason for site selection**

Not applicable.

# EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

## Citation for Special Area of Conservation (SAC)

**Name:** Minsmere to Walberswick Heaths and Marshes  
**Unitary Authority/County:** Suffolk  
**SAC status:** Designated on 1 April 2005  
**Grid reference:** TM468682  
**SAC EU code:** UK0012809  
**Area (ha):** 1265.52  
**Component SSSI:** Minsmere to Walberswick Heaths and Marshes SSSI


### Site description:

Lowland dry heaths occupy an extensive area of this site on the east coast of England, which is at the extreme easterly range of heath development in the UK. The heathland is predominantly heather – western gorse (*Calluna vulgaris* – *Ulex gallii*) heath, usually more characteristic of western parts of the UK. This type is dominated by heather, western gorse and bell heather *Erica cinerea*.

Shingle beach forms the coastline at Walberswick and Minsmere. It supports a variety of scarce shingle plants including sea pea *Lathyrus japonicus*, sea campion *Silene maritima* and small populations of sea kale *Crambe maritima*, grey hair-grass *Corynephorus canescens* and yellow horned-poppy *Glaucium flavum*. A well-developed beach strandline of mixed sand and shingle supports annual vegetation. Species include those typical of sandy shores, such as sea sandwort *Honckenya peploides* and shingle plants such as sea beet *Beta vulgaris* ssp. *maritima*.

**Qualifying habitats:** The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Annual vegetation of drift lines
- European dry heaths
- Perennial vegetation of stony banks. (Coastal shingle vegetation outside the reach of waves)

This citation relates to a site entered in the Register of European Sites for Great Britain.  
Register reference number: UK0012809  
Date of registration: 14 June 2005  
Signed:   
On behalf of the Secretary of State for Environment,  
Food and Rural Affairs

# Minsmere to Walberswick Heaths and Marshes

## Site details



Location of Minsmere to Walberswick Heaths and Marshes SAC/SCI/cSAC

<b>Country</b>	England
<b>Unitary Authority</b>	Suffolk
<b>Centroid*</b>	TM468682
<b>Latitude</b>	52 15 22 N
<b>Longitude</b>	01 37 02 E
<b>SAC EU code</b>	UK0012809
<b>Status</b>	Designated Special Area of Conservation (SAC)
<b>Area (ha)</b>	1265.52

\* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

### General site character

Coastal sand dunes. Sand beaches. Machair (5%)  
Shingle. Sea cliffs. Islets (15%)  
Bogs. Marshes. Water fringed vegetation. Fens (20%)  
Heath. Scrub. Maquis and garrigue. Phygrana (40%)  
Mixed woodland (20%)

[Boundary map](#) and associated biodiversity information on the NBN Gateway.

[Natura 2000 data form](#) for this site as submitted to Europe (PDF format, size 30kb).

[Interactive map](#) from MAGIC (Multi-Agency Geographic Information for the Countryside).

## Note:

When undertaking an appropriate assessment of impacts at a site, **all** features of European importance (both primary and non-primary) need to be considered.

## Annex I habitats that are a primary reason for selection of this site

### **1210 Annual vegetation of drift lines**

This site is one of two representatives of **Annual vegetation of drift lines** on the east coast of England. It occurs on a well-developed beach strandline of mixed sand and shingle and is the best and most extensive example of this restricted geographical type.

Species include those typical of sandy shores, such as sea sandwort *Honckenya peploides* and shingle plants such as sea beet *Beta vulgaris* ssp. *maritima*.

### **4030 European dry heaths**

Lowland **European dry heaths** occupy an extensive area of this site on the east coast of England, which is at the extreme easterly range of heath development in the UK. The heathland is predominantly NVC type H8 *Calluna vulgaris* – *Ulex gallii* heath, usually more characteristic of western parts of the UK. This type is dominated by heather *Calluna vulgaris*, western gorse *Ulex gallii* and bell heather *Erica cinerea*.

## Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

### **1220 Perennial vegetation of stony banks**

## Annex II species that are a primary reason for selection of this site

Not applicable.

## Annex II species present as a qualifying feature, but not a primary reason for site selection

Not applicable.



## European Site Conservation Objectives for Dew's Ponds Special Area of Conservation Site Code: UK0030133

With regard to the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

**Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;**

- **The extent and distribution of the habitats of qualifying species**
- **The structure and function of the habitats of qualifying species**
- **The supporting processes on which the habitats of qualifying species rely**
- **The populations of qualifying species, and,**
- **The distribution of qualifying species within the site.**

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

### **Qualifying Features:**

S1166. *Triturus cristatus*; Great crested newt

## Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2010 (the “Habitats Regulations”) and Article 6(3) of the Habitats Directive. They must be considered when a competent authority is required to make a ‘Habitats Regulations Assessment’ including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives and the accompanying Supplementary Advice (where available) will also provide a framework to inform the measures needed to conserve or restore the European Site and the prevention of deterioration or significant disturbance of its qualifying features as required by the provisions of Article 6(1) and 6(2) of the Directive.

These Conservation Objectives are set for each habitat or species of a [Special Area of Conservation \(SAC\)](#). Where the objectives are met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving Favourable Conservation Status for that species or habitat type at a UK level. The term ‘favourable conservation status’ is defined in Article 1 of the Habitats Directive.

**Publication date:** 31 March 2014 – version 2. This document updates and replaces an earlier version dated 29 May 2012 to reflect Natural England’s Strategic Standard on European Site Conservation Objectives 2014.



## **European Site Conservation Objectives for Minsmere to Walberswick Heaths and Marshes Special Area of Conservation Site Code: UK0012809**

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

**Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;**

- **The extent and distribution of qualifying natural habitats and habitats**
- **The structure and function (including typical species) of qualifying natural habitats, and**
- **The supporting processes on which qualifying natural habitats rely**

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

### **Qualifying Features:**

H1210. Annual vegetation of drift lines

H1220. Perennial vegetation of stony banks; Coastal shingle vegetation outside the reach of waves

H4030. European dry heaths

## **This is a European Marine Site**

This site is a part of the Minsmere–Walberswick European Marine Site. These conservation objectives should be used in conjunction with the Regulation 35 Conservation Advice Package, for further details please contact Natural England’s enquiry service at [enquiries@naturalengland.org.uk](mailto:enquiries@naturalengland.org.uk), or by phone on 0845 600 3078, or visit the Natural England website at:

<http://www.naturalengland.org.uk/ourwork/marine/protectandmanage/mpa/europeansites.aspx>

## **Explanatory Notes: European Site Conservation Objectives**

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2010 (the “Habitats Regulations”) and Article 6(3) of the Habitats Directive. They must be considered when a competent authority is required to make a ‘Habitats Regulations Assessment’, including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives and the accompanying Supplementary Advice (where available) will also provide a framework to inform the measures needed to conserve or restore the European Site and the prevention of deterioration or significant disturbance of its qualifying features as required by the provisions of Article 6(1) and 6(2) of the Directive.

These Conservation Objectives are set for each habitat or species of a [Special Area of Conservation \(SAC\)](#). Where the objectives are met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving Favourable Conservation Status for that species or habitat type at a UK level. The term ‘favourable conservation status’ is defined in Article 1 of the Habitats Directive.

**Publication date:** 30 June 2014 – version 2. This document updates and replaces an earlier version dated 29 May 2012 to reflect Natural England’s Strategic Standard on European Site Conservation Objectives 2014.



**EC Directive 79/409 on the Conservation of Wild Birds:  
Special Protection Area**

**MINSMERE-WALBERSWICK (SUFFOLK)**

The Minsmere-Walberswick proposed SPA contains areas of grazing marsh, extensive reedbeds, the estuary of the River Blyth, and areas of lowland heath and woodland. The boundaries of the site follows those of the Minsmere-Walberswick Heath and Marshes.SSSI.

Minsmere-Walberswick qualifies under Article 4.1, by supporting, in summer, nationally important breeding populations of the following Annex 1 species: 5 booming male bitterns *Botaurus stellaris* (presumed to represent 5 breeding pairs; 22% of the British breeding population) ; 15 breeding female marsh harriers *Circus aeruginosus* (20% of British) ; 47 pairs of avocet *Recurvirostra avosetta* (12% of British) ; 32 pairs of little tern *Sterna albifrons* (1% of British): and 24 pairs of nightjar *Caprimulgus europaeus* (1% of British).

The site qualifies also under Article 4.1 by regularly supporting, in winter, a nationally important wintering population of hen harrier *Circus cyaneus* (15 individuals, 2% of the British wintering population).

Minsmere-Walberswick qualifies under article 4.2 by supporting, in summer, in recent years, nationally important breeding populations of three regularly occurring migratory species: 24 pairs of gadwall *Anas strepera* (4% of British); 73 pairs of teal *A. crecca* (1% of British): and 23 pairs of shoveler *A. clypeata* (2% of British) . Also notable is a nationally important breeding population of bearded tit *Panurus biarmicus* (50 pairs, 8% of British).

The site qualifies also under Article 4.2 by supporting nationally important wintering populations of three migratory waterfowl. (average peak counts for the five year period 1985/86 to 1989/90): 100 European white-fronted geese *Anser albifrons albifrons* (2% of the British wintering population); 90 gadwall *Anas strepera* (1% of British) , and 100 shoveler *Anas clypeata* (1% of British).

Minsmere-Walberswick is also of importance for an outstandingly diverse assemblage of breeding birds of marshland and reedbed habitats, including bittern, garganey *Anas querquedula*, marsh harrier, water rail *Rallus aquaticus*, Cetti's warbler *Cettia cetti* and Savi's warbler *Locustella lusciniodes*. Also notable is an assemblage of wintering waterfowl including, in addition to species listed above, Bewick's swan *Cygnus columbianus*, wigeon *Anas penelope*, teal *Anas crecca*, avocet; spotted redshank *Tringa erythropus*; and redshank *Tringa totanus*.

During severe winter weather Minsmere-Walberswick can assume even greater national and international importance as wildfowl and waders from many other areas arrive, attracted by relatively mild climate, compared with continental areas, and the abundant food resources available.

SPA Citation  
HTR December 1991

This citation / map relates to a site entered in  
the Register of European Sites for Great Britain.  
Registered on 10.....  
Date of 1998  
Signed .....  
on behalf of the Secretary of State for the Environment



## European Site Conservation Objectives for Minsmere–Walberswick Special Protection Area Site Code: UK9009101

With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;

**Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;**

- **The extent and distribution of the habitats of the qualifying features**
- **The structure and function of the habitats of the qualifying features**
- **The supporting processes on which the habitats of the qualifying features rely**
- **The population of each of the qualifying features, and,**
- **The distribution of the qualifying features within the site.**

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

### **Qualifying Features:**

- A021 *Botaurus stellaris*; Great bittern (Breeding)
- A051 *Anas strepera*; Gadwall (Non-breeding)
- A051 *Anas strepera*; Gadwall (Breeding)
- A052 *Anas crecca*; Eurasian teal (Breeding)
- A056 *Anas clypeata*; Northern shoveler (Breeding)
- A056 *Anas clypeata*; Northern shoveler (Non-breeding)
- A081 *Circus aeruginosus*; Eurasian marsh harrier (Breeding)
- A082 *Circus cyaneus*; Hen harrier (Non-breeding)
- A132 *Recurvirostra avosetta*; Pied avocet (Breeding)
- A195 *Sterna albifrons*; Little tern (Breeding)
- A224 *Caprimulgus europaeus*; European nightjar (Breeding)
- A394 *Anser albifrons albifrons*; Greater white-fronted goose (Non-breeding)

## This is a European Marine Site

This SPA is a part of the Minsmere–Walberswick European Marine Site (EMS). These Conservation Objectives should be used in conjunction with the Regulation 35 Conservation Advice document for the EMS. For further details about this please visit the Natural England website at <http://www.naturalengland.org.uk/ourwork/marine/protectandmanage/mpa/europeansites.aspx> or contact Natural England's enquiry service at [enquiries@naturalengland.org.uk](mailto:enquiries@naturalengland.org.uk) or by phone on 0845 600 3078.

## Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2010 (the "Habitats Regulations") and Article 6(3) of the Habitats Directive. They must be considered when a competent authority is required to make a 'Habitats Regulations Assessment' including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives and the accompanying Supplementary Advice (where this is available) will also provide a framework to inform the management of the European Site under the provisions of Articles 4(1) and 4(2) of the Wild Birds Directive, and the prevention of deterioration of habitats and significant disturbance of its qualifying features required under Article 6(2) of the Habitats Directive.

These Conservation Objectives are set for each bird feature for a [Special Protection Area \(SPA\)](#). Where the objectives are met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving the aims of the Wild Birds Directive.

**Publication date:** 30 June 2014 (Version 2). This document updates and replaces an earlier version dated 29 May 2012 to reflect Natural England's Strategic Standard on European Site Conservation Objectives 2014. Previous references to additional features identified in the 2001 UK SPA Review have also been removed.

# NATURA 2000

## STANDARD DATA FORM

FOR SPECIAL PROTECTION AREAS (SPA)  
FOR SITES ELIGIBLE FOR IDENTIFICATION AS SITES OF COMMUNITY IMPORTANCE (SCI)  
AND  
FOR SPECIAL AREAS OF CONSERVATION (SAC)

### 1. Site identification:

1.1 Type  1.2 Site code

1.3 Compilation date  1.4 Update

#### 1.5 Relationship with other Natura 2000 sites

1.6 Respondent(s)

1.7 Site name

#### 1.8 Site indication and designation classification dates

date site proposed as eligible as SCI	
date confirmed as SCI	
date site classified as SPA	199205
date site designated as SAC	

### 2. Site location:

#### 2.1 Site centre location

longitude	latitude
01 38 02 E	52 18 55 N

2.2 Site area (ha)  2.3 Site length (km)

#### 2.5 Administrative region

NUTS code	Region name	% cover
UK403	Suffolk	100.00%

#### 2.6 Biogeographic region

Alpine

Atlantic

Boreal

Continental

Macaronesia

Mediterranean

### 3. Ecological information:

#### 3.1 Annex I habitats

Habitat types present on the site and the site assessment for them:

Annex I habitat	% cover	Representativity	Relative surface	Conservation status	Global assessment

### 3.2 Annex I birds and regularly occurring migratory birds not listed on Annex I

Code	Species name	Population			Site assessment				
		Resident	Breed	Winter	Stage	Population	Conservation	Isolation	Global
A056	<i>Anas clypeata</i>		23 P			B		C	
A056	<i>Anas clypeata</i>			98 I		C		C	
A052	<i>Anas crecca</i>		73 P			B		C	
A051	<i>Anas strepera</i>			93 I		C		C	
A051	<i>Anas strepera</i>		24 P			B		C	
A041a	<i>Anser albifrons albifrons</i>			67 I		C		B	
A021	<i>Botaurus stellaris</i>		7 I			A		B	
A224	<i>Caprimulgus europaeus</i>		24 P			C		C	
A081	<i>Circus aeruginosus</i>		16 P			B		B	
A082	<i>Circus cyaneus</i>			15 I		C		C	
A132	<i>Recurvirostra avosetta</i>		47 P			B		B	
A195	<i>Sterna albifrons</i>		28 P			C		C	

## 4. Site description:

### 4.1 General site character

Habitat classes	% cover
Marine areas. Sea inlets	
Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	14.0
Salt marshes. Salt pastures. Salt steppes	8.0
Coastal sand dunes. Sand beaches. Machair	3.0
Shingle. Sea cliffs. Islets	3.0
Inland water bodies (standing water, running water)	4.0
Bogs. Marshes. Water fringed vegetation. Fens	15.0
Heath. Scrub. Maquis and garrigue. Phygrana	23.0
Dry grassland. Steppes	
Humid grassland. Mesophile grassland	
Alpine and sub-alpine grassland	
Improved grassland	7.0
Other arable land	2.0
Broad-leaved deciduous woodland	16.0
Coniferous woodland	5.0
Evergreen woodland	
Mixed woodland	
Non-forest areas cultivated with woody plants (including orchards, groves, vineyards, dehesas)	
Inland rocks. Scree. Sands. Permanent snow and ice	
Other land (including towns, villages, roads, waste places, mines, industrial sites)	
<b>Total habitat cover</b>	<b>100%</b>

### 4.1 Other site characteristics

#### Soil & geology:

Acidic, Mud, Nutrient-poor, Peat, Sand, Shingle

#### Geomorphology & landscape:

Coastal, Estuary, Floodplain, Intertidal sediments (including sandflat/mudflat), Lagoon, Lowland, Open coast (including bay), Shingle bar

### 4.2 Quality and importance

#### ARTICLE 4.1 QUALIFICATION (79/409/EEC)

**During the breeding season the area regularly supports:**

<i>Botaurus stellaris</i> (Europe - breeding)	35% of the GB breeding population 5 year mean, 1993-1997
<i>Caprimulgus europaeus</i>	0.7% of the GB breeding population Count, as at 1990
<i>Circus aeruginosus</i>	10.2% of the GB breeding population 5 year mean, 1993-1997
<i>Recurvirostra avosetta</i> (Western Europe/Western Mediterranean - breeding)	10.4% of the GB breeding population Count, as at early 1990s
<i>Sterna albifrons</i> (Eastern Atlantic - breeding)	1.2% of the GB breeding population 5 year mean, 1992-1996
<b>Over winter the area regularly supports:</b>	
<i>Circus cyaneus</i>	2% of the GB population 5 year peak mean, 1985/6-1989/90

<b>ARTICLE 4.2 QUALIFICATION (79/409/EEC)</b>	
<b>During the breeding season the area regularly supports:</b>	
<i>Anas clypeata</i> (North-western/Central Europe)	2.3% of the population in Great Britain Count, as at 1990
<i>Anas crecca</i> (North-western Europe)	4.9% of the population in Great Britain Count, as at 1990
<i>Anas strepera</i> (North-western Europe)	3.1% of the population in Great Britain Count, as at 1990
<b>Over winter the area regularly supports:</b>	
<i>Anas clypeata</i> (North-western/Central Europe)	1% of the population in Great Britain 5 year peak mean 1991/92-1995/96
<i>Anas strepera</i> (North-western Europe)	1.1% of the population in Great Britain 5 year peak mean 1991/92-1995/96
<i>Anser albifrons albifrons</i> (North-western Siberia/North-eastern & North-western Europe)	1.1% of the population in Great Britain 5 year peak mean 1991/92-1995/96

### 4.3 Vulnerability

The site is actively managed to prevent scrub and tree invasion of the heathlands grazing marshes and reedbeds. Much of the land is managed by conservation organisations and positively by private landowners through ESA and Countryside Stewardship schemes. The coastline is going to be pushed back by natural processes, this is being addressed in the Shoreline Management Plan. Alternative sites for reed bed creation are being sought to help offset the possible future natural losses.

## 5. Site protection status and relation with CORINE biotopes:

### 5.1 Designation types at national and regional level

Code	% cover
UK01 (NNR)	27.6

UK SPA data form

UK04 (SSSI/ASSI)	100.0
------------------	-------

# NATURA 2000

## STANDARD DATA FORM

FOR SPECIAL PROTECTION AREAS (SPA)  
FOR SITES ELIGIBLE FOR IDENTIFICATION AS SITES OF COMMUNITY IMPORTANCE (SCI)  
AND  
FOR SPECIAL AREAS OF CONSERVATION (SAC)

### 1. Site identification:

1.1 Type  1.2 Site code

1.3 Compilation date  1.4 Update

#### 1.5 Relationship with other Natura 2000 sites

1.6 Respondent(s)

1.7 Site name

#### 1.8 Site indication and designation classification dates

date site proposed as eligible as SCI	199506
date confirmed as SCI	200412
date site classified as SPA	
date site designated as SAC	200504

### 2. Site location:

#### 2.1 Site centre location

longitude	latitude
01 37 02 E	52 15 22 N

2.2 Site area (ha)  2.3 Site length (km)

#### 2.5 Administrative region

NUTS code	Region name	% cover
UK403	Suffolk	100.00%

#### 2.6 Biogeographic region

Alpine

Atlantic

Boreal

Continental

Macaronesia

Mediterranean

### 3. Ecological information:

#### 3.1 Annex I habitats

Habitat types present on the site and the site assessment for them:

Annex I habitat	% cover	Representativity	Relative surface	Conservation status	Global assessment
Coastal lagoons	0.1	D			
Annual vegetation of drift lines	0.4	A	B	A	A



Perennial vegetation of stony banks	0.3	C	C	C	C
European dry heaths	40	B	C	A	B

### 3.2 Annex II species

Species name	Population				Site assessment			
	Resident	Migratory			Population	Conservation	Isolation	Global
		Breed	Winter	Stage				
<i>Triturus cristatus</i>	Present	-	-	-	D			

## 4. Site description

### 4.1 General site character

Habitat classes	% cover
Marine areas. Sea inlets	
Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	
Salt marshes. Salt pastures. Salt steppes	
Coastal sand dunes. Sand beaches. Machair	5.0
Shingle. Sea cliffs. Islets	15.0
Inland water bodies (standing water, running water)	
Bogs. Marshes. Water fringed vegetation. Fens	20.0
Heath. Scrub. Maquis and garrigue. Phygrana	40.0
Dry grassland. Steppes	
Humid grassland. Mesophile grassland	
Alpine and sub-alpine grassland	
Improved grassland	
Other arable land	
Broad-leaved deciduous woodland	
Coniferous woodland	
Evergreen woodland	
Mixed woodland	20.0
Non-forest areas cultivated with woody plants (including orchards, groves, vineyards, dehesas)	
Inland rocks. Screes. Sands. Permanent snow and ice	
Other land (including towns, villages, roads, waste places, mines, industrial sites)	
<b>Total habitat cover</b>	<b>100%</b>

### 4.1 Other site characteristics

<p><b>Soil &amp; geology:</b> Acidic, Sand, Shingle</p> <p><b>Geomorphology &amp; landscape:</b> Coastal, Lagoon, Lowland</p>
---

### 4.2 Quality and importance

<p>Annual vegetation of drift lines</p> <ul style="list-style-type: none"> <li>for which this is one of only four known outstanding localities in the United Kingdom.</li> <li>which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 100 hectares.</li> </ul> <p>Perennial vegetation of stony banks</p> <ul style="list-style-type: none"> <li>for which the area is considered to support a significant presence.</li> </ul> <p>European dry heaths</p> <ul style="list-style-type: none"> <li>for which this is considered to be one of the best areas in the United Kingdom.</li> </ul>
---

### 4.3 Vulnerability

Dry heath: These heaths were formed through, and are dependent upon, active management. Without grazing or cutting of heather, scrub and tree invasion onto the heaths is rapid and can be extensive. Bracken can also dominate large areas if suitable management has not been undertaken over the past decade. The heathland at Minsmere forms part of a RSPB reserve. The site management plan includes actions to ensure that open heathland is maintained and areas of scrub and bracken are cleared from former heath. Part of the cSAC is managed as Westleton Heath Nature Reserve.

Annual vegetation of drift lines: This habitat is maintained through the action of natural coastal processes upon the shoreline. The requirement for management is limited and is restricted to ensuring that significant human disturbance of the vegetated shore zone does not occur. This aspect of management is addressed through the RSPB visitor management plan.

## 5. Site protection status and relation with CORINE biotopes:

### 5.1 Designation types at national and regional level

Code	% cover
UK01 (NNR)	24.0
UK04 (SSSI/ASSI)	100.0

COUNTY: SUFFOLK

SITE NAME: DEW'S PONDS

DISTRICT: SUFFOLK COASTAL

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981 as amended.

Local Planning Authority: Suffolk Coastal District Council, Suffolk County Council

National Grid Reference: TM 390719

Area: 6.74 (ha.)

Ordnance Survey Sheet 1:50,000: 156

1:10,000: TM 37 SE

Date Notified (Under 1981 Act): 2000

Date of Last Revision: –

Reasons for Notification:

This site supports one of the largest known breeding populations of great crested newts *Triturus cristatus* in the UK.

General description:

This site lies in north east Suffolk in the parish of Bramfield, some 5km south of the town of Halesworth and 10km west of the Suffolk coast. This part of Suffolk has a high density of farm ponds, supporting a widespread distribution of great crested newts. Dew's Ponds contains a number of ponds which collectively support exceptionally high numbers of great crested newts on a regular basis.

The majority of the site is on level ground. The underlying solid geology is chalk but this is overlain by an extensive deposit of boulder clay. The clay gives rise to a poorly draining, moderately nutrient-rich, heavy soil.

There are twelve ponds within the site, ranging from long established farm ponds to more recently created ones (dug in 1990s). The ponds contain a variety of emergent and submerged aquatic vegetation including bearded stonewort *Chara canescens*. They have been managed for conservation purposes during the last decade. In contrast, many other ponds in the surrounding area have been infilled or neglected and therefore no longer support large populations of great crested newts. Rough, semi-improved grassland surrounds the ponds at the Dew's Ponds site with some scrub and hedgerow habitat. The terrestrial habitats are important to newts for feeding, shelter and hibernation during the non-breeding season.

Great crested newts have been recorded in at least nine of the twelve ponds in exceptional numbers. Various other amphibians and reptiles also breed on site. The ponds support good numbers of smooth newt *Triturus vulgaris*, with common frog *Rana temporaria* and common toad *Bufo bufo*. Grass snake *Natrix natrix*, slow-worm *Anguis fragilis* and common lizard *Laccerta vivipara* are also present and breed on site.

Other Information:

Great crested newt is specially protected by being listed on Schedule 5 of the Wildlife and Countryside Act 1981 as amended.

Great crested newt is a priority species of the UK Biodiversity Action Plan.

Great crested newt is listed on Annex II and IV of the European Communities Directive 92/43/EEC, on the Conservation of Natural Habitats and of Wild Fauna and Flora -- The Habitats Directive.

COUNTY: SUFFOLK      SITE NAME:      MINSMERE-WALBERSWICK  
HEATHS AND MARSHES

DISTRICT: SUFFOLK COASTAL/WAVENEY

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981, as amended

Local Planning Authority: SUFFOLK COASTAL DISTRICT COUNCIL, Waveney District Council, Suffolk County Council

National Grid Reference:      TM 475645      Area: 2325.89 (ha.) 5747.27 (ac.)  
TM 467772

Ordnance Survey Sheet 1:50,000: 156      1:10,000: TM 46 NE-NW-SW  
TM 47 NE-NW-SE-SW

Date Notified (Under 1949 Act): See below      Date of Last Revision: 1972

Date Notified (Under 1981 Act): 1989      Date of Last Revision: 1993

Other Information:

This site amalgamates Minsmere Level SSSI (notified in 1954), Walberswick SSSI (notified in 1954) and Brick Kiln Walks SSSI (notified in 1972).

Much of this site has been designated a Special Protection Area under EC Directive 79/409 on the Conservation of Wild Birds, and as a Wetland of International Importance under the Ramsar Convention.

Much of the site is included within 'A nature conservation review' by Ratcliffe (1977). It is within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty.

Parts of the site are owned and/or managed as nature reserves and are listed below

Walberswick National Nature Reserve (English Nature)  
Westleton Heath National Nature Reserve (English Nature)  
Minsmere Reserve (Royal Society for the Protection of Birds)  
Dunwich Heath (National Trust)  
Norman Gwatkin Reserve (Suffolk Wildlife Trust)

Description and Reasons for Notification:

This composite site is situated on the coast of Suffolk between Southwold in the north and Sizewell in the south. It contains a complex series of habitats, notably mudflats, shingle beach, reedbeds, heathland and grazing marsh, which combine to create an area of exceptional scientific interest.

The tidal mudflats of the River Blyth estuary form sheltered feeding grounds for wildfowl and shorebirds, notably wigeon, shelduck, redshank and dunlin. Saltmarsh, dominated by sea purslane *Halimione portulacoides*, but also composed of sea

lavender *Limonium vulgare*, sea aster *Aster tripolium* and common cord-grass *Spartina anglica* fringes the southern shore of the estuary. Other saltmarsh species include glasswort *Salicornia* spp., sea rush *Juncus maritimus*, common saltmarsh grass *Puccinellia maritima* and sea couch-grass *Elymus pycnanthus*.

Shingle beach forms the coastline at Walberswick and Minsmere. This is subject to sea erosion and human disturbance but, nevertheless, it supports a variety of scarce shingle plants including sea pea *Lathyrus japonicus*, sea campion *Silene maritima* and small populations of sea kale *Crambe maritima*, grey hair-grass *Corynephorus canescens* and yellow horned-poppy *Glaucium flavum*. A narrow strip of yellow dune extends southwards at Minsmere behind which is a strip of dune grassland. A series of shallow, brackish lagoons and saltmarsh occurs behind the shingle beach between Walberswick and Dunwich.

Extensive reedbeds, consisting largely of pure stands of reed *Phragmites australis*, occur at Minsmere and Walberswick. These developed on former grazing marshes which were flooded as a war-time defence measure in 1940. Both marshes contain shallow pools of open water and are intersected by deep water channels. The reedbeds are an important habitat for birds and insects. There are large breeding populations of reed warbler and bearded tit. Other notable breeding species include marsh harrier, bittern, cetti's warbler, garganey and water rail. The marshes have a rich insect fauna; particularly moths, which includes a number of rare species: notably *Archanara neurica*, *Photedes brevilinea* and *Senta flammea*.

At Minsmere, a 20 hectare area of shallow lagoons and islands has been created for wading birds and wildfowl. This area is renowned for its breeding colony of avocets; shoveler, gadwall, teal and shelduck also breed.

Large blocks of grazing marsh are found near Eastbridge and Southwold. These marshes support a high number of species of breeding waterfowl such as snipe, redshank, gadwall, shoveler and black-tailed godwit. Dykes within the marshes contain very diverse aquatic plant communities, with brackish and freshwater types represented. Many nationally rare and scarce invertebrates such as the soldier fly *Odontomyia ornata* are found east of Eastbridge, as are a number of nationally scarce plants including sea barley *Hordeum marinum* and whorled water-milfoil *Myriophyllum verticillatum*. The marshes west of Eastbridge support a mosaic of different unimproved wetland communities including fen-meadow characterised by blunt-flowered rush *Juncus subnodulosus* and marsh thistle *Cirsium palustre*, reed beds, swamps dominated by lesser pond sedge *Carex acutiformis*, marshes dominated by meadowsweet *Filipendula ulmaria* with some angelica *Angelica sylvestris*, and alder *Alnus glutinosa* woodland.

High land at Minsmere, Westleton and Walberswick forms part of the East Suffolk Sandlings and is composed of infertile sands and gravels. This supports large areas of lowland heath, bracken, dry acidic grassland, woods and scrub.

Lowland heath, dominated by ling *Calluna vulgaris* but also containing bell heath *Erica cinerea* and cross-leaved heath *E. tetralix*, occupies a large continuous tract of about 400 ha at Minsmere, Dunwich and Westleton Heath with smaller areas at

Walberswick. This heathland provides a valuable habitat for two nationally decreasing birds, the nightjar and woodlark.

Patches of unimproved acid grassland in which red fescue *Festuca rubra* and common bent *Agrostis capillaris* predominate, occur through the site but areas dominated by wavy hair-grass *Deschampsia flexuosa*, purple moor-grass *Molinia caerulea* and sand sedge *Carex arenaria* also occur. A variety of other acid grassland plants is also present, of which heath bedstraw *Galium saxatile* and sheep's sorrel *Rumex acetosella* are common. Scarce species include bird's-foot clover *Trifolium ornithopodioides* and mossy stonecrop *Crassula tillaea* together with a small colony of red-tipped cudweed *Filago lutescens*. There are also substantial areas dominated by bracken *Pteridium aquilinum* or gorse *Ulex europaeus* and *U. gallii*.

Mature plantation woodland, chiefly of oak *Quercus robur* or Scots pine *Pinus sylvestris* but also including sycamore *Acer pseudoplatanus* and sweet chestnut *Castanea sativa*, occur at Minsmere and Walberswick. Naturally regenerated woods of birch *Betula pendula* and Scots pine have arisen on former heathland and alder *Alnus glutinosa*, sallow *Salix* spp. and birch woodlands are also present on wet ground. This woodland and scrub provides important additional habitat diversity for birds and invertebrates.

COUNTY: SUFFOLK      SITE NAME: POTTON HALL FIELDS,  
WESTLETON

DISTRICT: SUFFOLK COASTAL

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the  
Wildlife and Countryside Act 1981 as amended

Local Planning Authority: SUFFOLK COUNTY COUNCIL, Suffolk Coastal District  
Council

National Grid Reference: TM 457706      Area: 16.91 (ha.) 41.78 (ac.)

Ordnance Survey Sheet 1:50 000: 156      1:10000: TM 47 SE

Data Notified (Under 1949 Act): –      Date of Last Revision: –

Date Notified (Under 1981 Act): 1992      Date of Last Revision: –

Other Information:

A new site.

Description and Reasons for Notification:

Potton Hall Fields are of special interest for their populations of the nationally rare Red-tipped Cudweed *Filago lutescens*, several thousand of which have been recorded there. The plant occurs in only two other counties in Britain and, being listed on Schedule 8 of the Wildlife and Countryside Act 1981, is protected under the provisions of Section 13 of the Act.

The site comprises two gently sloping fields with a narrow watercourse running between them. The soils, being derived from glaciofluvial drift, are well drained and sandy.

The land has been utilised for arable cropping until recently and is still predominantly bare ground. The Red-tipped Cudweed occurs in large patches throughout the site along with various ruderals including Scarlet Pimpernel *Anagallis arvensis*, Common Ragwort *Senecio jacobea* and Hare's-foot Clover *Trifolium arvense*.



## VOLUME 3, CHAPTER 7, APPENDIX 7A:

### ANNEX 7A.3 - SECONDARY DATA

- ANNEX 7A.3 - BAT SURVEY REPORT 2012
- ANNEX 7A.3 - PHASE 1 HABITAT SURVEY 2011
- ANNEX 7A.3 - GREAT CRESTED NEWT SURVEY 2012



# **NNB Generation Company**

## **Land West Side of A12, Darsham**

### **Associated Development Site 10**

DRAFT Bat Survey Report

February 2012

AMEC Environment & Infrastructure UK Limited

---

**Report for**

Christine Blythe  
NNB Generation Company  
Barnett Way  
Barnwood  
Gloucester  
GL4 3RS

## NNB Generation Company

## Land West Side of A12, Darsham

---

**Main Contributors**

Matt Hobbs

### Associated Development Site 10

---

**Issued by**

.....  
Emma Toovey

DRAFT Bat Survey Report

February 2012

---

**Approved by**

.....  
Lynn Whitfield

AMEC Environment & Infrastructure  
UK Limited

---

**AMEC Environment & Infrastructure  
UK Limited**

17 Angel Gate, City Road, London EC1V 2SH,  
United Kingdom  
Tel +44 (0) 207 843 1400  
Fax +44 (0) 207 843 1410

Doc Reg No. 28130 CR302

r:\projects\28130 sizewell ecology studies\reports\associated  
development sites\bat survey reports 2011\for issue\28130 ad site  
10 2011 bat survey report draft i1 v2.doc



Certificate No. FS 13881



Certificate No. EMS 69090

In accordance with an environmentally responsible approach,  
this document is printed on recycled paper produced from 100%  
post-consumer waste, or on ECF (elemental chlorine free) paper

---

## Disclaimer

This report has been prepared in a working draft form and has not been finalised or formally reviewed. As such it should be taken as an indication only of the material and conclusions that will form the final report. Any calculations or findings presented here may be changed or altered and should not be taken to reflect AMEC's opinions or conclusions.

---

## Copyright and Non-Disclosure Notice

The contents and layout of this report are subject to copyright owned by AMEC (©AMEC Environment & Infrastructure UK Limited 2012) save to the extent that copyright has been legally assigned by us to another party or is used by AMEC under licence. To the extent that we own the copyright in this report, it may not be copied or used without our prior written agreement for any purpose other than the purpose indicated in this report.

The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of AMEC. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests. Any third party who obtains access to this report by any means will, in any event, be subject to the Third Party Disclaimer set out below.

---

## Third Party Disclaimer

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by AMEC at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by any means. AMEC excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

---

## Document Revisions

No.	Details	Date
1	Draft Report	Feb 2012

# Contents

---

<b>1.</b>	<b>Introduction</b>	<b>1</b>
1.1	Background	1
1.2	Site Description and Value of Habitats for Bats	1
1.3	Purpose of this Report	2
1.4	Legislation and Policy Guidance	2
<b>2.</b>	<b>Methods</b>	<b>3</b>
2.1	Walked Transects	3
2.2	Static Bat Detector Survey	4
2.3	Personnel	4
<b>3.</b>	<b>Results</b>	<b>5</b>
3.1	Walked Transects	5
3.1.1	Weather Conditions	5
3.1.2	Relative Activity Levels and Spatial Distribution of Bats	5
3.2	Static Bat Detector Survey	6
3.2.1	Relative Activity Levels Of All Bats	Error! Bookmark not defined.
3.2.2	Relative Activity Levels of Group 1 Bats	7
3.2.3	Relative Activity Levels of Group 2 Bats	8
<b>4.</b>	<b>Conclusions</b>	<b>9</b>
4.1	Barbastelle	9
4.2	Nathusius' Pipistrelle and Leisler's Bat	9
4.3	Common and Soprano Pipistrelle	9
4.4	Brown Long-eared Bat, Myotis sp. and Serotine	9
4.5	Noctule	10
Table 2.1	Static Detector Dates and Locations	4
Table 3.1	Weather Conditions during Walked Transect Surveys	5
Table 3.2	Number of Passes and Relative Bat Activity Recorded during Walked Transect Surveys in 2011	5
Table 3.3	Relative activity level recorded during static bat detector survey	7



Figure 1.1	Site boundary	After Page 10
Figure 2.1	Combined 2011 walked transect bat survey routes and static bat detector survey locations	After Page 10
Figure 3.1	Locations of bat passes recorded during 2011 walked transect surveys	After Page 10
Appendix A	Policy and legislation relating to bats in Suffolk	
Appendix B	Materials and data analysis	

# 1. Introduction

---

## 1.1 Background

An area of land directly north of Sizewell B Nuclear Power Station, which is located near Leiston in Suffolk, has been identified as having the potential to accommodate the proposed development of one or more new nuclear reactors. This proposed development is known as Sizewell C. The site of the proposed development has an approximate central National Grid Reference (NGR) of TM473640. NNB Generation Company (EDF) has identified a number of additional sites for a variety of developments associated with the new build proposals at Sizewell that will be located beyond the current EDF landholding. AMEC Environment & Infrastructure UK Ltd ('AMEC') has been commissioned to provide ecological services in relation to these sites, in order to inform the site selection process and support any future planning submissions. Baker Shepherd Gillespie (BSG) was commissioned to carry out bat surveys for these sites in 2011.

Land to the west of the A12 at Darsham (Site 10) (approximate central NGR: TM406703) has been identified as a potential site for associated development. The sites proposed for associated development are currently at a preliminary stage of scoping with detailed scheme plans yet to be confirmed. Notwithstanding, current proposals for land at west side of A12, Darsham include the development of the site to support a satellite accommodation campus and park and ride.

## 1.2 Site Description and Value of Habitats for Bats

Site 10 is a 26ha triangle of land located to the north of Darsham Station, and to the northeast of the village of Yoxford, Suffolk. It lies within a predominately rural landscape (refer to **Figure 1.1**<sup>1</sup> for location details and a redline boundary of the site). The eastern boundary of the site is bordered by the A12 and residential properties, the western boundary is bordered by a railway line, and the northern boundary is bordered by Willow Marsh Lane.

A brief description of the habitats present within the site in relation to the potential they have for supporting roosting, foraging or commuting bats is included below. For a full habitat description and habitat map, please refer to the Phase 1 Habitat Survey report for the site<sup>2</sup>.

The site is predominantly arable farmland, which is likely to be of low value to bats. There is however a strip of uncultivated semi-improved grassland around the perimeter of the field, which may provide foraging opportunities for bats. A species-poor hedgerow borders the railway line along the western boundary, with standard trees along its length that appear to continue beyond the site boundary. Little Nursery woodland is located on the western boundary of the site and is approximately 515m in length and 3.25ha in extent. During the Phase 1 survey at least 20 trees within the woodland, and six trees in the hedgerows and field boundaries, were

---

<sup>1</sup> All figures can be found at the end of the report.

<sup>2</sup> Report reference: 28130ca143.



identified as having potential to support roosting bats; exhibiting features including broken limbs, cracks, crevices and flaking bark. In addition, the woodland and hedgerows are likely to provide good foraging opportunities. The woodland contains a variety of native tree species, although it is dominated by mature oak (*Quercus robur*) and ash (*Fraxinus excelsior*). This habitat is likely to provide a high diversity of insect species for foraging bats, as well as dark cover close to sunset/sunrise and shelter in adverse weather conditions. The railway line and hedgerows offer good connectivity and commuting routes for bats in the wider landscape.

### 1.3 Purpose of this Report

This report summarises the findings of bat activity surveys carried out within the site in 2011 and provides a summary of the bat interest of the site. The focus of the survey work was to examine spatial and temporal patterns of bat activity, and to identify areas of importance for bats through quantitative analysis of relative activity levels. The survey work did not attempt to identify potential roost locations, although an initial assessment was made of the potential for trees within the site to provide opportunities for roosting bats, as detailed in the Phase 1 Habitat Survey report for the site<sup>2</sup>.

### 1.4 Legislation and Policy Guidance

Details of national policies and legislation that relate to bats, as well as details of the draft Suffolk Biodiversity Action Plan (BAP) for bats are provided in **Appendix A**.

## 2. Methods

---

### 2.1 Walked Transects

Three walked transect surveys were undertaken within the survey area, in each of the three sampling periods (May, June and August 2011), in order to collect representative data on bat activity throughout the peak season for such. See **Figure 2.1** for transect routes. During each survey two surveyors together (for health and safety reasons) walked a pre-determined transect route. The transect route for Site 10 also incorporated Site 11 due to the small size of these sites. Only the data collected from within Site 10 is included in this report, with the data from Sites 11 detailed in a separate document<sup>3</sup>.

Two surveys were undertaken at dusk and one before dawn. The dusk survey visits started around sunset and typically took 2.5-3 hours to complete, and the dawn survey was carried out throughout the two hours prior to sunrise. The same (or a similar) transect route was walked on each survey visit with the start and end points changed on each visit to ensure that different parts of the site were surveyed at different times of the night. This approach was adopted to remove a bias that could be introduced if any given point on the transect route was sampled at approximately the same interval after sunset during the two dusk surveys. In addition, during the dusk transects, surveyors completed two circuits of the route to ensure sampling at each part of the site at two different intervals after sunset.

Surveys were carried out only when weather conditions were suitable for bats to be active, avoiding temperatures below 9°C, rain and high wind speeds. An initial attempt to survey on 3 August was cancelled due to heavy rain shortly after dusk. As a result the survey was postponed until dawn on 4 August.

A 40 minute emergence survey was conducted immediately after sunset on the eastern edge of Little Nursery woodland during the May and June surveys. In addition, a re-entry survey was conducted 60 minutes before sunrise on the August survey. One surveyor was positioned on the northeast edge of the wood with another on the southeast edge of the wood. Surveyors watched for bats emerging from or returning to trees in the woodland, and also noted any early or late bat activity that may indicate the presence of roosting bats within the wood.

During the emergence and re-entry surveys, surveyors could not see the western side of the wood and the railway line, and it is possible that bats may have been missed that were roosting along that side of the wood and/or commuting along the railway line. However, the emergence and re-entry surveys were designed to simply give an indication of the use of the wood by bats for roosting. Therefore this is not considered to be a significant constraint to fulfilling the aims of the survey work.

---

<sup>3</sup> Report reference: 28130 cr303



## 2.2 Static Bat Detector Survey

Anabat SD1 bat detectors were used to assess bat activity at a single location, thought to represent potentially high quality commuting or foraging habitat for bats (see **Figure 2.1** for locations). **Table 2.1** provides details of static detector deployments.

**Table 2.1 Static Detector Dates and Locations**

Static	Location (Figure 2.1)	Start	Finish	Nights	Dates analysed for Group 2 bats
A	On southern woodland edge	11/05	24/05	14	16, 20 and 22 May
A	On southern woodland edge	23/06	05/07	13	21,22 and 24 June
A	On southern woodland edge	04/08	17/08	14	6, 15 and 16 August

The detectors were programmed to begin recording half an hour before sunset and finish half an hour after sunrise. The number of survey hours therefore varied throughout the survey season according to night length.

All recordings were checked for rarer species of potentially higher conservation significance by scanning sound files for these species. The species selected were: barbastelle (*Barbastella barbastellus*), Nathusius' pipistrelle (*Pipistrellus nathusii*) and Leisler's bat (*Nyctalus leisleri*) (hereafter referred to as Group 1). However, because a very large amount of data is likely to be recorded during static detector surveys, the majority of which will represent the common pipistrelle species, it is not cost-efficient or necessary to check and label every pass of all species of bats. For all other species, therefore, termed here Group 2, a sub-set of three nights of data from each deployment (as detailed in **Table 2.1**) - those with the highest number of bat calls recorded – were analysed in detail.

Full details of equipment used for bat surveys and analysis methods are included in **Appendix B**.

## 2.3 Personnel

Walked transect and static detector survey work during 2011 was carried out by a total of three ecologists. These surveys were all led by Laura Jennings (LJ) or Ed Austin (EA) with another two experienced surveyors assisting<sup>4</sup>.

<sup>4</sup> Natalie White (NW) of BSG and Guy Newman (GN, freelance: Natural England bat survey licence number 20110030).

## 3. Results

---

### 3.1 Walked Transects

#### 3.1.1 Weather Conditions

Details of weather conditions during the surveys are provided in **Table 3.1**.

**Table 3.1 Weather Conditions during Walked Transect Surveys**

Date	Temperature (°C, start-end)	Wind strength <sup>5</sup>	Cloud cover (%)	Rainfall
11/05	13-11	2	10	0
22/06	14-12	2	10	0
04/08	16	1	5	0

#### 3.1.2 Relative Activity Levels and Spatial Distribution of Bats

The total numbers of passes and relative activity levels recorded for each species are shown in **Table 3.2**. The spatial distribution of the bat species recorded is shown in **Figure 3.1**.

**Table 3.2 Number of Passes and Relative Bat Activity Recorded during Walked Transect Surveys in 2011**

Species	Survey date				
	11/05	22/06	04/08	Total	B/h <sup>6</sup>
Noctule	0	12	3	15	2.6
<i>Nyctalus</i> sp.	1	0	0	1	0.2
Common pipistrelle	12	3	17	32	5.6
Common/soprano pipistrelle	3	0	0	3	0.5
Soprano pipistrelle	31	2	1	34	5.9
Barbastelle	4	0	0	4	0.7
Total	51	17	21	89	
Survey duration (min)	129	125	90	344	
Total B/h	23.7	8.2	14.0	15.5	

<sup>5</sup> Wind strength is given in the Beaufort scale and wind direction is abbreviated to an eight point compass (e.g. NE = northeast). The Beaufort scale is an empirical measure that relates wind speed to observed conditions at sea or on land.

<sup>6</sup> Number of bat passes per hour (see **Appendix B**).

In summary, four species of bats were recorded during the walked transect surveys: barbastelle, common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and noctule (*Nyctalus noctula*). The two pipistrelle bat species were recorded during all transects. Soprano pipistrelle was the most frequently encountered species during the walked transects (5.9 B/h; n<sup>7</sup> = 34), with common pipistrelle being the second most numerous (5.6 B/h; n = 32). Common pipistrelle passes were recorded on the western, northern and north-eastern site boundaries. The earliest common pipistrelle was observed foraging on the woodland edge 24 minutes after sunset in August. No passes were recorded on the south-eastern boundary where there are no trees or suitable features along which bats can forage or commute.

Activity of soprano pipistrelle bats was concentrated along the edge of Little Nursery wood with a single pass north of the woodland on the western site boundary. Single soprano pipistrelles were observed foraging within a glade in the woodland eight minutes after sunset for five minutes in May with others recorded foraging on the woodland edge 26 minutes after sunset in June and 17 minutes after sunset in August. An unidentified pipistrelle was also observed 37 minutes before sunrise commuting rapidly south along the woodland edge in August. Although bats were recorded close to sunset and sunrise on several occasions, the surveyors did not observe more than one individual at any time and bats were not seen leaving or entering specific trees.

Noctule bats were recorded in June and August (2.6 B/h; n = 15). A single pass by an unidentified *Nyctalus* species of bat was recorded in May. During June, surveyors observed an individual emerging from Little Nursery woodland 12 minutes after sunset and foraging just east of the woodland before commuting north. In August surveyors observed two bats returning to the woodland at 28 and 26 minutes before sunrise. Both bats commuted along the eastern edge of the woodland from the north before entering the southern end of the woodland. No noctules were seen leaving or entering specific trees.

Barbastelle was recorded during the May transect, with a total of 4 passes recorded. Two barbastelle passes were recorded at 46 and 51 minutes after sunset during the May transect in the vicinity of Little Nursery woodland. A further pass was recorded 68 minutes after sunset along Willow Marsh Lane on the northern site boundary, and another later pass was recorded on the eastern boundary of the site beside the gardens of the residential properties.

## 3.2 Static Bat Detector Survey

### 3.2.1 Relative Activity Levels of all Bats

The relative activity level recorded at the static detector during each survey period for all species or grouped species categories are shown in **Table 3.3**.

---

<sup>7</sup> Number of passes (please refer to **Appendix B**).

