



The Sizewell C Project

6.7 Volume 6 Sizewell Link Road Chapter 7 Terrestrial Ecology and Ornithology Appendix 7A Ecological Baseline and Method Statements

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VOLUME 6, 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 - PRIMARY DATA

ANNEX 7A.4 - BIODIVERSITY NET GAIN REPORT

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

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 6, CHAPTER 7, APPENDIX 7A: ECOLOGICAL BASELINE

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Executive Summary

Baseline ecological conditions were assessed within habitat-, species- or species assemblage specific Zones of Influence (Zol) of Sizewell link road (hereafter referred to as the 'proposed development') and wider study area. For this Technical Appendix, the 'site' is defined as the area of land which will be used to construct the new Sizewell Link Road. 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 Sustenance Zones (CSZs) as defined by the Bat Conservation Trust (BCT) (Ref 1.1).

Desk-study data from the Suffolk Biodiversity Information Service (SBIS) 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. The following surveys were carried out in 2019 to further inform the ecological baseline:

- extended Phase 1 habitat and protected species survey;
- great crested newt (*Triturus cristatus*) Habitat Suitability Index (HSI¹) and eDNA surveys of ponds;
- ornithological surveys (breeding);
- water vole (*Arvicola amphibius*) and otter (*Lutra lutra*) surveys;
- bat activity, emergence/re-entry and static detector surveys; and
- bat tree roost assessments.

Twelve statutory designated sites (one Ramsar site, three Special Protection Areas (SPAs), three Special Areas of Conservation (SACs) and five Sites of Special Scientific Interest (SSSIs)) were identified within a 5km radius of the site boundary (several of these with over-lapping boundaries). Fifteen non-statutory County Wildlife Sites (CWS) were identified within a 2km radius of the site boundary.

The area within the site boundary predominantly consists of intensively managed arable land bounded by hedgerows. The hedgerows are primarily species-rich with trees with

¹ 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.

25 hedgerows assessed as being ‘Important’, under the Wildlife and Landscape Criteria of the Hedgerows Regulations (Ref 1.2). Twelve blocks of broadleaved woodland and two plantation woodlands. One hundred and seven waterbodies (ponds) are within 500m of the site, with seven holding water identified within the site boundary.

The site supports an assemblage of plants and terrestrial mammals typical of the habitats present. Three great crested newt meta-populations were identified within the amphibian Zol of the proposed development. Habitats present within the site are largely sub-optimal for reptiles. The site supports a small number of Schedule 1 bird species, as listed on the Wildlife and Countryside Act (W&CA) (Ref 1.3), as well as a number of species listed on both the Red and Amber Birds of Conservation Concern (BoCC) lists (Ref 1.4). Twelve species/species groups of bat have been recorded within the Zol, and many trees with the potential to support roosting bats were identified within and adjacent to the site. Bat activity surveys recorded predominantly common and soprano pipistrelle (*Pipistrellus pygmaeus*) activity with low levels of activity recorded of other species (this did include the nationally rare barbastelle). Records of hedgehog (*Erinaceus europaeus*) have been identified within close proximity of the site boundary. A number of habitats within the site boundary have the potential to support hedgehog including the woodland blocks and hedgerows. Brown hare (*Lepus europaeus*) has been identified within the site boundary, with the arable and hedgerow habitat providing habitat suitable to support this species.

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 1.5). 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 1.5) 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 report 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.

On the basis of these criteria, the following species/habitats within the Zol of the proposed development have been classified as IEFs and scoped into the detailed assessment of the EclA:

- lowland mixed deciduous woodland is an IEF at the county level under CIEEM guidelines (Ref 1.5) and of medium importance, following the EIA-specific assessment methodology;

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- hedgerows are an IEF at the county level under CIEEM guidelines (Ref 1.5) and of medium importance, following the EIA-specific assessment methodology;
- ponds are an IEF at the local level under CIEEM guidelines (Ref 1.5) and of low importance, following the EIA-specific assessment methodology;
- great crested newts are an IEF at the county level under the CIEEM guidelines (Ref 1.5) and of medium importance, following the EIA-specific assessment methodology;
- breeding birds are an IEF at the local level under the CIEEM guidelines (Ref 1.5) and of low importance, following the EIA-specific assessment methodology; and
- the bat assemblage is an IEF at the county level under the CIEEM guidelines (Ref 1.5), and of medium importance following the EIA-specific assessment methodology.

1 Introduction

1.1 Purpose of this appendix

1.1.1 SZC Co² 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 developments 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** of the **Environmental Statement (ES)**. Each of the associated development sites has 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 Sizewell link road (hereafter referred to as the ‘proposed development’). The Sizewell link road site (herein referred to as the ‘site’) incorporates a bypass around Theberton and extends the route further to bypass Middleton Moor, joining the A12 south of Yoxford.

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 desk-study and field surveys undertaken in 2019.

1.1.4 This appendix to the proposed development **Chapter 7** of **Volume 6** 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 6** of the **ES**.

1.2 Structure of this appendix

1.2.1 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 (ZoI) of the

² NNB Generation Company (SZC) Limited, whose registered office is at 90 Whitfield Street, London W1T 4EZ

proposed development and wider study area. Zol, study area and survey area are all defined in **section 3**.

1.2.2 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 (SBIS) or Suffolk Wildlife Trust (SWT), that has been requested for the site and surrounding area.
- Primary data – this refers to survey work carried out in 2019 specifically targeted at informing the proposed development. This has been scoped with the consultees to ensure a robust and complete data set.

1.2.3 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 and primary data used to inform the assessment, as well as the results of this data acquisition. The primary data includes 2019 survey work, along with the justification for the scope and extent of the survey work undertaken. The detail of the desk-study information acquired is presented in **Annex 7A.2**. Detailed results of any 2019 surveys are presented in **Annex 7A.3**; 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 1.5) 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.

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

1.3 Legislative framework

a) Introduction

1.3.1 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

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

- European designations: (Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites (International designation));
- National designations: (Sites of Special Scientific Interest (SSSIs)); and
- non-statutory local (county) designations: (County Wildlife Sites (CWSs) and Roadside Nature Reserves (RNRs)).

i. European designated sites

1.3.3 SPAs are classified in accordance with Article 4 of the European Community (EC) 'Birds Directive' (Ref 1.6). 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.

1.3.4 SACs are designated under the EC 'Habitats Directive' (Ref 1.7). 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 Annex 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).

1.3.5 Ramsar sites are wetlands of international importance designated under the Ramsar Convention (Ref 1.8). 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.

1.3.6 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

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within the citations for European sites (often referred to as qualifying features) are of European/International importance for nature conservation.

ii. National designated sites

1.3.7 SSSIs are designated at the national (UK) level. Originally notified under the National Parks and Access to the Countryside Act (Ref 1.9), SSSIs were re-notified under the Wildlife and Countryside Act (W&CA) (Ref 1.3). Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act (Ref 1.10). The SSSI network in the UK provides statutory protection for the best examples of the country's flora, fauna, and geological or physiographical features.

1.3.8 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 1.9) and the W&CA (Ref 1.3).

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

iii. Local designated sites

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

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

1.3.12 RNRs are non-statutory sites designated by SCC to conserve good examples of species-rich plant areas and plants of national or county importance, and to reduce the threats posed by inappropriate management (all RNRs have their own management regime). RNRs can also be designated as either SSSIs or CWSs.

1.3.13 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 sites

1.3.14 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 W&CA (Ref 1.3) species included on Schedules

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2 and 5 of The Conservation of Habitats and Species Regulations (Ref 1.11); and badgers (*Meles meles*), which are protected under the Protection of Badgers Act (Ref 1.12).

1.3.15 Species that are fully protected under the W&CA (Ref 1.3) and/or Conservation of Habitats and Species Regulations (Ref 1.11), 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.

1.3.16 In addition, Schedule 9 of the W&CA (Ref 1.3) 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

1.3.17 Public bodies have a duty to conserve biodiversity, in accordance with Section 40 of the Natural Environment and Rural Communities (NERC) Act (Ref 1.13). 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.

1.3.18 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 1.13).
- Species listed as being of conservation interest in the relevant UK Red Data Book (RDB) or Birds of Conservation Concern (BoCC) Red List (Ref 1.4).
- 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 1.14).

1.3.19 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 1.13), 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.

1.3.20 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.

1.4 Scope of the baseline

a) Introduction

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

b) Site boundary

1.4.2 Please refer to **Figure 7.3** in **Annex 7A.1** for the site boundary used within the **Chapter 7** of **Volume 6** of the **ES** and this ecological baseline.

c) Defining the Zones of Influence

1.4.3 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 1.5).

1.4.4 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.

- 1.4.5 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 proposed development 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 consider 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 locally recognised designated sites (CWSs and RNRs) within a 2km radius.
- 1.4.6 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).
- 1.4.7 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**

- 1.4.8 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 and primary data (as defined in **section 1.2**). Again, it follows that the study area will differ depending on the type of data and the data sets being considered.
- 1.4.9 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 surveys were undertaken within the site boundary and a 500m radius, whilst no surveys were undertaken for invertebrates, reptiles or terrestrial mammals as the extended Phase 1 habitat and protected species survey identified habitats within the site boundary to be sub-optimal for these species. However, the extended Phase 1 habitat and protected species survey did include surveying for protected species, such as badger, within the site boundary.

1.4.10 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. 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 obtained within the defined study area.

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

1.4.11 **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	N/A
	Non-statutory designated	2km	2km	
Plants and Habitats		2km	2km	Within the site boundary
Invertebrates		2km	2km	Included as part of extended Phase 1 habitat and protected species survey
Reptile		2km	2km	Included as part of extended Phase 1 habitat and protected species survey
Amphibians		2km	2km	Within the site boundary and a 500m buffer area*
Birds		2km	2km	Within the site boundary
Bats	Barbastelle (<i>Barbastellus barbastellus</i>)	10km	10km	Within the site boundary
	Daubenton's bat (<i>Myotis daubentonii</i>)	2km	2km	
	Natterer's bat (<i>Myotis nattereri</i>)	4km	4km	
	Noctule	4km	4km	

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Ecological Feature		Zol	Study Area	Survey Area
	(<i>Nyctalus noctula</i>)			
	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	
	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 plus targeted surveys for otter (<i>Lutra lutra</i>) and water vole (<i>Arvicola amphibius</i>) along watercourses within the site boundary

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

1.4.12 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 (BCT) (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.
- 1.4.13 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, the Zol 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, Chapter 14, Appendix 14A8 - Bats**).
- 1.5 Desk-study/Baseline data
- a) Approach and methodology
- i. Desk-study
- 1.5.1 Records of protected or otherwise notable species of conservation interest within 2km of the site boundary were obtained from SBIS in June 2018.
- 1.5.2 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 (CWS) within 2km.
- 1.5.3 Where designated sites were found to fall within the radii detailed above, citations were obtained from SBIS/the Joint Nature Conservation Committee (JNCC) and Natural England's website. 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.
- 1.5.4 Suffolk's Priority Species and Habitats list (Ref 1.14), and the habitats and species of principal importance included on the Section 41 list of the NERC Act (Ref 1.13), were also reviewed with reference to the habitats and species present, or likely to be present, within the site and wider study area.

ii. Primary data

1.5.5 Ecological surveys carried out in 2019 included:

- extended Phase 1 habitat and protected species survey;
- great crested newt (*Triturus cristatus*) Habitat Suitability Index (HSI³) and eDNA surveys of ponds;
- breeding bird surveys;
- bat activity, emergence/re-entry and static detector surveys;
- bat tree roost assessments; and
- otter and water vole surveys included during the extended Phase 1 habitat and protected species survey.

1.5.6 Full details of the methodologies employed can be found in **Annex 7A.3**.

b) Results

i. Designated sites

1.5.7 Twelve statutory designated sites (one Ramsar site, three SPAs, three SACs and five SSSIs) are within a 5km radius of the site boundary. Details of these sites are provided in **Table 1.2** whilst their locations are presented on **Figure 7.1** in **Annex 7A.1**.

³ 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.

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

Site name	Distance from site	Reason for designation
Minsmere - Walberswick Heaths and Marshes SAC, SPA, Ramsar site and SSSI (includes Westleton Heath NNR)	525m (SSSI) 1.5km north-east (SPA, SAC Ramsar)	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 (<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. 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.
Sizewell Marshes SSSI	2km south-east	Sizewell Marshes SSSI is important for its large area of lowland, unimproved wet meadows which support assemblages of invertebrates and breeding birds. Several nationally scarce plants are also present.
Leiston-Aldeburgh SSSI	3.5km south	Leiston-Aldeburgh contains a rich mosaic of habitats including acid grassland, heath, scrub, woodland, fen, open water and vegetated shingle. This mix of habitats in close juxtaposition and the associated transition communities between habitats is unusual in the Suffolk Coast and Heaths. The variety of habitats support a diverse and abundant community of breeding and overwintering birds, a high number of dragonfly species and many scarce plants.
Sandlings SPA	3.5km south-east	Supports populations of European importance of the following Annex I species: Nightjar and woodlark.
Southern North Sea SAC	3.5km south-east	This site lies along the east coast of England, predominantly in the offshore waters of the central and southern North Sea, from north of Dogger Bank to the Straits of Dover in the south. The Annex II species that is the primary reason for the selection of the SAC is the Harbour porpoise (<i>Phocoena phocoena</i>).
Outer Thames SPA	3.5km south-east	The site is designated for non-breeding red-throated diver (<i>Gavia stellata</i>), breeding common tern (<i>Sterna hirundo</i>) and little tern (<i>Sternula albifrons</i>).

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Site name	Distance from site	Reason for designation
Dew's Ponds SAC and SSSI	4.4km north	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.
Potton Hall Fields SSSI	4.4km east	A site of special interest due to the presence of nationally rare arable weed Red-tipped Cudweed (<i>Filago lutescens</i>).

- 1.5.8 The development proposals will involve no direct land take from any of these statutory designated sites and the site 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 W&CA (Ref 1.3). This is a species associated with open sandy ground and arable margins and was not identified within the site during the Phase 1 habitat survey.
- 1.5.9 Fifteen non-statutory designated CWS are within 2km of the site boundary. 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**.

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

Site name	Distance from site	Reason for designation
Kiln Grove and Meadow CWS	0.5km south-west	Kiln Grove is an example of a coppice-with-standards ancient woodland (biodiversity priority habitat). The standards are mainly oak (<i>Quercus</i> sp.) and Ash (<i>Fraxinus excelsior</i>) with occasional Hornbeam (<i>Carpinus betulus</i>). The boundaries have a ditch and bank system typical of ancient woodland along with some veteran pollards. The ground flora is typical of ancient woodland and includes Primrose (<i>Primula vulgaris</i>), Wood Sedge (<i>Carex sylvatica</i>), Sanicle (<i>Sanicula europaea</i>), Bugle (<i>Ajuga reptans</i>) and Common Spotted-orchid (<i>Dactylorhiza fuchsii</i>). There are two woodland ponds and a number of internal earthworks which provide additional habitat diversity
England Covert CWS	0.5km north-east	Within Minsmere Valley: Eastbridge to Reckford Bridge
Minsmere Valley, Reckford Bridge to Beveriche Manor CWS	0.5km north	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 otter are often seen throughout the valley.
Theberton Woods CWS	0.5km south-west	Theberton Woods is an important example of a semi-natural boulder clay woodland that supports a diverse woodland flora including butterfly (<i>Platanthera bifolia</i>) and bird's nest orchids (<i>Neottia nidus-avis</i>). Although the woodland is not included in the ancient woodland inventory, it is shown on the 1st series of Ordinance Survey (OS) maps and there are some earthworks that suggest it may be ancient. The woodland contains a large number of ponds supporting a significant population of great crested newts. Since 2000 a small, introduced population of purple emperor butterfly (<i>Apature iris</i>) has been established, feeding on the abundant willows (<i>Salix</i> sp.) .
Simpsons Fromus Valley CWS ⁴	570m north	Simpson's Fromus Valley is a preserved wildlife site with meadows, woodland, ancient trees and ponds. Foremost amongst the highlights is the river Fromus, which runs through a wooded gully cutting a deep gorge out into the meadows, through the length of the Reserve. The 27 acres at Fromus Valley now support over 50 bird species including endangered species such as bullfinch (<i>Pyrrhula pyrrhula</i>),

⁴ Simpsons Fromus Valley CWS has been contacted but there has been no correspondence. No site boundary has therefore been provided on **Figure 7.2** in **Annex 7A.1**.

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Site name	Distance from site	Reason for designation
		yellowhammer (<i>Emberiza citrinella</i>) and skylark (<i>Alauda arvensis</i>). The site provides a wildlife haven amid intensively farmed arable land attracting high numbers of passing migrant birds in the winter, including fieldfare (<i>Turdus pilaris</i>) and redwing (<i>Turdus iliacus</i>) and acting as a refuge for resident bird species. A stagnant pond has been de-silted back to its clay base and scrub and trees cleared or coppiced to allow more light into the pond. Interesting emergent and marginal plants such as Thread-leaved Water-crowfoot (<i>Ranunculus trichophyllus</i>), Branched Bur-reed (<i>Sparganium erectum</i>) and Pink Water-speedwell (<i>Veronica catenata</i>) are expected to re-colonise. Insect life completes the ecosystem; beetles, flies, four species of dragonfly, bees and butterflies abound
Leiston Airfield CWS	1km south-west	This site consists of a mosaic of species-rich grassland and scrub. It is situated on the site of Leiston disused airfield. Although a small area, it supports many plants characteristic of unimproved grassland, for example Pepper Saxifrage (<i>Silaum silaus</i>), Common Centaury (<i>Centaurium erythraea</i>), Primrose (<i>Primula vulgaris</i>), Bugle (<i>Ajuga reptans</i>) and Common Spotted-orchid (<i>Dactylorhiza fuchsii</i>). Of particular interest is a population of Yellow-wort (<i>Blackstonia perfoliata</i>) which grows on the public footpath which runs along the western edge of the site.
Stonehill Covert CWS	1km north-east	Within Minsmere Valley: Eastbridge to Reckford Bridge
Minsmere Valley Eastbridge to Reckford Bridge CWS	1km north	The entire valley is of extreme importance for wildlife, forming the last unspoilt and least improved of Suffolk's larger marshland river valleys. Part of the valley forms the internationally important Minsmere/Walberswick SSSI. The marshes which form the central portion of the valley are botanically the richest marshes of the whole of the valley. This site provides valuable areas for breeding birds and invertebrates. Part of this site is owned by Royal Society for the Protection of Birds (RSPB) and is part of their Minsmere reserve. Otters are known to use the valley.
Westleton common and adjacent habitats CWS	1km north	Westleton Common, which is situated to the north west of Minsmere nature reserve is of great importance for wildlife conservation. It supports a good diversity of acid grassland plants including heath bedstraw and a number of rare clover species.. Another unusual feature of Westleton Common is its extensive and diverse lichen flora. This site is also important for invertebrate conservation. The silver studded blue butterfly (<i>Plebejus argus</i>), a Schedule 5 W&CA (Ref 1.3) species, closely associated with heathland and restricted to a few localities in Suffolk has been reintroduced to this site as part of a conservation programme. Furthermore, the exposed sand banks of a number of disused sand pits provides ideal

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Site name	Distance from site	Reason for designation
		conditions for a number of invertebrates restricted to this type of habitat. Reptiles are also well represented on the Common; common lizard (<i>Zootoca vivipara</i>), adders (<i>Vipera berus</i>) and slow-worm (<i>Anguis fragilis</i>) have been recorded here. In addition, nightjar an uncommon heathland bird has been recorded on this site.
Darsham Marshes CWS	1km north-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 tinunculus</i>), marsh and hen harrier (<i>Circus aeruginosus</i> and <i>Circus cyaneus</i>) frequently hunt in the area.
Suffolk Coastal 102 CWS (RNR)	1km south-west	Sulphur Clover (<i>Trifolium ochroleucon</i>) and Dyer's Greenwood (<i>Genista tinctoria</i>). This site is also a RNR.
Buckle's Wood CWS Also an Ancient and Semi-Natural Woodland (ASNW) on the Ancient Woodland Inventory (AWI)	1.2km south	The site contains numerous old coppice stools mainly comprising Hazel (<i>Corylus avellana</i>), with Ash, Field Maple (<i>Acer campestre</i>) and Hornbeam. Standard trees include mainly oak. There is a good ditch and bank boundary with a mixed-species hedge which, together with the old coppice stools, indicates woodland of some considerable age. Buckle's Wood is also listed on the Ancient Woodland Inventory for Suffolk
Sizewell Levels and Associated Areas CWS	1.9km south-east	A large area of land, consisting of woodland, plantation, wet meadow, osier (<i>Salix</i> spp.) beds and scrub situated behind Sizewell power station is considered to be of both regional and national importance for wildlife conservation. The main importance of the grazing marshes lies in the diversity and abundance of the birds which inhabit the area. The ground remains waterlogged through the winter and numerous dykes provide good cover for high numbers of mute swan (<i>Cygnus olor</i>), teal (<i>Anas crecca</i>), mallard (<i>Anas platyrhynchos</i>) and moorhen (<i>Gallinula chloropus</i>). Goose Hill, Nursery Covert and Kenton Hills support breeding populations of a number of nationally rare birds which are specially protected (Schedule 1 of W&CA (Ref 1.3)). Good numbers of migrant birds also frequent the area
The Spring Wood CWS Also an Ancient and Semi-Natural Woodland (ASNW) on the	1.9km north-west	A ditch and bank of ancient origin encloses this small woodland. Another feature of historical value, is an internal bank which divides the wood into two sections. The tree layer consists mainly of oak and Ash with frequent Horse-chestnut (<i>Aesculus hippocastanum</i>), Field Maple, lime (<i>Tilia</i> spp.) and Sycamore (<i>Acer pseudoplatanus</i>). Below the tree layer is a dense understorey composed of Field Maple, Elm (<i>Ulmus</i>

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Site name	Distance from site	Reason for designation
Ancient Woodland Inventory (AWI)		<i>spp.</i>), Hawthorn (<i>Crataegus monogyna</i>) and Hornbeam coppice. Of particular botanical interest and a strong indicator of ancient woodland is the presence of a wild service tree, a rare species in Suffolk. In addition, woodcock (<i>Scolopax rusticola</i>) has been recorded in this wood.
Coe Wood CWS Also an Ancient and Semi-Natural Woodland (ASNW) on the Ancient Woodland Inventory (AWI)	2km north-west	Ancient woodland almost entirely dominated by Hornbeam and Ash, with scattered oak. Goat Willow (<i>Salix caprea</i>) is abundant on the wetter ground; Hazel, Field Maple and Aspen (<i>Populus tremula</i>) occur infrequently. To the south, on the edge of a stream there are stands of mostly Wych Elm (<i>Ulmus glabra</i>) with some Ash. Ground flora includes Wood Anemone (<i>Anemone nemorosa</i>), Wood-sorrel (<i>Oxalis acetosella</i>), Sanicle, Orpine (<i>Sedum telephium</i>) and Ramsons (<i>Allium ursinum</i>). There are a series of ditches and banks in and around the wood and a number of rides and pathways, most of which are rather damp and overgrown. There are a few ponds in the wood; however, these obtain little or no light and do not support aquatic vegetation. The wood receives little active management.

1.5.10 Most of the habitat within the proposed route alignment is arable farmland. The non-statutory sites in **Table 1.3.** comprise mainly lowland mixed deciduous woodland with the Minsmere Valley, Darsham Marshes and Sizewell Belts supporting wetland habitat. Lowland mixed deciduous woodland habitat is listed under Section 41 of the NERC Act (Ref 1.13) it together with wetland are habitats targeted for action on Suffolk’s Priority Species and Habitats list (Ref 1.14).

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

ii. **Plants and habitats**

1.5.12 The desk-study identified 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.

1.5.13 The plant species identified by the desk-study data can be divided into three broad categories:

- Sneezewort (*Achillea ptarmica*), Marsh-mallow (*Althaea officinalis*), Heather, Bell Heather, Southern Marsh-orchid, Frogbit (*Hydrocharis morsus-ranae*), Marsh Pennywort (*Hydrocotyle vulgaris*), Bog Pondweed (*Potamogeton polygonifolius*) and Brookweed (*Samolus valerandi*) are associated with wet grassland, lowland heath and aquatic habitats associated with Minsmere Reserve;
- Heather, Heath-grass (*Danthonia decumbens*), Bell Heather and Navelwort (*Umbilicus rupestris*) characteristic of the coastal heath and wet grassland of Westleton Common; and
- Whorl-grass (*Catabrosa aquatica*), Southern Marsh-orchid, Common Cudweed (*Filago vulgaris*), Water-violet (*Hottonia palustris*), Lesser Pondweed (*Potamogeton pusillus*), Marsh Ragwort (*Senecio aquaticus*) and Marsh Arrowgrass (*Triglochin palustris*) are associated with the mosaic of fen and marsh at Darsham Marshes.

1.5.14 None of these species were recorded as present, during the Phase 1 habitat survey, within the site boundary, nor are they expected to be as habitat suitable for these species was not recorded.

1.5.15 Sandy Stilt Puffball (*Battarrea phalloides*) listed under Section 41 of the NERC Act (Ref 1.13), Schedule 8 of the W&CA (Ref 1.3), was identified as part of the desk-study on a protected road verge of the B1122 Yoxford, 920m away from the site.

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- 1.5.16 Seven Nationally Scarce species were identified: Marsh-mallow, Mossy Stonecrop (*Sedum acre*), Red-tipped Cudweed, Small-flowered Catchfly (*Silene gallica*), Marsh Sow-thistle (*Sonchus palustris*), Clustered Clover (*Trifolium glomeratum*), Sulphur Clover and Suffocated Clover (*Trifolium suffocatum*), all these species are associated with either wetland or grassland habitats. None of these species were recorded as being present, during the Phase 1 habitat survey, within the site, nor are they expected to be within the site boundary as suitable habitat for these species was not recorded.
- 1.5.17 The Phase 1 habitat survey map and associated Target Notes (TNs) are presented in **Figures 7.3 to 7.5** in **Annex 7A.1**. TNs are described in **Annex 7A.3** and are not repeated in this document. Those hedgerows assessed against the Wildlife and Landscape criteria of the Hedgerows Regulations (Ref 1.2) are indicated by green ‘hedgerow numbers’ H1, H2 and so on. The results of this assessment are also presented in **Annex 7A.3**.
- 1.5.18 Four non-native invasive plant species listed under Schedule 9 of the W&CA (Ref 1.3) were identified by the desk-study: Canadian Waterweed (*Elodea canadensis*); Nuttall’s Waterweed (*Elodea nuttallii*); Indian Balsam (*Impatiens glandulifera*); and Rhododendron (*Rhododendron ponticum*). None of these desk-study records were located within the site boundary. The Phase 1 habitat survey confirmed the absence of these non-native invasive plant species within the site boundary.
- 1.5.19 The site comprises predominately intensively managed arable fields with no scarce arable weeds or other notable plant species having been identified. Arable field margins are a habitat listed under Suffolk’s Priority Species and Habitat list (Ref 1.14), but no botanically rich arable margins were identified within the site boundary. Arable farmland is widespread in Suffolk.
- 1.5.20 There are also small areas of poor semi-improved grassland, including one large field of neutral semi-improved grassland supporting common grassland species including Meadow Foxtail (*Alopecurus pratensis*), Soft-brome (*Bromus hordeaceus*), Fescues (*Festuca* spp.), Yorkshire-fog (*Holcus lanatus*), Meadow Buttercup (*Ranunculus acris*), Creeping Buttercup (*Ranunculus repens*) and Common Bird’s-foot-trefoil (*Lotus corniculatus*). There are also two smaller areas of neutral semi-improved grassland present within the site, one south of Pretty Road and one east of TN6. Both areas of grassland support a variety of common species including Meadow Foxtail, Soft Brome (*Bromus hordeaceus*), Yorkshire-Fog (*Holcus lanatus*) and Meadow Buttercup.
- 1.5.21 The arable fields present within the site are bordered by fences and hedgerows, most of the hedgerows present are species-rich with trees.

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Twenty-five hedgerows (H1, H3, H4, H5, H6, H7, H8, H9, H10, H11, H13, H14, H15, H18, H19, H23, H31, H35, H36, H37, H39, H40, H42, H48 and H51) support a diverse mix of shrub species including Elm, Hawthorn, Blackthorn (*Prunus spinosa*), Rose (*Rosa spp.*) and Field Maple, with diverse ground floras including Dog’s Mercury (*Mercurialis perennis*), Common Nettle (*Urtica dioica*) and Lord’s-and-Ladies (*Arum maculatum*). Hedgerows (H1, H2, H3, H3, H4, H5, H7, H8, H9, H10, H11, H15, H18, H19, H21, H23, H29, H31, H35, H36, H37, H39, H40, H42, H48, H65, H132, H147, and H512) are ‘Important’ when assessed against the Wildlife and Landscape Criteria of the Hedgerows Regulations (Ref 1.2). The remaining hedgerows are species-poor and dominated by Hawthorn and Blackthorn. Hedgerows are a Suffolk BAP priority habitat (Ref 1.15) and are listed under Section 41 of the NERC Act (Ref 1.13).

1.5.22 Alongside Littlemoor Road is a species-rich road verge (TN7) with species present including Agrimony (*Agrimony eupatoria*), Common Knapweed (*Centaurea nigra*), Yarrow (*Achillea millefolium*), Meadow Vetchling (*Lathyrus pratensis*), Goat’s-beard (*Aruncus dioicus*) and Black Medic (*Medicago lupulina*).

1.5.23 Twelve blocks of broadleaved semi-natural woodland and two blocks of plantation woodland are present wholly or partly within the site. None of these woodlands are ancient.

- **TN1 (Figures 7.3 in Annex 7A.1)** (0.08ha) a small, scrubby woodland surrounding a pond. The canopy layer is Hazel (*Corylus avellana*) and Beech (*Fagus sylvatica*) with a shrub layer of Bramble (*Rubus fruticosus* agg.), Hawthorn and willow (*Salix spp.*). The ground flora consists of Ground Ivy (*Glechoma hederacea*) and Lord’s-and-Ladies.
- **TN2 (Figure 7.3 in Annex 7A.1)** (0.27ha) a sparse woodland with several mature oak trees and a shrub layer of Hawthorn, Hazel and Willow. The sparse ground flora includes Bramble, Dog’s Mercury and Common Nettle (*Urtica dioica*).
- **TN3 (Figure 7.3 in Annex 7A.1)** (3.3ha) a semi-mature woodland with abundant Hazel. Outside the site boundary and not fully surveyed.
- A single block of broadleaved plantation woodland TN4 (**Figure 7.3 in Annex 7A.1**) (0.27ha), with a canopy of oak and Wild Cherry (*Prunus avium*), outside and immediately adjacent to the southern boundary of the site. The ground flora predominately tall ruderals with Common Nettle and Cleavers (*Galium aparine*).
- **TN5 (Figure 7.4 in Annex 7A.1)** (0.52ha) a woodland copse with a tree canopy of Wild Cherry, oak and Ash. It has a sparse ground flora with

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Ivy (*Hedera helix*), Dog’s Mercury, Common Nettle and Cow Parsley (*Anthriscus sylvestris*).

- TN6 (**Figure 7.4 in Annex 7A.1**) (0.55ha) a woodland with a tree canopy of Hornbeam, Pedunculate Oak (*Quercus robur*) and Beech, and no understory. The ground flora consists of Herb-Robert (*Geranium robertianum*), Ivy, Dog’s Mercury and False Brome (*Brachypodium sylvaticum*).
- TN8 (**Figure 7.4 in Annex 7A.1**) (0.62ha) a plantation woodland with a tree canopy of young to semi-mature oak and Ash. The shrub layer is Hawthorn, Hazel and Beech and the ground flora Common Ivy and Dog’s Mercury-dominated.
- TN9 (**Figure 7.4 in Annex 7A.1**) is a small woodland copse of oak, Ash and Scots Pine (*Pinus sylvestris*) with sparse shrub layer of Hawthorn. The ground flora comprises Ground Ivy, Broad-leaved Dock (*Rumex obtusifolius*), Hogweed (*Heracleum sphondylium*) and Cow Parsley.
- Plumtreehills Covert, TN10 (**Figure 7.4 in Annex 7A.1**) (2.25ha) a mature woodland with sparse understory. The tree canopy is Sweet Chestnut (*Castanea sativa*), the understory Hazel and Elder (*Sambucus nigra*) and the ground flora Bluebell (*Hyacinthoides non-scripta*), Common Nettle and Lesser Celandine (*Ficaria verna*).
- TN11 (0.95ha) (**Figure 7.5 in Annex 7A.1**) a strip of broadleaved semi-natural woodland with a tree canopy of lime, Hornbeam and oak, an understory of Hawthorn, Holly (*Ilex aquifolium*), Rose, Field Maple, Honeysuckle (*Lonicera periclymenum*) and elm. The ground flora includes Bluebell, Sweet Woodruff (*Galium odoratum*), Lesser Celandine, Primrose, Pignut (*Conopodium majus*), Lord’s and-Ladies and Wood Avens (*Geum urbanum*).
- TN12 (**Figure 7.5**) (0.82ha) a small woodland copse with a tree canopy of oak and Wild Cherry and limited understory. The ground flora comprises mainly tall ruderals including Hogweed, Cleavers and Common Nettle.
- TN14 (**Figure 7.5 in Annex 7A.1**) (0.59ha) a small copse, half within the site boundary. The canopy is Hornbeam, Sycamore and oak with an understory of Hawthorn and Elder. The ground flora consists of Alexanders (*Smyrniolus satrum*), Cleavers), Broad-leaved Dock, Herb-Robert and Greater Burdock (*Arctium lappa*).

1.5.24 Lowland mixed deciduous woodland is a priority habitat in the Suffolk Priority Habitats and Species List (Ref 1.16) and is listed as a habitat of principal importance under Section 41 of the NERC Act (Ref 1.13).

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- 1.5.25 Within the site boundary, there are seven ditches and four watercourse , 10 of which had access to survey all of which were dry at the time of the Phase 1 habitat survey. Most of the ditches were cleared of all aquatic and marginal vegetation.
- 1.5.26 Within 500m of the site, 107 waterbodies (ponds) were identified. Of these ponds access was not granted to 54 ponds, 17 ponds were scoped out (nine were dry and eight ponds did not exist). Seven ponds, that hold water, are within the site boundary. Refer to **Figure 7.6 to 7.8** in **Annex 7A.1** for pond locations and **Annex 7A.3** for detailed descriptions of each pond. Ponds are a habitat listed under Suffolk’s Priority Species and Habitats list (Ref 1.14).

iii. Invertebrates

- 1.5.27 The desk-study revealed 135 records of invertebrates within 2km of the site boundary. Desk-study records revealed six butterfly species, including white-letter hairstreak (*Satyrrium w-album*), silver-studded blue, white admiral (*Limenitis camilla*), wall (*Lasiommata megera*), grayling (*Hipparchia semele* subsp. *semele*), small heath (*Coenonympha pamphilus*) and purple emperor that are RDB listed species, protected under Schedule 5 of the W&CA (Ref 1.3) and listed under Section 41 of the NERC Act (Ref 1.13), and on Suffolk’s Priority Species and Habitats list (Ref 1.14). White-letter hairstreak feeds on Elm so could potentially be present along the hedgerows within the site. Small heath and grayling could also be present within the site.
- 1.5.28 Desk-study records revealed 33 moth species (see **Annex 7A.2**) listed under Section 41 of the NERC Act (Ref 1.13), and on Suffolk’s Priority Species and Habitats list (Ref 1.14). All the records are over 0.75km away from the site. Most of these moth species are reed and fen specialists, found within Minsmere Marshes and will, therefore, not be present within the site.
- 1.5.29 Desk-study records revealed the Norfolk hawker (*Anax isosceles*) as an Endangered RDB listed dragonfly, protected under Schedule 5 of the W&CA (Ref 1.3) and listed under Section 41 of the NERC Act (Ref 1.13), and Suffolk’s Priority Species and Habitats list (Ref 1.14). Most of the desk-study records were from the Minsmere Marshes and there is limited suitable habitat for this species within the site
- 1.5.30 Desk-study records revealed a single soldier fly species black colonel (*Odontomyia tigrine*). This species of soldier fly is common for wetland habitats and therefore due to this habitat not being within the site, it is assumed that black colonel fly is absent from the site.
- 1.5.31 Within the site the arable fields and species-poor grasslands are of limited value to uncommon or notable invertebrate species. The woodland blocks (see **Figure 7.3 to 7.5** in **Annex 7A.1**) and species-rich hedgerows

throughout the site are likely to support a more diverse assemblage of invertebrate species which could include notable species.

iv. Amphibians

- 1.5.32 The desk-study revealed 42 records of amphibians within 2km of the site boundary. Species recorded comprised common toad (*Bufo bufo*) (seven records), common frog (*Rana temporaria*) (12 records), smooth newt (*Lissotriton vulgaris*) (ten records) and great crested newt (18 records). Two great crested newt records were from within 500m of the site boundary. One was located within Kelsale-Cum Carlton (240m from the site boundary) and the other was from Middleton Moor (380m from the site boundary). Three desk-study records of common toad were within 500m of the site boundary. Five records of smooth newt were from within Theberton Woods, 600m from the site. The full results of the desk-study are presented in **Annex 7A.2**.
- 1.5.33 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 1.17) A review of Suffolk's Priority Species and Habitats list (Ref 1.14) identified great crested newts as a priority species for conservation action in the county (Ref 1.17). Great crested newts are listed under Section 41 of the NERC Act (Ref 1.13), and protected under Schedule 5 of the W&CA (Ref 1.3), and Schedule 2 of the Conservation of Habitats and Species Regulations (Ref 1.11).
- 1.5.34 Arcadis identified 107 waterbodies within 500m of the site. Access was not granted to 53 ponds for surveys. Sixteen ponds (P039, P040, P043, P044, P045, P056, P080, P082, P116, P118, P120, P135, P139, P165, P166 and P167) were scoped out for eDNA survey due to being dry and eight ponds (P085, P125, P127, P128, P138, P141, P149 and P169) were not extant. HSI surveys for great crested newts were conducted for 30 ponds and eDNA surveys for 27 of these ponds in 2019. P051 was not eDNA surveyed due to it being unsafe to take water samples as there was deep mud round the pond edges. P130 was not eDNA surveyed due to access issues. P068 was not surveyed for eDNA as there was not enough water and there was deep mud around the pond edges.
- 1.5.35 **Table 1.4** provides a summary of the habitat suitability for great crested newts of the 54 ponds scoped into the 2019 surveys, 16 ponds which were dry and eight ponds which did not exist. The location of all ponds is shown on **Figure 7.6 to 7.8 (Annex 7A.1)**.
- 1.5.36 **Annex 7A.3** provides detailed descriptions of all ponds.

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Table 1.4: HSI scores for ponds at the site

Pond ID	HSI score	Comments	eDNA results
P031	0.77 - Good	Farm pond with dense scrubby vegetation making it inaccessible in many areas for survey	Absent
P032	0.69 - Average	Not Applicable (N/A)	Present
P035	0.65 - Average	N/A	Inconclusive
P036	0.83 - Excellent	Limited access to pond due to steep sides and dense vegetation.	Present
P038	0.67 - Average	N/A	Absent
P039	Dry	Dry pond with dense scrub. Leaf litter covering the pond surface.	Not Available (N/A)
P040	Dry	Depression in field could hold shallow water after heavy rain heavily, likely to dry quickly, was dry at the point of survey.	N/A
P041	0.62 - Average	N/A	Inconclusive
P042	0.48 - Poor	Shallow pond with filamentous algae and leaf litter.	Inconclusive
P043	Dry	N/A	N/A
P044	Dry	N/A	N/A
P045	Dry	N/A	N/A
P046	0.52 - Below Average	N/A	Absent
P047	0.87 - Excellent	N/A	Absent
P051	0.51 - Below Average	Unsafe to survey due to deep mud.	N/A
P053	0.78 - Good	Difficult to access. Scrubby edge with no access to majority of pond edge.	Present
P054	0.63 - Average	Shallow and inaccessible in a few areas.	Present
P056	Dry	Surveyed from adjacent land.	N/A
P060	0.66 - Average	N/A	Absent

NOT PROTECTIVELY MARKED

Pond ID	HSI score	Comments	eDNA results
P064	0.77 - Good	N/A	Present
P066	0.79 - Good	Pond with a large island on western edge.	Present.
P068	0.72 - Good	Not suitable for eDNA survey, water level too low. Steep sided and sinking mud impeded access. Landowner reports great crested newt in this pond.	N/A
P080	Dry	Pond in scrubby woodland, almost dry. Just a 1cm of water left.	N/A
P081	0.83 - Excellent	N/A	Present
P082	Dry	N/A	N/A
P085	No pond	Dry depression with dead wood and tall ruderal vegetation. No sign of holding water.	N/A
P107	0.54 - Below Average	Dense Bramble scrub on one edge of the pond.	Present
P108	0.40 - Poor	A circular ditch some parts dry, others have shallow water.	Absent
P109	0.86 - Excellent	Landowner reported great crested newt.	Absent.
P115	0.67 - Average	Woodland pond with egg laying material water mint	Absent
P116	Dry	N/A	N/A
P118	Dry	N/A	
P119	0.78 - Good	Steep sided pond which limits access	Present
P120	Dry	N/A	N/A
P121	0.42 - Poor	N/A	Present
P125	No Pond	N/A	N/A
P127	No pond	Depression but nothing to suggest pond present.	N/A
P128	No pond	Depression no sign of water being present.	N/A
P130	0.51 - Below Average	Ornamental pond with fish.	N/A

NOT PROTECTIVELY MARKED

Pond ID	HSI score	Comments	eDNA results
P131	0.71 - Good	N/A	Absent
P135	Dry	Wet mud so appears to have held water. Good egg laying material such as Water Forget-me-not (<i>Myosotis scorpiodes</i>). Not suitable breeding habitat in 2019.	N/A
P138	No pond	Depression in scrubby woodland. Not been a pond for a long time and an inflow from adjacent arable field also dry.	N/A
P139	Dry	N/A	N/A
P140	0.71 - Good	N/A	Present
P141	No pond	Old pond in woodland completely scrubbed over.	N/A
P149	No pond	Depression in woodland but no evidence of ever holding water.	N/A
P151	0.66 - Average	N/A	Absent
P160	0.36 - Poor	N/A	Absent
P163	0.64 - Average	N/A	Present
P164	0.71 - Good	N/A	Present
P165	Dry	N/A	N/A
P166	Dry	N/A	N/A
P167	Dry	N/A	N/A
P169	No pond	Dry ditch, no pond.	N/A

1.5.37 Of the 27 ponds sampled for eDNA, great crested newts were confirmed through analysis in 13 ponds (P032, P036, P053, P054, P064, P066, P081, P107, P119, P121, P140, P163 and P164). Three of these ponds (P036, P119 and P164) are within the site.