**Table 3.3 Relative Activity Level Recorded during Static Bat Detector Survey**

Species	Static A deployment dates			Total	B/h
	11-24/05	23/06-05/07	04-17/08		
<b>Group 1 (all nights)</b>					
Leisler's bat	4	5	52	61	0.2
Nathusius' pipistrelle	1	0	0	1	<0.1
Barbastelle	90	60	126	276	0.8
<b>Group 1 total</b>	<b>95</b>	<b>65</b>	<b>178</b>	<b>338</b>	
<b>Group 2 (3x3 nights)</b>					
Noctule	37	5	2	44	0.6
<i>Nyctalus</i> sp.	2	0	0	2	<0.1
Serotine/Leisler's bat	1	0	0	1	<0.1
Serotine	0	0	7	7	0.1
Common pipistrelle	243	107	104	454	6.1
Soprano pipistrelle	265	219	219	703	9.5
<i>Myotis</i> sp.	13	2	1	16	0.2
Brown long-eared bat	3	1	0	4	0.1
<b>Group 2 total</b>	<b>564</b>	<b>334</b>	<b>333</b>	<b>1231</b>	

In the nine nights selected for analysis of all species a total of 1231 bat passes (16.6 B/h) of six Group 2 species were recorded: common and soprano pipistrelle, noctule, serotine (*Eptesicus serotinus*), *Myotis* sp. and brown long-eared bat (*Plecotus auritus*). A further 338 passes (1 B/h) of three Group 1 species were also recorded: barbastelle, Nathusius' pipistrelle and Leisler's bat. An additional five species were recorded during static surveys that were not recorded during walked transects: Leisler's bat, serotine, Nathusius' pipistrelle, *Myotis* sp. and brown long-eared bat.

### 3.2.2 Relative Activity Levels of Group 1 Bats

Barbastelle was recorded in all three monitoring periods, with a total of 276 passes (0.8 B/h). Activity was highest during the August monitoring period (1 B/h; n = 126). Four very early passes were recorded between 0-20 minutes after sunset (TC1<sup>8</sup>) in August, which is before the typical emergence time for the species. Another 15 passes were recorded within 40-60 minutes of sunset. Of the 41 recording nights, barbastelle was recorded between 0 and 60 minutes of sunset on ten separate nights (4 in May; 6 in August). Six passes occurred within 40-60 minutes of sunrise; 1 night in June and 5 nights in August.

<sup>8</sup> Time Code (refer to **Appendix B**).

Leisler's bat was recorded within all three monitoring periods, with a total of 61 passes recorded (0.2 B/h). Activity was recorded between 40 minutes after sunset and the middle of the night, with a single pass 20-40 minutes before sunrise in May. There was a peak of activity 100-120 minutes after sunset (TC6; 1.2 B/h) with low activity recorded in all other periods. Activity was highest within the August monitoring period (0.4 B/h).

A single pass of Nathusius' pipistrelle was recorded in the middle of the night (TC7) in May.

### 3.2.3 Relative Activity Levels of Group 2 Bats

*Myotis* bats were recorded within all three monitoring periods, with a total of 16 bat passes (0.2 B/h). Low levels of activity were recorded between 60 minutes after sunset and 60 minutes before sunrise (TC4-10).

Noctule was recorded within all three monitoring periods, with a total of 44 passes (0.6 B/h) and two passes of unidentified *Nyctalus* sp. Low levels of activity were recorded within the June/July and August monitoring periods (0.2 and <0.1 B/h respectively) with the highest level of activity recorded in May (1.6 B/h; n = 37). In May low levels of activity were recorded between sunset and 20 minutes before sunrise (TC1-12) with a peak 0-20 minutes after sunset (TC1 = 9 B/h; n = 9) and 20-40 minutes before sunrise (TC12 = 6 B/h; n = 6). In June/July activity was recorded between 100 minutes after sunset and the middle of the night (TC6-7; n = 5) and 20-80 minutes before sunrise (TC10-12; n = 2). In August only 2 passes of the species were recorded in the middle of the night.

In total 454 common pipistrelle passes (6.1 B/h) and 703 soprano pipistrelle (9.5 B/h) were recorded. Common and soprano pipistrelle bats were recorded within all monitoring periods. Common pipistrelles were recorded between 14 minutes after sunset and 27 minutes before sunrise. 21 passes were recorded 0-20 minutes after sunset (TC1 = 7 B/h) with three passes 20-40 minutes before sunrise (TC12 = 1 B/h). The highest activity levels were recorded 60-80 minutes after sunset (TC4; 29.7 B/h; n = 89). Soprano pipistrelle bats were recorded between sunset and 16 minutes before sunrise. Six passes were recorded 0-20 minutes after sunset (TC1 = 2 B/h), with many recorded 20-40 minutes after sunset (TC2; 41 B/h; n = 123) and within 60 minutes of sunrise (TC11-13; 48.3 B/h; n = 145). The highest activity levels were recorded 40-60 minutes after sunset (TC3; 55.3 B/h; n = 166).

Four passes of brown long-eared bats were recorded between 65 minutes after sunset and 97 minutes before sunrise. Seven serotine passes were recorded in August during the period 60-120 minutes after sunset (TC4-6).

## 4. Conclusions

---

Bat surveys were carried out by BSG at Site 10 during May-August 2011 and included three walked transect surveys of the site and the deployment of a single static bat detector for around two weeks each in May, June/July and August. Four species of bats were recorded during walked transect surveys: common pipistrelle, soprano pipistrelle, noctule and barbastelle. An additional five species were recorded during static surveys that were not recorded during walked transects: Leisler's bat, serotine, Nathusius' pipistrelle, *Myotis* sp. and brown long-eared bat. The site supports an assemblage of bat species that is typical of the area and low activity levels were recorded for most species except barbastelle, common and soprano pipistrelle. The following sections provide further details of the status of each species.

### 4.1 Barbastelle

The timing and frequency of barbastelle passes suggest the likely presence of a roost within Little Nursery Wood. That said, it is not possible to determine the size and/or status of such a roost based on the current survey data. Although most of the site offers limited foraging opportunities for this species, the woodland provides suitable roosting and foraging habitat.

### 4.2 Nathusius' Pipistrelle and Leisler's Bat

Low levels of Nathusius' pipistrelle and Leisler's bat activity were recorded only during the static detector surveys. There is no evidence that the site is close to a roost of either species, or that the site is of importance to Nathusius' pipistrelle and Leisler's bat for foraging or commuting.

### 4.3 Common and Soprano Pipistrelle

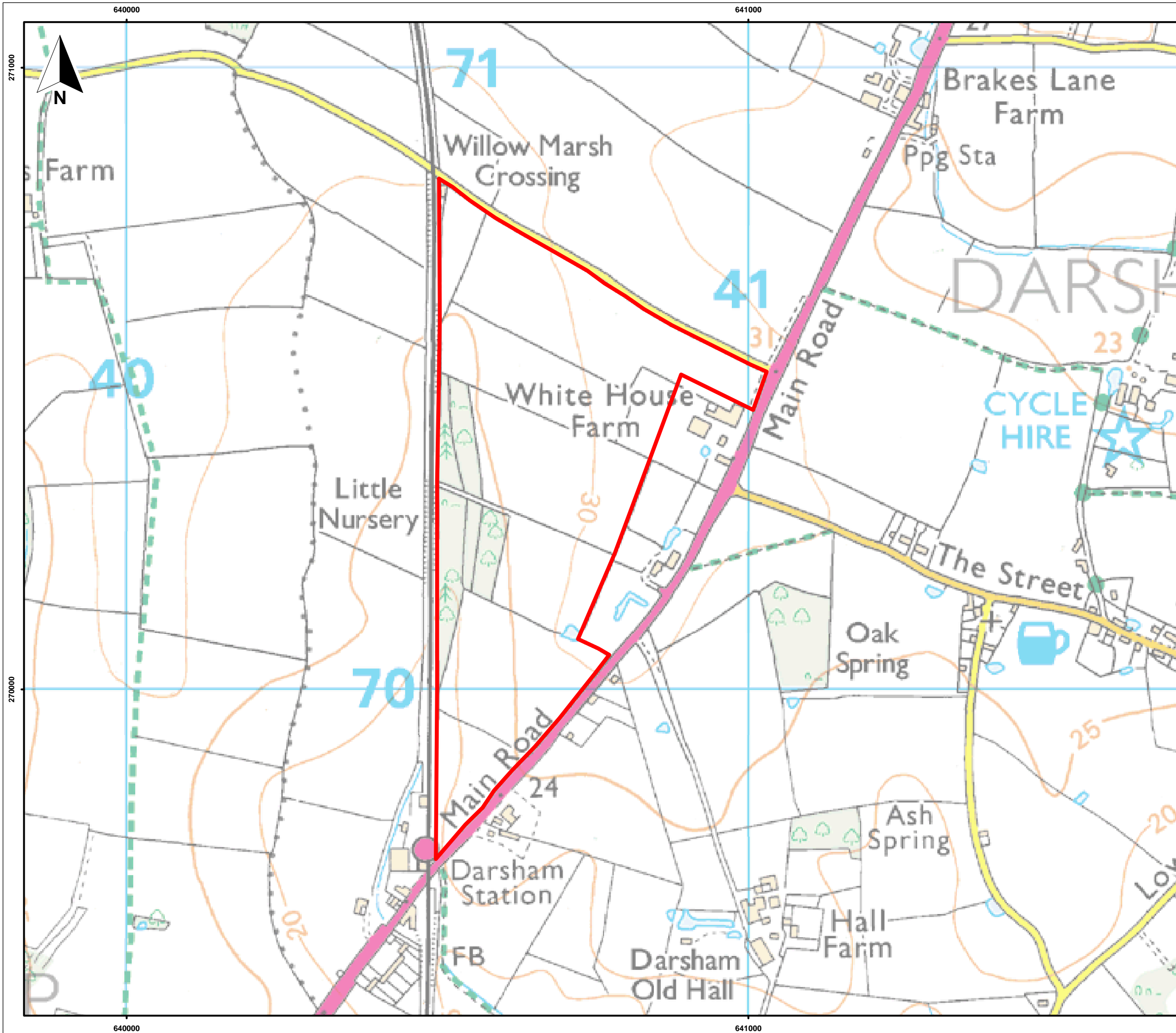
During the survey work moderate levels of common and soprano pipistrelle bat activity were recorded. The timing and frequency of the activity suggest the likely presence of roosts of these species within Little Nursery Wood, although it is difficult to say what the size and/or status of these roosts might be based on the current survey data.

### 4.4 Brown Long-eared Bat, *Myotis* sp. and Serotine

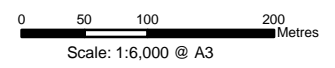
Low levels of brown long-eared bat, *Myotis* and serotine activity were recorded only during the static detector surveys. There is no evidence that the site is close to a roost of any of these species, or that the site is of importance to the species for foraging or commuting.

## 4.5 Noctule

The timing and frequency of noctule passes suggest the likely presence of a roost within Little Nursery Wood. That said, it is not possible to determine the size and/or status of the roost based on the current survey data.



Key:  
 Site boundary



H:\Projects\28130 Sizewell Ecology Studies (Sub File)\5 Design\Drawings\GIS\ArcGIS\mxd



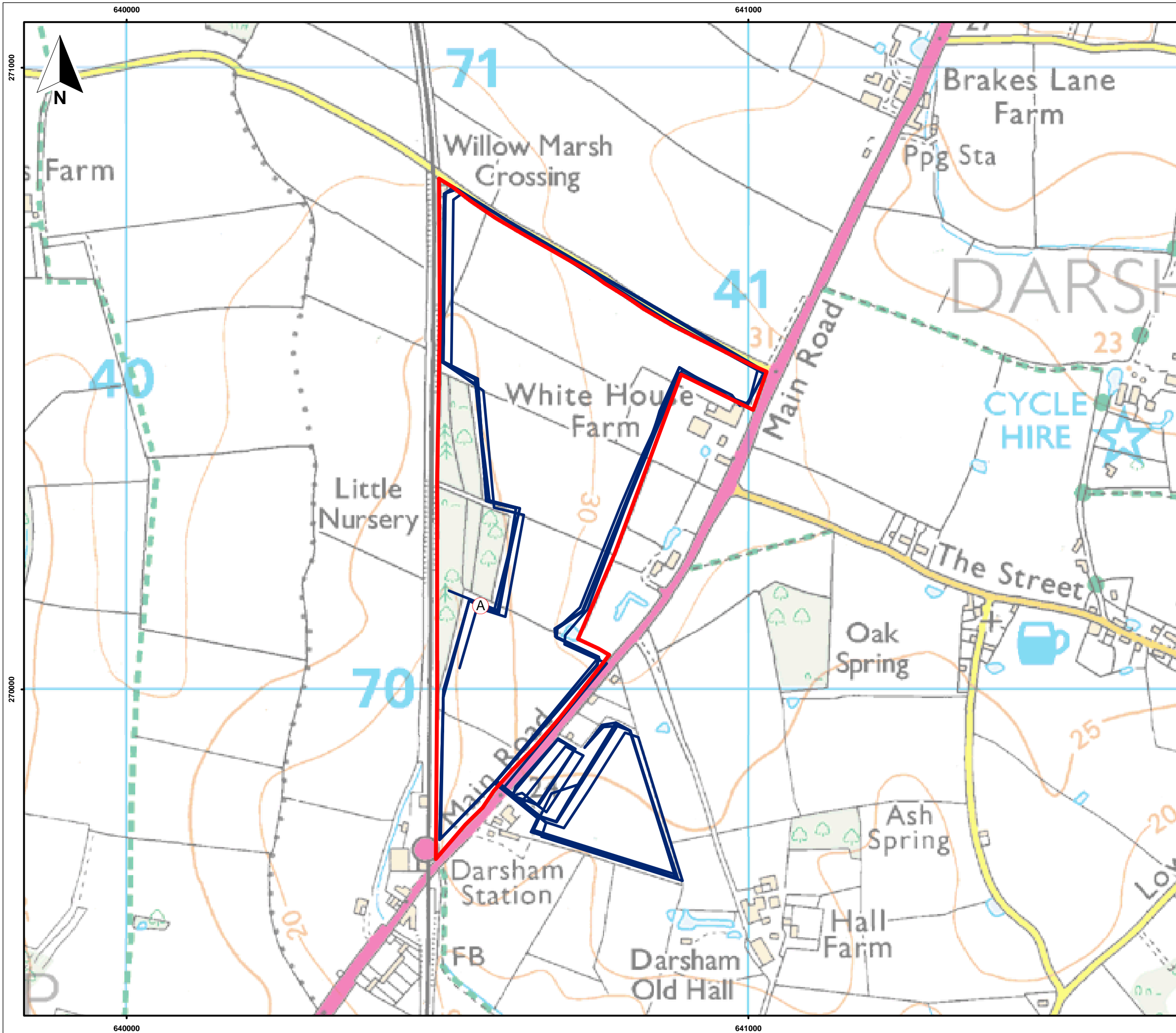
Land West Side of A12, Darsham  
 (Associated Development Site 10)  
 Bat Survey Report

**Figure 1.1**  
**Site boundary**

February 2012  
 28130-A364.mxd tugwc

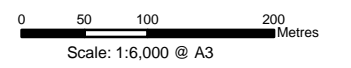






**Key:**

- Site boundary
- Walked transect route
- Static location



H:\Projects\28130 Sizewell Ecology Studies (Sub File)\5 Design\Drawings\GIS\ArcGIS\mxd

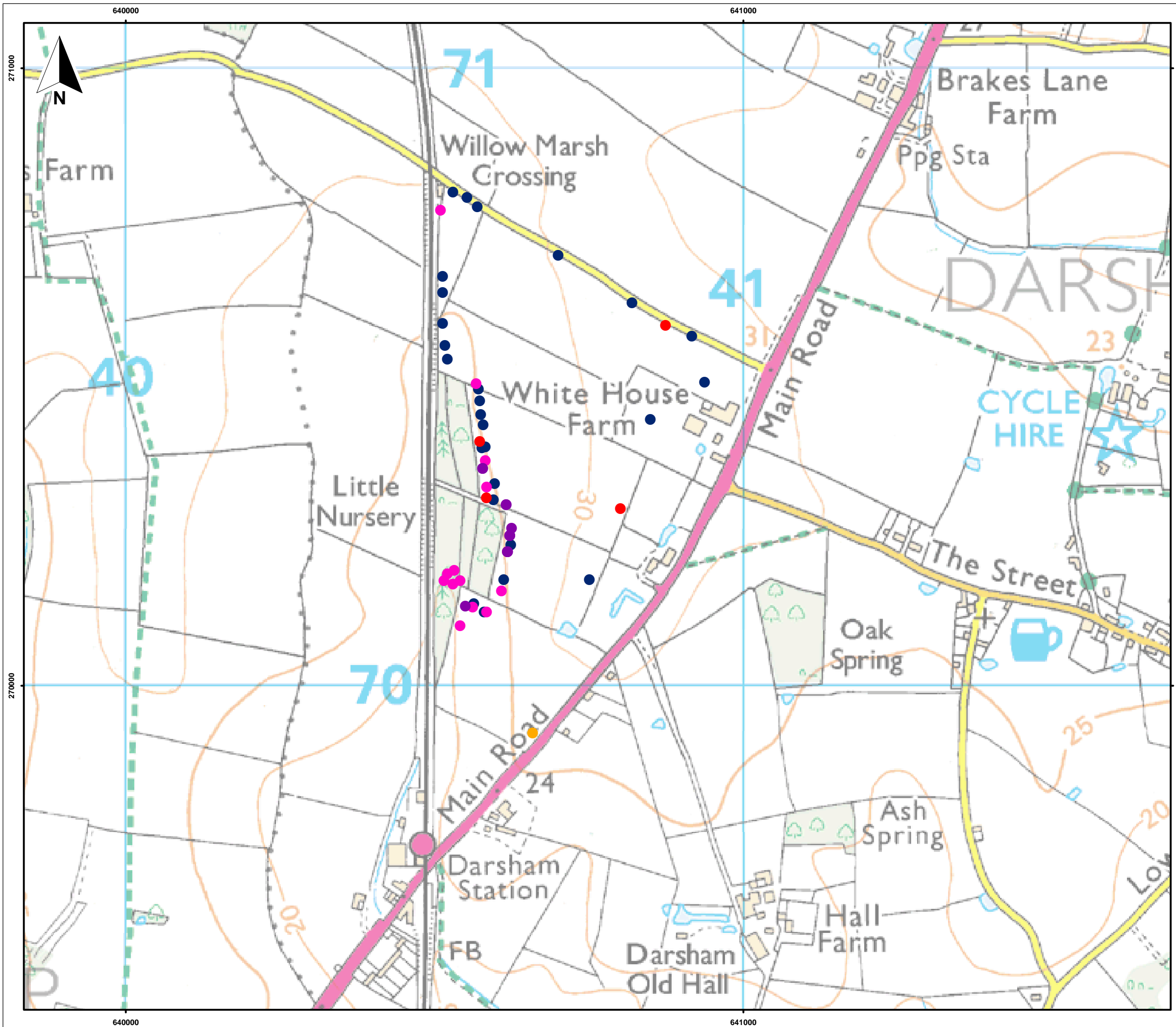


Land West Side of A12, Darsham  
(Associated Development Site 10)  
Bat Survey Report

**Figure 2.1**  
Combined 2011 walked transect bat survey routes and static bat detector survey locations

February 2012  
28130-A365.mxd tugwc





- Key:**
- Barbastelle
  - Noctule
  - *Nyctalus* sp.
  - Common pipistrelle
  - Soprano pipistrelle

0 50 100 200 Metres  
Scale: 1:6,000 @ A3

H:\Projects\28130 Sizewell Ecology Studies (Sub File)\5 Design\Drawings\GIS\ArcGIS\mxd



Land West Side of A12, Darsham  
(Associated Development Site 10)  
Bat Survey Report

**Figure 3.1**  
Locations of bat passes recorded during 2011 walked transect surveys

February 2012  
28130-A366.mxd tugwc



# Appendix A

## Policy and Legislation relating to Bats in Suffolk

---

### Legislation and Policy Guidance

#### Biodiversity Action Plan

Seventeen<sup>9</sup> species of bat are known to be resident in the UK, seven of which are on the new list of priority species<sup>10</sup> in the UK Biodiversity Action Plan (UK BAP), adopted by the Government in 2007. Species included on this list have been identified by the UK Government as needing special conservation effort because of their rarity and/or decline in numbers over recent decades. Species Action Plans (SAPs) have been developed to identify conservation priorities, propose action, and set targets to try and maintain and restore populations. Bat populations are at risk from changes to the landscape (such as those caused by agricultural practices or land development), which can cause loss of roosting, foraging or commuting habitat and be a contributing factor to population decline.

A clear understanding of the level and nature of use of a site by bats is necessary to ensure that environmental measures (mitigation, enhancement and offsetting) associated with a development can be appropriately targeted, and put in the context of local and National conservation priorities. The SAPs promote the favourable management of land, especially in the vicinity of known roost sites, and aim to maintain and enhance existing bat populations. These can lead to the designation of important sites for rarer species and notification to the local authority of important roosts such as maternity or hibernation sites.

Most of the Species Action Plans (SAPs) in the Suffolk Biodiversity Action Plan are based on National Biodiversity Action Plans. The process of identifying BAP priorities in Suffolk began in 1997, and an initial plan (Tranche 1) was produced in 1998. Priority species included the common pipistrelle bat. Tranche 2, published in 2000, was withdrawn and a new list was published in June 2010, with a new combined BAP for all bat species due for completion in autumn 2010. Although this had not been issued at the time of writing some data from the draft BAP for bats is included in **Table A1** below.

---

<sup>9</sup> This does not include greater mouse-eared bat (*Myotis myotis*), which is considered resident by some, but only a single individual has been recorded in recent years after the species was officially declared extinct in the UK.

<sup>10</sup> Priority bat species in the UK BAP: barbastelle, Bechstein's bat (*Myotis bechsteini*), noctule, soprano pipistrelle, brown long-eared bat, greater horseshoe bat (*Rhinolophus ferrumequinum*) and lesser horseshoe bat (*Rhinolophus hipposideros*).

**Table A1 Status of Bat Species in Suffolk<sup>11</sup>**

Species	Number of occupied 1 km squares	Range & abundance	Notes	Source
Noctule	86	Uncommon but widespread		Suffolk BAP
Leisler's bat	14	Rare and locally distributed	Only three nursery colonies are known in the county. Appears to be confined to the northwest of Suffolk.	Suffolk BAP Suffolk Bat Group
Serotine	109	Uncommon but widespread	There are approximately 45 known colonies in Suffolk.	Suffolk BAP Suffolk Bat Group
Nathusius' Pipistrelle	2	Rare and locally distributed	There are only a few records from Suffolk currently; more may come to light from a new BCT survey, initial results of which are due to be published in February 2010.	Suffolk BAP Suffolk Bat Group
Soprano Pipistrelle	74	Uncommon but widespread		Suffolk BAP
Common pipistrelle	682	Common and widespread		Suffolk BAP
Lesser horseshoe bat	1	Rare and very local	A single bat (presumed to be the same individual) has been recorded at a hibernation site in most winters between 1996 and at least 2008.	Suffolk BAP Suffolk Bat Group
Natterer's bat	131	Uncommon but widespread		Suffolk BAP
Daubenton's bat	50	Locally common and widespread		Suffolk BAP
Whiskered/ Brandt's/ Alcatheo* whiskered bat	?	Rare and very local	Until January 2000 all records were from two hibernation sites, and refer to single animals. A breeding roost has yet to be discovered in the county.	Suffolk Bat Group
Brown-long eared bat	624	Common and widespread		Suffolk BAP
Barbastelle	40	Uncommon but widespread		Suffolk BAP

\* Whiskered (*Myotis mystacinus*) and Brandt's (*Myotis brandtii*) bats are cryptic species (i.e. very similar to each other and therefore difficult to distinguish), so all previous hibernation site records would have been recorded as "whiskered/Brandt's". However, a third cryptic species, Alcatheo whiskered bat (*Myotis alcatheo*), was confirmed to occur in the UK in 2010, and is now thought to have been resident and probably widespread here for some time. Hibernation records could therefore represent any of these three.

<sup>11</sup> Information provided from the Suffolk BAP is draft and unpublished at the time of writing (13/12/2011).

### **Protective Legislation relating to Bats**

All bat species and their roosts are protected in the UK under *The Conservation of Habitats and Species Regulations 2010* which implements the EC Directive 92/43/EEC (the Habitats Directive). In addition, the lesser horseshoe bat, greater horseshoe bat, Bechstein's bat and barbastelle are listed in Annex II of the Habitats Directive, which requires sites to be designated by member states for their protection.

All bat species and their roosts are also protected under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended), and under the *Countryside and Rights of Way Act 2000*. Taken together, these Acts and Regulations make it illegal to:

- Intentionally or deliberately kill, injure or capture bats;
- Deliberately or recklessly disturb bats;
- Damage, destroy or obstruct access to bat roosts;
- Possess or transport a bat or any part of a bat, unless acquired legally; and
- Sell, barter or exchange bats or parts of bats.

*The Natural Environment and Rural Communities Act 2006* (NERC Act) states, in Section 40(1), that

*“every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”.*

Section 40(3) of the NERC Act 2006 goes on to state that

*“conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat”.*

Section 41(1) of the NERC Act 2006 states that

*“the Secretary of State must, as respects England, publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity”.*

All seven species of bats that are priority species in the UK Biodiversity Action Plan (see Section 2.4.1) are also considered Species of Principal Importance for the Conservation of Biodiversity under Section 41 of the NERC Act.

In paragraph 16 of Planning Policy Statement 9, the Government indicates that local authorities should take steps to further the conservation of species of principal importance for the conservation of biodiversity in England and should ensure that that these species and their habitats are protected from adverse effects of development, where appropriate, by using planning conditions or obligations.

Developments that compromise the protection afforded to bats under the provisions of *The Conservation of Habitats and Species Regulations 2010* almost invariably require a licence from Natural England. Three tests must be satisfied before a licence to permit otherwise prohibited acts can be issued:

- Regulation 53(2) (e) states that licences may be granted by Natural England to *'preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'*;
- Regulation 53(9) (a) states that a licence may not be granted unless Natural England is satisfied *'that there is no satisfactory alternative'*;
- Regulation 53(9) (b) states that a licence cannot be issued unless Natural England is satisfied that the action proposed *'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'*.

In conclusion, a licence permits otherwise unlawful actions and it is the responsibility of the developer, or their appointed advisor, to decide whether a licence is required for work that has the potential to affect bat populations. It is important that the developer carries out a thorough survey and accurate assessment to help avoid committing offences. It is also the responsibility of the developer to design and implement a mitigation scheme that meets the licensing requirements and ensures, as far as possible, the long-term maintenance of any bat population affected. Licence applications (under Regulation 53(2) (e) of the Habitats Regulations) will be determined by Natural England.

## Appendix B

# Materials and Data Analysis

---

### Use of Bat Detectors

#### Walked Transects

Surveyors used two different bat detectors on every survey: a Batbox Duet or BatBox Griffin detector for listening to bat calls from the combined heterodyne/frequency division output and an Anabat SD1 or SD2 frequency division detector for recording calls for subsequent identification. Wherever possible, surveyors recorded the observed behaviour and numbers of bats onto field proforma. Notes were taken of all bat sightings in conjunction with the Anabat recordings. This was to aid in identification and also to provide additional detail on the behaviour of observed bats. Field notes included a record of the time of each bat encounter, allowing results to be cross-referenced with the recorded data.

#### Static Bat Detector Survey

Anabat SD1 bat detectors were placed in camouflaged waterproof boxes with a 12V battery attached. The microphone was attached to a 2m cable which was connected to the detector. The microphone was housed inside a sealed curved pipe to keep water off the microphone without incurring significant loss in sensitivity. The pipes were positioned at 1-2m height without any solid objects present close to the microphone to prevent interference or impedance to recording bat calls.

#### Assessment of Data from Bat Detectors

The Anabat SD1 and SD2 frequency division bat detectors were used to record bat calls during walked transect and static bat detector activity surveys. The Anabat provides a frequency down conversion which generates audible audio signals with frequencies directly related to those the bat is producing.

The likelihood of detecting bats acoustically depends on the propagation of sound through air, the characteristics of bat calls, and the way sound is received and processed by the bat detector. Recent collaborative research by BSG and Bristol University has shown that bat detectors detect calls from some species of bats at greater distances than others. In general, bats with calls that can be detected over greater distances are larger bats which use calls that are both high amplitude and low frequency such as the noctule and the most difficult to detect are those which use low amplitude calls, such as the brown long-eared bat and barbastelle, or high frequencies, such as horseshoe bats *Rhinolophus* spp. **Table B1** shows the mean frontal detection range of Anabats for echolocation calls from UK bat species based on research undertaken by BSG in collaboration with Bristol University<sup>12</sup>.

---

<sup>12</sup> Holderied *et al.* (2011), unpublished data.

**Table B1** Estimated Mean Frontal Detection Ranges for Selected Bat Species using Anabat Detectors at Standard 'Field' Settings

Species	Mean frontal detection range (m)
Soprano pipistrelle	24
Brown long-eared bat	9
Natterer's bat	13
Noctule	47
Leisler's bat	38
Barbastelle	7
Lesser horseshoe bat	7

## Data Analysis

### Selection of Data for Analysis

Because a very large amount of data is likely to be recorded during a full field season of static bat detector recording, the majority of which will represent the common pipistrelle species, it is not cost-efficient or necessary to check and label every pass of all species of bats. All recordings were checked for rarer species of potentially higher conservation significance by scanning sound files for these species. The species selected were: barbastelle, Nathusius' pipistrelle and Leisler's bat (Group 1).

For all other species of bats (Group 2), a sub-set of three nights of data from each deployment - those with the highest number of bat calls recorded - were analysed in detail. By choosing the nights with the highest activity levels it is assumed that nights with optimal conditions for recording bat activity were also chosen. In this sense, the bias inherent to selecting data for analysis non-randomly in this way is similar to the bias when selecting nights with favourable conditions for carrying out other bat surveys. The only bias which is likely to result is that the activity rates for Group 1 species will be higher than if all the data within the relevant recording period were analysed (as for Group 2 species). As the data have been used to determine relative activity levels and not to provide a measure of abundance, this upward bias is unlikely to make any difference to the evaluation of the importance of bat populations at Sizewell.

### Bat Call Identification

Recorded bat calls were analysed using Analook software to confirm the identity of the bats present. Where possible, the bat was identified to species level. For species of long-eared bats records were not identified to species level due to the overlapping call parameters of each species but were assumed to refer to brown long-eared bats. It is unlikely that grey long-eared bat *Plecotus austriacus* occurs in Suffolk, given the species' known distribution and rarity (Harris & Yalden, 2008). Species of the genus *Myotis* were grouped together as many of the species have overlapping call parameters, making species identification problematic (BCT, 2007).



For *Pipistrellus* species the following criteria, based on measurements of peak frequency, were used to classify calls:

Common pipistrelle	$\geq 42$ and $< 49$ kHz
Soprano pipistrelle	$\geq 51$ kHz
Nathusius' pipistrelle	$< 39$ kHz
Common pipistrelle / Soprano pipistrelle	$\geq 49$ and $< 51$ kHz
Common pipistrelle / Nathusius' pipistrelle	$\geq 39$ and $< 42$ kHz

In addition, the following categories were used for calls which could not be identified with confidence due to the overlap in call characteristics between species or species groups:

- *Myotis/Plecotus* sp.
- *Nyctalus* sp. (either Leisler's bat or noctule).
- *Eptesicus serotinus/N. leisleri* (either serotine or Leisler's bat)

Bat calls which could not be ascribed to any of these categories were not used in the analysis.

### Calculation of relative activity

The Analook software enables analysis of the relative activity of different species of bats by counting the minimum number of bats recorded within discrete sound files. Once triggered by ultrasound, the Anabat records sound files with a duration of 15 seconds, which may contain a number of individual bat passes, or discrete groups of ultrasound 'pulses'. For the purposes of this analysis, the recording of one or more passes by a single species of bat within a 15 second sound file is counted as a single bat pass (B). More than one pass of the same species was counted within a sound file if multiple bats were recorded calling simultaneously. During analysis of sound files, it was possible to estimate the minimum number of bats recorded on individual sound files but not whether consecutive sound files had recorded, for example, a number of individual bats passing as they commute to a feeding habitat or one bat calling repeatedly as it flies up and down a hedgerow. Therefore, relative abundance of bats cannot be estimated from this analysis, but the number of bat passes does reflect the relative importance of a feature/habitat to bats by assigning a level of bat activity that is associated with that feature, regardless of the type of activity. In this analysis, bat passes per hour (B/h) has been used as a measure of 'relative activity'.

### Analysis by sunset-sunrise times

As part of the analysis of nocturnal patterns of behaviour for bats at Sizewell the data were split into discrete time periods relating to their proximity to sunset or sunrise. The time categories (time codes: TC) were as follows:

TC 0 = before sunset

TC 1 = 0-20 min after sunset

TC 2 = 20-40 min after sunset

TC 3 = 40-60 min after sunset

TC 4 = 60-80 min after sunset

TC 5 = 80-100 min after sunset

TC 6 = 100-120 min after sunset

TC 7 = Middle of night (varies across seasons)

TC 8 = 120-100 min before sunrise

TC 9 = 100-80 min before sunrise

TC 10 = 80-60 min before sunrise

TC 11 = 60-40 min before sunrise

TC 12 = 40-20 min before sunrise

TC 13 = 20-0 min before sunrise

For each of these categories B/h was calculated to allow a comparison between the activity level recorded in different time periods and TC7 was corrected to allow for variation in night length throughout the survey season.

# **NNB Generation Company**

## **Land West Side of A12, Darsham**

### **Associated Development Site 10**

DRAFT Extended Phase 1 Habitat Survey Report

December 2011

AMEC Environment & Infrastructure UK Limited

---

**Report for**

Christine Blythe  
NNB Generation Company  
Barnett Way  
Barnwood  
Gloucester  
GL4 3RS

# NNB Generation Company

## Land West Side of A12, Darsham

---

**Main Contributors**

Chris Hill

### Associated Development Site 10

---

**Issued by**

[Redacted]  
.....  
Chris Hill

DRAFT Extended Phase 1 Habitat Survey  
Report

December 2011

---

**Approved by**

[Redacted]  
.....  
Emma Toovey

AMEC Environment & Infrastructure  
UK Limited

---

**AMEC Environment & Infrastructure  
UK Limited**

17 Angel Gate, City Road, London EC1V 2SH,  
United Kingdom  
Tel +44 (0) 207 843 1400  
Fax +44 (0) 207 843 1410

Doc Reg No. 28130ca143

r:\projects\28130 sizewell ecology studies\reports\associated  
development sites\10 land west of a12 darsham\28130ca143 ad  
(site 10) xp1 final draft i2.doc



Certificate No. FS 13881



Certificate No. EMS 69090

In accordance with an environmentally responsible approach,  
this document is printed on recycled paper produced from 100%  
post-consumer waste, or on ECF (elemental chlorine free) paper

---

## Disclaimer

This report has been prepared in a working draft form and has not been finalised or formally reviewed. As such it should be taken as an indication only of the material and conclusions that will form the final report. Any calculations or findings presented here may be changed or altered and should not be taken to reflect AMEC's opinions or conclusions.

---

## Copyright and Non-Disclosure Notice

The contents and layout of this report are subject to copyright owned by AMEC (©AMEC Environment & Infrastructure UK Limited 2011) save to the extent that copyright has been legally assigned by us to another party or is used by AMEC under licence. To the extent that we own the copyright in this report, it may not be copied or used without our prior written agreement for any purpose other than the purpose indicated in this report.

The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of AMEC. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests. Any third party who obtains access to this report by any means will, in any event, be subject to the Third Party Disclaimer set out below.

---

## Third Party Disclaimer

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by AMEC at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by any means. AMEC excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

---

## Document Revisions

No.	Details	Date
1	Final Draft i1	August 2011
2	Final Draft i2	Dec 2011

---

# Contents

---

<b>1.</b>	<b>Introduction</b>	<b>1</b>
1.1	Background	1
1.2	Site Context	1
1.3	Scheme Description	1
<b>2.</b>	<b>Methodology for Data Collection</b>	<b>3</b>
2.1	Desk Study	3
2.2	Field Surveys	6
2.2.1	Habitats	6
2.2.2	Species	6
<b>3.</b>	<b>Site Baseline</b>	<b>9</b>
3.1	Policy and Legislative Context	9
3.1.1	Policy Context	9
3.2	Desk Study Results	10
3.2.1	European and Ramsar Sites	10
3.2.2	Statutory Nature Conservation Sites	11
3.2.3	Non-statutory Nature Conservation Sites	12
3.2.4	Protected or Notable Species	13
3.3	Field Survey Results	15
3.3.1	Habitats	15
3.3.2	Species	16
<b>4.</b>	<b>Conclusions and Recommendations</b>	<b>19</b>
4.1	Summary	19
4.1.1	Designated Sites	19
4.1.2	Habitats	20
4.1.3	Species	20
4.2	Ecological Impact Assessment	20
4.2.1	Habitats Regulations Assessment (HRA)	20
4.2.2	Masterplanning	21
4.3	Further Studies	22

4.3.1	Bats	22
4.3.2	Birds	22
4.3.3	Great Crested Newts	23
4.3.4	Reptiles	23
4.3.5	National Vegetation Classification	23
4.3.6	Invertebrates	23
<b>4.4</b>	<b>Other Recommendations</b>	<b>24</b>
4.4.1	Nesting Birds	24
Table 2.1	Sources of Desk Study Information	5
Table 3.1	Policy Issues to be Considered	9
Table 3.2	European and Ramsar Designated Conservation Sites within 5km of the Site	10
Table 3.3	Statutory Nature Conservation Sites within 2km of the Site	12
Table 3.4	Non-Statutory Nature Conservation Sites within 1km of the Site	12
Table 3.5	Protected and Otherwise Notable Species Recorded within 1km of the Site	13
Figure 1.1	Site Boundary Plan	After Page 24
Figure 3.1	Phase 1 Habitat Plan	After Page 24
Appendix A	Relevant Legislation	
Appendix B	Desk Study Data	
Appendix C	CONFIDENTIAL: Badger Survey	
Appendix D	Assessment of Waterbodies	

# 1. Introduction

---

## 1.1 Background

An area of land directly north of the Sizewell 'B' Power Station has been identified as having the potential to accommodate a new nuclear plant. NNB Generation Company (EDF) has identified a number of additional sites for a variety of developments associated with the new build proposals at Sizewell that will be located beyond the current EDF landholding. AMEC has been commissioned by EDF to provide an initial ecological appraisal of each of these sites to inform the site selection process and support any future planning submissions.

Land on the west side of the A12, Darsham (Site 10) (National Grid Reference TM 406 702) (Refer to **Figure 1.1** for location details) has been identified as a potential site for associated development. This report summarises the findings of an extended Phase 1 Habitat Survey for the site that includes a desk study exercise. This report identifies potential ecological receptors, should the site be re-developed and makes recommendations for further work where appropriate.

## 1.2 Site Context

The Site is situated in a rural setting on the western edge of the village of Darsham, Suffolk and is bound by a railway track along the western boundary, Willow Marsh Lane to the north while the eastern boundary is formed by the A12 and in part by, White House Farm and rear gardens associated with residential dwellings.

## 1.3 Scheme Description

The sites proposed for associated development are currently at a preliminary stage of scoping with detailed scheme plans yet to be confirmed. Notwithstanding this, current proposals for land at the west side of the A12, Darsham (Site 10) include the development of the Site to support park and ride and satellite campus facilities.





## **2. Methodology for Data Collection**

---

### **2.1 Desk Study**

A data-gathering exercise was undertaken to obtain information relating to statutory and non-statutory nature conservation sites, priority habitats and species, and legally protected and controlled species (see Boxes 1 and 2).

**Box 1 Designated Wildlife Sites, and Priority Habitats and Species**
**Statutory nature conservation sites**

Internationally important sites: Special Areas of Conservation (SACs) and candidate SACs, Special Protection Areas (SPAs) and proposed SPAs, Sites of Community Importance, Ramsar sites and European offshore marine sites.

Nationally important sites: Sites of Special Scientific Interest (SSSIs) that are not subject to international designations and National Nature Reserves (NNRs)

Local Nature Reserves (LNRs) are statutory sites that are of importance for recreation and education as well as nature conservation. Their level of importance is defined by their other statutory or any non-statutory designation (e.g. if an LNR is also an SSSI but is not an internationally important site, it will be of national importance). If an LNR has no other statutory or non-statutory designation it should be treated as being of district-level importance for biodiversity (although it may be of greater socio-economic value).

**Non-statutory nature conservation sites**

Sites of county importance: In Suffolk, County Wildlife Sites (CWS) are designated by the Suffolk CWS panel (which includes representatives from Suffolk County Council, Suffolk Biological Records Centre (SBRC), Suffolk Wildlife Trust and Natural England). Suffolk Wildlife Trust (SWT) monitors all planning applications for any potential impact on County Wildlife Sites.

**Priority habitats and species**

In this report, the geographic level at which a species/habitat has been identified as a priority for biodiversity conservation is referred to as its level of 'species/habitat importance'. For example, habitats and species of principal importance for the conservation of biological diversity in England (see the first bullet point below) are identified as of national species/habitat importance reflecting the fact that these species/habitats have been defined at a national level. The level of importance therefore pertains to the species/habitat as a whole rather than to individual areas of habitat or species populations, which cannot be objectively valued, other than for waterfowl, for which thresholds have been defined for national/international 'population importance'.

- National importance: Habitats and species of principal importance for the conservation of biological diversity in England. These are listed on: <http://www.defra.gov.uk/wildlife-countryside/pdf/biodiversity/s41-nerc-may2008species.pdf> and <http://www.defra.gov.uk/wildlife-countryside/pdf/biodiversity/s41-nerc-may2008habitats.pdf>. These include those UK Biodiversity Action Plan (UK BAP) priority habitats and species that occur in England.
- National importance: Species listed as being of conservation concern in the relevant UK Red Data Book (RDB) or the Birds of Conservation Concern<sup>1</sup> Red List.
- National importance: Nationally Scarce species, which are species recorded from 16-100 10x10km squares of the national grid.
- National importance: Ancient woodland (i.e. areas that have been under continuous woodland cover since at least 1600).
- County importance: Species listed in the Suffolk LBAP.

<sup>1</sup> Eaton, M.A. et al. (2009). Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *British Birds* **102**:296-341.

<b>Box 2</b>	<b>Legally Protected and Controlled Species</b>
<b>Legal protection</b>	
<p>Many species of animal and plant receive some degree of legal protection. For the purposes of this study, legal protection refers to:</p> <ul style="list-style-type: none"> <li>• Species included on Schedules 1, 5 and 8 of the <i>Wildlife and Countryside Act 1981</i> (as amended), excluding species that are only protected in relation to their sale (see Section 9[5] and 13[2]), reflecting the fact that the proposed development does not include any proposals relating to the sale of species;</li> <li>• Species included on Schedules 2 and 5 of The <i>Conservation of Habitats and Species Regulations 2010</i>; and</li> <li>• Badgers, which are protected under the <i>Protection of Badgers Act 1992</i>.</li> </ul>	
<b>Legal control</b>	
<p>Schedule 9 of the <i>Wildlife and Countryside Act 1981</i> (as amended) lists species of animal that it an offence to release or allow to escape into the wild and species of plant that it is an offence to plant or otherwise cause to grow in the wild.</p>	

Data were gathered for:

- European and Ramsar sites on or within 5km, of the site;
- Nationally statutory designated sites on or within 2km of the site;
- Non-statutory designated sites of nature conservation interest located on or within 1km of the site;
- Records of legally protected and priority species to a distance of 1km from the site boundary; and
- Water bodies within 500m of the site, not separated from the site by barriers to great crested newt (*Triturus cristatus*) movement (e.g. major roads, rivers, etc.).

This contextual information is important as it may point to notable species that could occur on the site itself. Sources of desk study information are listed in **Table 2.1**.

**Table 2.1 Sources of Desk Study Information**

<b>Topic</b>	<b>Date</b>	<b>Source of Information</b>
Statutory nature and non-statutory nature conservation sites.	2011	Suffolk Biological Records Centre (SBRC)
Records of priority and legally protected species	2011	SBRC
Ancient woodland	2011	SBRC
Potential great crested newt aquatic habitat	2011	1:10,000 Ordnance Survey maps

## 2.2 Field Surveys

### 2.2.1 Habitats

A Phase 1 Habitat survey of the site and its surrounds was undertaken by an AMEC ecologist on 29<sup>th</sup> March 2011 during the survey, distinct habitats were identified and any features of interest subjected to a more detailed description in a target note (TN)<sup>2</sup>. As the standard Phase 1 Habitat survey methodology is mainly concerned with vegetation communities, the survey was extended<sup>3</sup> to allow for the provision of information on other ecological features, including identification of the presence/potential presence of legally protected and otherwise notable species.

### 2.2.2 Species

The methodologies used to establish the presence/potential presence of specific species/species groups are summarised below. These relate to those species/biological taxa that the desk study and habitat types present indicated could occur on the site.

#### Badgers

During the survey the on-site habitats were assessed for their potential to provide suitable areas for sett excavation and badger foraging. Any evidence of badger activity was also recorded, such as:

- Setts - comprising either single holes or a series of holes likely to be connected underground;
- Hairs - usually with a white root, black band, white tip (often caught in sett entrances/fences/vegetation);
- Footprints – located in soft mud, often in sett entrances;
- Evidence of foraging – usually in the form of ‘snuffle holes’ (small scrapes created by badgers searching for insects and earthworms);
- Latrines - badgers usually deposit faeces in holes or scrapes in the ground; and
- Paths - particularly around setts or leading to feeding areas.

Mammal paths and snuffle holes were assumed to be created by badgers if the character of the path (in terms of size) was appropriate, and if other field signs were in close vicinity.

#### Bats

A general assessment of the suitability of the habitats on the site to support roosting, foraging and commuting bats was made. Mature trees were inspected for evidence of cavities, splits, cracks, loose bark and dense and woody ivy (*Hedera helix*) growth that could be used by bats

---

<sup>2</sup> Joint Nature Conservation Committee (2007). *Handbook for Phase 1 habitat survey - a technique for environmental audit*. JNCC, Peterborough.

<sup>3</sup> Institute of Environmental Assessment (1995). *Guidelines for Baseline Ecological Assessment*. E&FN Spon, London.

for roosting. Furthermore, any buildings or structures on site were inspected externally for suitable access or egress points.

### **Birds**

The habitats on site were assessed for their potential to support any nesting or foraging bird species or assemblages of notable species.

### **Great Crested Newts**

Where access was possible, on and off-site water bodies (within 500m) identified by the desktop study, with their associated terrestrial habitats, were assessed for their potential to support great crested newt suitable habitats including generally still water bodies with adjacent woodland or grassland areas where there is invertebrate prey potential.

### **Reptiles**

The site and wider survey area were assessed for their potential to provide sheltering, foraging and breeding habitats for the four common reptile species: slow worm (*Anguis fragilis*), viviparous lizard (*Zootoca vivipara*), grass snake (*Natrix natrix*) and adder (*Vipera berus*). These native reptile species generally require open areas with mixed-height vegetation, such as heathland, rough grassland, open scrub or (in the case of grass snake) water body margins. Suitable well drained and frost free areas are needed so that they can survive the winter.

### **Other Species**

In addition, an assessment was made of the potential for the site to support any other species considered to be of value for biodiversity conservation, including those that were identified as occurring within the local area by the desk study.



## 3. Site Baseline

---

### 3.1 Policy and Legislative Context

#### 3.1.1 Policy Context

Relevant policies are listed in **Table 3.1**, along with an outline of the issues included in these policies that would need to be taken into account when considering development of the site, and when undertaking an ecological appraisal.

**Table 3.1 Policy Issues to be Considered**

Policy Reference	Policy Issue
<i>National planning policies</i>	
<b>Planning Policy Statement 9 (PPS9)<sup>4</sup>: Biodiversity and geological conservation.</b>	The identification of effects on: designated sites of international, national and local importance; protected species, habitats and species of principal importance for the conservation of biodiversity in England; and ancient woodland and veteran trees.  The identification of measures to mitigate adverse effects and of opportunities for enhancing biodiversity.
<i>Regional planning policies</i>	
<b>The East of England Plan<sup>5</sup>. Policy ENV3 of the Regional Spatial Strategy (RSS) for the East of England</b>	Proper consideration should be given to the potential effects of development on the conservation of habitats and species outside designated sites, and on species protected by law. Planning authorities and other agencies should ensure that the region's wider biodiversity, earth heritage and natural resources are protected and enriched through the conservation, restoration and re-establishment of key resources.  This will be achieved by ensuring new development minimises damage to biodiversity and earth heritage resources by avoiding harm to local wildlife sites and, wherever possible, achieving net environmental gains in development sites through the retention of existing assets, enhancement measures, and new habitat creation.

<sup>4</sup> Office of the Deputy Prime Minister (2005). *Planning Policy Statement 9: Biodiversity and Geological Conservation*. HMSO.

<sup>5</sup> Government Office for East of England (2008). *The East of England Plan*. Cambridge.



Policy Reference	Policy Issue
<i>Local planning policies</i>	
<b>Suffolk Coastal Local Plan</b> ("Saved" policies incorporating 1 <sup>st</sup> and 2 <sup>nd</sup> Alterations 2001 and 2006 <sup>m</sup> )	The council seek to protect, restore, maintain and enhance biodiversity interests. Planning permission would not be granted for development that results in significant harm to biodiversity interests unless there is no satisfactory alternative, all statutory and regulatory requirements are met and suitable mitigation and compensation measures are provided.
<b>Reviewed Suffolk Coastal Core Strategy &amp; Development Management Policies</b>	<b>DM 27</b> - Development will not be permitted where there is an unacceptable impact on biodiversity and geodiversity having a regard to: the status and designation of sites habitats and species, the need to avoid the loss and fragmentation of important sites and habitats: and the impact and effectiveness of mitigation measures.
<b>SP14 - Biodiversity and Geodiversity and</b>	<b>SP14</b> - Biodiveristy and geodiversity will be protected and enhanced using a framework based on a network of Wildfie corridors; rivers coast and estuaries, identified habitats and geodiversity features, landscape character areas and protected species.
<b>DM27 – Biodiversity and Geodiversity</b>	
<i>Other policies</i>	
<b>UK Biodiversity Action Plan (UK BAP)</b> (Biodiversity Reporting and Information Group, 2007)	Effects on priority habitats and species listed in the UK BAP.
<b>The Suffolk Local Biodiversity Action Plan (LBAP)</b>	Effects on priority habitats and species listed in the Suffolk LBAP.

## 3.2 Desk Study Results

### 3.2.1 European and Ramsar Sites

Four Sites are located within 5km of the site and these sites are listed and summarised in **Table 3.2** below.

**Table 3.2 European and Ramsar Designated Conservation Sites within 5km of the Site**

Site	Type of designation	Area (ha)	Ecological interest	Grid Reference	Approximate distance (m) and direction from site
Minsmere to Walberswick Heaths and Marshes	Ramsar Site	2018.92	The site contains a mosaic of marine, freshwater, marshland and associated habitats complete with transition areas in between. It contains the largest continuous stand of reedbeds in England and Wales and rare transition in grazing marsh ditch plants from brackish to fresh water.	TM 477 747	3761m,E

Site	Type of designation	Area (ha)	Ecological interest	Grid Reference	Approximate distance (m) and direction from site
			This site supports nine nationally scarce plants and at least 26 red data book invertebrates. As well as an important assemblage of rare breeding birds associated with marshland and reedbeds.		
Minsmere to Walberswick Heaths and Marshes	Special Protection Area (SPA)	2019.55	The reserve is designated as an important breeding, roosting and feeding site for many bird species with over 100 resident species and around a further 240 species of migratory visitors being recorded at the site. The site is of particular conservation importance for great bittern ( <i>Botaurus stellaris</i> ), western marsh harrier ( <i>Circus aeruginosus</i> ), pied avocet ( <i>Recurvirostra avosetta</i> ), savi's warbler ( <i>Locustella luscinioides</i> ), bearded reedling ( <i>Panurus biarmicus</i> ) and reed bunting ( <i>Emberiza schoeniclus</i> ).	TM 456 666	3761m,E
Minsmere to Walberswick Heaths and Marshes	Special Area of Conservation (SAC)	1265.52	The principal reason for the designation of this site are the two Annex I habitats which it supports. Annual vegetation of drift lines occurs on a well developed beach strandline and is the best and most extensive example of this restricted geographical type. European dry heaths occupy an extensive area of this site on the east coast of England, which is at the extreme easterly range of heath development in the UK	TM 468 682	3761m,E
Dew's Ponds	SAC	6.82	A series of 12 ponds set in an area of formerly predominantly arable land. This site supports one of the largest known breeding populations of great crested newts ( <i>Triturus cristatus</i> ) in the UK.	TM 387718	1740m, NE

### 3.2.2 Statutory Nature Conservation Sites

One statutory wildlife site was recorded within 2km of the site boundary and is listed and summarised in **Table 3.3** below.

**Table 3.3 Statutory Nature Conservation Sites within 2km of the Site**

Site	Type of designation	Area (ha)	Ecological interest	Grid Reference	Approximate distance (m) and direction from site
Dew's Ponds	SSSI	6.82	As above this site is designated for Great crested newts. Various other amphibians and reptiles also breed on site. The ponds support good numbers of smooth newt ( <i>Triturus vulgaris</i> ), with common frog ( <i>Rana temporaria</i> ) and common toad ( <i>Bufo bufo</i> ). Grass snake ( <i>Natrix natrix</i> ), slow-worm ( <i>Anguis fragilis</i> ) and common lizard ( <i>Lacerta vivipara</i> ) are also present and breed on-site.	TM 390719	1740m, NE

### 3.2.3 Non-statutory Nature Conservation Sites

There are three non-statutory nature conservation sites within 1km of the site. These sites are listed and summarised in **Table 3.4**.

**Table 3.4 Non-Statutory Nature Conservation Sites within 1km of the Site**

Site	Type of designation	Area (ha)	Ecological interest	Grid Reference	Approximate distance (m) and direction from site
Sillett's Wood	CWS	7.86	Ancient woodland comprising oak, ash, hornbeam and hazel coppice with oak, ash and birch standards. Containing a wild service tree on the western boundary. Many typical ancient woodland indicators are present, such as yellow pimpernel, sanicle, remote sedge and yellow archangel.	TM 403 713	400m, NW
Willowmarsh Wood	CWS	9.73	The woodland was planted with poplars and conifers, mainly Norway spruce, at around 20 years ago. In the broadleaf part of the wood the understorey is formed by naturally regenerating oak and ash with hornbeam, hazel, hawthorn, field maple, willow and dogwood. The field layer is dominated by sedges, rushes and tall grasses in open areas. The ground flora is varied and abundant. It includes false oxlip, cowslip, common spotted orchid and dog's- mercury, with lesser spearwort and ragged robin in wetter areas. The existing ground flora makes it a valuable woodland site.	TM 395 712	940m, W

Site	Type of designation	Area (ha)	Ecological interest	Grid Reference	Approximate distance (m) and direction from site
Minsmere Valley Reckford Bridge to Beverriche Manor	CWS	91	Contains an extensive area of unimproved flower-rich grasslands containing Suffolk rarities such as bogbean and bog pimpernel, yellow rattle, marsh orchids and water violets. The site is a prime area for barn owl with a number of productive nest sites, and the whole valley is frequented by otters from the Minsmere group. It is therefore important to maintain the integrity of the whole of the valley site. Developments other than small-scale agricultural changes are likely to be very damaging in this comparatively undisturbed valley.	TM 404 687	650m, S

### 3.2.4 Protected or Notable Species

A number of protected or notable species have been recorded within 1km of the site as outlined in **Table 3.5**.

**Table 3.5 Protected and Otherwise Notable Species Recorded within 1km of the Site**

Species common name	Species biological name	Date (most recent)	Number of records	Distance of nearest recording from site (m)
<b>Mammals</b>				
Brown Hare	<i>Lepus europaeus</i>	2007	9	300m, S
Hedgehog	<i>Erinaceus europaeus</i>	2007	4	1000m, N
Otter	<i>Lutra lutra</i>	2008	3	900m, SW
Brown Long-Eared Bat	<i>Plecotus auritus</i>	1990	1	Exact location unknown.
Noctule	<i>Nyctalus noctula</i>	1990	1	Exact location unknown.
Serotine	<i>Eptesicus serotinus</i>	1990	1	Exact location unknown.
<b>Reptiles and amphibians</b>				
Great Crested Newt	<i>Triturus cristatus</i>	2006	2	580m, N
Grass Snake	<i>Natrix natrix</i>	1993	3	900m, S

Species common name	Species biological name	Date (most recent)	Number of records	Distance of nearest recording from site (m)
Slow-worm	<i>Anguis fragilis</i>	1999	1	Exact location unknown.
<b><i>Invertebrates</i></b>				
Rosy Rustic	<i>Hydraecia micacea</i>	2007	1	500m, SE
Rustic	<i>Hoplodrina blanda</i>	1997	1	500m, SE
Small Square-spot	<i>Diarsia rubi</i>	2006	2	500m, SE
Stag Beetle	<i>Lucanus cervus</i>	1997	1	Exact location unknown.
<b><i>Birds</i></b>				
Barn Owl	<i>Tyto alba</i>	1990	7	300m, S
Grey Partridge	<i>Perdix perdix</i>	2000	3	500m, S
Bullfinch	<i>Pyrrhula pyrrhula</i>	2002	4	Exact location unknown.
Corn Bunting	<i>Emberiza calandra</i>	1994	2	Exact location unknown.
Cuckoo	<i>Cuculus canorus</i>	1991	2	Exact location unknown.
Dunnock	<i>Prunella modularis</i>	1995	4	Exact location unknown.
Hawfinch	<i>Coccothraustes coccothraustes</i>	1994	1	Exact location unknown.
House Sparrow	<i>Passer domesticus</i>	1995	5	Exact location unknown.
Lapwing	<i>Vanellus vanellus</i>	1991	1	Exact location unknown.
Lesser Spotted Woodpecker	<i>Dendrocopos minor</i>	1994	2	Exact location unknown.
Linnet	<i>Carduelis cannabina</i>	1991	3	Exact location unknown.
Skylark	<i>Alauda arvensis</i>	1991	3	Exact location unknown.
Song Thrush	<i>Turdus philomelos</i>	2002	5	Exact location unknown.
Spotted Flycatcher	<i>Muscicapa striata</i>	2007	5	Exact location unknown.
Starling	<i>Sturnus vulgaris</i>	1991	2	Exact location unknown.
Tree Sparrow	<i>Passer montanus</i>	1991	2	Exact location unknown.
Turtle Dove	<i>Streptopelia turtur</i>	2002	1	Exact location unknown.

Species common name	Species biological name	Date (most recent)	Number of records	Distance of nearest recording from site (m)
Woodlark	<i>Lullula arborea</i>	1995	1	Exact location unknown.
Yellowhammer	<i>Emberiza citrinella</i>	1991	3	Exact location unknown.

### 3.3 Field Survey Results

#### 3.3.1 Habitats

Figure 3.1 presents the Phase 1 Habitat survey map. The following sections describe the habitats on and around the Site.

#### Site Context and Surrounding Habitats

The Site is situated in a rural setting on the western edge of the village of Darsham, Suffolk and is bound by a railway track along the western boundary which consists of a raised shale embankment fringed on both sides by dense scrub and woody shrubs. Willow Marsh Lane bounds the north of the Site while the eastern boundary is formed by the A12 and in part by White House Farm and rear gardens associated with residential dwellings. The wider landscape consists predominantly of large arable fields with boundary hedges and tree lines with occasional copses, broom or gorse coverts.

#### On-site Habitats

The Site consists of a large arable field (c.24ha), bound by stretches of hedgerow and a field margin formed by a non-continuous strip of rank semi-improved grassland and tall ruderals between 0.5m and 2m wide with occasional dense patches of scrub formed by bramble (*Rubus fruticosus* agg.). Located centrally along the western boundary is 'Little Nursery' a deciduous woodland (c.3 ha). The southern end of the arable field and a 20m wide strip bordering the east of the woodland is currently arable set aside and consists of old crop remnants interspersed with common ruderals such as broad-leaved dock (*Rumex obtusifolius*).

Field margins comprise of grass species cocksfoot (*Dactylus glomerata*), Yorkshire fog (*Holcus lanatus*) with locally frequent patches of tufted hair grass (*Deschampsia cespitosa*), while dominant ruderal species are Alexander's (*Smyrnum olusatrum*), common nettle (*Urtica dioica*) and spear thistle (*Cirsium vulgare*), as well as the following regularly occurring forbs, which include self heal (*Prunella vulgaris*), cleavers (*Galium aparine*) and germander speedwell (*Veronica chamaedrys*).

Species-poor hedgerows are present in stretches along all three site boundaries and consist predominantly of hawthorn (*Crataegus monogyna*) interspersed with ash (*Fraxinus excelsior*), oak (*Quercus sp.*), dog rose (*Rosa canina*) and bramble. The most notable of these include two 300m long, dense, hawthorn hedges that border gardens along the eastern site boundary and the

railway track along the western boundary, north of the wood. A number of mature oak and ash standards are also interspersed throughout the hedges and field boundaries of the Site.

Little Nursery is a large block of semi-natural broadleaved woodland, comprising predominantly mature ash and oak stands with occasional conifer. The southern end of the woodland is bordered by a dry ditch along the eastern boundary; this section of woodland presents a species-poor shrub layer dominated by dog's mercury (*Mercurialis perennis*) with an understorey of scattered hawthorn. The central area of woodland contains a greater density of mature trees with a more diverse shrub layer including ancient woodland indicator species moschatel (*Adoxa moschatellina*) and primrose (*Primula vulgaris*), with lesser celandine (*Ranunculus ficaria*) and common dog violet (*Viola riviniana*). This section of woodland presents a more diverse mosaic of habitats including dead wood piles, dense patches of brambles, a running stream with a damper woodland habitat to the east and a pond, which borders the rail tracks to the west. The northern section of woodland consists of younger ash trees with a bramble understorey.

### 3.3.2 Species

#### Badger

See Appendix C.

#### Bats

The desk study contains records of serotine (*Eptesicus serotinus*), noctule (*Nyctalus noctula*) and brown long eared bat (*Plecotus auritus*) within 1km of the site. It is likely that further bat species are in the locality as bats are widespread across the county with 14 of the 17 resident UK bat species recorded in Suffolk.

A number of trees located in Little Nursery woodland (c.20) and the hedgerows and field boundaries around the site (c.6) have the potential to support roosting bats. These trees all exhibit features including broken limbs, cracks, crevices and bark flakes that would be suitable for bat roosts. The on-site grassland, woodland and hedgerow habitats provide foraging opportunities for bats roosting in the vicinity, both in trees and in the residential buildings near to the site while the railway track and hedgerows offer good connectivity and commuting routes for bats in the wider landscape.

The buildings located adjacent to and beyond the eastern site boundary including, White House Farm, Moaste Hall and residential dwellings were assessed from a distance for their potential to support roosting bats. The majority of the buildings have low bat roosting potential as they are in a good state of repair with no obvious holes or entrance crevices while the farm out buildings were suitable only for occasional roosting as they were clad in corrugated tin.

#### Birds

Desk study results provided multiple records of notable bird species, including woodlark (*Lullula arborea*) and barn owl (*Tyto alba*) which receive additional protection under Schedule 1 of the Wildlife and Countryside Act (1981). During the walkover survey marsh tit (*Poecile palustris*) (BoCC<sup>6</sup> Red-list), woodcock (*Scolopax rusticola*) and sparrowhawk (*Accipiter nisus*) were recorded within the woodland, whilst yellowhammer (*Emberiza citrinella*) and

---

<sup>6</sup> Birds of Conservation Concern

whitethroat (*Sylvia communis*) were recorded along the hedgerow borders. No other species were recorded nesting or potentially breeding within or around the site; in particular, no ground nesting birds, such as Skylark [BoCC<sup>7</sup> Red list].

The woodland and tree-lined hedgerows around the boundary of the Site however have the potential to support several protected or moderate to high conservation status species.

### **Great Crested Newt**

The desk study identified great crested newt records 580m north of the site in addition to their presence at Dew's Pond SAC and SSSI (designated for great crested newts), which is located 1740m north east of site.

Multiple waterbodies within 500m of the Site have been identified during the desk study that have ecological connectivity with the Site; following a site visit, 6 of these were identified as being potentially suitable to support great crested newt including a pond located directly adjacent to the east of the Site within the grounds of Moaste Hall. Details of these waterbodies are provided in Appendix D.

The majority of the Site itself provides limited suitability for great crested newt, as intensively farmed arable fields are considered sub-optimal terrestrial habitat. Little Nursery woodland however contains one pond along the western site boundary that has the potential to support breeding great crested newts, whilst the woodland understorey provides opportunities for foraging, shelter and hibernation. The narrow field margins also provide ruderals, tussocky grassland and scrub suitable to support newts.

### **Reptiles**

Desk study results provided records of slow worm and grass snake within 1km of the Site.

The field margins of improved grassland, scrub and ruderal vegetation bordering the Site have the potential to provide sheltering and foraging habitat for all four common native reptile species with the habitat around the pond providing suitable breeding and foraging opportunities for grass snake. Potential hibernation sites were also identified across the site, predominantly in dead wood piles within the woodland and in brick and rubble beyond the eastern site boundary on the edge White House Farm (TN1).

### **Other Species**

A number of notable invertebrate species have been recorded within 1km of the site boundaries. The mosaic of habitats within Little Nursery woodland, including streams, dead wood piles, and a diverse ground flora, could potentially support scarce/notable species of invertebrates, particularly stag beetle which was identified during the desk study.

A record of otters was identified during the desk study within 1km of the site however there is no suitable aquatic habitat on or adjacent to the site and no signs of otter were observed during the survey.

The Suffolk BAP species hedgehog (*Erinaceus europaeus*) and brown hare (*Lepus europaeus*) were recorded within 1km of the site. Three brown hares were identified onsite during the survey and the habitats within Little Nursery woodland are suitable to support hedgehog.

---

<sup>7</sup> Birds of Conservation Concern





## 4. Conclusions and Recommendations

---

### 4.1 Summary

An Extended Phase 1 Habitat Survey was undertaken for the Site in parallel with a desk top study of readily available ecological information. The following potential ecological receptors within the potential zone of influence of the development proposals are outlined below:

#### 4.1.1 Designated Sites

##### **International/European Statutory Designated Sites**

Four international/European statutory designated sites are located within 5km of the Site:

- Dew's Ponds Special Area of Conservation (SAC) (1.7km North east);
- Minsmere to Walberswick Heaths and Marshes Special Protection Area (SPA) (3.76km east);
- Minsmere to Walberswick Heaths and Marshes Ramsar Site (3.76km east); and
- Minsmere to Walberswick Heaths and Marshes Special Area of Conservation (SAC) (3.76km east).

Given the proximity of these sites, and the absence of detailed proposals for the Site, there is potential for these sites to be affected by the proposed development and as such should be taken into account within any further design and assessment.

##### **National Statutory Designated Sites**

One national statutory designated site is located within 2km of the Site:

- Dew's Ponds (SSSI) (1.7km North east).

Given the proximity of this site and the absence of detailed proposals for the Site, there is potential for this site to be affected by the proposed development and as such should be taken into account within any further design and assessment.

##### **Non-Statutory Designated Sites**

Three non-statutory designated sites are located within 1km of the Site:

- Sillett's Wood (CWS) (400m north west);
- Willowmarsh Wood (CWS)(940m west); and
- Minsmere Valley Reckford Bridge to Beverriche Manor (CWS) (650m S).

Given the proximity of these sites, particularly Sillett's Wood, and the absence of detailed proposals for the Site, there is potential for these sites to be affected by the proposed development and as such should be taken into account within any further design and assessment.

#### **4.1.2 Habitats**

The Site comprises a large arable field with margins formed by a non-continuous strip of semi-improved rank grassland interspersed with tall ruderal vegetation and scattered scrub. The fields are fringed by species poor boundary hedges with interspersed mature tree stands.

Little Nursery woodland situated along the western boundary is thought to be a remnant of ancient semi natural woodland, due the mature broadleaf tree stands and varied ancient woodland indicator ground flora; ancient woodland and replanted ancient woodland sites Sillett's Wood (CWS) and Willowmarsh Wood are also within close proximity. Ancient semi natural woodland is a UK BAP priority habitat.

The habitats on-site have the potential to support species which are considered important to biodiversity conservation, or are afforded protection by statute.

#### **4.1.3 Species**

The following protected species and species groups have been identified as being potentially present on site:

- Bats (roosting, foraging and commuting).
- Great crested newt (breeding, foraging, commuting and hibernating).
- Nesting birds.
- Reptiles.
- Invertebrates.

Recommendations are provided below in order to inform any Ecological Impact Assessment (EcIA) and scheme design and also to ensure compliance with the relevant wildlife legislation and national policy relating to these species.

## **4.2 Ecological Impact Assessment**

It is recommended that this report (and future survey findings) is used to form the basis of an EcIA once additional information relating to the scheme design becomes available. This should assess the effects of the development on the biodiversity receptors identified in section 4.1, as well as informing any masterplanning and detailed design of an ecological enhancement and mitigation strategy where appropriate.

### **4.2.1 Habitats Regulations Assessment (HRA)**

There are four European or ramsar sites within 5km of the Site, the nearest being 1.7km to the north east (Dews Ponds SAC). At this stage, detailed development proposals for the site have not been established. It is considered unlikely that the development proposals will result in effects on these designated areas or the features for which they have been designated however, in the absence of more information this cannot be scoped out at this stage. As such, there is the potential that a Habitats Regulations Assessment (HRA) would need to be undertaken for the Site.

The need for Habitat Regulations Assessment is set out within Article 6 of the EC Habitats Directive 1992, and interpreted into British law by the Conservation of Habitats and Species Regulations 2010. The ultimate aim of HRA is to “*maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest*” (Habitats Directive, Article 2(2)). This aim relates to habitats and species, not the European sites themselves, although the sites have a significant role in delivering favourable conservation status.

It is recommended that consultation should commence with Natural England in order to establish their expectations particularly in relation to the need for undertaking HRA for this site.

#### **4.2.2 Masterplanning**

Development proposals for the Site are still in their very early stages and as such, it is not appropriate at this stage to provide any detailed assessment of effects upon ecological receptors and protected species. As such, we have provided below a number of broad recommendations and principles that can be further refined once more detailed designs become available.

According to PPS9<sup>4</sup> there is a need to ‘enhance biodiversity in green spaces and among developments so that they are used by wildlife and valued by people’. Furthermore, there is a requirement by policy to consider the BAP priority species that may occur on the Site. In order to adequately address these requirements, it is recommended that there is specialist ecological input into the development of the scheme design from the outset. This will ensure that the new development retains existing habitats used by protected and notable species on the site, as well as incorporating features within the design to enhance the habitats for biodiversity in general. Such features may include:

- Retention of woodland habitat;
- Retention of tree and scrub lines which may be used by foraging and commuting bats;
- Increasing botanical diversity by planting native fruit and flower-bearing species (of local provenance): this will in turn increase invertebrate diversity and thus prey for bats and herpetofauna;
- Provision of artificial roost sites for bats through installation of appropriate boxes and other roost spaces incorporated within new buildings;
- Avoidance of excessive lighting, particularly around artificial bat roost sites and commuting and foraging habitat;
- Installing hibernacula – these involve loose, inert fill being dug into, and piled up above the ground. The material is then covered in top soil and turf with the edges left to expose the fill and allow access for reptiles and amphibians;
- Stag beetle pyramids - these consist of a number of logs half buried into the ground vertically. While providing a source of rotting dead wood and shelter for invertebrates, they also provide sheltering, hibernating and basking locations for herpetofauna;

- Retaining a graded edge to grassland habitats, with a long grass sward, ruderal species and scrub buffer between short sward grass and denser scrub/woodland; and
- Further guidance is provided in the publications ‘Biodiversity by Design’, ‘Habitat Management for Bats’ and ‘Herpetofauna Workers’ Manual’<sup>8</sup>.

### 4.3 Further Studies

Further survey work is recommended to establish the status of any protected or otherwise notable species or assemblages of species present or potentially present on site. The findings of this additional survey work will inform the scheme design and any necessary mitigation strategy that may be required to comply with legislation of planning policy. Such information can also provide baseline data against which the success of future restoration and enhancement work can be measured through monitoring.

#### 4.3.1 Bats

Due to the level of protection afforded to bats and the potential for them to be effected by the development proposals, it is recommended that tree inspections, emergence and activity surveys are undertaken in order to ascertain the level of bat activity within and around the Site.

Detailed external inspections of the trees should be undertaken in order to identify any direct evidence of usage by bats. If appropriate these should be followed up by emergence/re-entry surveys at dusk or dawn.

Activity surveys should also be undertaken across the site using pre-defined transects. These surveys will aim to highlight which bat species use the area and where the highest areas of usage are.

Dependent upon the development proposals, should bats be found to use the Site there would be a requirement to design a mitigation strategy taking into account the available guidance and advice<sup>9</sup>. If roosts are identified it may be necessary to obtain a licence from Natural England to destroy the roost and to mitigate for its loss. This may also have an effect on the timing of the removal of trees and/or buildings, which may need to be scheduled to avoid breeding and/or hibernation periods (May-September and November-March respectively).

#### 4.3.2 Birds

The Site has the potential to support notable bird species. As such it is recommended that a suite of Common Bird Census (CBC)<sup>10</sup> surveys should be undertaken in order to determine the species assemblage utilising the Site and habitats in close proximity to the Site.

---

<sup>8</sup> Bullock, D. J., Oldham, R. and Corbett, K. (1998). Habitats and their management. In: Gent, A. H. and Gibson, S. D. eds. Herpetofauna workers’ manual. Joint Nature Conservation Committee, Peterborough, pp61-73.

<sup>9</sup> Mitchell-Jones, A. J. (2004) Bat mitigation guidelines. English Nature, Peterborough.

<sup>10</sup> Gilbert G, Gibbons, D.W. and Evans, J. (1998). Bird Monitoring Methods. RSPB, Sandy.

### 4.3.3 Great Crested Newts

It is recommended that all ponds within 500m of the Site that have the potential to support great crested newt (ponds assessed are presented in Table 3.6, Appendix D) are subject to a great crested newt presence / likely absence survey. The survey methods should accord to best practice guidelines<sup>11</sup>, and thus would involve four separate visits to the site under suitable weather conditions between mid-March and mid-June (two visits to be made between mid-April and mid-May).

### 4.3.4 Reptiles

Due to the level of protection afforded to reptiles it is recommended that a presence/ likely absence survey is conducted to establish the presence of reptile species in suitable habitat on the Site in line with best practice guidelines<sup>12,13</sup> should development proposals result in the direct loss of habitats with the potential to support these species. This will involve laying artificial reptile refugia across areas of suitable habitat. Refugia would then be examined on a subsequent seven survey visits combined with early-morning walkover surveys to search for basking animals. Surveys are seasonally constrained and must be undertaken between April and September, with optimal survey periods being late April-May and September. It is likely that, should the presence of reptiles be identified, the total number of survey visits may need to be increased to 20 in order to make population estimates.

### 4.3.5 National Vegetation Classification

Depending on the scope of development proposals, should Little Nursery woodland be impacted, a detailed botanical survey based on National Vegetation Classification (NVC)<sup>14</sup> methodology is recommended in order to accurately classify the woodland habitat. An NVC survey on woodland habitats can be undertaken in May and June and grassland habitats are best undertaken in June or July when flowering species are more apparent.

### 4.3.6 Invertebrates

Depending on the scope of development proposals, should Little Nursery woodland be impacted, a detailed invertebrate survey may be required. A scoping exercise would establish if the Site provides suitable habitat for protected or otherwise notable invertebrate species.

---

<sup>11</sup> English Nature (2001). *Great crested newt mitigation guidelines*. Peterborough, English Nature.

<sup>12</sup> Griffiths, R. and Inns, H. (1998). Surveying. In: Gent, A. H. and Gibson, S. D. eds. *Herpetofauna workers' manual*. Peterborough, Joint Nature Conservation Committee, pp1-13.

<sup>13</sup> Froglife (1999). *Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.

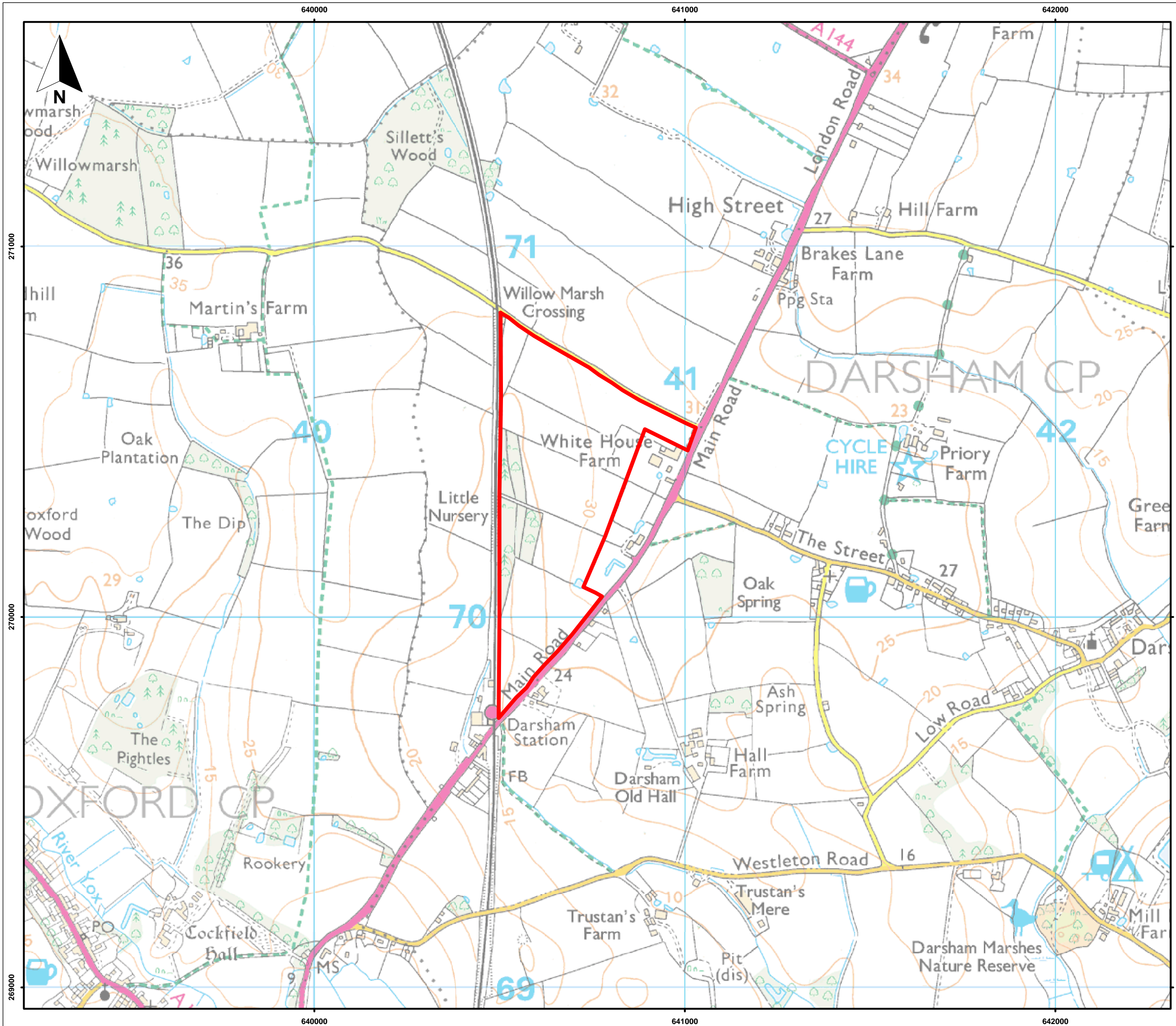
<sup>14</sup> Rodwell, J.S. (2006). *National Vegetation Classification: Users' Handbook*. Joint Nature Conservation Committee.

## **4.4 Other Recommendations**

### **4.4.1 Nesting Birds**

All active bird nests are legally protected under the Wildlife and Countryside Act (1981, as amended). This means that, with certain exceptions, it is illegal to intentionally or recklessly destroy an actively used nest during the breeding season, which is considered to be between March and August inclusive.

In order to minimise this risk of contravening legislation, site clearance should be completed outside the breeding bird season when active nests are not present. Where site clearance outside the breeding bird season is not possible, an ecologist will need to carefully inspect vegetation prior to clearance to ensure that active nests are not present. Should an active nest be found, it will be left in-situ and undisturbed until the young have fledged.




**Key:**

Site boundary

0  0.5  
Kilometres

Scale: 1:10,000 @ A3


H:\Projects\28130 Sizewell Ecology Studies (Sub File)\5 Design\Drawings\GIS\MapInfo\Workspaces



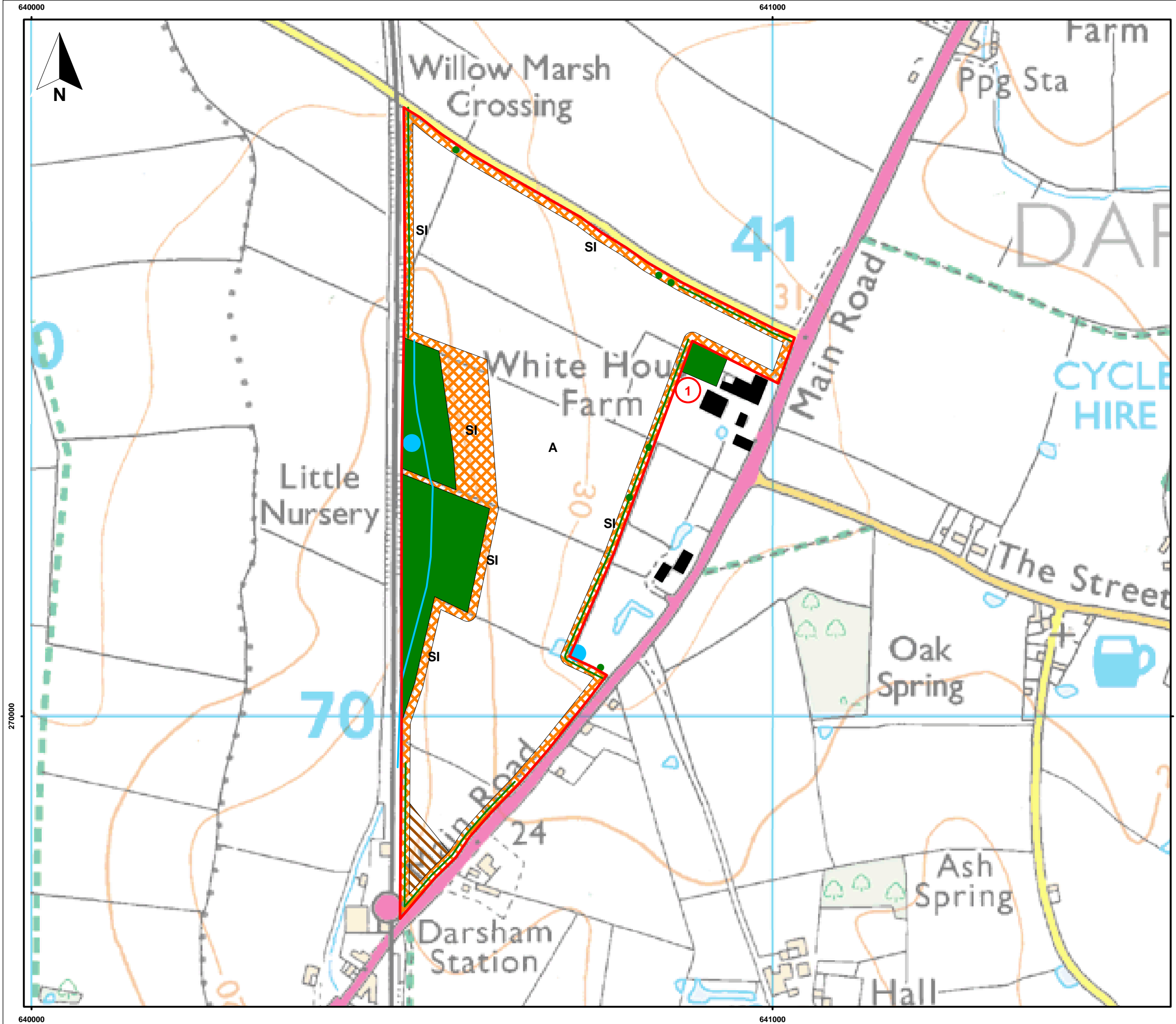
Associated Development Site 10  
Extended Phase 1 Habitat Survey Report

**Figure 1.1**  
Site boundary plan

November 2011  
28130-A211.mxd tugwc







- Key:**
- Site boundary
  - Semi-natural broadleaved woodland
  - Arable
  - Semi-improved grassland
  - Stream
  - Species-poor hedgerow
  - Buildings
  - Scattered trees
  - Tall ruderal
  - Target note
  - Pond

Scale: 1:5000 @ A3  
 0 250 Meters

H:\Projects\28130 Sizewell Ecology Studies (Sub File)\5 Design\Drawings\GIS\MapInfo\Workspaces



Associated Development Site 10  
 Extended Phase 1 Habitat Survey Report

**Figure 3.1**  
**Phase 1 Habitat Plan**

November 2011  
 28130-A212.mxd tugwc



Based upon the Ordnance Survey Map with the permission of the Controller of Her Majesty's Stationery Office. © Crown Copyright. 100001776

## Appendix A Relevant Legislation

---

### Badgers

The *Protection of Badgers Act 1992* consolidates previous legislation (including the *Badgers (Further Protection) Act 1991*). It makes it a serious offence to intentionally or recklessly:

- Kill, injure or take, or attempt to kill, injure or take a badger;
- To damage, destroy or obstruct access to a sett; and
- To disturb a badger when it is occupying a sett.

### Bats

All British bat species are listed in Schedule 5 of *The Wildlife and Countryside Act 1981* (as amended). The Act transposes into UK law the Convention on the Conservation of European Wildlife and Natural Habitats (commonly referred to as the 'Bern Convention'). All British bat species are listed on Schedule 5 of the Act in respect of Section 9, which makes it an offence, *inter alia*, to:

- Intentionally or recklessly kill, injure, or take (handle) a bat;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a bat uses for shelter or protection; and
- Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection.

British bat species receive further protection under Regulation 41 of the *The Conservation of Habitats and Species Regulations 2010*, which make provision for the purpose of implementing European Union Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 1992. All British bat species are listed on Annex IV of the Directive, which means that member states are required to put in place a system of strict protection as outlined in Article 12, and this is done through inclusion on Schedule 2 of the Regulations, which makes it an offence, *inter alia*, to:

- Deliberately capture, injure or kill any bat;
- Deliberately disturb a bat, in particular any disturbance which is likely:
  - (a) to impair their ability:
    - (i) to survive, to breed or reproduce, or to rear or nurture their young, or
    - (ii) to hibernate or migrate;
  - (b) to affect significantly the local distribution or abundance of the bat species; or
- Damage or destroy a breeding site or resting place of a bat.

In addition, five British bat species are listed on Annex II of the *Habitats Directive*. These are:

- Greater horseshoe bat (*Rhinolophus ferrumequinum*);
- Lesser horseshoe bat (*Rhinolophus hipposideros*);
- Bechstein's bat (*Myotis bechsteinii*);
- Barbastelle (*Barbastella barbastellus*); and
- Greater mouse-eared bat (*Myotis myotis*).

As Annex II species under the Habitats Regulations, the Directive requires the designation of Special Areas of Conservation (SACs) by EC member states to ensure that their populations are maintained at a favourable conservation status. Where bats occur outside SACs the level of legal protection that these species receive is the same as for other bat species, however their inclusion on Annex II serves to underline their conservation significance and it is therefore less likely that adequate mitigation for loss of roosts of these species will be possible.

**For projects in England:** Further details of the above legislation, and of the roles and responsibilities of developers and planners in relation to bats, can be found in Natural England's *Bat Mitigation Guidelines*, which can be downloaded from the NE website: <http://naturalengland.etraderstores.com/NaturalEnglandShop/IN136>

### Birds

With certain exceptions<sup>15</sup>, all wild birds, their nests and eggs are protected by the *Wildlife and Countryside Act 1981* (as amended). Therefore, it is an offence, *inter alia*, to:

- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; and
- Take or destroy the egg of any wild bird.

Bird species listed on Schedule 1 of the Act receive further protection, thus for these species it is also an offence to:

- Disturb any bird while it is nest building, or is at a nest containing eggs or young; or disturb the dependent young of any such bird.

### Great Crested Newts

The great crested newt is listed on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and is therefore afforded protection under Section 9 of this Act. In addition, the species is listed in Schedule 2 of *The Conservation (Natural Habitats, &c.) Regulations 1994* (SI 1994 No. 2716) (as amended) (known as the Habitats Regulations) and is therefore protected under Regulation 39 of the Regulations. The Act and Regulations makes it an offence, *inter alia*, to

- intentionally kill, injure, take (handle), or capture a great crested newt;

---

<sup>15</sup> Some species, such as game birds, are exempt in certain circumstances.

- intentionally or recklessly damage, destroy or obstruct access to any place that a great crested newt uses for shelter or protection- under the Habitats Regulations it is an offence to damage or destroy a breeding site or resting place of any great crested newt; or
- intentionally or recklessly disturb a great crested newt while it is occupying a structure or place that it uses for shelter or protection - under the Habitats Regulations it is an offence to deliberately disturb a great crested newt (this applies anywhere, not just at its roost) in such a way as to be likely to significantly affect:
  - the ability of any significant group of great crested newts to survive, breed, or rear or nurture their young; or
  - the local distribution or abundance of great crested newts.

This relates to both the aquatic and terrestrial habitat that it may occupy. The legislation applies to all life stages of great crested newts.

### Reptiles

The four widespread<sup>16</sup> species of reptile that are native to Britain, namely viviparous lizard, slow worm, adder and grass snake, are listed on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and are afforded limited protection under Section 9 of this Act. This makes it an offence, *inter alia*, to:

- Intentionally kill or injure any of these species.

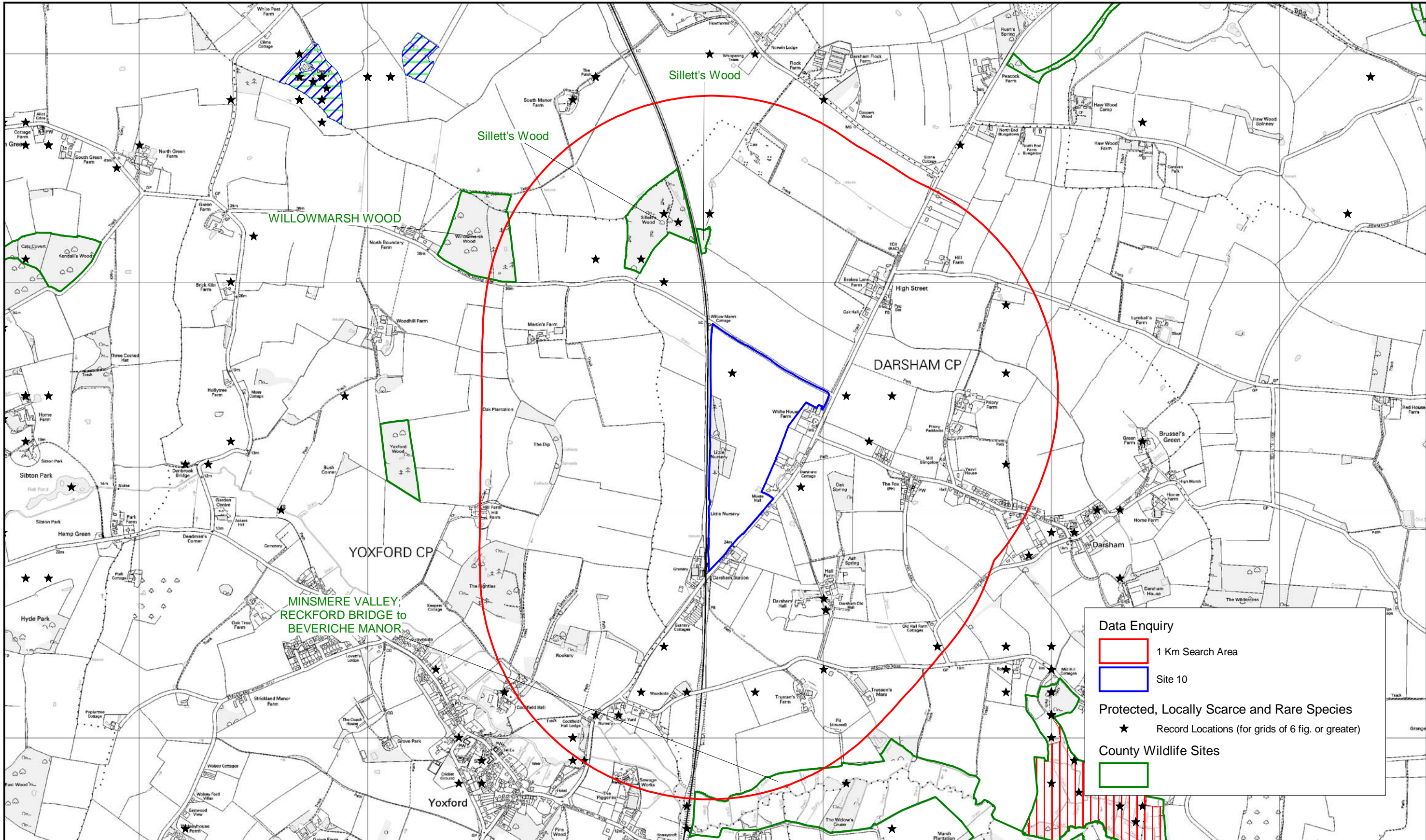
---

<sup>16</sup> The two other native species of British reptile (sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca*) receive a higher level of protection under the *Wildlife and Countryside Act 1981* (as amended). However, the distribution of these species is restricted to a limited number of sites in particular geographic locations.

# Appendix B

## Desk Study Data

---



**Data Enquiry**

- 1 Km Search Area
- Site 10

**Protected, Locally Scarce and Rare Species**

- ★ Record Locations (for grids of 6 fig. or greater)

**County Wildlife Sites**

- 

**SUFFOLK  
BIOLOGICAL  
RECORDS  
CENTRE**

Suffolk Biological Records Centre  
Ipswich Museum, High Street  
Ipswich, IP1 3QH  
Tel: 01473 433571

This map is based upon Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Suffolk County Council Licence No. 100023395 (2005)

▲  
NORTH  
Grid North

Scale 1:16000

**Entec (Land West of A12, Darsham (site 10) TM 406 702)**

**1 Km Data Enquiry**

PRODUCED BY  
Ben Heather

CHECKED BY

DRAWING No.

DATE  
11/02/2011

## **Appendix C**

# **CONFIDENTIAL: Badger Survey**

---

This appendix has been removed as it contains confidential information. This appendix is available on request to those who have legitimate need to view the information.

## Appendix D Assessment of Waterbodies

**Table D1 Waterbodies within 500m of the Site Boundary**

Ref no.	Water body	Nat Grid Ref	Distance/direction from Study area (m) - (WSA = within study area)	Approximate Area (m <sup>2</sup> )	Description
<b>WB18</b>	Field Copse Pond	TM400696	493 SW	<b>120</b>	A small pond located in a broadleaf copse in the centre on an arable field. The pond is over shaded by mature oak trees and dominated by pond weed.
<b>WB19</b>	Moate Hall Pond	TM407700	3 E	<b>300</b>	The pond is located in a private garden directly adjacent to the site boundary. The pond is shaded around 70 % of its margin by mature trees and is littered with dead plant material. Surrounding habitat includes scrub, with nearby hedgerows and ditches.
<b>WB20</b>	Moate Hall Garden Pond 1	TM408701	50 E	-	Assessed visually from 20m as access was not possible. Situated in a wooded garden the pond consisted of an open water body with well established aquatic vegetation.
<b>WB21</b>	Moate Hall Garden Pond 2	TM408702	50 E	<b>150</b>	Assessed visually from 20m as access was not possible. Small garden pond, with 60% shaded margins and 20% of the pond covered with aquatic vegetation. The surrounding habitat consists of hedgerows and amenity lawn.
<b>WB22</b>	White House Farm Pond	TM409703	67 E	-	Pond not present.
<b>WB23</b>	Little Nursery Wood Pond	TM405703	WSA	<b>200</b>	Located within broadleaf woodland along the western site boundary The pond is thought to be permanent and contains 25% cover of aquatic vegetation and is shaded around 75% of its margin by surrounding trees and scrub.



Ref no.	Water body	Nat Grid Ref	Distance/direction from Study area (m) - (WSA = within study area)	Approximate Area (m <sup>2</sup> )	Description
<b>WB24</b>	Sillett's Wood Pond	TM403712	473 N	<b>800</b>	A large still pond with shading over 50% of the margins and a 40% cover of aquatic vegetation. Terrestrial habitat consists of a surrounding woodland copse and arable fields with field margins and hedgerows.
<b>WB25</b>	Willow Marsh Pond 1	TM404712	413 N	-	Access was not possible as on private land. Unable to make visual assessment.
<b>WB26</b>	Willow Marsh Pond 2	TM404711	365 N	-	Access was not possible as on private land. Unable to make visual assessment.
<b>WB27</b>	Willow Marsh Pond 3	TM404711	331 N	-	Access was not possible as on private land. Unable to make visual assessment.
<b>WB28</b>	The Street Pond	TM412701	480 E	-	Access was not possible as on private land. Unable to make visual assessment.
<b>WB28a</b>	Oak Spring Pond	TM410699	350 E	-	Access was not possible as on private land. Unable to make visual assessment.
<b>WB29</b>	Hall Farm Track Pond	TM408699	160 E	<b>600</b>	Pond situated in an arable field. Limited aquatic vegetation, multiple mallard ducks present some fringing common reed mace ( <i>Typha latifolia</i> ).
<b>WB29a</b>	Hall Farm Pond	TM410696	474 E	-	Access was not possible as on private land. Unable to make visual assessment.
<b>WB30</b>	Darsham Old Hall Pond 1	TM409696	414 SE	-	Access was not possible as on private land. Unable to make visual assessment.
<b>WB31</b>	Darsham Old Hall Pond 2	TM408696	362 SE	-	Access was not possible as on private land. Unable to make visual assessment.
<b>WB32</b>	Darsham Old Hall Pond 3	TM408696	330 SE	-	Access was not possible as on private land. Unable to make visual assessment.

# **NNB Generation Company**

## **Sizewell Associated Development Sites**

Great Crested Newt Survey Report

April 2012

AMEC Environment & Infrastructure UK Limited

---

**Report for**

Christine Blythe  
NNB Generation Company  
Barnett Way  
Barnwood  
Gloucester  
GL4 3RS

## NNB Generation Company

## Sizewell Associated Development Sites

---

**Main Contributors**


Chris Hill

Great Crested Newt Survey Report

April 2012

---

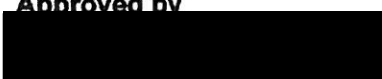
**Issued by**

  
Chris Hill

AMEC Environment & Infrastructure  
UK Limited

---

**Approved by**

  
Katheryn Leggat

---

**AMEC Environment & Infrastructure  
UK Limited**

17 Angel Gate, City Road, London EC1V 2SH,  
United Kingdom  
Tel +44 (0) 207 843 1400  
Fax +44 (0) 207 843 1410

Doc Reg No.28130ca330

r:\projects\28130 sizewell ecology studies\reports\associated  
development sites\gcn report 2012\sizewell ad gcn 2012 draft  
26042012.doc



Certificate No. FS 13881



Certificate No. EMS 69090

In accordance with an environmentally responsible approach,  
this document is printed on recycled paper produced from 100%  
post-consumer waste, or on ECF (elemental chlorine free) paper

---

## Disclaimer

This report has been prepared in a working draft form and has not been finalised or formally reviewed. As such it should be taken as an indication only of the material and conclusions that will form the final report. Any calculations or findings presented here may be changed or altered and should not be taken to reflect AMEC's opinions or conclusions.

---

## Copyright and Non-Disclosure Notice

The contents and layout of this report are subject to copyright owned by AMEC (©AMEC Environment & Infrastructure UK Limited 2012) save to the extent that copyright has been legally assigned by us to another party or is used by AMEC under licence. To the extent that we own the copyright in this report, it may not be copied or used without our prior written agreement for any purpose other than the purpose indicated in this report.