1.5.38 Pond P107 (**Figure 7.6, Annex 7A.1**) is approximately 240m north of the site, south of Yoxford within a small group of trees separating two large arable fields to the west and east and scattered trees and semi-improved grassland to the north. There is good hedgerow connectivity to a large area of woodland to the north-east which offers good foraging habitat and opportunities for hibernation sites.

- 1.5.39 Ponds P036, P064, P066, P119, P121 and P164 (**Figures 7.6 and 7.7, Annex 7A.1**) are a cluster of ponds located south of Middleton Moor, east of East Suffolk railway line, which is within the site boundary. This cluster of ponds are considered to be a second great crested newt population as it is 820m away from population one (the newts using P107). P036 and P119 are within the site, west of Littlemoor Road (See **Figure 7.6 to 7.8 in Annex 7A.1**).
- 1.5.40 Ponds P053, P054 and P140 (confirmed great crested newts from eDNA analysis) are adjacent to each other and located 305m south of the site boundary in a large area of dense scrub and trees, adjacent to Dovehouse Farm (west of Plumtreehills Covert). There is good foraging habitat and opportunities for hibernation sites within the scrub. Ponds P163 and P081 (**Figure 7.7, Annex 7A.1**) are nearby (305m north of Ponds P053, P054 and P140) in the corner of an arable field within a thin strip of woodland, south of Hawthorn Cottages. This grouping of ponds represents a third potential population of an unknown size, within 500m of the site. It is approximately 1.8km away from population two and great crested newt are known to travel up to 1km (Ref 1.18)
- 1.5.41 While great crested newts are distributed throughout the Zol, the majority of the site consists of arable fields which are of limited suitability to great crested newts. The field margins, hedgerows and blocks of woodland comprise suitable foraging habitat, with the woodland providing suitable hibernation sites, and hedgerows providing connectivity between ponds.
- 1.5.42 For full details of survey results, please refer to **Annex 7A.3**.

v. Reptiles

- 1.5.43 A review of Suffolk's Priority Species and Habitats list (Ref 1.14) identified four native, reptile species including adder, common lizard, grass snake (*Natrix helvetica helvetica*) 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 1.13).
- 1.5.44 The desk-study revealed 17 records of reptiles within 2km of the site. Species recorded comprised grass snake, common lizard, slow-worm and adder. Two adder records were between 1.5 to 2.0km to the north-east of the site boundary. One grass snake record was 2km from the site and the remaining records were 0.3 to 1.5km from the site boundary. Two common lizard records were approximately 1.5km and 2km from the site with one slow-worm record, approximately 2km from the site boundary.
- 1.5.45 No targeted reptile surveys were conducted due to the limited extent of suitable habitat within the site. It was assumed that the hedgerow network on

site could support a small population of common reptile species; however, there is better quality habitat within the wider area outside the Zol to support reptiles. An incidental reptile sighting was noted during a bird transect survey in 2019, an adult grass snake was observed basking at the base of a hedgerow, south of B1122 Yoxford Road within the site boundary.

1.5.46 Within the site boundary, most of the land comprises arable fields with a small portion of semi-improved grassland to the south-east. The margins of the arable fields present within the site are regularly ploughed and therefore have limited potential to provide sheltering and foraging habitat for common reptile species. The arable fields themselves are also considered sub-optimal to support reptiles. The available habitat to support reptile species within the site is considered to be extremely limited and the site considered to be of little value to reptile species.

vi. Birds

1.5.47 The results of the desk-study presented in **Annex 7A.2** has identified records of 61 bird species that are protected under Schedule 1 of the W&CA (Ref 1.3), 21 species on the Red List of BoCC (Ref 1.4) (species of high conservation concern) and 18 species found on the Amber List of BoCC (Ref 1.4) (species of medium conservation concern). In addition, a further 28 species that are either Green List of BoCC or of no conservation concern (species of low conservation concern) were also identified. All bird records were within 2km of the site boundary. Several of these bird species are also listed within Section 41 of the NERC Act (Ref 1.13). 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 W&CA*	Section 41 NERC Act	Red List (BoCC)	Amber List (BoCC)
Lesser Redpoll (<i>Acanthis cabaret</i>)		✓	✓	
Marsh Warbler (<i>Acrocephalus palustris</i>)	✓	✓	✓	
Skylark (<i>Alauda arvensis</i>)		✓	✓	
Kingfisher (<i>Alcedo atthis</i>)	✓			✓
Garganey (<i>Anas querquedula</i>)	✓			
European Greater White-fronted Goose (<i>Anser albifrons</i> subsp. <i>Albifrons</i>)		✓		
Tree Pipit (<i>Anthus trivialis</i>)		✓	✓	
Purple Heron (<i>Ardea purpurea</i>)	✓			
Scaup (<i>Aythya marila</i>)	✓	✓	✓	

NOT PROTECTIVELY MARKED

Bird Species	Sch 1 W&CA*	Section 41 NERC Act	Red List (BoCC)	Amber List (BoCC)
Bittern (<i>Botaurus stellaris</i>)	✓	✓		✓
Dark-bellied Brent Goose (<i>Branta bernicla</i> subsp. <i>Bernicla</i>)		✓		
Stone-curlew (<i>Burhinus oediconemus</i>)	✓	✓		
Lapland Bunting (<i>Calcarius lapponicus</i>)	✓			✓
Ruff (<i>Calidris pugnax</i>)	✓		✓	
Temminck's Stint (<i>Calidris temminckii</i>)	✓			
Nightjar (<i>Caprimulgus europaeus</i>)		✓		✓
Cetti's Warbler (<i>Cettia cetti</i>)	✓			
Little Ringed Plover (<i>Charadrius dubius</i>)	✓			
Black Tern (<i>Chlidonias niger</i>)	✓			
Marsh Harrier (<i>Circus aeruginosus</i>)	✓			✓
Hen Harrier (<i>Circus cyaneus</i>)	✓	✓		
Montagu's Harrier (<i>Circus pygargus</i>)	✓	✓		✓
Hawfinch (<i>Coccothraustes coccothraustes</i>)		✓	✓	
Quail (<i>Coturnix coturnix</i>)	✓			✓
Cuckoo (<i>Cuculus canorus</i>)		✓		
Bewick's Swan (<i>Cygnus columbianus</i>)	✓			✓
Whooper Swan (<i>Cygnus cygnus</i>)	✓			✓
Yellowhammer (<i>Emberiza citrinella</i>)		✓	✓	
Reed Bunting (<i>Emberiza schoeniclus</i>)		✓		✓
Merlin (<i>Falco columbarius</i>)	✓		✓	
Peregrine (<i>Falco peregrinus</i>)	✓			
Hobby (<i>Falco subbuteo</i>)	✓			
Brambling (<i>Fringilla montifringilla</i>)	✓			
Black-throated Diver (<i>Gavia arctica</i>)	✓			✓
Great Northern Diver (<i>Gavia immer</i>)	✓			✓
Red-throated Diver (<i>Gavia stellata</i>)	✓			
White-tailed Eagle (<i>Haliaeetus albicilla</i>)	✓			
Little Gull (<i>Hydrocoloeus minutus</i>)	✓			

NOT PROTECTIVELY MARKED

Bird Species	Sch 1 W&CA*	Section 41 NERC Act	Red List (BoCC)	Amber List (BoCC)
Wryneck (<i>Hydrocoloeus minutus</i>)	✓			
Red-backed Shrike (<i>Lanius collurio</i>)	✓			
Mediterranean Gull (<i>Larus melanocephalus</i>)	✓			✓
Black-tailed Godwit (<i>Limosa limosa</i>)	✓		✓	
Savi's Warbler (<i>Locustella luscinioides</i>)	✓	✓	✓	
Grasshopper Warbler (<i>Locustella naevia</i>)		✓	✓	
Common Crossbill (<i>Loxia curvirostra</i>)	✓			
Woodlark (<i>Lullula arborea</i>)	✓	✓		
Velvet Scoter (<i>Melanitta fusca</i>)	✓		✓	
Common Scoter (<i>Melanitta nigra</i>)	✓		✓	
Bee-eater (<i>Merops apiaster</i>)	✓			
Red Kite (<i>Milvus milvus</i>)	✓			
Spotted Flycatcher (<i>Muscicapa striata</i>)		✓		
Curlew (<i>Numenius arquata</i>)		✓		
Whimbrel (<i>Numenius phaeopus</i>)	✓			
Golden Oriole (<i>Oriolus oriolus</i>)	✓		✓	
Osprey (<i>Pandion haliaetus</i>)	✓			
Bearded Tit (<i>Panurus biarmicus</i>)	✓			
House Sparrow (<i>Passer domesticus</i>)		✓		
Tree Sparrow (<i>Passer montanus</i>)		✓		
Grey Partridge (<i>Perdix perdix</i>)		✓		
Honey-buzzard (<i>Pernis apivorus</i>)	✓			
Black Redstart (<i>Phoenicurus ochruros</i>)	✓			
Wood Warbler (<i>Phylloscopus sibilatrix</i>)		✓	✓	
Spoonbill (<i>Platalea leucorodia</i>)	✓			✓
Snow Bunting (<i>Plectrophenax nivalis</i>)	✓			
Slavonian Grebe (<i>Podiceps auritus</i>)	✓			
Black-necked Grebe (<i>Podiceps nigricollis</i>)	✓			
Avocet (<i>Recurvirostra avosetta</i>)	✓			
Firecrest (<i>Regulus ignicapilla</i>)	✓			

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Bird Species	Sch 1 W&CA*	Section 41 NERC Act	Red List (BoCC)	Amber List (BoCC)
Serin (<i>Serinus serinus</i>)	✓			
Roseate Tern (<i>Sterna dougallii</i>)	✓	✓		
Little Tern (<i>Sternula albifrons</i>)	✓		✓	
Turtle Dove (<i>Streptopelia turtur</i>)		✓		
Dartford Warbler (<i>Sylvia undata</i>)	✓		✓	
Wood Sandpiper (<i>Tringa glareola</i>)	✓			✓
Greenshank (<i>Tringa nebularia</i>)	✓			✓
Green Sandpiper (<i>Tringa ochropus</i>)	✓			✓
Redwing (<i>Turdus iliacus</i>)	✓		✓	
Fieldfare (<i>Turdus pilaris</i>)	✓		✓	
Ring Ouzel (<i>Turdus torquatus</i>)		✓	✓	
Barn Owl (<i>Tyto alba</i>)	✓			
Lapwing (<i>Vanellus vanellus</i>)		✓		✓

1.5.48 Of the bird species that are protected under Schedule 1 of the W&CA (Ref 1.3) the majority are associated with coastal habitats and therefore unlikely to be breeding within the site. Only hobby and barn owl are considered likely to breed in the vicinity. Of the BoCC Red List (Ref 1.4) 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.

1.5.49 Breeding bird surveys were conducted between April 2019 to June 2019. The results of these surveys are summarised below with the full details presented in **Annex 7A.3**.

1.5.50 Marsh harrier was the only Schedule 1 species of the W&CA (Ref 1.3) that was recorded over the course of the breeding bird surveys. This record was of marsh harrier in flight passing over the site. Additionally, the habitats present within the site are unsuitable for breeding marsh harrier. Seven species listed under Section 41 of the NERC Act (Ref 1.13) and the Red List of BoCC (Ref 1.4) were recorded including skylark, yellowhammer, linnet (*Linaria cannabina*), song thrush, yellow wagtail (*Motacilla flava*), house sparrow and cuckoo. Reed bunting and dunnoek, listed on the Amber List of BoCC (Ref 1.4) and Section 41 of the NERC Act (Ref 1.13) were also recorded. Kestrel, stock dove (*Columba oenas*), marsh harrier, black-headed gull (*Chroicocephalus ridibundus*), meadow pipit (*Anthus pratensis*), house

NOT PROTECTIVELY MARKED

martin (*Delichon urbicum*), snipe (*Gallinago gallinago*), swift (*Apus apus*) and meadow pipit (*Anthus pratensis*) are Amber List species of BoCC (Ref 1.4). 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 W&CA	Section 41 NERC Act	Red List (BoCC)	Amber List (BoCC)
Dunnock (<i>Prunella modularis</i>)		✓		✓
Skylark (<i>Alda arvensis</i>)		✓	✓	
Yellowhammer (<i>Emberiza citronella</i>)		✓	✓	
Linnet (<i>Linaria cannabina</i>)		✓	✓	
Kestrel (<i>Falco tinnunculus</i>)				✓
Song thrush (<i>Turdus philomelos</i>)		✓	✓	
Stock dove (<i>Columba oenas</i>)				✓
Marsh harrier (<i>Circus aeruginosus</i>)	✓			✓
Yellow wagtail (<i>Motacilla flava</i>)		✓	✓	
Black-headed gull (<i>Chroicocephalus ridibundus</i>)				✓
Meadow pipit (<i>Anthus pratensis</i>)				✓
House sparrow (<i>Passer domesticus</i>)		✓	✓	
House martin (<i>Delichon urbicum</i>)				✓
Snipe (<i>Gallinago gallinago</i>)				✓
Swift (<i>Apus apus</i>)				✓
Reed bunting (<i>Emberiza schoeniclus</i>)		✓		✓
Cuckoo (<i>Cuculus canorus</i>)		✓		
Meadow pipit (<i>Anthus pratensis</i>)				✓

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- 1.5.51 Most of the birds identified during the surveys are associated with farmland habitats. Linnet, yellowhammer, skylark, kestrel, reed bunting and stock dove are on the UK Farmland Indicator list (Ref 1.19). The UK Farmland Bird Indicator is made up of 19 species that are dependent on farmland, and not able to thrive in other habitats.
- 1.5.52 In addition to the above, 30 Green Listed species of BoCC (Ref 1.4) were recorded. These species are listed in **Annex 7A.3**. Two introduced species with no conservation listing, pheasant (*Phasianus colchicus*) and red-legged partridge (*Alectoris rufa*), were also recorded.
- 1.5.53 Of the species recorded during surveys, linnet, skylark and yellowhammer, kestrel, stock dove and yellow wagtail are predominantly associated with arable farmland habitat that is abundant in Suffolk. House sparrow and dunnock are often associated with human habitation and hedgerows. Song thrush is associated with woodland and moorhen with wetland habitats.
- vii. **Bats**
- 1.5.54 The desk-study identified 50 records of bat species within the species-specific Zols as detailed in **section 3.5**. Species recorded comprised barbastelle (*Barbastella barbastellus*), serotine (*Eptesicus serotinus*), Natterer's bat (*Myotis nattereri*), noctule (*Nyctalus noctula*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), and brown long-eared bat (*Plecotus auratus*). Records were also identified for unspecified species within the *Plecotus* spp., *Myotis* spp. and *Pipistrellus* spp. groups.
- 1.5.55 Fourteen records, for four species (Natterer's, soprano pipistrelle, common pipistrelle 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, with the closest roost record located 300m to the north of the site within Theberton (a pipistrelle bat roost). Breeding roosts were identified within the relevant Zols for Natterer's bat and brown long-eared bat, with the closest (brown long-eared) located 1.1km from the site within Upper Abbey Farm.
- 1.5.56 None of the remaining activity records were identified within the site, with the closest record, for a common pipistrelle, located approximately 260m to the north of the site.
- 1.5.57 A summary of the results of 2019 bat surveys is provided below. Full details of the survey results are provided in **Annex 7A.3**.
- 1.5.58 The extended Phase 1 habitat and protected species survey identified the habitats present to be primarily arable fields of limited value to foraging bats.

The boundary hedgerows contain several mature trees. These hedgerows together with the woodland blocks and scattered mature trees have the potential to support roosting bats and offer good commuting and foraging opportunities. **Figure 7.3 to 7.5 in Annex 7A.1** presents the Phase 1 habitat plan.

- 1.5.59 Eighty-four trees were assessed during bat tree assessment surveys as having specific features potentially suitable for use by roosting bats. A summary of the roost assessment levels assigned to these trees is provided in **Table 1.7**. Full details of the results of the bat tree assessment survey are provided in **Annex 7A.3**. The location of assessed trees is illustrated on **Figure 7.15 to 7.18 in Annex 7A.1**.

Table 1.7 Summary of bat tree assessment results

Tree roost assessment level.	Number of trees identified
High potential	3
Medium potential	41
Low potential	36
Negligible potential	4

- 1.5.60 Activity transect surveys were undertaken across four transect routes along the site alignment on a monthly basis between April and October 2019 (Transects 1, 2, 3 and 4). An additional transect (Transect 5), was undertaken between July and October due to access restrictions prior to July 2019. Transect 1 was located within the north of the site, Transects 2, 3 and 5 were located in the middle of the site and Transect 4 in the south. In addition, eleven static detectors were deployed once a month between April and October, twelve deployed between May and October and fourteen deployed between July and October. The location of the transect routes, static detectors Monitoring Stations (MS), and the location of all recorded bat passes on all transects routes are illustrated on **Figure 7.12 to 7.14 in Annex 7A.1**.
- 1.5.61 Seven species (noctule, serotine, common pipistrelle, soprano pipistrelle, Nathusius’ pipistrelle (*Pipistrellus nathusii*) brown long-eared and barbastelle) and species belonging to two species groups (‘big bat’ and *Myotis* spp.) were identified during activity surveys at the site. Across all transects, common and soprano pipistrelle were the most frequently recorded. All other species were recorded at very low levels.
- 1.5.62 During the course of the static detector surveys, eight species were recorded (Natterer’s bat, noctule, serotine common pipistrelle, soprano pipistrelle, Nathusius’ pipistrelle, barbastelle and brown long-eared bat) as well as unidentified species belonging to four species groups (‘big bat’, *Myotis* spp.,

common/soprano pipistrelle and *Plecotus* spp., assumed to be brown long-eared bat). Recorded activity levels largely reflected those recorded during transect surveys, with activity dominated by common and soprano pipistrelle. All other species groups were recorded at significantly lower levels.

viii. Terrestrial Mammals

- 1.5.63 The desk-study revealed 109 records of terrestrial mammals within 2km of the site boundary. Species recorded comprised otter (six records), hedgehog (*Erinaceus europaeus*) (52 records), badger (*Meles meles*) (13 records), brown hare (*Lepus europaeus*) (one record), harvest mouse (*Micromys minutus*) (seven records), water shrew (*Neomys fodiens*) (two records) and water vole (30 records).
- 1.5.64 Ten water vole records were associated Darsham Marshes and twelve records were associated with Minsmere River and Old Minsmere River 1.6km north-east of the site. None of the remaining water vole records were within the site boundary. Due to the lack of suitable waterbodies within the site, water vole is considered absent from the site. No evidence for their occupation was identified during the extended Phase 1 habitat and protected species survey, and therefore this species has been scoped out of this ecological baseline and not considered further within this document.
- 1.5.65 Five otter records were identified by the desk-study, all associated with Royal Society for the Protection of Birds (RSPB) Minsmere Reserve 900m north-east of the site. All the watercourses within the site are dry and look to have been dry for some time; however, they do have connectivity to Minsmere New Cut 1.6km north-east. These watercourses are therefore sub-optimal but could be used by otter travelling across their range.
- 1.5.66 The closest hedgehog record was 130m from the site boundary. The woodland blocks and hedgerows within the survey area provide 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 1.14) and listed under Section 41 of the NERC Act (Ref 1.13).
- 1.5.67 The single brown hare record was located at Upper Abbey Farm part of the main development site approximately 1.5km away from the site boundary. As part of the extended Phase 1 habitat and protected species survey, there were several incidental records of brown hare within the site boundary. Additionally, the arable and hedgerow habitat present provides suitable habitat for brown hare. The Suffolk BAP (Ref 1.15) 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 1.20), and with rabbit haemorrhagic disease type

2 now confirmed in brown hare from Dorset and Essex (Ref 1.21). Brown hare is a wide-ranging species and although they could be using the site the population that is assumed to be present is not significant in the wider population.

1.5.68 The closest harvest mouse record was 690m away from the site. The limited habitat suitable to support this species that was recorded within the site boundary includes the arable fields and margins. Harvest mouse is on Suffolk's Priority Species and Habitats list (Ref 1.14) and considered locally important.

1.5.69 Of the water shrew records, one record was 790m and another 1.0km from the site. This species was not recorded during any baseline surveys. Water shrew is reported as declining in Suffolk (Ref 1.22). The water shrew is on Suffolk's Priority Species and Habitats list (Ref 1.14) and considered locally important. Water shrew is often found in habitats close to water, including the banks of streams, rivers, ponds, drainage ditches, reed-beds and fens. Within the site boundary, there is sub-optimal habitat to support this species.

1.5.70 The desk-study revealed 13 records of badgers. Only a single record was recorded within the site boundary. The extended Phase 1 habitat and protected species survey recorded no badger setts within the site. Access, however, was not granted to all land within the site boundary; therefore, there is the potential that the site could support badgers. The woodland and hedgerow habitats within the site provide foraging opportunities for badger. Badger is protected under the Protection of Badgers Act (Ref 1.12).

1.6 Baseline conditions – ecological features and their importance

a) Assessment methodology

1.6.1 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 has been 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 6** of the **ES**.

1.6.2 To comply with both the CIEEM Guidelines for Ecological Impact Assessment (Ref 1.5) 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 proposed development.

- 1.6.3 Under the CIEEM guidelines (Ref 1.5), 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.
- 1.6.4 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 outlines what measures are required to prevent any contravention of the legislation.
- 1.6.5 In line with the CIEEM guidelines (Ref 1.5) 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).
- 1.6.6 The following table has also been used in order to assess the ecological features in accordance with the wider EIA methodology (**Table 1.8**).

Table 1.8: Criteria for assessment of ecological importance.*

Importance	Criteria	
High	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).
Medium	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

Importance	Criteria	
		of regional or county importance, such as CWSs, County BAP habitats, etc.).
Low	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).
Very low	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

1.6.7 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 1.5) and the wider EIA assessment methodology.

1.6.8 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 technical appendix gives a detailed rationale for the value assigned to each ecological receptor and the conclusions reached.

i. Feature: Designated sites

Description and distribution

1.6.9 Twelve statutory designated sites were identified within a 5km radius of the site boundary, and fifteen 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

1.6.10 Given that for statutory designated sites:

- one of the statutory designated sites (Minsmere to Walberswick Heaths and Marshes SAC, Ramsar site and SPA) supports Annex I habitats and species of European importance listed on Article 4 of the EC Birds Directive (Ref 1.6), and is a wetland of international importance;
- Dews Ponds SSSI supports Annex II species great crested newt,
- Sandlings SPA supports populations of European importance of Annex I species of European importance listed on Article 4 of the EC Birds Directive (Ref 1.6);
- the SSSIs (Minsmere to Walberswick SSSI, Sizewell Marshes SSSI and Leiston to Aldeburgh 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 1.5) and
- of high importance, following the EIA-specific assessment methodology;
- scoped out of the detailed assessment as there would be no direct or indirect impacts.

1.6.11 Given that the fifteen non-statutory CWSs:

- support habitat types listed on Section 41 of the NERC Act (Ref 1.13) and are targeted for action in Suffolk BAP (Ref 1.15); however
- no direct land take of these sites would occur and these sites are sufficiently far away so that no indirect impact pathways have been identified

then these fifteen non-statutory CWS within the Zol would be:

- an IEF at county level under the CIEEM guidelines (Ref 1.5); and
- 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.

ii. Feature: Plants and habitats

Description and distribution

1.6.12 The main habitat present, arable farmland, is widespread in Suffolk, and no botanically rich arable margins were identified. Twenty-five species-rich intact hedgerows were identified as ‘important’ in the Hedgerows Regulations (Ref 1.2) within the site boundary. Hedgerows are on Suffolk’s Priority Species and Habitats list (Ref 1.14), have been targeted for action in the Suffolk BAP (Ref 1.15) and are listed under Section 41 of the NERC Act (Ref 1.13). At the last assessment (2004), there were an estimated 12,500km to 15,000km of species-rich hedgerow in the county (Ref 1.23).

1.6.13 There are eleven broadleaved woodland blocks identified that are relatively discrete and limited in area (0.27 – 0.95 ha in extent). The Suffolk BAP (Ref 1.15) identifies that there are 15,466ha of broadleaved woodland within Suffolk. Lowland mixed deciduous woodland is a priority habitat (Ref 1.16) and is listed under Section 41 of the NERC Act (Ref 1.13).

1.6.14 The Suffolk BAP states that Suffolk ‘has a very high density of ponds with an estimate of 22,635 across the county’ (Ref 1.15). Within 500 of the site boundary, 107 ponds have been identified.

Assessment

1.6.15 Arable: Given that arable habitat is widespread in Suffolk and no botanically rich field margins were identified, then the arable habitat within the Zol of the proposed development would:

- not be an IEF under the CIEEM guidelines (Ref 1.5); and
- of very low importance, following the EIS specific assessment methodology

Hedgerows: Given that twenty-five ‘important’ species-rich hedgerows were identified within the site that will be severed; then hedgerows within the Zol of the proposed development would be:

- an IEF at county level under the CIEEM guidelines (Ref 1.5) and;
- of medium importance, following the EIA specific assessment methodology;

1.6.16 Ponds: Given that:

- eight ponds are within the site boundary, of which seven of this would temporarily lost, and one would be permanently lost;
- ponds are on Suffolk's Priority Species and Habitats list (Ref 1.14) and is listed under Section 41 of the NERC Act (Ref 1.13).

then ponds within the Zol of the proposed development would be:

- an IEF at local level under the CIEEM guidelines (Ref 1.5) and;
- of low importance, following the EIA specific assessment methodology

1.6.17 Lowland mixed deciduous woodland: Given that woodland present:

- is limited in extent and does not constitute ancient woodland;
- is of some ecological value and supports species such as bats and breeding birds;
- lowland mixed deciduous woodland is on Suffolk's Priority Species and Habitats list (Ref 1.14) and is listed under Section 41 of the NERC Act (Ref 1.13); and
- would not be able to be retained fully;

then lowland mixed deciduous woodland within the Zol of the proposed development would be:

- an IEF at county level under CIEEM guidelines (Ref 1.5); and
- of medium importance, following the EIA-specific assessment methodology.

iii. Feature: Invertebrates

Description and distribution

1.6.18 Desk-study records identified that RDB species such as white-letter hairstreak, small heath and grayling could occur within with site, all of which are listed under Section 41 of the NERC Act (Ref 1.13), and Suffolk's Priority Species and Habitats list (Ref 1.14). White-letter hairstreak feeds on Elm so could be present within the hedgerows on the site.

1.6.19 Most of the site comprises arable fields, with no species-rich margins or other features of particular importance to invertebrate species. The semi-natural woodland within the site was found to support features of some benefit to invertebrate species, including dead wood and a diverse ground flora.

Additionally, species-rich hedgerows are likely to be of some value to invertebrates, in particular moth and butterfly species.

Assessment

1.6.20 Given that:

- the majority of the site comprises arable fields of limited value to invertebrate species;
- the hedgerows within the site are of limited value to invertebrates; and
- the broadleaved woodland to be lost is of limited extent;

then the invertebrate assemblage within the Zol of the proposed development would:

- not be an IEF under the CIEEM guidelines (Ref 1.5); and;
- be of very low importance, following the EIA-specific assessment methodology.

iv. Feature: Amphibians

Description and distribution

1.6.21 Great crested newts are in Ponds P032, P036, P053, P054, P064, P066, P081, P107, P119, P121, P140, P163 and P164 (see **Figure 7.6 to 7.8 in Annex 7A.1**). Separate populations are thought to be present at the following pond clusters:

- Population 1: P107;
- Population 2: P036, P064, P066, P119, P121, and P164; and
- Population 3: P053, P054, P081, P140, and P163.

1.6.22 Ponds P036, P119 and P164 are the only ponds within the site boundary that were positive for great crested newt presence.

1.6.23 Most of the site consists of arable fields of limited suitability for foraging great crested newts, the hedgerows and blocks of woodland are suitable foraging habitat and provide suitable hibernation sites. The hedgerows and associated margins also provide connectivity between ponds and woodland features.

1.6.24 Suffolk (along with Cheshire) boasts the highest density of ponds in England and is a stronghold for great crested newts, particularly in the north-east of

the county (which covers the EDF Energy estate) (Ref 1.24). Analysis of 900 of Suffolk's 22,000 estimated ponds between 2004 to 2007 (Ref 1.24) revealed that, whilst over 14% of the ponds surveyed contained great crested newts, large and thriving 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).

- 1.6.25 Desk-study records were also identified for common toad, smooth newt, common frog within 500m of the site boundary. Smooth newt and common frog are not on Suffolk's Priority Species and Habitats list (Ref 1.14). It is considered that the woodland blocks would provide suitable foraging habitat and the larger ponds suitable breeding habitat for all the species. It is envisaged that the woodland blocks would support a small population of common toad, common frog and smooth newt.

Assessment

- 1.6.26 Great crested newt: Given that:
- is on Suffolk's Priority Species and Habitats list (Ref 1.14), is listed under Section 41 of the NERC Act (Ref 1.13), and are protected under Schedule 5 of the W&CA (Ref 1.3) and Schedule 2 of the Conservation of Habitats and Species Regulations (Ref 1.11);
 - is widespread but patchily distributed with populations of conservation interest in the UK, and has a population stronghold in the Suffolk; and
 - has been found within the site boundary, with the potential of three populations distributed throughout the Zol;
- then the population of this species located within the Zol of the proposed development would be:
- an IEF at the county level under the CIEEM guidelines (Ref 1.5); and
 - of medium importance, following the EIA-specific assessment methodology.

- 1.6.27 Common toad: Given that:
- the common toad is on Suffolk's Priority Species and Habitats list (Ref 1.14) and listed under Section 41 of the NERC Act (Ref 1.13);
 - it likely to be found in only low numbers within woodland blocks; and

- the broadleaved woodland to be lost is of limited extent, with better quality woodlands within the wider area;

then the population of this species within the Zol of the proposed development would:

- not be an IEF under the CIEEM guidelines (Ref 1.5); and
- be of very low importance, following the EIA-specific assessment methodology.

1.6.28 Common frog and smooth newt: Given that:

- the common frog and smooth newt have low nature conservation status; and
- have relatively low abundance within 500m of the site, as seen in the desk-study.

then the population of this species within the Zol of the proposed development would:

- not be an IEF under the CIEEM guidelines (Ref 1.5); and
- be of very low importance, following the EIA-specific assessment methodology.

v. **Feature: Reptiles**

Description and distribution

1.6.29 On the basis of the extended Phase 1 habitat and protected species survey, the majority of the site consists of large tracts of arable farmland which is sub-optimal for reptiles. Marginal habitat suitable for reptiles within the site includes hedgerows and arable margins providing resting places, though these are restricted in extent and often isolated within large tracts of arable farmland.

1.6.30 There was a single, incidental sighting of a grass snake within the site boundary and there were no desk-study records of reptiles within the site.

1.6.31 A review of the Suffolk’s Priority Species and Habitats list identified adder, grass snake, common lizard and slow-worm as a priority species (Ref 1.14). In addition, adder, grass snake, common lizard and slow-worm are included within Section 41 of the NERC Act (Ref 1.13).

Assessment

1.6.32 Given that:

- only a single grass snake was recorded within the site;
- there were no desk-study records within the site boundary; and
- the habitat is considered predominantly to be sub-optimal for reptiles, the hedgerows and associated field margins could support low numbers of common species;

then the reptile assemblage within the Zol of the proposed development would be:

- not be an IEF under the CIEEM guidelines (Ref 1.5); and;
- of very low importance, following the EIA-specific assessment methodology.

vi. Feature: Birds

Description and distribution

1.6.33 A number of Schedule 1 species of the W&CA (Ref 1.3) were reported in the desk-study; however, these species are likely to be incidental sightings of species passing through the survey area. Marsh harrier was the only Schedule 1 species that was recorded during the breeding bird surveys; however, it was just flying across the site and there was no record of breeding.

1.6.34 A small number of BoCC Red List species (Ref 1.4) were observed during the breeding bird surveys, including skylark, song thrush, linnet, yellow wagtail, kestrel and yellowhammer. All are considered to be breeding within the site, with skylark the most numerous with up to ten individuals recorded.

1.6.35 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 wild birds are likely to support a greater number and diversity of bird species than the intensively managed arable farmland present within the site.

Assessment

1.6.36

Given that:

- the only Schedule 1 breeding bird species of the W&CA (Ref 1.3) recorded commuting over the site was marsh harrier;
- intensively managed arable habitat, and the farmland bird assemblage it supports, is widespread in Suffolk, and the arable habitat is not being managed specifically to benefit breeding birds;
- six species on the UK Farmland Indicator List have been identified during the breeding bird transects; and
- the nesting and foraging resource of the hedgerows, broadleaved woodland and arable land within the site will not be retained in its entirety;

notwithstanding the legal protection afforded to nesting bird species, then the farmland breeding bird assemblage within the Zol of the proposed development would be:

- an IEF at the local level under the CIEEM guidelines (Ref 1.5); and
- of low importance, following the EIA-specific assessment methodology.

vii. Feature: Bats

Description and distribution

1.6.37

Areas of woodland, hedgerows and scattered mature trees within and in land adjacent to the site were considered to have potential for roosting bats and to provide good quality commuting and foraging opportunities. Eighty-four trees were identified as having the potential to support bat roosts (this assessment excluded trees within the woodland).

1.6.38

Activity and static detector surveys demonstrated that activity within the site and within adjacent habitats was dominated by common and soprano pipistrelle.

Assessment

1.6.39

Given that:

Barbastelle are nationally rare with a restricted distribution and are listed on Suffolk's Priority Species and Habitats list (Ref 1.15), Section 41 of the NERC Act (Ref 1.14) and on Annex II of the Habitats Directive (Ref 1.7). However, barbastelle only accounted for a small proportion of the overall activity

recorded along the site and immediately adjacent habitats. While a breeding population of barbastelle is using the Zol of the proposed development (defined as 10km), including the EDF Energy estate, for foraging and roosting (all types); there is little indication that the site is of importance to barbastelle;

Noctule, big bat, brown long-eared, serotine, *Myotis* spp. And Nathusius pipistrelle activity was only recorded at very low levels and this species is unlikely to be reliant on habitat within or immediately adjacent to the site;

common and soprano pipistrelle are common and widespread in the UK and Suffolk and were the most frequently recorded species within the site and immediately adjacent habitat.

then the bat assemblage within the Zol would be:

- an IEF at a county level under CIEEM guidelines (Ref 1.5); and
- of medium importance, following the EIA-specific assessment methodology.

1.6.40 Full details of the criteria considered during the assessment of bats at the site are provided in **Table 1.9** to **Table 1.11** :

Table 1.9: Criteria for assessing the importance of the bat species within the Zol. Note that Zol differs between species

Source of data	Published data		Information derived from data (inc local desk-study information) supported by professional judgement based on known species ecological traits			
KEY to 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 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 proposed development site and adjacent areas.	High reliance on habitats present within the site (inside or out with 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 proposed development site but within Zol.	Hibernation within Zol very likely; within the site probable.	Moderate reliance on habitats present within the site (based on data and species preferences); higher reliance on habitats outside of the site.
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 1.10 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.			

Table 1.11: Summary of the elements considered in determining the geographical context of each species' importance.*

Species**	Conservation Status	Status UK/Suffolk (Ref 1.25) (Ref 1.26)	Recorded Activity within site and Zol	Breeding Roosts (maternity) within the Zol	Hibernation within the Zol	Use of habitats within the Zol for foraging/ commuting	Geographic context of importance
Barbastelle	Habs. Dir. Annex II EPS NERC Act	Nationally rare/ Widespread but uncommon in Suffolk.	Recorded at low levels in 2019 during activity surveys.	No evidence within (and low likelihood) of breeding roosts within the site. A small number of trees with roost features preferred by barbastelle (i.e. oaks with loose bark or hazard beans) identified within the site.	No evidence within or adjacent to the site; these areas support very few trees with features preferred by barbastelle.	Habitats within the site largely unsuitable but adjacent and bisecting woodland blocks and hedgerows may be used as occasional foraging/commuting habitat. Habitat mosaic in Zol offers reasonable connectivity and foraging opportunities.	County (score of 11)

NOT PROTECTIVELY MARKED

Species**	Conservation Status	Status UK/Suffolk (Ref 1.25) (Ref 1.26)	Recorded Activity within site and Zol	Breeding Roosts (maternity) within the Zol	Hibernation within the Zol	Use of habitats within the Zol for foraging/ commuting	Geographic context of importance
Natterer's bat	EPS	Nationally common, widespread in the UK/ Widespread but uncommon in Suffolk	Only low numbers identified specifically to Natterer's.	No evidence within Site and activity recorded indicate unlikely within the site. A variety of potential roost resources are present in the Zol.	No evidence within Site and roosting preferences indicate unlikely within Site. 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 adjacent woodland blocks but unlikely to be large enough for reliance.	Local (score of 8)
Noctule	EPS NERC Act	Common in England and widespread in Suffolk	Recorded in very low numbers during activity surveys in 2019.	Large number of trees with roost potential within the site. Woodland blocks within Zol may support breeding roost(s).	Trees with roost potential within the site. Woodland blocks within Zol may support hibernation roost(s).	Use almost all landscape types and less reliant on linear features. Unlikely to be heavily reliant on the Site or immediately adjacent habitat but Zol will provide habitats on which noctule rely.	Local (score of 8)
Common pipistrelle	EPS	Common and widespread in the UK and Suffolk	Common and widespread across the site. Most frequently recorded species across the site along with soprano pipistrelle.	Habitat within the site largely unsuitable. Adjacent trees and woodland blocks have some features suitable (but larger	Few winter roosts are known; these tend to be solitary individuals. Buildings favoured.	Habitat within the site largely unsuitable; however, activity in 2019 suggested the site supports	Local (score of 6)

NOT PROTECTIVELY MARKED

Species**	Conservation Status	Status UK/Suffolk (Ref 1.25) (Ref 1.26)	Recorded Activity within site and Zol	Breeding Roosts (maternity) within the Zol	Hibernation within the Zol	Use of habitats within the Zol for foraging/ commuting	Geographic context of importance
				roosts are found in buildings).		foraging and commuting. Generalist, widespread and common.	
Soprano pipistrelle	EPS NERC Act	Common and widespread in UK and Suffolk	Common and widespread across the site. Most frequently recorded species across the site along with common pipistrelle.	Habitat within the site largely unsuitable (and larger roosts are found in buildings).	Few winter roosts are known; these tend to be solitary individuals. Buildings favoured.	Habitat within the site largely unsuitable; however, activity in 2019 suggested proposed development supports foraging and commuting. Generalist, though with a bias towards riparian habitats.	Local (score of 7)
Nathusius' pipistrelle	EPS	Uncommon in the UK/Rare in Suffolk	Recorded in only very low numbers.	Habitat within the site largely unsuitable although adjacent trees and woodland blocks have some features potentially suitable.	Habitat within the site largely unsuitable although adjacent trees and woodland blocks have some features potentially suitable.	Generalist, though with a bias towards riparian habitats	Local (score of 7)

NOT PROTECTIVELY MARKED

Species**	Conservation Status	Status UK/Suffolk (Ref 1.25) (Ref 1.26)	Recorded Activity within site and Zol	Breeding Roosts (maternity) within the Zol	Hibernation within the Zol	Use of habitats within the Zol for foraging/ commuting	Geographic context of importance
Serotine	EPS	Uncommon but widespread in UK and Suffolk.	Low levels activity recorded only ⁵ .	No evidence within Site and roosting preferences strongly indicate unlikely within Site A variety of potential roost resources are present in the Zol.	No evidence within Site and roosting preferences strongly indicate unlikely within Site A variety of potential roost resources are present in the Zol.	The site is open and sub-optimal. Known to use the Zol but in low numbers.	Local (score of 7)
Brown long-eared bat	EPS NERC Act	Common and widespread in UK and Suffolk	Very low activity levels recorded throughout survey period.	Large number of trees with roost potential within the site. Woodland blocks within Zol may support breeding roost(s).	Large number of trees with roost potential within the site. Woodland blocks within Zol may support hibernation roost(s).	Often under-recorded, generalist	Local (score of 9)

⁵ Note. 'Big bat' calls may contain serotine passes that cannot be identified to the species level.

viii. Feature: Terrestrial Mammals

Description and distribution

- 1.6.41 The desk-study revealed only a single record of badger within the site boundary. No badger setts were recorded during baseline surveys.
- 1.6.42 Five otter records were identified by the desk-study, all associated with RSPB Minsmere Reserve. Although all the watercourses within the site are dry and therefore sub-optimal for otters, they do have connectivity to Minsmere New Cut 1.6km north east and therefore they could still be used by commuting otter. A review of the Suffolk's Priority Species and Habitats list (Ref 1.14) identified otters as a priority species for conservation action in the county. Otters are protected under Schedule 5 and 6 of the W&CA (Ref 1.3), and Schedule 2 of the Conservation of Habitats and Species Regulations (Ref 1.11) and are included within Section 41 of the NERC Act (Ref 1.13).
- 1.6.43 Ten water vole records were associated Darsham Marshes and twelve records were associated with Minsmere River and Old Minsmere River 1.6km north-east of the site. None of the remaining water vole records were within the site boundary. Due to the lack of suitable waterbodies within the site, water vole is considered to be absent from the site. In addition, no evidence for their occupation was identified during the extended Phase 1 habitat and protected species survey, and therefore this species has been scoped out of this ecological baseline.
- 1.6.44 Desk-study records for brown hare were approximately 1.5km away from the site; however, there were several incidental records within the site during the extended Phase 1 habitat and protected species survey. The arable and hedgerow habitat present provides suitable habitat for brown hare. East Anglia has been a reservoir for brown hare, holding approximately 20% of the national population across the three counties (Cambridgeshire, Suffolk and Norfolk) (Ref 1.27). Brown hare is widespread in Suffolk (Ref. 7A.**Error! Bookmark not defined.**); 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 1.20). The individuals on site would not comprise a significant contribution to the wider population of this highly mobile species.
- 1.6.45 There were no records of hedgehog within the site. The woodland blocks and hedgerows within the survey area provide potentially suitable habitat for hedgehog and this species could be present within the site boundary. Hedgehog is on Suffolk's Priority Species and Habitats list (Ref 1.14) and Section 41 of the NERC Act (Ref 1.13). However, most of the site is arable fields, and so suboptimal for hedgehogs

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1.6.46 Two desk-study records of water shrew (both outside of the site boundary) were identified. During the extended Phase 1 habitat and protected species survey no evidence of water shrew was noted. Water shrew is considered to be declining in Suffolk (Ref 1.22). The water shrew is on Suffolk's Priority Species and Habitats list (Ref 1.14), considered locally important, but is not included within Section 41 of the NERC Act (Ref 1.13).