The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of AMEC. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests. Any third party who obtains access to this report by any means will, in any event, be subject to the Third Party Disclaimer set out below.

---

## Third Party Disclaimer

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by AMEC at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by any means. AMEC excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

---

## Document Revisions

No.	Details	Date
1	Draft	April 2012

---

# Contents

---

<b>1.</b>	<b>Introduction</b>	<b>1</b>
1.1	Background	1
1.2	Purpose of this Report	1
1.3	Legislation	1
<b>2.</b>	<b>Methods</b>	<b>3</b>
2.1	Desk Study	3
2.2	Screening	3
2.2.1	Desk Study	3
2.2.2	Field Study	3
2.3	Presence/Absence Surveys	4
2.4	Personnel	4
2.5	Constraints	4
<b>3.</b>	<b>Results</b>	<b>7</b>
3.1	Desk Study	7
3.2	Screening	7
3.2.1	Desk Study	7
3.2.2	Field Study	7
3.3	Presence/Absence Surveys	10
<b>4.</b>	<b>Conclusions</b>	<b>13</b>
Table 3.1	Records of Great Crested Newt within 1km of AD Sites	7
Table 3.2	Habitat Descriptions, HSI Scores and further Survey Requirements of Accessible Water Bodies	8
Table 3.2	Water Bodies Surveyed for Great Crested Newt Presence/Absence	10
Table 3.3	Water Body 3 Survey Results	10
Table 3.4	Water Body 17 Survey Results	11
Table 3.5	Water Body 23 Survey Results	11
Appendix A	Legislation relating to Great Crested Newt	
Appendix B	Water Bodies	
Appendix C	Figures	
Appendix D	References	

# 1. Introduction

---

## 1.1 Background

An area of land directly north of Sizewell B Nuclear Power Station, which is located near Leiston in Suffolk, has been identified as having the potential to accommodate the proposed development of one or more new nuclear reactors. This proposed development is known as Sizewell C. The site of the proposed development has an approximate central National Grid Reference (NGR) of TM473640. NNB Generation Company (EDF) has identified a number of additional sites for a variety of developments associated with the new build proposals at Sizewell that will be located beyond the current EDF landholding. AMEC Environment & Infrastructure UK Ltd ('AMEC') has been commissioned to provide ecological services in relation to these sites, in order to inform the site selection process and support any future planning submissions.

## 1.2 Purpose of this Report

The focus of the survey work was to establish presence/likely absence of great crested newt (*Triturus cristatus*) within water bodies on and within 500m of the sites. This report summarises the findings of great crested newt surveys carried out in 2011 and provides a summary of the great crested newt (GCN) interest of the Associated Development sites.

## 1.3 Legislation

Details of the legislation that relates to great crested newt are provided in Appendix A.



## 2. Methods

---

### 2.1 Desk Study

In 2007 and 2010 AMEC conducted survey work to establish the presence / likely absence of great crested newt within water bodies on and within 500m of the proposed development area for Sizewell C<sup>1,2</sup>. The results from this study were used to inform the current survey.

The Suffolk Biological Records Centre (SBRC) was contacted for GCN records to a distance of 1km from the site boundaries of all associated development sites and water bodies within 500m of each site were identified using satellite imagery, and the relevant OS base maps.

### 2.2 Screening

#### 2.2.1 Desk Study

During the desk study 61 water bodies were identified within 500m of all associated development sites (sites 1-19 inclusive). These were screened prior to conducting field surveys. The screening process used satellite imagery and OS base maps to identify which ponds were separated from associated development sites by barriers preventing great crested newt movement between water bodies and the site. Such barriers include major roads and large rivers. Ponds which were regarded as separated by barriers were 'screened out' from the need for further survey.

#### 2.2.2 Field Study

29 water bodies identified during the desk study were visited in March 2011 during Extended Phase 1 Habitat Surveys<sup>1</sup>, to determine their suitability to support great crested newt. Each water body was assessed using the Great Crested Newt Habitat Suitability Index (HSI). The HSI is a numerical index, derived by scoring a range of habitat variables, according to available guidance<sup>3,4</sup>, where: <0.5= poor, 0.5-0.59=below average, 0.6-0.69=average, 0.7-0.79=good, and >0.8-1=excellent. The results from this exercise helped to inform which ponds had habitats suitable to support GCN and would therefore require a presence/absence survey, and which ponds were unsuitable to support GCN and could be screened out from further survey.

---

<sup>1</sup> Entec UK Ltd (2007) *Great Crested Newt Report: Sizewell*, Entec, Gosforth

<sup>2</sup> Entec UK Ltd (2010) *Great Crested Newt Report: Sizewell*, Entec, Gosforth

<sup>3</sup> Oldham, R. S., Keeble, J., Swan, M. J. S., and Jeffcote, M. (2000). Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*). *Herpetological Journal*. **10**: 143-155.

<sup>4</sup> Updated guidelines available from: <http://www.narrs.org.uk/naspack.htm>



## 2.3 Presence/Absence Surveys

Presence/absence surveys were carried out at 3 water bodies that were considered suitable for breeding great crested newt following the screening exercise. Each water body was surveyed four times in suitable weather conditions between mid-March and mid-June, (with two visits between mid-April and mid-May), during which at least three of the following methods were employed on each survey visit, according to best practice guidelines<sup>5</sup>.

- Bottle-trapping – bottle traps made from two-litre plastic bottles were secured to the substrate using a bamboo cane. The traps were set at a density of approximately one per two metres around accessible sections of the water body margins. The traps were set each evening between 1930 and 2130 hours and retrieved between 0600 and 0800 hours the following morning, with any amphibians captured recorded and released.
- Torch-light survey – accessible sections of water body margins were slowly walked, whilst shining the light of a 500,000-1,000,000 candle power torch into the water and recording any amphibians observed. This method was employed during the period between dusk and midnight.
- Egg search - marginal submerged macrophytes were inspected for the presence of great crested newt eggs.
- Netting survey – the perimeter of the water body was walked at dusk using a long-handled dip-net to sample the edge. The sampling effort aimed to involve a minimum of 15 minutes of netting per 50m of shoreline.

Suitable weather conditions for amphibian surveys occur under night-time air temperatures of more than 5°C. Torch surveys also require little/no wind and rain, and bottle trapping was avoided under high temperatures where oxygen levels in the water are reduced, therefore increasing the potential for causing harm to trapped animals.

## 2.4 Personnel

All surveys were led by AMEC Ecologists Katheryn Leggat (Natural England Licence No. 20113863) and Alastair Miller (Natural England Licence No. 20111647).

## 2.5 Constraints

It was not possible to gain access to survey every water body identified and screened in during the desktop study, owing to difficulty in obtaining landowner permission where ponds were located on private land. In total, 20 ponds which were screened in as potentially suitable to support GCN at the desk study stage could not be accessed in the field for a further assessment of the habitats. Also 12 ponds which were assessed at a distance from public rights of way during the field screening exercise as being suitable to support GCN could not be accessed for presence/absence surveys. All water bodies which could not be accessed for initial habitat

---

<sup>5</sup> English Nature (2001). *Great crested newt mitigation guidelines*. Peterborough, English Nature.



assessments or further presence/absence surveys are detailed in Table B1 (Appendix B) and illustrated in Figures 3.1-3.7 (Appendix C).



## 3. Results

---

### 3.1 Desk Study

The Sizewell Great Crested Newt Surveys 2007 and 2010 found no evidence of great crested newt within the study area or in the immediate surrounding area.

The mapping exercise identified a total of 61 discrete water bodies within 500m of the associated development sites.

SBRC returned five records of great crested newt from within 1km of the AD sites as outlined in Table 3.1.

**Table 3.1 Records of Great Crested Newt within 1km of AD Sites**

AD Site reference	Number of records	Date (most recent)	Distance (m), direction of nearest record from site
Site 1	2	1998	400, E
Site 3	1	1998	1000, N
Site 10	2	2006	580m, N

### 3.2 Screening

#### 3.2.1 Desk Study

12 water bodies were screened out from further survey; these water bodies were separated from the development sites by major rivers, roads or areas of development, these water bodies are detailed in Table B2 (Appendix B) and illustrated in Figures 3.1-3.7 (Appendix C).

#### 3.2.2 Field Study

Table 3.2 presents the habitat descriptions and HSI scores for the 29 ponds that were assessed in the field during the screening process. Pond locations are illustrated on Figures 3.1-3.7. All figures are provided in Appendix C.

**Table 3.2 Habitat Descriptions, HSI Scores and further Survey Requirements of Accessible Water Bodies**

Pond ID <sup>6</sup>	Description	HSI Score	Presence/absence survey required
WB1	Still, supporting a range of aquatic plant life with 90% of the water surface being covered by pond weed ( <i>Potamogeton sp.</i> ). Shaded on 75% of its margins with adjacent habitat consisting of woodland and drainage ditches.	0.80 Excellent	Yes
WB2	A swimming pool.	-	-
WB3	Assessed visually from 20m as access was not possible. Situated in a wooded garden the pond consisted of an open water body with well established aquatic vegetation.	0.74 Good	Yes
WB4	Pond not present.	-	-
WB5	Pond not present.	-	-
WB6	Still, supporting a range of aquatic plant life with 75% of the water surface being covered by pond weed. Shaded on 80% of its margins with adjacent habitat consisting of a small woodland copse and hedgerows and field boundaries. Signs of wildfowl.	0.68 Average	Yes
WB8	A large farmyard pond with slurry running off into the water body. Waterfowl were present while macrophyte cover was limited to 5%. The pond was shaded around 15% of its margin by scrub.	0.44 Poor	No
WB9	A large pond situated centrally within a large arable field and surrounded by a broadleaf copse. 65 % of the water body has macrophyte cover with 50% of the pond margin shaded.	0.83 Excellent	Yes
WB10	Pond not present.	-	-
WB11	Pond not present.	-	-
WB12	Assessed visually from 10m as access was not possible. Situated in a garden the pond consisted of an open water body with well established aquatic vegetation, with adjacent hedges.	0.77 Good	Yes
WB13	The pond was heavily shaded by oak and willow trees with scrub understorey around 90% of its margins, with macrophyte cover dominating 70% of the water body. The surrounding vegetation consisted of arable land with boundary hedgerows.	0.79 Good	Yes
WB14	The pond was shaded by oak and willow trees with scrub understorey around 80% of its margins, with macrophyte cover present around 25% of the water body. The surrounding vegetation consisted of arable land with boundary hedgerows.	0.74 Good	Yes
WB15	Located adjacent to Brick Kiln Farm this was a fishing pond stocked with fish with a number of wildfowl present. Minimal aquatic vegetation was present while the pond possessed a combination of sheer sides and deep water with a covering of dense bramble and common reed mace ( <i>Typha latifolia</i> ).	0.35 Poor	No
WB16	Pond not present.	-	-
WB17 *	Shallow field pond with limited aquatic or emergent vegetation, prone to drying up during the summer.	0.44 Poor	Yes

<sup>6</sup> Water body references correspond to those in Associated Development site Phase 1 Reports (AMEC, 2011).

Pond ID6	Description	HSI Score	Presence/absence survey required
WB17a	Pond not present.	-	-
WB17b	Pond not present.	-	-
WB18	A small pond located in a broadleaf copse in the centre of an arable field. The pond is shaded by mature oak trees and dominated by pond weed.	0.41 Poor	No
WB19	The pond is located in a private garden directly adjacent to the site boundary. The pond is shaded around 70% of its margin by mature trees and is littered with dead plant material. Surrounding habitat includes scrub, with nearby hedgerows and ditches.	Good 0.72	Yes
WB20	Assessed visually from 20m away as access was not possible. Situated in a wooded garden, the pond consisted of an open water body with well established aquatic vegetation.	Excellent 0.81	Yes
WB21	Assessed visually from 20m away as access was not possible. Small garden pond, with 60% shaded margins and 20% of the pond covered with aquatic vegetation. The surrounding habitat consists of hedgerows and amenity lawn.	Good 0.71	Yes
WB23	Located within broadleaf woodland along the western site boundary The pond is thought to be permanent and contains 25% cover of aquatic vegetation and is shaded around 75% of its margin by surrounding trees and scrub.	Average 0.63	Yes
WB24	A large still pond with shading over 50% of the margins and a 40% cover of aquatic vegetation. Terrestrial habitat consists of a surrounding woodland copse and arable fields with field margins and hedgerows.	Excellent 0.89	Yes
WB29	Pond situated in an arable field, Limited aquatic vegetation, multiple mallard ducks present; some fringing common reed mace).	Average 0.54	Yes
WB43	Pond not present.	-	-
WB44	Pond not present.	-	-
WB49	Scoped out - large reservoir, fish and waterfowl present	-	-
WB52	Large, fenced off urban water body, with steep sides and dominated by aquatic vegetation with surrounding amenity grassland. The surrounding landscape consists of busy roads and industrial parks.	Poor 0.49	No

\* WB 17 received a poor HSI score, however was assessed as potentially suitable to support GCN.

Of the 29 ponds assessed during field surveys, 14 had terrestrial and aquatic habitats considered suitable to support great crested newt and were scoped in for further presence/absence surveys. 15 ponds were screened out as unsuitable, due to a lack of suitable aquatic and/or terrestrial habitat.

Only three water bodies which had habitats assessed as suitable to support great crested newt could be accessed for presence/absence surveys. These ponds are described in Table 3.2 and illustrated in Figures 3.1-3.4.

**Table 3.2 Water Bodies Surveyed for Great Crested Newt Presence/Absence**

Water body reference number (see Figures 3.1 and 3.2)	Description	AD Site within 500m	Grid reference	Distance (m), direction from site
3	Situated in a wooded garden the pond consists of an open water body with well established aquatic vegetation.	1	TM435637	51, SW
17	Shallow field pond with virtually no aquatic or emergent vegetation, prone to drying up during the summer.	4, 5, 9	TM461626	425, E
23	Located within broadleaf woodland along the western boundary of AD site 10. The pond is thought to be permanent and contains 25% cover of aquatic vegetation and is shaded around 75% of its margin by surrounding trees and scrub.	10	TM405703	0 (within site boundary)

### 3.3 Presence/Absence Surveys

The results of the presence/absence surveys conducted on water bodies 3, 17 and 23 and the conditions during the surveys are detailed in Tables 3.3-3.5.

**Table 3.3 Water Body 3 Survey Results**

Date	Survey conditions				Survey results			
	Precipitation	Turbidity	Air temp. (°C)	Water temp. (°C)	Torching	Trapping	Egg search*	Netting
11/5/2011	None	2.0	13	14	1PN	1F, 1PN	GCN and SM eggs	N/A
12/5/2011	None	2.5	12	13	0	0	N/A	N/A
1/6/2011	None	0	13	14	N/A	0	N/A	N/A
2/6/2011	None	0	15	15	0	0	N/A	N/A

Turbidity is measured on a scale of 1-3.

M = male great crested newt, F = female great crested newt, J = juvenile great crested newt, PN = palmate newt, SN = smooth newt, SM = small newt (palmate or smooth)

\* = Once presence of great crested newt eggs had been confirmed egg searches were not continued to avoid unnecessary damage to eggs.

N/A = denotes survey method was not used.

**Table 3.4 Water Body 17 Survey Results**

Date	Survey conditions				Survey results			
	Precipitation	Turbidity	Air temp (°C)	Water temp (°C)	Torching	Trapping	Egg search*	Netting
12/5/2011	None	2.5	12	11	0	0	0	N/A
1/6/2011	None	1.0	13	15.7	0	Water levels too low	0	N/A
2/6/2011	None	1.5	14	17.7	0	Water levels too low	N/A	N/A

Pond dried up, further survey was not possible.

Footnotes: see Table 3.3.

**Table 3.5 Water Body 23 Survey Results**

Date	Survey conditions				Survey results			
	Precipitation	Turbidity	Air temp. (°C)	Water temp. (°C)	Torching	Trapping	Egg search*	Netting
14/4/2011	None	3.0	10	11	0	0	0	N/A
11/5/2011	None	3.0	13	14	0	0	0	N/A
12/5/2011	None	2.5	12	13	0	0	0	N/A
8/6/2011	None	2.5	14	15	0	0	0	N/A

Footnotes: see Table 3.3.

One adult female great crested newt was recorded in water body 3 on one occasion along with two records of female palmate newt (*Lissotriton helveticus*) in the same water body. An egg search of this pond revealed the presence of great crested newt and small newt eggs<sup>7</sup>. No other newts or signs indicating their presence were recorded at any other water body.

<sup>7</sup> References to 'small newts' may refer to either smooth newts (*Lissotriton vulgaris*) or palmate newts, the females of which are difficult to tell apart from a torch survey; both the egg and the larval forms are also difficult to distinguish.





## 4. Conclusions

---

A total of 29 ponds within 500m of AD Sites 1, 3, 9, 10, 11, 16 and 18 were assessed in the field for their suitability to support great crested newts. It is considered that 14 of these ponds had habitats suitable to support this species. During the desk study an additional 20 ponds were identified as potentially suitable to support great crested newts; however, their habitats could not be assessed in the field due to their location on private property.

Owing to difficulties with obtaining permission to access private land, only three ponds were subject to presence/absence surveys for great crested newt. Single records of great crested newt and palmate newt were recorded in water body 3 only. Water body 3 is located 51m to the southwest of AD Site 1, and is well connected to the site via a wooded garden and hedgerow. The habitats within Site 1 provide limited habitat suitability for great crested newt, with no water bodies offering breeding habitat, and the majority of the site comprising intensively farmed arable fields. Nevertheless, field margins provide ruderal vegetation, tussocky grassland and scrub suitable to support newts, while a small woodland copse and pile of earth covered rubble in the centre of the site may provide hibernation opportunities. Great crested newt may therefore be present on the site.



# Appendix A

## Legislation relating to Great Crested Newt

---

### Great Crested Newt

Great crested newt is listed in Schedule 5 of *The Wildlife and Countryside Act 1981* (as amended). The Act transposes into UK law the Convention on the Conservation of European Wildlife and Natural Habitats (commonly referred to as the 'Bern Convention'). Great crested newt is listed on Schedule 5 of the Act in respect of Section 9, which makes it an offence, *inter alia*, to:

- intentionally or recklessly kill, injure, or take (handle) a great crested newt;
- intentionally or recklessly damage, destroy or obstruct access to any structure or place that a great crested newt uses for shelter or protection; or
- intentionally or recklessly disturb a great crested newt while it is occupying a structure or place that it uses for shelter or protection.

Great crested newt receives further protection under Regulation 41 of *The Conservation of Habitats and Species Regulations 2010*, which make provision for the purpose of implementing European Union Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 1992. Great crested newt is listed on Annex IV of the Directive, which means that member states are required to put in place a system of strict protection as outlined in Article 12, and this is done through inclusion on Schedule 2 of the Regulations, which makes it an offence, *inter alia*, to:

- deliberately capture, injure or kill any great crested newt;
- deliberately disturb a great crested newt, in particular any disturbance which is likely:
  - (a) to impair their ability:
    - (i) to survive, to breed or reproduce, or to rear or nurture their young; or
    - (ii) to hibernate or migrate
  - (b) to affect significantly the local distribution or abundance of great crested newt;  
or
- damage or destroy a breeding site or resting place of a great crested newt.

## Appendix B Water Bodies

**Table B.1 Water Bodies Potentially Suitable to Support Great Crested Newts, which were Inaccessible for Preliminary Habitat Assessment or Presence/Absence Surveys**

<b>Water body reference Number*</b>	<b>Water body name</b>	<b>Surveys carried out</b>	<b>AD site within 500m</b>	<b>Distance (m), direction to nearest AD Site</b>
<b>WB1</b>	Buckleswood Road Pond	HSI conducted; no access for presence/absence survey	1	276, SW
<b>WB6</b>	Hill Farm Copse Pond	HSI conducted; no access for presence/absence survey	1	451, N
<b>WB7</b>	Hill Farm Field Pond	No access for any field surveys.	1	400, N
<b>WB9</b>	Aldhurst Copse Pond 1	HSI conducted; no access for presence/absence survey	1,2,3	146, S
<b>WB12</b>	Abbey Farm Pond 1	HSI conducted; no access for presence/absence survey	1,2	386, N
<b>WB13</b>	Abbey Farm Pond 2	HSI conducted; no access for presence/absence survey	1,2	400, N
<b>WB14</b>	Abbey Farm Garden Pond	HSI conducted; no access for presence/absence survey	1,2	277, N
<b>WB18</b>	Field Copse Pond	HSI conducted; no access for presence/absence survey	10,11	120, SW
<b>WB19</b>	Moate Hall Pond	HSI conducted; no access for presence/absence survey	10,11	3, E
<b>WB20</b>	Moate Hall Garden Pond 1	HSI conducted no access for presence/absence survey	10,11	50, E
<b>WB21</b>	Moate Hall Garden Pond 2	HSI conducted; no access for presence/absence survey	10,11	50, E
<b>WB22</b>	White House Farm Pond	No access for any field surveys.	10,11	67 E
<b>WB24</b>	Sillett's Wood Pond	HSI conducted; no access for presence/absence survey	10	473, N
<b>WB25</b>	Willow Marsh Pond 1	No access for any field surveys.	10	413, N

<b>Water body reference Number*</b>	<b>Water body name</b>	<b>Surveys carried out</b>	<b>AD site within 500m</b>	<b>Distance (m), direction to nearest AD Site</b>
<b>WB26</b>	Willow Marsh Pond 2	No access for any field surveys.	10	365, N
<b>WB27</b>	Willow Marsh Pond 3	No access for any field surveys.	10	331, N
<b>WB28a</b>	Oak Spring Pond	No access for any field surveys.	10,11	250, E
<b>WB29</b>	Hall Farm Track Pond	HSI conducted; no access for presence/absence survey	11	40m, E
<b>WB29a</b>	Hall Farm Pond	No access for any field surveys.	10,11	220, SE
<b>WB30</b>	Darsham Old Hall Pond 1	No access for any field surveys.	10,11	125, SE
<b>WB31</b>	Darsham Old Hall Pond 2	No access for any field surveys.	10,11	122, SE
<b>WB32</b>	Darsham Old Hall Pond 3	No access for any field surveys.	10,11	118, SE
<b>WB39</b>	Oak Ground Pond	No access for any field surveys.	17	387, W
<b>WB40</b>	Carlton Hall Wood Pond 1	No access for any field surveys.	17	278, N
<b>WB41</b>	Carlton Hall Wood Pond 2	No access for any field surveys.	17	278, N
<b>WB45</b>	Palant's Grove Pond	No access for any field surveys.	13	350, SW
<b>WB46</b>	Friday Street Pond	No access for any field surveys.	13	175, SW
<b>WB47a</b>	Manor Farm Pond	No access for any field surveys.	13	275, E
<b>WB48</b>	Pettistree Pylons Pond	No access for any field surveys.	16	400, NE
<b>WB50</b>	Wonder Grove Pond 1	No access for any field surveys.	14	197, NE
<b>WB51</b>	Wonder Grove Pond 2	No access for any field surveys.	14	197, NE
<b>WB51a</b>	Borrow Pit Pond	No access for any field surveys.	14	50, E

Key: HSI: Habitat Suitability Index

\*: Water bodies are illustrated in Figures 3.1- 3.7

**Table B.2 Water Bodies Scoped Out from Survey Due to Severance from Associated Development Sites**

<b>Water body reference Number</b>	<b>Water body name</b>	<b>AD site within 500m</b>	<b>Reason for scoping decision</b>
<b>WB28</b>	The Street Pond	10	Pond severed from Site 10 due to main road, and beyond 500m from Site 11.
<b>WB32a</b>	Park Farm Field Pond	12	Severed from Site 12 due to main road.
<b>WB33</b>	Park Farm Covert Pond	12	Severed from Site 12 due to main road.
<b>WB34</b>	Hill House Farm Field Pond 1	12	Severed from Site 12 due to main road.
<b>WB35</b>	Hill House Farm Field Pond 2	12	Severed from Site 12 due to main road.
<b>WB36</b>	Hill House Farm Field Pond 3	12	Severed from Site 12 due to main road.
<b>WB37</b>	Burnt House Farm Field Pond 1	12	Severed from Site 12 due to main road.
<b>WB38</b>	Burnt House Farm Field	12	Severed from Site 12 due to main road.
<b>WB42</b>	Carlton Rookery Field Pond	17	Pond severed from Site 17 due to two roads and industrial estate.
<b>WB47</b>	Benhall Lodge Park Pond	13	Severed from Site 13 by A12.
<b>WB53</b>	Square Covert Pond	18,19	Pond severed from Sites 18 and 19 due to main road.
<b>WB54</b>	Square Covert Reservoir	18,19	Pond severed from Sites 18 and 19 due to main road.

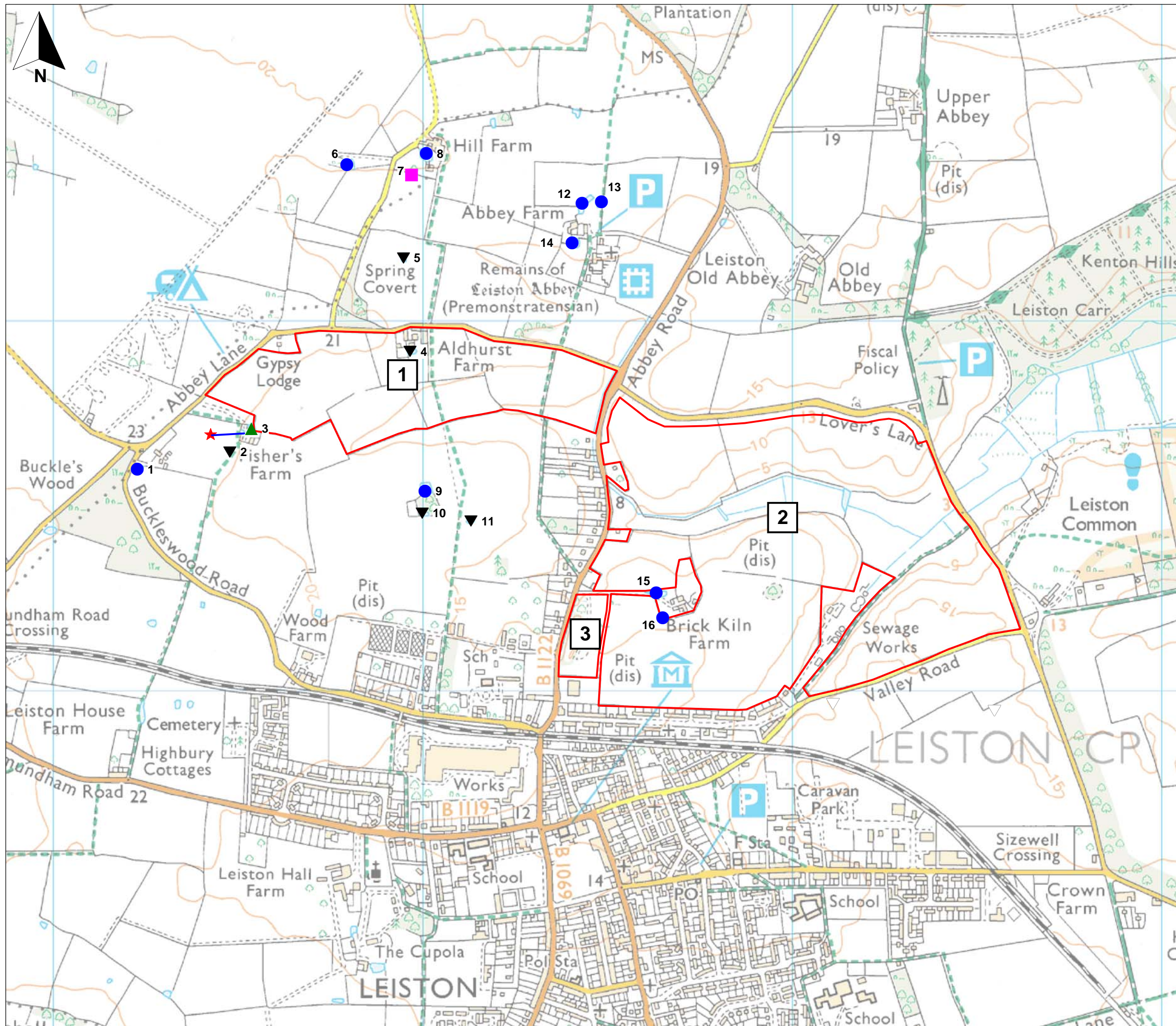
\*: Water bodies are illustrated in Figures 3.1- 3.7

# Appendix C

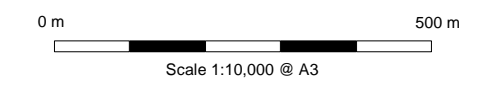
## Figures

---





Key	
<span style="border: 1px solid black; padding: 2px;">1</span>	Associated development site
<span style="border-bottom: 2px solid red; width: 20px; display: inline-block;"></span>	Site boundary
<span style="background-color: magenta; width: 10px; height: 10px; display: inline-block;"></span> 1	Water body - no access for HSI
<span style="color: blue; font-size: 12px;">●</span> 1	Water body - HSI conducted
<span style="color: green; font-size: 12px;">▲</span> 1	Water body - HSI and presence/absence survey conducted
<span style="color: red; font-size: 12px;">★</span>	Great crested newt recorded
<span style="color: black; font-size: 12px;">▼</span> 1	Water body - not present

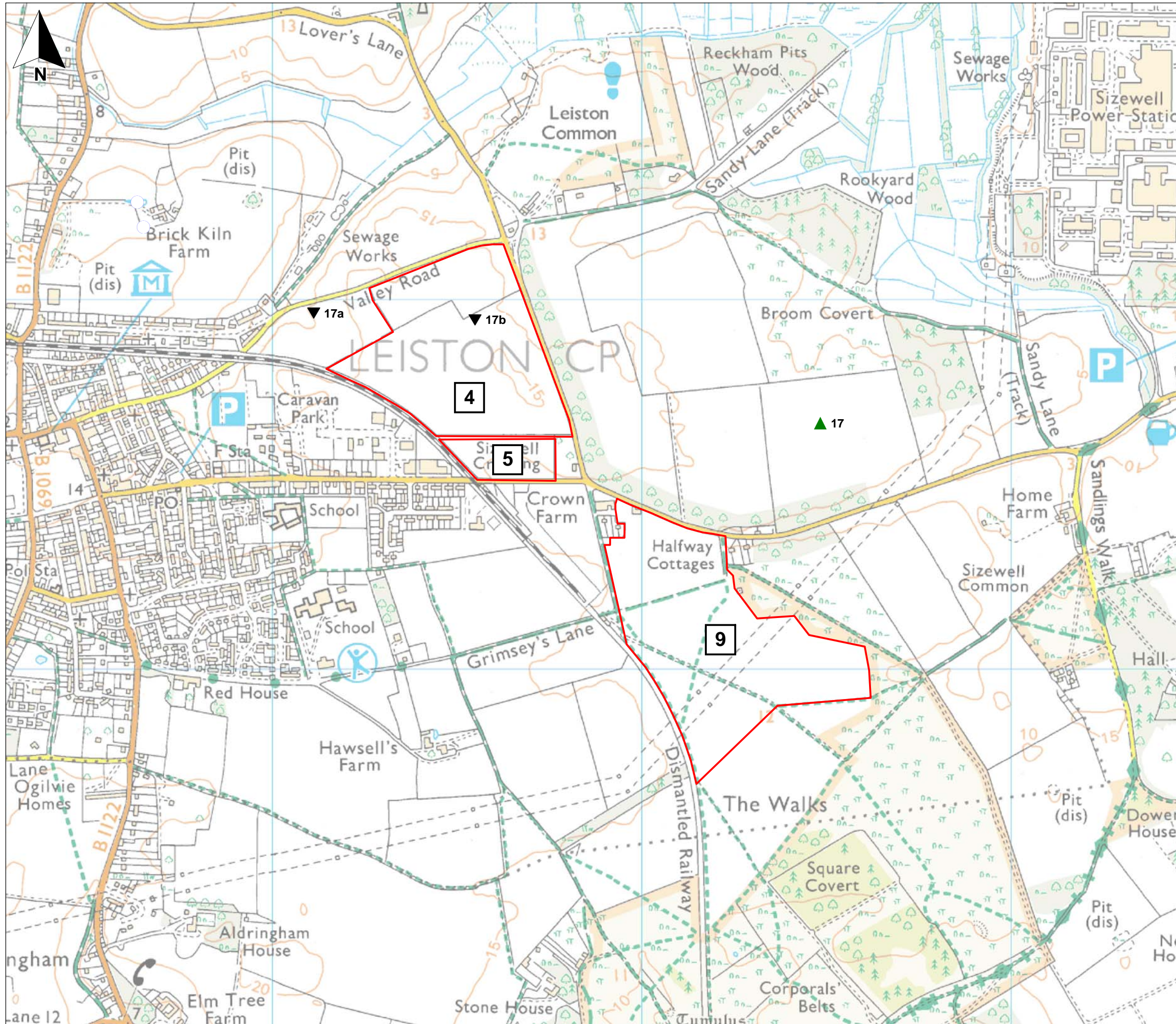


Sizewell Associated Development Sites  
Great Crested Newt Survey Report

**Figure 3.1**  
**Water bodies 1-16**

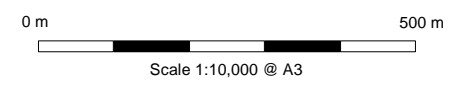
April 2012  
28130-A333.wor tugwc





**Key**

<span style="border: 1px solid black; padding: 2px;">1</span>	Associated development site
<span style="border-bottom: 1px solid red; width: 20px; display: inline-block;"></span>	Site boundary
▲ 1	Water body - HSI and presence/absence survey conducted
▼ 1	Water body - not present

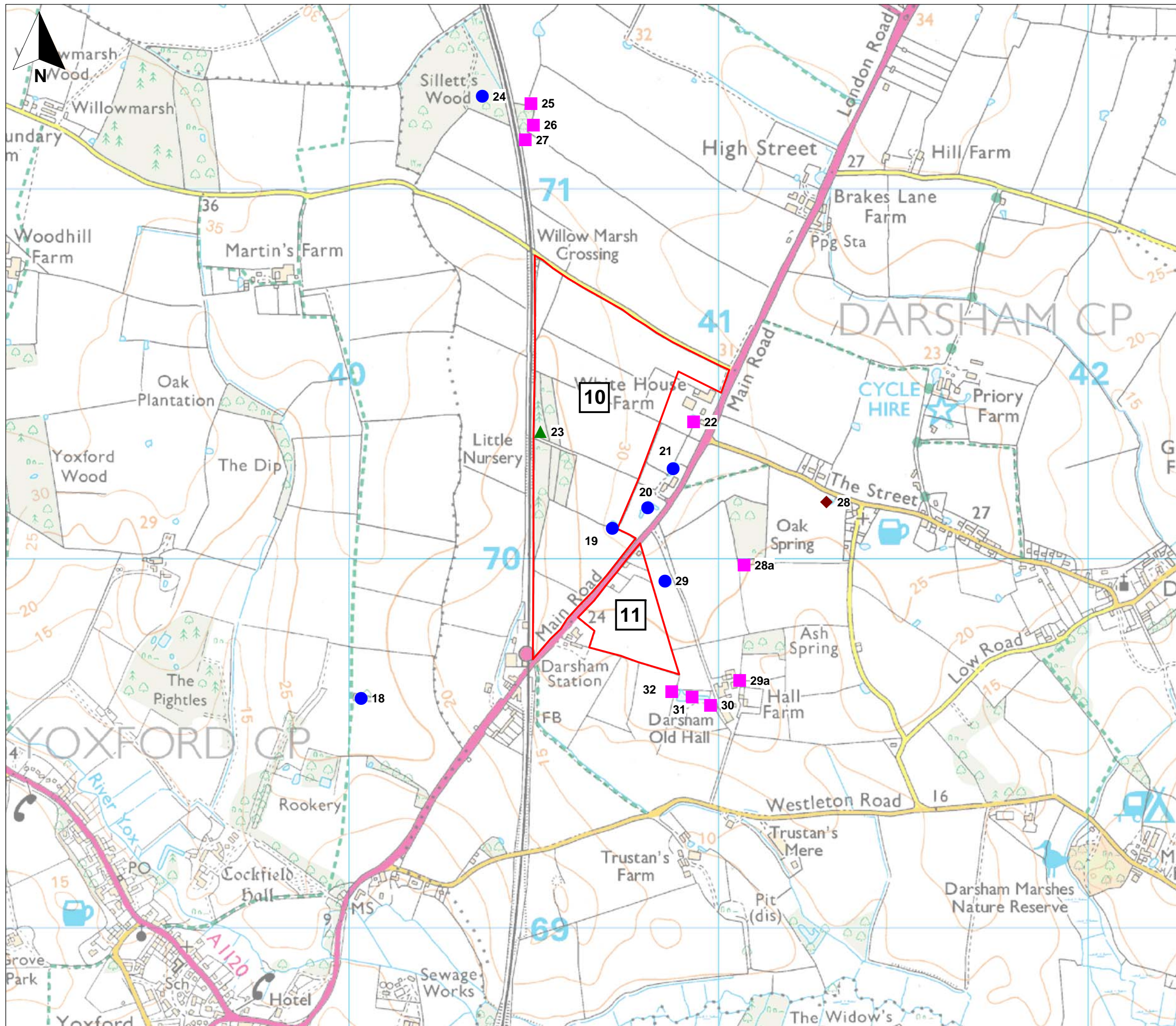


Sizewell Associated Development Sites  
Great Crested Newt Survey Report

**Figure 3.2**  
**Water body 17-17b**

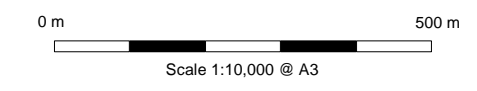
April 2012  
28130-A405.wor tugwc





**Key**

- 1 Associated development site
- Site boundary
- 1 Water body - no access for HSI
- 1 Water body - HSI conducted
- ▲ 1 Water body - HSI and presence/absence survey conducted
- ◆ 1 Water body - severed from site

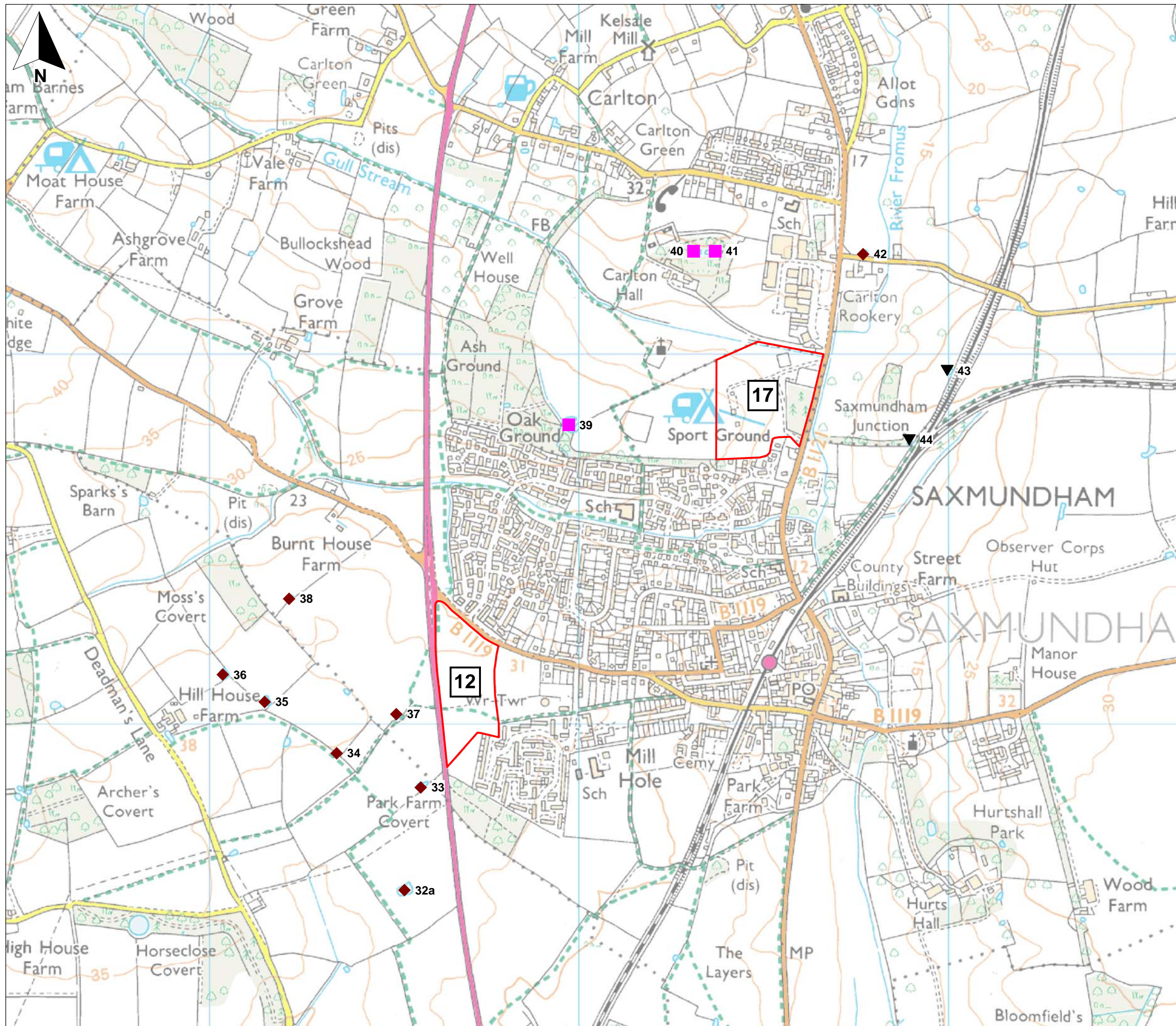


Sizewell Associated Development Sites  
Great Crested Newt Survey Report

**Figure 3.3**  
**Water bodies 18-32**

April 2012  
28130-A334.wor tugwc





**Key**

- 1 Associated development site
- Site boundary
- 1 Water body - no access for HSI
- ◆ 1 Water body - severed from site
- ▼ 1 Water body - not present

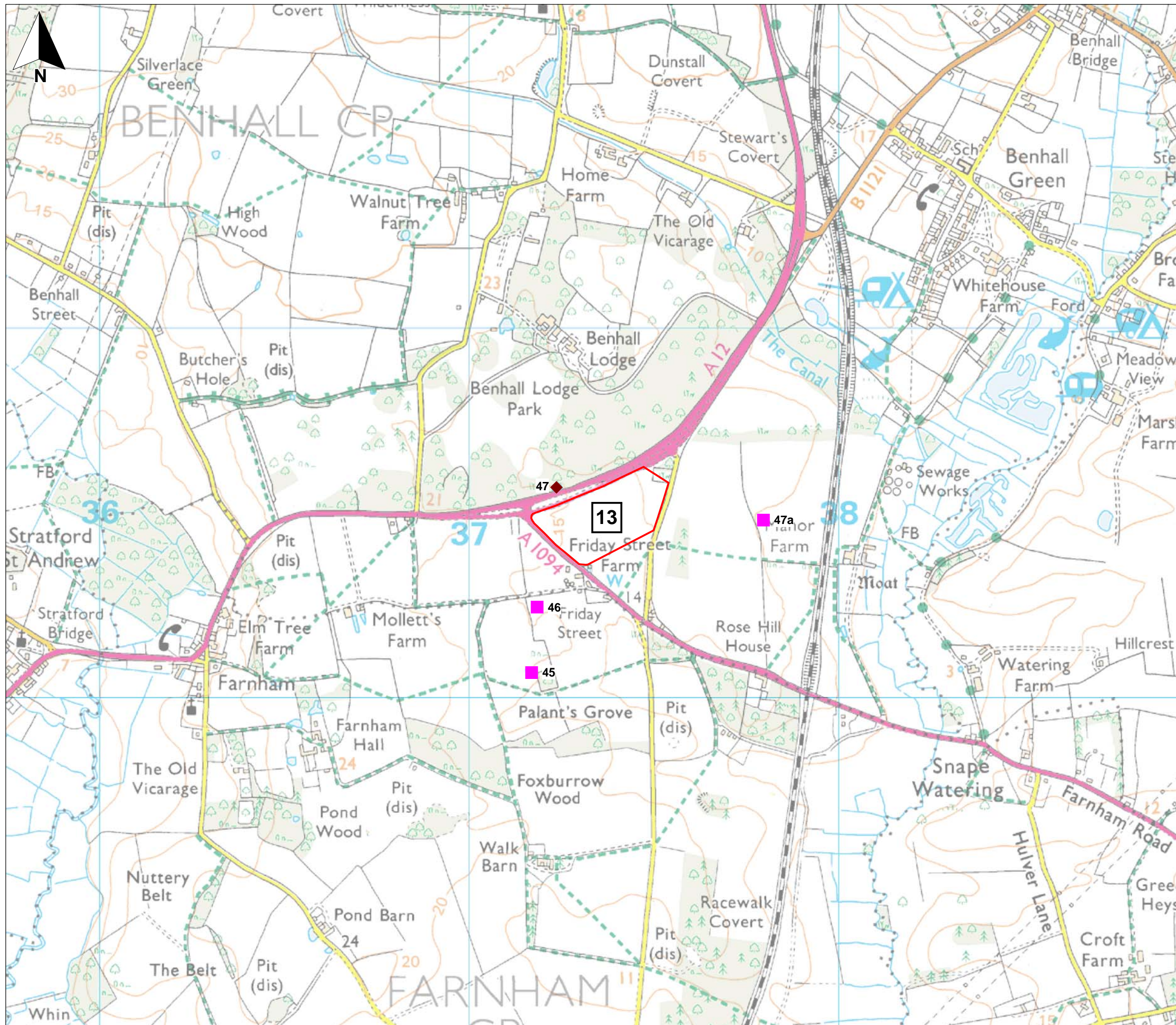
0 m  500 m  
Scale 1:10,000 @ A3



Sizewell Associated Development Sites  
Great Crested Newt Survey Report

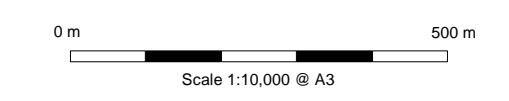
**Figure 3.4**  
Water bodies 32a - 44

REPRODUCED WITH THE PERMISSION OF ORDNANCE SURVEY ON BEHALF OF HER MAJESTY'S STATIONERY OFFICE. © CROWN COPYRIGHT (2011). ALL RIGHTS RESERVED. BRITISH ENERGY plc PART OF EDF ENERGY LICENCE 100019324



**Key**

- 1 Associated development site
- Site boundary
- 1 Water body - no access for HSI
- ◆ 1 Water body - severed from site

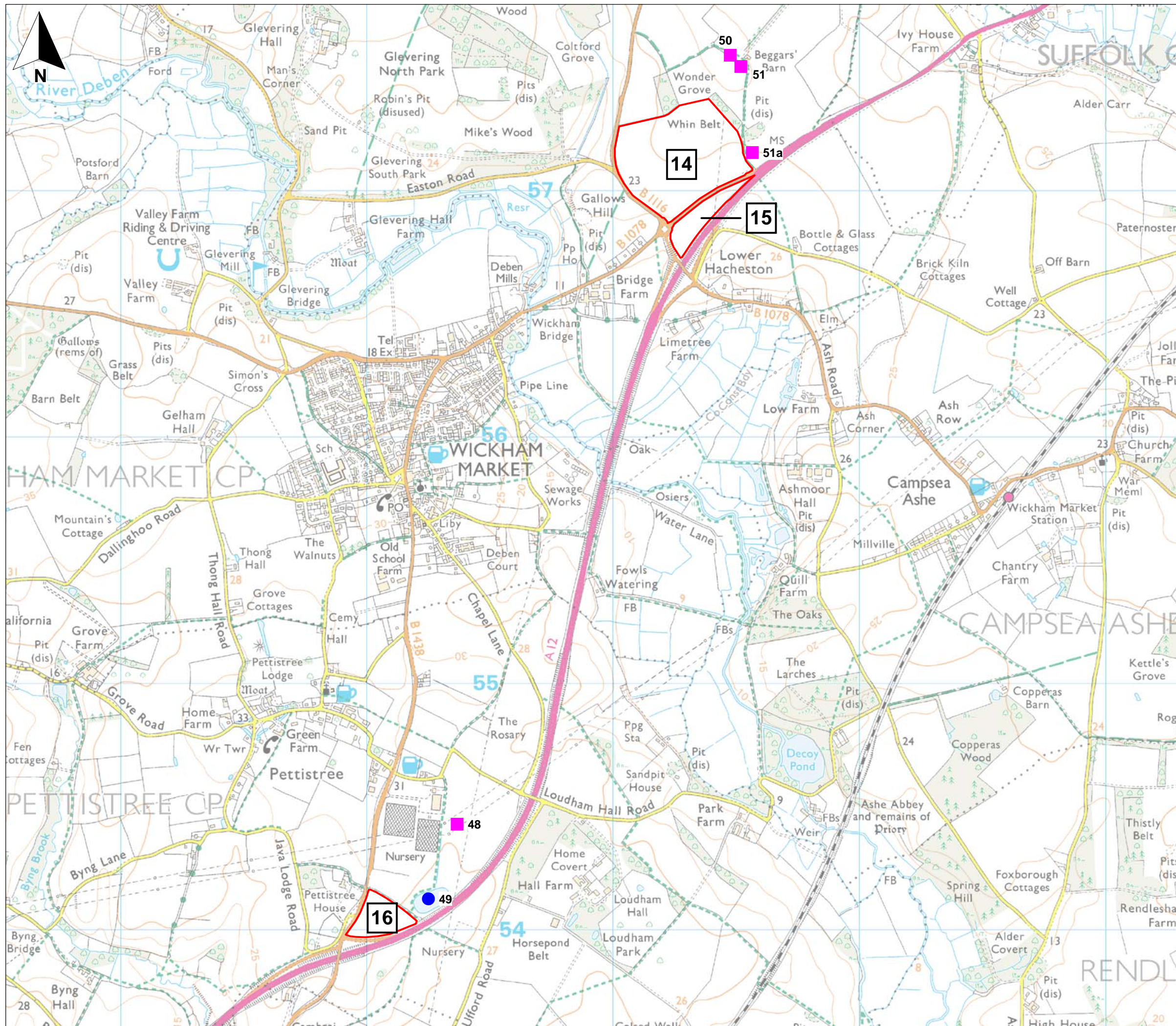


Sizewell Associated Development Sites  
Great Crested Newt Survey Report

**Figure 3.5**  
Water bodies 45 - 47a

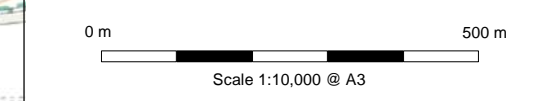
April 2012  
28130-A407.wor tugwc





**Key**

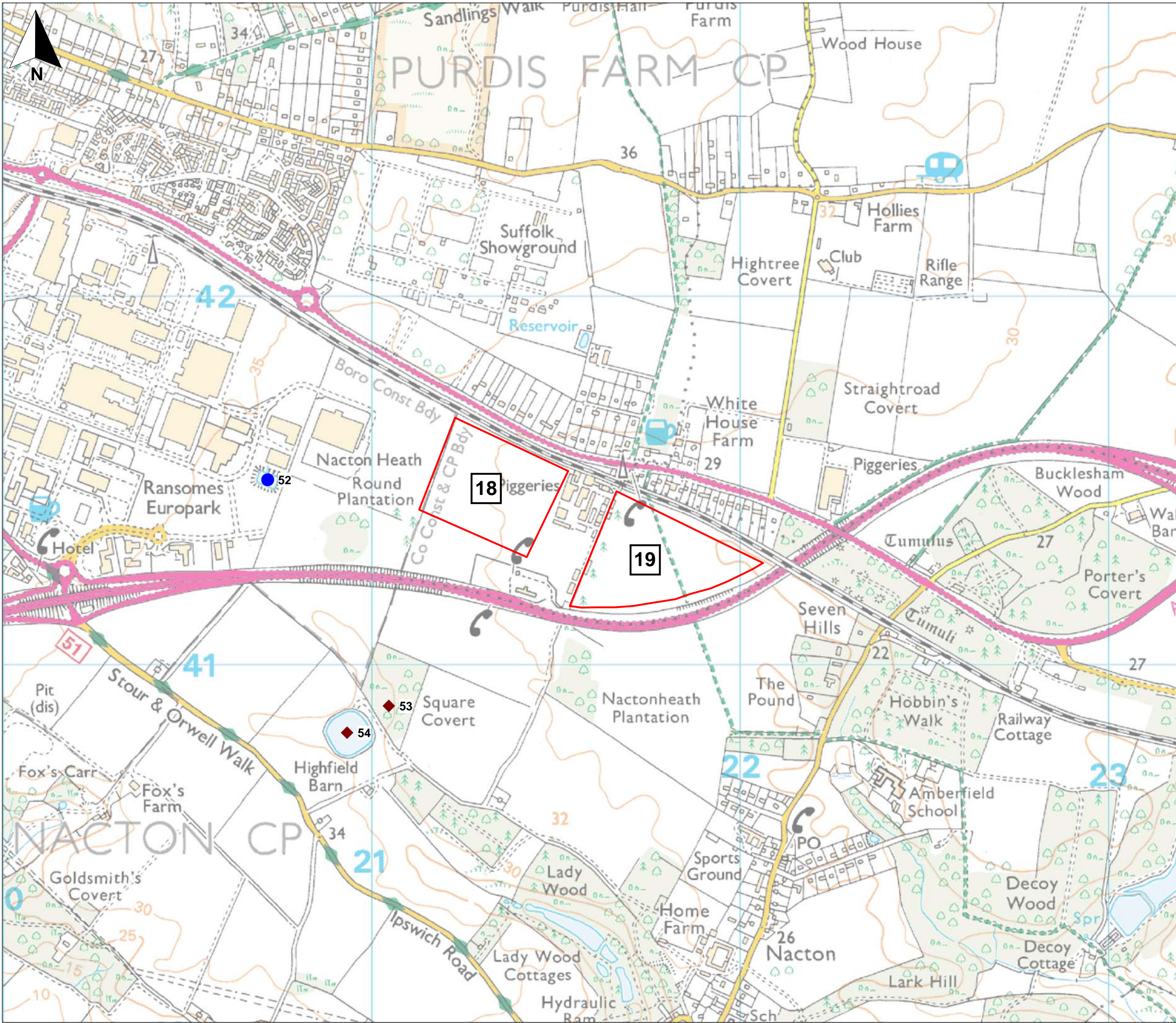
- 1 Associated development site
- Site boundary
- 1 Water body - no access for HSI
- 1 Water body - HSI conducted



Sizewell Associated Development Sites  
Great Crested Newt Survey Report

**Figure 3.6**  
Water bodies 48 - 51a

REPRODUCED WITH THE PERMISSION OF ORDNANCE SURVEY ON BEHALF OF HER MAJESTY'S STATIONERY OFFICE. © CROWN COPYRIGHT (2011). ALL RIGHTS RESERVED. BRITISH ENERGY plc PART OF EDF ENERGY LICENCE 100019324



**Key**

- 1 Associated development site
- Site boundary
- 1 Water body - HSI conducted
- ◆ 1 Water body - severed from site

0 m  500 m  
Scale 1:10,000 @ A3



Sizewell Associated Development Sites  
Great Crested Newt Survey Report

**Figure 3.7**  
Water bodies 52 - 54

April 2012  
28130-A409.wor tugwc



## Appendix D References

---

English Nature (2001). *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.

Entec UK Ltd (2007). *Great Crested Newt Report: Sizewell*. Entec, Gosforth.

Entec UK Ltd (2010). *Great Crested Newt Report: Sizewell*. Entec, Gosforth.

Oldham, R.S., Keeble, J., Swan, M.J.S., Jeffcote, M. (2000). Evaluating the Suitability of Habitat for Great Crested Newt (*Triturus cristatus*). *Herpetological Journal* 10(4); 143-155.





VOLUME 3, CHAPTER 7, APPENDIX 7A:  
ANNEX 7A.4: PRIMARY DATA

## Contents

1	Introduction.....	1
1.2	Plants and Habitats.....	1
1.3	Amphibians.....	1
1.4	Ornithology .....	14
1.5	Bats .....	19
	References .....	33

## Tables

Table 1.1:	Darsham ponds identified by Arcadis .....	4
Table 1.2:	Habitat Suitability Index for ponds surveyed by Arcadis .....	5
Table 1.3:	eDNA survey results for pond 101 and 102 .....	6
Table 1.4:	Pond descriptions for Pond 78, 101 and 102 .....	7
Table 1.5:	Amphibian survey results for Pond 78 surveyed by Arcadis in 2015 .....	9
Table 1.6:	Breeding bird survey visits timings and weather conditions .....	14
Table 1.7:	Wintering bird survey visits timings and weather conditions .....	15
Table 1.8:	All bird species recorded, and peak counts recorded during the breeding and wintering bird surveys .....	16
Table 1.9:	Static detector survey periods.....	20
Table 1.10:	Summary of all activity recorded during activity surveys 2015.....	22
Table 1.11:	Summary of static detector results at 2015.....	23
Table 1.12:	Summary of bat tree assessment results 2015.....	26

## Plates

**None provided.**

## Figures

All figures are found within Annex 7A.1 of Appendix 7A: Ecological Baseline for the Northern Park and Ride at Darsham. Note only those figures referenced in this Annex have been listed below

Figure 7.1: Location of Statutory Designated Sites within 5km of the Northern Park and Ride at Darsham

Figure 7.2: Location of Non-Statutory Designated Sites within 2km of the Northern Park and Ride at Darsham

Figure 7.3: Phase 1 Habitat of Northern Park and Ride at Darsham

Figure 7.4: Northern Park and Ride at Darsham Great Crested Newt Surveys

Figure 7.5: Red List and NERC Species Recorded at Northern Park and Ride at Darsham during Breeding Bird Surveys in April-June 2015

Figure 7.6: Schedule 1 Species Recorded at Northern Park and Ride at Darsham during Winter Bird Surveys in November-January 2015

Figure 7.7: Red List and NERC Species Recorded at Northern Park and Ride at Darsham during Winter Bird Surveys from November 2014 to March 2015

Figure 7.8: Northern Park and Ride at Darsham Bat Tree Assessment Results 2015

Figure 7.9: Northern Park and Ride at Darsham Bat Surveyor Positions and SM2 Locations

## 1 Introduction

1.1.1 This Annex provides details of the primary data collected for the northern park and ride at Darsham (from here on referred to as the ‘proposed development’). For the purpose of this Annex, the northern park and ride at Darsham site is referred to as the ‘site’.

1.1.2 No targeted surveys were undertaken for invertebrates, reptiles and terrestrial mammals (other than bats) because, from the extended Phase 1 habitat survey, no evidence for the potential presence of these taxa of conservation interest was identified. These taxa are not therefore considered further within this Annex.

## 1.2 Plants and Habitats

1.2.1 Wood Group (formerly Entec and Amec Foster Wheeler) had previously carried out an extended Phase 1 habitat survey in 2011 (attached as an **Annex 7-3**). A review of aerial photographs, site visits in association with other protected species surveys in 2014, and a 2018 site visit to check site conditions, showed that there were no significant material changes to the habitats present within the proposed development since Wood Group’s extended Phase 1 habitat survey in 2011. Therefore, the extended Phase 1 habitat survey was not repeated by Arcadis Consulting (UK) Limited (Arcadis).

## 1.3 Amphibians

### a) Methodology

#### i. 2015 surveys

1.3.1 A review of Ordnance Survey (OS) maps and aerial photos (from the Bing maps website) of the site was carried out to identify any waterbodies within 500m of the boundaries of the site boundary.

1.3.2 A site visit to each pond was made by Arcadis ecologists on 8 April 2015, for each pond where access was granted. During these visits, detailed site descriptions were taken for each water body, including photographs, measurements of the area and depth, descriptions of marginal, aquatic and surrounding vegetation, and a note was made of suitable survey methods for the water body.

1.3.3 Where appropriate, a Habitat Suitability Index for great crested newts (*Triturus cristatus*) (Ref. 1.1) was calculated for each water body. The Habitat Suitability Index scores a water body against ten habitat suitability

**NOT PROTECTIVELY MARKED**

indices, which include water quality and the likely presence/absence of fish and aquatic plant cover. From these ten suitability indices, a geometric mean is calculated, which gives an overall numerical index ranging between zero and one. A score of near zero indicates highly sub-optimal habitat, whilst a score near one represents optimal habitat. Habitat Suitability Index scores are then used to define pond suitability for great crested newts on a categorical scale, from 'poor' to 'below average', 'average', 'good', and 'excellent'.

- 1.3.4 The Habitat Suitability Index for each pond was used to compare the general suitability of the ponds present for great crested newts. However, the Habitat Suitability Index is not a substitute for undertaking newt surveys and, if a water body is awarded a high Habitat Suitability Index score, this does not guarantee that great crested newts will be present, only that they are likely to be present.
- 1.3.5 Targeted great crested newt surveys were undertaken at ponds identified as being potentially suitable for breeding amphibians during the scoping surveys. Four survey visits to each pond were carried out in suitable weather conditions between April and June 2014. Where great crested newts were recorded, an additional two surveys were undertaken (making a total of six surveys) before mid-June to allow an estimate of population size class to be made. The survey methods used depended on the different characteristics of each pond (such as turbidity, or abundance of aquatic vegetation), following Natural England's 'Great Crested Newt Mitigation Guidelines' (Ref. 1.2).
- 1.3.6 The three preferred standard survey methods (torchlight survey, bottle-trapping and egg search) were carried out on each visit to the ponds although, in some cases, fewer survey techniques (the most appropriate to the pond) could be used. Netting was used as a last resort on a single individual pond, and only once all other options had proved ineffective.
- 1.3.7 Each torchlight survey comprised a single walk around the pond at a measured pace, using a 500,000 candle-power torch to locate and identify amphibians. During the survey, all amphibians observed were counted, sexed and identified to species where possible (female smooth (*Lissotriton vulgaris*) and palmate (*L. helveticus*) newts are not always distinguishable by torch surveys). Survey timings and weather conditions were also recorded.
- 1.3.8 Bottle-trapping surveys used ridged 1.5 litre mineral water bottles (with the top end cut off and inverted inside the main body of the bottle). These were submerged in the pond on canes wedged into the pond sediment. Traps were set in the evening and checked early the following morning. All amphibians captured overnight were identified to species and life stage, and sexed where

possible. Suitable aquatic vegetation at the pond margins was also checked at this time for the presence/absence of newt eggs.

1.3.9 For ponds found to contain great crested newts, populations were classified as ‘small’ for maximum counts up to ten, ‘medium’ for maximum counts between 11 and 100, and ‘large’ for maximum counts over 100 (Ref. 1.2).

1.3.10 Appropriate biosecurity measures were adopted whilst undertaking the surveys, in order to avoid the inadvertent spreading of chytridiomycosis. This is a fungal disease which can have a devastating effect on amphibian populations. Measures implemented included the thorough drying of traps between surveys, and the application of Virkon antiseptic solution to survey equipment, wading poles and surveyor’s waders between visits, where ponds are separated by a distance of over 1km.

1.3.11 The water bodies occasionally exhibited conditions rendering certain survey methods impractical or unsafe. For example, a pond with heavy duckweed cover may not be effectively torched, and certain ponds had banks too steep to safely allow the deployment of bottle traps. For this reason, although effort was made to use three survey methods for each pond, occasionally this was not possible. Occasionally, bank vegetation and conditions restricted access to sections of the water body, rendering surveying the entire perimeter of a pond impossible. In the event of accidental trapping of water shrew (*Neomys fodiens*), no further bottle trapping surveys were undertaken.

#### ii. 2019 surveys

1.3.12 In 2019, due to a change in the red line boundary, two additional ponds, Ponds 101 and 102 were identified with 500m of the site. For both ponds, both Habitat Suitability Index (following the methodology above) and eDNA surveys were conducted.

1.3.13 For great crested newt eDNA surveys, sampling methodologies followed details in Briggs *et al.* ‘Analytical and methodological development for improved surveillance of Great Crested Newt, Appendix 5, Technical advice note for field and laboratory sampling of great crested newt environmental DNA’ (Ref. 1.3). As required by Natural England, samples were collected by a licensed surveyor between 15 April and 30 June 2019.

1.3.14 The samples were sent to FERA’s eDNA testing service for analysis. The analysis method detects pond occupancy from great crested newts using traces of eDNA shed into the pond environment. The detection of great crested newt eDNA is carried out using real-time polymerase chain reaction to amplify part of the cytochrome 1 gene found in mitochondrial DNA. The method followed details in Briggs *et al.* (Ref. 1.3).

**NOT PROTECTIVELY MARKED**

1.3.15 There are a number of limitations with this method as follows: (1) the results are based on analyses of the samples received by the laboratory; (2) any variation between the characteristics of the sample and a batch will depend on the sampling procedure used; (3) the method is qualitative and therefore the levels given in the score are for information only, they do not constitute the quantification of great crested newt DNA against a calibration curve; (4) a ‘not detected’ result does not exclude the presence at levels below the limit of detection.

1.3.16 Appropriate biosecurity measures, as those described above, were adopted.

b) Results

1.3.17 Twenty-one waterbodies were identified within 500m of the boundary of the proposed development (**Table 1.1**). **Figure 7.4 (Annex 7-1)** shows the locations of these ponds classified as follows: ponds which were scoped out as requiring further surveys (e.g. because of location, no longer extant or dry at the time of survey); ponds where access was not granted for scoping or survey; ponds where access was granted for scoping, but not for subsequent survey; ponds where great crested newt surveys were carried out; and ponds that were found to contain great crested newt populations.

**Table 1.1: Darsham ponds identified by Arcadis.**

Pond ID	Amec ID	Scoped In/out		Access	Surveyed
		In	Out		
78	WB19	Yes		Yes	Yes
79	WB20	Yes		No	No
80	WB20	Yes		No	No
81	WB21	Yes		No	No
82	WB22	Yes		No	No
83	WB27	Yes		No	No
84	WB26	Yes		No	No
85	WB25	Yes		No	No
86	WB24	Yes		No	No
87	WB18	Yes		No	No
88	WB32		Yes – east of A12	No	No
89	WB31		Yes – east of A12	No	No
90	WB30		Yes – east of A12	No	No
91	WB29a		Yes – east of A12	No	No
92	WB29		Yes – east of A12	No	No

Pond ID	Amec ID	Scoped In/out		Access	Surveyed
		In	Out		
93	WB28a		Yes – east of A12	No	No
94	WB28		Yes – east of A12	No	No
95	N/A		Yes – east of A12	No	No
100	WB23		Yes- dry	Yes	No
101	N/A	Yes		Yes	Yes
102	N/A	Yes		Yes	Yes

1.3.18 Of these 21, eight ponds were scoped out as requiring no further surveys, as they were all east of the A12 trunk road (see **Table 1.1**), which would act as a substantial barrier to the dispersal of great crested newts. Therefore, any newts using these ponds would be unlikely to access the proposed development site. Of the remaining 11 ponds (see **Table 1.1**), access was only granted for four ponds (Pond 78, 100, 101 and 102). Pond 100 was scoped out as it was found to be dry. Pond 78, 101 and 102 were found to have potential for supporting great crested newts.

1.3.19 **Table 1.2** presents the results of the Habitat Suitability Index assessment carried out for Pond 78, 101 and 102. Pond 78 is a small pond in a small area of scrub adjacent to arable fields on three sides, and gardens on the fourth side. It scored ‘average’ in terms of Habitat Suitability Index; factors limiting the suitability of this pond were small size, shade and lack of macrophyte cover. Ponds 101 and 102 are farm ponds surrounded by scrub and small trees. Pond 101 scored ‘good’ and Pond 102 scored ‘poor’ in terms of Habitat Suitability Index.

**Table 1.2: Habitat Suitability Index for ponds surveyed by Arcadis.**

Feature	Pond ID		
	78	101	102
Location	1	1	1
Pond area	0.2	0.85	0.8
Pond drying	0.9	0.9	0.9
Water quality	0.67	0.67	0.01
Shade	0.3	1	1
Fowl	1	0.67	0.67
Fish	1	1	0.67
Ponds	0.82	0.85	0.85
Terrestrial habitat	0.67	0.67	0.67



**NOT PROTECTIVELY MARKED**

Feature	Pond ID		
	78	101	102
Macrophytes	0.3	0.3	0.3
<b>Habitat Suitability Index Score</b>	<b>0.60</b>	<b>0.72</b>	<b>0.42</b>
<b>Suitability for Great Crested Newt</b>	<b>Average</b>	<b>Good</b>	<b>Poor</b>



1.3.20 Great crested newt eDNA was only tested in 2019 on Ponds 101 and 102. The results of this survey are provided in **Table 1.3**.

**Table 1.3: eDNA survey results for pond 101 and 102.**


Pond	Date sampled	GCN detection	Inhibition	Degradation
P101	15/04/2019	Present	No	No
P1025	15/04/2019	Absent	No	No

1.3.21 **Table 1.4** gives the pond description of the pond scoped in for surveys and for which access was granted 2015 and 2019 (Pond 78, 101 and 102). **Table 1.5** provides the full population survey results for Pond 78 conducted in 2015.

**Table 1.4: Pond descriptions for Pond 78, 101 and 102.**

Pond 78	
	
Grid reference	TM407701
Description	Pond 78 comprises a small pond (approx. 100m <sup>2</sup> area) surrounded by scrub and small trees, with arable fields on three sides and a garden (with short mown lawn) on the fourth side. Heavily shaded with very little emergent and marginal aquatic vegetation. No evidence of waterfowl or fish present. Good foraging and hibernacula opportunities within the scrub area and adjacent garden, and connectivity via field margin and gardens to other nearby ponds.
Area	100m <sup>2</sup>
Depth	1.0m
Perimeter	40m
Scoped in/out	In
Pond 101	
	
Grid reference	TM412710

**NOT PROTECTIVELY MARKED**

Description	Pond 101 comprises a large farm pond surrounded by scrub and small trees, with arable fields on three sides and a garden (with short mown lawn) on the fourth side. No emergent and marginal aquatic vegetation was observed. There was no evidence of fish present. There are good foraging and hibernacula opportunities within the scrub area and adjacent garden.
Area	1,600m <sup>2</sup>
Depth	2m
Perimeter	28.9m
Scoped in/out	In
<b>Pond 102</b>	
	
Grid reference	TM412710
Description	Pond 102 comprises a large farm pond surrounded by scrub and small trees, as well as by arable fields and the A12 to the east. Little emergent and marginal aquatic vegetation was observed. There was no evidence of fish present. There are good foraging and hibernacula opportunities within the scrub area and areas.
Area	2,000m <sup>2</sup>
Depth	2m
Perimeter	90m
Scoped in/out	In

**Table 1.5: Amphibian survey results for Pond 78 surveyed by Arcadis in 2015.**

Key to tables:

Wind speed: (1 = no wind; 2 = light wind; 3 = strong wind)

Rain: (heavy/light/none)

Turbidity score (0-5): (0 = completely clear, 5 = very turbid)

Vegetation cover score (0-5): (0 = no vegetation obscuring water, 5 = water completely obscured by vegetation)

Pond 78								
Visit 1	08/04/15							
Temperature:	5°C	Rain				None		
Wind speed	Light	Cloud cover				100%		
Turbidity score	2	Vegetation cover				1		
Survey constraints	25% of banks not accessible due to scrub							
% of perimeter surveyed	75% torch, 50% traps			Other amphibians			1 smooth newt	
Species	Egg search	Torchlight survey						
		Larvae	Eft	Immature	Adult			Total
					Male	Female	Unknown	
Great crested newt	None				3	1		4
Smooth newt	None							0
Palmate newt								0
Smooth/palmate newt								0
Species		Trap						
		Larvae	Eft	Immature	Adult			Total
					Male	Female	Unknown	
Great crested newt					1			1
Smooth newt					1			1
Palmate newt								0
Smooth/palmate newt								0

Pond 78								
Visit 2	14/04/15							
Temperature:	14°C	Rain			None			
Wind speed	No wind	Cloud cover			None			
Turbidity score	1	Vegetation cover			0			
Survey constraints	25% of banks not accessible due to scrub							
% of perimeter surveyed	75% torched and trapped			Other amphibians			Common frog	
Species	Egg search	Torchlight survey						
		Larvae	Eft	Immature	Adult			Total
					Male	Female	Unknown	
Great crested newt	None							0
Smooth newt	None							0
Palmate newt								0
Smooth/palmate newt								0
Species		Trap						
		Larvae	Eft	Immature	Adult			Total
					Male	Female	Unknown	
Great crested newt	None							0
Smooth newt	None							0
Palmate newt								0
Smooth/palmate newt								0

Pond 78								
Visit 3	11/05/15							
Temperature:	15°C	Rain			None			
Wind speed	None	Cloud cover			Moderate			
Turbidity score	3	Vegetation cover			0			
Survey constraints	Water shrew found in trap on 2 <sup>nd</sup> survey therefore no further trapping							
% of perimeter surveyed	75% torch, 25% netted	Other amphibians			None			
Species	Egg search	Torchlight survey						
		Larvae	Eft	Immature	Adult			Total
					Male	Female	Unknown	
Great crested newt	None				1	1		2
Smooth newt	None							0
Palmate newt								0
Smooth/palmate newt								0
Species		Netting						
		Larvae	Eft	Immature	Adult			Total
					Male	Female	Unknown	
Great crested newt								0
Smooth newt								0
Palmate newt								0
Smooth/palmate newt								0

**NOT PROTECTIVELY MARKED**

Pond 78								
Visit 4	12/05/15							
Temperature:	11°C	Rain			None			
Wind speed	Strong	Cloud cover			Light			
Turbidity score	2	Vegetation cover			1			
Survey constraints	Water shrew found in trap on 2 <sup>nd</sup> survey therefore no further trapping							
% of perimeter surveyed	75% torch, 25% netted	Other amphibians			None			
Species	Egg search	Torchlight survey						
		Larvae	Eft	Immature	Adult			Total
					Male	Female	Unknown	
Great crested newt	None					2		2
Smooth newt	None							0
Palmate newt								0
Smooth/palmate newt								0
Species		Netting						
		Larvae	Eft	Immature	Adult			Total
					Male	Female	Unknown	
Great crested newt								0
Smooth newt								0
Palmate newt								0
Smooth/palmate newt								0

**NOT PROTECTIVELY MARKED**

Pond 78								
Visit 5	02/06/15							
Temperature:	14°C	Rain			None			
Wind speed	Light	Cloud cover			Light			
Turbidity score	1	Vegetation cover			0			
Survey constraints	Water shrew found in trap on 2 <sup>nd</sup> survey therefore no further trapping.							
% of perimeter surveyed	75% torch	Other amphibians			None			
Species	Egg search	Torchlight survey						Total
		Larvae	Eft	Immature	Adult			
					Male	Female	Unknown	
Great crested newt	None						0	
Smooth newt	None						0	
Palmate newt							0	
Smooth/palmate newt							0	

Pond 78								
Visit 6	03/06/15							
Temperature:	13°C	Rain			None			
Wind speed	None	Cloud cover			Light			
Turbidity score	1	Vegetation cover			0			
Survey constraints	Water shrew found in trap on 2 <sup>nd</sup> survey therefore no further trapping.							
% of perimeter surveyed	60%	Other amphibians			1 common frog, 3 smooth newt			
Species	Egg search	Torchlight survey						Total
		Larvae	Eft	Immature	Adult			
					Male	Female	Unknown	
Great crested newt	None						0	
Smooth newt	None						0	
Palmate newt							0	
Smooth/palmate newt							0	

**NOT PROTECTIVELY MARKED**



## 1.4 Ornithology

### a) Methodology

1.4.1 Bird surveys were undertaken on a monthly basis during the breeding season between April and June 2014 (inclusive), and for the wintering season on a monthly basis between November 2014 and March 2015 (inclusive). The transect-based surveys aimed to identify any important breeding/wintering bird of nature conservation interest within the site and its surroundings.

1.4.2 The surveys were undertaken in accordance with best practice survey guidance (Ref. 1.4). The same methodology (detailed below) was used for both the breeding and wintering bird surveys.

1.4.3 The surveys extended along field boundaries, woodland edges and woodland tracks within the site boundary (where land access permitted). Particular focus was placed upon species of nature conservation importance (Schedule 1 species of the Wildlife and Countryside Act (Ref. 1.5)), Red and Amber List species of Birds of Conservation Concern (BoCC) (Ref. 1.6) and National Environment and Rural Communities (NERC) Act (Ref. 1.7) listed species), with these species being mapped and recorded using standard British Trust for Ornithology species and behaviour codes. All other species (Green List species on BoCC) were recorded and an inventory was produced, but these records were not mapped.

1.4.4 The surveys were timed to take place during the morning, commencing approximately one hour after sunrise, with each transect lasting for approximately two hours. The surveys were timed to avoid poor weather conditions (i.e. heavy rain, mist/fog and strong winds), wherever possible. Further details regarding the timing and frequency of transect surveys, as well as the associated weather conditions, are presented below.

### b) Survey timings and weather conditions

1.4.5 **Table 1.6** and **Table 1.7** provide the survey timing and weather conditions for the breeding bird and wintering bird surveys respectively.

**Table 1.6: Breeding bird survey visits timings and weather conditions**

Date	Start	Finish	Duration of Survey (Hours)	Weather	Wind speed (beaufort)	Wind direction	Cloud cover (Oktas)
15/04/15	6:00	7:00	1	Fine	1	W	3/8
08/05/15	05:00	06:15	1.25	Dry	0	N/A	4/8

Date	Start	Finish	Duration of Survey (Hours)	Weather	Wind speed (beaufort)	Wind direction	Cloud cover (Oktas)
05/06/15	6:20	7:40	1:20	Warm and overcast	0	N/A	8/8

**Table 1.7: Wintering bird survey visits timings and weather conditions**

Date	Start	Finish	Duration of Survey (Hours)	Weather	Wind speed (beaufort)	Wind direction	Cloud cover (Oktas)
22/01/15	10:00	11:00	1	Overcast	0	n/a	8/8
19/02/15	16:00	16:50	50mins	Raining	3-4	S	8/8
19/03/15	8:30	9:30	1	Overcast	3	N	8/8
24/11/15	12:30	13:30	1	Overcast, some light drizzle	1-2	E	8/8

**c) Results**

**1.4.6** The results of both the breeding bird survey and the wintering bird surveys are detailed in **Table 1.8**.

**NOT PROTECTIVELY MARKED**

**Table 1.8: All bird species recorded, and peak counts recorded during the breeding and wintering bird surveys**

Species	Schedule 1	Conservation status (BoCC)	NERC listed	Present in breeding season	Breeding season peak count	Present in wintering season	Wintering season peak count
Fieldfare	Yes	Red List	✓			✓	34
Redwing	Yes	Red List	✓			✓	30
Herring gull		Red List	✓	✓	4	✓	2
Linnet		Red List	✓	✓	28	✓	40
Marsh tit		Red List	✓	✓	2	✓	3
Mistle thrush		Red List	✓	✓	1	✓	1
Nightingale		Red list		✓	1		
House Sparrow		Red list		✓	3	✓	2
Skylark		Red List	✓	✓	3	✓	26
Song thrush		Red List	✓	✓	1	✓	3
Starling		Red List	✓			✓	81
Woodcock		Red List	✓			✓	2
Yellowhammer		Red List	✓	✓	2	✓	12
Bullfinch		Amber List	✓	✓	2	✓	2
Dunnock		Amber List	✓	✓	8	✓	6
Black-headed gull		Amber List				✓	170
Meadow pipit		Amber List		✓	2		

**NOT PROTECTIVELY MARKED**

Species	Schedule 1	Conservation status (BoCC)	NERC listed	Present in breeding season	Breeding season peak count	Present in wintering season	Wintering season peak count
Stock dove		Amber List		✓	1	✓	6
Swift		Amber list		✓	3		
Blackbird		Green List		✓	4	✓	13
Blackcap		Green List		✓	7		
Blue tit		Green List		✓	20	✓	16
Buzzard		Green List				✓	2
Carrion crow		Green List		✓	3	✓	16
Chaffinch		Green List		✓	14	✓	21
Collared dove		Green List		✓	1	✓	2
Chiffchaff		Green List		✓	7		
Goldcrest		Green List		✓	1	✓	1
Goldfinch		Green List		✓	7	✓	25
Great tit		Green List		✓	15	✓	18
Great spotted woodpecker		Green List				✓	1
Greenfinch		Green List		✓	4	✓	2
Green woodpecker		Green list		✓	1		
Jay		Green list				✓	1
Jackdaw		Green List		✓	4	✓	1

**NOT PROTECTIVELY MARKED**

**NOT PROTECTIVELY MARKED**

Species	Schedule 1	Conservation status (BoCC)	NERC listed	Present in breeding season	Breeding season peak count	Present in wintering season	Wintering season peak count
Long-tailed tit		Green List		✓	3	✓	11
Magpie		Green List		✓	2	✓	1
Moorhen		Green List				✓	1
Pheasant		Not Listed		✓	2	✓	2
Pied wagtail		Green List		✓	2	✓	2
Robin		Green List		✓	8	✓	8
Swallow		Green list		✓	1		
Treecreeper		Green list		✓	3		
Whitethroat		Green List		✓	1		
Woodpigeon		Green List		✓	33	✓	34
Wren		Green List		✓	11	✓	9
Red-legged partridge		Not Listed		✓	2		

## 1.5 Bats

### a) Methodology

1.5.1 During the extended Phase 1 habitat and protected species walkover survey by Wood Group (Ref. 1.8), an external inspection of all trees on site was carried out to assess their suitability for occupancy by roosting and/or hibernating bats. Potential roost features were initially observed from the ground with binoculars and scrutinised for their suitability to be used by bats, alongside searching for any evidence of use, such as staining, feeding remains or droppings. The likely value of the various habitat features for foraging and commuting bats was also critically assessed.

1.5.2 A further detailed inspection of trees present within the site boundary and the adjacent Little Nursery Wood to the west was undertaken on 23 April 2014 and 1 May 2015 to identify the presence of potential roost features. Inspections were undertaken from the ground using binoculars to identify the presence of potential roost features as well as identifying any evidence of use.

Activity surveys were undertaken at the site on a monthly basis between May and October 2015, using Pettersson D240x time expansion bat detectors (stationary), listening at 45kHz. Surveys focused on recording any bats emerging from or re-entering Little Nursery Wood; however, activity by bats throughout the Site was also recorded. Each survey was undertaken with four surveyors positioned at the corners of the eastern side of the woodland. Positions were numbered 1 to 4 (the locations are illustrated on **Figure 7.9** in **Annex 7A.1**). Surveyor positions to the west of Little Nursery Wood were prevented due to a railway line directly adjacent to the west of Little Nursery Wood. Each surveyor listened at 45kHz and surveys were undertaken for 1.5 hours following sunset. A single exception to these timings occurred in August 2015 when adverse weather conditions caused the survey to end after 1 hour and 15 minutes. The dates of activity surveys are detailed in **Table 1.9** below.

1.5.3 Data collected during emergence surveys was analysed in BatSound by experienced analysts and a measure of relative activity calculated in the form of bat passes per hour (B/h<sup>1</sup>).

---

<sup>1</sup> A measure of relative bat activity has been calculated in the form of the number of bat passes per hour. This measure has been calculated to reflect both the total number of calls experienced over a complete survey for all bat species on each survey visit, and the total number of calls by a given species over a complete survey for all survey visits undertaken in 2014, combined. It is important to note that not all areas of the transect are recorded throughout; that calculations have been based on survey effort rounded to the nearest quarter of an hour and that the passes per hour value has been provided to the nearest tenth. As such this measure of relative bat activity is an approximation.

1.5.4 Static detector surveys in April and May 2015 used two SM2 detectors (Wildlife Acoustic Song Meter SM2BAT+), making full spectrum recordings, which were deployed within Little Nursery Wood. Between June and October 2015, an additional static (SM2) detector was added, located on the eastern edge of Little Nursery Wood. **Figure 7.9** in **Annex 7A.1** illustrates the location of static detector Monitoring Stations (MSs). **Table 1.9** below provides details on the survey periods. On each occasion, the detectors were deployed for a period of seven consecutive nights and were set to record between 20 minutes before sunset to 20 minutes after sunrise.

**Table 1.9: Static detector survey periods**

Survey visit	Survey Dates (2015)
1	13 April – 20 April
2	11 May – 18 May
3	25 June – 2 July
4	15 July – 22 July
5	5 August – 12 August
6	10 September – 17 September
7	8 October – 15 October

1.5.5 Data collected during static detector surveys was analysed using SonoChiro auto-identification software and the results grouped into six species groups (barbastelle, 'big bat'<sup>2</sup> spp., *Plecotus* spp. (assumed to be brown long-eared bat<sup>3</sup>), *Pipistrellus* spp.<sup>4</sup>., *Myotis* spp., and Nathusius' pipistrelle) and the mean number of passes per night calculated for further analysis.

1.5.6 Full details of the analysis process, as well as the trials undertaken to determine the suitability of SonoChiro as an analysis method, and the manual verifications undertaken, are provided in Arcadis (2016) (Ref. 1.9).

b) Results

i. Activity results

1.5.7 Four species and four species groups were identified during activity surveys at Darsham in 2015. Activity levels peaked in July at 72B/h with a significant reduction in activity levels noted in April (6B/h) and October (6.6B/h). Activity

<sup>2</sup> The 'big bat' species group includes calls identified specifically to noctule or serotine as well as those identified to the 'big bat' group (noctule, Leisler's bat, and serotine).

<sup>3</sup> All long-eared bat recordings are considered to relate to brown long-eared bat echolocation calls due to the absence of grey long-eared bat from Suffolk based on their current known distribution (Ref. 1.10).

<sup>4</sup> The *Pipistrellus* spp. group includes calls identified specifically to common or soprano pipistrelle as well as those identified to the common/soprano pipistrelle group. This group excludes calls identified as Nathusius' pipistrelle.

levels during remaining survey months were moderate at between 19.2B/h and 37.3B/h. The results of activity surveys at Darsham are detailed in **Table 1.10** and are considered by species in the following paragraphs. The locations of surveyors are illustrated on **Figure 7.9** in **Annex 7A.1**.

- 1.5.8 Common and soprano pipistrelle were the most frequently recorded species across all survey visits at 12.7B/h and 7.7B/h respectively. Common pipistrelles were recorded during all survey visits, with a noticeable peak in activity in July, and were the only species recorded during the April survey. Foraging and commuting behaviour was recorded and six common pipistrelles were observed emerging from the Little Nursery Wood. A further five common pipistrelles were noted to enter the woodland, primarily at Position 2, during the course of activity surveys.
- 1.5.9 Soprano pipistrelles were recorded during all activity surveys, with the exception of the April survey, with a peak in activity during the June survey. Foraging and commuting behaviour was recorded and five soprano pipistrelles were observed emerging from Little Nursery Wood. One further soprano pipistrelles was observed entering the woodland at Position 1.
- 1.5.10 Noctule were the third most frequently recorded species, although activity levels were noticeably reduced compared to common and soprano pipistrelles at 3.6B/h. Noctules were recorded during only the May, June, July and August surveys with a significant peak in activity recorded during the July survey. Two noctules were recorded emerging from Little Nursery Wood with a number of further passes of noctule activity originating from within or above the woodland.
- 1.5.11 Barbastelles were recorded during the May, June, July and September surveys with an overall relative activity level of 1.6B/h. The number of passes recorded were consistently low, between 2 and 6 per survey visit, with no clear activity peak. No barbastelle were recorded emerging from or entering Little Nursery Wood. A small number of barbastelle were observed using the eastern edge of Little Nursery Wood; however, the number of passes did not suggest this linear feature was a regular/frequently used commuting route.
- 1.5.12 All other species and species groups were recorded at only very low levels of activity (<1B/h). A single bat identified to the *Nyctalus* spp. group and a single bat identified to the 'big bat'<sup>5</sup> group (which may have been noctule (see above) were recorded emerging from Little Nursery Wood.

---

<sup>5</sup> The 'big bat' species group includes calls identified specifically to noctule or serotine as well as those identified to the 'big bat' group (noctule, Leisler's bat, and serotine).



**Table 1.10: Summary of all activity recorded during activity surveys 2015**

Species	Number of passes recorded per species per survey visit and survey effort (hours)							Total	Bat passes per hour (B/h)**
	13.04.15 (1.5)	11.05.15 (1.5)	16.06.15 (1.5)	08.07.15 (1.5)	05.08.15 (1.25)	10.09.15 (1.25)	13.10.15 (1.5)		
Common pipistrelle	9	10	14	60	14	14	6	127	12.7
Soprano pipistrelle	0	13	26	13	6	15	4	77	7.7
Noctule	0	6	6	20	4	0	0	36	3.6
Barbastelle	0	2	2	6	0	6	0	16	1.6
<i>Nyctalus</i> spp.	0	1	2	5	0	0	0	8	0.8
'Big Bat'* spp.	0	0	3	3	0	0	0	6	0.6
Common/soprano pipistrelle	0	0	2	1	0	0	0	3	0.3
<i>Myotis</i> spp.	0	1	1	0	0	1	0	3	0.3
<b>Total</b>	<b>9</b>	<b>33</b>	<b>56</b>	<b>108</b>	<b>24</b>	<b>36</b>	<b>10</b>		
<b>Bat passes per hour (B/h)</b>	<b>6</b>	<b>22</b>	<b>37.3</b>	<b>72</b>	<b>19.2</b>	<b>28.8</b>	<b>6.6</b>		

\*All long-eared bat recordings are considered to relate to brown long-eared bat echolocation calls due to the absence of grey long-eared bat from Suffolk based on their current known distribution. (Ref. 1.10, Ref. 1.11)

\*\* This calculation of B/h has been calculated across survey visits which may have experienced differences in a range of factors including weather conditions. As such this provides only a broad indication of the level of bat activity.

ii. **Static detector surveys**

**1.5.13** Full details of the results of static detector surveys, in the form of the mean number of passes per night (mppn) across Darsham, are provided in **Table 1.11**. Recorded data has been grouped into six species groups (barbastelle, Nathusius' pipistrelle, *Myotis* spp., 'big bat' spp., long-eared bat spp. and pipistrelle spp.<sup>6</sup>).

**1.5.14** Peak activity levels across all survey occasions for each species group are indicated in green.

**1.5.15** Note that no static detector was deployed at MS03 in April or May 2015.

<sup>6</sup> The *Pipistrellus* spp. group includes calls identified specifically to common or soprano pipistrelle as well as those identified to the common/soprano pipistrelle group. This group excludes calls identified as Nathusius' pipistrelle.

**NOT PROTECTIVELY MARKED**

**Table 1.11: Summary of static detector results at 2015**

Survey dates	Monitoring location	Mean passes per night					
		Barbastelle	<i>Myotis</i> spp. *	Big Bat spp. **	Nathusius' pipistrelle ***	Pipistrelle spp. ****	Long-eared bat spp. *****
13.04.15 – 20.04.15	1	0.00	0.14	0.00	0.00	5.00	0.29
	2	0.14	0.43	0.00	0.00	0.43	0.00
	3	N/A					
11.05.15 – 18.05.15	1	0.00	0.43	0.00	0.00	112.00	0.00
	2	0.00	0.14	0.00	0.00	4.14	0.00
	3	N/A					
25.06.15 – 02.07.15	1	0.29	0.71	0.00	0.00	225.29	0.14
	2	6.14	0.43	0.00	0.00	132.29	0.29
	3	0.14	1.57	11.71	0.00	111.43	0.00
15.07.15 – 22.07.15	1	0.00	1.29	0.29	0.00	329.43	11.43
	2	1.14	0.29	0.00	0.00	539.00	1.14
	3	0.00	3.86	29.14	0.00	139.43	0.43
05.08.15 – 12.08.15	1	0.00	1.86	0.00	0.00	867.71	0.14
	2	0.00	2.71	0.00	0.00	573.29	2.29
	3	0.00	0.00	3.57	0.00	56.43	0.00
10.09.15 – 17.09.15	1	0.00	0.29	0.00	0.00	136.86	0.14
	2	0.00	0.57	0.00	0.00	109.14	0.00
	3	0.71	1.86	0.00	0.00	25.29	0.00
08.10.15 – 15.10.15	1	0.00	0.00	0.00	0.00	90.86	0.00

**NOT PROTECTIVELY MARKED**

Survey dates	Monitoring location	Mean passes per night					
		Barbastelle	<i>Myotis</i> spp. *	Big Bat spp. **	Nathusius' pipistrelle ***	Pipistrelle spp. ****	Long-eared bat spp. *****
	2	0.57	0.71	0.00	0.00	45.43	0.00
	3	0.43	1.00	0.00	0.00	7.43	0.00

\* *Myotis* spp. includes those calls identified by SonoChiro specifically as Natterer's and Bechstein's in addition to those identified to a group level as *Myotis* sp..

\*\* Big Bat spp. includes those calls identified by SonoChiro specifically as noctule, serotine and northern Bat in addition to those identified to a group level as *Eptesicus/Nyctalus*.

\*\*\* Nathusius' pipistrelle includes those calls identified by SonoChiro specifically as Nathusius' pipistrelle in addition to those identified as Nathusius'/Kuhl's/Savi's pipistrelle and those as Kuhl's pipistrelle but which manual checks showed to be Nathusius' pipistrelle.'

\*\*\*\* Pipistrelle spp. includes those calls identified by SonoChiro specifically as common and soprano pipistrelles in addition to those identified to these at a group level

\*\*\*\*\* Long-eared Bats include those calls identified by SonoChiro specifically as brown or grey Long-eared bats in addition to those identified to a group level as long-eared bats.

## iii. Tree assessment survey

- 1.5.16 Full details of the features identified during the tree assessment survey are provided in **Table 1.12** and are illustrated on **Figure 7.8** in **Annex 7A.1**. It should be noted that an additional 30+ trees were identified within Little Nursery Wood as containing features of low potential suitability for roosting bats; however, these specific features were not detailed due to the low likelihood of their use by bats and are not included in **Table 1.12**. A single tree, a semi-mature Ash, was identified as a confirmed roost with two brown long-eared bats found to be present at the time of surveying (see **Figure 7.8** in **Annex 7A.1**).