1.6.47 Seven harvest mouse records were identified by the desk-study with the closest record being 690m away from the site. Habitat suitable to support this species was recorded within the site including the arable fields and margins. Harvest mouse is on Suffolk's Priority Species and Habitats list (Ref 1.14) and the NERC Act (Ref 1.13). Harvest mouse within the Zol is of local importance under the CIEEM guidelines (Ref 1.5) and of very low importance under the EIA-specific methodology.

Assessment

1.6.48 Badger: Given that:

- no badger setts were found that could be affected by the proposed development;
- badgers are widespread across England and Wales, and populations are increasing both in England and Wales and in Suffolk (Ref 1.28);

then the badgers within the Zol of the proposed development would:

- not be an IEF under the CIEEM guidelines (Ref 1.5); and
- be of very low importance, following the EIA-specific assessment methodology.

1.6.49 Otter: Given that:

- otter is on Suffolk's Priority Species and Habitats list (Ref 1.14) and listed under Section 41 of the NERC Act (Ref 1.13);
- has a population that is increasing both in England and Suffolk specifically from virtual extinction during the early 1970s, but is still considered to be vulnerable, threatened by: lack of safe and suitable habitat along rivers; poor water quality and pollution; and road traffic accidents;
- has not been recorded within the site boundary but that there is connectivity between Minsmere New Cut and watercourses within the site;

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then the population of otter within the Zol of the proposed development would:

- not be an IEF under CIEEM guidelines (Ref 1.5); and
- be of very low importance following the EIA specific assessment methodology.

1.6.50 Water vole: Given that:

- water vole is on Suffolk's Priority Species and Habitats list (Ref 1.14) and Section 41 of the NERC Act (Ref 1.13);
- has not been recorded within the site boundary and there are no suitable watercourses within the site;

then the population of water vole within the Zol of the proposed development would:

- not be an IEF under CIEEM guidelines (Ref 1.5); and
- be of very low importance following the EIA specific assessment methodology.

1.6.51 Given that the remaining mammal assemblage:

- is, in the case of the brown hare, on Suffolk's Priority Species and Habitats list (Ref 1.14) and Section 41 of the NERC Act (Ref 1.13); while the habitat within the site is suitable for brown hare, the population on site (one to two individuals) would not be a significant contribution to the wider population of this highly mobile species;
- is, in the case of water shrew, legally protected, and is on Suffolk's Priority Species and Habitats list (Ref 1.14), but has not been found within the site;
- is, in the case of hedgehog, on Suffolk's Priority Species and Habitats list (Ref 1.14) and listed under Section 41 of the NERC Act (Ref 1.14); however, there was an absence of desk-study and survey records for hedgehogs within the site, and limited suitable habitat;
- is, in the case of harvest mouse, is on Suffolk's Priority Species and Habitats list (Ref 1.14), but has not been found within the site;

then brown hare, water shrew, harvest mouse and hedgehog within the Zol of the proposed development would:

- not be IEFs under CIEEM guidelines (Ref 1.5); and

- be of very low importance, following the EIA-specific assessment methodology.

c) **Summary of ecological features/receptors**

1.6.52 Following a review of the known baseline within the Zol, **Table 1.12** 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.

1.6.53 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 1.12: 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	<p>Statutory designated sites (Minsmere Walberswick Heaths and Marshes SAC, SPA, Ramsar, SSSI, Sizewell Marshes SSSI, Leiston-Aldeburgh SSSI, Sandlings SPA, Southern North Sea SAC, Outer Thames SPA, Dew’s Ponds SAC and SSSI, Potton Hall Fields SSSI) were identified within the Zol.</p> <p>Statutory designated sites support a range of habitats and European and nationally protected species. Given the distance of these statutory designated sites from the site (the closest of which is 1.5km north-east), and the implementation of the primary and tertiary mitigation measures detailed in section 7.5 of Chapter 7 of Volume 6 of the ES, no direct or indirect impacts are anticipated on the statutory designated sites.</p> <p>Therefore these designated sites been scoped out of the detailed assessment.</p>	Scoped out
Non-statutory Designated Sites	County/Medium	<p>CWS (Kiln Grove and Meadow, England Covert, Minsmere Valley, Reckford Bridge to Beveriche Manor CWS, Theberton Woods, Simpsons Fromus Reserve, Leiston Airfield, Stonehill Covert, Minsmere Valley Eastbridge to Reckford Bridge CWS, Westleton Common, Darsham Marshes, Suffolk’s Coastal 102 RNR, Buckle’s Wood, Sizewell Levels, Spring Wood and Coe Wood) have been identified within the Zol.</p> <p>CWS support a range of habitats types that are listed on Section 41 of the NERC Act (Ref 1.14) and which are targeted for action in the Suffolk BAP (Ref 1.15). Given the distance of these non-statutory designated sites from the site (the closest of which is 0.5km north-east and the implementation of the primary and tertiary mitigation measures detailed in section 7.5 of Chapter 7 of Volume 6 of the ES, no direct or indirect impacts are anticipated on the non-statutory designated sites.</p> <p>Therefore these CWS’s have been scoped out of the detailed assessment.</p>	Scoped out
Lowland mixed deciduous woodland	County/Medium	<p>There are 12 broadleaved woodland blocks identified. Lowland mixed deciduous woodland is a priority habitat in the Suffolk Priority Habitats and Species List (Ref 1.14) and is listed as a habitat of principal importance under Section 41 of the NERC Act (Ref 1.13). Although only small areas of these woodland would be lost due to construction of the proposed development, they would not be retained in their entirety and therefore they have been scoped in to the detailed assessment.</p>	Scoped In

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Feature/ Receptor	Importance (CIEEM/EIA Methodology)	Justification	Scope in/out
Arable habitats	Local/Very Low	Arable field margins are a habitat listed under Suffolk’s Priority Species and Habitats list (Ref 1.14). Arable land is widespread in Suffolk and the arable farmland within the site was of little intrinsic botanical diversity and no botanically rich arable margins were identified. The arable margins support common ruderal and weed species.	Scoped out
Ponds within the site boundary and Zol	Local/Low	<p>Ponds are a habitat listed under Suffolk’s Priority Species and Habitats (Ref 1.14) and Section 41 of the NERC Act (Ref 1.13). Eight ponds, of which six were confirmed to be holding water at time of the field surveys, are within the site boundary.</p> <p>Seven ponds would be temporarily lost ponds would be lost due to the proposed development and one pond would be permanently lost due to the development. .Twelve ponds are outside of the site boundary but have the potential to be indirectly impacted by the proposed development, impacting the water quality. Twenty ponds in total would be impacted by the works have therefore been scoped in to the detailed assessment.</p> <p>The ponds within the wider area are known to support populations of great crested newts. Great crested newts have been assessed as an IEF in its own right.</p>	Scoped in
Hedgerows	County/Medium	Construction of the proposed development would result in the loss of 14 ‘important’ hedgerows. All hedgerows are a habitat listed under Suffolk’s Priority Species and Habitats (Ref 1.14). Whilst hedgerows are widespread in Suffolk; it is considered that the loss of species-rich hedgerows at this location as the potential to result in a significant effect. Therefore, hedgerows have been scoped in to the detailed assessment.	Scoped in
Invertebrate assemblage	Local/Very Low	The majority of the site comprises arable fields. The broadleaved woodland blocks present within the site and species-rich hedgerows are of some value to invertebrates; in particular common butterfly and moth species. Primary mitigation measures, such as elm planting for white-letter hairstreak have been considered and described in section 7.5 of Chapter 7 of Volume 6 of the ES . Invertebrates have therefore been scoped out of the detailed assessment.	Scoped out
Great crested newts	County/Medium	Great crested newt eDNA was confirmed in 13 ponds (P032, P036, P053, P054, P064, P066, P081, P107, P119, P121, P140, P163 and P164). P036, P119 and P164 are the only confirmed great	Scoped in

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Feature/ Receptor	Importance (CIEEM/EIA Methodology)	Justification	Scope in/out
		<p>crested newt ponds within the site boundary. Great crested newt is a priority species for conservation action in the county (Ref 1.14), is protected under Schedule 5 of the W&CA (Ref 1.3) and Schedule 2 of the Conservation of Habitats and Species Regulations (Ref 1.11) and is included within Section 41 of the NERC Act (Ref 1.13).</p> <p>The majority of the site consists of arable fields of limited suitability for foraging great crested newts, however, the field margins, hedgerows and blocks of woodland provide suitable foraging habitat and suitable hibernation sites. The hedgerows would also provide connectivity between ponds and woodland blocks.</p> <p>Great crested newts have therefore been scoped in to the detailed assessment.</p>	
Other amphibians	Local/Very Low	<p>It is envisaged that the woodland blocks within and adjacent to the site would support a small population of common toad and common frog. While not legislatively protected, common toad is listed under Section 41 of the NERC Act (Ref 1.13) while common frog has a low conservation status. However, only a small area of woodland and the ponds within the site boundary are suitable to support these species. The habitat lost would be small and there is sufficient, suitable habitat outside the site which will be retained.</p> <p>As such, common toad and common frog have therefore been scoped out of the detailed assessment; however, mitigation measures employed to protect reptiles would also protect these species. These have been detailed in section 7.5 of Chapter 7 of Volume 6 of the ES and the Code of Construction Practice.</p>	Scoped out
Reptile assemblage	Local/Very Low	<p>All four common, native reptile species (adder, common lizard, grass snake and slow-worm) are protected under Schedule 5 of the W&CA (Ref 1.3) and are on Section 41 of the NERC Act (Ref 1.13) and included on Suffolk’s Priority Species and Habitats list (Ref 1.14).</p> <p>Habitat within and adjacent to the site is of low suitability for reptile species, while one incidental sighting of a grass snake was recorded, the habitat on site is not suitable to maintain reptile populations. From the review of available baseline data, the reptile population is predicted to be fragmented within the wider landscape, and the population within the Zol of the proposed development would not be significant to the wider reptile population within Suffolk. Overall, it is</p>	Scoped out

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Feature/ Receptor	Importance (CIEEM/EIA Methodology)	Justification	Scope in/out
		<p>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 with regards to a potential significant effect on the population, but details of the mitigation measures that should be employed to avoid harm to individual animals should they be encountered have been outlined within the section 7.5 of Chapter 7 of Volume 6 of the ES and the Code of Construction Practice to prevent impacts to these fauna</p>	
Breeding bird assemblage	Local/Low	<p>Breeding birds are protected while nesting under the W&CA (Ref 1.3). The breeding bird assemblage identified within the site is representative of the habitats present and the populations observed on site are comparable to the populations within the wider area. Many of the species recorded are common and widespread, including the intensively managed arable habitat, and the farmland bird assemblage it supports, which is widespread in Suffolk. However, farmland birds are in decline nationally due to a combination of habitat loss and intensive farming practices. Six birds on the Farmland Bird Indicator List have been found on site. It is therefore considered that any impacts could affect the farmland bird populations found within the site</p>	Scoped in
Roosting/ commuting/ foraging bats	County/Medium	<p>At least 11 bat species/species groups have been recorded historically within the site (Natterer's bat, noctule, serotine common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, barbastelle, brown long-eared bat, ('big bat', <i>Myotis</i> spp., common/soprano pipistrelle and <i>Plecotus</i> spp).</p> <p>Activity surveys within the site boundary revealed common and soprano pipistrelle as the mostly frequently recorded species with other species recorded at very low levels. A number of trees were identified within the site boundary that have a high or medium potential to support roosting bats, these trees are found scattered across the site</p> <p>The degree of sensitivity bats display varies between species; however, it is recognised that all bat species can be negatively impacted by human disturbance. All bat species in the UK are protected under Annex IV of the Habitats Directive (Ref 1.7), transposed to English law under the Conservation of Habitats and Species Regulations (Ref 1.11). Additional relevant legislation includes the W&CA (Ref 1.3), and the NERC Act (Ref 1.13).</p>	Scoped in

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Feature/ Receptor	Importance (CIEEM/EIA Methodology)	Justification	Scope in/out
Badgers	Local/Very Low	<p>Badgers are protected under Schedule 6 of the W&CA (Ref 1.3) and by the Protection of Badgers Act (Ref 1.12).</p> <p>No evidence of badger was recorded within the site although it is possible they utilise woodland and hedgerows and arable margins within the site for foraging. Badgers are widespread across England, and populations are increasing Suffolk (Ref 1.22).</p> <p>Badgers have therefore been scoped out of the assessment. However, due to the legal protection offered to badgers and their setts, the badger population within the ZoI will require secondary mitigation to ensure compliance with the legislation. This has been as outlined within section 7.5 of Chapter 7 of Volume 6 of the ES.</p>	Scoped out
Water vole	Local/Very Low	<p>Ten water vole records associated Darsham Marshes and 12 records associated with River Yox and Old Minsmere Old River 1.6km north-east of the site, were identified by the desk-study. None of the water vole records were within the site boundary. Water vole are listed under Suffolk's Priority Species and Habitats (Ref 1.14) and are protected under Schedule 5 and 6 of the Wildlife and Countryside Act (Ref 1.3), and are included within section 41 of the NERC Act (Ref 1.13).</p> <p>No habitat suitable for water voles was identified within the site, as all ditches were recently cleared at the time of survey, and there was no emergent or aquatic vegetation. The ditch network present is sub-optimal for water vole, and therefore this species is unlikely to be found within the site. This species is therefore considered absent from the site and has not been considered further within this assessment.</p>	Scoped out
Otter	Local/Very Low	<p>Five otter records were identified by the desk-study, all associated with RSPB Minsmere Reserve 900m north-east of the site. Otter are listed under Suffolk's Priority Species and Habitats (Ref 1.14) and are protected under Schedule 5 and 6 of the W&CA (Ref 1.3), and Schedule 2 of the Conservation of Habitats and Species Regulations (Ref 1.11) and are included within Section 41 of the NERC Act (Ref 1.13).</p>	Scoped out

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Feature/ Receptor	Importance (CIEEM/EIA Methodology)	Justification	Scope in/out
		<p>Although all the watercourses within the site were dry at the time of survey in 2019, they do have connectivity to Minsmere Old River 1.6km north east and therefore they could still be used by commuting otter; however, no evidence of otter use was recorded within the site.</p> <p>Otter has been scoped out of the detailed assessment as there is no predicted effect upon the otter population, however details of the mitigation measures that should be employed to safeguard individual otter should they commute through the site have been outlined within section 7.5 of Chapter 7 of Volume 6 of the ES and the CoCP (Doc Ref 8.11) to prevent impacts on otter.</p>	
Brown hare	Local/Very Low	<p>There were several incidental records of this species on the 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 a significant contribution to the potential wider population within the ZoI. The brown hare is listed under Suffolk's Priority Species and Habitats (Ref 1.14) and Section 41 of the NERC Act (Ref 1.13).</p> <p>The effects of the proposed development on this highly mobile species are unlikely to be significant and brown hare have therefore been scoped out of the detailed assessment.</p>	Scoped out
Hedgehog	Local/Very Low	<p>The majority of the site is arable fields, and so sub-optimal for hedgehog. The woodland and boundary hedgerows within the site provide potentially suitable habitat for hedgehog and this species could be present within the site boundary. While hedgehog are likely to be found within or adjacent to the proposed development, there is sufficient adjacent habitat to support this species and the effects of the proposed development on this species is unlikely to be of significance. Hedgehog is listed under Suffolk's Priority Species and Habitats (Ref 1.14) and Section 41 of the NERC Act (Ref 1.13). The mitigation measures employed to protect reptiles would also protect this species. These have been outlined in within section 7.5 of Chapter 7 of Volume 6 of the ES and the CoCP (Doc Ref 8.11) to minimise impacts these fauna.</p>	Scoped out
Harvest Mouse	Local/Very Low	<p>Harvest mouse are on Suffolk's Priority Species and Habitats list (Ref 1.14) and NERC Act (Ref 1.13). No harvest mouse records were found within the site with the closest desk-study record 690m away. This species has, therefore, been scoped out the detailed assessment.</p>	Scoped out

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Feature/ Receptor	Importance (CIEEM/EIA Methodology)	Justification	Scope in/out
Water shrew	Local/Very Low	<p>No water shrew records were found during survey within the site boundary; however, the ponds could support this species. The population within the site is not considered of particular importance to the wider population of the species. Water shrews are considered to be declining in Suffolk (Ref 1.22). The water shrew is also on Suffolk’s Priority Species and Habitats list (Ref 1.14) and considered locally important, but is not included within Section 41 of the NERC Act (Ref 1.13), so is not identified as a species of principal importance for the purpose of conserving biodiversity in England</p> <p>Therefore, this species has been scoped out the detailed assessment, but details of the mitigation measures that should be employed to safeguard water shrew have been detailed within the ES.</p>	Scoped out

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VOLUME 6, CHAPTER 7, APPENDIX 7A:
ANNEX 7A.2: DESK STUDY

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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 Sizewell link road site boundary (hereafter referred to as the site) were obtained from Suffolk Biodiversity Information Service (SBIS) in March 2018.

1.2 Plants

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

Table 1.1: Desk study results for plants

Plant Species	Location	Grid Reference	Year	Approximate distance from the site boundary
Sneezewort (<i>Achillea ptarmica</i>)	Minsmere	TM454665	2014	1.6km north-east
Marsh-mallow (<i>Althaea officinalis</i>)	Minsmere	TM4666	2017	1.9km
Heather (<i>Calluna vulgaris</i>)	Westleton Common	TM46P	2015	1.5km
	Minsmere	TM46N	2014	0.39km
	Westleton Common	TM4468	2014	1.5km
	Darsham Marshes	TM46J	2012	0.76km
Carline Thistle (<i>Carlina vulgaris</i>)	Minsmere	TM46T	2013	1.9km
Whorl-grass (<i>Catabrosa aquatica</i>)	Darsham Marshes	TM46J	2012	0.76km
Soft Hornwort (<i>Ceratophyllum submersum</i>)	Simpson's Fromus Valley	TM383665	2015	0.69km
Chicory (<i>Cichorium intybus</i>)	Darsham	TM46E	2014	0.27km
Grey Hair-grass (<i>Corynephorus canescens</i>)	Minsmere	TM46T	2013	1.9km
Mossy Stonecrop (<i>Crassula tillaea</i>)	Westleton Common	TM4468	2014	1.5km
	Darsham Marshes	TM46J	2012	0.76km
Hound's-tongue (<i>Cynoglossum officinale</i>)	Minsmere	TM46T	2013	1.9km
Common Spotted-orchid (<i>Dactylorhiza fuchsii</i>)	Theberton Woods, verge through wood	TM420655	2017	0.93km

NOT PROTECTIVELY MARKED

Plant Species	Location	Grid Reference	Year	Approximate distance from the site boundary
	Simpson's Fromus Valley	TM383665	2016	0.69km
	Theberton, Hawthorn Road	TM421661	2016	0.76km
	Theberton	TM422657	2013	1.9km
	Middleton	TM428678	2013	0.93km
	Theberton Woods	TM421655	2010	0.84km
Marsh-Orchid (<i>Dactylorhiza fuchsii</i> x <i>praetermissa</i> = <i>D. x grandis</i>)	Middleton	TM431677	2017	0.9km
Heath Spotted-orchid (<i>Dactylorhiza maculate</i>)	Sizewell	TM4565	2014	0.72km
Southern Marsh-orchid (<i>Dactylorhiza praetermissa</i>)	Middleton	TM431677	2017	0.9km
	Simpson's Fromus Valley	TM383665	2016	0.68km
	Darsham Marshes	TM42386875	2016	1.3km
	Middleton	TM42866781	2015	9.7km
	Minsmere	TM46N	2014	0.39km
	Middleton	TM430679	2014	1.1km
	Middleton	TM428678	2013	0.93km
Heath-grass (<i>Danthonia decumbens</i>)	Westleton Common	TM4468	2015	1.5km
Bell Heather (<i>Erica cinerea</i>)	Westleton Common	TM46P	2015	1.5km
	Westleton Common	TM4468	2014	1.5km
	Minsmere	TM46N	2014	0.39km

NOT PROTECTIVELY MARKED

Plant Species	Location	Grid Reference	Year	Approximate distance from the site boundary
	Darsham Marshes	TM46J	2012	0.76km
Red-tipped Cudweed (<i>Filago lutescens</i>)	Minsmere	TM46T	2013	1.9km
Small Cudweed (<i>Filago minima</i>)	Westleton Common	TM4468	2014	1.5km
Common Cudweed (<i>Filago vulgaris</i>)	Westleton Common	TM4468	2014	1.5km
	Darsham Marshes	TM46J	2012	0.76km
	Minsmere	TM46T	2012	0.39km
Wild Strawberry (<i>Fragaria vesca</i>)	Theberton Woods	TM4264	2014	2km
	Westleton Common	TM4468	2014	1.5km
Dyer's Greenweed (<i>Genista tinctoria</i>)	Middleton / Kelsale U2401	TM39936646	2014	1.1km
	Middleton / Kelsale U2401	TM4037566611	2013	0.75km
Corn Marigold (<i>Glebionis segetum</i>)	Lower Abbey Farm Marshes	TM4665	2014	1.7km
Water-violet (<i>Hottonia palustris</i>)	Theberton	TM4248765257	2012	0.72km
	Darsham Marshes	TM46J	2012	0.76km
Frogbit (<i>Hydrocharis morsus-ranae</i>)	Minsmere	TM4666	2017	1.9km
Marsh Pennywort (<i>Hydrocotyle vulgaris</i>)	Minsmere	TM46T	2014	0.39km
Smooth Cat's-ear (<i>Hypochaeris glabra</i>)	Westleton Common	TM4468	2014	1.5km
	Sizewell	TM460660	2014	1.9km
	Minsmere	TM46T	2013	1.9km
Bristle Club-rush (<i>Isolepis setacea</i>)	Darsham Marshes	TM46J	2011	0.76

NOT PROTECTIVELY MARKED

Plant Species	Location	Grid Reference	Year	Approximate distance from the site boundary
Bird's-nest Orchid (<i>Neottia nidus-avis</i>)	Theberton Woods	TM420655	2017	0.93km
	Theberton Woods	TM421655	2010	0.84km
Common Twayblade (<i>Neottia ovata</i>)	Theberton Woods	TM422654	2011	0.8km
Spiny Restharrow (<i>Ononis spinosa</i>)	Middleton / Kelsale U2401	TM401665	2017	1km
	Middleton / Kelsale U2401	TM39936646	2014	1km
	Saxmundham	TM4066	2010	1.5km
Bee Orchid (<i>Ophrys apifera</i>)	Westleton Common	TM4468	2015	1.5km
Early-purple Orchid (<i>Orchis mascula</i>)	Simpson's Fromus Valley	TM383665	2016	0.7km
	Theberton Woods	TM4264	2014	2km
Greater Butterfly-orchid (<i>Platanthera chlorantha</i>)	Middleton / Kelsale U2401	TM400666	2016	0.94km
	Theberton Woods	TM46H	2016	2km
	Middleton / Kelsale U2401	TM39936646	2014	1km
	Middleton / Kelsale U2401	TM4037566611	2013	0.75km
Bog Pondweed (<i>Potamogeton polygonifolius</i>)	Minsmere	TM46T	2013	1.9km
Lesser Pondweed (<i>Potamogeton pusillus</i>)	Darsham Marshes	TM46J	2012	0.76km
Hoary Cinquefoil (<i>Potentilla argentea</i>)	Westleton Common	TM46P	2015	1.5km
	Westleton Common	TM4468	2014	1.5km
	Darsham Marshes	TM46J	2012	0.76km
	Minsmere	TM4666	2017	1.9km

NOT PROTECTIVELY MARKED

Plant Species	Location	Grid Reference	Year	Approximate distance from the site boundary
Lesser Spearwort (<i>Ranunculus flammula</i> subsp. <i>Flammula</i>)	Theberton Woods	TM46H	2016	1.9km
Wild Clary (<i>Salvia verbenaca</i>)	Darsham Marshes	TM46J	2011	0.76km
	Westleton Common	TM4468	2014	1.5km
Brookweed (<i>Samolus valerandi</i>)	Minsmere	TM46T	2013	1.9km
Sanicle (<i>Sanicula europaea</i>)	Simpson's Fromus Valley	TM383665	2016	0.7km
	Theberton Woods	TM4264	2014	2km
	Middleton	TM39936646	2014	1km
	Saxmundham	TM4066	2010	1.5km
Marsh Ragwort (<i>Senecio aquaticus</i>)	Darsham Marshes	TM46J	2012	0.76km
Corn Spurrey (<i>Spergula arvensis</i>)	Sizewell, Lower Abbey arable	TM458661	2014	1.8km
Field Woundwort (<i>Stachys arvensis</i>)	Theberton Woods	TM421655	2010	0.84km
Clustered Clover (<i>Trifolium glomeratum</i>)	Westleton Common	TM4468	2014	1.5km
Sulphur Clover (<i>Trifolium ochroleucon</i>)	Middleton / Kelsale U2401	TM401665	2017	1km
	Middleton / Kelsale U2401	TM39936646	2014	1km
	Saxmundham	TM4066	2010	1.5km
Bird's-foot Clover (<i>Trifolium ornithopodioides</i>)	Westleton Common	TM4468	2014	1.5km
Suffocated Clover (<i>Trifolium suffocatum</i>)	Westleton Common	TM46P	2015	1.5km
Marsh Arrowgrass (<i>Triglochin palustre</i>)	Darsham Marshes	TM422688	2012	1.2km

NOT PROTECTIVELY MARKED

Plant Species	Location	Grid Reference	Year	Approximate distance from the site boundary
Western Gorse (<i>Ulex gallii</i>)	Westleton Common	TM46P	2015	1.5km
Navelwort (<i>Umbilicus rupestris</i>)	Westleton Common	TM46P	2015	1.5km
	Westleton Common	TM4468	2014	1.5km
Common Valerian (<i>Valeriana officinalis</i>)	Minsmere	TM46N	2014	0.39km
	Darsham Marshes	TM46J	2012	0.76km
Sandy Stilt Puffball (<i>Battarrea phalloides</i>)	Yoxford B1122	TM4000068650	2014	0.9km
Reindeer lichen (<i>Cladonia ciliata var. tenuis</i>)	Westleton Common	TM4468	2010	1.5km
Reindeer Moss (<i>Cladonia portentosa</i>)	Westleton Common	TM4468	2010	1.5km
Awl-leaved Screw-moss (<i>Tortula schimperi</i>)	Kelsale-cum-Carlton	TM3766	2015	1.9km
	Simpson's Fromus Valley	TM383665	2014	0.67km
	Middleton	TM422663	2012	0.54km

1.3 Invertebrates

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

Table 1.2: Desk study results for invertebrates

Invertebrate Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
Beetle species (<i>Curculio villosus</i>)	Simpson's Fromus Valley		TM383665	1.491133345	52.24459853	2015		0.69km
Purple emperor (<i>Apatura iris</i>)	Theberton Woods		TM422654	1.547363074	52.23302497	2016	1 Count	0.81km
	Theberton Woods	Theberton Wood	TM425652	1.551604436	52.23109813	2016	1 Count	0.77km
	Theberton Woods	Theberton Wood	TM4265	1.544153624	52.22952322	2016	4 Count	1.2km
	Theberton		TM420655	1.544511436	52.23401031	2016	4 Count	0.93km
	Theberton Woods	Theberton Wood	TM46H	1.543438283	52.22054903	2016	2 Count	2km
	Theberton		TM421655	1.545973071	52.23396635	2016	2 Count	0.84km
	Theberton		TM422655	1.547434703	52.23392238	2016	1 Count	0.75km
	Theberton Woods		TM4264	1.543438283	52.22054903	2015	2 Count	2km
	Theberton Woods	Theberton Woods	TM4298865796	1.559164954	52.23623157	2015	1 Count	0.04km

NOT PROTECTIVELY MARKED

Invertebrate Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary	
	Theberton Woods	Theberton Woods	TM421654	1.545901472	52.23306894	2015	1 Count	0.9km	
	Theberton Woods	Theberton Woods	TM421653	1.545829877	52.23217152	2014	4 Count	0.61km	
	Theberton Woods		TM423656	1.548967992	52.23477581	2014	1 Count	0.26km	
	Theberton		TM426658	1.553496451	52.23643854	2012	1 Count	0.53km	
Small (<i>Coenonympha pamphilus</i>)	heath	Leiston	Upper Abbey Farm	TM453645	1.592018189	52.22357662	2015	1 Count	1.2km
		Leiston	Upper Abbey Farm	TM453647	1.592163202	52.22537136	2015	1 Count	1.1km
		Westleton Common		TM4468	1.575548581	52.25556246	2015	1 Count	1.5km
		Leiston	Upper Abbey Farm	TM453642	1.591800699	52.2208845	2015	1 Count	1.4km
		Theberton Woods	Theberton Woods	TM4265	1.544153624	52.22952322	2015	1 Count	1.2km
		Leiston	Upper Abbey Farm	TM4464	1.572661465	52.21966697	2014	1 Count	1.6km
		Minsmere B. R.	RSPB Minsmere	TM4665	1.602610215	52.2277513	2014	1 Count	1.7km
		Theberton	Theberton-Eastbridge	TM443664	1.578778468	52.24107127	2014	2 Count	0.84km
		Kenton Hills		TM453640	1.591655724	52.21908976	2013	1 Count	1.5km
		Theberton		TM4466	1.574104266	52.23761476	2013		0.39km

NOT PROTECTIVELY MARKED

Invertebrate Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Leiston		TM453650	1.592380749	52.22806348	2013	1 Count	1km
	Leiston		TM454651	1.593914666	52.2289163	2013	1 Count	1.2km
	Leiston		TM453641	1.591728209	52.21998713	2013	1 Count	1.5km
	Yoxford	Yoxwood community wood (planted 2008)	TM3969	1.503137091	52.26673142	2012	1 Count of Abundant	1.5km
	Leiston	Upper Abbey Farm transect summary	TM4564	1.58727249	52.21922323	2011	1 Count of Abundant	1.3km
	Westleton Heath		TM4369	1.561645217	52.26497893	2011	1 Count	2km
	Yoxford	Yoxford WCBS square	TM4069	1.517764684	52.26629601	2010	1 Count	1.3km
Grayling (<i>Hipparchia semele</i>)	Leiston	Upper Abbey Farm	TM460652	1.602755676	52.22954602	2015	2 Count	1.7km
	Westleton Heath		TM4468	1.575548581	52.25556246	2015	32 Count	1.5km
	Leiston	Upper Abbey Farm	TM456656	1.597200555	52.23331399	2015	1 Count	1.4km
	Theberton		TM443664	1.578778468	52.24107127	2015	1 Count	0.84km
	Leiston	Upper Abbey Farm	TM453644	1.591945688	52.22267925	2015	1 Count	1.3km
	Minsmere B. R.	RSPB Minsmere	TM4666	1.603337675	52.2367249	2015	1 Count	2km
	Leiston	Upper Abbey Farm	TM453640	1.591655724	52.21908976	2015	1 Count	1.5km
	Theberton Woods	Theberton Woods	TM4265	1.544153624	52.22952322	2015	1 Count	1.2km

NOT PROTECTIVELY MARKED

Invertebrate Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Sizewell		TM4663	1.601156438	52.20980405	2014	4 Count	1.2km
	Leiston	Upper Abbey Farm	TM4464	1.572661465	52.21966697	2014	2 Count	1.1km
	Leiston		TM453647	1.592163202	52.22537136	2013	1 Count	1.3km
	Leiston	Upper Abbey Farm Transect-summary	TM4564	1.58727249	52.21922323	2013		0.76km
	Theberton		TM445662	1.581557418	52.23918773	2013		0.058km
	Leiston		TM453642	1.591800699	52.2208845	2013	2 Count	1.4km
	Leiston		TM453650	1.592380749	52.22806348	2013	1 Count	1km
	Leiston	Leiston Abbey Farm nr Ash Wood	TM4665	1.602610215	52.2277513	2010	2 Count	1.7km
	Minsmere B. R.	Minsmere Saunders NW	TM4567	1.589446066	52.24614445	2010	1 Count	1.7km
	Westleton Heath		TM4468	1.575548581	52.25556246	2016	15 Count	1.5km
	Kenton Hills		TM453639	1.591583242	52.21819238	2016	1 Count	1.6km
	Minsmere B. R.	Minsmere	TM46T	1.603337675	52.2367249	2016	10 Count	1.9km
Wall megera (<i>Lasiommata megera</i>)	Theberton		TM445662	1.581557418	52.23918773	2013		0.76km
	Yoxford		TM4069	1.517764684	52.26629601	2011	1 Count	1.3km
White admiral (<i>Limenitis camilla</i>)	Minsmere B. R.	Minsmere	TM46T	1.603337675	52.2367249	2016	1 Count	1.9km
	Theberton		TM420655	1.544511436	52.23401031	2016	2 Count	0.93km

NOT PROTECTIVELY MARKED

Invertebrate Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Kenton Hills	Sizewell Belts, Kenton Hills	TM4536963983	1.592651537	52.21890648	2016	1 Count	1.6km
	Theberton Woods	Theberton Wood	TM421655	1.545973071	52.23396635	2016	1 Count	0.84km
	Theberton Woods		TM422654	1.547363074	52.23302497	2016	1 Count	0.81km
	Theberton		TM443664	1.578778468	52.24107127	2015	1 Count	0.84km
	Theberton Woods	Theberton Woods	TM421654	1.545901472	52.23306894	2015	1 Count	0.9km
	Minsmere B. R.	RSPB Minsmere	TM4666	1.603337675	52.2367249	2015	2 Count	1.9km
	Theberton Woods		TM4264	1.543438283	52.22054903	2015	1 Count	2km
	Theberton Woods	Theberton Woods	TM4265	1.544153624	52.22952322	2014	1 Count	1.2km
	Theberton Woods	Theberton Woods	TM423656	1.548967992	52.23477581	2013		0.62km
	Theberton		TM4466	1.574104266	52.23761476	2013		0.39km
	Kenton Hills		TM457643	1.597717802	52.22160364	2010	1 Count	1.6km
Silver-studded blue (<i>Plebejus argus</i>)	Westleton Heath	Sawmils, Westleton Heath	TM4468	1.575548581	52.25556246	2015	20 Count	1.5km
	Minsmere B. R.	RSPB Minsmere	TM4665	1.602610215	52.2277513	2014	6 Count	1.7km

NOT PROTECTIVELY MARKED

Invertebrate Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Minsmere B. R.	Minsmere Gravel Pit Comp 26	TM449669	1.587911622	52.24529158	2013		1.6km
	Westleton Heath		TM46P	1.575548581	52.25556246	2016	7 Count	1.3km
	Minsmere B. R.	RSPB Minsmere-Gravel Pit	TM449669	1.587911622	52.24529158	2016		1.5km
	Westleton Common		TM435680	1.568237053	52.25578394	2016	1 Count	1.3km
	Westleton Common		TM4468	1.575548581	52.25556246	2016	1 Count	1.5km
White-letter hairstreak (<i>Satyrium w-album</i>)	Leiston	Old Abbey, Leiston	TM453639	1.591583242	52.21819238	2016	2 Count	1.6km
Norfolk hawker (<i>Anaciaeschna isosceles</i>)	Leiston		TM457639	1.597427383	52.21801417	2015		1.9km
	Minsmere B. R.	Minsmere, Bittern hide area	TM4666	1.603337675	52.2367249	2014		2km
	Eastbridge	Eastbridge, Minsmere River	TM4566	1.588721161	52.23717073	2014		1km
	Eastbridge	Eastbridge-Middleton	TM4467	1.574826234	52.24658862	2013		0.79km
	Theberton Woods		TM46H	1.543438283	52.22054903	2013		2km
	Middleton	Middleton Reckford Bridge	TM4367	1.560206023	52.24703098	2013		0.22km

NOT PROTECTIVELY MARKED

Invertebrate Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Eastbridge		TM46N	1.574104266	52.23761476	2012		0.39km
	Theberton Woods		TM4265	1.544153624	52.22952322	2012		1.2km
	Minsmere B. R.	Minsmere	TM46T	1.603337675	52.2367249	2011		2km
	Eastbridge	Eastbridge, bridge over Minsmere River	TM453663	1.593323851	52.23972928	2010		1.5km
	Eastbridge	Eastbridge, Dam Bridge	TM451664	1.590472863	52.24071572	2010		1.3km
Variable damselfly (<i>Coenagrion pulchellum</i>)	Minsmere B. R.	Minsmere	TM46T	1.603337675	52.2367249	2014		2km
	Eastbridge	Eastbridge Village	TM4566	1.588721161	52.23717073	2013		1km
	Leiston		TM4666	1.603337675	52.2367249	2012		2km
	Eastbridge		TM46N	1.574104266	52.23761476	2011		0.39km
	Theberton	Eastbridge, nr. Minsmere Old river	TM4466	1.574104266	52.23761476	2010		0.39km
Pantaloan bee (<i>Dasypoda hirtipes</i>)	Theberton	verge near Eels foot	TM451661	1.590255332	52.2380236	2015		1.9km
Lacewing spp. (<i>Euroleon nostras</i>)	Eastbridge	Mere Cottage	TM451661	1.590255332	52.2380236	2017		1.9km
	Westleton		TM448668	1.586377236	52.24443868	2014		1.4km
	Westleton		TM447670	1.585060156	52.24627789	2014		1.4km

NOT PROTECTIVELY MARKED

Invertebrate Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Theberton		TM4466	1.574104266	52.23761476	2013	1 Count of Adult	0.39km
Grey dagger (<i>Acronicta psi</i>)	Kenton Hills		TM456639	1.595966354	52.21805875	2011		1.8km
	Kenton Hills		TM458639	1.598888409	52.21796957	2011		2km
	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
Knot grass (<i>Acronicta rumicis</i>)	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
Ear moth (<i>Amphipoea oculea</i>)	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.1km
	Middleton		TM431678	1.562243793	52.254166	2010	1 Count	1km
Dusky brocade (<i>Apamea remissa</i>)	Eastbridge	Eastbridge, Suffolk	TM45086606	1.589933993	52.23767356	2017		1.2km
White-mantled wainscot (<i>Archanaea neurica</i>)	Darsham Marshes		TM420689	1.546947047	52.26452235	2011	2 Count	1.1km
Garden tiger (<i>Arctia caja</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
Bulrush veneer (<i>Calamotropha paludella</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km

NOT PROTECTIVELY MARKED

Invertebrate Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
Mottled rustic (<i>Caradrina morpheus</i>)	Eastbridge	Eastbridge, Suffolk	TM45086606	1.589933993	52.23767356	2017		1.2km
Crescent (Celaena leucostigma)	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
Latticed heath (<i>Chiasmia clathrata</i>)	Middleton	Middleton CP	TM430678	1.560781519	52.25421017	2015		0.97km
	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
Sallow (<i>Cirrhia icteritia</i>)	Middleton	Middleton CP	TM42866781	1.558741522	52.25436171	2015		0.97km
Small phoenix (<i>Ecliptopera silaceata</i>)	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
White-line dart (<i>Euxoa tritici</i>)	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
Ghost moth (<i>Hepialus humuli</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km

NOT PROTECTIVELY MARKED

Invertebrate Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Sizewell	Upper Abbey	TM453646	1.592090693	52.22447399	2014		1.1km
Shaded fan-foot (<i>Herminia tarsicrinalis</i>)	Kenton Hills		TM458639	1.598888409	52.21796957	2011		2km
Rustic (<i>Hoplodrina blanda</i>)	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.1km
	Middleton		TM431678	1.562243793	52.254166	2010	3 Count	1km
Rosy rustic (<i>Hydraecia micacea</i>)	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.1km
	Middleton		TM431678	1.562243793	52.254166	2010	1 Count	1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
Dot moth (<i>Melanchra persicariae</i>)	Sizewell	Upper Abbey	TM453646	1.592090693	52.22447399	2014		1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
	Middleton		TM431678	1.562243793	52.254166	2010	1 Count	1km
	Middleton		TM4310167769	1.562236101	52.25388737	2009	2 Count	1km
Wainscot neb (<i>Monochroa palustrellus</i>)	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1km

NOT PROTECTIVELY MARKED

Invertebrate Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
Lunar yellow underwing (<i>Noctua orbona</i>)	Kenton Hills		TM458639	1.598888409	52.21796957	2011		2km
Oblique carpet (<i>Orthonama vittata</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
Powdered quaker (<i>Orthosia gracilis</i>)	Simpson's Fromus Valley	Simpsons Fromus Valley	TM384664	1.492524862	52.24365776	2014		0.75km
	Darsham		TM424685	1.552510324	52.26075663	2012		1.2km
	Middleton		TM431678	1.562243793	52.254166	2010	2 Count	1km
Waste grass-veneer (<i>Pediasia contaminella</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
Giant water-veneer (<i>Schoenobius gigantella</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
Shaded broad-bar (<i>Scotopteryx chenopodiata</i>)	Darsham Marshes		TM420689	1.546947047	52.26452235	2011		1.1km
Flame wainscot (<i>Senta flammea</i>)	Eastbridge	Eastbridge, Suffolk	TM45086606	1.589933993	52.23767356	2017		1.2km
White ermine (<i>Spilosoma lubricipeda</i>)	Eastbridge		TM45096605	1.590072912	52.23757937	2017		1.2km
	Eastbridge	Eastbridge, Suffolk	TM45086606	1.589933993	52.23767356	2017		1.2km
	Kenton Hills		TM458639	1.598888409	52.21796957	2011		2km
	Kenton Hills		TM456639	1.595966354	52.21805875	2011		1.8km

NOT PROTECTIVELY MARKED

Invertebrate Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Middleton		TM431678	1.562243793	52.254166	2010	1 Count	1km
Buff ermine (<i>Spilosoma lutea</i>)	Eastbridge	Eastbridge, Suffolk	TM45086606	1.589933993	52.23767356	2017		1.2km
	Sizewell	Upper Abbey	TM453646	1.592090693	52.22447399	2014		1.1km
	Simpson's Fromus Valley	Simpsons Fromus Valley	TM384664	1.492524862	52.24365776	2014		0.75km
	Middleton		TM431678	1.562243793	52.254166	2010	2 Count	1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
Long-legged tabby (<i>Synaphe punctalis</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
Blood-vein (<i>Timandra comae</i>)	Eastbridge	Eastbridge, Suffolk	TM45086606	1.589933993	52.23767356	2017		1.2km
	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km
Cinnabar (<i>Tyria jacobaeae</i>)	Eastbridge	Eastbridge, Suffolk	TM45086606	1.589933993	52.23767356	2017		1.2km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	1.603337675	52.2367249	2010	1 Count	2km
Oak hook-tip (<i>Watsonalla binaria</i>)	Eastbridge	Eastbridge, Suffolk	TM45086606	1.589933993	52.23767356	2017		1.2km
Dark-barred twin-spot carpet (<i>Xanthorhoe ferrugata</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM446674	1.583887777	52.24991184	2010		1.5km

NOT PROTECTIVELY MARKED

Invertebrate Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
Hemipteran spp. (<i>Anoscopus albifrons</i>)	Simpson's Fromus Valley	Fromus Valley	TM38096676	1.488246202	52.24702281	2014	1 Count	0.62km
Dipteran spp. (<i>Brachicheta strigata</i>)	Theberton	Theburton, Suffolk, VC25	TM444651	1.579300565	52.22936092	2011		0.12km
	Theberton	Theberton, E.Suffolk	TM444661	1.580023367	52.23833475	2010		0.62km
Dipteran spp. (<i>Huebneria affinis</i>)	Theberton		TM444661	1.580023367	52.23833475	2011		0.62km
Dipteran spp. (<i>Myopites inulaedyssentericae</i>)	Minsmere B. R.	Minsmere	TM46T	1.603337675	52.2367249	2016		2km
Black colonel (<i>Odontomyia tigrine</i>)	Simpson's Fromus Valley	F5	TM383665	1.491133345	52.24459853	2015		0.69km

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>)	Middleton		TM428677	1.55778507	52.25340105	2015		0.85km
	Leiston	Abbey Road, Leiston	TM4443963142	1.57845615	52.21177282	2015	2	2km
	Theberton Woods		TM4229665646	1.548942491	52.23519038	2013		0.6km
	Kelsale-cum-Carlton	Laurel Farmhouse	TM385669	1.494339828	52.24810177	2011		0.24km
	Eastbridge	Chapel Road	TM451661	1.590255332	52.2380236	2011	1	1.2km
	Theberton	Potters Street	TM446652	1.582295737	52.23016952	2010	1	0.31km
Smooth newt (<i>Lissotriton vulgaris</i>)	Theberton Woods		TM42046579	1.545303699	52.23659523	2013	13	0.82km
	Theberton Woods		TM4197265578	1.544157998	52.2347226	2013	7	0.93km
	Theberton Woods		TM4229665646	1.548942491	52.23519038	2013	12	0.6km
	Theberton Woods		TM4230865272	1.54884988	52.23182877	2013	13	0.82km
	Theberton Woods		TM4214765384	1.546576968	52.23290469	2013	10	0.86km
	Yoxford	7 Oakwood Park	TM399688	1.516159778	52.26454475	2011		1km
	Kelsale-cum-Carlton	Laurel Farmhouse	TM385669	1.494339828	52.24810177	2011		0.24km
Common frog	Simpson's Valley	Fromus F6 by pond	TM383665	1.491133345	52.24459853	2015		0.67km

NOT PROTECTIVELY MARKED

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
<i>(Rana temporaria)</i>	Simpson's Fromus Valley	Simpson Fromus Valley Reserve	TM3829366558	1.491071902	52.24512209	2015		0.64km
	Theberton Woods		TM4197265578	1.544157998	52.2347226	2013		0.93km
	Theberton Woods		TM4230865272	1.54884988	52.23182877	2013		0.81km
	Theberton Woods		TM4214765384	1.546576968	52.23290469	2013		0.87km
	Sizewell	Kenton Hills, Sizewell	TM458640	1.598961037	52.21886694	2012	1	1.9km
	Middleton	Poplar Villa, Mill Road	TM428677	1.55778507	52.25340105	2012	5	0.85km
	Yoxford	7 Oakwood Park	TM399688	1.516159778	52.26454475	2011	1	1.1km
	Theberton	Potters Street	TM446652	1.582295737	52.23016952	2010	1	0.31km
Great crested newt <i>(Triturus cristatus)</i>	Simpson's Fromus Valley		TM383665	1.491133345	52.24459853	2015		0.67km
	Simpson's Fromus Valley	Simpson Fromus Valley Reserve	TM3829366558	1.491071902	52.24512209	2015		0.64km
	Theberton	Nine ponds	TM4182265507	1.541914723	52.23415132	2013		1.1km
	Theberton Woods		TM4197265578	1.544157998	52.2347226	2013	11	0.93km
	Theberton Woods		TM4214765384	1.546576968	52.23290469	2013	13	0.86km
	Kelsale-cum-Carlton	pond in derelict orchard	TM3867	1.487099338	52.24921566	2013		0.61km
	Theberton Woods		TM4229665646	1.548942491	52.23519038	2013	16	0.6km

NOT PROTECTIVELY MARKED

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Theberton		TM4230865272	1.54884988	52.23182877	2013	10	0.81km
	Theberton Woods	Theberton Woods	TM423653	1.548753018	52.23208357	2011	1	0.8km
	Theberton Woods	Theberton Woods	TM423656	1.548967992	52.23477581	2011	3	0.62km
	Kelsale-cum-Carlton	Laurel Farmhouse	TM385669	1.494339828	52.24810177	2011		0.24km
	Middleton	Middleton Moor	TM415678	1.538846969	52.25487049	2011	3	0.38km
	Theberton Woods	Theberton Woods	TM421654	1.545901472	52.23306894	2011		0.89km

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>)	Leiston	Abbey Road, Leiston	TM4443963142	1.57845615	52.21177282	2015	1	2km
Grass snake (<i>Natrix helvetica helvetica</i>)	Leiston	Abbey Road, Leiston	TM4443963142	1.57845615	52.21177282	2015	1	2km
	Theberton Woods		TM4219765453	1.547357188	52.23350192	2015		0.78km
	Middleton	Middleton B1122	TM43156658	1.562096855	52.24319567	2013	1	0.002km
	Theberton Woods		TM4197265578	1.544157998	52.2347226	2013		0.93km
	Eastbridge	4 Lyndon Cottages, Cemetery Lane	TM451661	1.590255332	52.2380236	2012	1	1.2km
	Middleton	Minsmere River, Reckford	TM4394067590	1.574375067	52.25190979	2011		1.1km
	Kelsale-cum-Carlton	Church Meadow	TM383666	1.491203869	52.24549599	2011	1	0.6km
	Kelsale-cum-Carlton	Laurel Farmhouse Main Meadow	TM384667	1.492736522	52.24635016	2011	1	0.46km
Kelsale-cum-Carlton	Laurel Farmhouse Main Meadow	TM384668	1.492807083	52.24724762	2011	1	0.37km	

NOT PROTECTIVELY MARKED

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Eastbridge	Minsmere New Cut west of bridge	TM452664	1.591934645	52.24067119	2010	1	1.4km
	Theberton	Potters Street	TM446652	1.582295737	52.23016952	2010		0.31km
	Minsmere B. R.	Meadow Marsh	TM446674	1.583887777	52.24991184	2010		1.5km
Adder (<i>Vipera berus</i>)	Sizewell	Kenton Hills, Sizewell	TM459640	1.600422088	52.21882232	2012	1	2km
	Minsmere B. R.	Meadow Marsh	TM446674	1.583887777	52.24991184	2011	1	1.5km
Common lizard (<i>Zootoca vivipara</i>)	Leiston	Abbey Road, Leiston	TM4443963142	1.57845615	52.21177282	2015	3	2km
	Eastbridge	Near Bridge of Minsmere New Cut	TM453663	1.593323851	52.23972928	2010	1	1.5km

1.6 Birds

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

Table 1.5: Desk study results for birds

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
Lesser redpoll (<i>Acanthis cabaret</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	2 Count	1.9km
	Middleton		TM4367	2014	1 Count	0.22km
	Kenton Hills		TM46M	2011	1 Count	1.2km
	Docwra's Ditch	Docwra`s Ditch	TM46T	2010	10 Count	1.9km
Common (mealy) redpoll (<i>Acanthis flammea</i>)	Eastbridge		TM4566	2013	12 Count	1.1km
	Minsmere B. R.	Minsmere (TM46 T)	TM46T	2011	1 Count	1.9km
	Sizewell	Sizewell Kenton Hills	TM4564	2011	1 Count	1.3km
Mealy redpoll (<i>Acanthis flammea subsp. flammea</i>)	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
Marsh warbler (<i>Acrocephalus palustris</i>)	Minsmere B. R.	Minsmere	TM46T	2010		1.9km
Skylark (<i>Alda arvensis</i>)	Middleton	Middleton CP	TM4267	2015		0.084km
	Sizewell	Sizewell Upper Abbey Farm	TM4564	2014	200 Count	1.3km
	Darsham	Trustan's Farm Darsham	TM46E	2011	1 Possible Count of Breeding confirmed	0.27km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Leiston	Upper Abbey Leiston	TM46M	2011	1 Possible Count of Breeding confirmed	1.2km
	Minsmere B. R.	Minsmere	TM46T	2011	3 Count	1.9km
	Middleton		TM46I	2011	1 Possible Count of Breeding confirmed	0.85km
	Yoxford		TM36Z	2011	1 Possible Count of Breeding confirmed	0.92km
	Theberton		TM46H	2011	1 Possible Count of Breeding confirmed	2km
	Eastbridge	Eastbridge/Lower Abbey Marshes	TM46N	2011		0.39km
	Westleton Heath		TM46P	2011	1 Possible Count of Breeding confirmed	1.5km
	Middleton		TM46J	2010	20 Count	0.76km
Kingfisher (<i>Alcedo atthis</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	1 Count	1.9km
	Eastbridge		TM4566	2014	1 Count	1/2km
	Eastbridge		TM46N	2011	1 Confirmed Count of Breeding confirmed	0.39km
	Sizewell	Sizewell Kenton Hills	TM4564	2011	1 Count	1.3km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
	Middleton		TM46I	2011	1 Possible Count of Breeding confirmed	0.85km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Darsham		TM46J	2010	1 Count	0.76km
Pintail (<i>Anas acuta</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	6 Count	0.39km
	Minsmere B. R.	Minsmere	TM46T	2011	2 Count	1.9km
Garganey (<i>Anas querquedula</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	1 Count	1.9km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
	Eastbridge		TM46N	2010	1 Possible Count of Breeding confirmed	0.39km
White-fronted goose (<i>Anser albifrons</i>)	Sizewell	Lower Abbey	TM4665	2014		1.7km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	2 Count	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46T	2011		1.9km
European greater white-fronted goose (<i>Anser albifrons subsp. albifrons</i>)	Eastbridge		TM46N	2010	28 Non- Count of Breeding confirmed	0.39km
Greylag goose (<i>Anser anser</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Eastbridge	Eastbridge/Lower Abbey Marshes	TM46N	2011		0.39km
	Minsmere B. R.	RSPB Minsmere	TM46T	2011		1.9km
	Lower Abbey Farm Marshes	Lower Abbey Marshes	TM4665	2010	1 Count	1.7km
Lesser white-fronted goose (<i>Anser erythropus</i>)	Eastbridge	Eastbridge (south)	TM4565	2013	1 Count	0.72km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
Rock pipit (<i>Anthus petrosus</i>)	Minsmere B. R.	Minsmere (TM46 T)	TM46T	2010	1 Count	1.9km
Meadow pipit (<i>Anthus pratensis</i>)	Sizewell	Lower Abbey Farm Marshes	TM459661	2014		1.9km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
	Westleton Heath	Westleton Heath NNE	TM46P	2010	1 Probable Count of Breeding confirmed	1.5km
	Minsmere B. R.	Minsmere RSPB	TM4666	2010		1.9km
Water pipit (<i>Anthus spinoletta</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	1 Count	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46T	2011		1.9km
Tree pipit (<i>Anthus trivialis</i>)	Westleton Walks		TM4567	2012	1 Count	1.7km
Swift (<i>Apus apus</i>)	Middleton	Middleton CP	TM43086777	2017		0.96km
	Middleton	Middleton CP	TM42866759	2016		0.75km
	Theberton		TM43516752	2016		0.83km
	Middleton Moor		TM41726791	2016		0.51km
	Middleton	Middleton CP	TM43076783	2016		1km
	Middleton		TM4267	2015		0.084km
	Leiston	Leiston CP	TM443632	2015		1.9km
	Middleton		TM430677	2014		0.87km
	Middleton		TM43076782	2014	18 Count	1km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	1 Count	1.9km
	Theberton		TM449661	2014		1km
	Middleton		TM430678	2014		0.97km
	Theberton		TM44936619	2014	1 Count	1.1km
	Middleton		TM431677	2013		0.9km
	Middleton		TM43196771	2013	4 Count	0.93km
	Middleton		TM43066782	2013	10 Count	1km
	Theberton		TM437658	2012		0.22km
	Yoxford		TM39446898	2012	6 Count	1.3km
	Yoxford		TM39546879	2012	4 Count	1.1km
	Middleton		TM43076776	2012	10 Count	0.95km
	Middleton		TM417679	2012		0.5km
	Theberton		TM43766581	2012	4 Count	0.24km
	Yoxford		TM394689	2012		1.3km
	Yoxford		TM395687	2012		1.1km
	Middleton		TM41716791	2012	10 Count	0.5km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Middleton		TM431676	2011		0.8km
	Middleton	Tebagong	TM43126765	2011	1 Count	0.9km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary	
	Eastbridge		TM46M	2011	20 Probable Count of Breeding confirmed	1.2km	
	Middleton		TM46I	2011	1 Confirmed Count of Breeding confirmed	0.85km	
	Westleton		TM46P	2011		1.5km	
	Theberton		TM46H	2011	1 Probable Count of Breeding confirmed	2km	
	Eastbridge	Eastbridge/Lower Marshes	Abbey	TM46N	2011		0.39km
	Yoxford		TM36Z	2011	1 Confirmed Count of Breeding confirmed	0.92km	
	Middleton	IP17 3NS		TM43476755	2010	3 Count	0.85km
	Middleton	IP17 3NS		TM43476753	2010	3 Count	0.83km
	Middleton	IP17 3NR		TM43086778	2010	14 Count	1km
	Middleton	IP17 3NJ		TM42936774	2010	1 Count	0.9km
	Middleton			TM429677	2010		0.86km
	Middleton			TM434675	2010		0..78km
Alpine swift (<i>Apus melba</i>)	Minsmere B. R.	Minsmere	TM46T	2010		1.9km	
Great white egret (<i>Ardea alba</i>)	Minsmere B. R.	Minsmere RSPB	TM46T	2011		1.9km	
	Eastbridge		TM46N	2010	1 Count	0.39km	
	Minsmere B. R.	Minsmere Island Mere	TM4666	2010	2 Count	1.9km	

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Eastbridge		TM4566	2010	1 Count	1.1km
Eurasian great egret (<i>Ardea alba subsp. alba</i>)	Sizewell	Sizewell Ash Wood	TM4665	2014	1 Count	1.7km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	1 Count	1.9km
Purple heron (<i>Ardea purpurea</i>)	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
Turnstone (<i>Arenaria interpres</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	8 Count	0.39km
	Minsmere B. R.	Minsmere RSPB	TM46T	2011	2 Non- Count of Breeding confirmed	1.9km
Short-eared owl (<i>Asio flammeus</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	1 Count	1.9km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
Long-eared owl (<i>Asio otus</i>)	Westleton	Westleton Clay Lane	TM4567	2014	1 Count	1.7km
Little owl (<i>Athene noctua</i>)	Yoxford		TM3968	2014	1 Count	0.53km
	Leiston	N7-032	TM4593165937	2014		1.8km
	Darsham	Darsham (west)	TM4169	2014	1 Count	0.75km
	Yoxford		TM396688	2014	1 Count	1.1km
	Eastbridge		TM4566	2012	1 Count	1.1km
	Kelsale-cum-Carlton	Laurel Farmhouse, Kelsale	TM3866	2011	1 Count	1.3km
	Leiston		TM46M	2011	1 Possible Count of Breeding confirmed	1.2km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Yoxford		TM36Z	2011	1 Possible Count of Breeding confirmed	0.92km
	Middleton		TM46J	2010	1 Count	0.76km
	Leiston	N6-068 Upper Abbey Farm meadow, East Bridge	TM4524164705	2010		1km
Scaup (<i>Aythya marila</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	1 Count	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46T	2010	1 Count	1.9km
Waxwing (<i>Bombycilla garrulus</i>)	Eastbridge		TM4566	2011	70 Count	1.1km
	Minsmere B. R.	Minsmere RSPB	TM46T	2011	7 Count	1.9km
	Westleton	Westleton (south-west)	TM4368	2011	2 Count	1.2km
	Eastbridge		TM46M	2010	50 Count	1.2km
	Minsmere B. R.	Minsmere RSPB	TM4666	2010	2 Count	1.9km
	Yoxford		TM3968	2010	1 Count	0.53km
	Yoxford		TM36Z	2010	15 Count	0.92km
Bittern (<i>Botaurus stellaris</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Minsmere B. R.	Minsmere	TM46T	2011	2 Count	1.9km
	Eastbridge		TM46N	2010	1 Possible Count of Breeding confirmed	0.39km
Brent goose (<i>Branta bernicla</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Westleton		TM46T	2011		1.9km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
Dark-bellied brent goose (<i>Branta bernicla</i> subsp. <i>bernicla</i>)	Minsmere B. R.	Minsmere (TM46 T)	TM46T	2011	3 Non- Count of Breeding confirmed	1.9km
	Eastbridge		TM46N	2010	1 Count	0.39km
Light-bellied brent goose (<i>Branta bernicla</i> subsp. <i>hrota</i>)	Minsmere B. R.	Minsmere RSPB	TM46T	2010	40 Count	1.9km
Barnacle goose (<i>Branta leucopsis</i>)	Yoxford		TM396688	2014	2 Count	1.1km
	Yoxford		TM3968	2014	2 Count	0.53km
	Minsmere B. R.	Minsmere	TM46T	2011	11 Count	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	20 Count	0.39km
	Theberton		TM46I	2010	7 Non- Count of Breeding confirmed	0.85km
Goldeneye (<i>Bucephala clangula</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	2 Count	1.9km
	Minsmere B. R.	Minsmere (TM46 T)	TM46T	2011	1 Count	1.9km
Stone-curlew (<i>Burhinus oedicephalus</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Westleton Walks		TM4567	2012	3 Count	1.7km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
	Westleton		TM46P	2011	1 Possible Count of Breeding confirmed	1.5km
	Minsmere B. R.	Minsmere	TM46N	2011	4 Possible Count of Breeding confirmed	0.39km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
Lapland bunting (<i>Calcarius lapponicus</i>)	Minsmere B. R.	Minsmere	TM46T	2010	1 Count	1.9km
Sanderling (<i>Calidris alba</i>)	Minsmere B. R.	Minsmere	TM46T	2011	7 Count	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010	2 Count	0.39km
Dunlin (<i>Calidris alpina</i>)	Minsmere B. R.	Minsmere Reserve	TM46T	2011	12 Non- Count of Breeding confirmed	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010	16 Count	0.39km
Curlew sandpiper (<i>Calidris ferruginea</i>)	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
Little stint (<i>Calidris minuta</i>)	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
Ruff (<i>Calidris pugnax</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Minsmere B. R.	Minsmere RSPB (TM46 T)	TM46T	2011		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	1 Count	0.39km
Temminck's stint (<i>Calidris temminckii</i>)	Minsmere B. R.	Minsmere	TM46T	2010		1.9km
Nightjar (<i>Caprimulgus europaeus</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	1 Count	1.9km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Westleton		TM46P	2011	1 Possible Count of Breeding confirmed	1.5km
Goldfinch (<i>Carduelis carduelis</i>)	Middleton	Middleton CP	TM4267	2015		0.084km
	Sizewell	Lower Abbey Farm Marshes	TM459656	2014		1.7km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Yoxford		TM396688	2014	3 Count	1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Yoxford		TM36Z	2011	1 Possible Count of Breeding confirmed	0.92km
	Theberton		TM46H	2011	1 Possible Count of Breeding confirmed	2km
	Middleton		TM46I	2011		0.85km
	Leiston	Upper Abbey Leiston	TM46M	2011	1 Possible Count of Breeding confirmed	1.2km
	Darsham	Trustan's Farm Darsham	TM46E	2011	1 Possible Count of Breeding confirmed	0.27km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Westleton Heath		TM46P	2011		1.5km
	Eastbridge	Eastbridge/Lower Abbey Marshes	TM46N	2011		0.39km
	Darsham		TM46J	2010	6 Count	0.76km
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	5 Count	1.3km
	Kenton Hills	Kenton Hills / Sizewell Belts	TM4564	2010	2 Count	1.3km
Trecreeper familiaris) (<i>Certhia</i>)	Middleton	Middleton CP	TM4267	2015		0.084km
	Eastbridge		TM4566	2014	2 Count	1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Lower Abbey Farm Marshes	Sizewell Lower Abbey Marshes	TM4665	2012	1 Count	1.7km
	Theberton Woods	Theberton Woods	TM4265	2011	5 Count	1.2km
	Westleton Heath		TM46P	2011	1 Possible Count of Breeding confirmed	1.5km
	Middleton		TM46I	2011	1 Count	0.85km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010		0.39km
	Middleton		TM46J	2010	1 Count	7.6km
	Kenton Hills		TM46M	2010	2 Possible Count of Breeding confirmed	1.2km
	Kenton Hills	Kenton Hills / Sizewell Belts	TM4564	2010	1 Count	1.3km
	Theberton Woods	Theberton Woods	TM46H	2010	1 Probable Count of Breeding confirmed	2km
Cetti's warbler (<i>Cettia cetti</i>)	Minsmere B. R.	Minsmere RSPB	TM4587266120	2017		1.9km
	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Middleton	Middleton CP	TM4267	2015		0.084km
	Lower Abbey Farm Marshes	Sizewell Lower Abbey Marshes	TM4665	2014	4 Count	1.7km
	Westleton	Westleton (south-east)	TM4468	2014	1 Count	1.5km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	10 Count	0.39km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Middleton		TM46I	2011	1 Possible Count of Breeding confirmed	0.84km
	Eastbridge		TM4566	2010	1 Count	1.1km
Little ringed plover (<i>Charadrius dubius</i>)	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
Ringed plover (<i>Charadrius hiaticula</i>)	Minsmere B. R.	RSPB Minsmere	TM46T	2011		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	1 Count	0.39km
White-winged black tern (<i>Chlidonias leucopterus</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	1 Count	1.9km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
Black tern (<i>Chlidonias niger</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	2 Count	1.9km
	Minsmere B. R.	Minsmere	TM46T	2011	2 Count	1.9km
Greenfinch (<i>Chloris chloris</i>)	Middleton	Middleton CP	TM4267	2015		0.084km
	Yoxford		TM396688	2014	2 Count	1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Middleton		TM46I	2011	2 Count	0.85km
	Minsmere B. R.	Minsmere	TM46T	2011	2 Count	1.9km
	Theberton		TM46H	2011	1 Possible Count of Breeding confirmed	2km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Yoxford		TM36Z	2011	1 Possible Count of Breeding confirmed	0.92km
	Leiston	Upper Abbey Leiston	TM46M	2011	1 Possible Count of Breeding confirmed	1.2km
	Darsham	Trustan's Farm Darsham	TM46E	2011	1 Possible Count of Breeding confirmed	0.27km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	2 Count	0.39km
	Westleton Heath		TM46P	2011		1.5km
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	1 Confirmed Count of Breeding confirmed	1.5km
White stork (<i>Ciconia ciconia</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2011	1 Count	1.9km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Non- Count of Breeding confirmed	1.9km
Marsh harrier (<i>Circus aeruginosus</i>)	Middleton	Middleton CP	TM4267	2015		0.084km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	5 Count	1.9km
	Eastbridge		TM4566	2014	4 Count	1.1km
	Yoxford		TM3968	2012	1 Count	0.53km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	2 Count	0.39km
	Middleton	Minsmere River, Reckford	TM4394067590	2011		1.1km
	Middleton		TM46I	2011		0.84km
	Westleton Heath		TM46P	2011	1 Count	1.5km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Minsmere B. R.	RSPB Minsmere	TM46T	2011	4 Count	1.9km
	Darsham Marshes		TM46J	2010		0.76km
Hen harrier (<i>Circus cyaneus</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	1 Count	1.9km
	Eastbridge		TM4566	2014	1 Count	1.1km
	Minsmere B. R.	Minsmere RSPB	TM46T	2011		1.9km
	Westleton Common		TM4468	2011	1 Count	1.5km
	Westleton		TM46P	2010	1 Count	1.5km
	Middleton		TM46I	2010	1 Count	0.84km
Montagu's harrier (<i>Circus pygargus</i>)	Minsmere B. R.	Minsmere	TM46T	2011		q.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010	1 Count	0.39km
Hawfinch (<i>Coccothraustes coccothraustes</i>)	Minsmere B. R.	Minsmere	TM46T	2010	1 Count	1.9km
Quail (<i>Coturnix coturnix</i>)	Westleton	Westleton (west)	TM4369	2014	1 Count	2km
Cuckoo (<i>Cuculus canorus</i>)	Eastbridge		TM45126607	2017		1.2km
	Minsmere B. R.	Minsmere	TM454661	2014		1.5km
	Middleton		TM4367	2014	1 Count	0.22km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	1 Count	1.9km
	Eastbridge		TM4566	2014	1 Count	1.1km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Eastbridge		TM46N	2011	1 Possible Count of Breeding confirmed	0.39km
	Minsmere B. R.	Minsmere RSPB	TM46T	2011	1 Possible Count of Breeding confirmed	1.9km
	Theberton		TM46H	2011		2km
	Sizewell	Sizewell Black Walks	TM4565	2011	1 Count	0.72km
	Middleton		TM46I	2011	1 Possible Count of Breeding confirmed	0.85km
	Lower Abbey Farm Marshes	Lower Abbey Marshes	TM4665	2010	1 Count	1.7km
	Eastbridge	Eastbridge (north-west)	TM4466	2010	1 Count of male	0.39km
	Theberton	Theberton round cottages	TM46M	2010	1 Count	1.2km
	Westleton Common		TM46P	2010	1 Possible Count of Breeding confirmed	1.5km
Blue tit (<i>Cyanistes caeruleus</i>)	Middleton	Middleton CP	TM4267	2015		0.084km
	Yoxford		TM396688	2014	2 Count	1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Theberton		TM46H	2011	3 Confirmed Count of Breeding confirmed	2km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Probable Count of Breeding confirmed	1.9km
	Yoxford		TM36Z	2011	9 Count	0.92km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Middleton		TM46I	2011	9 Possible Count of Breeding confirmed	0.85km
	Darsham Marshes		TM46J	2011	1 Possible Count of Breeding confirmed	0.76km
	Kenton Hills		TM46M	2011		1.2km
	Westleton Heath		TM46P	2011		1.5km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	6 Count	0.39km
	Kenton Hills	Kenton Hills / Sizewell Belts	TM4564	2010	2 Count	1.3km
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	1 Confirmed Count of Breeding confirmed	1.3km
Bewick's swan (<i>Cygnus columbianus</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	8 Count	1.9km
	Darsham		TM4269	2013	11 Count	1.2km
	Eastbridge	Eastbridge (south)	TM4565	2013	28 Count	0.72km
	Eastbridge		TM4566	2013	21 Count	1.1km
	Westleton	Westleton (south-east)	TM4468	2012	37 Count	1.5km
	Minsmere B. R.	RSPB Minsmere	TM46T	2011	10 Count	1.9km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2010	8 Count	1.9km
	Sizewell	Sizewell Upper Abbey Farm	TM4564	2010	14 Count	1.3km
	Theberton		TM4365	2010	9 Count	0.59km
Whooper swan	Minsmere B. R.	Minsmere	TM4666	2016		1.9km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
<i>(Cygnus cygnus)</i>	Eastbridge	Eastbridge (south)	TM4565	2013	4 Count	0.72km
	Westleton	Westleton (south-east)	TM4468	2012	3 Count	1.5km
	Minsmere B. R.	Minsmere RSPB	TM46T	2011	2 Count	1.9km
House martin <i>(Delichon urbicum)</i>	Middleton	Middleton CP	TM4267	2015		0.084km
	Middleton		TM4367	2014	30 Count	0.22km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	1 Count	1.9km
	Eastbridge		TM4566	2012	60 Count	1.1km
	Leiston	Upper Abbey Leiston	TM46M	2011	1 Possible Count of Breeding confirmed	1.2km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	12 Count	0.39km
	Yoxford		TM36Z	2011	1 Confirmed Count of Breeding confirmed	0.92km
	Theberton		TM46H	2011	1 Probable Count of Breeding confirmed	1.9km
	Middleton		TM46I	2011	1 Confirmed Count of Breeding confirmed	0.85km
	Darsham Marshes		TM46J	2010		0.76km
	Darsham	Darsham station	TM46E	2010	2 Confirmed Count of Breeding confirmed	0.27km
Westleton		TM46P	2010		1.5km	