**NOT PROTECTIVELY MARKED**

**Table 1.12: Summary of bat tree assessment results 2015**

Tree Number	Grid Reference	Tree Species and general tree description	Description of Feature	Potential Feature of
1	TM 40500 70056	Semi Mature Ash 330mm diameter trunk	Scar/wound on north side of stem from 0.5m to 7m approx. 60mm wide partially occluded. Seven woodpecker holes in wound most to a depth of 50-60mm, but top hole at 5m may extend upwards.	Medium
2	TM 40500 70056	Semi Mature Ash 220mm diameter trunk	Three wounds at 6m on west side of tree just below a 90 degree bend in stem. Wounds open into single cavity approx. 450mm high by 150mm wide but with three large openings.	Low
3a	TM 40500 70056	Semi Mature Ash 260mm diameter trunk Twin stem	Wound at 3.5m on north-east stem (25mm by 400mm) partially occluded, cavity approx. 100mm diameter inside extending upwards.	High
3b		Semi Mature Ash 260mm diameter trunk Southern single stem	Tear out wound at 5-8m on north side opening approx. 40mm by 50mm at bottom on wound, potentially extending upwards approx. 300-500mm by 100mm diameter. Split wound on south side at 4-6m with opening 40mm by 70mm extending into cavity.	High High
3c		Semi Mature Ash 260mm diameter trunk Western single stem	Knothole partially occluded at 5m on north-eastern side, 40mm diameter potentially opening upwards behind occlusion.	Medium
4	TM 40478 70500	Semi Mature Ash 290mm diameter trunk Twin stem at 4m	Cavity in tear out wound on north-eastern side of stem at 8m. Cavity 20mm by 80mm potentially opening wider inside and potentially extends up and down.	Low/Medium
5	TM 40500 70056	Semi Mature Ash 290mm diameter trunk	Tear out wound from small limb at 9-10m on northern side. . Wound 10-30mm wide by 450mm high, opening into cavity c. 50mm diameter and potentially extending upwards.	Medium

**NOT PROTECTIVELY MARKED**

Tree Number	Grid Reference	Tree Species and general tree description	Description of Feature	Potential Feature of
6	TM 40500 70056	Young Ash 170mm diameter trunk	Tear out wound at 4-6m on northern side, partially occluded. Potentially extends upwards into rot hole at top of wound but small hole (approx. 30mm diameter).	Low
7	TM 40489 70278	Young Ash 190mm diameter trunk	Tear out wound from ground level to 3m, partially occluded up to 2m, fully occluded from 2-3m. Narrow slit in partially occluded section extending upwards for full height of fully occluded section. Void approx. 50-70mm diameter extends up 1m. Fully inspected with fiberscope – no signs of current occupation by bats.	High
8	TM 40489 70278	Young Ash 180mm diameter trunk	Tear out wound at 2.5–4m, partially occluded on north east side with several small cavities into dead wood (25mm by 50mm), one at top of wound extending upwards (distance unknown) No signs of current occupation.	Medium
9	TM 40489 70278	Young Ash	Tear out wound at 1.5m on east side next to small broad 200mm stem. Wound partially occluded, opening approx. 60mm wide by 400mm high extending upwards 400mm. Fully inspected with fiberscope – no signs of current occupation by bats .	Medium
10	TM 40484 70389	Young Ash 170mm diameter triple stem	Tear out wound at 2.5m on northern side of central stem, partially occluded wound. Hole 25mm wide by 80mm high into cavity approx. 100mm diameter extending up and down in stem. No sign of current occupation by bats.	High
11	TM 40546 70504	Semi-mature Ash 300mm diameter trunk	Wound at 5.5m on western side, three partially occluded holes. Lower hole 30mm wide by 100mm high and two smaller holes within 300mm above all leading into cavity extending up in stem, possibly approx. 120mm diameter. Bottom of hole fully of bird droppings.	Medium
12	TM 40546 70504	Young Ash 210mm diameter trunk	Multiple tear off wounds on north-east side at 2-3.5m. Four holes partially occluded (40mm by 60mm) leading into single cavity up tree 100mm diameter extending approx. 1200mm up.	Low/Medium

**NOT PROTECTIVELY MARKED**

Tree Number	Grid Reference	Tree Species and general tree description	Description of Feature	Potential Feature of
13	TM 40552 70392	Semi Mature Ash 300mm diameter trunk	Single long tear off wound, partially occluded form 4-7m on western side of tree. Wound open with cavity 40mm wide into cavity approx. 50mm diameter and extending upwards into stem at top of occlusion. Wound/cavity partially obscured.	Medium
14	TM 40552 70392	Young Ash 180mm diameter trunk	Tear off wound on south-eastern side from ground to 2.5m, partially occluded with open cavity approx. 40mm by 40mm up wound extending approx. 350mm up into stem. No signs of current occupation by bats but few tit features stuck to inside.	Medium
15	TM 40552 70392	Semi Mature Ash 290mm diameter trunk	Five holes woodpecker enlarged on line of fully occluded tear off wound at 8-10m on north-west side. Probable single cavity extending up inside stem joining all openings.	High
16	TM 40557 70281	Semi Mature Ash 370mm diameter twin stem at 4m	Knothole on western side at fork, partially occluded. 35mm diameter leading potentially to larger cavity. No signs of current occupation by bats.	Medium
17	TM 40704 70066	Mature Pedunculate Oak 1100mm diameter trunk	Hazard beam split at 8m on east side in 180mm diameter limb.	High
18	TM 40830 70295	Early Mature Ash 650mm diameter trunk	Small woodpecker hole (25mm wide by 50mm high) at 4m on western side but obscured by dense vegetation, extending into small cavity, probably does not open out into larger cavity. Unable to fully assess.	Undetermined
19	TM 40563 70170	Semi Mature Ash 460mm diameter trunk	Four woodpecker holes at 8-9m on western side and several small knotholes, partially occluded at a similar height. All are blind ending at approx. 50mm and do not open into better cavities.	Low
20	TM 40631 70173	Semi Mature Ash 350mm diameter trunk	Four woodpecker holes at 12-14m, two on western side and two on northern side (approx. 60mm diameter). May extend into cavity in main stem but too high to see with confidence.	Medium

**NOT PROTECTIVELY MARKED**

Tree Number	Grid Reference	Tree Species and general tree description	Description of Feature	Potential Feature of
21	TM 40494 70167	Semi Mature Ash 470mm diameter trunk	Partially occluded tear off wound at 12m on western side. Cavity opening approx. 30-40mm wide by 120mm high opening into cavity approx. 100-120mm wide, probably does not extend upwards.	Low/Medium
22	TM 40554 70268	Standing dead pole 320mm diameter trunk Dead stem snapped off at 6m	Several woodpecker holes at 5m, one goes approx. 120mm and extends upwards. May connect to open hollow stem at top.	Low
23	TM 40563 70170	Semi Mature Ash 480mm diameter trunk	Seven woodpecker holes with fully occluded wound from 4 to 9m on east side of tree. All holes may go into central cavity. Large fungal fruiting body on floor next to stem, may have internal rot cavity.	High
24	TM 40563 70170	Young Ash 200mm diameter trunk	Woodpecker hole at 8m on western side. Hole 50mm diameter extending in and up into stem.	High
25	TM 40563 70170	Young Ash 200mm diameter twin stem	Three woodpecker holes at 14m on east side potentially leading into single cavity. Each woodpecker hole approx. 60mm diameter.	High
26	TM 40563 70170	Young Ash 240mm diameter twin stem at 0m	Five woodpecker holes at 5-7m on northern and western side. Probably link in single chimney cavity with fungal evidence on tree.	High
27	TM 40565 70225	Semi Mature Elm 420mm diameter trunk	Tear off wound from 4-7m on eastern side, partially occluded with rams horning (100mm wide by 3m high). Potential for void behind occluded bark with small opening (50mm by 50mm) at top of occluded wound extending inwards and upwards potentially into larger cavity (though only 200mm below top of stem so limited ability to extend upwards).	High



**NOT PROTECTIVELY MARKED**

Tree Number	Grid Reference	Tree Species and general tree description	Description of Feature	Potential Feature of
28	TM 40564 70276	Mature Ash 600mm diameter trunk	Partially occluded tear off wound on eastern side of west primary limb, upwards facing at 12m (1.5m long by 10-100mm wide) potentially opening into larger enclosed cavity further up stem. Cavity currently occupied by nesting great tit.	High
29	TM 40583 70279	Semi Mature Ash Twin stem at 0m 320mm and 380mm diameter	Partially occluded tear off wound on western stem at 9m. Wound 80mm wide by 200mm high with spongy dead wood in wound. Hole 80mm by 50mm at top of occlusion extending up into stem.	High
30	TM 40596 70279	Semi Mature Ash Triple stem at 0.5m each 200mm diameter	Enlarged woodpecker hole 60mm diameter on eastern side of southern stem at 7m.	High
			Two woodpecker holes beneath pruning wound (largely occluded) on north-eastern stem at 7m. All opening into single cavity.	Low
31	TM 40604 70269	Semi Mature Oak 420mm diameter trunk with significant crown dieback	Partially occluded pruning wound (60mm x 80mm) at 12m on northern side extending upwards into enclosed cavity (60mm diameter).	High
			Partially occluded pruning wound (100mm wide x 150mm high) at 13m on western side with solid wood inside. Potential for small cavity (10mm x 20mm) on lower right-hand edge.	Low
32	TM 40596 70272	Semi Mature Ash 380mm diameter trunk	Significant number of enlarged woodpecker holes from 4 to 10m on north-eastern aspect of main stem. Two likely to be blind endings, seven (40-60mm diameter) probably extend into single hollow cavity extending up stem.	High
			Partially occluded linear wound from 3-9m on south-western side. Most of feature fully occluded but approx. 600mm length in centre has openings into cavity and woodpecker hole 40mm diameter into this area.	High
33	TM 40598 70254	Semi Mature Ash 280mm diameter trunk	Partially occluded tear off wound on south-west side at 4-5m (100mm x 600mm) extending upwards into closed cavity in stem.	High

**NOT PROTECTIVELY MARKED**

Tree Number	Grid Reference	Tree Species and general tree description	Description of Feature	Potential Feature of
34	TM 40598 70238	Semi Mature Ash Multi (5) stem at 0m several broken and dead	Wound at 750mm above ground (30mm wide by 100mm high) partially occluded extending upwards into closed cavity. Limb snapped off and doubled over to ground at 1500mm high, minor staining below.	Confirmed roost
35	TM 40600 70237	Semi Mature Ash Multi (6) stem at 0m	Two woodpecker holes on eastern side of southern stem at 8 and 11m. Three woodpecker holes on southern side at 8-10m. All are approx. 40-60mm diameter possibly extending into single chimney cavity in stem.	High
			Association feature at tight union between two co-dominant southern stems at 0-1.2m. Opening 20-30mm wide x 200mm high on northern face with 150mm diameter cavity inside stem, potentially extending upwards into cavity in most southerly stem.	High
36	None provided	Semi Mature Ash 280mm diameter trunk	Long tear off wound at 12-14m in north east facing side. Partially occluded (fully occluded at top) opening 30mm wide x 150mm high extending upwards into central cavity. Lower opening 20mm x 40mm. Whole cavity likely extends 750-1000mm.	Medium
37	TM 40594 70174	Semi Mature Ash 380mm diameter trunk	Partially occluded (almost fully occluded) tear off wound on northern side at 0.5-3.5m. Three entrance holes (50mm x 200mm) extending into enclosed cavity 100mm diameter extending upwards 200mm diameter heavily cobwebbed cavity.	Medium
			Small opening at 3m (10mm x 20mm) extending into very small cavity.	Low
38	TM 40571 70167	Semi Mature Ash 250mm diameter trunk	Woodpecker hole extending downwards on eastern aspect at 5m (40mm diameter).	Medium
39	TM 40590 70169	Semi Mature Ash Triple stem at 0.5m each 400mm diameter	Two woodpecker holes on north eastern aspect at 8m, both holes close together 40mm x 50mm diameter extending into single cavity in stem at least 250mm x 120mm.	High
40	TM 40593 70177	Early Mature Oak	Delaminated bark wound on branch stem. 250mm at 6m on main stem. Associated cavity into deadwood.	High

**NOT PROTECTIVELY MARKED**

Tree Number	Grid Reference	Tree Species and general tree description	Description of Feature	Potential Feature of
		600mm diameter trunk	Extensive deadwood (delaminated wood and minor tear off wound) at end of southern primary limb.	Low
41	TM 40597 70254	Semi Mature Ash 700mm diameter trunk	40mm diameter woodpecker hole at 5m on eastern side into 100mm diameter cavity extending up and down stem.	High
42	TM 40597 70254	Semi Mature Ash 150mm diameter trunk	Partially occluded wound at 4m on eastern side. Occluded bulge is 1800mm wide opening in bulge 45mm x 25mm opening into larger enclosed cavity inside (80mm x 100mm). Directly in line with confirmed roost.	High
43	TM 40606 70244	Semi Mature Ash Twin stem at 0.5m, 300mm and 200mm diameter stems	Wound/cavity formed in primary limb of southern stem formed by abrasions from field maple limb. Partially occluded, opening extends 150mm up and 150mm down from rubbing limb. Extends into 80-100mm diameter cavity extending up ash limb.	High
			Cavity formed by association from ash and field maple stems rubbing.	Low
44	TM 40755 70032	Early Mature Ash Multi (6) stem at 6m 750mm diameter trunk Partially obscured by ivy	Partially occluded tear off wound (120mm x 200mm) at 8m on western side. Extends into horizontal limb forming cavity approx. 100mm diameter x 300mm deep, possibly tapering.	Medium
			Pruning wound 40mm diameter on south-western aspect at 3.5m extending in along horizontal limb 100mm+, 45mm diameter.	Medium
			Significant dead wood in upper crown on western side at 7m above hedge, extensive cracks and fissures and delaminated bark on primary limb (150mm diameter x 1.5m long).	Medium

**NOT PROTECTIVELY MARKED**

## References

- 1.1 R.S. Oldham, J. Keeble, M.J.S. Swan & M. Jeffcote. 2000. Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). *Herpetological Journal*, 2000, 10(4): 143-155.
- 1.2 English Nature. 2001. Great Crested Newt Mitigation Guidelines. Peterborough: English Nature, 2001.
- 1.3 J. Biggs, N. Ewald, A. Valentini, C. Gaboriaud, R.A. Griffiths, J. Foster, J. Wilkinson, A. Arnett, P. Williams and F. Dunn. 2014.. Analytical and methodological development for improved surveillance of Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.
- 1.4 G. Gilbert. D.W. Gibbons. & J. Evans. Bird Monitoring Methods. RSPB: Sandy, 1998.
- 1.5 Wildlife and Countryside Act, as amended. 1981. (Online) Available from <http://www.legislation.gov.uk/ukpga/1981/69> (Accessed 1 March 2016).
- 1.6 M.A. Eaton. N. Aebisher. A. Brown. R. Hearn. L. Lock. A. Musgrove. D. Noble. D. Stroud. & R. Gregory. 2015. BoCC 4: Population status of birds in the United Kingdom, Channel Islands and Isle of Man. *British birds*, 2015, 108:708-746.
- 1.7 Natural Environment and Rural Communities Act. 2006. (Online). Available from: <http://www.legislation.gov.uk/ukpga/2006/16/contents> (Accessed 1 March 2019).
- 1.8 Amec. Land west side of A12, Darsham. Associated Development Site 10. Extended Phase 1 Habitat Survey Report. December 2011.
- 1.9 Arcadis. Sizewell C Ecology: Automated (SM2) bat detector monitoring report 2013/2014. 2016. Unpublished report to EDF.
- 1.10 Suffolk Biodiversity Partnership. 2015. Suffolk Biodiversity Action Plan. Suffolk Biodiversity Partnership 2015. Available from: <http://www.suffolkbiodiversity.org/biodiversity-action-plans.aspx> (Accessed 1 March 2019).
- 1.11 Suffolk Bat Group. 2012. Bats in Suffolk – Distribution Atlas 1982 – 2011. Available from: [http://www.suffolkwildlifetrust.org/sites/default/files/suffolk\\_bat\\_atlas\\_2011\\_secure.pdf](http://www.suffolkwildlifetrust.org/sites/default/files/suffolk_bat_atlas_2011_secure.pdf) (Accessed 1 March 2019).

**NOT PROTECTIVELY MARKED**

---

VOLUME 3, CHAPTER 7, APPENDIX 7A, ANNEX 7A.5:

DRAFT GREAT CRESTED NEWT MITIGATION LICENCE APPLICATION

|

**NOT PROTECTIVELY MARKED**

**NOT PROTECTIVELY MARKED**

---

## 1. INTRODUCTION

### 1.1 Background and Scheme Overview

- 1.1.1 SZC Co is proposing to build a new nuclear power station at Sizewell in East Suffolk, known as Sizewell C. Located to the north of the existing Sizewell B power station, the Sizewell C site is located on the Suffolk coast, approximately halfway between Felixstowe and Lowestoft; to the north-east of the town of Leiston. The project is being submitted as a component Nationally Significant Infrastructure Project (NSIP) and will be approved through the Development Control Order Process (DCO).
- 1.1.2 The proposed Sizewell C nuclear power station would comprise two UK EPR™ units with an expected net electrical output of approximately 1,670 megawatts (MW) per unit, giving a total site capacity of approximately 3,340MW. The design of the UK EPR™ units is based on technology used successfully and safely around the world for many years, which has been enhanced by innovations to improve performance and safety. The UK EPR™ design has passed the Generic Design Assessment process undertaken by UK regulators (Office for Nuclear Regulation and Environment Agency), and has been licenced and permitted at Hinkley Point C. Once operational, Sizewell C would be able to generate enough electricity to supply approximately six million homes in the UK.
- 1.1.3 In addition to the key operational elements of the UK EPR™ units, the Sizewell C Project comprises other permanent and temporary development to support the construction and operation of the Sizewell C nuclear power station. The key elements are the main development site, comprising the Sizewell C nuclear power station itself, offshore works, land used temporarily to support construction and a series of off-site associated development sites in the local area including:
- Two temporary park and ride sites; one to the north-west of Sizewell C at Darsham (the ‘northern park and ride’), and one to the south-west at Wickham Market (the ‘southern park and ride’) to reduce the amount of traffic generated by the construction workforce on local roads and through local villages;
  - A permanent road to bypass Stratford St Andrew and Farnham (referred to as the ‘two village bypass’) to alleviate traffic on the A12 through the villages;

## NOT PROTECTIVELY MARKED

---

- A permanent road linking the A12 to the Sizewell C main development site (referred to as ‘Sizewell link road’) to alleviate traffic from the B1122 through Theberton and Middleton Moor;
- Permanent highway improvements at the junction of the A12 and B1122 east of Yoxford (referred to as the ‘Yoxford roundabout’) and other road junctions to accommodate Sizewell C construction traffic;
- A temporary freight management facility at Seven Hills on land to the south-east of the A12/A14 junction to manage the flow of freight to the main development site;
- A temporary extension of the existing Saxmundham to Leiston branch line into the main development site (‘the green rail route’) and other permanent rail improvements on the Saxmundham to Leiston branch line, to transport freight by rail in order to remove large numbers of HGVs from the regional and local road network; and
- Green rail route extension and rail improvements to the Saxmundham to Leiston branch line.

1.1.4 The components of the Project listed above are referred to collectively as the ‘Sizewell C Project’.

1.1.5 In order to enable the proposed development of Darsham (the ‘northern park and ride’), as detailed above, a number of facilitating works (including vegetation clearance works and ground-breaking works) are required. Given the opportunities afforded to great crested newts (GCN) by the habitats present within the site, the proposed facilitating works have the potential to cause injury / mortality and indirect disturbance of great crested newts that may be present. Accordingly, the purpose of this document is to provide a reasonable avoidance measures (RAMs) method statement that can be used by the ecological consultant, EDF Energy and any relevant subcontractors, to ensure the safeguarding of GCN during the facilitation works to be undertaken within the site.

## 1.2 Purpose of this Document

1.1.6 Survey work carried out with respect to the ponds within the Northern Park and Ride site recorded evidence of GCN, such that the proposed development will result in the destruction of GCN terrestrial habitat and has the potential to cause injury/ mortality to this protected species. Accordingly, in order to facilitate the Northern Park and Ride development, a draft GCN mitigation licence application

**NOT PROTECTIVELY MARKED**

---

has been prepared in support of the DCO application. This would be updated and submitted for approval to Natural England at the appropriate juncture.

- 1.1.7 To apply for a mitigation licence application, a number of specific documents and forms must be completed in a set template. This Annexe to the ES forms a draft licence application document and is comprised of several items as set out below: • A draft WML-A14-2 GCN Method Statement, along with the relevant accompanying figures; and • A draft WML-A14-E6a&E6b Work Schedule for Great Crested Newt. 1.2.3 Further documentation required to apply for a licence, including the A14 application form for great crested newt mitigation and a Reasoned Statement will need to be complied subsequent to the granting of the DCO, and submitted along with the documents which form this Annexe, updated as necessary.





**NOT PROTECTIVELY MARKED**

---

SIZEWELL C –NORTHERN PARK AND RIDE– DRAFT GREAT CRESTED NEWT  
MITIGATION LICENCE APPLICATION

WML-A14-2 GCN METHOD STATEMENT

**NOT PROTECTIVELY MARKED**

**The Conservation of Habitats and Species Regulations 2010 (as amended)  
Method Statement to support application for licence under Regulation 53(2)(e) in respect of Great  
crested newts *Triturus cristatus***

**Section A.**

Site/project name:

Applicant (developer) name:

Named Ecologist:

Is this application for a new Method Statement (not previously licensed), a modification to a licensed Method Statement (non-annexed only), or a re-submission following a "Further Information Request" notice?

If a re-submission, please give previous application reference (eg EPSL, EPSM 20XX-3142A, 20XX XXX EPS MIT):

**NB: For re-submissions and modifications (non-annexed) the Method Statement should be re-submitted in its entirety, including all maps, appendices, reports, etc. You must clearly show any changes from the previously submitted version by underlining relevant text (CTRL-U) or by changing the font colour.**

In undertaking this mitigation project, I agree to comply with good practice as set out in the *Great crested newt mitigation guidelines (GCNMG)* (English Nature, 2001). [Note: if you do not check the box to comply with good practice your application will almost certainly be rejected. See comments on *Technical mitigation issues* in Instructions]

**NB: Please be concise with your information and descriptions provided within your Method Statement**

**Section B Introduction**

You have provided a brief description of proposal in the application form, please provide the following additional background and site information.

**Relationship with impacts due to other nearby development**

**B1.1** Is this application part of a phased/multi-plot development? See: [Advice on Masterplan guidance](#)

For example, is it part of a phased mineral extraction, housing development or one plot in a multiple ownership residential scheme?.....  
If No, go to Question B1.2

If yes, how many great crested newt (GCN) licences will be required?

What licence application phase is this? e.g. licence application 1 of 3.

**Note: sections in this Method Statement on impact assessment and mitigation measures must explicitly relate to impacts only from the development currently proposed.**

**Your separate master plan document is expected to take due regard of the overall project. This is important to ensure that in-combination effects are considered, and mitigation measures across the whole project are both sufficient and coherent.**

**Confirm you provided:**

- A Separate Masterplan document.....
- Separate Masterplan figures.....
- A Habitat Management and Maintenance Plan?...

If you have selected 'No' to any of the above questions, please explain why as these are considered necessary and important documents for determination of your application. Not to provide them is likely to result in delays to being able to determine your application whilst we come back to you for this information.

## B - Background & Site Info

This is a draft EPS licence to be submitted with the application to grant a Development Consent Order (DCO). The DCO consists of multiple aspects of the development required to facilitate the installation of the Sizewell C power station, including rail routes, link roads and park and ride schemes. In total, it is considered that two separate GCN licences will be required to facilitate the scheme. The other proposed GCN licence is in relation to the Sizewell Link Road, which is located over 3km from the Darsham Park and Ride Works. It is not considered appropriate to submit a masterplan for GCN as a component of these two applications, as the Darsham Park and Ride is associated with the wider Sizewell C works, but consists of a park and ride located over 9km from the main Sizewell Development Site. Further, it is located 3km from the other GCN licence location, Sizewell Link Road (SLR). As such, there is no potential for cumulative or in combination effects and it is appropriate to consider both applications in isolation. A Habitat Management and Maintenance Plan will be evolved and will be submitted in support of the formal licence application, when this is necessitated.

For clarity the development has three stages. These are:

- 1) Conversion of the site from an arable field to an active car park with associated landscaping;
- 2) Usage of the park and ride for the duration of the construction (approximately 10 years) - for this period GCN will be excluded from the site;
- 3) Restoration of the site to an arable field after the completion of the Sizewell C development, GCN fencing will be removed at this stage

N.B. For the purposes of this licence, the end stage of the licensable period is the reversion of the site to an arable field. GCN are proposed to be excluded for the duration of the operational phase of the development to prevent the need for double handling.

Please provide below a brief summary of how the current application relates to the larger project.

The proposed Sizewell C nuclear power station would comprise two UK EPR™ units with an expected net electrical output of approximately 1,670 megawatts (MW) per unit, giving a total site capacity of approximately 3,340MW. The design of the UK EPR™ units is based on technology used successfully and safely around the world for many years, which has been enhanced by innovations to improve performance and safety. The UK EPR™ design has passed the Generic Design Assessment process undertaken by UK regulators (Office for Nuclear Regulation and Environment Agency), and has been licenced and permitted at Hinkley Point C. Once operational, Sizewell C would be able to generate enough electricity to supply approximately six million homes in the UK.

In addition to the key operational elements of the UK EPR™ units, the Sizewell C Project comprises other permanent and temporary development to support the construction and operation of the Sizewell C nuclear power station. This application applies to one of these elements. These are:

Two temporary park and ride sites; one to the north-west of Sizewell C at Darsham (the 'northern park and ride' - to which this application applies), and one to the south-west at Wickham Market (the 'southern park and ride') to reduce the amount of traffic generated by the construction workforce on local roads and through local villages; A permanent road to bypass Stratford St Andrew and Farnham (referred to as the 'two village bypass') to alleviate traffic on the A12 through the villages;

A permanent road linking the A12 to the Sizewell C main development site (referred to as 'Sizewell link road') to alleviate traffic from the B1122 through Theberton and Middleton Moor;

Permanent highway improvements at the junction of the A12 and B1122 east of Yoxford (referred to as the 'Yoxford roundabout') and other road junctions to accommodate Sizewell C construction traffic;

A temporary freight management facility at Seven Hills on land to the south-east of the A12/A14 junction to manage the flow of freight to the main development site;

A temporary extension of the existing Saxmundham to Leiston branch line into the main development site ('the green rail route') and other permanent rail improvements on the Saxmundham to Leiston branch line, to transport freight by rail in order to remove large numbers of HGVs from the regional and local road network; and Green rail route extension and rail improvements to the Saxmundham to Leiston branch line.

The components of the Project listed above are referred to collectively as the 'Sizewell C Project'. Current application comprises a park and ride car park for the the main development site (Sizewell C, the new nuclear power station).

**For this method statement also include a map FIG. B1.1 - [see Sum & Figs. tab.](#)**

**B1.2** Apart from any mentioned in B1.1, are there other GCN mitigation projects which might affect the target population? You must make reasonable efforts to establish this, including discussions with your

## B - Background & Site Info

client and the LPA.

Notes: Include any projects within 100m of site boundary, and any further away that are likely to seriously impact on the population at the site. Include current projects, any from the last 5 years, and any planned to happen within the next 5 years.

If yes, provide summary information here, including site names, dates, and - if known - licence reference No.s:

A review of the planning applications viewable on the East Suffolk Council planning portal found no evidence of forthcoming projects taking place within the next 5 years that have the potential to affect the target GCN population for this application. Similarly, a review of MAGIC for granted European Protected Species applications within the past five found none to be present within 100m of the site. Three historic applications (references: EPSM2009-1044, EPSM2009-1450 and EPSM2012-460) dated between 2009 and 2014 were discovered between 1.7km and 5km of the site. Given that these granted licences were restricted to enabling the destruction of GCN resting places, in addition to their distance from the site, it is considered unlikely that there are other GCN mitigation projects that may affect the target population for this application.

**NB: Locations of other GCN sites must be shown on FIG. B1.2 - [see Sum & Figs. tab](#)**

[Next Section](#)

**C Survey and site assessment**

C1 Pre-existing survey information on GCN at survey site (eg previous to the survey data used to inform this application)

C1.1 Indicate conclusion on newts at development site from pre-existing survey data, if any. You should make reasonable efforts to find this data, including consulting the NBN Gateway and Local Records Centres.

Pre-existing survey indicates great crested newts likely absent

C1.2 Age of pre-existing survey data (years between now and latest survey)

Over 6 years

C1.3 Source(s) of pre-existing survey data; also include a copy or summary in an appendix

Local biological record centre search (taken from Environmental Statement for the proposed scheme), NBN and MAGIC search. Of the 16 records of GCN that were returned within 2km of the site, none are located within or adjacent to the site, with the closest record originating 480m from the site.

Pre-existing survey data on several of the ponds surrounding the site is included within AMEC Environmental's 2011 Great Crested Newt Survey Report. This survey included HSI assessments on 6 of the ponds within 500m of the development site and a population survey on 1 pond within 500m of the development site. As highlighted within this report, presence/ likely absence surveys were undertaken on a pond now referred to as P100 in this report which found no evidence of GCN. A summary of the results of the 2011 HSI and population surveys is provided below:

Pond 78: HSI - 0.72 Good;

Pond 79 / 80: HSI - 0.81 Excellent;

Pond 81: HSI - 0.71 Good;

Pond 86: HSI - 0.89, Excellent;

C2 Status of GCNs in the local area

C2.1 Local status (within approx 10km). Note: often there will be only patchy data on newt distribution, but you may feel able to assign one of the categories below when combined with pond density figures for the local area.

Note: this is only a rough measure.

Frequent - known or likely to occur at c. >5 ponds per square km

Further information on local status

643 records of GCN within 10km on NBN. This equates to ~6 record per km<sup>2</sup>. There is a high density of ponds within the 10km area surrounding the site and, indeed, Suffolk as a county holds a very high density of ponds. Nevertheless, analysis of 900 of Suffolk's 22,000 estimated ponds between 2004 to 2007 (Bullion, 2009), revealed that whilst over 14% of the ponds surveyed contained GCNs, large and established populations were only recorded at a small number of ponds (sunny, well-vegetated ponds with good surrounding habitat), and the majority of Suffolk's ponds were found to be unsuitable for GCN (due to heavy shade and organic matter, and/or the presence of predatory fish or damagingly high duck populations).

C3 Recent survey (to inform this mitigation project)

C3.1 Objective of survey

To confirm presence of great crested newts in a specified area

C3.2 Survey area and justification

- Clearly state which areas were surveyed...

If *Other*, please provide comments below:

Ponds on site and within 500m, where access was available

- Select which ponds were surveyed.....

If *Other*, please provide comments below:

Shown on Figures C3.2a and C3.2b

- Provide justification for the area surveyed (whether 250m or 500m of the site)

## C - Survey Info

A 500m survey area was adopted in accordance with Natural England's recommended buffer area for surveying ponds for GCN. Of the 21 ponds present within 500m of the site, nine were not surveyed due to a lack of granted access by the relevant landowners (as shown on Figure C3.2a). In addition, a further eight were not surveyed as they were considered to be terrestrially isolated from impacts associated with the proposals, should great crested newts be present within them. The A12 is situated between the site and these ponds. This busy A road is defined in part by high kerbs with drainage gullies, such that it is considered to form a barrier to the dispersal of great crested newts to some degree. Further, due to the suboptimal terrestrial habitat present within the site and a lack of potential breeding ponds to the west of it, there appears to be no motivation for GCN to disperse across the site from the direction of these ponds. Accordingly, these eight ponds were deemed to be sufficiently isolated from the site and were scoped out from survey.

**NB: to accompany the survey section you must identify the survey area and all ponds within that area, indicating those surveyed from those not surveyed, on FIG. C3.2(a) and the 250m and 500m radii limits around the development boundary. An aerial photograph of the site and surrounding area is also useful. Please label as FIG. C3.2(b) if included. [See Sum & Figs. tab.](#)**

### C3.3 Habitat description: waterbodies

C3.3i Briefly describe all waterbodies within your survey area. Please provide only a short text description, e.g. "Pond 1 is a small garden pond in the northwest of the site. Pond 2 is a marl pit pond in the centre of the site". Include pond references (names). Do not include Habitat Suitability Index (HSI) data here; this is to be added later in the Method Statement.

Pond ref	Description
Pond 79 - 82	Garden ponds located to the east of the site boundary.
Pond 78	Small pond located in rough grassland in an arable field margin.
Pond 88 - 95	Small ponds located to the south of the site boundary.
Pond 100	Pond is next to hedgerow with scrub/trees around some of its margin, close to the order limits.
Pond 101	Agricultural field pond with scrub/trees around some of its margin south east of the order limits.
Pond 102	Agricultural field pond with scrub/trees around some of its margin, south of the order limits.
83 - 87	Woodland ponds located to the north (83 - 86) and south-west (87) of the site boundary

*Add further records to the [Additional Records tab.](#)*

### C3.3.ii Waterbodies: distance from development site boundary and other ponds.

Provide distance (to the nearest 10m) from the development site boundary for each pond within the survey area. If pond is on site, enter "0". If a pond on site or close to the development was not surveyed for GCNs, still give the distance, and provide reason for not surveying.

Pond ref	Distance (m)	Surveyed or not?	If selected 'No- other reason' explain below
Pond 79 - 82	25	No - access permission denied	-
Pond 78	0	Yes	
Pond 88 - 95	110	No - isolated from development by	
Pond 100	55	No - other reason	Pond dry at time of survey
Pond 101	185	Yes	-
Pond 102	190	Yes	-
83 - 87	250	No - access permission denied	

*Add more records here [Additional records page](#)*

**C3.4 Habitat description: terrestrial habitats.**

What is the total area (ha) of the development site?

27.94

- Please provide a broad breakdown (ha and habitat type) of terrestrial habitat present on the development site. **Note** that this total should be the same as the area included above.
- Also, briefly describe the terrestrial habitats present on adjacent areas likely to support GCNs. If there is no defined boundary to development site, please explain the habitats affected by the works and within the surrounding area.
- The habitats described in this section should be clearly shown and identified on Figure C3.2(a)

The site is dominated by arable farmland, which is bordered by a semi-improved species-poor (2m wide) grassland margin. The site itself is bordered by species-poor hedgerows, interspersed with stands of mature Oak (*Quercus robur*) and Ash (*Fraxinus excelsior*) on three sides, and by a block of broadleaved woodland (Little Nursery Wood) on the western boundary. A single pond is located within the site (pond 78), whilst a small number of ponds were identified within gardens immediately adjacent to the eastern boundary, with a further small pond located within Little Nursery Wood. Little Nursery Wood consisted of primarily mature Ash with a dry ditch running along the eastern boundary and a running stream through the centre.

Being dominated by arable fields, the majority of the site comprises low value terrestrial GCN habitat (approx. 24.56ha) that does not offer resting opportunities. However, small areas of suitable terrestrial habitats for GCN are located within the site boundary, including the areas of calcareous semi-improved grassland and field margins (approx. 0.7ha), the area of tall ruderal vegetation (approx. 0.31ha) and the hedgerows that bound the site (approx. 1,408m).

The site also includes areas of existing roads etc. which are within the redline of the site which will not be impacted.

**NB: Photographs showing the habitats on site should be provided - FIG. C3.4**

[see Sum & Figs. tab](#)

**C3.5 Waterbodies: quantitative assessment.**

A Habitat Suitability Index (HSI) score should be calculated for each pond that would be subject to activities likely to result in adverse impacts on the local GCN population. See guidance in the Instructions section (Survey data and HSI tabs). It is not required for ponds subject to low impacts, though can be entered if you wish; this may be useful, for example, to provide objective evidence that the population affected is likely to be small.

In the boxes below, enter the Pond reference (or name) then the SI scores. The spreadsheet will automatically calculate the HSI. It is expected that, for each HSI, all ten SI scores should be entered in most cases. If you did not calculate a particular SI score, leave blank (**do not** enter "0"). If more than two variables are missing, the HSI should be treated as provisional and you should comment on this below. If more than 10 waterbodies need HSI scores, include additional information in an appendix, in the same format as below.

Date HSI assessment undertaken		01/03/2015			01/03/2015
Pond ref	Pond 79 - 82	Pond 78	Pond 88 - 95	Pond 100	Pond 101
SI1 - Location		1			1
SI2 - Pond area		0.2			0.85
SI3 - Pond drying		0.9			0.9
SI4 - Water quality		0.67			0.67
SI4 - Shade		0.3			1
SI6 - Fowl		1			0.67
SI7 - Fish		1			1

C - Survey Info

SI8 - Ponds		0.82			0.85
SI9 - Terr'l habitat		0.67			0.67
SI10 - Macrophytes		0.3			0.3
HSI		0.60			0.75

Date HSI assessment undertaken	01/03/2015				
Pond ref	Pond 102				83 - 87
SI1 - Location	1				
SI2 - Pond area	0.8				
SI3 - Pond drying	0.9				
SI4 - Water quality	0.01				
SI4 - Shade	1				
SI6 - Fowl	0.67				
SI7 - Fish	0.67				
SI8 - Ponds	0.85				
SI9 - Terr'l habitat	0.67				
SI10 - Macrophytes	0.3				
HSI	0.47				

Add more records here [Additional records](#) page

Please comment and describe any constraints on HSI data if appropriate. If ponds did not under go a HSI assessment please also explain why:

As previously discussed, access to Ponds 79 – 87 was not granted, whilst ponds 88 – 95 were scoped out due to their relative isolation from the site.

**C4 Amphibian survey**

**C4.1 Terrestrial amphibian survey**

Was a terrestrial survey undertaken?.....

If no, proceed to next section.

Objective of terrestrial survey:

Which area was surveyed for terrestrial amphibians?

Explain terrestrial survey area(s). Also mark on map, and give map reference here:

N/A

**Applicants must ensure they retain or have access to the records set out in the technical advice note, and used to support the licence application, for at least 12 months after the first licence return (dates for which will be set out in any licence granted).**

Fill in the boxes to show methods, timing, effort and results:

Survey start date:  Survey end date:



C - Survey Info

Method:	Refuge search	Pitfall	Night search	Other**
Effort				
No. of newts* found:				
Total newts:	0			

Metamorphs and immatures as percentage of total catch:

\*for this section, "no. of newts" refers more accurately to "no. of newt observations", as individuals are not distinguished in typical surveys. If you have individual newt data, state below.

Comments on results, e.g. \*\* if an 'other' method was used please explain what this was, favoured areas, migration route, juvenile dispersal route. Also mark observations and locations newts found on a map, and give map reference here:

**C4.2 Aquatic surveys for presence / absence using eDNA.**

A. Have you used eDNA to determine GCN presence?

B. If yes, please confirm the following:

- i. The Defra [technical advice note](#) has been strictly followed -  
*If no, the results will not be accepted.*

**Applicants must ensure they retain or have access to the records set out in the technical advice note, and used to support the licence application, for at least 12 months after the first licence return (dates for which will be set out in any licence granted).**

- ii. Natural England's published timeframes for taking eDNA samples has been adhered to -

*If no, please explain why.*

- iii. Confirm only licensed GCN surveyors, or suitably trained and competent Accredited Agents (see below table) have taken the eDNA samples to support this licence application. Provide their names and licence references below.

Pond ref	GCN Surveyor / Accredited Agent	Licence Reference
Pond 79 - 8	No survey due to lack of access	N/A
Pond 78	Conventional surveys undertaken in 2015	2014-6208-CLS-CLS
Pond 88 - 9	Scoped out of assessment	N/A
Pond 100	Pond dry at time of survey	N/A
Pond 101	Bethany Hasell/ Sophie Elliott	2017-30376-CLS-CLS

C - Survey Info

Pond 102	Bethany Hasell/ Sophie Elliott	2017-30376-CLS-CLS
83 - 87		

Add more records here [Additional records page](#)

C. Complete the following table

Pond reference	Date eDNA sample taken	Result (presence or absence)
Pond 79 - 82		N/A
Pond 78		N/A
Pond 88 - 95		N/A
Pond 100		N/A
Pond 101	15/04/2019	Present
Pond 102	15/04/2019	Absent
83 - 87		N/A

Add more records here [Additional records page](#)

**It is only acceptable to use Accredited Agents under a GCN survey licence to collect eDNA samples if it can be demonstrated that they are adequately trained and competent in GCN ecology, conventional survey techniques, trained in the collection of eDNA samples and are experienced GCN surveyors even if they do not hold their own GCN survey licences. The named ecologist and applicant are responsible for ensuring that this condition is met.**

**Results of eDNA survey data must be clearly depicted on Figure C3.2a.**

[Next Section](#)

**C4.3 Aquatic amphibian survey (conventional methods) - GCN results - Pond 78**

Was an aquatic amphibian survey done?	Yes	If no, proceed to next section.
Total no. of ponds surveyed:	1	If >10 ponds or >8 visits for a pond, provide further data... See additional <a href="#">Survey ponds 11-20 sheet</a>
Surveyor name(s):		

**Important. Read before completing this section:** Enter GCN survey data in relevant boxes in the table below (for Pond 1) and those on subsequent sheets (for up to 9 other ponds). Enter "0" where you did a survey and found no newts; leave box blank if no survey was done. This format is designed for a typical single season survey with typical methods and effort. Explain atypical methods/effort later. For multiple year surveys, give details in annex (convert data to this format if possible). Use these tables to provide details only for the most recent season's survey. Append older survey results in full. Automatic yellow highlight indicates possible detectability problem (see Evaluation & interpretation section, later).

Pond reference (e.g. "Pond 1") - below				Method:	Torch			Bottle-trap			Net			Egg search	Larvae
					Torch power:			No. of traps used in pond:						eggs found?	larvae found? (any method)
No. of survey visits to this pond:															
				Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.		
(1) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:											
(2) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:											
(3) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:											
(4) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:											
(5) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:											
(6) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:											
(7) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:											
(8) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:											

**Peak adult count for this pond in any one visit (by torch, trap or net):**

Comments and constraints: 25% of banks not accessible due to scrub. Water shrew found in trap on 2nd survey therefore no further trapping

C - Survey - Pond 1-10

: Sizewell C - Darsham Park and Ride

C4.3 Aquatic amphibian survey (conventional methods)- GCN results (cont - Pond 2)

NB: This page prints in landscape format

Pond reference (e.g. Pond 2)				Method:	Torch			Bottle-trap			Net			Egg search	Larvae
Pond 78					Torch power:			No. of traps used in pond:					eggs found?	larvae found?	
No. of survey visits to this pond:		6			Don't know / varies									(any method)	
				Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.		
(1) Date:	Air temp	Veg cover	Turbidity		3	1	0	1	0	0				No	No
04/08/2015	5	1	1	Adult totals:	4			1			0				
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0				No	No
4/14/2015	14	0	1	Adult totals:	0			0			0				
(3) Date:	Air temp	Veg cover	Turbidity		1	1	0				0	0	0	No	No
05/11/2015	15	0	3	Adult totals:	2			0			0				
(4) Date:	Air temp	Veg cover	Turbidity		0	2	0				0	0	0	No	No
05/12/2015	11	1	2	Adult totals:	2			0			0				
(5) Date:	Air temp	Veg cover	Turbidity		0	0	0							No	No
06/02/2015	14	0	1	Adult totals:	0			0			0				
(6) Date:	Air temp	Veg cover	Turbidity		0	0	0							No	No
06/03/2015	13	0	1	Adult totals:	0			0			0				
(7) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(8) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
<b>Peak adult count for this pond in any one visit (by torch, trap or net):</b>								4							

Comments and constraints: eDNA established presence

**C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 3)**

*NB: This page prints in landscape format*

Pond reference (e.g. Pond 3)				Method:	Torch			Bottle-trap			Net			Egg search eggs found?	Larvae larvae found? (any method)
No. of survey visits to this pond:					Torch power:			No. of traps used in pond:							
Sex/life stage:				Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
(1) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0		0			0					
(2) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0		0			0					
(3) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0		0			0					
(4) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0		0			0					
(5) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0		0			0					
(6) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0		0			0					
(7) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0		0			0					
(8) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0		0			0					
<b>Peak adult count for this pond in any one visit (by torch, trap or net):</b>							0								
Comments and constraints:															

**C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 4)**

*NB: This page prints in landscape format*

Pond reference (e.g. Pond 4)				Method:	Torch			Bottle-trap			Net			Egg search eggs found?	Larvae larvae found? (any method)
No. of survey visits to this pond:					Torch power:			No. of traps used in pond:							
				Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.		
(1) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(2) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(3) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(4) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(5) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(6) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(7) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(8) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
<b>Peak adult count for this pond in any one visit (by torch, trap or net):</b>								0							
Comments and constraints:															

**C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 5)**

*NB: This page prints in landscape format*

Pond reference (e.g. Pond 5)				Method:	Torch			Bottle-trap			Net			Egg search	Larvae	
Pond 101					Torch power:			No. of traps used in pond:						eggs found?	larvae found? (any method)	
No. of survey visits to this pond:		0		Sex/life stage:			Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.	
(1) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(2) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(3) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(4) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(5) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(6) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(7) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(8) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
<b>Peak adult count for this pond in any one visit (by torch, trap or net):</b>										0						

Comments and constraints:

**C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 6)**

*NB: This page prints in landscape format*

Pond reference (e.g. Pond 6)				Method:	Torch			Bottle-trap			Net			Egg search	Larvae
Pond 102					Torch power:			No. of traps used in pond:					eggs found?	larvae found? (any method)	
No. of survey visits to this pond:		0													
				Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.		
(1) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(2) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(3) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(4) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(5) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(6) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(7) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(8) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
<b>Peak adult count for this pond in any one visit (by torch, trap or net):</b>					0										
Comments and constraints:															



**C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 7)**

*NB: This page prints in landscape format*

Pond reference (e.g. Pond 7)				Method:	Torch			Bottle-trap			Net			Egg search	Larvae
					Torch power:			No. of traps used in pond:						eggs found?	larvae found? (any method)
No. of survey visits to this pond:															
				Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.		
(1) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(2) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(3) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(4) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(5) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(6) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(7) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(8) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
<b>Peak adult count for this pond in any one visit (by torch, trap or net):</b>								0							
Comments and constraints:															

**C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 8)**

*NB: This page prints in landscape format*

Pond reference (e.g. Pond 8)				Method:	Torch			Bottle-trap			Net			Egg search	Larvae	
					Torch power:			No. of traps used in pond:						eggs found?	larvae found? (any method)	
No. of survey visits to this pond:				Sex/life stage:				Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.
(1) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(2) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(3) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(4) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(5) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(6) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(7) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
(8) Date:	Air temp	Veg cover	Turbidity													
				Adult totals:	0			0			0					
<b>Peak adult count for this pond in any one visit (by torch, trap or net):</b>										0						
Comments and constraints:																

**C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 9)**

*NB: This page prints in landscape format*

Pond reference (e.g. Pond 9)				Method:	Torch			Bottle-trap			Net			Egg search	Larvae
No. of survey visits to this pond:					Torch power:			No. of traps used in pond:						eggs found?	larvae found? (any method)
					Sex/life stage:			Male	Female	Imm.					
(1) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(2) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(3) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(4) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(5) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(6) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(7) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(8) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
<b>Peak adult count for this pond in any one visit (by torch, trap or net):</b>								0							

Comments and constraints:

**C4.3 Aquatic amphibian survey (conventional methods) - GCN results (Pond 10)**

*NB: This page prints in landscape format*

Pond reference (e.g. Pond 10)				Method:	Torch			Bottle-trap			Net			Egg search eggs found?	Larvae larvae found? (any method)
No. of survey visits to this pond:					Torch power:			No. of traps used in pond:							
				Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.		
(1) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(2) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(3) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(4) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(5) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(6) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(7) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
(8) Date:	Air temp	Veg cover	Turbidity												
				Adult totals:	0			0			0				
<b>Peak adult count for this pond in any one visit (by torch, trap or net):</b>								0							
Comments and constraints:															

: *Sizewell C - Darsham Park and Ride*

C4.4 Aquatic amphibian survey (continued)

1. Confirm that you have undertaken a walkover survey within 3 months prior to submission.....

2. If the survey was not undertaken this year, please confirm whether there are any changes to habitats (aquatic or terrestrial). If yes, please detail the nature of the changes below.

[Next Section](#)

**C5 Interpretation and evaluation****Summary of presence, peak count, population size class and habitat quality**

Enter whether GCNs (any life stage) were detected for each pond, and HSI score for each pond subject to adverse impacts (see guidance in instructions). The other fields (in blue) should be generated automatically based on data you have entered in previous sheets.

Pond ref	Gt. crested newts detected?	Peak adult count	Pop size class	HSI	Low detectability warning*	Peak count visit number	Eggs
0	Yes	0					
Pond 78	No	4	Small	0.60		1	No
0	No	0					
0	No	0					
Pond 101	No	0		0.75			
Pond 102	No	0		0.47			
0	No	0					
0	No	0					
0	No	0					
0	No	0					

**\*Note: The detectability column will state "Caution" if your data suggest any survey was done in poor conditions (temp<5C, veg cover>3, turbidity>3 or torch power <500,000 cp); otherwise it is blank. Aquatic newt surveys should not be carried out when air temp is <5C or with weak torches as results can be misleading. Whilst careful timing can sometimes avoid vegetation and turbidity problems, they are inevitable at some sites. It may be appropriate to undertake more detailed surveys and interpretation techniques (e.g. CMR). If this column returns "Caution", or there is any other reason to suspect detectability problems, you should be especially careful about interpreting counts, and comment on this in the constraints box below.**

Peak total site count\*\* for all ponds surveyed: 4

\*\* This figure is derived as follows. For each survey visit, the spreadsheet picks the highest count of adult newts obtained by torch, net or bottle-trap for each pond. These individual pond counts are then summed to give a site count for each visit. The peak total site count is then the highest of these figures, i.e. highest summed count across all ponds attained on any one visit. This figure may derive from counts using a mixture of methods (torch, bottle-trap or net) - see adjacent table which shows how the figure is derived. The calculations assume survey visits per pond are undertaken within similar timeframes, if this is not the case, this Peak total site count should be calculated by hand and reasons for it explained in the general comments text box below.

Population size class for all ponds surveyed: Small

\*\*\* this automatically generated size class assumes that it is appropriate to aggregate counts from all ponds, i.e. there is likely to be newt movement between ponds, for example where each pond is within approx 250m of another, with no significant barriers to dispersal. If you believe the automatically generated size class is incorrect for your site, provide your ecological justification in box below and give alternative accounts of peak total site counts and population size class for the site. Where there are meta-populations explain which ponds form each meta-population. For surveys of >10 ponds, data should be added to appendix provided, and note that peak counts etc will need to be derived separately.

A lack of access to some of the ponds surrounding the site has limited the extent of the specific GCN survey work undertaken to date. However, as ponds 79 and 80 were assessed as being of 'excellent' suitability for GCN and Pond 81 was assessed as being of 'good' suitability for GCN during the 3rd party 2011 HSI assessments, coupled with the close proximity and likely connectivity between these ponds and pond 78, it is assumed that these four ponds at a minimum form a meta-population. In addition, pond 101 was recorded to be positive for GCN eDNA. Accordingly, a medium size class is considered to be a more appropriate representation of the population of GCN present within the site and the surrounding 500m area. Subsequent to formal submission of the licence application, it is likely that further survey of ponds 79 - 82 will be required if access can be obtained.

Site status assessment (see Section 5.8.5 of *Great crested newt mitigation guidelines* for guidance):

Quantitative	Minor importance - small population
Qualitative	Moderate - breeding on site; habitats common in area
Functional	Moderate importance - probably some dispersal to/from nearby population(s)

Contextual

Unknown

**General comments on overall site status, and constraints to interpretation and evaluation -**

How did the constraints affect your interpretation of your survey?

- Account for the presence of any barriers to dispersal and explain how this affects your assessment of the distribution of newts across the site and the presence of meta-populations

The eight ponds located to the east of the A12 were scoped out of the GCN survey due to the presence of the A12 between the site and the ponds, which is bordered in part but high kerbs and supports a number of drainage gullies. As the A12 is partly lined by hedgerows and areas of grassland, and a small number of drop kerbs are also present, this feature is not considered to form a complete barrier to GCN dispersal but is likely to restrict/inhibit GCN movements to various degrees dependant on distance from GCN ponds and motivators on the 'other side' of the 'barrier'. Moreover, given the suboptimal terrestrial habitat present within the site, it is considered that there is little to no motivation for habitation of the site and, accordingly, these eight ponds were deemed to be sufficiently isolated from the site. Therefore, it is considered unlikely that GCN, should they be present within these offsite ponds, will make use of the site/be affected by the works.

Nine of the remaining ponds within 500m of the site were not surveyed due to a lack of access permission. Nevertheless, access to ponds 79, 80 and 81 was obtained during a 3rd party survey in 2011 (report appended to this application) and ponds 79 and 80 were assessed as being of 'excellent' suitability for GCN and Pond 81 was assessed as being of 'good' suitability for GCN. Given their favourable HSI score and close proximity to pond 78, it is assumed that these ponds also support GCN, comprising a meta-population, spanning across ponds pond 78, 79, 80 and 81.

- Acknowledge any survey constraints e.g. low detectability warnings (as highlighted in section C5 above), deviation from survey recommendations in the GCNMG (methodology, timings, effort) etc.

The presence of dense scrub surrounding pond 78 prevented access to 25% of the ponds perimeter, however this is not considered to pose a significant constraint to the survey as a sufficient number of traps were deployed during the surveys. Due to the discovery of a trapped water shrew within a bottle-trap during survey 2 of pond 78 (14/04/2015), bottle-trapping was no longer used as a survey technique during the subsequent four surveys, with netting undertaken as one of the preferred survey methods instead.

- Justify why constrained survey data is considered to accurately represent the size and distribution of the GCN population(s) present

Whilst it was not possible to continue bottle-trapping during the survey of pond 78 (following the discovery of a trapped water shrew), the majority of the observed GCN were done so by torchlight which was not hindered by survey constraint.

[Next section](#)



**D1 Habitat impact tables**

N.B: this section must identify impacts *in the absence of mitigation or compensation measures*. Refer to the *Great crested newt mitigation guidelines* for guidance in impact types (section 6).

Should you wish to convert ha to m<sup>2</sup> or m<sup>2</sup> to ha please [use this converter](#)

Total Area of Development (ha): 27.94

**D1.1 Breakdown of terrestrial impacts**

Permanent		Temporary	
Habitat type	Area lost (ha)	Habitat type	Area damaged (ha)
		Arable Fields	24.56
		Calcareous semi-improved grassland	0.7
		Tall ruderal vegetation	0.31
Total Loss	0	Total Damage	25.57

**D1.2 Core, intermediate and distant terrestrial impacts**

	Permanent Area lost (ha)	Temporary Area damaged (ha)
Core (<50m from pond)	0	0.8
Intermediate (50-250m from pond)	0	13.05
Distant (>250m from pond)	0	11.72
Total (ha)	0	25.57

**D1.3 Aquatic impacts**

	Permanent		Temporary	
	Number lost	Area lost (m <sup>2</sup> )	Number damaged	Area damaged (m <sup>2</sup> )
GCN Ponds	0	0	0	0
Other Ponds	0	0	0	0
Total	0	0	0	0

**Notes on terms in these tables:**

• 'GCN ponds' must include all ponds or other waterbodies in which GCN were recorded plus any others that are likely to be used by GCNs for foraging e.g. suitable ponds / waterbodies where no GCN were recorded but with good connectivity to other ponds / waterbodies within the survey area found to support GCNs.