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
Great spotted woodpecker (<i>Dendrocopos major</i>)	Middleton	Middleton CP	TM4267	2015		0.084km
	Yoxford		TM396688	2014	1 Count	1.1km
	Sizewell	Whinney Hill	TM4665	2014		1.7km
	Middleton		TM46I	2011	1 Probable Count of Breeding confirmed	0.85km
	Darsham Marshes		TM46J	2011	1 Possible Count of Breeding confirmed	0.76km
	Theberton		TM46H	2011	3 Confirmed Count of Breeding confirmed	2km
	Yoxford		TM36Z	2011		0.92km
	Westleton		TM46P	2011	1 Confirmed Count of Breeding confirmed	1.5km
	Kenton Hills		TM46M	2011	2 Count	1.2km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
	Eastbridge		TM46N	2010	1 Count	0.39km
	Kenton Hills	Kenton Hills / Sizewell Belts	TM4564	2010	1 Count	1.3km
Little egret (<i>Egretta garzetta</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Middleton		TM4367	2014	1 Count	0.22km
	Minsmere B. R.	Minsmere	TM46T	2011	2 Count	1.9km
	Middleton		TM46I	2011	1 Count	0.85km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	1 Count	0.39km
	Leiston		TM46M	2010		1.2km
	Darsham		TM46J	2010	1 Count	0.76km
	Yoxford		TM36Z	2010	1 Count	0.92km
Yellowhammer (<i>Emberiza citrinella</i>)	Middleton	Middleton CP	TM4267	2015		0.084km
	Middleton		TM46I	2011	1 Possible Count of Breeding confirmed	0.85km
	Westleton Heath		TM46P	2011		1.5km
	Minsmere B. R.	RSPB Minsmere	TM46T	2011		1.9km
	Darsham	Trustan's Farm Darsham	TM46E	2011	1 Possible Count of Breeding confirmed	0.27km
	Yoxford		TM36Z	2011	1 Possible Count of Breeding confirmed	0.92km
	Theberton		TM46H	2011	1 Possible Count of Breeding confirmed	2km
	Leiston	Upper Abbey Leiston	TM46M	2011	1 Possible Count of Breeding confirmed	1.2km
	Westleton Heath		TM46N	2011	1 Count	0.39km
	Eastbridge		TM4566	2010	21 Count	1.1km
	Middleton		TM46D	2010	1 Count	1.5km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
Reed bunting (<i>Emberiza schoeniclus</i>)	Lower Abbey Farm Marshes	Sizewell Lower Abbey Marshes	TM4665	2014	1 Count	1.7km
	Sizewell	Sizewell Upper Abbey Farm	TM4564	2014	45 Count	1.3km
	Middleton		TM46I	2011	1 Possible Count of Breeding confirmed	0.85km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Probable Count of Breeding confirmed	1.9km
	Minsmere B. R.	Minsmere RSPB	TM4666	2010	2 Count	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010		0.39km
	Leiston		TM46M	2010	1 Possible Count of Breeding confirmed	1.1km
Robin (<i>Erithacus rubecula</i>)	Middleton	Middleton CP	TM4267	2015		0.084km
	Yoxford		TM396688	2014	2 Count	1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	2 Count	0.39km
	Yoxford		TM36Z	2011	1 Confirmed Count of Breeding confirmed	0.92km
	Westleton		TM46P	2011		1.5km
	Theberton		TM46H	2011	1 Possible Count of Breeding confirmed	2km
	Kenton Hills		TM46M	2011		1.2km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Darsham Marshes		TM46J	2011	1 Possible Count of Breeding confirmed	0.76km
	Middleton		TM46I	2011		0.85km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	1 Confirmed Count of Breeding confirmed	1.3km
	Middleton		TM46D	2010	1 Count	1.5km
	Kenton Hills	Kenton Hills / Sizewell Belts	TM4564	2010	3 Count	1.3km
Merlin (<i>Falco columbarius</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	1 Count	1.9km
	Eastbridge		TM4566	2011	1 Count	1.1km
	Minsmere B. R.	Minsmere RSPB (TM46 T)	TM46T	2011		1.9km
Peregrine (<i>Falco peregrinus</i>)	Sizewell	Sizewell Upper Abbey Farm	TM4564	2014	1 Count	1.3km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	1 Count	1.9km
	Minsmere B. R.	Minsmere Meadow Marsh	TM4467	2011	1 Count	0.79km
	Minsmere B. R.	Minsmere (TM46 T)	TM46T	2010	1 Count	1.9km
	Westleton Common		TM4468	2010	1 Count of Frequent	1.5km
	Westleton		TM46P	2010		1.5km
	Middleton	Middleton (east)	TM4367	2010	1 Count of Frequent	0.22km
	Leiston	Leiston Abbey	TM4464	2010	1 Count of Frequent	1.2km
Hobby	Middleton	Middleton CP	TM4267	2015		0.084km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
<i>(Falco subbuteo)</i>	Theberton		TM4365	2015		0.59km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	1 Count	1.9km
	Middleton		TM4367	2014	1 Count	0.21km
	Sizewell	Black Walks	TM4565	2014		0.72km
	Minsmere B. R.	Minsmere Saunders' Hill	TM4567	2013	1 Count	1.7km
	Minsmere B. R.	Minsmere Meadow Marsh	TM4467	2013	2 Count	0.79km
	Eastbridge	Eastbridge/Lower Abbey Marshes	TM46N	2011		0.39km
	Darsham Marshes		TM46J	2011	1 Possible Count of Breeding confirmed	0.76km
	Middleton		TM46I	2011	1 Count	0.85km
	Sizewell	Sizewell Ash Wood	TM4665	2011	2 Count	1.7km
	Westleton Heath		TM46P	2011	1 Count	1.5km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Sizewell	Sizewell Kenton Hills	TM4564	2011	2 Count	1.3km
	Eastbridge		TM4566	2010	1 Count	1.1km
	Theberton	Theberton round cottages	TM46M	2010	1 Count	1.2km
Kestrel <i>(Falco tinnunculus)</i>	Middleton	Middleton CP	TM4267	2015		0.084km
	Sizewell	Upper Abbey Farm	TM453645	2014		1.2km
	Leiston	BC1353	TM4539365244	2013		1.1km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Middleton		TM46I	2011		0.85km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	1 Count	0.39km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
	Westleton Heath		TM46P	2011		1.5km
	Leiston	Upper Abbey Leiston	TM46M	2011	1 Possible Count of Breeding confirmed	1.2km
	Middleton		TM46J	2010	1 Count	0.76km
Brambling (<i>Fringilla montifringilla</i>)	Sizewell	Sizewell Upper Abbey Farm	TM4564	2014	20 Count	1.3km
	Middleton		TM4367	2014	1 Count	0.22km
	Middleton		TM46I	2011	10 Count	0.85km
	Minsmere B. R.	Minsmere	TM46T	2010	1 Count	1.9km
Black-throated diver (<i>Gavia arctica</i>)	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
Great northern diver (<i>Gavia immer</i>)	Minsmere B. R.	Minsmere RSPB	TM46T	2010	1 Count	1.9km
Red-throated diver (<i>Gavia stellate</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
Crane (<i>Grus grus</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	2 Count	1.9km
	Minsmere B. R.	Minsmere	TM46T	2010	2 Count	1.9km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
White-tailed eagle (<i>Haliaeetus albicilla</i>)	Minsmere B. R.	Minsmere	TM46T	2011	1 Non- Count of Breeding confirmed	1.9km
Swallow (<i>Hirundo rustica</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Simpson's Fromus Valley	F6 by pond	TM383665	2015		0.69km
	Middleton		TM4267	2015		0.084km
	Yoxford		TM396688	2014	2 Count	1.1km
	Eastbridge		TM4566	2012	100 Count	1.1km
	Middleton		TM46E	2011	1 Count	0.27km
	Middleton		TM46I	2011	1 Confirmed Count of Breeding confirmed	0.85km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	2 Count	0.39km
	Yoxford		TM36Z	2011	1 Probable Count of Breeding confirmed	0.92km
	Eastbridge		TM46M	2011	12 Probable Count of Breeding confirmed	1.2km
	Darsham Marshes		TM46J	2011	1 Possible Count of Breeding confirmed	0.76km
	Theberton		TM46H	2011	1 Probable Count of Breeding confirmed	2km
	Westleton		TM46P	2011	1 Possible Count of Breeding confirmed	1.7km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Lower Abbey Farm Marshes	Lower Abbey Marshes	TM4665	2010	1 Count	1.7km
Little gull (<i>Hydrocoloeus minutus</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9m
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010	1 Count	0.39km
Wryneck (<i>Jynx torquilla</i>)	Westleton Walks		TM4567	2013	1 Count	1.7km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
Red-backed shrike (<i>Lanius collurio</i>)	Westleton Walks		TM4567	2013	1 Count	1.7km
	Minsmere B. R.	Minsmere	TM46T	2010		1.9km
Great grey shrike (<i>Lanius exubitor</i>)	Westleton Walks		TM4567	2013	1 Count	1.7km
	Westleton Heath		TM46P	2010	1 Count	1.5km
Herring gull (<i>Larus argentatus</i>)	Yoxford		TM396688	2014	2 Count	1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Dunwich Heath NT	Dunwich Heath	TM46T	2011	17 Count	1.9km
	Middleton		TM46I	2011		0.85km
	Eastbridge	Eastbridge/Lower Abbey Marshes	TM46N	2011		0.39km
	Westleton		TM46P	2011	1 Non- Count of Breeding confirmed	1.5km
	Darsham		TM46J	2010	4 Count	0.76km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
Mediterranean gull (<i>Larus melanocephalus</i>)	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Westleton Heath		TM46P	2011	2 Count	1.5km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010		0.39km
	Darsham		TM4269	2010	2 Count	1.2km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2010	1 Count	1.9m
	Darsham	Fairfields, Darsham	TM46J	2010	2 Count	0.76km
Black-tailed godwit (<i>Limosa limosa</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	30 Count	0.39km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
Linnet (<i>Linaria cannabina</i>)	Sizewell	Sizewell Black Walks	TM4565	2014	2 Count	0.72km
	Lower Abbey Farm Marshes	Sizewell Lower Abbey Marshes	TM4665	2014	2 Count	1.7km
	Sizewell	Sizewell Upper Abbey Farm	TM4564	2014	100 Count	1.3km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Westleton Heath		TM46P	2011		1.5km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	2 Count	0.39km
	Middleton		TM46I	2011		0.85km
	Leiston	Upper Abbey Leiston	TM46M	2011	1 Possible Count of Breeding confirmed	1.2km
	Darsham Marshes		TM46J	2010		0.76km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
Twite (<i>Linaria flavirostris</i>)	Minsmere B. R.	Minsmere RSPB	TM46T	2010	35 Count	1.9km
Savi's warbler (<i>Locustella luscinioides</i>)	Minsmere B. R.	Minsmere	TM46T	2010	1 Possible Count of Breeding confirmed	1.9km
Grasshopper warbler (<i>Locustella naevia</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	1 Count	1.9km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Possible Count of Breeding confirmed	1.9km
Common crossbill (<i>Loxia curvirostra</i>)	Westleton	Westleton Mumbry Hills	TM4467	2013	1 Count	0.79km
	Westleton Walks		TM4567	2013	1 Count	1.7km
	Sizewell	Sizewell Kenton Hills	TM4564	2012	18 Count	1.3km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2012	5 Count	1.9km
	Sizewell	Sizewell Walk Barn	TM4665	2011	16 Count	1.7km
	Westleton		TM46P	2011	25 Non- Count of Breeding confirmed	1.5km
	Minsmere B. R.	Minsmere	TM46T	2011	30 Count	1.9km
	Theberton Woods	Theberton Woods	TM4265	2011	1 Count	1.2km
Woodlark (<i>Lullula arborea</i>)	Sizewell	Sizewell Upper Abbey Farm	TM4564	2014	7 Count	1.3km
	Westleton Common		TM4468	2014	1 Count	1.5km
	Minsmere B. R.	Minsmere Saunders' Hill	TM4567	2013	5 Count	1.7km
	Eastbridge		TM4566	2013	1 Count	1.1km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Westleton Heath		TM46P	2011	2 Possible Count of Breeding confirmed	1.5km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
	Eastbridge		TM46N	2010	1 Possible Count of Breeding confirmed	0.39km
	Kenton Hills		TM46M	2010	1 Count	1.2km
Nightingale (<i>Luscinia megarhynchos</i>)	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Sizewell	Sizewell Black Walks	TM4565	2011	1 Count	0.72km
	Eastbridge		TM46N	2011	1 Possible Count of Breeding confirmed	0.39km
	Westleton Heath		TM46P	2011	1 Possible Count of Breeding confirmed	1.5km
	Westleton	Westleton (south-east)	TM4468	2011	1 Count	1.5km
	Theberton		TM46H	2010	1 Possible Count of Breeding confirmed	1.9km
	Middleton		TM46I	2010	1 Possible Count of Breeding confirmed	0.85km
Velvet scoter (<i>Melanitta fusca</i>)	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
Common scoter (<i>Melanitta nigra</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	1 Count	1.9km
	Minsmere B. R.	Minsmere	TM46T	2011	20 Count	1.9km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Minsmere B. R.	Minsmere RSPB	TM46N	2010		0.39km
Smew (<i>Mergellus albellus</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	5 Count	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46T	2011	7 Count	1.9km
	Eastbridge		TM46N	2010	2 Count	0.39km
	Minsmere B. R.	Minsmere Meadow Marsh	TM4467	2010	1 Count	0.79km
Bee-eater (<i>Merops apiaster</i>)	Theberton		TM4365	2015		0.59km
	Sizewell	Sizewell Ash Wood	TM4665	2011	1 Count	1.7km
Red kite (<i>Milvus milvus</i>)	Kenton Hills		TM4564	2014		1.3km
	Leiston	Leiston Abbey	TM4464	2014	1 Count	1.2km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	1 Count	1.9km
	Eastbridge		TM4566	2013	1 Count	1.1km
	Theberton		TM4365	2013	1 Count	0.59km
	Westleton Walks		TM4567	2012	1 Count	1.7km
	Westleton Common		TM4468	2012	1 Count	1.5km
	Theberton Woods	Theberton Woods	TM4265	2011	2 Count	1.2km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Minsmere B. R.	Minsmere Meadow Marsh	TM4467	2010	1 Count	0.79km
Pied wagtail (<i>Motacilla alba</i>)	Sizewell	Red Rails	TM4564	2014		1.3km
	Minsmere B. R.	Minsmere	TM46T	2011	2 Count	1.9km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Darsham Marshes		TM46J	2011	1 Possible Count of Breeding confirmed	0.76km
	Middleton		TM46I	2011		0.85km
	Westleton		TM46P	2010	1 Probable Count of Breeding confirmed	1.5km
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	1 Count	1.3km
	Theberton	The Alders, Theberton	TM46M	2010	1 Confirmed Count of Breeding confirmed	1.2km
White wagtail (<i>Motacilla alba subsp. alba</i>)	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Westleton		TM46P	2010		1.5km
Pied wagtail (<i>Motacilla alba subsp. yarrellii</i>)	Middleton		TM4267	2015		0.084km
	Yoxford		TM396688	2014	1 Count	1.2km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	1 Count	0.39km
	Westleton Heath		TM46P	2011	3 Confirmed Count of Breeding confirmed	1.5km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2010	50 Count	1.9km
	Kenton Hills		TM46M	2010	1 Count	1.2km
	Kenton Hills	Kenton Hills / Sizewell Belts	TM4564	2010	1 Count	1.3km
Grey wagtail	Sizewell	Sizewell Belts	TM457638	2014		1.9km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
<i>(Motacilla cinerea)</i>	Middleton	Middleton (east)	TM4367	2012	2 Count	0.22km
	Middleton		TM46I	2011	1 Probable Count of Breeding confirmed	0.85km
	Middleton		TM4267	2010	1 Count	0.084km
Yellow wagtail <i>(Motacilla flava)</i>	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2010	2 Count	1.9km
Grey-headed wagtail <i>(Motacilla flava subsp. thunbergi)</i>	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
Spotted flycatcher <i>(Muscicapa striata)</i>	Middleton		TM43096777	2017		0.96km
	Middleton Moor		TM4167	2014	4 Count	0.4km
	Theberton Woods	Theberton Woods	TM4265	2013	1 Count	1.2km
	Theberton Woods		TM421654	2013	1 Count	0.9km
	Middleton		TM46I	2011	2 Confirmed Count of Breeding confirmed	0.85km
	Yoxford		TM36Z	2011	1 Confirmed Count of Breeding confirmed	0.92km
	Theberton Woods		TM46H	2010	4 Confirmed Count of Breeding confirmed	2km
	Minsmere B. R.	Minsmere Meadow Marsh	TM4467	2010	4 Count	0.79km
	Minsmere B. R.	Minsmere	TM46T	2010		1.9km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Westleton		TM46N	2009	1 Possible Count of Breeding confirmed	1.9km
Curlew (<i>Numenius arquata</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Westleton Heath		TM46P	2010	1 Count	1.5km
	Minsmere B. R.	Minsmere Meadow Marsh	TM4467	2010	1 Count	0.79km
Whimbrel (<i>Numenius phaeopus</i>)	Minsmere B. R.	Minsmere	TM46T	2011	2 Non- Count of Breeding confirmed	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010		0.39km
Wheatear (<i>Oenanthe oenanthe</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Westleton Walks		TM4567	2013	3 Count	1.7km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
	Sizewell	Sizewell Walk Barn	TM4665	2011	1 Count	1.7km
	Westleton Heath		TM46P	2010	2 Count	1.5km
	Eastbridge		TM4566	2010	1 Count	1.1km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010		0.39km
Golden oriole (<i>Oriolus oriolus</i>)	Theberton Woods	Theberton Woods	TM4265	2013	1 Count	1.2km
Osprey	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	1 Count	1.9km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
<i>(Pandion haliaetus)</i>	Minsmere B. R.	Minsmere	TM46T	2011	1 Non- Count of Breeding confirmed	1.9km
Bearded tit <i>(Panurus biarmicus)</i>	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010		0.39km
	Leiston		TM46M	2010	1 Possible Count of Breeding confirmed	1.2km
Great tit <i>(Parus major)</i>	Middleton	Middleton CP	TM4267	2015		0.084km
	Yoxford		TM396688	2014	1 Count	1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Westleton Heath		TM46P	2011		1.5km
	Yoxford		TM36Z	2011	5 Count	0.92km
	Middleton		TM46I	2011	1 Possible Count of Breeding confirmed	0.95km
	Kenton Hills		TM46M	2011		1.2km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Eastbridge	Eastbridge/Lower Abbey Marshes	TM46N	2011	1 Confirmed Count of Breeding confirmed	0.39km
	Theberton		TM46H	2011	1 Confirmed Count of Breeding confirmed	1.9km
	Darsham Marshes		TM46J	2010		0.76km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	10 Count	1.3km
	Kenton Hills	Kenton Hills / Sizewell Belts	TM4564	2010	6 Count	1.3km
	Middleton		TM46D	2010	6 Count	1.5km
House sparrow (<i>Passer domesticus</i>)	Middleton	Middleton CP	TM4267	2015		0.084km
	Middleton		TM434673	2014		0.59km
	Sizewell	Sizewell Upper Abbey Farm	TM4564	2014	40 Count	1.3km
	Sizewell	Lower Abbey Farm	TM4565	2014		0.72km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Middleton		TM46I	2011	1 Confirmed Count of Breeding confirmed	0.85km
	Yoxford		TM36Z	2011	1 Confirmed Count of Breeding confirmed	0.92km
	Theberton		TM46H	2011		2km
	Darsham Marshes		TM46J	2011	1 Possible Count of Breeding confirmed	0.76km
	Lower Abbey Farm Marshes	Sizewell Lower Abbey Marshes	TM4665	2011	6 Count	1.7km
	Leiston	Upper Abbey Leiston	TM46M	2011	1 Possible Count of Breeding confirmed	1.2km
	Eastbridge	Eastbridge/Lower Abbey Marshes	TM46N	2011		0.39km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Westleton		TM46P	2010	1 Confirmed Count of Breeding confirmed	1.5km
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	1 Confirmed Count of Breeding confirmed	1.3km
Tree sparrow (<i>Passer montanus</i>)	Eastbridge	Eastbridge (south)	TM4565	2013	3 Count	0.72km
	Kelsale-cum-Carlton	Laurel Farmhouse, Kelsale	TM3866	2012	2 Count	1.3km
	Westleton	Westleton (south-west)	TM4368	2011	4 Count	1.2km
	Middleton		TM46I	2010	1 Count	0.85km
	Theberton	Theberton round cottages	TM46M	2010	2 Count	1.2km
Grey partridge (<i>Perdix perdix</i>)	Darsham	Darsham (south-west)	TM4069	2014	2 Count	1.3km
	Yoxford		TM36Z	2011	1 Possible Count of Breeding confirmed	0.92km
	Minsmere B. R.	Minsmere	TM46T	2010	1 Possible Count of Breeding confirmed	1.9km
Coal tit (<i>Periparus ater</i>)	Yoxford		TM396688	2014	1 Count	1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Middleton		TM46I	2011		0.85km
	Westleton		TM46T	2011	1 Possible Count of Breeding confirmed	1.9km
	Kenton Hills		TM46M	2011		1.2km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Westleton		TM46P	2011	1 Possible Count of Breeding confirmed	1.5km
	Kelsale-cum-Carlton	kelsale	TM36Y	2011	1 Possible Count of Breeding confirmed	1.3km
	Theberton Woods	Theberton Woods	TM46H	2010	1 Probable Count of Breeding confirmed	2km
	Yoxford		TM36Z	2010	1 Count	0.92km
	Kenton Hills	Kenton Hills / Sizewell Belts	TM4564	2010	1 Count	1.3km
	Sizewell	Sizewell Black Walks	TM4565	2010	1 Count	0.72km
Honey-buzzard (<i>Pernis apivorus</i>)	Westleton Walks		TM4567	2012	1 Count	1.7km
Grey phalarope (<i>Phalaropus filicarius</i>)	Minsmere B. R.	Minsmere RSPB	TM46T	2010		1.9km
	Minsmere B. R.	Minsmere RSPB	TM4666	2010	1 Count	1.9km
Black redstart (<i>Phoenicurus ochruros</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	1 Count	1.9km
	Sizewell	Sizewell Ash Wood	TM4665	2012	1 Count	.1.7km
	Eastbridge		TM4566	2012	1 Count	1.1km
Redstart (<i>Phoenicurus phoenicurus</i>)	Westleton	Westleton Mumbry Hills	TM4467	2013	1 Count	0.79km
	Westleton Heath		TM46P	2011	1 Count	1.4km
	Westleton		TM46T	2010	1 Probable Count of Breeding confirmed	1.9km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Eastbridge		TM4566	2010	1 Count	1/1km
Wood warbler (<i>Phylloscopus sibilatrix</i>)	Theberton Woods		TM421654	2010	1 Count	0.9km
	Theberton Woods	Theberton Woods	TM4265	2010	1 Count	1.2km
Green woodpecker (<i>Picus viridis</i>)	Sizewell	Blackwalks	TM4565	2014		0.72km
	Yoxford		TM396688	2014	2 Count	1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Minsmere B. R.	Minsmere Reserve	TM46T	2011	2 Possible Count of Breeding confirmed	1.9km
	Kenton Hills		TM46M	2011	1 Count	1.2km
	Westleton		TM46P	2011		1.5km
	Yoxford		TM36Z	2011	1 Possible Count of Breeding confirmed	0.92km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	2 Count	0.39km
	Middleton		TM46I	2011		0.85km
	Darsham Marshes		TM46J	2011	1 Possible Count of Breeding confirmed	0.76km
	Theberton Woods	Theberton Woods	TM46H	2011		1.9km
	Theberton Woods		TM421654	2011	1 Count	0.89km
	Lower Abbey Farm Marshes	Lower Abbey Marshes	TM4665	2010	1 Count	1.7km
Spoonbill	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	1 Count	1.9km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
<i>(Platalea leucorodia)</i>	Minsmere B. R.	RSPB Minsmere	TM46T	2011	4 Count	1.9km
	Eastbridge		TM4566	2010	3 Count	1.1km
Snow bunting <i>(Plectrophenax nivalis)</i>	Minsmere B. R.	Minsmere RSPB	TM46T	2011	10 Count	1.9km
Glossy ibis <i>(Plegadis falcinellus)</i>	Eastbridge		TM4566	2012	1 Count	1.1km
Slavonian grebe <i>(Podiceps auritus)</i>	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
Black-necked grebe <i>(Podiceps nigricollis)</i>	Minsmere B. R.	Minsmere RSPB	TM46T	2011		1.9km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2011	1 Count	1.9km
Marsh tit <i>(Poecile palustris)</i>	Theberton Woods	Theberton Woods	TM4265	2014	2 Count	1.2km
	Middleton		TM4367	2014	1 Count	0.21km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Lower Abbey Farm Marshes	Sizewell Lower Abbey Marshes	TM4665	2012	1 Count	1.7km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	2 Count	0.39km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Sizewell	Sizewell Kenton Hills	TM4564	2011	1 Count	1.3km
	Kenton Hills		TM46M	2010	1 Possible Count of Breeding confirmed	1.1km
	Westleton		TM46P	2010		1.5km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Theberton Woods	Theberton Woods	TM46H	2010	1 Probable Count of Breeding confirmed	2km
	Middleton	Vale Fm, Middleton	TM46J	2010	1 Confirmed Count of Breeding confirmed	0.76km
	Eastbridge		TM4566	2010	1 Count	1.1km
	Theberton Woods	Theberton Woods	TM421655	2010	1 Count	0.84km
Dunnock (<i>Prunella modularis</i>)	Middleton	Middleton CP	TM4267	2015		0.084km
	Sizewell	Blackwalks	TM4565	2014		0.72km
	Yoxford		TM396688	2014	2 Count	1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Middleton		TM46I	2011	1 Possible Count of Breeding confirmed	0.85km
	Dunwich Heath NT	Dunwich Heath	TM46T	2011	8 Probable Count of Breeding confirmed	1.9km
	Theberton		TM46H	2011	1 Possible Count of Breeding confirmed	2km
	Yoxford		TM36Z	2011		0.92km
	Westleton Heath		TM46P	2011		1.5km
	Kenton Hills		TM46M	2011		1.2km
	Kenton Hills	Kenton Hills / Sizewell Belts	TM4564	2010	1 Count	1.3km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Eastbridge		TM46N	2010	1 Possible Count of Breeding confirmed	0.39km
	Middleton	Vale Fm, Middleton	TM46J	2010	1 Probable Count of Breeding confirmed	0.76km
Bullfinch (<i>Pyrrhula pyrrhula</i>)	Sizewell	Cover Plot	TM453648	2014		1.1km
	Yoxford		TM396688	2014	2 Count	1.1km
	Lower Abbey Farm Marshes	Sizewell Lower Abbey Marshes	TM4665	2014	1 Count	1.7km
	Yoxford		TM3968	2014	2 Count	0.53km
	Eastbridge		TM4566	2014	1 Count	1.1km
	Westleton	Westleton (south-east)	TM4468	2014	2 Count	1.5km
	Sizewell	Sizewell Upper Abbey Farm	TM4564	2014	4 Count	1.3km
	Darsham Marshes		TM46J	2011	1 Possible Count of Breeding confirmed	0.76km
	Middleton		TM46I	2011	2 Count	0.85km
	Minsmere B. R.	Minsmere RSPB (TM46 T)	TM46T	2011		1.9km
	Theberton Woods	Theberton Woods	TM4265	2011	1 Count	1.2km
	Minsmere B. R.	Minsmere RSPB	TM4666	2010		1.9km
	Theberton Woods	Theberton Woods	TM46H	2010	1 Probable Count of Breeding confirmed	2m
Kelsale-cum-Carlton	kelsale	TM36Y	2010	1 Count	1.3km	

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
Avocet (<i>Recurvirostra avosetta</i>)	Minsmere B. R.	Minsmere	TM46T	2011	1 Confirmed Count of Breeding confirmed	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	80 Count	0.39km
Firecrest (<i>Regulus ignicapilla</i>)	Sizewell	Sizewell Upper Abbey Farm	TM4564	2014	1 Count	1.3km
	Sizewell	Sizewell Ash Wood	TM4665	2014	1 Count	1.7km
	Sizewell	Ashwood	TM460652	2014		1.7km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	1 Count	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46T	2011		1.9km
	Minsmere B. R.	Minsmere Hangmans New Wood	TM4566	2011	1 Count	1.1km
Goldcrest (<i>Regulus regulus</i>)	Middleton	Middleton CP	TM4267	2015		0.084km
	Yoxford		TM396688	2014	1 Count	1.1km
	Sizewell	Sizewell Black Walks	TM4565	2014	1 Count	0.72km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Middleton		TM46I	2011		0.85km
	Westleton		TM46P	2010	1 Possible Count of Breeding confirmed	1.5km
	Kenton Hills		TM46M	2010	1 Count	1.2km
	Kenton Hills	Kenton Hills / Sizewell Belts	TM4564	2010	4 Count	1.3km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	1 Count	1.3km
Sand martin (<i>Riparia riparia</i>)	Minsmere B. R.	Minsmere RSPB	TM4666	2014		1.9km
	Minsmere B. R.	Minsmere RSPB (TM46 T)	TM46T	2011		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010		0.39km
Whinchat (<i>Saxicola rubetra</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Minsmere B. R.	Minsmere Saunders' Hill	TM4567	2012	1 Count	1.7km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
Stonechat (<i>Saxicola rubicola</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Westleton Heath		TM46P	2011	1 Count	1.5km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Confirmed Count of Breeding confirmed	1.9km
	Eastbridge		TM46N	2010	1 Count	0.39km
	Eastbridge		TM4566	2010	1 Count of male	1.1km
Serin (<i>Serinus serinus</i>)	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
Nuthatch (<i>Sitta europaea</i>)	Theberton Woods	Theberton Woods	TM4265	2014	1 Count	1.2km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
	Yoxford		TM36Z	2011	1 Possible Count of Breeding confirmed	0.92km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010		0.39km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
King eider (<i>Somateria spectabilis</i>)	Minsmere B. R.	Minsmere RSPB	TM4666	2010		1.9km
	Minsmere B. R.	Minsmere	TM46T	2010	1 Count	1.9km
Siskin (<i>Spinus spinus</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	20 Count	1.9km
	Sizewell	Sizewell Kenton Hills	TM4564	2012	1 Count	1.3km
	Minsmere B. R.	Minsmere	TM46T	2011	80 Count	1.9km
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	1 Count	1.3km
	Westleton Walks		TM4567	2010	50 Count	1.7km
	Middleton		TM46I	2010	50 Count	0.85km
	Darsham		TM46J	2010	30 Count	0.76km
	Kenton Hills		TM46M	2010	10 Count	1.3km
Roseate tern (<i>Sterna dougallii</i>)	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
Common tern (<i>Sterna hirundo</i>)	Minsmere B. R.	Minsmere	TM46T	2011	1 Non- Count of Breeding confirmed	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010		0.39km
Arctic tern (<i>Sterna paradisaea</i>)	Minsmere B. R.	Minsmere Island Mere	TM4666	2013	1 Count	1.9km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
Sandwich tern (<i>Sterna sandvicensis</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Minsmere B. R.	Minsmere	TM46T	2011	2 Count	1.9km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Minsmere B. R.	Minsmere RSPB	TM46N	2010		0.39km
Little tern (<i>Sternula albifrons</i>)	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010	2 Count	0.39km
Turtle dove (<i>Streptopelia turtur</i>)	Theberton	Between Theberton and Eastbridge	TM44376627	2017		0.75km
	Middleton		TM4367	2014	2 Count	0.22km
	Sizewell	Sizewell Ash Wood	TM4665	2014	2 Count	1.7km
	Darsham		TM4269	2014	1 Count	1.1km
	Westleton Common		TM4468	2011	1 Count	1.5km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2011	1 Count	1.9km
	Minsmere B. R.	Minsmere Saunders' Hill	TM4567	2011	4 Count	1.7km
	Westleton Heath		TM46P	2011	3 Possible Count of Breeding confirmed	1.5km
	Middleton		TM46I	2011	1 Possible Count of Breeding confirmed	0.85km
	Eastbridge		TM46N	2010	1 Possible Count of Breeding confirmed	0.39km
Theberton	The Alders, Theberton	TM46M	2010	1 Possible Count of Breeding confirmed	1.2km	

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	1 Possible Count of Breeding confirmed	1.3km
Tawny owl (<i>Strix aluco</i>)	Westleton	Westleton (south-west)	TM4368	2014	1 Count	1.2km
	Yoxford	Yoxford (north-west)	TM3869	2014	1 Count	1.7km
	Sizewell	Upper Abbey (bridleway)	TM453644	2014		1.3km
	Eastbridge		TM4566	2013	1 Count	1.1km
	Minsmere B. R.	Minsmere Meadow Marsh	TM4467	2011	2 Count	0.79km
	Middleton		TM46I	2011		0.85km
	Minsmere B. R.	Minsmere (TM46 T)	TM46T	2011		1.9km
	Theberton		TM46H	2011		2km
	Theberton Woods		TM421654	2011	1 Count	0.89km
	Minsmere B. R.	Minsmere Saunders' Hill	TM4567	2011	1 Count	1.7km
	Westleton Heath		TM46P	2011	1 Possible Count of Breeding confirmed	1.5km
	Eastbridge		TM46N	2010	1 Possible Count of Breeding confirmed	0.39km
	Theberton	Theberton Church Road	TM4466	2010	1 Count	0.39km
	Kelsale-cum-Carlton	Laurel Farmhouse Kelsale	TM36Y	2010	1 Count	1.3km
	Kelsale-cum-Carlton	Kelsale (north)	TM3866	2010	1 Count	1.3km
Theberton	Theberton round cottages	TM46M	2010	1 Count	1.2km	

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
Starling (<i>Sturnus vulgaris</i>)	Sizewell	Pony Paddock	TM4565	2014		0.72km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2014	35000 Count	1.9km
	Minsmere B. R.	Minsmere	TM46T	2011	11 Possible Count of Breeding confirmed	1.9km
	Leiston	Upper Abbey Leiston	TM46M	2011	1 Possible Count of Breeding confirmed	1.2km
	Theberton		TM46H	2011		2km
	Eastbridge	Eastbridge/Lower Abbey Marshes	TM46N	2011		0.39km
	Middleton		TM46I	2011	1 Possible Count of Breeding confirmed	0.85km
	Yoxford		TM36Z	2011	23 Count	0.92km
	Westleton Heath		TM46P	2010	35 Count	1.5km
	Middleton		TM46J	2010	4 Count	7.6km
Dartford warbler (<i>Sylvia undata</i>)	Westleton Heath		TM46P	2011	1 Possible Count of Breeding confirmed	1.5km
	Dunwich Heath NT	Dunwich Heath	TM46T	2011	2 Probable Count of Breeding confirmed	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010		0.39km
Shelduck (<i>Tadorna tadorna</i>)	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	30 Count	0.39km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Westleton Heath		TM46P	2011		1.5km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
Wood sandpiper (<i>Tringa glareola</i>)	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2010	1 Count	0.39km
Greenshank (<i>Tringa glareola</i>)	Minsmere B. R.	Minsmere	TM46T	2011	3 Count	1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	1 Count	0.39km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2011	1 Count	1.9km
	Minsmere B. R.	Minsmere Dunes	TM46S	2009	1 Count	1.9km
Green sandpiper (<i>Tringa ochropus</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
Wren (<i>Troglodytes troglodytes</i>)	Middleton		TM4267	2015		0.084km
	Yoxford		TM396688	2014	4 Count	1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Leiston	Upper Abbey Leiston	TM46M	2011	1 Possible Count of Breeding confirmed	1.2km
	Theberton Woods	Theberton Woods	TM46H	2011		2km
	Middleton		TM46I	2011		0.85km
	Eastbridge	Eastbridge/Lower Abbey Marshes	TM46N	2011		0.39km
	Westleton Heath		TM46P	2011		1.5km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Yoxford		TM36Z	2011	1 Possible Count of Breeding confirmed	0.92km
	Minsmere B. R.	Minsmere RSPB (TM46 T)	TM46T	2011		1.9km
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	1 Confirmed Count of Breeding confirmed	1.3km
	Kenton Hills	Kenton Hills / Sizewell Belts	TM4564	2010	4 Count	1.3km
	Middleton	Vale Fm, Middleton	TM46J	2010	1 Probable Count of Breeding confirmed	0.76
Redwing (<i>Turdus iliacus</i>)	Sizewell	Red Rails	TM4564	2014		1.3km
	Minsmere B. R.	Minsmere Saunders' Hill	TM4567	2013	180 Count	1.7km
	Minsmere B. R.	Minsmere (TM46 T)	TM46T	2011		1.9km
	Middleton		TM46I	2011	2 Count	0.85km
	Theberton		TM46H	2011	8 Count	2km
	Minsmere B. R.	Minsmere	TM46N	2011		0.39km
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	7 Count	1.2km
	Kenton Hills		TM46M	2010	50 Count	1.2km
	Yoxford		TM36Z	2010	1 Count	0.92
	Westleton		TM46P	2010	2 Count	1.5km
	Minsmere B. R.	Minsmere RSPB	TM4666	2010		1.9km
	Middleton	Middleton CP	TM4267	2015		0.084km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
Song thrush (<i>Turdus philomelos</i>)	Yoxford		TM396688	2014	2 Count	1.1km
	Lower Abbey Farm Marshes	Sizewell Lower Abbey Marshes	TM4665	2014	1 Count	1.7km
	Sizewell	Upper Abbey Farm	TM452646	2014		1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Yoxford		TM36Z	2011	1 Count	0.92km
	Middleton		TM46I	2011	1 Possible Count of Breeding confirmed	0.85km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Leiston	Upper Abbey Leiston	TM46M	2011	1 Possible Count of Breeding confirmed	1.2km
	Theberton		TM46H	2011	1 Possible Count of Breeding confirmed	2km
	Middleton		TM46D	2010	1 Count	1.5km
	Westleton		TM46P	2010	1 Possible Count of Breeding confirmed	1.5km
	Darsham		TM46J	2010	1 Count	0.76km
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	1 Confirmed Count of Breeding confirmed	1.3km
Fieldfare (<i>Turdus pilaris</i>)	Sizewell	Bridleway @ Rifle pit	TM453648	2014		1.2km
	Westleton	Westleton (south-east)	TM4468	2014	26 Count	1.5km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Westleton Walks		TM4567	2012	20 Count	1.7km
	Theberton		TM46H	2011	2 Count	2km
	Minsmere B. R.	Minsmere	TM46T	2011		1.9km
	Westleton		TM46J	2011	100 Count	0.76km
	Yoxford		TM36Z	2011	1 Count	0.92km
	Middleton		TM46I	2011	23 Count	0.8km
	Minsmere B. R.	Minsmere Island Mere	TM4666	2011	100 Count	1.9km
	Eastbridge		TM4566	2010		1.1km
	Kelsale-cum-Carlton	kelsale	TM36Y	2010	3 Count	1.3km
	Eastbridge		TM46N	2010	3 Count	0.39km
	Middleton		TM46D	2010	20 Count	1.5km
	Westleton		TM46P	2010	3 Count	1.5km
	Ring ouzel (<i>Turdus torquatus</i>)	Sizewell	Sizewell Upper Abbey Farm	TM4564	2014	1 Count
Westleton Walks			TM4567	2013	2 Count	1.7km
Minsmere B. R.		Minsmere	TM46T	2011		1.9km
Eastbridge			TM46N	2010	1 Count	0.39km
Westleton			TM46P	2010		1.5km
	Darsham Marshes		TM42156874	2016		1.1km
	Middleton		TM434671	2016		0.4km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
Barn owl (<i>Tyto alba</i>)	Leiston	N6-068A Upper Abbey Farm meadow, East Bridge	TM4524164705	2015		1km
	Middleton	NF-004 Reckford Bridge Marsh, Middleton	TM4360267715	2015		1km
	Middleton	Middleton CP	TM4267	2015		0.084km
	Kelsale-cum-Carlton	NA-012	TM3925866045	2015		1.1km
	Eastbridge	NE-060	TM4495366210	2015		1.1km
	Leiston	E058	TM4587365376	2015		1.6km
	Darsham Marshes	E057	TM4230068700	2015		1.2km
	Leiston	NC-077 Upper Abbey Farm meadow, East Bridge	TM4530064600	2015		1.1km
	Eastbridge	E186	TM4515266642	2015		1.5km
	Sizewell	Sizewell Upper Abbey Farm	TM4564	2014	1 Count	1.3km
	Middleton	Christmas Cottage, Middleton	TM42856777	2014	1 Count	0.93km
Barn owl (<i>Tyto alba</i>) Continued	Minsmere B. R.	Minsmere Meadow Marsh	TM4467	2014	1 Count	0.79km
	Middleton	Middleton, suffolk	TM41956794	2014		0.71km
	Darsham	Darsham (west)	TM4169	2014	1 Count	0.74km
	Middleton	N7-067	TM4340067700	2014		0.98km
	Westleton Walks		TM4567	2014	1 Count	1.7km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
	Leiston	BC1353	TM4539365244	2014		1.1km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	2013		1.9km
	Eastbridge	NC-084	TM4520266647	2013		1.6km
	Eastbridge		TM4566	2013	1 Count	1.1km
	Yoxford	Yoxford (north-west)	TM3869	2013	1 Count	1.7km
	Kelsale-cum-Carlton	Kelsale North Green	TM3966	2012	1 Count	1.1km
	Middleton		TM4367	2012	1 Count	0.22km
	Middleton Moor		TM46D	2011	1 Count	1.5km
	Middleton		TM46I	2011		0.85km
	Middleton Moor		TM4167	2011	1 Count	0.41km
	Minsmere B. R.	Minsmere	TM46T	2011	1 Count	1.9km
	Theberton Woods	Theberton Woods	TM4265	2011	1 Count	1.2km
	Theberton	E027	TM4400064400	2011		0.77km
	Yoxford		TM36Z	2011	1 Count	0.92km
	Darsham		TM46J	2011	4 Confirmed Count of Breeding confirmed	0.76km
	Middleton	Minsmere River, Reckford	TM4394067590	2011		1.1km
	Theberton		TM46H	2011		2km
	Kelsale-cum-Carlton	kelsale	TM36Y	2011	2 Probable Count of Breeding confirmed	1.3km

NOT PROTECTIVELY MARKED

Bird Species	Location	Site Detail	Grid Reference	Year	Abundance	Approximate distance from the site boundary
Barn owl (<i>Tyto alba</i>) Continued	Yoxford	Yoxford (north)	TM3969	2011	1 Count	1.5km
	Theberton	The Alders, Theberton	TM46M	2010	1 Possible Count of Breeding confirmed	1.2km
	Eastbridge		TM46N	2010	1 Possible Count of Breeding confirmed	0.39km
Lapwing (<i>Vanellus vanellus</i>)	Minsmere B. R.	Minsmere	TM4666	2016		1.9km
	Minsmere B. R.	Minsmere RSPB	TM46N	2011	50 Count	0.39km
	Minsmere B. R.	Minsmere	TM46T	2011	81 Possible Count of Breeding confirmed	1.9km
	Westleton	Westleton (south-east)	TM4468	2011	152 Count	1.5km
	Westleton Walks		TM4567	2011	82 Count	1.7km
	Westleton		TM46P	2011		1.5km
	Middleton		TM46I	2010	30 Count	0.85km
Leiston		TM46M	2010	1 Probable Count of Breeding confirmed	1.2km	
Sabine's gull (<i>Xema sabini</i>)	Minsmere B. R.	Minsmere	TM46T	2010	1 Non- Count of Breeding confirmed	1.9km

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 Sizewell Link Road 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)¹. The sole exception to this is for barbastelle (*Barbastella barbastellus*) for which the Zol has been extended to 10km.

Table 1.6: Desk study results for bats

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
Western barbastelle (<i>Barbastella barbastellus</i>)	Leiston	Wood Farm Westward Ho	TM437631	1.56763011	52.21172317	2012		2.1km
Serotine (<i>Eptesicus serotinus</i>)	Theberton Woods	Theberton Woods	TM4216065580	1.546907347	52.23465791	2014	2 Count	0.75km
	Leiston	Upper Abbey Farmhouse	TM4532764539	1.592440997	52.22391457	2013		1.2km
Daubenton's bat (<i>Myotis daubentonii</i>)	Leiston	Upper Abbey Farmhouse	TM4532764539	1.592440997	52.22391457	2012		1.2km
	Kenton Hills	Kenton Hills Sizewell	TM460642	1.602028521	52.22057241	2016		2km

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

NOT PROTECTIVELY MARKED

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
Natterer's bat (<i>Myotis nattereri</i>)	Leiston	Upper Abbey Farm Barn, Leiston	TM453645	1.592018189	52.22357662	2016		1.2km
	Kenton Hills		TM4564	1.58727249	52.21922323	2014		1.3km
	Leiston	Upper Abbey Farmhouse	TM4532764539	1.592440997	52.22391457	2013	2 Count of present	1.2km
	Kenton Hills	Kenton Hills Sizewell	TM457638	1.597354788	52.2171168	2012	21 Count	2km
	Leiston	Upper Abbey Farm Barn Leiston	TM454656	1.594277487	52.23340315	2012	6 Count	1.2km
	Kenton Hills	Kenton Hills Sizewell	TM4563	1.586548725	52.21024945	2012	21 Count	2.3km
	Sizewell	Kenton Hills, Sizewell	TM456640	1.596038923	52.21895612	2011	8 Count	1.7km
	Middleton		TM410670	1.530964471	52.24791028	2010		0.41km
Noctule bat (<i>Nyctalus noctula</i>)	Kenton Hills	Kenton Hills Sizewell	TM460642	1.602028521	52.22057241	2016		2km
	Kenton Hills		TM4564	1.58727249	52.21922323	2014		1.2km
	Middleton		TM435674	1.567804481	52.25039959	2013		0.71km
	Kenton Hills	Kenton Hills Sizewell	TM457638	1.597354788	52.2171168	2012	3 Count	2km
	Kenton Hills	Kenton Hills Sizewell	TM4563	1.586548725	52.21024945	2012	2 Count	2.3km
	Sizewell	Kenton Hills, Sizewell	TM456640	1.596038923	52.21895612	2011	2 Count	1.7km
Pipistrelle species bat	Kenton Hills	Kenton Hills Sizewell	TM460642	1.602028521	52.22057241	2016		2km
	Kenton Hills	Kenton Hills Sizewell	TM4563	1.586548725	52.21024945	2012	3 Count	2.3km

NOT PROTECTIVELY MARKED

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
<i>(Pipistrellus sp.)</i>	Middleton		TM432677	1.563634053	52.25322443	2011		0.93km
	Middleton		TM410670	1.530964471	52.24791028	2010		0.41km
	Middleton		TM434678	1.56663059	52.2540334	2010		1.1km
Common pipistrelle <i>(Pipistrellus pipistrellus)</i>	Kelsale-cum-Carlton	Laurel Farm house	TM3850066870	1.494318649	52.24783253	2014	1 Count	0.7km
	Kenton Hills		TM4564	1.58727249	52.21922323	2014		1.3km
	Middleton		TM435674	1.567804481	52.25039959	2013		0.71km
	Theberton	Old Manor House, Theberton	TM4363065886	1.568613762	52.23675556	2013		0.31km
	Leiston	Upper Farmhouse Abbey	TM4532764539	1.592440997	52.22391457	2013		1.2km
	Middleton		TM432677	1.563634053	52.25322443	2011		0.93km
Soprano pipistrelle <i>(Pipistrellus pygmaeus)</i>	Yoxford	Old High Road, Yoxford	TM3940068800	1.508846304	52.26476258	2014	1 Count	1.2km
	Theberton Woods	Theberton Woods	TM4213065390	1.546332793	52.23296601	2014	2 Count	0.87km
	Theberton Woods	Theberton Woods	TM4229065650	1.548857657	52.23522891	2014	4 Count	0.61km
	Kenton Hills	Kenton Hills Sizewell	TM460642	1.602028521	52.22057241	2013	2 Count	2km
	Leiston	Upper Farmhouse Abbey	TM4532764539	1.592440997	52.22391457	2013		1.2km
	Kenton Hills	Kenton Hills Sizewell	TM457638	1.597354788	52.2171168	2012	2 Count	2km

NOT PROTECTIVELY MARKED

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Theberton	School House, IP16 4SA	TM437659	1.569647036	52.23685022	2012	100+ Count	0.32km
Long-eared bat species (<i>Plecotus sp.</i>)	Middleton		TM426679	1.555004225	52.25528406	2016	1 Count	0.93km
Brown long-eared bat (<i>Plecotus auratus</i>)	Leiston	Upper Abbey Farm Workshop, Leiston	TM453646	1.592090693	52.22447399	2016		1.1km
	Leiston		TM460650	1.602610215	52.2277513	2016	20 Count of present	1.2km
	Leiston	Westward Ho	TM437631	1.56763011	52.21172317	2016		2.1km
	Yoxford		TM406682	1.525970849	52.25885445	2013		0.4km
	Theberton	Old Manor House, Theberton	TM4363065886	1.568613762	52.23675556	2013		0.31km
	Yoxford		TM40686829	1.527204992	52.25962715	2013		0.32km
	Leiston	Upper Abbey Farmhouse	TM4532764539	1.592440997	52.22391457	2013		1.2km
	Westleton	Everest, Blythburgh Rd., Westleton, Saxmundham, IP17 3AS	TM445645	1.580328317	52.22393225	2012		0.67km
	Middleton		TM432677	1.563634053	52.25322443	2011		0.93km
	Middleton		TM410670	1.530964471	52.24791028	2010		0.41km
Leiston		TM459650	1.601148874	52.22779595	2010		1.6km	

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 water vole (<i>Arvicola amphibius</i>)	Middleton		TM4268	1.546301904	52.25644566	2016		0.76km
	Darsham		TM4212468830	1.548710499	52.26383961	2014		1.2km
	Darsham		TM4211868777	1.548584725	52.26336662	2014		1.1km
	Darsham		TM4210868702	1.548384672	52.26269796	2014		1.1km
	Darsham		TM4213768714	1.548817426	52.26279289	2014		1.3km
	Westleton		TM4244868479	1.553197243	52.26054702	2014		1.3km
	Darsham		TM4220768680	1.549816832	52.26245696	2014		1.1km
	Darsham		TM4217768735	1.549417523	52.26296374	2014		1.1km
	Darsham		TM4215868721	1.549129589	52.26284647	2014		1.1km
	Darsham		TM4220568812	1.549882297	52.26364242	2014		1.2km
	Darsham		TM4209768663	1.548195818	52.26235282	2014		1km
	Middleton	back of garden on Rectory Road	TM4367	1.560206023	52.24703098	2013		0.22km
	Middleton	between Reckford	TM4467	1.574826234	52.24658862	2012		0.79km

NOT PROTECTIVELY MARKED

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
		Bridge and Eastbridge						
	Middleton	Minsmere River, Reckford	TM4394067590	1.574375067	52.25190979	2011		1km
	Middleton		TM4417067380	1.577586269	52.24992329	2010		1.1km
	Eastbridge	Eastbridge	TM451664	1.590472863	52.24071572	2010		1.3km
	Eastbridge	Eastbridge IDB drain	TM4468966255	1.584359929	52.23959733	2010		0.93km
West european hedgehog (<i>Erinaceus europaeus</i>)	Theberton	Leiston Road, Leiston	TM4357365977	1.567846164	52.23759741	2017	1 Count	0.4km
	Middleton	Middleton CP	TM43096775	1.562061577	52.25372172	2017		0.94km
	Theberton	Church Road, Theberton	TM4414866351	1.57652111	52.24069898	2017	1 Count	0.75km
	Middleton	Rectory Road, Middleton	TM4299967809	1.560773372	52.25429138	2017	2 Count	0.98km
	Theberton	Church Road, Theberton	TM4371066062	1.569909994	52.23829957	2017	1 Count	0.48km
	Yoxford	Middleton Road, Yoxford	TM4051868390	1.52490697	52.26059543	2016	1 Count	0.5km
	Theberton	Leiston Road, Leiston	TM4359665933	1.568150654	52.23719238	2016	2 Count	0.35km
	Middleton	Leiston Road, Middleton	TM4340667406	1.566434393	52.25049502	2016	1 Count	0.7km

NOT PROTECTIVELY MARKED

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Theberton	Church Road, Theberton	TM4383666246	1.571884509	52.23989498	2016	1 Count	0.63km
	Theberton		TM437658	1.569574952	52.23595283	2016		0.22km
	Theberton	Abbey Lane, Leiston	TM4320263997	1.56099944	52.21999286	2016	1 Count	1.5km
	Theberton		TM4333663915	1.562898416	52.21919783	2016	1 Count	1.5km
	Theberton	Leiston Road, Leiston	TM4375265774	1.57031627	52.23569649	2016	1 Count	1km
	Middleton	The Causeway, Saxmundham	TM4244267960	1.552736831	52.25589213	2016	1 Count	0.92km
	Leiston	Abbey Road, Leiston	TM4426163158	1.575867369	52.21199532	2016	1 Count	2km
	Theberton	Church Road, Leiston	TM4428266491	1.578581114	52.24189588	2016	2 Count	0.92km
	Theberton	Church Road	TM4429966319	1.578705304	52.24034484	2015		0.76km
	Westleton	Black Slough	TM4394967975	1.57478475	52.25536073	2015		1.4km
	Middleton		TM4212167275	1.547551635	52.24988621	2015		0.16km
	Theberton	Abbey Lane	TM4328363837	1.562067949	52.21852126	2015		1.6km
	Theberton	Leiston Road	TM4361566118	1.568561699	52.23884415	2015		0.54km
	Theberton	Harrow Lane	TM4246764343	1.55050782	52.22342185	2015		1.4km
	Middleton	Leiston Road	TM4345167088	1.566863194	52.24762141	2015		0.41km

NOT PROTECTIVELY MARKED

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Middleton	Rectory Road	TM4326467669	1.564547557	52.25291795	2015		0.93km
	Theberton	Harrow Lane	TM4245764342	1.550360976	52.22341727	2015		1.4km
	Middleton	Rectory Road	TM4315467803	1.563035578	52.25416907	2015		1km
	Yoxford	Old High Road	TM3944168820	1.509460201	52.26492422	2015		1.2km
	Yoxford		TM39536895	1.510854274	52.26605215	2015		1.3km
	Theberton	Church Road, Theberton	TM4376865922	1.570656848	52.23701755	2014	2 Count	0.35km
	Theberton	Abbey Lane, Leiston cake and ale holiday park, abbey lane, theberton	TM4328663915	1.562167855	52.21921991	2014	2 Count	1.6km
	Theberton	Church Road, Leiston	TM4438466209	1.579868294	52.23931999	2014	1 Count of dead	0.7km
	Theberton	Leiston Road, Leiston Leiston Road Theberton	TM4372165920	1.569968409	52.23702041	2014	2 Count of dead	0.34km
	Theberton	Church Road, Leiston	TM4439966310	1.580160585	52.24021969	2014	2 Count	0.8km
	Theberton	Leiston Road, Leiston Leiston Road Theberton	TM4369265930	1.569551726	52.23712298	2014	2 Count of dead	0.35km

NOT PROTECTIVELY MARKED

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Middleton	The Causeway, Saxmundham 18 cobham road.IP3 9JD	TM4268068165	1.556364527	52.2576269	2014	1 Count	1.2km
	Middleton	Rectory Road, Middleton	TM4328367704	1.564850591	52.25322364	2014	1 Count	1km
	Leiston	Abbey Lane, Leiston Not far from the Buckleswood Road turning	TM4332763705	1.56261593	52.21731726	2014	1 Count of dead	1.7km
	Yoxford		TM396687	1.511700717	52.26377806	2014	1 Count of dead	1km
	Yoxford	Oakwood Park, Yoxford	TM3951868813	1.510581518	52.26482788	2014	1 Count	1.2km
	Yoxford	Oakwood Park, Yoxford Yoxford Primary School	TM3954068836	1.510919636	52.26502471	2014	1 Count	1.2km
	Yoxford	Old High Road, Saxmundham	TM3937268906	1.508511927	52.26572606	2014	1 Count of dead	1.3km
	Yoxford	Old High Road, Saxmundham	TM3937968628	1.508417151	52.26322811	2014	2 Count	1.1km
	Yoxford	Park Place, Yoxford	TM3942368886	1.509243734	52.26552437	2014	1 Count of dead	1.3km

NOT PROTECTIVELY MARKED

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Yoxford	Sunnyside, High Street Road in Yoxford	TM3956168926	1.511290688	52.26582327	2014	1 Count of dead	1.3km
	Yoxford	Westleton Road, Yoxford on corner of A12	TM4020968880	1.520736395	52.26512786	2014	1 Count of dead	1km
	Yoxford	Yoxford Road, Saxmundham Dead hedgehog, at side of road B1122.	TM4046368435	1.524134624	52.26102331	2014	1 Count of dead	0.57km
	Yoxford	Old High Road, Saxmundham Rear of Yoxford Primary School, just by the rear school gates,	TM3940968852	1.509014833	52.26522533	2014	1 Count	1.2km
	Theberton	B1122 road at Theberton	TM436660	1.568257402	52.23779186	2013	1 Count of dead	0.42km
	Middleton	Rectory Road, Saxmundham	TM4310867740	1.562317585	52.25362403	2013	1 Count	0.94km
	Theberton		TM438657	1.570964501	52.23501118	2012	1 Count of alive	0.13km

NOT PROTECTIVELY MARKED

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Leiston	Abbey Road, Leiston	TM4438263233	1.57768915	52.21261472	2011	4 Count	1.9km
Brown hare (<i>Lepus europaeus</i>)	Sizewell	Upper Abbey Farm	TM458647	1.599469542	52.22514849	2014		1.6km
European otter (<i>Lutra lutra</i>)	Middleton		TM4355067759	1.568794409	52.2535991	2016		1.1km
	Minsmere B. R.	minsmeer reserve suffolk	TM451646	1.58916819	52.22456301	2015		0.98km
	Minsmere B. R.	Minsmere	TM4510864607	1.589290162	52.22462227	2015		0.98km
	Minsmere B. R.	Minsmere RSPB Reserve	TM4666	1.603337675	52.2367249	2013		1.9km
	Middleton	Minsmere River, Reckford	TM4394067590	1.574375067	52.25190979	2011		1.1km
Eurasian badger (<i>Meles meles</i>)	Yoxford	A12	TM386670	1.495872632	52.24895589	2016	1 Count of dead	1.1km
	Middleton		TM417674	1.541485375	52.25119302	2016		1.2km
	Middleton		TM4353667769	1.568596906	52.25369504	2016		1.2km
	Yoxford		TM40896823	1.530233438	52.25899679	2015		1km
	Yoxford		TM41046814	1.532362904	52.25812342	2015		0km
	Yoxford	Middleton Road 100 metres west of New Plantation	TM408682	1.528895807	52.25876696	2015	1 Count of dead	0.2km

NOT PROTECTIVELY MARKED

Species	Location	Site Detail	Grid Reference	Longitude	Latitude	Year	Abundance	Approximate distance from the site boundary
	Sizewell	Black Walks	TM457654	1.598516767	52.23147466	2014		1.4km
	Westleton		TM4495367058	1.58880099	52.24668584	2014		1.7km
	Eastbridge	Eastbridge	TM453663	1.593323851	52.23972928	2014		1.4km
	Leiston	Leistoná	TM4420163295	1.57508967	52.21325133	2012		1.8km
	Theberton	Pretty Road, Theberton	TM435659	1.566723647	52.2369387	2012		0.33km
	Westleton		TM4495267036	1.588770421	52.24648887	2011		1.7km
Harvest mouse (<i>Micromys minutus</i>)	Simpson's Fromus Valley	I12	TM383665	1.491133345	52.24459853	2015		0.69km
	Leiston		TM454654	1.594132347	52.23160841	2013		1.1km
	Theberton		TM4450066500	1.581774432	52.24187987	2010		1km
	Theberton		TM4440066200	1.580095668	52.23923213	2010		0.7km
Eurasian water shrew (<i>Neomys fodiens</i>)	Middleton	Duffers Bridge	TM430679	1.560853473	52.25510757	2012		1km
	Middleton	between Reckford Bridge and Eastbridge	TM4467	1.574826234	52.24658862	2011		0.79km

VOLUME 6, 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
- Natura 2000 Data Forms

Special Protection Areas:

- Citation
- Conservation Objectives
- Natura 2000 Data Forms

Sites of Special Scientific Interest Citations

County Wildlife Site Citations

CWS Number Suffolk Coastal 165
Site Name KILN GROVE & MEADOW
Parish THEBERTON
District Suffolk Coastal
NGR TM425658

Description

Kiln Grove is an excellent example of a coppice-with-standards ancient woodland (biodiversity priority habitat). The standards are mainly oak and ash with occasional hornbeam. The boundaries have a ditch and bank system typical of ancient woodland along with some veteran pollards.

The main coppiced species are hazel, field maple and ash, with occasional hornbeam and birch. Shrubs include holly, elder, hawthorn and dogwood.

The ground flora is typical of ancient woodland and includes primrose, wood sedge, sanicle, bugle and common spotted orchid. There are two woodland ponds and a number of internal earthworks which provide additional habitat diversity. In the south east corner of the wood there is a massive old oak, possibly a pollard, which has been felled in the past. Re-growth from the stump has formed a unique coppice stool which may be several hundred years old.

A small area of unimproved grassland (biodiversity priority habitat) borders the wood on the north side. This supports a good wet grassland flora including common spotted orchids, ragged robin, marsh thistle, cuckoo flower and marsh bedstraw.

RNR Number 0

Area 3.33

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	<p>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 pimpernel, 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.</p>
RNR Number	0
Area	91.03

County Wildlife Site Citations

CWS Number Suffolk Coastal 218
Site Name THEBERTON WOODS
Parish THEBERTON
District Suffolk Coastal
NGR TM42246551

Description

Theberton Woods is an important example of a semi-natural boulder clay woodland that supports a diverse woodland flora including butterfly and bird's nest orchids. Although the woodland is not included in the ancient woodland inventory, it is shown on the 1st series O.S. maps and there are some earthworks that suggest it may be ancient.

Parts of the wood have previously been planted with conifers, but these are now being removed as part of restoration management by the Forestry Commission and the flora is responding and recovering well.

The woodland contains a large number of ponds supporting a significant population of great crested newt (Biodiversity Priority species and protected species). Since 2000 a small, introduced population of Purple Emperor butterfly has been established, feeding on the abundant Sallows.

The site includes an arable reversion field which has developed a flora typical of wet chalky boulder clay including southern marsh orchid, common spotted orchid and yellow-wort. This flora is similar to that of the existing and adjacent CWSs of Leiston Airfield and Kiln Meadow. The sallow scrub around the edges of this area is important for the Purple Emperor butterfly and the dense boundary hedges provide important habitat for farmland bird species such as bullfinch, yellowhammer and linnet (all biodiversity priority species).

RNR Number 0

Area 33.08

County Wildlife Site Citations

CWS Number Suffolk Coastal 164

Site Name LEISTON AIRFIELD

Parish THEBERTON

District Suffolk Coastal

NGR TM424651

Description

This site consists of a mosaic of species-rich grassland and scrub. It is situated on the site of Leiston disused airfield. Although a small area, it supports many plants characteristic of unimproved grassland, for example pepper saxifrage, common centaury, primrose, bugle and common spotted orchid. Of particular interest is a population of yellow-wort which grows on the public footpath which runs along the western edge of the site. Maintenance of the right of way keeps some of the grassland open along the right of way, but the remaining grassland glades are vulnerable to scrub encroachment.

RNR Number 0

Area 0.52

County Wildlife Site Citations

CWS Number Suffolk Coastal 127
Site Name MINSMERE VALLEY; EASTBRIDGE TO RECKFORD BRIDGE
Parish WESTLETON
District East Suffolk
NGR TM446673

Description

This area of marshland is situated in the central portion of the Minsmere Valley. The entire valley is of extreme importance for wildlife, forming the last unspoilt and least improved of Suffolk's larger marshland river valleys. Part of the valley forms the internationally important Minsmere/Walberswick SSSI. The marshes which form the central portion of the valley are botanically the richest marshes of the whole of the valley. Most of the area consists of herb rich, unimproved marshes which are becoming increasingly rare in Suffolk. Those which are managed either by grazing or cutting or both, maintain conditions suitable for typical plants such as southern marsh orchid, ragged robin and bog stitchwort, whilst rarities such as bogbean, early marsh orchid and water violet are also present. Other areas which have not been grazed for many years are slowly turning into reed fen, sedge swamp and carr woodland. Here the flora has declined. However as an alternative habitat, they provide valuable areas for breeding birds and invertebrates. Part of this site is owned by RSPB and is part of their Minsmere reserve. Otters are known to use the valley. In 1994 the majority of this County Wildlife Site was confirmed as part of the Minsmere-Walberswick SSSI.

RNR Number 0

Area 24.80

County Wildlife Site Citations

CWS Number Suffolk Coastal 180
Site Name WESTLETON COMMON AND ADJACENT HABITAT
Parish WESTLETON
District Suffolk Coastal
NGR TM443685

Description

This CWS is situated to the south east of Westleton village. The majority of the site is comprised of Westleton Common - the extent of which has remained more or less as per the 1840 Tithe map with the exception of a few small areas now in private ownership. The CWS boundary extends beyond the Common to include a disused pit to the east of the Minsmere Road. The Common and its immediate surroundings have a history of gravel extraction, dating back at least as far as the 1880's and continuing until the 1960's. Since the cessation of any large scale gravel extraction, no formal 'restoration' of the quarried areas took place. The steep sides of the pits remain, along with damp areas of former washing pits, a bank of washed sand, bare ground and hard standings. Such features are unusual as the majority of former quarries and pits have been in-filled and restored to agricultural land. The semi-natural vegetation present is a diverse mosaic of remnant and naturally regenerated heathland (biodiversity priority habitat), acid grassland (biodiversity priority habitat), scrub, woodland, early successional/ruderal vegetation communities and bare ground. These habitats support a wide range of wildlife including silver studded blue butterfly (biodiversity priority species), bullfinch (biodiversity priority species), nightingale, linnet (biodiversity priority species), four species of reptile including adder (biodiversity priority species) and the rare invertebrate - antlion (biodiversity priority species). The CWS also supports a number of notable plant species including nationally scarce species such as clustered clover and mossy stonecrop. In addition, former industrial/wartime activities and infrastructure such as soil dumping and hard standings have provided 'man-made' habitat niches that have been colonised by species not necessarily characteristic of the locality, but that none the less, add to the ecological diversity e.g. wall pennywort on former soil dumps and lichens that have colonised concrete. The site is also a County Geological Site (CGS) for its exposures of Westleton Beds

RNR Number 0
Area 21.39

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

County Wildlife Site Citations

CWS Number	Suffolk Coastal 212
Site Name	102
Parish	KELSALE CUM CARLTON/MIDDLETON
District	Suffolk Coastal
NGR	TM 39936646 - TM 40476662
Description	Sulphur Clover & Dyer's Greenwood. This site is also a Roadside Nature Reserve.
RNR Number	102
Area	0.32

County Wildlife Site Citations

CWS Number	Suffolk Coastal 104
Site Name	BUCKLES WOOD
Parish	LEISTON
District	Suffolk Coastal
NGR	TM431635
Description	<p>Buckle's Wood has a good coppice with standards structure, several rides and a track for vehicular access. The coppice stools are old, mainly hazel, with ash, field maple and hornbeam also present. The standards are oak and even-aged. The wood appears to be managed at present, with a large new pond under excavation and game bird rearing pens and beehives are also present. There is a good ditch and bank boundary with a mixed species hedge, which together with the old coppice stools, indicates a woodland of some considerable age.</p>
RNR Number	0
Area	4.62

County Wildlife Site Citations

CWS Number Suffolk Coastal 106

Site Name SIZEWELL LEVELS & ASSOCIATED AREAS

Parish LEISTON

District Suffolk Coastal

NGR TM463640

Description

A large area of land, consisting of woodland, plantation, wet meadow, osier beds and scrub situated behind Sizewell power station is considered to be of both regional and national importance for wildlife conservation. The area not within the Site of Special Scientific Interest (SSSI) boundary, which comprises wet meadow, sallow scrub and birch/alder woodland is of conservation importance. The flora of the marshes includes a number of uncommon plants, for example ragged robin and purple loosestrife. A recent survey however, has shown that the main importance of the grazing marshes lies in the diversity and abundance of the birds which inhabit the area. The ground remains waterlogged through the winter and numerous dykes provide good cover for high numbers of swan, teal, mallard and moorhen. Also of ornithological importance are the plantations situated to the north of Sizewell Belts; Goose Hill, Nursery Covert and Kenton Hills. The areas support breeding populations of a number of nationally rare birds which are specially protected (Schedule 1 of Wildlife and Countryside Act). Good numbers of migrant birds also frequent the area. The whole site therefore, with its diversity of habitats, is considered to be one of the most important County Wildlife Sites in the county. In 1994 the area designated as a Site of Special Scientific Interest was extended to include a large proportion of this County Wildlife Site.

RNR Number 0

Area 105.35

County Wildlife Site Citations

CWS Number Suffolk Coastal 154
Site Name THE SPRING WOOD
Parish SIBTON
District Suffolk Coastal
NGR TM370685

Description

A ditch and bank of ancient origin encloses this small woodland. Another feature of historical value, is an internal bank which divides the wood into two sections. The tree layer consists mainly of oak and ash with frequent horse chestnut, field maple, lime and sycamore standards. Below the tree layer, a dense understorey composed of field maple, elm, hawthorn and hornbeam coppice forms an important part of the structure of the wood. Of particular botanical interest and a strong indicator of ancient woodland is the presence of a wild service tree, a rare species in Suffolk. In addition, woodcock has been recorded in this wood.

RNR Number 0

Area 2.2

County Wildlife Site Citations

CWS Number Suffolk Coastal 153

Site Name COE WOOD

Parish SIBTON

District Suffolk Coastal

NGR TM367675

Description

This ancient woodland is almost entirely dominated by hornbeam and ash coppice, with scattered ash and oak standards. Many of the ash trees have grown from neglected coppice. Goat willow is abundant on the wetter ground; hazel, field maple and aspen occur infrequently. To the south, on the edge of a stream there are stands of mostly wych elm with some ash. Ground flora of interest includes wood anemone, wood sorrel, sanicle, orpine and ramsons. Deer, moles, foxes, rabbits, frogs and toads have all been seen here. There are a series of ditches and banks in and around the wood and a number of rides and pathways, most of which are rather damp and overgrown and support species such as tufted hair-grass. There are a few ponds in the wood however, these obtain little or no light and do not support aquatic vegetation. The wood receives little active management; a few clearings have been made to promote cover for pheasants.

RNR Number 0

Area 21.36

Information Sheet on Ramsar Wetlands (RIS)

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

FOR OFFICE USE ONLY.

DD MM YY

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Designation date

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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) (www.metoffice.com/climate/uk/averages/19712000/sites/lowestoft.html) 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)
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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

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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: [REDACTED]
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

Country	England
Unitary Authority	Suffolk
Centroid*	TM387718
Latitude	52 17 31 N
Longitude	01 30 02 E
SAC EU code	UK0030133
Status	Designated Special Area of Conservation (SAC)
Area (ha)	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/6.8_volume_6_sizewell_link_road/ch07_terrestrial_ecology_and_ornithology/appendices/annex_7a-2_desk_study/sac/citation/szc_bk6_es_v6_app7a_annex7a2_dews_ponds_sac_\[final\].docx](https://sizewellcdco.aecomonline.net/book6_es_text/6.8_volume_6_sizewell_link_road/ch07_terrestrial_ecology_and_ornithology/appendices/annex_7a-2_desk_study/sac/citation/szc_bk6_es_v6_app7a_annex7a2_dews_ponds_sac_[final].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: [REDACTED]
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

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



Inshore and Offshore Special Area of Conservation: Southern North Sea

SAC Selection Assessment Document



January 2017

Further information

This document is available as a pdf file on the JNCC website for download if required (www.jncc.gov.uk).

Please return comments or queries to:

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Recommended citation: JNCC (2017) SAC Selection Assessment: Southern North Sea. January, 2017. Joint Nature Conservation Committee, UK. Available from: <http://jncc.defra.gov.uk/page-7243>

1. Introduction

This document provides detailed information about the Southern North Sea site proposed for designation for the Annex II species harbour porpoise (*Phocoena phocoena*) and evaluates this interest feature according to the Habitats Directive¹ selection criteria and guiding principles. This is a single feature site, proposed to be designated solely for the purpose of aiding the management of harbour porpoise populations throughout UK waters, in accordance with EU legislation. The site includes parts of both territorial waters (out to 12 nautical miles from the baseline) and offshore waters (from 12 nautical miles from the coast out to 200 nautical miles or to the UK Continental Shelf limit), and is therefore a joint responsibility between the Joint Nature Conservation Committee (JNCC) and Natural England (NE).

The Conservation of Habitats and Species Regulations 2010² (as amended) transpose the Habitats Directive into law on land and in territorial waters of England and Wales. The Offshore Marine Conservation (Natural Habitats &c.) Regulations 2007³ (as amended in 2010) transpose the Habitats Directive into law for UK offshore waters.

The advice contained in the present document is produced to enable the Secretary of State to decide whether he/she proposes to submit the Southern North Sea site to the European Commission as a site eligible for designation as a Special Area of Conservation (SAC), in accordance with Regulation 10 of the Conservation of Habitats and Species Regulations 2010 (as amended), and Regulation 7 of the Offshore Marine Conservation (Natural Habitats &c.) Regulation 2007 (as amended). JNCC and NE have been asked by Defra to provide this advice.

The Habitats Directive aims to conserve biodiversity by maintaining or restoring Annex I habitats and Annex II species to a favourable conservation status. Member States are required to contribute to a coherent European ecological network of protected sites through designation of SACs for natural habitats and wild species listed on the Annexes of the Directive. Sites eligible for designation as marine SACs are selected on the basis of the criteria set out in Annex III (Stage 1) of the Habitats Directive and relevant scientific information. Sites are considered only if they host a Habitats Directive Annex I habitat or Annex II species. For Annex II aquatic species that range over wide areas, sites must clearly identify areas that represent the physical and biological factors essential to these species' life and reproduction. Socio-economic factors are not taken into account in the identification of sites to be proposed to the European Commission.

While some wide-ranging highly mobile aquatic species have clearly-defined breeding/nurturing/feeding areas (i.e. areas 'essential to their life and reproduction'), the harbour porpoise is a naturally widely-distributed cetacean in European North Atlantic waters, and relatively little is known about its breeding behaviour. In addition, there are few obvious natural site boundaries for mobile species in the open sea. In practice, therefore, Article 4 of the Habitats Directive, which requires Member States to propose sites for Annex II species, and Annex III (site selection criteria) have proved difficult to apply to this species.

To address this problem, the European Commission (EC) held a workshop involving experts in December 2000 and published guidance on the designation of SACs for harbour porpoise in 2007 (EC, 2007). The guidance states that '*it is possible to identify areas representing crucial factors for the life cycle of this species. These areas would be identifiable on the basis of:*

- *the continuous or regular presence of the species (although subject to seasonal variations);*
- *good population density (in relation to neighbouring areas);*
- *high ratio of young to adults during certain periods of the year and*

¹ http://www.central2013.eu/fileadmin/user_upload/Downloads/Document_Centre/OP_Resources/HABITAT_DIRECTIVE_92-43-EEC.pdf

² http://www.legislation.gov.uk/uksi/2010/490/pdfs/uksi_20100490_en.pdf

³ http://www.legislation.gov.uk/uksi/2007/1842/pdfs/uksi_20071842_en.pdf

- *other biological elements are characteristic of these areas, such as very developed social and sexual life.*

The guidance also states that '*defining boundaries for 'sites' in offshore waters which support a given percentage of the national population of some mobile species may be difficult due to the lack of obvious natural boundaries (such as coast, topographical boundaries, etc.) in the open sea. This criterion is also challenging to use in the offshore marine environment where populations may often be distributed across several national boundaries.*' Therefore, the application of these additional criteria has also proven difficult.

In addition to information on the Annex II species hosted within the site, this document contains;

- i) a map of the site;
- ii) its name, location and extent;
- iii) the data resulting from application of the criteria specified in Annex III (Stage 1) to the Habitats Directive.

In preparing this document, JNCC and NE have taken into consideration the format established by the European Commission, under which the Member States are required to provide site information to the Commission when proposing candidate SACs. This format is set out in the 'Natura 2000 Standard data form'⁴ (prepared by the European Topic Centre for Biodiversity and Nature Conservation on behalf of the European Commission to collect standardised information on SACs throughout Europe).

⁴ The Standard Data Form template is available here: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011D0484&from=EN>

2. Background to identification of harbour porpoise Special Areas of Conservation in UK waters

The Joint Cetacean Protocol (JCP) was created in 2004 and is amongst the largest collation of standardised survey data on harbour porpoise in the world, comprising 39 data sources with data from at least 545 distinct survey platforms (ships and aircraft) representing over 1.05 million km of survey effort (coverage) over an 18-year period from 1994-2011. DHI Water Environments (UK) Ltd (DHI) were contracted by JNCC to undertake an analysis of these data in order to determine if persistent areas of high harbour porpoise density were present in the wider UK seas (Heinänen and Skov, 2015). This study will hereafter be referred to as the DHI analysis/model.

Partly to ensure geographic representation, UK waters were divided into three Management Units (MUs)⁵ identified by the Interagency Marine Mammal Working Group (IAMMWG): the North Sea (NS), the Celtic and Irish Seas (CIS) and West Scotland (WS). These MUs align with the UK parts of the Assessment Units⁶ proposed for the harbour porpoise by the International Council for the Exploration of the Sea (ICES) in their advice to OSPAR. The Management Units were selected to combine what we understand of the ecology of harbour porpoise with the practicality of managing human activities.

The DHI analysis modelled the relationship between environmental variables and the observed harbour porpoise distribution to develop distribution models in each MU. These models described discrete areas of predicted high porpoise density and captured the year-to-year variation within the different locations. Areas within the MUs that were identified to persistently have the top 10% of predicted high densities of harbour porpoise were considered in detail in the analysis. Areas of Search (AoS), within which the final SAC boundaries would be identified, were selected based on these top 10% of predicted high density areas. The top 10% areas were filtered by model confidence and areas of less than 500km² were removed on the grounds that such small areas are ineffective for harbour porpoise conservation in relation to the much larger AoS identified in the Management Units. Sites within the AoS were restricted to higher confidence areas only⁷.

Sufficiency, seasonality and geographic spread of sites were considered in order to identify a network of recommended draft SACs (rdSACs). Sufficiency thresholds of 20% of the nominal UK harbour porpoise abundance and 10-14% of the UK habitat for the species⁷ within the rdSACs of each MU were met.

A UK network of sites for harbour porpoise was submitted to Government as draft SACs (dSACs) in June 2015. Once the sites gain approval from Governments to go to consultation, the classification changes from dSACs to possible SACs (pSACs), once submitted to the European Commission they are classed as candidate SACs (cSACs). The Governments of Wales and Northern Ireland, and Defra on behalf of England and offshore decided to proceed to consultation with five of the sites (Figure 1), subject to an adjustment to the North Channel SAC boundary. This adjustment reflected the decision by Scottish Ministers not to proceed with pSACs in their waters at that time. Together with the existing Skerries & Causeway SAC (grade C for harbour porpoise), these five sites cover 10.3% of the UK habitat and 18.7% of the UK population⁸ of harbour porpoises, and are distributed in territorial and offshore waters throughout the North Sea MU and the Celtic and Irish Seas MU. In addition, there are 34 UK SACs which already list harbour porpoise as a non-qualifying feature (grade D) in UK waters. The five sites consulted on were submitted to the European Commission as cSACs on 30th January 2017.

⁵ IAMMWG, 2015. Management Units for cetaceans in UK waters (January 2015). JNCC Report No. 547, JNCC Peterborough. 37pp.

⁶ ICES. 2014 available from

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2014/WGMME/wgmme_2014.pdf

⁷ IAMMWG, 2015. The use of harbour porpoise sightings data to inform the development of draft Special Areas of Conservation in UK waters. JNCC Report No. 565, JNCC Peterborough. 29pp.

⁸ UK habitat for harbour porpoise is considered the UK continental shelf which is approximated by waters of 200m depth or less.

Along with all other Member States, the UK has legal obligations to protect harbour porpoises throughout the territory over which it exercises sovereignty. The network of protected sites will contribute towards maintaining the favourable conservation status of the wider population of harbour porpoise. Alongside and in addition to the identification of the network of harbour porpoise sites, an overarching conservation strategy⁹ has been in place for harbour porpoise since 2000. This was further reviewed in 2009 and will continue to be reviewed and updated when necessary.

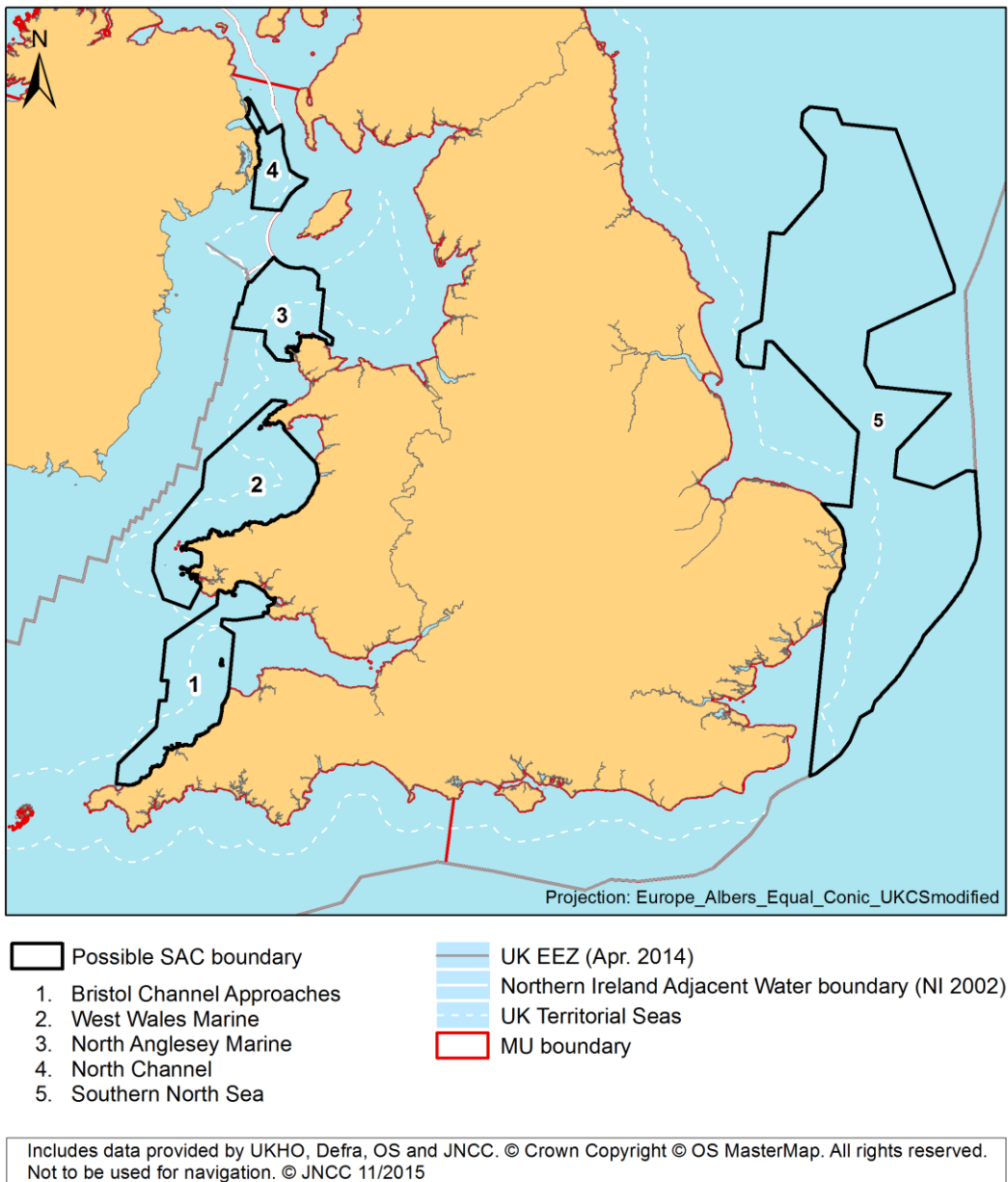


Figure 1: A network of five possible SACs (pSACs) for harbour porpoise in Wales, England, Northern Ireland and offshore waters.

⁹ DETR. 2000. A UK conservation strategy for the harbour porpoise (*Phocoena phocoena*). Department for the Environment Transport and the Regions; Ministry of Agriculture, Fisheries and Food; Scottish Executive Rural Affairs Department; Department of Agriculture and Rural Development (Northern Ireland); National Assembly for Wales Environment Division; Department of the Environment in Northern Ireland

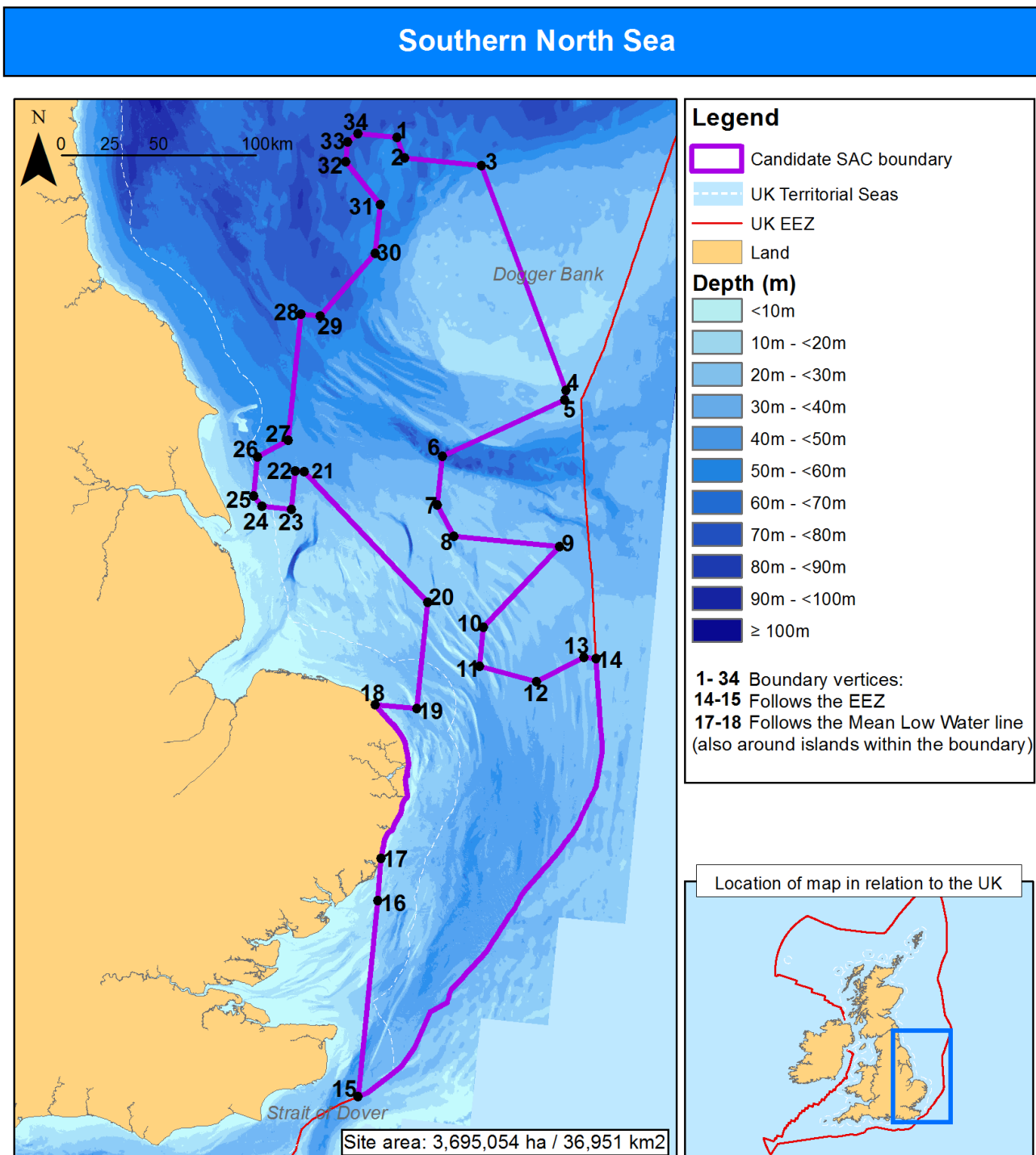
3. Southern North Sea SAC: Selection Assessment

Site name Southern North Sea	Site centre location 53°33'03.6"N, 01°47'59.6"E (Datum: WGS 1984)
Site surface area 3,695,054ha / 36,951km ² (Datum: Europe Albers Equal Area modified to UK, calculated in ArcGIS)	Biogeographic region Atlantic
Administrative Region UK offshore waters (JNCC) English inshore waters (NE)	Percentage cover within region Offshore waters: 88% English inshore waters: 12%

4. Interest features under the EU Habitats Directive

1351: [Harbour porpoise \(*Phocoena phocoena*\)](#)

5. Map of site



Includes data provided by UKHO, Defra, OS and JNCC. © Crown Copyright © OS MasterMap. All rights reserved.
 Not to be used for navigation. © JNCC 01/2017

ID	Latitude	Longitude	ID	Latitude	Longitude	ID	Latitude	Longitude	ID	Latitude	Longitude
1	55° 28' 53.1" N	01° 02' 24.8" E	10	53° 17' 32.9" N	02° 11' 31.6" E	19	52° 53' 06.4" N	01° 45' 21.9" E	28	54° 37' 00.5" N	00° 27' 44.8" E
2	55° 23' 34.2" N	01° 07' 24.8" E	11	53° 06' 45.7" N	02° 11' 43.8" E	20	53° 22' 42.4" N	01° 44' 22.2" E	29	54° 37' 11.8" N	00° 37' 01.8" E
3	55° 24' 03.2" N	01° 45' 17.6" E	12	53° 04' 11.8" N	02° 38' 38.6" E	21	53° 54' 05.6" N	00° 39' 29.7" E	30	54° 56' 28.6" N	00° 59' 18.7" E
4	54° 25' 05.4" N	02° 37' 56.9" E	13	53° 12' 19.1" N	02° 59' 22.3" E	22	53° 54' 00.3" N	00° 35' 04.2" E	31	55° 09' 56.9" N	00° 58' 38.1" E
5	54° 22' 23.6" N	02° 37' 58.3" E	14	53° 12' 19.0" N	03° 04' 57.1" E	23	53° 43' 17.2" N	00° 35' 41.1" E	32	55° 20' 23.2" N	00° 39' 10.7" E
6	54° 03' 07.5" N	01° 43' 06.7" E	15	51° 04' 38.9" N	01° 39' 44.1" E	24	53° 43' 00.0" N	00° 22' 03.6" E	33	55° 25' 46.4" N	00° 38' 51.5" E
7	53° 49' 40.4" N	01° 43' 32.5" E	16	51° 59' 04.9" N	01° 38' 08.0" E	25	53° 45' 35.5" N	00° 17' 20.7" E	34	55° 28' 33.4" N	00° 43' 26.4" E
8	53° 41' 38.9" N	01° 52' 54.2" E	17	52° 10' 53.8" N	01° 37' 10.6" E	26	53° 56' 22.0" N	00° 16' 38.8" E			
9	53° 41' 57.7" N	02° 42' 50.7" E	18	52° 52' 51.5" N	01° 26' 06.6" E	27	54° 02' 03.1" N	00° 30' 01.3" E			

6. Site summary

The Southern North Sea site is located in the North Sea MU and has been recognised as an area with predicted persistent high densities of harbour porpoise. The main area included within the site covers important winter and summer habitat, which emerged as part of the top 10% persistent high density areas for these seasons within the UK. Approximately two thirds of the site, the northern part, is recognised as important for porpoises during the summer season, whilst the southern part is more important during the winter.