• Area of ponds to be calculated by measuring or estimating extent at winter maximum.

• 'Terrestrial habitat' here includes any land likely to be important to the local GCN population for foraging, resting, hibernating or dispersal. This means, for example, that even unvegetated or sparsely vegetated areas close to high quality newt ponds (within around 50m) should be included in impact assessments; this could apply to quarry floors, arable, cracked or damaged hard-standing and amenity grassland.

• Areas may be excluded from calculations if you assess that they are substantially isolated by barriers to dispersal and therefore highly unlikely to be used by newts; this may even include apparently high quality areas.

## D - Impact assmt

- Areas may also be excluded if you believe for any other reason that they are highly unlikely to be used by newts. **Please always explain why you have excluded certain areas below.**

*If there are discrepancies in the areas in the tables below, please explain in the Impact text boxes below .*

**D2 Pre- and mid-development impacts:** descriptive text. Example: "Vegetation clearance and archaeological investigations in Area A would kill and injure newts, and damage core refuge sites, close to Pond 1. Moderate negative impact on population."

The construction phase activities will require standard operations including vegetation clearance and topsoil stripping. No GCN breeding ponds will be lost or directly impacted by the planned works in the short-term (construction phase) or long-term (operational phase). The temporary loss of sub-optimal habitat, in the form of arable land, will be during the construction phase and operational phase of the car park, however this will be replaced with areas of reinstated agricultural land after the car park has been removed.

**D3 Long-term impacts:** descriptive text (to always include fragmentation if applicable to scheme) .

Example:

"Construction of Plot 1 in Area B would kill and injure newts, destroy Pond 1 (a breeding site) and core terrestrial habitat, consisting of rough grassland and deciduous woodland, around Pond 1. Creation of play area in Area C would reduce grassland value for newts. Construction of Plot 1 would create significant dispersal barrier between Ponds 1 and 2. Serious negative impact on population."

No long-term negative impacts are expected arising from the implementation of the park and ride scheme. 'Core' and 'intermediate' terrestrial habitats would be lost; however, the habitat is sub-optimal arable land that does not provide resting opportunities. Further, there are no known GCN ponds to the west of the scheme, so the scheme does not represent a dispersal barrier. In the long term, sub-optimal habitat in close proximity of the GCN pond will be reinstated and the creation of a number of purpose-built hibernacula and refugia will enhance the area.

**D4 Post-development interference impacts:** descriptive text. Example: "Major increase in risk of fish and invasive aquatic plant introduction due to creation of large residential development adjacent to pond. Potentially serious negative impact on population."

The operational phase impacts are controlled by the presence of the amphibian fencing preventing GCN entering the operational compound area. Once decommissioned and the site is returned to agricultural use, there is assessed to be no significant increase in risk to GCN.

**D5 Other impacts:** descriptive text. Example: "Reduced water table due to altered local hydrology when development is complete. Increased early pond desiccation, resulting in lower breeding success. Likely serious negative impact on population." impacts when creating any mitigation or compensation measures.

None

#### **D5.2 Impact assessment map notes**

Impact maps must be of a suitable scale to clearly show the following:

- The development site boundary
- 50m, 250m and 500m radii around each GCN pond boundary
- Temporary and permanent impacts and habitats affected (to include a key to show the habitat types).
- Fragmentation impacts and/or barriers to dispersal.

More than one map may be required for larger schemes.

**NB: Impacts must be shown on FIG. D - ensure all habitats types that will be affected by the proposals and impacts on them (indicating whether temporary or permanent) are clearly indicated and 50m, 250m and 500m radii are shown around GCN ponds.**

[See Sum & Figs. tab.](#)

[Next section](#)

**E1 The mitigation solution** being proposed in the Method Statement should be the one that delivers the 'need' with the least impact on the newt population.

Please explain why this design was chosen over other potential solutions - set out what other mitigation proposals were considered and why they were not feasible, for example:

☐ if the proposal is to construct a new road and it will destroy breeding ponds, explain why it is not possible to retain the ponds in the proposed design etc; or,

- ☒ if a residential development results in a net loss of habitat, explain why it was not possible to reduce the housing footprint; or,
- ☒ if pond drain down is planned for the summer months when newts are breeding please explain why it is not possible to schedule this in, followed by pond destruction, in late September onwards; or
- ☒ if your proposal includes a non-standard approach to meeting the 'need'.

The proposed development works comprise the creation of a park and ride area, along with associated access roads, within an area of arable land considered to be of low value to GCN. The scheme has been designed to avoid the loss of any ponds, with all ponds being retained.

Accordingly, given the domination of the development area by suboptimal GCN habitat (comprising mainly arable land), it is considered unlikely that the proposed scheme will have a significant negative impact on the GCN population in this area. Nevertheless, in the absence of mitigation there is the potential to injure/ kill individual GCN and, as such, a number of mitigation measures have been proposed.

Mitigation is outlined for the construction, operational and decommissioning phase of the development.

Construction mitigation comprises hand searches in the areas grassland present at the margins of the arable land prior to a staged vegetation clearance to be undertaken in these areas, in addition to installing one-way directional newt fencing around the eastern perimeter of the work (to sperate these areas from the pond and habitat area to the east of the site), to prevent great crested newts from entering the development area but allow them to move into the retained areas to the east. Any GCN found during the construction phase will be moved by hand into this safeguarded area.

Fencing would be sited to ensure that Pond 78 is excluded from the site during the operational phase of the development.

This approach eliminates the need to translocate great crested newts away from the landscaped areas of the park and ride once this is returned to agricultural use (after approximately 9 years of the site being utilised as a park and ride scheme). This fencing would be installed at the start of the first phase of construction, maintained throughout operation and would remain in place until the end of the site restoration works, with bi-annual checks on the fencing structure undertaken during the operational use of the site. In any GCN were found incidentally during the works, these will be moved by hand to the vicinity of the pond in the retained pond on site.

Accordingly, the proposed development is predicted to have non-significant, minor temporary impacts on the great crested newt population. Once construction is complete the site area will be restored, therefore the impacts are considered to be negligible and only for the duration of the works. The vast majority of the affected terrestrial habitats are considered to be of low value for great crested newts providing few refuges (managed agricultural land). Once the development is implemented the areas now considered to be of limited value for the species will be enhanced with the creation of additional refugia/resting places suitable for GCN.

**E2 Receptor site selection.** *NB: this relates to the place(s) where any captured newts will be released. It does not just refer to distant receptor sites or need to be the entire compensation area; where GCN will be placed must be clearly indicated on the relevant map. Enter details below unless no newts will be captured or displaced.*

**NB: Location of the receptor site in relation to the development site must be provided on FIG. E2**  
[see Sum & Figs. tab](#)

**E2.1 Existing GCN status at receptor site(s)**

Great crested newts present; small population size class

**E2.2 Survey information for receptor site if different from the survey for the application proposal.**

The receptor site for terrestrial GCN is proposed to be located in the grassland surrounding pond 78 (if GCN are encountered)

**E2.3 Receptor site locations. Must include:**

Please record further sites in [Additional Records tab](#)

Site name	OS grid ref eg AB12345678	Administration area - if different from development site	Distance from development site (m).
P78 Receptor Area	TM407700	Within the site	0m

**E2.4 Receptor site(s): ownership and land status. Please note that any receptor site must be free from future development proposals/threats.**

[Additional records tab.](#)

Site name	Site Ownership	Conservation Designation?
P78 Receptor Area	Within site ownership	No

**E2.5 Receptor site: habitat description, size (ha) & adjacent land use.**

[Additional Records tab](#)

Site name	Habitat description	Size (ha)	Adjacent Land Use
P78 Receptor Area	Area of grassland present in the immediate surrounds of pond p78 within the site		Arable land on site and offsite residential garden

**E3 Habitat creation, restoration and/or enhancement**

The left side of table below summarises the impacts you specified in section D. Enter the habitat creation, restoration and/or enhancement that will be undertaken to compensate for these impacts in the right hand column.

Should you wish to convert ha to m<sup>2</sup> or m<sup>2</sup> to ha please [use this converter](#)

Aquatic habitat	Impacts			Compensation		
	Effect	Number	Total Area (m <sup>2</sup> )	Measure	Number	Total Area (m <sup>2</sup> )
GCN ponds	Lost	0	0	Created	0	0
	Damaged	0	0	Restored / reinstated / enhanced	0	0

Terrestrial habitat	Impacts		Compensation	
	Area lost (ha)		Area gained (ha)	
	Permanent	Temporary	Created	Restored / reinstated / enhanced
Core	0.0	0.8		0.8
Intermediate	0.0	13.1		13.1
Distant	0.0	11.7		11.7
<b>Totals</b>	0.0	25.6	0.0	25.6

**NB: All habitat creation, restoration and enhancement measures must be shown on FIG. E3.1 - see [Sum & Figs. tab](#)**

If a net loss of habitat (ha) is proposed please provide in the text box below an ecological justification to explain why the habitat measures proposed are considered sufficient to compensate for the impacts of the development. Some reduction in terrestrial habitat area may be acceptable provided there is an appreciable increase in habitat quality.

The vast majority of the development area comprises arable land that is of low value for GCN, lacking resting/overwintering opportunities and providing limited foraging opportunities only. Further, based on the location of the GCN ponds and suitable terrestrial habitats, it is unlikely that this habitat facilitates significant dispersal. The proposed habitat creation will significantly improve this, replacing the arable land with semi-improved grassland and hedgerow planting, supplemented by hibernacula, that provide overwintering opportunities for GCN.

**E3.1** Describe the creation, restoration or enhancement of aquatic habitats (include design and water body dimensions as per *mitigation guidelines* and waterbody location. Dimensions these will be included in any annexed licence issued).

**NB: Only put timing of aquatic creation, restoration or enhancement in the timetable E6a.**

Pond reference	Surface Area (m <sup>2</sup> )	Max. Depth (m)	Design / enhancement measures and location
N/A	0	0	N/A

**E Mitigation & compensation (continued)**

**E3.2 Terrestrial habitat measures**

State number/area/length of any terrestrial habitat measures. Leave blank if not applicable. \*Dimensions of hibernacula are expected to be *at least* that recommended in the mitigation guidelines.

	Number/area (ha)/length**	
	Created	Reinstated / Restored / Enhanced
Hedgerow planting		
Grassland re-seeding		
Grassland management (just for GCN)		
Scrub planting		

E - Mitign & compn

Woodland planting		
Hibernacula creation*	2	
Refuge creation		

*\*\* Information must be consistent with Table E3.*

Please describe management methods and explain any novel designs, non-standard proposals or techniques in the free text box below. Also describe any other terrestrial habitat measures, including locations & design. (Confirm landowner agreement for these measures, if they are to be created on land outside of the applicant's ownership, in Declaration worksheet J).

NB: Do not put in specific dates here; add these into E6a (separate document).

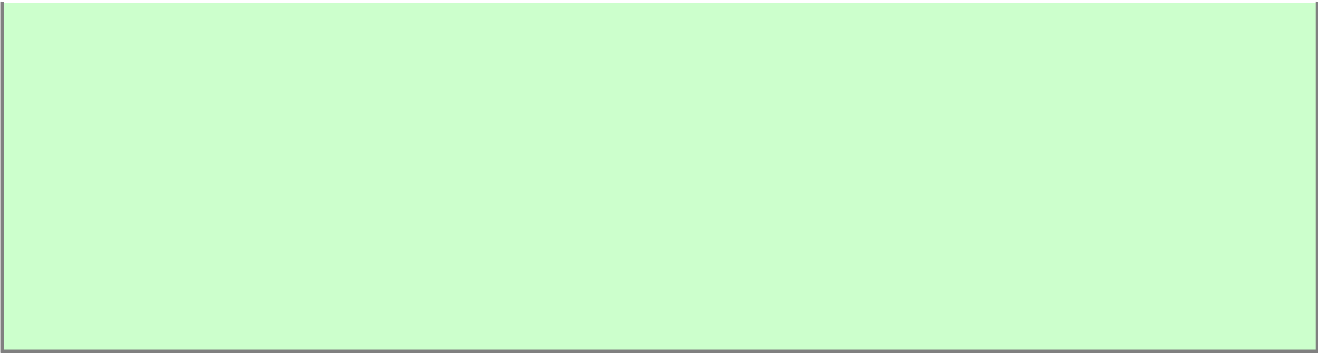
No management of the newly created terrestrial habitats is proposed. Landowner agreement will be sought for the creation of two hibernacula/ refuges/ brush piles which will be installed in close proximity to the receptor sites identified for newts captured within terrestrial habitats under the licence agreement.

**E3.3 Integration with roads and other hard landscapes.**

Explain any measures you will take to integrate mitigation with roads and other hard landscapes. If you propose any connectivity measures, such as underpasses, please specify:

- Design (to include length, width, height and guide fencing)
- Monitoring (to include methodology and duration)
- Maintenance (to detail how long-term functionality of the underpass(es) and entrances will be ensured)

**NB: Locations & details of any proposed connectivity measures must be provided on FIG. E3.3 - see: [Sum & Figs. tab](#)**  
**NB: If you have identified fragmentation as an impact this is something you should address.**



**E Mitigation & compensation (continued)**

**E4 Capture, exclusion & translocation: Please do not refer to any dates in this section - these should be provided in E6.**

State capture +/- or exclusion methods, with effort levels.

[Pls Read Advice Notes](#)

	Use method? <i>Yes/no</i>	Minimum capture effort <i>(days)</i>
At pond: bottle-trap, net, hand search &/or drain down	No	
At pond: ring-fence, pitfall trap (+ fence & refuges)	No	
Away from pond: hand search	Yes	
Away from pond: destructive search	Yes	
Away from pond: fence, pitfall trap (& refuges)	No	
Away from pond: night search	No	
Away from pond: exclusion fence only	Yes	
Other or additional method(s) - state below:	No	

Given that only terrestrial GCN habitat is to be impacted by the proposed works, it is considered sufficient to undertake hand searches during the staged vegetation removal exercise in order to safeguard GCN during the proposed works.

**NB:** • A minimum of 25 nights trapping will only be acceptable in exceptional circumstances which are fully justified and explained. See [guidance on capture effort](#)

**NB: Locations of all capture/exclusion activities must be shown on FIG. E4(a)**  
**- Any non-standard capture/exclusion measures should be detailed on FIG. E4(b) - [see H - Figures tab.](#)**  
**- if timings of works are different for different meta-populations please separate out in your work schedule.**

Briefly explain your capture/exclusion proposals, for example:

- Justify the use of non-standard methodologies and/or deviation from recommendations in the Great crested newt mitigation guidelines
- Explain differing capture effort in trapping compartments



NB: If a very complex capture operation is proposed the methodology should be explained in detail below.

Exclusion fencing will encircle the development area in order to prevent GCN from entering the site during the construction activities. The areas of grassland present within the margins of the arable land will be cleared by way of a precautionary two stage strimming exercise, with hand searches for newts being undertaken immediately following the first stage of the clearance.

**E Mitigation & compensation (continued)**

**E5 Post-development site safeguard.** Refer to Section 8.5 of the Great crested newt mitigation guidelines.

**E5.1 Habitat management & maintenance**

Is any specific post-development habitat management and site maintenance planned?

If no, proceed to population monitoring section E5.2.

State which of the following habitat management operations will occur:

Aquatic vegetation management in water bodies	No
Clearance of shading tree or scrub cover around pond margins	No
Mowing, cutting or grazing of grassland	Yes
Desilting and clearance of leaf-fall	No
Woodland and scrub management	No
Other (state below)	No

**NB: Details of site management and maintenance should be shown on FIG. E5.1. - see "H Sum & Figs" tab. Indicate which areas (including which ponds) the management and maintenance plan will apply to.**

State which of the following site maintenance operations will occur:

Checking for fish presence, and removal through appropriate methods	No
Checking pond condition and remedial action as required	No
Checking for and removal of dumped rubbish	No
Reinstatement following fire, acute pollution or other major damage	No
Repair or replace fences	Yes
Maintain tunnel, underpass, guide fencing in good condition	Yes
Repair or replace interpretation boards	No
Other (state below)	No

State the period for which habitat management and maintenance plan will continue: 4 years

**NOTE:** A separate, detailed plan must also be attached if

- (a) population size class is large and impacts are moderate-high,
- (b) regionally important population and impacts are moderate-high,
- (c) losses of > 2 breeding water bodies on site supporting medium size class population, or
- (d) phased or multi-plot developments.

If your proposal meets one of the above (a - d), confirm that such a document is attached:

Please note, if you have selected 'No', you are likely to receive a Further Information Request.

**E5.2** Post-development population monitoring (refer to Section 8.5.2 of the *Great crested newt mitigation guidelines* and advice at beginning of this template).

**NB: Details of ponds which will be monitored post development must be shown and referenced on FIG. E5.2.**

[see Sum & Figs. tab](#)

**NB: It is the licensee's responsibility to ensure that post development monitoring is carried out and that remedial action is taken if compensation measures are failing.**

Is population monitoring required? Y/N

[Please refer to table in the post development monitoring advice section](#)

If no, proceed to section E5.3

Indicate timing and type of post-development population monitoring:

Timing (years post-dev't):

Type of monitoring: Population size class (6 visits) + habitat assessment

Specify which ponds will be monitored. Additionally, if your post-development monitoring proposals do not follow the GCNMG please provide your ecological justification below. Comments on monitoring period, methods or effort.

**NB: A Natural England mitigation licence will not confer rights of access to monitor water bodies or other habitats which lie outside the licensee's ownership. Permission/s should be granted prior to applying for a licence. Please see Declaration section in worksheet I.**

**E5.3 Site safeguard**

Mechanism(s) for site safeguard.

Is there a mechanism in place to secure site safeguard?.....

If N/A, please briefly explain why.

If yes, please confirm which apply to your scheme:

- i) Restrictive Covenant.....
- ii) Clause to relinquish future development rights in S106 agreement.....
- iii) NERC Act agreement.....
- iv) Explicit recognition of site in local planning documents.....
- v) Designation as County Wildlife Site or similar.....
- vi) other.....

Please confirm that the receptor site and mitigation and / or compensation land is free from future development.

Note : if you state 'No' your application will almost certainly be rejected; provide justification below.

**NOTE: A copy of any significant document, such as a Section 106 agreement, must be included with your application. It must be clear within any s106, or other legal document/agreement, where the specific reference to GCN is.**

**E6 Work Schedule**

Please complete a separate [Work Schedule for Great crested newt Annexed Licence](#), and submit with your application.



**F - Final post development Layout**

F1 Final Post development Layout Figure F1 is required

**NB: Please show the final layout on FIG. F1. - see "H and list of figures" below. This must show the final development layout and include ponds, buildings, roads, GCN tunnels, other mitigation or compensation measures, etc.**

**G - Checklist of Documents, figures, maps and diagrams to include**

You must provide maps, photographs and diagrams to adequately explain the mitigation plans. Use the checklist below to understand what is required for your application. All maps and figures must be included as individual files. Additional maps, photos or diagrams should be included where necessary.

Map / Figure guidance: Ensure each map / figures includes the following:

- Site name and figure reference
- Scale bar and Direction of North
- Date DD/MM/YYYY

**H - List of figures**

Figure reference	Mandatory or not?	What it must show (also see details above on site reference, dating and naming).
Figure B1.1	Yes, if the application is part of a phased or multi-plot development	<b>Masterplan map</b> showing the location of each individual phase or plot associated with the overall scheme. The phase to which the current application refers should be highlighted
Figure B1.2	Yes, if there are other GCN mitigation projects nearby which might affect the target population	<b>Map to show location of other nearby GCN mitigation sites</b> to show development boundaries and compensation/mitigation areas.
Figure C3.2a	Yes	<b>Survey map</b> to show development site location, survey area and ponds. The terrestrial and aquatic habitats described in sections C3.3 and C3.4 should also be shown. Indicate which ponds were found to support GCN, including specifying results of any eDNA sampling if relevant.
Figure C3.2b	-	<b>Aerial photograph of site</b> for information only to help better inform the application.
Photos C3.4	Yes	<b>Photographs</b> to show terrestrial and aquatic habitats on the development site and surrounding area (to include the receptor area).
Figure D	Yes	<b>Impact map</b> to show the location and extent of the different habitat types to be temporarily and/or permanently lost/damaged (as detailed in section D of the Method Statement). Radii of 50, 250 and 500m around each GCN pond which will be impacted must be shown.
Figure E2	Yes	Receptor site map to show the location of the receptor site(s) in relation to the development.
Figure E3.1	Yes, if habitat creation, enhancement or restoration is proposed	Habitat measures map to show the location and extent of all terrestrial and aquatic habitat measures detailed in section E3 of the Method Statement).
Figure E3.3	Yes, if measures to improve connectivity are proposed	Connectivity map to show the location of any measures employed to improve connectivity e.g. underpasses/tunnels, new friendly traffic and /or drainage features (dropped kerbs/set-back gully pots) etc.

F-G-H Sum & Figs

<b>Figure E4a</b>	<b>Yes</b>	Capture and exclusion map to show how GCNs will be cleared from the development site and prevented from entering during construction. A clear differentiation should be made between different types of amphibian fencing (e.g. permanent, temporary, perimeter, drift, ring, one-way etc). Direction of travel over one-way fences should also be shown.
<b>Figure E4b</b>	Yes, if non-standard measures are proposed	Non-standard capture and exclusion measures – diagrams or photographs to show designs/specifications.
<b>Figure E5.1</b>	<b>Yes</b> , if habitat management and maintenance is proposed	Post-development management and maintenance map to show the location and extent of the terrestrial and aquatic habitats to be managed and maintained in accordance with section E5.1 of the Method Statement. To include tunnels/underpasses/guide fencing if applicable. Ponds to be managed and maintained must be clearly referenced.
<b>Figure E5.2</b>	<b>Yes</b> , if monitoring has been proposed	Post-development monitoring map to show, and reference, all of the waterbodies to be monitored (as detailed in section E5.2 of the Method Statement). To include tunnel/underpass/guide fencing if applicable.
<b>Figure F1</b>	<b>Yes</b>	<b>Final development layout map</b> to show both the development layout (e.g. buildings, rail, roads) <u>and</u> all of the mitigation/compensation measures proposed (e.g. including ponds, tunnels, receptor areas)

List of documents

<b>Document</b>	<b>Mandatory or not?</b>
Completed application form	Yes
Completed method statement template	Yes
Completed work schedule	Yes
Figures - as stated above	Yes
Separate Masterplan document	Yes - if part of a phased or multi-plot development
Separate Habitat Management and Maintenance Plan	Yes - if: (a) population size class is large and impacts are moderate-high, or (b) regionally important population and impacts are moderate-high, or (c) losses of > 2 breeding water bodies on site supporting medium size class population, or (d) phased or multi-plot developments.

List any other maps, photographs or diagrams attached:

[Next Section](#)

**I - Declarations**

Re: E2: I confirm that relevant landowner consent/s has/have been granted to accept great crested newts onto land outside the applicant's ownership.

Re: E3.1 and E3.2 – I confirm that landownership consent/s has/have been granted to allow the creation of the proposed habitat compensation (aquatic or terrestrial) on land outside the applicant's ownership.

Re: E5.2 – I confirm that consent/s has/have been granted by the relevant landowner/s for monitoring and maintenance purposes, as set out in E5.2, on land outside the applicant's ownership.

RE: E5.1 and E5.2 - I, the applicant, confirm that all habitat management, maintenance and monitoring detailed in section 5, and accompanying documents, will be undertaken.

Unsecured consents statement:

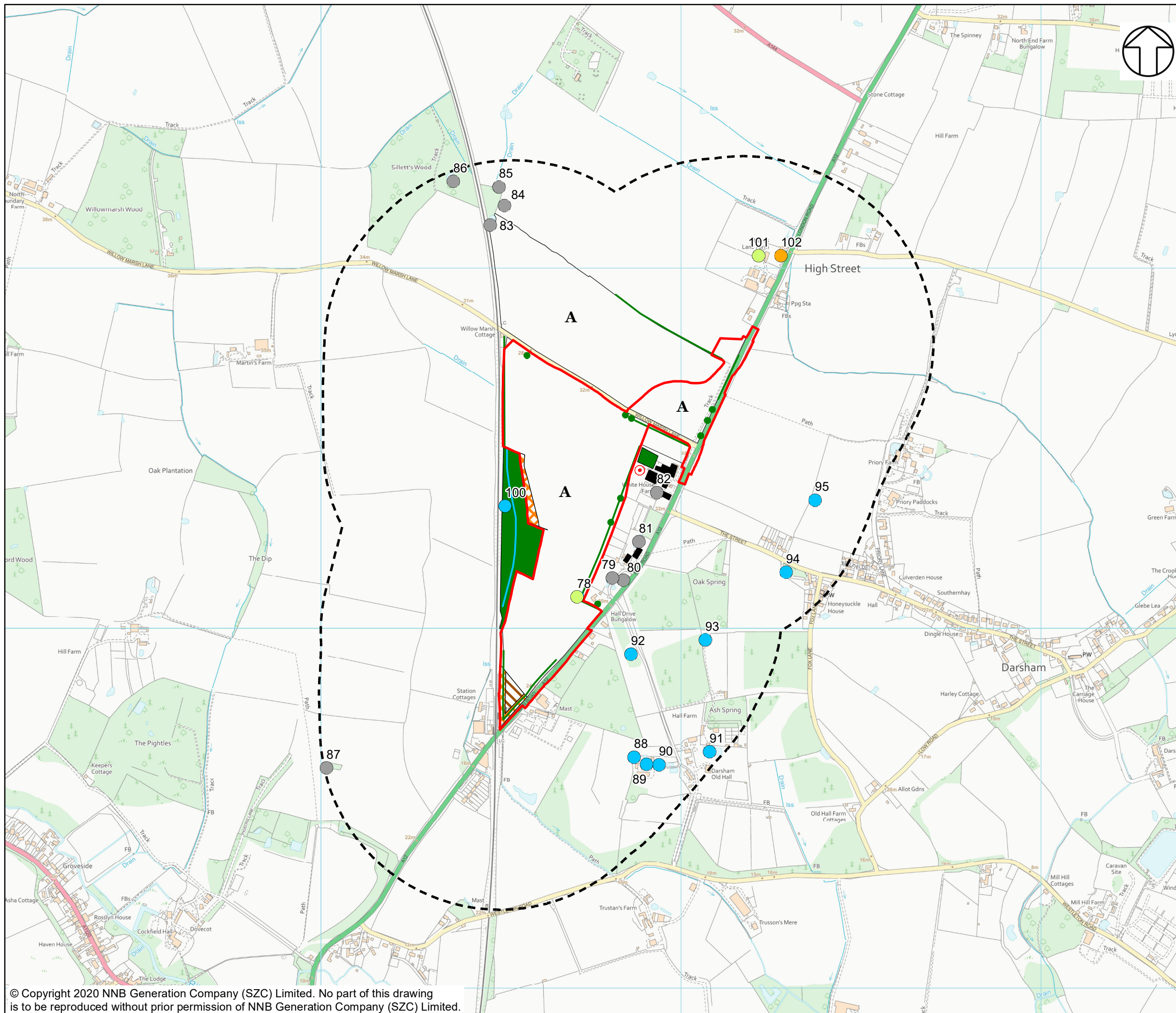
If you have been unable to secure consents for any of the four declarations please explain why and detail any plans you have in place to obtain the consent(s) or provide details of any right(s) or agreement(s) that will enable the lawful implementation of the proposed mitigation, compensation and monitoring. Important Note: Failure to provide the appropriate landowner consents means that the Method Statement is unlikely to meet the requirements for the FCS test to be met. It is therefore in your interest to ensure that the appropriate consents have been secured before applying for a licence.

[Return to beginning](#)



## SIZEWELL C – NORTHERN PARK AND RIDE – DRAFT GREAT CRESTED NEWT MITIGATION LICENCE APPLICATION

### WML-A14-2 GCN METHOD STATEMENT – ACCOMPANYING FIGURES



**NOTES**

**KEY**

- NORTHERN PARK AND RIDE DEVELOPMENT SITE BOUNDARY
- 500M BUFFER ZONE - NORTHERN PARK AND RIDE
- SCATTERED BROADLEAVED TREES
- POND
- TARGET NOTE
- RUNNING WATER
- INTACT HEDGE - SPECIES-POOR
- BROADLEAVED WOODLAND - SEMI-NATURAL
- CALCAREOUS GRASSLAND - SEMI-IMPROVED
- OTHER TALL HERB AND FERN - RUDERAL
- CULTIVATED/DISTURBED LAND - ARABLE
- BUILDINGS

**GREAT CRESTED NEWT SURVEY RESULTS:**

- GCN PRESENT
- SCOPED OUT
- POND NOT EXTANT
- NO ACCESS

NOT PROTECTIVELY MARKED

**COPYRIGHT**

Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationary Office © Crown Copyright (2019). All Rights reserved. NNB GenCo 0100060408.



DOCUMENT:  
 SIZEWELL C  
 NORTHERN PARK AND RIDE AT DARSHAM  
 DRAFT GCN LICENCE METHOD STATEMENT

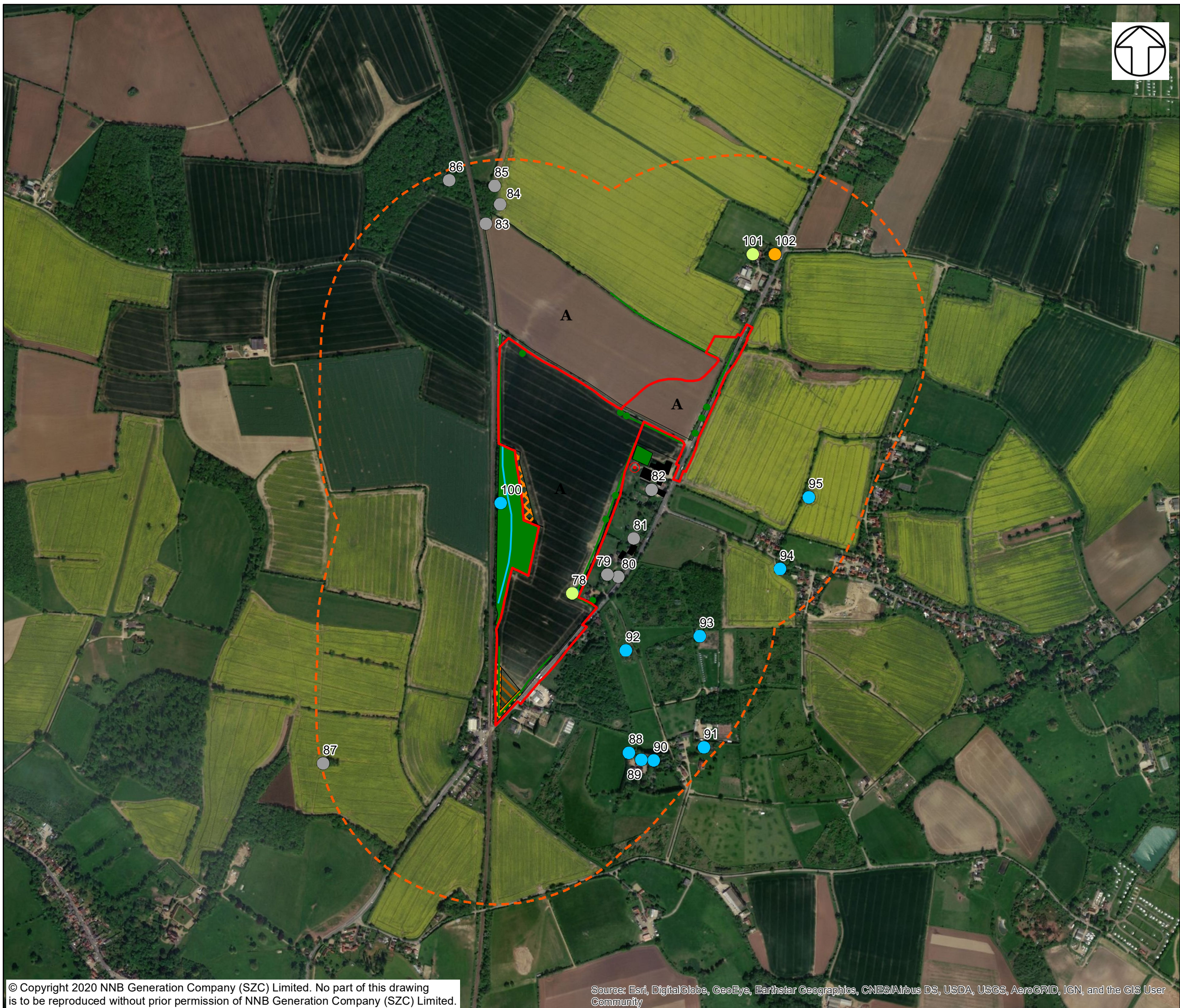
DRAWING TITLE:  
 FIGURE C3.2a: SURVEY MAP

DRAWING NO:  
 FIGURE 7A-5.1

DATE: JAN 2020      DRAWN: R.M.      SCALE: 1:10,000 @A3







**NOTES**

**KEY**

- NORTHERN PARK AND RIDE DEVELOPMENT SITE BOUNDARY
- 500M BUFFER ZONE - NORTHERN PARK AND RIDE
- SCATTERED BROADLEAVED TREES
- POND
- TARGET NOTE
- RUNNING WATER
- INTACT HEDGE - SPECIES-POOR
- BROADLEAVED WOODLAND - SEMI-NATURAL
- CALCAREOUS GRASSLAND - SEMI-IMPROVED
- OTHER TALL HERB AND FERN - RUDERAL
- A CULTIVATED/DISTURBED LAND - ARABLE
- BUILDINGS

**GREAT CRESTED NEWT SURVEY RESULTS:**

- GCN PRESENT
- SCOPED OUT
- POND NOT EXTANT
- NO ACCESS

NOT PROTECTIVELY MARKED

**COPYRIGHT**  
 Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown Copyright (2019). All Rights reserved. NNB GenCo 0100060408.

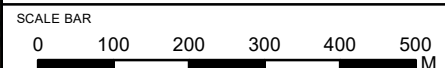


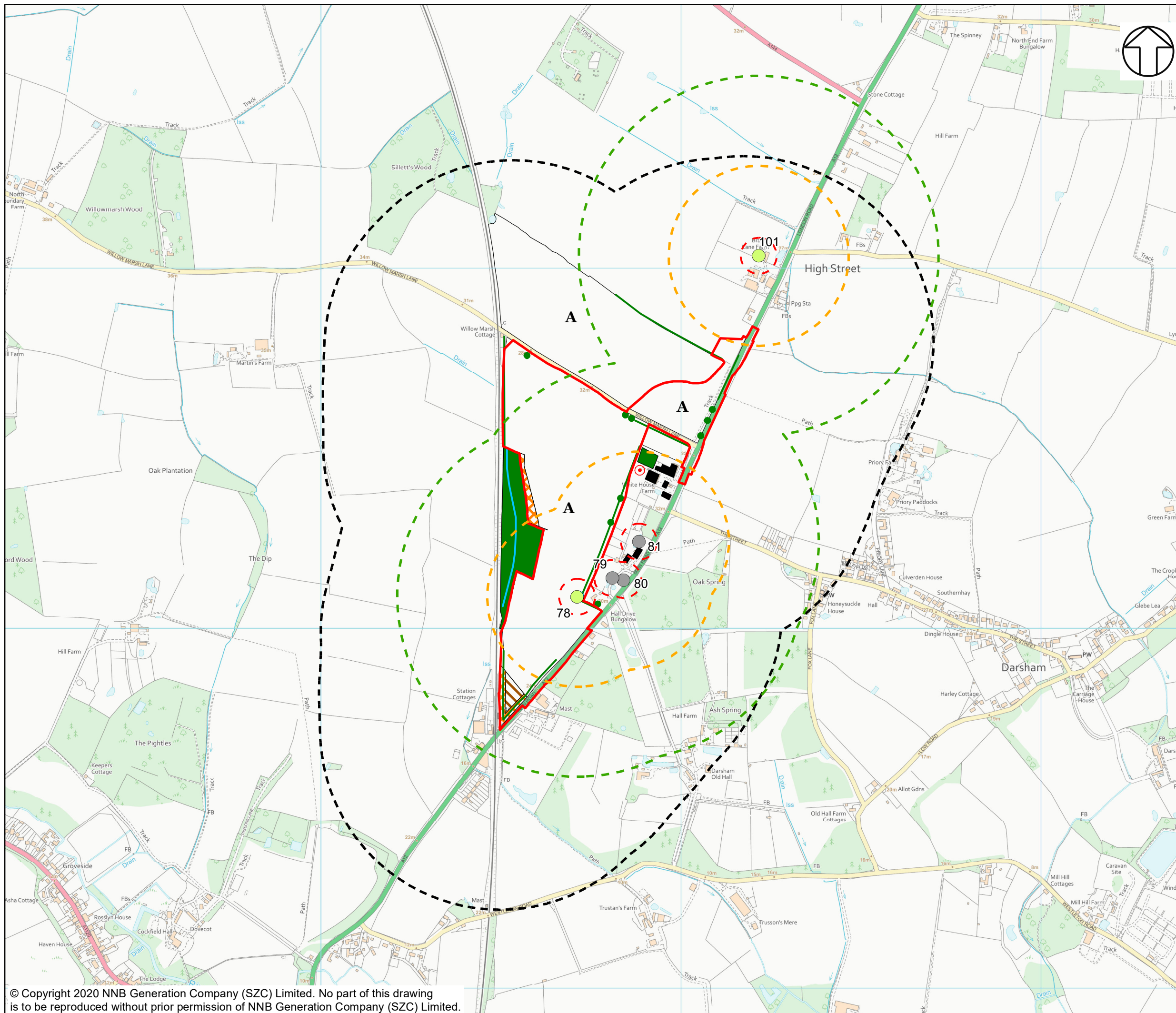
**DOCUMENT:**  
 SIZEWELL C  
 NORTHERN PARK AND RIDE AT DARSHAM  
 DRAFT GCN LICENCE METHOD STATEMENT

**DRAWING TITLE:**  
 FIGURE C3.2b: AERIAL PHOTOGRAPH OF SITE

**DRAWING NO:**  
 FIGURE 7A-5.2

**DATE:** JAN 2020      **DRAWN:** R.M.      **SCALE:** 1:10,000 @A3





- NOTES**
- KEY**
- NORTHERN PARK AND RIDE DEVELOPMENT SITE BOUNDARY
  - 500M BUFFER ZONE - NORTHERN PARK AND RIDE
  - SCATTERED BROADLEAVED TREES
  - POND
  - TARGET NOTE
  - RUNNING WATER
  - INTACT HEDGE - SPECIES-POOR
  - BROADLEAVED WOODLAND - SEMI-NATURAL
  - CALCAREOUS GRASSLAND - SEMI-IMPROVED
  - OTHER TALL HERB AND FERN - RUDERAL
  - A CULTIVATED/DISTURBED LAND - ARABLE
  - BUILDINGS
- GREAT CRESTED NEWT SURVEY RESULTS:**
- GCN PRESENT
  - NO ACCESS
  - 50M IMPACT RADIUS
  - 250M IMPACT RADIUS
  - 500M IMPACT RADIUS

NOT PROTECTIVELY MARKED

**COPYRIGHT**  
 Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationary Office © Crown Copyright (2019). All Rights reserved. NNB GenCo 0100060408.

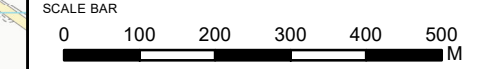


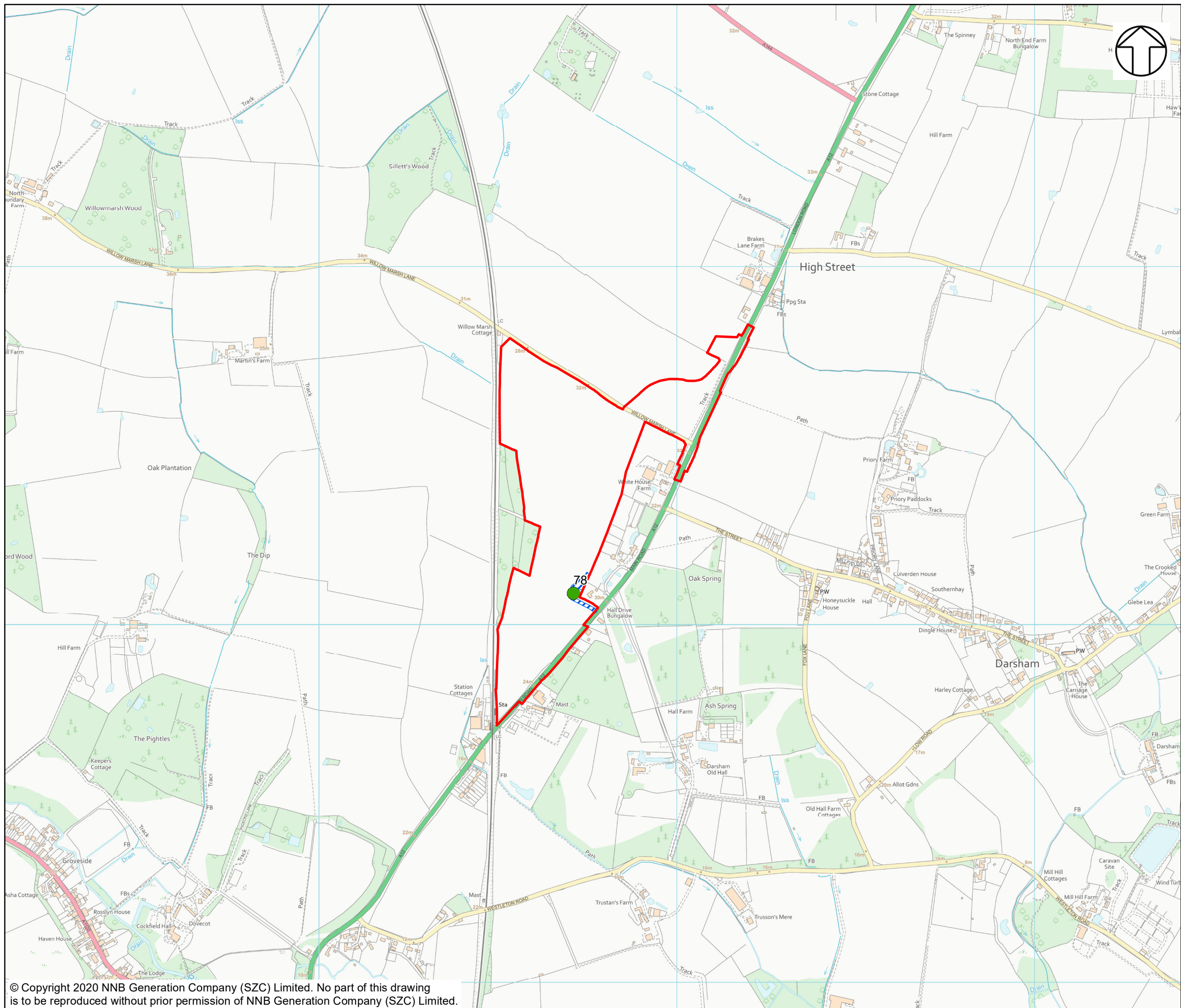
**DOCUMENT:**  
 SIZEWELL C  
 NORTHERN PARK AND RIDE AT DARSHAM  
 DRAFT GCN LICENCE METHOD STATEMENT

**DRAWING TITLE:**  
 FIGURE D: IMPACT MAP

**DRAWING NO:**  
 FIGURE 7A-5.3

**DATE:** JAN 2020      **DRAWN:** R.M.      **SCALE:** 1:10,000 @A3





**NOTES**

**KEY**

- NORTHERN PARK AND RIDE DEVELOPMENT SITE BOUNDARY
- CONFIRMED BREEDING POND (RS2)
- TERRESTRIAL RECEPTOR SITE (RS1)

NOT PROTECTIVELY MARKED

**COPYRIGHT**  
 Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationary Office © Crown Copyright (2019). All Rights reserved. NNB GenCo 0100060408.

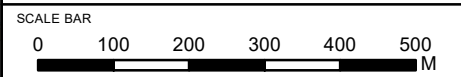


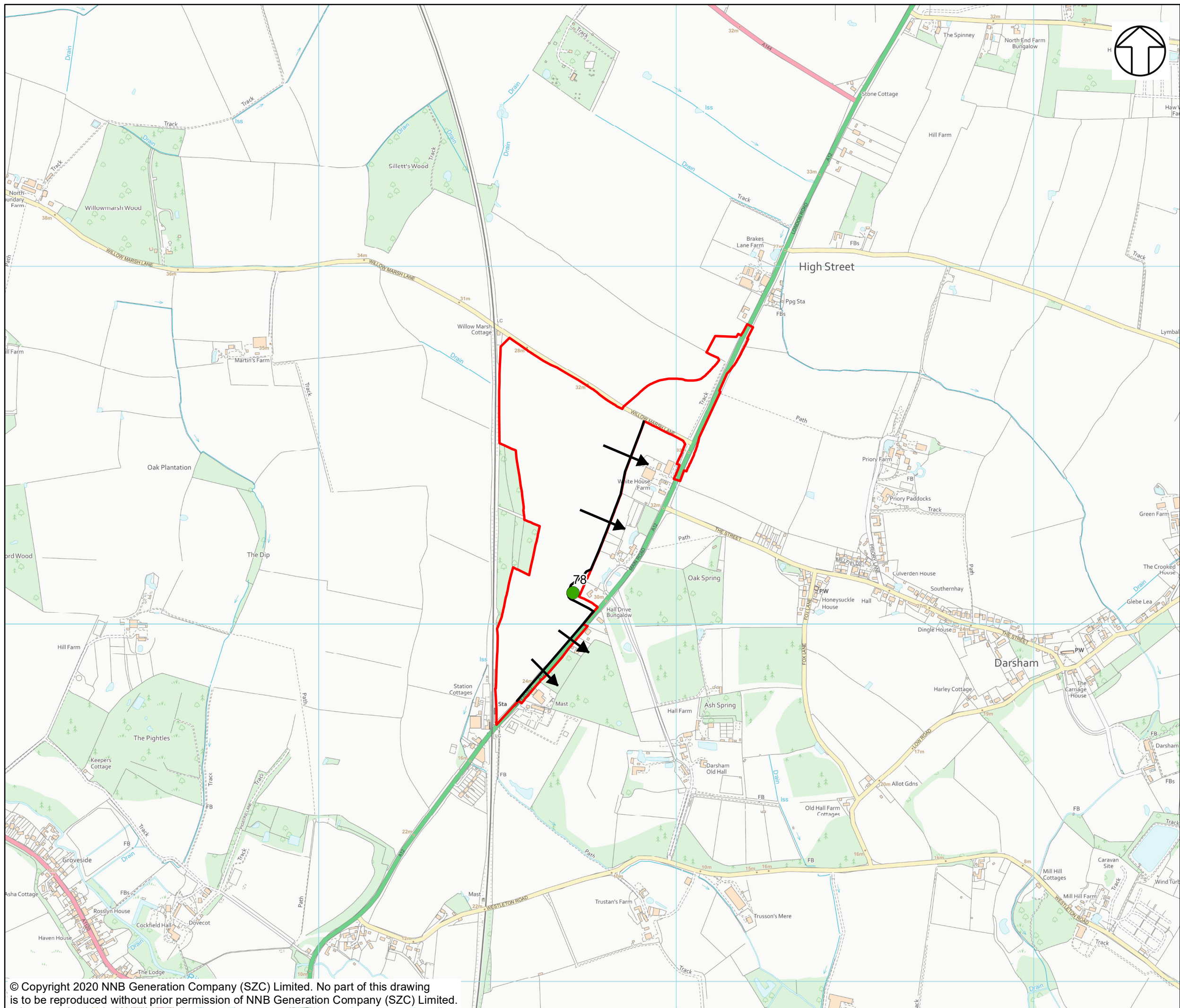
**DOCUMENT:**  
 SIZEWELL C  
 NORTHERN PARK AND RIDE AT DARSHAM  
 DRAFT GCN LICENCE METHOD STATEMENT

**DRAWING TITLE:**  
 FIGURE E2: RECEPTOR SITE MAP

**DRAWING NO.:**  
 FIGURE 7A-5.4

**DATE:** JAN 2020      **DRAWN:** R.M.      **SCALE:** 1:10,000 @A3





**NOTES**

**KEY**

- NORTHERN PARK AND RIDE DEVELOPMENT SITE BOUNDARY
- CONFIRMED BREEDING POND (RS2)
- ONE-WAY FENCING

NOT PROTECTIVELY MARKED

**COPYRIGHT**  
 Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationary Office © Crown Copyright (2019). All Rights reserved. NNB GenCo 0100060408.

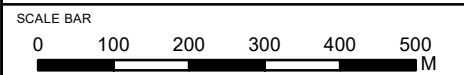


**DOCUMENT:**  
 SIZEWELL C  
 NORTHERN PARK AND RIDE AT DARSHAM  
 DRAFT GCN LICENCE METHOD STATEMENT

**DRAWING TITLE:**  
 FIGURE E4a: CAPTURE AND EXCLUSION MAP

**DRAWING NO:**  
 FIGURE 7A-5.5

**DATE:** JAN 2020      **DRAWN:** R.M.      **SCALE:** 1:10,000 @A3





**NOTES**

**KEY**

- NORTHERN PARK AND RIDE DEVELOPMENT SITE BOUNDARY
- ACCESS ROAD
- ACCOMODATION TRACK
- PEDESTRIAN WALKWAY / ZONE
- WELFARE/SECURITY BUILDINGS
- SHELTERS (BUS/CYCLE)
- SECURITY FENCE
- ECOLOGICAL FENCE
- LIGHTING COLUMNS
- LANDSCAPE BUNDS
- EXISTING VEGETATION
- PROPOSED PLANTING
- GRASSED AREAS
- EXISTING GRASSLAND TO BE RETAINED
- INFILTRATION BASIN
- SURFACE WATER ATTENUATION
- EXISTING POND
- SWALE
- EXISTING DITCH
- DITCH
- BUFFER ZONE
- EXISTING PUBLIC RIGHT OF WAY

NOT PROTECTIVELY MARKED

**COPYRIGHT**  
 Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown Copyright (2019). All Rights reserved. NNB GenCo 0100060408.  
 Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.  
 PROW data sourced from Suffolk CC on 27/02/2019 under OGL v3.0 are an interpretation of the Definitive Map and Statement, not the Definitive Map itself, and should not be relied on for determining the position or alignment of any public right of way. The data contains Ordnance Survey data © Crown copyright and database right 2019.