The Southern North Sea site is very large and covers an area of 36,951km² stretching from the central North Sea north of the Dogger Bank southwards to the Strait of Dover. The water depths within the site range between 10m and 75m, with the majority of the site shallower than 40m. The majority of the substrate types within the site are categorised as sublittoral sand and sublittoral coarse sediment (Eunis level 3, EUSeaMap). The boundary of the Southern North Sea site crosses four other Special Areas of Conservation. The four SACs, the Dogger Bank SAC, Margate and Long Sands SAC, the North Norfolk Sandbanks and Saturn Reef SAC and Haisborough, Hammond and Winterton SAC, are all classified for their Annex I habitat of 'Sandbanks which are slightly covered by sea water all the time' and the latter two are also designated for 'Reef'.

Defining habitats of cetaceans is problematic; this is primarily due to their highly mobile nature and their distribution being driven mainly by the distribution and availability of their prey. In the absence of prey data, relationships between habitat variables (such as depth, water temperature, seabed sediment etc) are often used as proxies of prey distribution (e.g. Marubini *et al*, 2009; Skov & Thomsen, 2008; Embling *et al*, 2010). Regional variation in these relationships between habitat variables occurs and was evident between the Management Units in the analyses undertaken by DHI.

The analyses undertaken by DHI used several different environmental variables and modelled them against observed density of harbour porpoise for each MU. In all MUs, the coarseness of the seabed sediment was important, with porpoises showing a preference for coarser sediments (such as sand/gravel) rather than fine sediments (e.g. mud). Similar habitat associations have been made in the eastern part of the North Sea (Skov *et al*, 2014). Sandeels (*Ammodytidae*), which are known prey for harbour porpoises, exhibit a strong association with particular surface sediments (Benke & Siebert, 1996; Santos, 1998). Fine particle fractions have been demonstrated to limit the distribution of the lesser sandeel (*Ammodytes marinus*) around the Shetland Isles (Wright *et al*, 2000). Harbour porpoise feed on a wide variety of fish and generally focus on the most abundant local species. The predominant prey type appears to be bottom-dwelling fish, although shoaling fish such as mackerel (*Scomber scombrus*) and herring (*Clupea harengus*) are also taken (Santos & Pierce, 2003; Pierce *et al*, 2007).

For the North Sea MU the DHI model results for both the summer and winter seasons show water depth and variables within the water column are the most important physical factors that increase the probability of presence and density of harbour porpoise. The harbour porpoise density in the North Sea MU peaked in stable waters (based on vertical differences in temperature) with lower gradients of eddy activity (turbulence); higher densities were also found in areas with current speeds of 0.4-0.6m/s. The analysis indicated a preference for water depths between 30 and 50m throughout the year. There was a negative relationship with increasing levels of traffic beyond a threshold of approximately 80 ships per day.

The physical characteristics of the Southern North Sea site are well aligned to the environmental variables determining the probability of presence and the density of harbour porpoise. The majority of the site incorporates shallow depths of around 40m (see section 5). The seabed energy layer of EU SeaMap¹⁰ indicates that the energy levels, including current and wave energy, are predominantly medium across the majority of the site.

7. Site boundary

To date, the guidance developed by JNCC for defining SAC boundaries for marine sites away from the coast has focused on habitat features; largely from modelled data. The harbour porpoise sites are also, in part, based on modelled data and the outputs predict areas with expected high densities of harbour porpoise. The outputs from this approach and that for habitat features are similar. Therefore, the guidelines are largely transferable to consideration of boundaries for harbour porpoise sites:

1. As a general principle, site boundaries should be drawn closely around the qualifying feature for which the sites have been selected, taking into account the need to ensure that the site operates as a functional whole for the conservation of the feature;
2. Where possible, the seaward boundaries of the sites should be drawn using straight lines to ensure ease of identification on charts and at sea (and thereby minimising the number of nodes in the boundary where feasible);
3. However, a balance is needed between more complex site shapes drawn more tightly around the feature and simple square/rectangular boundaries so that the area of 'non-interest-feature' included within the site boundary is minimised, but this should not be to the detriment of the structural and functional integrity of the interest feature;
4. Site boundary coordinates be provided in degrees, minutes, seconds.

The nature of the boundaries for the recommended draft SAC were 'blocky' due to their emergence from the 25km² gridded model output of the DHI analysis (5km x 5km grid squares). Additional principles for creating boundaries for the harbour porpoise sites were also needed:

5. Diagonal runs of pixels (the DHI grid squares) should be straightened by a line that approximates the centre of the diagonal;
6. Vertical and horizontal lengths of more than two pixels of the sites were maintained whenever possible to preserve overall shape;
7. Modifications of the boundary of each recommended draft SACs should not alter the total area of the site by more than approximately 5%;
8. Candidate SACs will not extend into rivers;
9. Estuaries are excluded where the width of the entrance is ≤ 2 km and the model did not indicate the area was included;
10. The 'coastal' edge of sites is defined by the Mean Low Water (MLW) tide line;
11. In England, small ports and harbours, which have enclosed inner harbours areas, have been excluded.
12. Site boundaries were aligned with the EEZ boundary where they were closely aligned.

¹⁰ Phase 1 energy layers are available for download from EUSeaMap: <http://www.emodnet-seabedhabitats.eu/default.aspx?page=1953>

8. Assessment of interest feature against selection criteria

8.1. Harbour porpoise (*Phocoena phocoena*)

Annex III selection criteria for Annex II Species: Stage 1B

Stage 1 of Annex III of the Habitats Directive refers to the assessment at national level of the relative importance of sites based on:

- (a) Size and density of the population of the species present on the site in relation to the populations present within national territory.
- (b) Degree of conservation of the features of the habitat which are important for the species concerned and restoration possibilities.
- (c) Degree of isolation of the population present on the site in relation to the natural range of the species.
- (d) Global assessment of the value of the site for conservation of the species concerned.

As UK waters are divided into Management Units to ensure geographic coverage and to facilitate management for harbour porpoise, each site has been assessed in relation to the MU rather than at the national level.

a) Proportion of UK part of the North Sea Management Unit population¹¹

Abundance estimates calculated for each site were used directly to grade criterion iii a) *Size and density of the population of the species present on the site in relation to the populations present within national territory*. The identification of SACs for harbour porpoise has been driven by assessments at the scale of national territory within Management Units to ensure sites constitute a geographically *representative* network; the criterion has been applied at this scale.

The explanatory notes to the Natura 2000 standard data form suggest the following ranking to grade the sites based on the size of the population in the site relative to the population in the national territory (criterion III (a)) and for the purpose of harbour porpoise candidate SACs, relative to the relevant UK management unit:

Grade A: >15% to 100% of the relevant UK management unit population

Grade B: >2% to 15% of the relevant UK management unit population

Grade C: >0% to 2% of the relevant UK management unit population

The candidate SACs are '*clearly identifiable*' based on the modelling and persistence analyses undertaken by DHI. The analytical approach taken by DHI incorporated some of the sub-criteria of the European Commission guidance for identifying sites for marine mobile species (EC, 2007), such as sub-criteria '*Continuous or regular presence of the species (although subject to seasonal variations)*', '*Good population density (in relation to neighbouring areas)*' and some elements of sub-criteria '*Other biological elements that are characteristics, such as very developed social and sexual life*'. All of the sites have regular presence of harbour porpoise, whilst some show seasonal variation. It was not possible to assess the ratio of young to adults because data have not been collected consistently at an appropriate scale. The abundance within the candidate SACs can be estimated from existing survey data (Hammond *et al*, 2013) and thereby Criterion III (a) can be applied directly for the purposes of grading the site.

The Southern North Sea site was identified as being within the top 10% of persistent high density areas for harbour porpoise in UK waters for both winter and summer seasons (Heinänen and Skov, 2015). Due to the large area of the Southern North Sea site, the population supported is substantial in the UK and

¹¹ UK MU population is defined throughout this document as 'the UK portion of the MU where water depths are 200m or less'.

European context. It is estimated (based on the SCANS-II survey which took place in July 2005 only) that the site supports approximately 18,500 individuals (95% Confidence Interval: 11,864 - 28,889) for at least part of the year, as seasonal differences are likely to occur, and represents approximately 17.5% of the population within the UK part of the North Sea MU. It should be noted that because this estimate is from a one-month survey in a single year it cannot be considered as a specific population number for the site. It is therefore not appropriate to use site population estimates in any assessments of effects of plans or projects (i.e. Habitats regulation Assessments), as these need to take into consideration population estimates at the MU level, to account for daily and seasonal movements of the animals.

Although survey effort was not constant for all months of the year, the DHI analysis showed high confidence in the modelling across the majority of the site during the winter and the summer season, indicating a year round presence of raised densities of harbour porpoise within the site.

Therefore the Southern North Sea site has been identified as an important area for harbour porpoise during both seasons and, based on the figure of 17.5% of the North Sea MU population, the Southern North Sea site would be graded A on the basis of the EC standard data form (A = >15% to 100% of the UK part of the MU population).

b) Degree of conservation of the features of the habitat which are important for the species concerned and restoration possibilities

The five sites (Figure 1) cover approximately 10.3% of available porpoise habitat (continental shelf) and porpoise densities within this network are amongst the highest modelled for the population as indicated by the DHI analysis. This supports the notion that these areas, relative to the rest of the continental shelf, include the best habitat for harbour porpoises and have been used persistently over the last two decades. It is assumed that the preference for these habitats is associated with good feeding opportunities and prey aggregations. The available evidence indicates that the conservation status of the UK harbour porpoise population is currently Favourable¹². Therefore, it is considered that the conservation of the feature in all the sites is graded as II (elements are well conserved), and 'restoration possibilities' do not have to be considered. Therefore, the overall grade for this criterion is at least grade B. We do not know which features of the habitat are the most important drivers of the association with prey; nor do we know what the main prey species of porpoise within the sites are. Until this is known, the quality of the habitat (good or excellent) cannot be determined, so a grade of A/B has been awarded.

Therefore, with respect to the degree of conservation of the features of the habitat important for the harbour porpoise, the Southern North Sea site would be graded A/B ('Excellent'/'Good conservation') overall, without the necessity for consideration of restoration possibilities.

c) Degree of isolation of the population present on the site in relation to the natural range of the species

As a wide-ranging species, the animals within the site cannot be considered isolated in relation to the rest of the population. Animals within the site are part of the wider MU population.

Therefore, with respect to isolation, the Southern North Sea site would be graded C: population not isolated within extended distribution range.

d) Global assessment

The global assessment is weighted towards the grade awarded to the site for its size and density, given that the conservation of features is not clearly understood and the sites are all equal in quality with regard to their 'degree of isolation'.

¹² http://jncc.defra.gov.uk/pdf/Article17Consult_20131010/S1351_UK.pdf

Therefore, the Southern North Sea site is considered to have a global grade A, i.e. within the context of the UK North Sea management unit. It contains a significant proportion of both the UK MU (17.5%) and European population of harbour porpoises and it covers important and persistent high density areas for both summer and winter season.

Summary of grades for Stage 1B criteria

	Proportion of UK MU Population (a)	Conservation of features (b)	Isolation of population (c)	Global assessment (d)
Southern North Sea	A	A/B	C	A

9. Supporting scientific documentation

The process leading to the selection of the Southern North Sea site was based on a combination of observed data and predictive modelling (Heinänen and Skov, 2015). The study investigated whether persistent high density areas of harbour porpoise could be identified in UK waters, using 18 years (1994 to 2011) of sea-based Joint Cetacean Protocol (JCP) data covering the entire UK EEZ.

The JCP assembled disparate effort-related cetacean sightings datasets from European / north-east Atlantic waters and included those from all major UK sources e.g. 'Small Cetacean Abundance in the North Sea and adjacent waters' SCANS & SCANS-II from 1994 and 2005 respectively (Hammond *et al*, 2002; Hammond *et al*, 2013); 'Cetacean Offshore Distribution and Abundance in European Atlantic' CODA surveys from 2007 (CODA, 2009); European Seabirds At Sea (ESAS), which collected and collated seabird and cetacean data from the majority of countries with a north-west European coastline between 1979 and 1999, with ad hoc surveys beyond 1999; Sea Watch Foundation (SWF; i.e. NGO led surveys); Atlantic Research Coalition (ARC); and from other non-governmental and marine renewable industry sources.

The DHI report addressed challenges, such as variable survey coverage in different parts of the UK EEZ within the study period, by developing statistical distribution models capable of predicting seasonal and yearly means. Where there were sufficient data, models were run for two seasons: summer and winter for each MU.

Data on concentrations of prey of harbour porpoises were not available for the entire EEZ at a fine spatial scale (5km). Therefore, physical oceanographic properties of currents, water masses and the seafloor were used as variables in the model. It is assumed that these variables affect the probability of harbour porpoises encountering prey. Mean shipping intensity was also included in the model to account for some anthropogenic disturbance.

The DHI model results indicate that densities of harbour porpoises are influenced by both oceanographic and pressure variables. The degree of influence of these factors varies in different parts of UK waters and with the different seasons. Analyses of the persistency of high density areas integrated evaluations of the number of years that high densities were predicted for an area, with evaluations of the degree of recent high densities as predicted by the distribution models. Due to the uneven survey effort over the period, the uncertainty in modelled distributions varied greatly. Robust model predictions (based on relative standard errors) were found in all shelf waters of the North Sea north of the Channel.

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Southern North Sea

Designated Special Area of Conservation (SAC)

Country	England Offshore
Unitary Authority	Extra-Regio
Centroid*	TG500000
Latitude	53.551
Longitude	1.7999
SAC EU Code	UK0030395
Status	Designated Special Area of Conservation (SAC)
Area (ha)	3695054

* 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.



Location of Southern North Sea SAC

General site character

- Marine areas, Sea inlets (100%)
Download the [Natura 2000 standard data form](#) for this site as submitted to Europe (PDF <100kb)

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

- 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

- **1351 Harbour porpoise** *Phocoena phocoena*
Habitat occurrence description not yet available.

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

- Not Applicable

Many designated sites are on private land: the listing of a site in these pages does not imply any right of public access.



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, 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.



**Harbour Porpoise (*Phocoena phocoena*)
Special Area of Conservation:
Southern North Sea**

Conservation Objectives and Advice on Operations

March 2019

Advice under Regulation 21 of The Conservation of Offshore Marine Habitats and Species Regulation 2017 and Regulation 37(3) of the Conservation of Habitats and Species Regulations 2017

Further information

This document is available as a pdf file on the JNCC website for download if required (www.jncc.defra.gov.uk).

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Summary of Conservation Objectives and Advice on Operations

The Conservation Objectives and Advice on Operations are set out for the Southern North Sea Special Area of Conservation (SAC) for harbour porpoise (*Phocoena phocoena*). The site covers both inshore (within 12 nautical miles of coast) and offshore (beyond 12 nautical miles of coast) waters where Natural England (NE) and the Joint Nature Conservation Committee (JNCC) have respective advisory responsibilities as the Statutory Nature Conservation Bodies (SNCB).

The general objective of achieving or maintaining Favourable Conservation Status (FCS) for all species and habitat types listed in Annexes I and II of the Habitats Directive needs to be translated into Conservation Objectives for SACs. These objectives describe the condition to be achieved by a site for it to contribute in the best possible way to achieving FCS at the national, bio-geographical and European level¹. The Advice on Operations is site-specific but based on a broad assessment of the sensitivity of the harbour porpoise to anthropogenic pressures at a UK scale.

The advice in this document has been developed using the best available scientific information and expert interpretation as of February 2019. The advice provided here may be subject to change as our knowledge about the site and the impacts of human activities improves.

To ensure the site contributes in the best possible way to achieving FCS, management of human activities occurring in or around the site is required if these activities are likely to have an adverse impact (directly or indirectly) on the integrity of the site, with regards to its Conservation Objectives. It should be noted that as European Protected Species under Annex IV of the Habitats Directive, harbour porpoises are already strictly protected throughout their European range. As such, several conservation measures are already in place in the UK.

To achieve the Conservation Objectives for the Southern North Sea SAC, the Relevant² and Competent³ Authorities should consider human activities within their remit which might affect the integrity of the site.

¹ <http://jncc.defra.gov.uk/PDF/comm02D07.pdf>

² Relevant Authorities are those who are already involved in some form of relevant marine regulatory function and would therefore be directly involved in the management of a marine site lying within territorial waters. The bodies which may be relevant authorities are listed in Regulation 6 of the Conservation of Habitats and Species Regulations 2017. All Relevant Authorities are also Competent Authorities.

³ Competent Authorities are defined in Regulation 5 of the Conservation of Offshore Marine Habitats and Species Regulations 2017 and Regulation 7 of the Conservation of Habitats and Species Regulations 2017. In summary, a Competent Authority is any person or organisation that has the legally delegated or invested authority (e.g. Minister, government department, public body of any kind or statutory undertaker) to perform a designated function.

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1 Introduction

1.1 Background

Initial advice on a network of sites identified within UK waters for harbour porpoise (*Phocoena phocoena*) was submitted to UK and Devolved Governments as a series of draft SACs in June 2015. The sites were identified within the UK portions of Management Units (MUs⁴) defined for the species (ICES, 2014; IAMMWG, 2015). The Welsh and Northern Irish Governments, along with Defra on behalf of England and relevant offshore waters, gave approval for sites within their areas of jurisdiction to proceed to consultation (January to May 2016). In light of the responses to the consultation, five sites were submitted to the European Commission as candidate SACs in January 2017. These five sites were adopted by the EC as Sites of Community Importance on 12 December 2017 and designated as SACs by Ministers on 26th February 2019. These sites are shown in Figure 1.

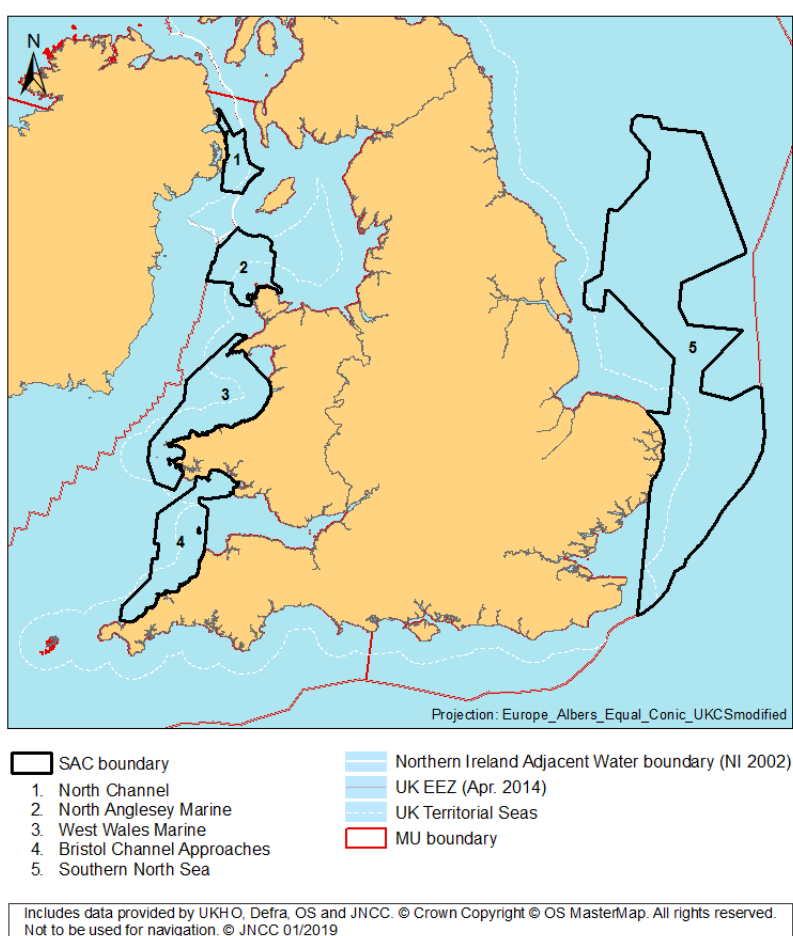


Figure 1: Special Areas of Conservation for the harbour porpoise, *Phocoena phocoena* identified in Northern Ireland, England, Wales and offshore waters. The Management Unit (MU) boundary (red line) refers to the UK portion of the North Sea and Celtic and Irish Seas MUs.

⁴ For conservation and management purposes it is practical to divide the population into smaller units, termed Management Units (MUs). These MUs were developed to take account of biological populations of animals but were also be determined by political boundaries and are at an appropriate scale at which to assess human activities. In the UK, three MUs have been defined for harbour porpoise: West of Scotland, Celtic and Irish Seas, and North Sea (IAMMWG, 2015)

This advice document is for the Southern North Sea SAC (Figure 2) which is subject to protection under the Conservation of Habitats and Species Regulations 2017⁵ and the Conservation of Offshore Marine Habitats and Species Regulation 2017⁶ (collectively referred to as the Habitats Regulations). The advice is given in fulfilment of the duty of the Statutory Nature Conservation Bodies (SNCBs) under the Habitats Regulations to advise Relevant and Competent Authorities as to (a) the Conservation Objectives for the site; and (b) any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which the site has been designated. The SNCBs aim to ensure that the Conservation Objectives are up-to-date, accessible and enable the assessment of the potential effects of plans and projects.

2 Responsibilities of Relevant and Competent Authorities

Competent Authorities (including those which are also Relevant Authorities) are required to exercise their functions to comply with the Habitats Regulations. Competent Authorities must, within their areas of jurisdiction, consider both direct and indirect effects on the site. This includes considering operations inside and outside the boundary of the SAC, if the impacts could affect the achievement of the site's Conservation Objectives. Decisions on management measures (e.g. the scale and type of mitigation) are the responsibility of the relevant regulatory or management bodies. These bodies will consider SNCB advice and hold discussions with the sector concerned, where appropriate. Where consent is required and the operation (if considered a plan or project) is likely to significantly affect a European Site, Article 6(3) of the Habitats Directive requires that an Appropriate Assessment (AA) is carried out. The AA is part of the "Habitat Regulations Assessment" (HRA), which is a case-specific assessment made in view of the Conservation Objectives for the affected site or sites. Each HRA requires case-specific advice from the SNCB but the assessment is the responsibility of the competent authority concerned.

The variability of harbour porpoise distribution and abundance within sites is in part due to their mobility and wide-ranging nature as well as natural and anthropogenic changes in habitat and prey. Relevant and Competent Authorities are not required to undertake any actions to ameliorate changes in the condition of the site if it is shown that the changes result wholly from natural causes. It is therefore important to contextualise any apparent deterioration of harbour porpoise presence in the site in terms of natural variability and the abundance and distribution patterns at the population level (i.e. MU).

3 Conservation Objectives for harbour porpoise SACs

3.1 The role of Conservation Objectives

Site level Conservation Objectives are a set of specified objectives that must be met to ensure that the site contributes in the best possible way to achieving Favourable Conservation Status (FCS) of the designated site feature(s) at the national and biogeographic level (EC, 2012). Conservation Objectives constitute a necessary reference for:

- identifying any site-based conservation measures that may be required;
- carrying out HRAs of the implications of plans or projects.

The purpose of the HRA is to determine whether a plan or project adversely affects a site's integrity. The critical consideration in relation to site integrity is not the extent or degree of an

⁵ <http://www.legislation.gov.uk/ukxi/2017/1012/contents/made>

⁶ <http://www.legislation.gov.uk/ukxi/2017/1013/contents/made>

impact, or whether an impact is direct or indirect, but whether a plan or project, either individually or in combination with other plans or projects, affects the site's ability to achieve its Conservation Objectives and therefore contribute to Favourable Conservation Status.

Harbour porpoise are protected everywhere in European waters under the provisions of the Habitats Regulations. The harbour porpoise in UK waters are considered part of a wider European population and the highly mobile nature of this species means that the concept of a 'site population' is not considered an appropriate basis for expressing Conservation Objectives for this species. Site based conservation measures will complement wider ranging measures that are in place for the harbour porpoise.

3.2 Background to Conservation Objectives

The Conservation Objectives are designed to help ensure that the obligations of the Habitats Directive can be met. Article 6(2) of the Directive requires that there should be no deterioration or significant disturbance of the qualifying species or to the habitats upon which they rely. Therefore, the focus of the Conservation Objectives for harbour porpoise sites is on addressing pressures that affect site integrity and would include:

- killing or injuring harbour porpoise (directly or indirectly);
- preventing their use of significant parts of the site (disturbance / displacement);
- significantly damaging relevant habitats; or
- significantly reducing the availability of prey.

This document includes both a statement of the Conservation Objectives and explanatory text on their intent and interpretation specific to the site. The Conservation Objectives have been set taking account of European Commission guidance (EC, 2012). Further guidance on the management of specific pressures of harbour porpoise is being developed.

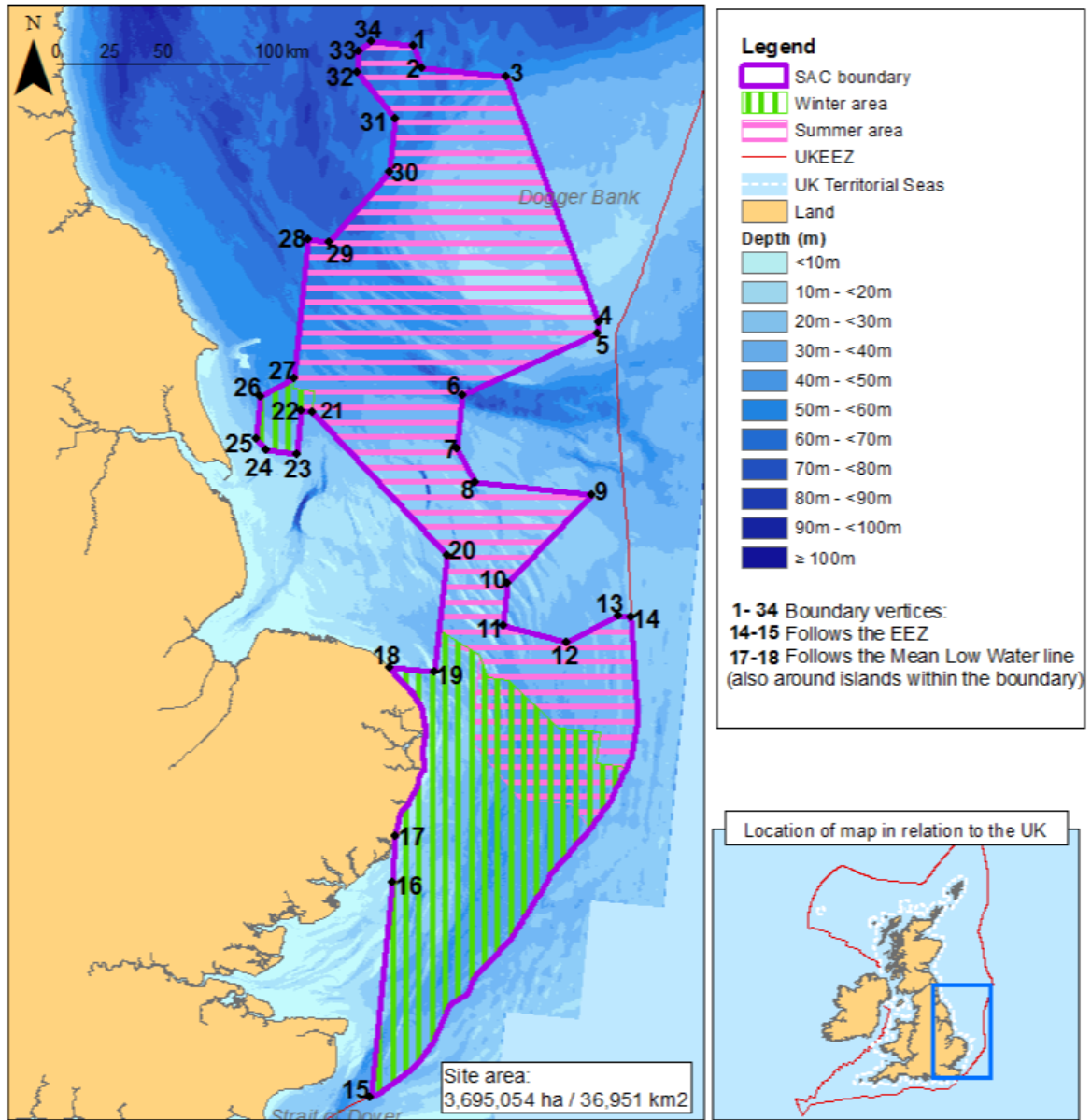
3.3 The Southern North Sea SAC Conservation Objectives

The qualifying feature of the site is the Habitats Directive Annex II species:

- harbour porpoise (*Phocoena phocoena*)

Seasonal differences in the relative use of the site have been identified based on the analyses of Heinänen and Skov (2015). Harbour porpoise sightings data were modelled seasonally (Summer: April-September and Winter: October-March) for each MU. The outputs of this analysis were maps of areas by season and MU, that persistently contained elevated densities of harbour porpoises. These areas were used as the basis for site identification and as a consequence, sites may have seasonal components which should be considered in the assessment of impacts and proposed management. The Southern North Sea has been designated because of its importance to harbour porpoise in both the summer and winter months (Figure 2).

Southern North Sea



Includes data provided by UKHO, Defra, OS and JNCC. © Crown Copyright © OS MasterMap. All rights reserved.
 Not to be used for navigation. © JNCC 02/2019. Coordinates displayed in WGS84 geographic coordinate system.
 Site area calculated using modified Europe_Albers_Equal_Area_Conic_UK projection.

ID	Latitude	Longitude	ID	Latitude	Longitude	ID	Latitude	Longitude	ID	Latitude	Longitude
1	55° 28' 53.1" N	01° 02' 24.8" E	10	53° 17' 32.9" N	02° 11' 31.6" E	19	52° 53' 06.4" N	01° 45' 21.9" E	28	54° 37' 0.5" N	00° 27' 44.8" E
2	55° 23' 34.2" N	01° 07' 24.8" E	11	53° 06' 45.7" N	02° 11' 43.8" E	20	53° 22' 42.4" N	01° 44' 22.2" E	29	54° 37' 11.8" N	00° 37' 01.8" E
3	55° 24' 03.2" N	01° 45' 17.6" E	12	53° 04' 11.8" N	02° 38' 38.6" E	21	53° 54' 05.6" N	00° 39' 29.7" E	30	54° 56' 28.6" N	00° 59' 18.7" E
4	54° 25' 05.4" N	02° 37' 56.9" E	13	53° 12' 19.1" N	02° 59' 22.3" E	22	53° 54' 0.3" N	00° 35' 04.2" E	31	55° 09' 56.9" N	00° 58' 38.1" E
5	54° 22' 23.6" N	02° 37' 58.3" E	14	53° 12' 19.0" N	03° 04' 57.1" E	23	53° 43' 17.2" N	00° 35' 41.1" E	32	55° 20' 23.2" N	00° 39' 10.7" E
6	54° 03' 07.5" N	01° 43' 06.7" E	15	51° 04' 38.9" N	01° 39' 44.1" E	24	53° 42' 60.0" N	00° 22' 03.6" E	33	55° 25' 46.4" N	00° 38' 51.5" E
7	53° 49' 40.4" N	01° 43' 32.5" E	16	51° 59' 04.9" N	01° 38' 08.0" E	25	53° 45' 35.5" N	00° 17' 20.7" E	34	55° 28' 33.4" N	00° 43' 26.4" E
8	53° 41' 38.9" N	01° 52' 54.2" E	17	52° 10' 54.3" N	01° 37' 11.0" E	26	53° 56' 22.0" N	00° 16' 38.8" E			
9	53° 41' 57.7" N	02° 42' 50.7" E	18	52° 52' 51.4" N	01° 26' 06.8" E	27	54° 02' 03.1" N	00° 30' 01.3" E			

Figure 2: The Southern North Sea Special Area of Conservation for harbour porpoise. Summer and winter areas shown.

The Conservation Objectives for the site are:

To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters

In the context of natural change, this will be achieved by ensuring that:

1. Harbour porpoise is a viable component of the site;
2. There is no significant disturbance of the species; and
3. The condition of supporting habitats and processes, and the availability of prey is maintained.

Conservation Objective 1: Harbour porpoise is a viable component of the site

This SAC has been selected primarily based on the long-term, relatively higher densities of porpoise in contrast to other areas of the MU. The implication is that the SAC provides relatively good foraging habitat and may also be used for breeding and calving. However, because the number of harbour porpoise using the site naturally varies (e.g. between seasons), there is no exact value for the number of animals expected within the site.

The intent of this objective is to minimise the risk of injury and killing or other factors that could restrict the survivability and reproductive potential of harbour porpoise using the site. Specifically, this objective is primarily concerned with operations that would result in unacceptable levels of those impacts on harbour porpoises using the site. Unacceptable levels can be defined as those having an impact on the FCS of the populations of the species in their natural range. The reference population for assessments against this objective is the MU population in which the SAC is situated (IAMMWG 2015).

Harbour porpoise is a European Protected Species (EPS) listed on Annex IV of the Habitats Directive and as such is protected under the Habitats Directive Article 12 and transposing regulations from deliberate killing (or injury), capture and disturbance throughout its range. In addition, Article 12 (4) of the Habitats Directive is concerned with incidental capture and killing. It states that Member States 'shall establish a system to monitor the incidental capture and killing of the species listed on Annex IV (all cetaceans). In the light of the information gathered, Member States shall take further research or conservation measures as required to ensure that incidental capture and killing does not have a significant negative impact on the species concerned'. Site based measures should therefore be aligned with the existing strict protection measures in place throughout UK waters. Significant disturbance within or affecting the site is considered in the second conservation objective.

Conservation Objective 2: There is no significant disturbance of the species

Disturbance of harbour porpoise typically, but not exclusively, originates from operations that cause underwater noise including, as examples, seismic surveys, pile driving and sonar. Responses to noise can be physiological and/or behavioural. JNCC has produced guidelines to minimise the risk of physical injury to cetaceans from various sources of loud, underwater noise⁷. However, disturbance is primarily a behavioural response to noise and may, for example, lead to harbour porpoises being displaced from the affected area.

This SAC was identified as having persistently higher densities of harbour porpoises (Heinänen and Skov 2015) compared to other areas of the MU. This is likely linked to the habitats within the site providing good feeding opportunities. Therefore, operations within or affecting the site should be managed to ensure that the animals' potential usage of the site is

⁷ <http://jncc.defra.gov.uk/page-4273>

maintained. Disturbance is considered significant if it leads to the exclusion of harbour porpoise from a significant portion of the site. Specifically, draft SNCB advice / guidance for assessing the significance of noise disturbance to a site suggests:

Noise disturbance within an SAC from a plan/project individually or in combination is significant if it excludes harbour porpoises from more than:

1. 20% of the relevant area⁸ of the site in any given day⁹, and
2. an average of 10% of the relevant area of the site over a season^{10,11}.

Conservation Objective 3: The condition of supporting habitats and processes, and the availability of prey is maintained

Supporting habitats, in this context, means the characteristics of the seabed and water column. Processes encompass the movements and physical properties of the habitat. The maintenance of supporting habitats and processes contributes to ensuring that prey is maintained within the site and is available to harbour porpoises using the site. Some evidence shows that the harbour porpoise has a high metabolic rate compared to terrestrial mammals of similar size (Rojano-Doñate et al. 2018) and high feeding rates (Wisniewska et al., 2016). The harbour porpoise is therefore thought to be a species that is highly dependent on year-round proximity to food sources and its distribution and condition may strongly reflect the availability and energy density of its prey (Brodie 1995 in Santos & Pierce, 2003). The densities of porpoise using a site are likely linked to the availability (and density) of prey within the site. Harbour porpoise eat a variety of prey including gobies, sandeel, whiting, herring and sprat. However, the diet of porpoises when within the sites is not well known but is likely comparable to that in the wider seas.

There are several operations (Table 2) which potentially affect the achievement of this Conservation Objective. Whilst some plans/projects are unlikely to have a significant effect alone, an effect might become significant when considered in combination with other plans/projects and against the background of existing activities/pressures on the site. Further work is needed to assess historic, existing and planned levels of plans/projects in the sites and to better understand their impacts on the habitats and prey within the sites.

4 Advice on Operations

4.1 Purpose of advice

This section details the advice on activities specifically occurring within or close to the Southern North Sea SAC that would be expected to impact the site; this is known as Advice on Operations. Initial assessments were conducted at a UK scale, with subsequent site-level assessment detailing our understanding of the operations and their potential to impact the site (Section 5 & 6). Advice is only given where pressures¹² may impact the site and

⁸ The relevant area is defined as that part of the SAC that was designated on the basis of higher persistent densities for that season (summer defined as April to September inclusive, winter as October to March inclusive).

⁹ Applicable only in Habitats Regulations Assessments (HRA) due to impracticality of daily noise limit management of activities, but retrospective compliance analysis advised

¹⁰ Summer defined as April to September inclusive, winter as October to March inclusive

¹¹ For example, a daily footprint of 19% for 95 days would result in an average of $19 \times 95 / 183$ days (summer) = 9.86%

¹² See Annex B for definition of key terms

therefore, may require management, if the Conservation Objectives are to be met. Widespread pressures may also act to affect the overall status of harbour porpoise, but their effects are not restricted to specific sites. Such pressures are best dealt with through broader measures. Alongside and in addition to the identification of the network of harbour porpoise sites, an overarching conservation strategy (DETR, 2000) has been in place for harbour porpoise since 2000. In light of a recent conservation literature review (IAMMWG *et al* 2015), a UK Dolphin and Porpoise Conservation Strategy is being developed.

The advice outlined below should also be used to help identify the extent to which existing operations are, or can be made, consistent with the Conservation Objectives, and thereby focus the attention of Relevant and Competent Authorities and monitoring programmes to areas that may need management measures.

This Advice on Operations will be supplemented through further discussions with the Relevant and Competent Authorities and any advisory groups that may be formed for the site.

4.2 Background

In compiling this Advice on Operations, the SNCBs have considered the pressures that may be caused by human activities and may affect the integrity of the site when considered against the Conservation Objectives. The advice is generated through a broad grading of sensitivity and exposure of the harbour porpoise to pressures associated with activities to gain an understanding of how vulnerable the species is to each activity at a UK level. The activities and their associated pressures to which the harbour porpoise is deemed vulnerable at a UK level are then considered at a site level to inform the risks to achieving the Conservation Objectives along with any potential management that may be required to mitigate against such risks. Annex A details the assessments of the level of impact risk¹³ from operations on harbour porpoise populations at a UK-wide scale. This informs on the activities likely to impact the site.

This document is guidance only and activities and their management within or affecting the site will be considered in the context of HRA and where applicable through other environmental assessment processes, such as Environmental Impact Assessment (EIA).

5 Operation assessments at UK scale

The assessments have been carried out using all available evidence as of February 2019. If further information is made available in future which would improve our understanding of harbour porpoise vulnerability in UK waters, the assessments may be updated. This advice is provided without prejudice for use by the Relevant and Competent Authorities. The level of any impact will depend on the location, timing and intensity of the relevant operation. This advice is provided to assist and focus the Relevant and Competent Authorities in their consideration of the management of these operations.