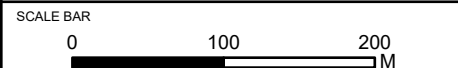


**DOCUMENT:**  
 SIZEWELL C  
 NORTHERN PARK AND RIDE AT DARSHAM  
 DRAFT GCN LICENCE METHOD STATEMENT

**DRAWING TITLE:**  
 ILLUSTRATIVE MASTERPLAN FOR THE  
 NORTHERN PARK AND RIDE AT DARSHAM

**DRAWING NO:**  
 FIGURE 7A-5.6

**DATE:** JAN 2020      **DRAWN:** V.W.      **SCALE:** 1:5,000 @A3





**NOTES**

**KEY**

- NORTHERN PARK AND RIDE DEVELOPMENT SITE BOUNDARY
- ACCESS ROAD
- ACCOMODATION TRACK
- PEDESTRIAN WALKWAY / ZONE
- WELFARE/SECURITY BUILDINGS
- SHELTERS (BUS/CYCLE)
- SECURITY FENCE
- ECOLOGICAL FENCE
- LIGHTING COLUMNS
- LANDSCAPE BUNDS
- EXISTING VEGETATION
- PROPOSED PLANTING
- GRASSED AREAS
- EXISTING GRASSLAND TO BE RETAINED
- INFILTRATION BASIN
- SURFACE WATER ATTENUATION
- EXISTING POND
- SWALE
- EXISTING DITCH
- DITCH
- BUFFER ZONE
- EXISTING PUBLIC RIGHT OF WAY

NOT PROTECTIVELY MARKED

**COPYRIGHT**

Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown Copyright (2019). All Rights reserved. NNB GenCo 0100060408.  
 Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.  
 PROW data sourced from Suffolk CC on 27/02/2019 under OGL v3.0 are an interpretation of the Definitive Map and Statement, not the Definitive Map itself, and should not be relied on for determining the position or alignment of any public right of way. The data contains Ordnance Survey data © Crown copyright and database right 2019.



**DOCUMENT:**

SIZEWELL C  
 NORTHERN PARK AND RIDE AT DARSHAM  
 DRAFT GCN LICENCE METHOD STATEMENT

**DRAWING TITLE:**

ILLUSTRATIVE MASTERPLAN FOR THE  
 NORTHERN PARK AND RIDE AT DARSHAM

**DRAWING NO:**

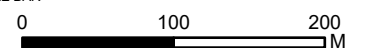
FIGURE 7A-5.7

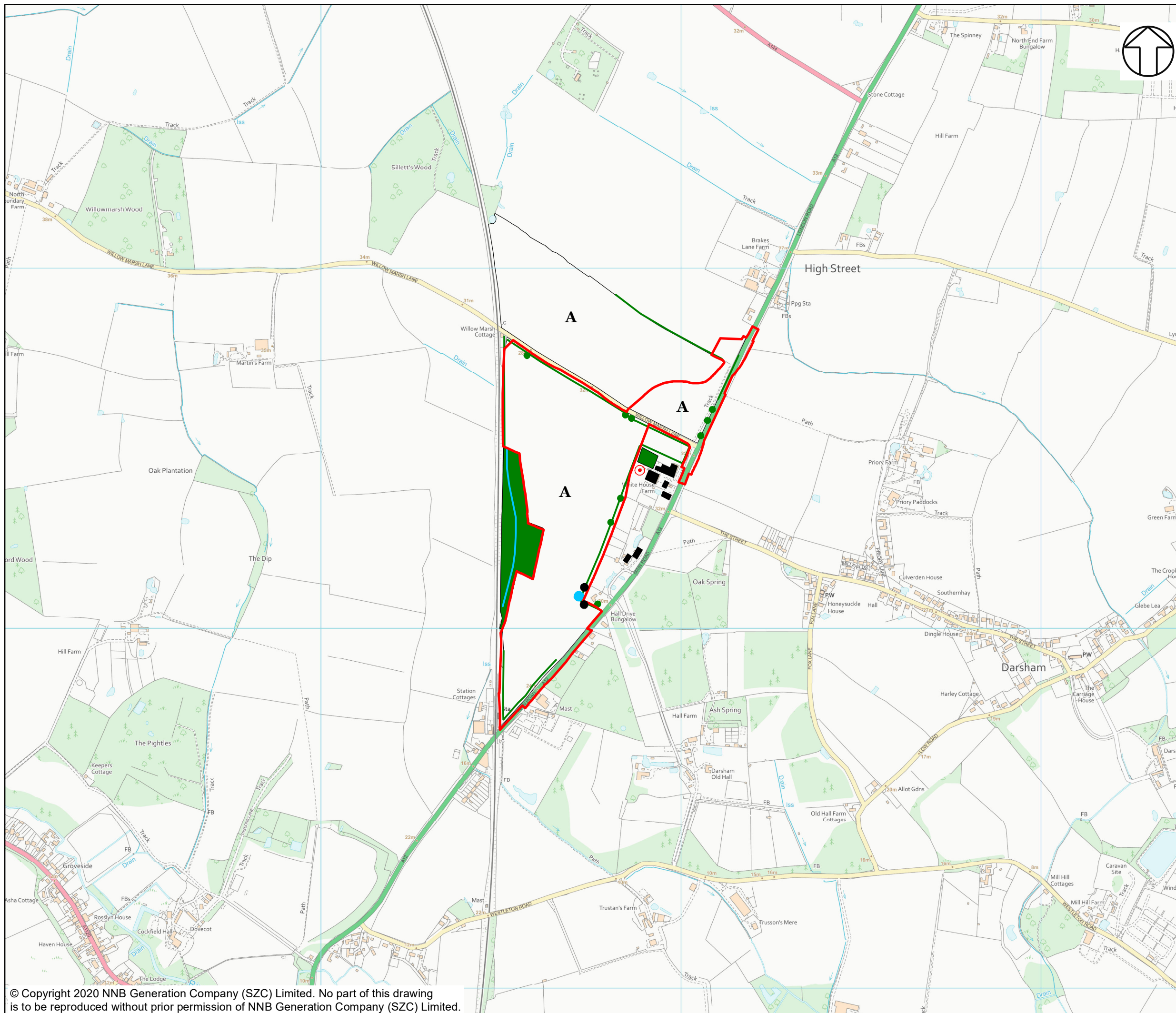
DATE: JAN 2020

DRAWN: V.W.

SCALE: 1:5,000 @A3

**SCALE BAR**





**NOTES**

**KEY**

- NORTHERN PARK AND RIDE DEVELOPMENT SITE BOUNDARY
- HIBERNACULA
- SCATTERED BROADLEAVED TREES
- POND
- TARGET NOTE
- RUNNING WATER
- INTACT HEDGE - SPECIES-POOR
- BROADLEAVED WOODLAND - SEMI-NATURAL
- A CULTIVATED/DISTURBED LAND - ARABLE
- BUILDINGS

NOT PROTECTIVELY MARKED

**COPYRIGHT**  
 Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown Copyright (2019). All Rights reserved. NNB GenCo 0100060408.

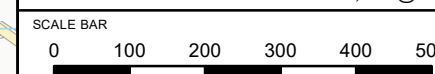


**DOCUMENT:**  
 SIZEWELL C  
 NORTHERN PARK AND RIDE AT DARSHAM  
 DRAFT GCN LICENCE METHOD STATEMENT

**DRAWING TITLE:**  
 FIGURE F1b: POST OPERATIONAL PHASE

**DRAWING NO:**  
 FIGURE 7A-5.8

**DATE:** JAN 2020      **DRAWN:** R.M.      **SCALE:** 1:10,000 @A3





## SIZEWELL C – NORTHERN PARK AND RIDE – DRAFT GREAT CRESTED NEWT MITIGATION LICENCE APPLICATION

### WML-A14-E6A&E6B WORK SCHEDULE FOR GREAT CRESTED NEWT



## WML-A14-E6a&E6b – WORK SCHEDULE FOR GREAT CRESTED NEWT ANNEXED LICENCES



**Site name and address (as stated on the application form or licence granted): Sizewell C - Darsham (Northern Park and Ride)**

Please ensure that the work schedules E6a and E6b are S.M.A.R.T and appropriate timescales are provided for each activity, to fit with order of events. Complete these schedules to show timings for all major categories of work (mitigation and compensation measures), and to show the main construction period. The most common activities are listed here, and you can add up to 6 more if needed. Leave blank if not applicable. Enter timing by stating **start and end dates, to nearest month and year** (see first line for example). Enter comments if you need to clarify timings. For very complex schemes (e.g. high impact or phased development schemes) if additional lines are needed please do add in. This work schedule will form part of any annexed licence.

<b>PLEASE INCLUDE DATE OF SUBMISSION (e.g. 1 January 2016).</b> This will be referenced in the licence →		<b>February 2020</b>
<b>E6a) Pre, mid and post-development (other than monitoring, management and maintenance)</b>		
Activity	Timing	Comments
<i>Example: Receptor site pond creation</i>	<i>Nov-15 to Dec-15</i>	<i>Also plant pond up with native species in January 2016</i>
Receptor site pond creation		
Receptor site pond enhancement or restoration		
Receptor site terrestrial hab works - general e.g. reseedling, hedge planting		
Receptor site terrestrial hab works - features e.g. hibernacula, refuges	March to October 20XX to 20XX (+4yrs)	Prior to commencement of construction works.
Construction of permanent fences/walls		
Construction of underpass/tunnel/culvert (and installation of 'guide' fencing)		
Newt fence installation (to include drift or ring fencing if applicable – specify which)	April to May 20XX to 20XX (+4yrs)	Prior to commencement of construction works
Newt capture (pitfall trapping etc - outside hibernation/dormancy periods only)		

Pond draining and pond destruction (please indicate when each will occur)		
Hand searches	March to October 20XX to 20XX (+4yrs)	Prior to commencement of construction works as a component of the site clearance and facilitation
Destructive searches (following completion of all other capture efforts)	June to October 20XX to 20XX (+4yrs)	Timing dependant on when other capture methods have been undertaken
Construction period (start and end dates)	January 20XX (start date + 4yrs) to January 20XX (+2yrs)	This includes the construction and operational phase
Site checks & maintenance during construction	January 20XX (start date + 4yrs) to January 20XX (+2yrs)	On going fencing checks biannually following commencement of construction works, for the duration of the works and the operational phase
Drift fence removal (not to be undertaken during hibernation/dormancy periods)		
Newt fence removal (not to be undertaken during hibernation/dormancy periods)	Post February 20XX	Upon the completion of the construction works and operational use and once the site has been restored to agricultural use.
Ring fence removal (not to be undertaken during the hibernation/dormancy periods)		
Habitat reinstatement (for temporary impact schemes only)	Post February 20XX	Upon the completion of the construction works and operational phase.
Post construction mitigation/compensation on dev't site or other (provide details)		

**E6b) Post-development works - type a "Y" where each activity will occur for a given year and leave blank for no activity.**

<b>Year:</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>
Population monitoring												
Habitat management												
Site maintenance												
<b>Year:</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>	<b>2036</b>	<b>2037</b>	<b>2038</b>	<b>2039</b>
Population monitoring												
Habitat management												
Site maintenance												

VOLUME 3, CHAPTER 7, APPENDIX 7A:

ANNEX 7A.6 - NON-LICENSABLE METHOD STATEMENTS:

- ANNEX 7A.6A - BATS
- ANNEX 7A.6B - REPTILES



VOLUME 3, CHAPTER 7, APPENDIX 7A, ANNEX 7A.6A:

BAT - NON-LICENSABLE METHOD STATEMENT

**Contents**

1. BAT - Non- Licensable Method Statement – Darsham..... 1

1.1 Introduction..... 1

1.2 Site reasonable avoidance measures method statements for bats ..... 4

1.3 Bats ..... 5

1.4 Facilitating work requirements ..... 7

References ..... 9

**Tables**

**None provided.**

**Plates**

Plate 1.1: Site location ..... 3

**Figures**

**None provided.**

**Appendices**

Appendix 7A.1: Ecological Tool Box Talk ..... 10

Appendix 7A.2: Declaration ..... 13

## 1. Bat Non-licensable Method Statement

### 1.1 Introduction

#### a) Background and Scheme Overview

1.1.1 SZC Co. is proposing to build a new nuclear power station at Sizewell in East Suffolk, known as Sizewell C. Located to the north of the existing Sizewell B power station, the Sizewell C site is located on the Suffolk coast, approximately halfway between Felixstowe and Lowestoft; to the north-east of the town of Leiston. The project is being submitted as a component Nationally Significant Infrastructure Project (NSIP) and will be approved through the Development Control Order Process (DCO).

1.1.2 The proposed Sizewell C nuclear power station would comprise two UK EPR™ units with an expected net electrical output of approximately 1,670 megawatts (MW) per unit, giving a total site capacity of approximately 3,340MW. The design of the UK EPR™ units is based on technology used successfully and safely around the world for many years, which has been enhanced by innovations to improve performance and safety. The UK EPR™ design has passed the Generic Design Assessment process undertaken by UK regulators (Office for Nuclear Regulation and Environment Agency), and has been licenced and permitted at Hinkley Point C. Once operational, Sizewell C would be able to generate enough electricity to supply approximately six million homes in the UK.

1.1.3 In addition to the key operational elements of the UK EPR™ units, the Sizewell C Project comprises other permanent and temporary development to support the construction and operation of the Sizewell C nuclear power station. The key elements are the main development site, comprising the Sizewell C nuclear power station itself, offshore works, land used temporarily to support construction and a series of off-site associated development sites in the local area including:

- two temporary park and ride sites; one to the north-west of Sizewell C at Darsham (the ‘northern park and ride’), and one to the south-west at Wickham Market (the ‘southern park and ride’) to reduce the amount of traffic generated by the construction workforce on local roads and through local villages;
- a permanent road to bypass Stratford St Andrew and Farnham (referred to as the ‘two village bypass’) to alleviate traffic on the A12 through the villages;

- a permanent road linking the A12 to the Sizewell C main development site (referred to as ‘Sizewell link road’) to alleviate traffic from the B1122 through Theberton and Middleton Moor;
- permanent highway improvements at the junction of the A12 and B1122 east of Yoxford (referred to as the ‘Yoxford roundabout’) and other road junctions to accommodate Sizewell C construction traffic;
- a temporary freight management facility at Seven Hills on land to the south-east of the A12/A14 junction to manage the flow of freight to the main development site; and
- a temporary extension of the existing Saxmundham to Leiston branch line into the main development site (‘the green rail route’) and other permanent rail improvements on the Saxmundham to Leiston branch line, to transport freight by rail in order to remove large numbers of HGVs from the regional and local road network.

1.1.4 The components listed above are referred to collectively as the ‘Sizewell C Project’.

1.1.5 In order to enable the proposed development of Darsham (the ‘northern park and ride’), as detailed above, a number of facilitating works (including vegetation clearance works and ground-breaking works) are required. Given the opportunities afforded to bats by the habitats present within the site, the proposed facilitating works have the potential to cause injury / mortality and indirect disturbance of bats that may be present. Accordingly, the purpose of this document is to provide a reasonable avoidance measures method statement that can be used by the ecological consultant, SZC Co and any relevant subcontractors, to ensure the safeguarding of bats during the facilitation works to be undertaken within the site.

#### b) Site Location and Setting

1.1.6 The Site is located in Sizewell, East Suffolk (site centre grid reference OS Grid Reference TM 40687 70312). The northern park and ride at Darsham would be situated to the west of the A12, to the east of the East Suffolk line and to the north of Darsham rail station. Access to the site would be via a new three arm roundabout, with realignments of Willow Marsh Lane and the A12.

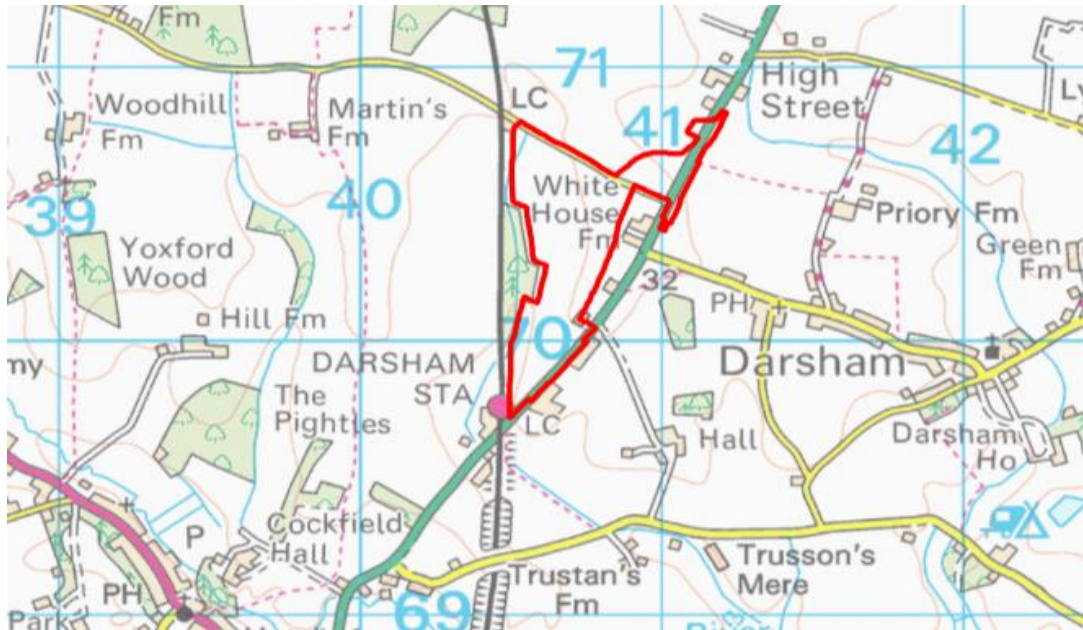
1.1.7 The area within the red line boundary predominately consisted of arable farmland bordered by a semi-improved species-poor 2m wide grassland margin. The area is bordered by species-poor hedgerows, interspersed with stands of mature Oak (*Quercus robur*) and Ash (*Fraxinus excelsior*) on three sides, and by a block of broadleaved woodland (Little Nursery Wood) on the



western boundary. A small number of ponds were identified within gardens adjacent to the eastern boundary, with a further small pond located within Little Nursery Wood. Little Nursery Wood consisted of primarily mature Ash with a dry ditch running along the eastern boundary and a running stream through the centre.

1.1.8 The area covered by this Method Statement is presented in **Plate 1.1** below.

**Plate 1.1: Site location**



**c) Proposed Works**

1.1.9 The specific works covered by this method statement include vegetation clearance measures, and the lighting arrangements for the site.

1.1.10 Perimeter and parking area lighting Lanterns will utilise LED based light fittings with zero-degree tilt, and lighting columns along the perimeter would be fitted with a demountable shield to reduce backward spill of light.

**d) Key Ecological Constraints**

1.1.11 Within this site, the following are the predicted potential constraints:

- bats;
- reptiles; and
- great crested newts.

1.1.12 This method statement only covers bats, there is an associated method statement for reptiles and a draft protected species licence for great crested newts.

1.1.13 This document is presented as a first draft. SZC Co and its consultant ecologists are committed to working with Natural England and other stakeholders to develop the approaches outlined within this document to ensure a legally robust approach to protected species before the document is finalised. Further surveys will be undertaken as relevant and these will also inform the final draft of this and related documents, sufficient to inform any relevant licence.

## 1.2 Site reasonable avoidance measures method statements for bats

### a) Introduction

1.2.1 This section provides a suite of dedicated reasonable avoidance measures method statements for the ecological constraints that may be encountered for bats during the facilitation works.

1.2.2 In all cases the aim of the Method Statement is to reduce the risk of causing injury / mortality and disturbance of the protected species and avoid contravention of the relevant legislation. The ECoW will determine exactly when and where it is appropriate to apply the measures described in the reasonable avoidance measures method statement. The ECoW will oversee and quality-control the implementation of the tasks undertaken.

1.2.3 It is the responsibility of the site contractors to carry out the works in a manner which will not contravene the legislation with regards to protected species in the areas identified as having potential to support protected species. Any variations from the individual Method Statements may contravene legislation and therefore risk prosecution. Thus, it is their joint responsibility that no changes to the timings or methods outlined below are made without prior agreement from the ECoW.

### b) Toolbox talk

1.2.4 Prior to commencement of the facilitation works, all site contractors will be briefed by the ECoW as part of the site induction. The toolbox talk (**Appendix 7A.1**) will provide a basic overview of the life history, habitat requirements, identification and legal protection granted to the legally protected species / other species of conservation concern present on within the site that may be encountered during the works.

1.2.5 Site-specific toolbox talks will also be undertaken as necessary to identify the habitats present on site that have the potential to be used by these species and outline the environmental measures to be followed in order to avoid breaches of legislation and / or adverse effects on protected species that could occur within or in the vicinity of the working area.

1.2.6 There is a declaration (**Appendix 7A.2**) for those present to sign to confirm they have understood the constraints and actions presented.

### 1.3 Bats

#### a) Site status and potential impacts

1.3.1 Surveys identified a 'big bat' species (potentially serotine or noctule), common pipistrelle, and soprano pipistrelle emerging from and entering Little Nursery Wood, indicating the wood is likely to be used for both roosting and foraging. A confirmed brown long-eared bat roost was identified within Little Nursery Wood. Low numbers of barbastelle passes were also recorded in the vicinity of Little Nursery Wood although the number of passes did not suggest this feature was a regular/frequently used commuting route and no barbastelle were observed emerging from Little Nursery Wood.

1.3.2 Assessment of trees with bat roost potential identified three trees within the proposed development site with potential to support roosting bats, but these three trees would be retained. Little Nursery Wood adjacent to the development site provided a greater roost resource and 41 trees within Little Nursery Wood were identified with the potential to support roosting bats, including the brown long-eared roost. All of these trees within the adjacent wood land are retained.

1.3.3 Bats are impacted by both increased noise levels and increased lighting but only a relatively small number of bats have been recorded within the proposed development site on any one occasion. Evidence suggests that bats using the site are not dependent on the habitats present and will also be using a range of additional habitats in the wider area. A 10m buffer from the development would be maintained along the north-east, south-east and south-west borders and a 20m total buffer is maintained from Little Nursery Wood. No significant effects on bat populations are expected as a result of construction noise or lighting.

#### b) Legislation

1.3.4 All bat species in England are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (Ref 1.1) in respect of Section 9, which makes it an offence, inter alia, to:

- intentionally or recklessly kill, injure or take a bat;
- intentionally or recklessly damage, destroy or obstruct access to any structure or place that a bat uses for shelter or protection; or
- intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection.

1.3.5 The offence “recklessly” was added by the Countryside and Rights of Way Act 2000 (CRoW) (Ref 1.2).

1.3.6 All bat species in England receive further protection under Regulation 41 of The Conservation of Habitats and Species Regulations 2017 (Ref 1.4). They are listed on Schedule 2 of the Regulations, which makes it an offence, *inter alia*, to:

- deliberately capture, injure or kill a bat;
- deliberately disturb a bat, in particular any disturbance which is likely:
  - impair their ability
    - i. to survive, to breed or reproduce, or to rear or nurture their young, or
    - ii. to hibernate or migrate
  - affect significantly the local distribution or abundance of that bat species; or
- damage or destroy a breeding site or resting place of a bat.

1.3.7 Noctule (*Nyctalus noctule*), soprano pipistrelle (*Pipistrellus pygmaeus*) and brown long-eared bat (*Plecotus auratus*) are also included on Section 41 of the NERC Act 2006 (Ref 1.3). This Act places a duty upon public bodies to have regard to the purpose of conserving biodiversity within all of their actions. The species listed under Section 41 are ‘Species of Principal Importance for the conservation of biodiversity in England’ for which conservation steps should be taken or promoted.

c) [Toolbox talk for bats](#)

1.3.8 Prior to commencement of the vegetation clearance works, all site contractors will be briefed by the ECoW as part of the site induction to provide them with a basic overview of the life history, habitat requirements, identification and legal protection granted to bats. Site-specific toolbox talks will also be undertaken as necessary to identify the habitats present within the site that have the potential to be used by bats and outline the environmental measures to be followed in order to avoid breaches of

legislation and / or adverse effects on reptiles that could occur within or in the vicinity of the working area.

d) **Precautionary working methods**

1.3.9 Little Nursery Wood would be retained in its entirety with a buffer distance of 20m between the woodland and the proposed development.

1.3.10 Close-boarded fencing where the proposed development site abuts Little Nursery woodland.

1.3.11 The three trees within the development site with the potential to support roosting bats would be retained. No trees will be felled as part of this scheme.

1.3.12 Construction lighting would be designed to prevent spill and exposure on to Little Nursery Wood. The lighting design for the proposed development would comply with the lighting strategy and use light fittings chosen to limit stray light. Guidance within the latest Institution of Lighting Professionals (ILP) Guidance Note (Ref 1.5) would be followed as far as possible. These measures would minimise impacts on nocturnal species such as bats that may use the nearby tree lines or habitats for roosting or foraging.

1.3.13 In addition, although some activities may require 24 hour working, the majority of construction would take place Monday to Saturday 07:00 to 19:00 hours. This means night-time works would be avoided, which is when bats are most active. Incidental mortality associated with traffic movements would therefore not have a significant effect on the bat assemblage.

1.3.14 A10m buffer from the development would be maintained along the north-east, south-east and south-west borders

## 1.4 **Facilitating work requirements**

a) **Vegetation clearance methods**

1.4.1 As set out above, vegetation clearance works are required in order to facilitate the development of the site. Whilst this document has been produced in relation to bats, further information has been provided to ensure legal compliance in relation to other protected species.

1.4.2 Given that the works are to take place outside of the active bird breeding season (early March and late August inclusive), it is considered that no nesting bird checks are required prior to the commencement of works. Nevertheless, should vegetation clearance works take place within the core bird breeding season, a qualified ECoW will need to carry out a nesting bird check at least 48 hours before the commencement of works effecting the

vegetation within the site. Once nesting birds have been confirmed absent, then the vegetation clearance contractors will carry out a habitat manipulation exercise in the form of a two stage vegetation cut, with the initial cut reducing the vegetation to a height of 150mm before a second cut subsequently reduces it to ground level, with a minimum of two hours between cuts to allow reptiles or amphibians to move out of the cutting area.

- 1.4.3 Vegetation clearance which does not disturb the ground or vegetation below 150mm can be conducted year-round with a low risk of impacting upon reptiles. Any vegetation clearance likely to impact vegetation below 150mm or the removal of places of shelter/hibernation features would be undertaken outside of the reptile and amphibian hibernating period (October to February inclusive), during periods of warm, dry weather. If this is not possible, vegetation would be cut to the ground (to remove potential bird nesting habitat), but the roots would remain intact until hibernation is complete. The root system of vegetation would then be removed once the hibernation season is over. Clearing of vegetation would be undertaken under the supervision of the suitably experienced Ecological Clerk of Works (ECoW).
- 1.4.4 The vegetation arisings will be collected and used to create habitat piles in areas adjacent to the site (which are to be retained during the development works).
- 1.4.5 The habitats present within the site are largely sub-optimal for bats, being intensively managed for arable farming purposes. The sub-optimal arable land supports few invertebrates on which bats can forage.
- 1.4.6 Works should be undertaken outside of all tree and hedgerow root protection zones that would not be removed as part of the proposed development. Tree protective fencing as described in section 6.2 of British Standard 5837:2012 (Ref 1.6) should be installed (distance of fencing from tree trunk = 12x trunk diameter, distance from hedgerows = 1m from the spread of hedgerow canopy), where required, prior to plant and machinery arriving on site and construction works commencing. The fencing should remain intact throughout the duration of the works and only be removed upon completion. Weather-proof notices should be attached to any protective fencing located adjacent to retained trees displaying the words 'Construction Exclusion Zone'. All personnel must be made aware of these restrictions. If works need to be undertaken within the root protection zones an Arboricultural survey would be required and any advice provided adhered to, to secure the long-term survival of the tree/hedgerow.

## References

- 1.1 Her Majesties Stationary Office (HMSO) (1981). The Wildlife and Countryside Act (as amended). HMSO, London.
- 1.2 HMSO (2000) The Countryside Rights of Way (CRoW) Act. HMSO, London
- 1.3 HMSO (2006). The Natural Environment and Rural Communities Act. HMSO, London
- 1.4 HMSO (2017). The Conservation of Habitats and Species Regulations. HMSO, London.
- 1.5 Institution of Lighting Professionals/Bat Conservation Trust (2018). Institution of Lighting Professionals. 2018. Bats and artificial lighting in the UK. Guidance Note 08/2018.
- 1.6 British Standards Institute (2012). British Standard for Trees in relation to design, demolition and construction (BS 5837:2012). British Standards Institute. 2012

## Appendix 7A.1: Ecological Tool Box Talk

### 1.1. Legislation

1.1.1. Ecology surveys have been completed within the site and have identified the potential for the presence of a legally protected species. The Ecological Method Statement details the mitigation and working methods that should be adopted to avoid contravention of the legislation. If this is not followed, there is a risk that you could break the law by doing actions such as:

- Deliberately capture, injure or kill;
- Damage or destroy a resting place or breeding site;
- Deliberately or recklessly disturb an individual while it's in a structure or place of shelter or protection;
- Block access too structures or places of shelter or protection; or
- Possess, sell, control or transport live or dead individuals.





1.1.2. Any of the following could happen if you're found guilty of any offence:

- You could get an unlimited fine;
- You could be sent to prison for up to 6 months.

### 1.2. Species identification

	<p><u>Nesting Birds</u></p> <p>The bird nesting season extends from March to August inclusive, although in mild climate nesting may start in February.</p> <p>Nesting occurs in a variety of habitats including agricultural fields (ground nesting birds), dense bramble scrub, buildings and other man-made structures and trees.</p>
---	---



 	<p><u>Reptiles (slow-worm, common lizard, grass snake and adder)</u></p> <p>They may be found sheltering in vegetation, under debris such as logs, ricks or piles of rubble or waste items. They may also bask in the open on sunny days.</p> <p>DO NOT leave materials in area where it might be colonised by reptiles. Any debris or materials should be moved with care or moved under direct supervision of a suitably qualified ecologist.</p>
	<p><u>Bats</u></p> <p>On site habitats where bats may roost include trees.</p> <p>If works involve trees with cavities then check with the on-site ecologist that these have been inspected.</p>
	<p><u>Badgers</u></p> <p>It is unlikely that the animals would be seen but signs of their presence include:</p> <ul style="list-style-type: none"> <li>• Setts (d shaped burrow with a large spoil heap);</li> <li>• Latrines or dung pits; and</li> <li>• Snuffle holes and runs.</li> </ul>

	<p><u>Great Crested Newts</u></p> <p>It is possible that great crested newt may be present on site.</p> <p>Newts are associated with water bodies but during the winter they live / hibernate in terrestrial habitat.</p> <p>They can be harmed when clearing vegetation, moving debris such as log piles and ground works.</p>
---	---

### 1.3. Action

- If any species, or signs characteristic of protected species in the vicinity of the works are apparent, OR IF IN ANY DOUBT, stop the works immediately and contact the Project ecologist;
- The species involved may then be identified and appropriate action such as further surveys or mitigation taken; and
- Do not attempt to move any species found unless instructed to do so by an ecologist.





VOLUME 3, CHAPTER 7, APPENDIX 7A, ANNEX 7A.6B:  
REPTILE NON-LICENSABLE METHOD STATEMENT

## Contents

1.1	Introduction.....	1
1.2	Site Reasonable Avoidance Measures (RAMS) method statements for reptiles .....	5
1.3	Reptiles.....	6
1.4	Facilitating work requirements .....	9
	References .....	13

## Plates

Plate 1.1:	Site location.....	3
Plate 1.2:	Vegetation clearance equipment .....	10
Plate 1.3:	Ground-breaking .....	12

## Figures

**None provided.**

## Appendices

Appendix 7A6B.1:	Toolbox Talk .....	14
Appendix 7A6B.2:	Declaration of Understanding.....	15

## 1. Appendix 7A.6B: Reptile Non-licensable Method Statement

### 1.1 Introduction

#### a) Background and Scheme Overview

- 1.1.1 SZC Co is proposing to build and operate a new nuclear power station on the Suffolk coast, known as Sizewell C Power Station (hereafter referred to as 'Sizewell C') located to the north of the existing Sizewell B Power Station.
- 1.1.2 It is located to the north of the existing Sizewell B power station, the Sizewell C site is located on the Suffolk coast, approximately halfway between Felixstowe and Lowestoft; to the north-east of the town of Leiston.
- 1.1.3 This Reptile Method Statement outlines the key approaches to mitigating potential impacts to the reptile populations at Darsham. It will be used by the ecological consultant, SZC Co and any relevant subcontractors, in relation to the proposal to build the Sizewell C.
- 1.1.4 The proposed Sizewell C nuclear power station would comprise two UK EPR™ units with an expected net electrical output of approximately 1,670 megawatts (MW) per unit, giving a total site capacity of approximately 3,340MW. The design of the UK EPR™ units is based on technology used successfully and safely around the world for many years, which has been enhanced by innovations to improve performance and safety. The UK EPR™ design has passed the Generic Design Assessment process undertaken by UK regulators (Office for Nuclear Regulation and Environment Agency), and has been licenced and permitted at Hinkley Point C. Once operational, Sizewell C would be able to generate enough electricity to supply approximately six million homes in the UK.
- 1.1.5 In addition to the key operational elements of the UK EPR™ units, the Sizewell C Project comprises other permanent and temporary development to support the construction and operation of the Sizewell C nuclear power station. The key elements are the main development site, comprising the Sizewell C nuclear power station itself, offshore works, land used temporarily to support construction including an

accommodation campus and a series of off-site associated development sites in the local area including:

- two temporary park and ride sites; one to the north-west of Sizewell C at Darsham (the ‘northern park and ride’), and one to the south-west at Wickham Market (the ‘southern park and ride’) to reduce the amount of traffic generated by the construction workforce on local roads and through local villages;
- a permanent road to bypass Stratford St Andrew and Farnham (referred to as the ‘two village bypass’) to alleviate traffic on the A12 through the villages;
- a permanent road linking the A12 to the Sizewell C main development site (referred to as ‘Sizewell link road’) to alleviate traffic from the B1122 through Theberton and Middleton Moor;
- permanent highway improvements at the junction of the A12 and B1122 east of Yoxford (referred to as the ‘Yoxford roundabout’) and other road junctions to accommodate Sizewell C construction traffic;
- a temporary freight management facility at Seven Hills on land to the south-east of the A12/A14 junction to manage the flow of freight to the main development site; and
- a temporary extension of the existing Saxmundham to Leiston branch line into the main development site (‘the green rail route’) and other permanent rail improvements on the Saxmundham to Leiston branch line, to transport freight by rail in order to remove large numbers of HGVs from the regional and local road network.

1.1.6 The components listed above are referred to collectively as the ‘Sizewell C Project’.

#### b) Site Location and Setting

1.1.7 The northern park and ride at Darsham site measures approximately 27.9ha in area and is located west of the village of Darsham. The site lies to the west of the A12, to the east of the East Suffolk line, and to the north of Darsham railway station. The northern park and ride at Darsham is one of two proposed park and ride developments associated with the main development site, with the Darsham park and ride being created for the use of construction workers approaching Sizewell from the north on the A12. The northern park

and ride facilities would also intercept traffic movements from locations west of the A12.

- 1.1.8 The proposed development would provide spaces for up to 1,250 cars, and would allow the transfer of a substantial proportion of the construction workforce by bus to and from the main development site, therefore reducing the construction workforce traffic on the roads between the A12 and the main development site. The proposed development is temporary and would be in situ until the construction of the Sizewell C power station is complete (between 9–12 years).
- 1.1.9 The site is dominated by arable farmland with a block of broadleaved woodland (Little Nursery Wood), measuring approximately 2.8ha located adjacent to the site on its western boundary. Small arable field margins comprising semi-improved, species-poor grassland is present within the site alongside the east side of Little Nursery Wood, as well as an area of tall ruderal vegetation to the south. Species-poor hedgerows are also present along the western, eastern and northern site boundaries, whilst a single pond is present within the site.
- 1.1.10 The area covered by this method statement is presented in **Plate 1.1** below.

**Plate 1.1: Site location**



- 1.1.11 The purpose of the proposed development would be to reduce the amount of additional traffic generated by the construction workforce on local roads



and through local villages as a result of the Sizewell C Project. The northern park and ride at Darsham would be used by construction workers approaching Sizewell from the north on the A12, with workers then being transported to and from the Sizewell C main development site by bus. The park and ride facilities would also intercept traffic movements from locations west of the A12. However, as a component of this, vegetation clearance and ground-breaking works (collectively referred to as “facilitating works” within this report) will be required in order to facilitate the proposed development. Accordingly, a number of potential ecological constraints are associated with the proposed facilitating works, as are set out below.

### c) Key Ecological Constraints

1.1.12 The key potential legislative constraints associated with the facilitation works within the site include:

- bats;
- great crested newt; and
- reptiles.

This method statement only covers guidance relating to reptiles. A method statement has also been prepared for bats and a draft protected species licence prepared for great crested newts.

1.1.13 In order to enable the proposed development of the northern park and ride at Darsham site, as detailed above, a number of facilitating works (including vegetation clearance works and ground-breaking works) are required. Given the opportunities afforded to reptiles by the habitats present within the site, the proposed facilitating works have the potential to cause injury/ mortality of reptiles that may be present within the site at the time of the works. Accordingly, the purpose of this document is to provide a reasonable avoidance measures method statement that can be used by the ecological consultant, SZC Co and any relevant subcontractors, to ensure the safeguarding of reptiles during the facilitation works to be undertaken within the site.

1.1.14 This document is presented as a first draft. SZC Co and its consultant ecologists are committed to working with Natural England and other stakeholders to develop the approaches outlined within this document to ensure a legally robust approach to protected species before the document is finalised. Further surveys will be undertaken as relevant and these will also inform the final draft of this and related documents.

## 1.2 Site Reasonable Avoidance Measures method statements for reptiles

### a) Introduction

1.2.1 This section provides a suite of dedicated reasonable avoidance measures method statements for the ecological constraints that may be encountered for reptiles during the facilitation works.

1.2.2 In all cases the aim of the Method Statement is to reduce the risk of causing injury / mortality of the protected species and avoid contravention of the relevant legislation. The Ecological Clerk of Works (ECoW) will determine exactly when and where it is appropriate to apply the measures described in the reasonable avoidance measures method statement. The ECoW will oversee and quality-control the implementation of the tasks undertaken.

1.2.3 It is the responsibility of the site contractors to carry out the works in a manner which will not contravene the legislation with regards to protected species in the areas identified as having potential to support protected species. Any variations from the individual Method Statements may contravene legislation and therefore risk prosecution. Thus, it is their joint responsibility that no changes to the timings or methods outlined below are made without prior agreement from the ECoW.

### b) Toolbox talk

1.2.4 Prior to commencement of the facilitation works, all site contractors will be briefed by the ECoW as part of the site induction. The toolbox talk (Appendix 1) will provide a basic overview of the life history, habitat requirements, identification and legal protection granted to the legally protected species / other species of conservation concern present on within the site that may be encountered during the works.

1.2.5 Site-specific toolbox talks will also be undertaken as necessary to identify the habitats present on site that have the potential to be used by these species and outline the environmental measures to be followed in order to avoid breaches of legislation and / or adverse effects on protected species that could occur within or in the vicinity of the working area.

1.2.6 There is a declaration (Appendix 2) for those present to sign to confirm they have understood the constraints and actions presented.

## 1.3 Reptiles

### a) Site status

1.3.1 Within the site boundary, there is some potential for the grass margin of the arable field to provide sheltering and foraging habitat for common reptile species but the arable field itself is considered sub-optimal habitat. There is also some potential for hibernation sites within Little Nursery Wood, and in brick and rubble identified adjacent to White House Farm, as well as some breeding and foraging opportunities for grass snake within the habitat surrounding the dry pond within Little Nursery Wood. However, the available habitat to support reptile species is limited, of little value, and poorly connected to other suitable habitat, with the surrounding area primarily comprising arable farmland. The desk-study data received from the Suffolk Biodiversity Information Service (SBIS) returned only a single historic record of grass snake (*Natrix natrix*) within 2km of the site.

1.3.2 Accordingly, given that the extent of this habitat is quite limited such that it is unlikely that the site is of elevated potential to this species group. As a result, targeted presence/ absence surveys were not undertaken. Nevertheless, given the presence of suitable habitat within and adjacent to the site, there is the potential for this species group to make at least occasional use of the site.

### b) Legislation

1.3.3 There are four common and widespread species of reptile that are native to Britain, i.e. common or viviparous lizard (*Zootoca vivipara*), slow worm (*Anguis fragilis*), adder (*Vipera berus*) and grass snake (*Natrix natrix*). Grass snake is also listed on Schedule 5 of the Wildlife and Countryside Act (WCA) (as amended) (Ref. 1.1) in respect of Section 9, which makes it an offence, inter alia, to intentionally (or recklessly) kill or injure this species (recklessly as added by the Countryside and Rights of Way Act (CroW) Act (Ref. 1.2).

1.3.4 Common lizard, slow worm, adder and grass snake are also included on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (Ref. 1.3). This Act places a duty upon public bodies to have regard to the purpose of conserving biodiversity within all of their actions. The species listed under Section 41 are 'Species of Principal Importance for the conservation of biodiversity in England' for which conservation steps should be taken or promoted.

c) **Toolbox talk**

1.3.5 Prior to commencement of the vegetation clearance works, all site contractors will be briefed by the ECoW as part of the site induction to provide them with a basic overview of the life history, habitat requirements, identification and legal protection granted to reptiles.

1.3.6 Site-specific toolbox talks will also be undertaken as necessary to identify the habitats present within the site that have the potential to be used by reptiles and outline the environmental measures to be followed in order to avoid breaches of legislation and / or adverse effects on reptiles that could occur within or in the vicinity of the working area. The toolbox talk will stress that potential reptile refugia / hibernation features should be left undisturbed; and reptiles should not be handled by contractors.

d) **Precautionary working methods**

1.3.7 The exact timings of the vegetation clearance works are currently unknown. However, these works will need to consider potential impacts to other receptors in addition to reptiles, particularly nesting birds, dependent upon the timings of the works.

1.3.8 Vegetation clearance which does not disturb the ground or vegetation below 150mm can be conducted year-round with a low risk of impacting upon reptiles, however there are seasonal constraints in relation to birds. Potential impacts to nesting birds will need to be considered of vegetation removal is required between March and August inclusive (generally considered to be the bird nesting season).

1.3.9 Any vegetation clearance likely to impact vegetation below 150mm or which is likely to impact the ground layer or features which offer reptiles shelter or protection should take place during the active reptile period (March to October (inclusive), although the exact timings are weather dependant). In order to avoid disturbing reptiles during hibernation (the period where reptiles are most vulnerable). Accordingly, with respect to the proposed clearance of suitable reptile habitat, it is proposed that a staged vegetation clearance exercise is undertaken under the direct supervision of the Ecological Clerk of Works (ECoW), in order to reduce the suitability of the habitats within the site.

1.3.10 Where it is necessary to undertake vegetation clearance in and around suitable reptile habitat the following precautionary measures will be put in place to avoid encountering and accidentally injuring reptiles:

**NOT PROTECTIVELY MARKED**

- vegetation clearance (below 150mm) and ground-breaking works will only be conducted in the active season (March to October inclusive seasonally dependent)<sup>1</sup> and when the weather is suitable (i.e. it is warm, approximately 8°C should be the minimum temperature). The works should not be conducted early in the morning before reptiles have had a chance to ‘warm up’;
- the ECoW will work with the contractor to determine a cutting regime whereby any animals present are encouraged away from the cutting into retained habitats and not isolated in an unsuitable area. This area will be walked by the ECoW to disturb reptiles prior to works commencing;
- the ECoW will also consider any impacts to ground nesting birds, if appropriate and assess any risk;
- initially, vegetation is to be cleared to reduce cover for reptiles (at a minimum 150mm from the ground in the first pass);
- subsequent to this, a suitable period of time as decided by the ECoW will be given to allow for any reptiles present at the time of works to move away from the cut areas;
- the grassland / remaining vegetation will then be cut to as close to ground level as possible;
- vegetation cuttings are to be piled within the site so as to create additional sheltering opportunities to reptiles within the site;
- any suitable reptile sheltering features (e.g. log piles, compost heaps or debris) will be identified by the on-site ecologist. These will be avoided if possible, if not they will be checked by the ECoW before their removal (should this be required). Any removal of sheltering habitats will be supervised by the ECoW. These will be dismantled by hand; this should be overseen by the ecologist. If a reptile is found the ecologist will decide whether or not it is appropriate to relocate the animal;
- shelter features that require removal should be reinstated near the clearance area in a quiet, sheltered location. This will ensure that no

---

<sup>1</sup> Advanced works approach would integrate vegetation clearance in relation to reptiles, great crested newts and bats as necessary; each having preferential periods for vegetation removal; an integrated approach could include cutting to near ground level during winter, then clearance of the lowest trunks and roots under supervision in spring

net loss of potential reptile shelter features takes place. If possible, shelter features should be dismantled by hand and moved out of the working area, supervised by the ECoW where appropriate. Such materials will be lifted (not dragged) out of the working area; and

- if reptiles are found, the ECoW will move the animals out of the way to a place of safety. The exact location would be decided on a case-by-case basis by the ECoW, with any reptiles encountered moved to a safe location within a suitable refuge or hibernation feature, surrounded by suitable foraging and basking habitat and judged to be a safe distance from the ongoing vegetation clearance works. Reptiles will not be handled by contractors, as common lizards and slow worms may shed their tails if handled inappropriately.

1.3.11 Should any reptiles be found on site during the works when the ECoW isn't present, the ECoW should be contacted immediately for advice.

## 1.4 Facilitating work requirements

### a) Vegetation clearance methods

1.4.1 As set out above, vegetation clearance works are required in order to facilitate the development of the site. A staged vegetation clearance exercise at a suitable time of year will be undertaken in order to safeguard any reptiles present at the time of works. Such works will take place under the supervision of the ECoW. Such an approach will minimise the potential harm caused to reptiles within the site as it will avoid disturbing this species group during the hibernation period.

1.4.2 Prior to commencement of the vegetation clearance works, the ECoW will liaise with the contractor to clearly demarcate the required working areas.

1.4.3 If shelter features are present (i.e. log and vegetation piles), those will be checked by the ECoW before their removal (should this be required).

1.4.4 If shelter features are present that require removal, those should be reinstated near the clearance area in a quiet, sheltered location. This will ensure that no net loss of potential reptile shelter features takes place. If possible, shelter features should be dismantled by hand and moved out of the working area, supervised by the ECoW where appropriate. Such materials will be lifted (not dragged) out of the working area.

1.4.5 Should works be required in winter (November to February inclusive) or in cold weather (below 8°C overnight temperature) the ECoW will advise upon

bespoke working methods. Likely to require a hand search and a staged vegetation clearance approach under direct supervision.




1.4.6 The vegetation arisings will be collected and used to create habitat piles in areas adjacent to the site (which are to be retained during the development works).

b) **Vegetation clearance equipment**

1.4.7 The vegetation clearance contractors on site will utilise equipment specific to their clearance methods as per their reasonable avoidance measures. For example:

- John Deere 3 series compact with cut and collector flail;
- John Deere 4 series compact tractor with side arm flail; and
- brushcutter, rakes, pitchforks and other hand tools.

**Plate 1.2: Vegetation clearance equipment**

	
<p><i>John Deere 3 series compact tractor</i></p>	<p><i>John Deere 4 series tractor</i></p>
	
<p><i>Brushcutter</i></p>	

c) **Ground-breaking works methods**

1.4.8 Given that vegetation clearance works are to take place within the site prior to the commencement of any ground-breaking works, it is likely that the risk of encountering reptiles will be reduced, due to the absence of suitable habitat within the areas proposed for ground-breaking works.

1.4.9 Reptiles are known to enter hibernation by burrowing underground, by settling into tree root systems or by entering voids and crevices in the ground or surrounding material. Accordingly, should the works take place during the reptile hibernation period (the dormancy period runs from November to February (inclusive) and initially should be avoided where possible), it is considered necessary for the ground-breaking works to be undertaken under direct supervision of the ECoW. Small sections of the topsoil removed and inspected by the ECoW. Hand-digging under ECoW supervision may also be required.

d) **Ground-breaking works equipment**

1.4.10 Contractors will utilise the equipment as per their reasonable avoidance measures method, For example:

- JCB 16C-I new generation 1 tonne mini digger;
- spade;
- spill kits; and
- Chapter 8 barrier/ Heras fencing.



**Plate 1.3: Ground-breaking works equipment**

	
<p><i>JCB 16C-1 New Generation 1 Tonne Mini Digger</i></p>	<p><i>Chapter 8 barrier/ Heras fencing</i></p>

## References

- 1.1 Her Majesties Stationary Office (1981). The Wildlife and Countryside Act (as amended). HMSO, London.
- 1.2 HMSO (2000) The Countryside Rights of Way (CRoW) Act. HMSO, London
- 1.3 HMSO (2006). The Natural Environment and Rural Communities Act. HMSO, London

Appendix 7A6B.1: Toolbox Talk

# Reptiles

Reptiles in the UK



**Legal Protection**  
All reptile species are protected.

Likely to be found in:



**IF BITTEN SEEK MEDICAL HELP IMMEDIATELY.**

Reptiles typically dormant between November and February. Sheltering/hibernation sites include log / brush piles, mammal burrows and tree / hedgerow roots.

### Appendix 7A6B.2: Declaration of Understanding

Toolbox talk title:	Ecology
Given by:	
Site:	
Date:	

Name	Company	Signature

Name	Company	Signature