The harbour porpoise is a wide-ranging species and occurs throughout the UK Continental Shelf area (JNCC, 2013). It does occur in deeper waters but in very low densities, and perhaps only seasonally. As a predominantly continental shelf species, it is exposed to a wide range of pressures that are both ubiquitous (e.g. pollution) and patchy (e.g. bycatch) in nature, and the list of anthropogenic activities leading to these pressures is long. Based on current available information, the operations that pose the most notable risk of impact to UK harbour porpoise are shown in Table 1.

¹³ Risk includes consideration of severity of implications of impact

The current levels of impact of the various pressures are based on the Article 17 assessments¹⁴ and the full list of assessed activities and key references can be found in Annex A. Updates to the assessments will occur as more evidence becomes available.

Definitions of pressures are explained in Annex B.

Activities which currently pose a low risk to harbour porpoise at the UK level (Annex A) have not been considered in this advice. The exposure to the pressures associated with these activities is currently very limited. Non-anthropogenic impacts are also not considered, such as attack and predation from other marine mammal species that have the potential to impact harbour porpoise populations.

Table 1: Key activities (operations) and the relative risk of impacts on harbour porpoise throughout UK waters. Those pressures ranked 'high' are known to have the greatest impact relative to other pressures on the population of UK harbour porpoises. Activities which currently pose a low risk are not shown.

Operations	Pressures	Impacts	Current relative level of risk of impact
Commercial fisheries with bycatch of harbour porpoise (predominantly static nets)	Removal of non-target species	<ul style="list-style-type: none"> • Mortality through entanglement/bycatch 	High
Discharge/run-off from land-fill, terrestrial and offshore industries	Contaminants	<ul style="list-style-type: none"> • Effects on water and prey quality • Bioaccumulation through contaminated prey ingestion Leading to health issues (e.g. on reproduction) 	High
Shipping, drilling, dredging and disposal, aggregate extraction, pile driving, acoustic surveys, underwater explosion, military activity, acoustic deterrent devices and recreational boating activity	Anthropogenic underwater sound	<ul style="list-style-type: none"> • Mortality • Internal injury • Disturbance leading to physical and acoustic behavioural changes (potentially impacting foraging, navigation, breeding, socialising) • Habitat changes/loss 	Medium
Shipping, recreational boating, tidal energy installations	Death or injury by collision	<ul style="list-style-type: none"> • Mortality • Injury 	Medium/Low
Commercial fisheries (reduction in prey resources)	Removal of target species	<ul style="list-style-type: none"> • Reduction in food availability • Increased competition from other species • Displacement from natural range 	Medium

¹⁴ EU Habitats Directive Article 17 assessment, harbour porpoise report: http://jncc.defra.gov.uk/pdf/Article17Consult_20131010/S1351_UK.pdf . Updated Article 17 reports for 2013-2018 will be available in 2019.

6 Site specific considerations: Southern North Sea SAC

6.1 Sensitivity of harbour porpoise to existing activities within or impacting the site

The Southern North Sea site spans territorial and offshore waters and covers a large geographical area of 36,951km². A summary of the site can be found in the Selection Assessment Document on the Site Information Centre¹⁵.

All available information on activities within the site has been used to assess the threats and pressures within the site. However, precise information on some activities within the boundary is not currently available due to lack of targeted data collection to date. Assessing exposure carries certain assumptions about the spatial extent, frequency and intensity of the pressures associated with marine activities.

Table 2 is an overview of activities (operations) occurring within or in proximity to the Southern North Sea site to which the harbour porpoise has a current relative level of risk of impact as High or Medium at a UK level (Table 1) and therefore may require further consideration concerning options for management. The impact of a pressure at the site level can differ to that at UK level dependent on the amount of activity within or adjacent to the site. GIS layers of spatial activity data as well as review of literature, were used to identify the impact risk within the site (where a pressure is concentrated within a site) and whether it differs from the UK level risk. These assessments include all available information as of February 2019.

In 2012, the UK Government adopted a revised approach to the management of fishing activities within European marine sites (EMS) in England¹⁶. The revised approach is designed to ensure consistency in the management of fishing activities with Article 6 of the Habitats Directive. Risk based prioritisation of managing the fishing activities of UK and non-UK vessels has been applied to relevant SAC features within the UK 12 nautical mile (nm) territorial limit. For SACs outside of 12 nm, management measures will be introduced by appropriate regulators to ensure adequate protection.

JNCC and the country SNCBs are working with the Regulators and Industry to ensure that a pragmatic approach to mitigation and management of pressures that may affect the integrity of the site is adopted. Any future guidance documents will be made available on the Site Information Centre on the JNCC website.

¹⁵ SAC Selection Assessment Document: <http://jncc.defra.gov.uk/page-7243>

¹⁶ <https://www.gov.uk/government/publications/revised-approach-to-the-management-of-commercial-fisheries-in-european-marine-sites-overarching-policy-and-delivery>

Table 2: Operations occurring within/near to the Southern North Sea site which may affect the integrity of the site.

Operations	Pressure	Comment on current level of activity	Management considerations
Commercial fisheries (with harbour porpoise bycatch)	Removal of non-target (bycatch) species	<p>Bycatch of harbour porpoise in fishing gear is one of the most significant anthropogenic pressures impacting the population at a UK level. The commercial fisheries most associated with harbour porpoise bycatch are bottom set nets, such as gillnets and tangle nets.</p> <p>The Fishery Activity Database (Marine Management Organisation) shows that fishing effort is higher along the coast. There are pockets of higher bycatch rates in areas close to the site boundary, particularly in areas off the coast from Flamborough Head, although the use of static and drift nets is higher in the southern regions of the site.</p> <p>VMS data from large vessels suggest there is higher static net effort from EU registered vessels compared to UK vessels in the offshore region of the SAC. Effort in the south east appears to have increased between 2009 and 2013.</p>	<p>Where bycatch may pose a risk to achieving the site's conservation objectives, mitigation may be required.</p> <p>Where management measures are required, the development of these would be led by fishery managers in discussion with fishing interests and informed by any detailed information about fishing activity that can be made available. Detailed measures, if required, will be developed by the relevant management authority (European Commission/MMO/IFCA/Defra)</p> <p>The use of pingers as a mitigation measure is required on static nets deployed by vessels >12 m in length in specified areas through EU Regulation 812/2004¹⁷. This part of the UK fleet currently utilises the DDD pinger, which has been agreed under derogation. Additional noise disturbance may need to be considered if acoustic deterrent devices are considered to be used as mitigation. A fisheries guidance document will be developed in collaboration with management authorities and stakeholders.</p> <p>The majority of bycatch is taken by the numerous small bottom set gillnetting vessels (<12m), for which the use of pingers is not mandatory under Regulation 812/2004. One option for management could be to extend the pinger requirement to include any vessels. Further work is needed to understand the scale of disturbance that could result from the wide-spread deployment of pingers on all vessels operating within the site. If necessary, consideration of alternatives to pinger use could be explored and might include gear modification or alternative gear types.</p>

¹⁷ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:150:0012:0031:EN:PDF>

<p>Discharge/run-off from land-fill, terrestrial/offshore industries</p>	<p>Contaminants</p>	<p>Current exposure within/near the site is unknown.</p>	<p>This pressure cannot be managed effectively at the site level. Most of the relevant pollutants have been effectively phased out of use by action under the OSPAR Convention and the Stockholm convention, which restrict the marketing and use of PCBs; plan for disposal of PCBs; and eliminate or restrict the production and use of persistent organic pollutants [POPs]). However, human activities are the most likely cause of the re-release of these chemically stable chemicals into the environment or for introduction of other contaminants of which the impacts are poorly known.</p> <p>Any novel sources of potential contamination and/or activities likely to cause re-release of pollutants from stores associated with a new plan or project will be assessed under HRA both within and outside the site where there is the potential to impact upon site integrity.</p> <p>Current sources of exposure have to be identified and further efforts to limit or eliminate PCB discharges to the marine environment may still be needed.</p>
<p>Shipping</p>	<p>Anthropogenic underwater sound</p>	<p>Several ports along the east coast of England result in large vessel shipping routes throughout the site. There is higher pressure along the southern boundary of the site, although development is ongoing in the Humber to increase port capacity.</p> <p>An estimated increase in local vessel traffic associated with wind farms is expected at 25% during construction and 20% during operation.</p>	<p>Harbour porpoise use sound for foraging, navigation, communication and predator detection. Underwater noise therefore has the potential to interrupt or affect these behaviours as well as cause hearing damage, particularly at short distances. The peak frequency of echolocation pulses produced by harbour porpoise is 120–130 kHz, corresponding to their peak hearing sensitivity although hearing occurs throughout the range of ~1 and 180 kHz (Southall <i>et al</i> 2007).</p> <p>The underwater sounds created by large ships are unlikely to cause physical trauma but could make preferred habitats less attractive as a result of disturbance (habitat displacement, area avoidance). However, additional management is unlikely to be required based on current levels within the site. Significant increases in vessel traffic, for example as may be associated with the installation of wind farms in</p>

			the area, would need further assessment.
Oil and gas drilling		Areas licensed for oil and gas extraction are present in the northern and central parts of the site.	Existing and inactive (exploratory and dry) wells and oil and gas licensed blocks occur within the network of harbour porpoise sites and any future applications would be subject to an HRA.
Pile driving		Current and licensed areas for offshore wind, including construction and maintenance phases are located within the site.	<p>A European Protected Species (EPS) licence is required for any construction activity which could affect cetaceans and carries the risk of resulting in a disturbance or injury offence. Developers are required to follow the 'Statutory Nature Conservation Agency protocol for minimising the risk of injury to marine mammals from piling noise'¹⁸.</p> <p>An HRA will be considered for all new (or review of consent) developments (coastal and marine) using pile driving within the site or within 26km of site boundaries. If additional mitigation (to that required under EPS licence) is required, planning and management of pile driving activities may be needed. There is potential for a reduction or limitation of the disturbance / displacement effects by varying the schedule of piling, particularly if several developments are constructing at the same time and pile driving footprints do not overlap (which would maximise area from which porpoise are excluded). Limited spatio-temporal restrictions may be needed.</p> <p>Other examples of mitigation that might be required include the use of sound dampers, i.e. methods that create a barrier to sound transfer (e.g. bubble curtains) and the use of alternative foundation types (e.g. gravity foundations, suction cups, floating turbines, drilling).</p>
Dredging and disposal		A number of capital and maintenance dredging and disposal sites are present within the site boundary.	Dredging and disposal can cause disturbance leading to changes in harbour porpoise behaviour as well as to their habitat and prey. There is also potential for resuspension of pollutants from the sediment. The risk from single plans/projects may be considered relatively low but is assessed through HRA. However,

¹⁸ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/50006/jncc-pprotocol.pdf

		<p>there is currently considerable uncertainty regarding effects on habitat and prey.</p> <p>New dredging projects (or licence renewals) are subject to HRA. Cumulative impacts will be considered within the HRA.</p>
Aggregate extraction	Extensive existing licensed and active areas within the site.	<p>Aggregate extraction can cause disturbance leading to changes to harbour porpoise behaviour as well as to their habitat and prey. However, the risk is considered relatively low and additional management is unlikely to be required.</p> <p>New aggregate extraction projects (or licence renewals) are subject to HRA. Cumulative impacts will be considered within the HRA.</p>
Geophysical surveys (including seismic) surveys	Geophysical surveys occur in the site.	<p>Some geophysical surveys that may affect the integrity of the site may require consent and be subject to HRA.</p> <p>Each case needs to be assessed individually, and the JNCC Guidelines for minimising the risk of injury to marine mammals from geophysical surveys (updated August 2017¹⁹) are available online. Within the guidance, seismic survey is defined as <i>'Any geophysical survey that uses airguns to generate sound which is sent into the seabed and the reflected energy is recorded and processed to produce images of the geological strata below; described as 2D, 3D and 4D and includes any similar techniques that use airguns.'</i></p> <p>It is currently not known whether sub-bottom profilers cause disturbance to harbour porpoise. Further research is needed to understand the sound propagation and effect ranges from these types of equipment.</p> <p>Cumulative impacts of geophysical surveys will need to be considered.</p> <p>Further advice on assessment and management of noisy activities within the sites is being developed by the SNCBs in consultation with Regulators, industry and NGOs.</p>

¹⁹ http://jncc.defra.gov.uk/pdf/jncc_guidelines_seismicsurvey_apr2017.pdf.

Acoustic deterrent/mitigation devices		Unknown, no consistent areas of usage but can be used as a mitigation tool during pile driving and unexploded ordnance (UXO) detonations.	See pile driving and UXOs.
Pinger devices		23 UK registered >12 m gillnet boats of which four are required to use pingers in the area of the site to meet the requirements of Reg812/2004. Use on vessels under 12 m within the site is unknown but likely low.	See 'Fisheries (commercial and recreational) with harbour porpoise bycatch'. The use of pingers is required for >12m gillnet sector and there are 4 vessels fishing within the site that are required to use pingers. Because the majority of the total bycatch occurs in bottom set nets deployed from vessels <12m, which are the greatest component of the UK gillnet fleet, one option for management could be to extend the pinger requirement to further vessels deploying static nets within site boundaries. However, the impact of potential disturbance as a result of such an approach may need to be assessed and the potential for other mitigation options such as alternative gear types, gear modifications or spatial gear restriction may need to be considered.
Military activity		Although few active MOD areas are located within the site, the MOD can operate anywhere in UK waters.	Activities take place under Range Standing Orders, command guidance and environmental risk management tools, which include measures to reduce the risk of killing, injury and disturbance of marine mammals (for example live firing trials are subject to confirmation that marine mammals are not present in the vicinity of targets). MOD, a Competent Authority, incorporates the SACs into their environmental assessments via their MOD Environmental Protection Guidelines (Maritime) and Marine Environment and Sustainability Assessment Tool (MESAT) ²⁰ .
Unexploded ordnance (UXOs)		Unexploded ordnance from WWII can be found throughout the North Sea, including within the site. Projects that could inadvertently explode	Although the removal of UXOs is short term, the noise is significant and can cause injury or death to harbour porpoise. An EPS licence and/or HRA may be required. Mitigation is usually required to reduce risk of injury and killing. As a minimum, the JNCC

²⁰ <http://www.royalnavy.mod.uk/-/media/royal-navy-responsive/documents/useful-resources/environmental-protection/environmental-protection-guidelines-maritime-v21.pdf?la=en-gb>

		UXOs must undertake a survey to search for possible ordnance ahead of the project commencing. Most ordnance found is exploded on site or removed for health and safety reasons.	<p>guidelines for minimising the risk of disturbance and injury to marine mammals whilst using explosives are applied. A combination of Marine Mammal Observers (MMO)s, Acoustic Deterrent Devices (ADD) and occasionally scare charges are used to ensure harbour porpoise and other marine mammals are a sufficient distance from the explosion to prevent death or injury. Discussions are ongoing between industry, regulators and SNCBs on the most appropriate suite of mitigation measures for UXO clearance (including the possible use of bubble curtains). This will depend on the size of UXOs likely to be encountered and the practicality of deployment of the mitigation measure, amongst other factors.</p> <p>Discussions are ongoing between industry, regulators and SNCBs on the most appropriate suite of mitigation measures for UXO clearance (including the possible use of bubble curtains). This will depend on the size of UXOs likely to be encountered and the practicality of deployment of the mitigation measure, amongst other factors.</p>
Shipping	Death or injury by collision	Several ports along the east coast of England resulting in busy shipping routes throughout the site, with the highest level of activity in the south.	Post mortem investigations of stranded harbour porpoise (Deaville & Jepson, 2011; Deaville 2011:2017) have revealed some deaths caused by trauma (potentially linked with vessel strikes). However, this is not currently considered a significant risk and no additional management is likely to be required.
Recreational boating activity		Royal Yachting Association (RYA) cruising routes are present across the extent of the site, although focussed along the coast	<p>See 'Shipping' (with death or injury by collision).</p> <p>Adherence to wildlife codes of conduct is already advocated, e.g: WiSe scheme; SeaWatch code of conduct; ZSL code of conduct; The RYA good practice guide - The Green Wildlife Guide for Boaters</p> <p>UK SNCBs are looking at the option of developing an overarching wildlife watching code of conduct to site alongside the Scottish code.</p>
Commercial fisheries	Removal of target (prey) species	Fisheries targeting prey species such as whiting, herring, sandeel and sprat throughout their	Currently, most commercial species are managed at scales relevant for stock management and not at the site level.

		<p>ranges in the North Sea, fished by UK and EU fisheries.</p>	<p>Harbour porpoise diet within UK waters includes a wide variety of fish and they will generally focus on the most abundant local species (De Pierrepont <i>et al</i> 2005; Camphuysen <i>et al</i> 2006). The predominant prey type appears to be whiting, gobies and sandeel, although shoaling fish such as mackerel and herring are also taken. Harbour porpoise diets overlap extensively with diets of other piscivorous marine predators (notably seals) and many of the main prey species are also taken by commercial fisheries, although porpoises tend to take smaller fish than those targeted by fisheries (Santos and Pierce 2003).</p> <p>The overlap between commercial fisheries and harbour porpoise prey is unknown within the site. Further research is required to establish whether there is any direct overlap.</p>
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6.2 Limitations of the evidence

It is important to note that the information used to catalogue activities occurring within the site is not complete. The available data are drawn from existing monitoring programmes (e.g. the UK's Bycatch Monitoring Scheme for Protected Species and other European datasets linked to VMS monitoring of fishing vessels) but these have limitations, including availability and accessibility of data at the time of preparing this advice. Caveats with how the data have been collected also need to be understood to correctly interpret the information. This has resulted in the use of expert judgement where sufficient evidence is lacking but risk is implied. Below are some points to consider alongside the above table to ensure the information is not taken out of context:

- **Data availability**
 - Globally, the marine environment is generally far behind the evidence levels of that on land, particularly in offshore areas, mainly due to scale and difficulty/cost of data acquisition.
 - There can be sensitivities surrounding data that have been gathered by industry, and some data are not available for use for advice and management purposes. Often these data become available eventually, but not in time to inform management decisions.
- **Fishing: Limitations of fishing Vessel Monitoring System (VMS) data**
 - VMS positional data are transmitted at approximately 2-hour intervals. There is no information transmitted regarding precise vessel activity, therefore assumptions on its activity, based on logbook returns and vessel speed profile are often made.
 - Vessel positional data (e.g. VMS) cannot inform regulators regarding extent of static gear deployment or soak times.
 - Fishing vessels under 12m long, (and from 2009 until 2013, vessels under 15m long) are not required to use the VMS, and therefore VMS data tells us nothing

regarding the activity of this segment of the fleet. However, local information can be obtained from fisheries management authorities and will be used to develop more detailed guidance to assist with identification of any management measures where considered necessary.

- **Contaminants**

- Although use of many of the relevant substances (e.g. PCBs) has been heavily regulated for many years, including a ban on further production, re-suspension or reintroduction of pollutants may occur. It is difficult to identify sources of contamination when dealing with highly mobile species.

7 References

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8 Annex A: Assessment of the level of impact risk from operations (activities) on UK harbour porpoise populations

The relative level of risk of impact to harbour porpoise from a range of pressures was assessed at UK level (Table A1) as part of the 3rd reporting round for Article 17²¹. See Annex B for the definitions of pressures as used for the harbour porpoise assessments. For the assessment the relative importance of the pressure was assessed by considering the evidence available of an impact and the nature of that impact (direct/indirect) together with the area over which the pressure is acting in UK waters in relation to the species distribution. The relative levels are assigned according to the Article 17 guidance (Evans and Marvela, 2013) as:

Code	Meaning	Comment
H	High importance/impact	Important direct or immediate influence and/or acting over large areas
M	Medium importance/impact	Medium direct or immediate influence, mainly indirect influence and/or acting over moderate part of the area/acting only regionally
L	Low importance/impact	Low direct or immediate influence, indirect influence and/or active over small part of the area/acting only regionally

Table A1: Full assessment of relative level of the impact risk from operations (activities) on harbour porpoise in UK waters based on considerations for Article 17 assessment for harbour porpoise conservation status²².

Operations	Pressures ²³	Impacts	Relative level of risk of impact	Evidence		Key references
				Spatial overlap (species & pressure)	Post-mortem examination	
Commercial fisheries with bycatch (predominantly static nets)	Removal of non-target species	<ul style="list-style-type: none"> Mortality through entanglement/by catch 	High	✓	✓	Deaville and Jepson, 2011; Morizur <i>et al</i> 1999; Read <i>et al</i> 2006; Northridge, S. and Kingston, A. 2010; Northridge <i>et al</i> 2016; ICES 2015b

²¹ <http://jncc.defra.gov.uk/page-6564>

²² EU Habitats Directive Article 17 assessment, harbour porpoise report: http://jncc.defra.gov.uk/pdf/Article17Consult_20131010/S1351_UK.pdf

²³ The NE Advice on Operations also has a 'Radionuclide' pressure category assessed as being insufficient in evidence. This would likely be a 'low' in terms of impact risk and as such is unlikely to pose a significant threat to maintenance of harbour porpoise FCS

Discharge/run-off from land-fill, terrestrial and offshore industries	Contaminants ²⁴	<ul style="list-style-type: none"> • Effects on water and prey quality • Bioaccumulation through contaminated prey ingestion • Health issues (e.g. on reproduction) 	High		✓	Jepson <i>et al</i> 2005; Jepson <i>et al</i> 2016; Deaville & Jepson, 2011; ICES, 2015a; Van De Vijver <i>et al</i> 2003; Law <i>et al</i> 2012; Pierce <i>et al</i> 2008; Murphy <i>et al</i> 2015.
Noise ²⁵ from shipping, drilling, dredging and disposal, aggregate extraction, pile driving, acoustic surveys, underwater explosion, military activity, acoustic deterrent devices and recreational boating activity	Anthropogenic underwater sound	<ul style="list-style-type: none"> • Mortality • Internal injury • Disturbance leading to physical and acoustic behavioural changes (potentially impacting foraging, navigation, breeding, socialising) • Habitat change/loss 	Medium	✓		Deaville & Jepson, 2011; Stone & Tasker, 2006; Stone, 2015; Jepson <i>et al</i> 2005; Fernandez <i>et al</i> 2005; Würsig & Richardson, 2009; WGMME, 2012.
Shipping, recreational boating, renewable energy installations	Death or injury by collision	<ul style="list-style-type: none"> • Mortality • Injury 	Medium/Low	✓	✓	Deaville & Jepson, 2011; Dolman <i>et al</i> 2006; ICES 2015a
Commercial fisheries, bycatch	Removal of target species	<ul style="list-style-type: none"> • Reduction in food availability • Increased competition from other species • Displacement from natural range • Habitat change/loss 	Medium		✓	Simmonds and Isaac, 2007; OSPAR QSR 2010; MacLeod <i>et al</i> 2007a, b; Thompson <i>et al</i> 2007; Santos and Pierce, 2003; Pierce <i>et al</i> 2007; ICES 2015b
Agriculture, aquaculture, sewage	Nutrient enrichment	<ul style="list-style-type: none"> • Effects on water quality • Increased risk of algal blooms may present health issues • Habitat change/loss 	Low	✓	✓	Craig <i>et al</i> 2013
Agriculture, aquaculture, sewage	Organic enrichment	<ul style="list-style-type: none"> • Effects on water quality • Increased risk of algal blooms may present health issues • Habitat change/loss 	Low	✓		Craig <i>et al</i> 2013

²⁴ The NE Advice on Operations splits contaminants into 'Transition elements and organo-metals, e.g. TBT'; 'Hydrocarbon and PAHs'; and 'synthetic compounds, e.g. pesticides, antifoulants, PCBs and pharmaceuticals'. Users of this advice should be mindful of all these categories of contaminants.

²⁵ The NE Advice on Operations includes 'vibration' as a pressure but considers that the potential effects of vibration are adequately covered by consideration of the potential pressure 'Underwater Noise Changes' and refers back to this pressure. Similar considerations should be undertaken using this advice.

Waste disposal - navigational dredging (capital, maintenance)	Physical change (to another seabed type)	<ul style="list-style-type: none"> Changes in availability of prey species Habitat change/loss 	Low			
Bridges, tunnels, dams, installations, presence of vessels (shipping, recreation)	Water flow (tidal current) changes – local	<ul style="list-style-type: none"> Changes in location of prey species Displacement of harbour porpoise Habitat change/loss 	Low			
Terrestrial and at-sea 'disposal'	Litter	<ul style="list-style-type: none"> Mortality through entanglement Ingestion 	Low	✓	✓	Deaville and Jepson, 2011
Bridges, tunnels, dams, installations, presence of vessels (shipping, recreation)	Barrier to species movement	<ul style="list-style-type: none"> Habitat inaccessible Potential physiological effects Habitat change/loss 	Low	✓		WGMME., 2012; ICES 2015a
Sewage	Introduction of microbial pathogens	<ul style="list-style-type: none"> Increased risk of disease 	Low		✓	Harvell <i>et al</i> 1999; Gulland and Hall, 2007; Van Bresseem <i>et al</i> 2009

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9 Annex B: Definitions of Pressures as applied within harbour porpoise SAC Advice on Operations

Pressures	Definition in the context of harbour porpoise advice
Removal of non-target species	The removal of species not targeted by the fishery; in this case the bycatch (and probable mortality) of harbour porpoise
Contaminants	Introduced material capable of contaminating harbour porpoise, prey or habitat important to harbour porpoise, with a negative impact directly or indirectly on porpoises
Anthropogenic underwater sound	Introduced noise with the potential to cause injury, stress or disturbance to harbour porpoise
Death or injury by collision	Introduction of physical objects; mobile or immobile, that may collide with or result in potential collision of harbour porpoise resulting in injury or mortality
Removal of target species	Removal of harbour porpoise prey, resulting in increased competition amongst porpoise and other species, and/or displacement from their natural range

NATURA 2000 – STANDARD DATA FORM

Special Areas of Conservation under the EC Habitats Directive (includes candidate SACs, Sites of Community Importance and designated SACs).

Each Natura 2000 site in the United Kingdom has its own Standard Data Form containing site-specific information. The data form for this site has been generated from the Natura 2000 Database submitted to the European Commission on the following date:

22/12/2015

The information provided here, follows the officially agreed site information format for Natura 2000 sites, as set out in the [Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 \(2011/484/EU\)](#).

The Standard Data Forms are generated automatically for all of the UK's Natura 2000 sites using the European Environment Agency's Natura 2000 software. The structure and format of these forms is exactly as produced by the EEA's Natura 2000 software (except for the addition of this coversheet and the end notes). The content matches exactly the data submitted to the European Commission.

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

Further technical documentation may be found here
http://bd.eionet.europa.eu/activities/Natura_2000/reference_portal

As part of the December 2015 submission, several sections of the UK's previously published Standard Data Forms have been updated. For details of the approach taken by the UK in this submission please refer to the following document:
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

More general information on Special Areas of Conservation (SACs) in the United Kingdom is available from the [SAC home page on the JNCC website](#). This webpage also provides links to Standard Data Forms for all SACs in the UK.

Date form generated by the Joint Nature Conservation Committee
25 January 2016.



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE UK0030133
SITENAME Dew`s Ponds

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- [2. SITE LOCATION](#)
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- [5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES](#)
- [6. SITE MANAGEMENT](#)

1. SITE IDENTIFICATION

1.1 Type B	1.2 Site code UK0030133	Back to top
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1.3 Site name

Dew`s Ponds

1.4 First Compilation date 2001-07	1.5 Update date 2015-12
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1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee
Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY
Email:

Date site proposed as SCI:	2001-07
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-04
National legal reference of SAC designation:	Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/490/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude

1.500555556

Latitude

52.29194444

2.2 Area [ha]:

6.59

2.3 Marine area [%]

0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code

Region Name

UKH1

East Anglia

2.6 Biogeographical Region(s)

Atlantic (100.0
%)

3. ECOLOGICAL INFORMATION

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

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Species			Population in the site							Site assessment				
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D		A B C	
						Min	Max				Pop.	Con.	Iso.	Glo.
A	1166	Triturus cristatus			p	101	250	i		M	C	B	C	B

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

4.1 General site character

Habitat class	% Cover
N14	85.0
N23	1.0
N21	10.0
N06	4.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: neutral,clay 2 Terrestrial: Geomorphology and landscape: lowland

4.2 Quality and importance

Triturus cristatus for which this is considered to be one of the best areas in the United Kingdom.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
H	A04		I
H	A02		I

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): <http://publications.naturalengland.org.uk/category/6490068894089216>

<http://publications.naturalengland.org.uk/category/3212324>

http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/> Yes
<input type="checkbox"/> No, but in preparation
<input checked="" type="checkbox"/> No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS

The codes in the table below are also explained in the [official European Union guidelines for the Standard Data Form](#). The relevant page is shown in the table below.

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	Designated Special Protection Area	53
B	SAC (includes candidates Special Areas of Conservation, Sites of Community Importance and designated SAC)	53
C	SAC area the same as SPA. Note in the UK Natura 2000 submission this is only used for Gibraltar	53

3.1 Habitat representativity

CODE	DESCRIPTION	PAGE NO
A	Excellent	57
B	Good	57
C	Significant	57
D	Non-significant presence	57

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippophila rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	15%-100%	58
B	2%-15%	58
C	< 2%	58

3.1 Conservation status habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global grade habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	15%-100%	62
B	2%-15%	62
C	< 2%	62
D	Non-significant population	62

3.2 Conservation status species (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' Or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Assemblages types

CODE	DESCRIPTION	PAGE NO
WATR	Non breeding waterfowl assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Scree, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic resources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK02	Marine Nature Reserve	67
UK04	Site of Special Scientific Interest (UK)	67

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)	
Total habitat cover	100%

4.1 Other site characteristics

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

4.2 Quality and importance

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

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

NATURA 2000 – STANDARD DATA FORM

Special Protection Areas (SPAs) classified under Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version), also known as the ‘Birds Directive’

and

Special Areas of Conservation (SACs) (includes candidate SACs, Sites of Community Importance (SCIs) and designated SACs) designated under Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, also known as the ‘Habitats Directive’

Each Natura 2000 site in the United Kingdom has its own Standard Data Form containing site-specific information.

The information provided here follows the officially agreed site information format for Natura 2000 sites, as set out in the [Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 \(2011/484/EU\)](#).

The Standard Data Forms are generated automatically for all of the UK’s Natura 2000 sites using the European Environment Agency’s Natura 2000 software. The structure and format of these forms is exactly as produced by the EEA’s Natura 2000 software (except for the addition of this coversheet and the end notes). The content matches exactly the data submitted to the European Commission.

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

Further technical documentation may be found here:
<http://cdr.eionet.europa.eu/help/natura2000>

In December 2015, several sections of the UK’s previously published Standard Data Forms were updated. For details of the approach taken by the UK in this submission please refer to the following document:

http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf.

These changes formed part of the UK Submission to the European Commission on 22/12/2015.

More general information on Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) in the United Kingdom, including in Gibraltar, is available from the [SPA homepage](#) and [SAC homepage](#) on the JNCC website. These webpages also provide links to Standard Data Forms for all Natura 2000 sites in the UK.

Date Standard Data Form generated by the Joint Nature Conservation Committee:	26 th March 2019 (UK Tranche 58)
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NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE UK0030395
SITENAME Southern North Sea

TABLE OF CONTENTS

- [1. SITE IDENTIFICATION](#)
- [2. SITE LOCATION](#)
- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
- [6. SITE MANAGEMENT](#)
- [7. MAP OF THE SITE](#)

1. SITE IDENTIFICATION

1.1 Type B	1.2 Site code UK0030395	Back to top
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1.3 Site name

Southern North Sea

1.4 First Compilation date 2017-01	1.5 Update date 2019-03
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1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee
Address: Monkstone House, City Road, Peterborough, PE1 1JY
Email:

Date site proposed as SCI: 2017-01

Date site confirmed as SCI: 2017-12

Date site designated as SAC: 2019-02

National legal reference of SAC designation:

Regulations 13 and 17-19 of The Conservation of Habitats and Species Regulations 2017
(<https://www.legislation.gov.uk/uksi/2017/1012/contents/made>),
and Regulations 11, 19 and 20 of The Conservation of Offshore Marine Habitats and Species Regulations 2017
(<http://www.legislation.gov.uk/uksi/2017/1013/contents/made>).

2. SITE LOCATION

2.1 Site-centre location [decimal degrees]:

Longitude

1.7999

Latitude

53.551

2.2 Area [ha]:

3695054.0

2.3 Marine area [%]

100.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code**Region Name**

UKZZ

Extra-Regio

2.6 Biogeographical Region(s)

Atlantic (100.0
%)

3. ECOLOGICAL INFORMATION

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species			Population in the site							Site assessment				
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D		A B C	
						Min	Max				Pop.	Con.	Iso.	Glo.
M	1351	Phocoena phocoena			p	11864	28889	i	C	M	A	A	C	A

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

[Back to top](#)

4.1 General site character

Habitat class	% Cover
N01	100.0
Total Habitat Cover	100

Other Site Characteristics

General site characteristics: Sand and coarse sediments. Non-vegetated. Full salinity. Water depths between 10m and 75m.

4.2 Quality and importance

Harbour porpoise (*Phocoena phocoena*) "For which this is considered to be one of the best areas in the United Kingdom".

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
L	D03		b
L	G04		b
H	F02		b
L	J03		b
H	C02		b
H	C03		b
M	H03	O	b

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.5 Documentation

For information on this site, including the Selection Assessment Document, Conservation Objectives and Advice on Activities document, as well as information about the identification process of the UK network of harbour porpoise SACs, see the Site Information Centre (see link) for this site. The population size estimate in Section 3.2, provided at the time the site was proposed as an SCI, is based on data from a survey conducted in 2005 (Hammond et al. 2013). Revised "population in the site" estimates based on the 2016 survey (Hammond et al. 2017) are a minimum of 20237 (lower 95% CI) and maximum of 41538 (higher 95% CI). All these estimates are derived from one-month summer surveys and should not be considered as specific population sizes for the site. Hammond, P. Macleod, K. Berggren, P. Borchers, D. Burt, L. Canadas, A. Desportes, G. Donovan, G. Gilles, A. Gillespie, D. Gordon, J. Hiby, L. Kuklik, I. Leaper, R. Lehnert, K. Leopold, M. Lovell, P. Øien, N. Paxton, C. Ridoux, V. Rogan, E. Samarra, F. Scheidat, M. Sequeira, M. Siebert, U. Skov, H. Swift, R. Tasker, M. Teilmann, J. van Canneyt, O. Vazques, J. (2013). Cetacean abundance and distribution in European Atlantic shelf waters to inform conservation and management. Biological Conservation. 164. 107 - 122. Hammond, P. Lacey, C. Gilles, A. Viquerat, S. Börjesson, P. Herr, H. Macleod, K. Ridoux, V. Santos, M. Scheidat, M. Teilmann, J. Vingada, J. Øien, N. (2017). Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys. Available: <https://synergy.st-andrews.ac.uk/scans3/files/2017/05/SCANS-III-design-based-estimates-2017-05-12-final-revis>

Link(s): <http://jncc.defra.gov.uk/page-7243>

6. SITE MANAGEMENT

[Back to top](#)

6.1 Body(ies) responsible for the site management:

Organisation:	Joint Nature Conservation Committee
Address:	
Email:	

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/> Yes
<input type="checkbox"/> No, but in preparation
<input checked="" type="checkbox"/> No

7. MAP OF THE SITES

[Back to top](#)

INSPIRE ID:

Map delivered as PDF in electronic format (optional)

Yes No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).

EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS

The codes in the table below are also explained in the [official European Union guidelines for the Standard Data Form](#). The relevant corresponding page number is shown in the table below.

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: in the UK Natura 2000 submission, this is only used in Gibraltar)	53

3.1 Habitat representativity

CODE	DESCRIPTION	PAGE NO
A	Excellent representativity	57
B	Good representativity	57
C	Significant representativity	57
D	Non-significant presence	57

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
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CODE	DESCRIPTION	PAGE NO
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7150	Depressions on peat substrates of the Rhynchosporion	57
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8210	Calcareous rocky slopes with chasmophytic vegetation	57
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8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion roburi-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
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9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
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3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global assessment (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Assemblages types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Scree, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic resources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (UK)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area (SPA, EC Birds Directive)	67
IN09	Special Area of Conservation (SAC, EC Habitats Directive)	67

**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
Date of 1998
Signed
on behalf of the Secretary of State for the Environment

EC Directive 2009/147/EC on the Conservation of Wild Birds

Special Protection Area (SPA)

Name: *Outer Thames Estuary SPA*

Counties/Unitary Authorities: Norfolk, Suffolk, Essex, Kent

Boundary of the SPA:

The seaward and alongshore extent of the Outer Thames Estuary SPA is defined according to the distribution of non-breeding red-throated divers (O'Brien *et al.* 2012). The site includes coastal areas up to Mean High Water up the coast (to Caister-on-Sea) to provide coverage for little terns from Great Yarmouth North Denes foraging from this SPA, and common terns foraging from Breydon Water SPA. The inclusion of the River Yare channel, to abut the eastern boundary of the existing Breydon Water SPA, and the lower River Bure (to approximately Runham village south of Filby), to provide continuous SPA coverage for common terns foraging from this SPA. The inclusion of coastal areas up to Mean High Water down the coast (to just south of Corton), providing coverage for common terns from Breydon Water foraging from this SPA. The inclusion of the River Blyth to encompass Blythburgh Water, a tidal lagoon directly adjacent to the northern parts of Minsmere-Walberswick SPA in addition to the inclusion of Mean High Water areas up the coast (to Southwold) and down the coast (to Leiston) to provide continuous coverage for little terns foraging from this SPA. The inclusion of the estuarine areas up to Mean High Water within the Crouch and Roach Estuaries, overlapping the existing Crouch and Roach Estuaries SPA in the intertidal area and the inclusion of a small marine area along the south Essex coast and overlapping part of the Foulness SPA for foraging common terns.

Size of SPA: The SPA covers an area of 392,451.66 ha.

Site description:

The Outer Thames Estuary SPA is located on the east coast of England between the counties of Norfolk (on the north side) and Kent (on the south side) and extends into the North Sea. The site comprises areas of shallow and deeper water, high tidal current streams and a range of mobile mud, sand, silt and gravely sediments extending into the marine environment, incorporating areas of sand banks often exposed at low tide. Intertidal mud and sand flats are found further towards the coast and within creeks and inlets inland down the Blyth estuary and the Crouch and Roach estuaries. The diversity of marine habitats and associated species is reflected in existing statutory protected area designations, some of which overlap or abut the SPA.

Qualifying species:

SPA site selection guidelines have been applied to the most up to date information for the site.

The site qualifies under **article 4.1** of the Directive (2009/147/EC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:

Species	Season	Count (Period)	% of population
Red-throated diver <i>Gavia stellata</i>	Non-breeding	6,466 individuals (1989 – 2006/07) ¹	38.0% of GB population
Little tern <i>Sternula albifrons</i>	Breeding	746 individuals (2011 – 2015)	19.64% of GB population
Common tern <i>Sterna hirundo</i>	Breeding	532 individuals (2011 – 2015)	2.66% of GB population

Assemblage qualification:

The site does not qualify under SPA selection stage 1.3.

Principal bird data sources:

Colony counts from JNCC Seabird Monitoring Programme, Norfolk Bird & Mammal Reports, Foulness Area Bird Survey Group and contributed by colony managers from RSPB.

Data on ringed common terns from national bird ringing scheme.

Red-throated diver data from aerial surveys 1989 - 2006/07: Natural England (2010): Departmental Brief: Outer Thames Estuary Special Protection Area. *Available at:* <http://publications.naturalengland.org.uk/publication/3233957>

Red-throated diver data from aerial surveys 1989 - 2006/07: O'Brien, S.H., Webb, A., Brewer, M. J. & Reid, J. B. (2012). Use of kernel density estimation and maximum curvature to set Marine Protected Area boundaries: Identifying a Special Protection Area for wintering red-throated divers in the UK. *Biological Conservation*, 156, 15–21.

¹ Value retained from original Outer Thames Estuary SPA standard data form (<http://publications.naturalengland.org.uk/publication/3233957>)

EC Directive 79/409 on the Conservation of Wild Birds

Citation for Special Protection Area (SPA)

Name: Sandlings

Unitary Authority/County: Suffolk

Consultation proposal: All or parts of Blaxhall Heath Site of Special Scientific Interest (SSSI), Leiston - Aldeburgh SSSI, Sandlings Forest SSSI, Snape Warren SSSI, Sutton & Hollesley Heaths SSSI and Tunstall Common SSSI have been recommended as a Special Protection Area because of their European ornithological importance. In particular, for their breeding populations of Nightjars *Caprimulgus europaeus* and Woodlarks *Lullula arborea*.

Site description: The Sandlings SPA lies near the Suffolk Coast between the Deben Estuary and Leiston. In the 19th century, the area was dominated by heathland developed on glacial sandy soils. During the 20th century, large areas of heath were planted with blocks of commercial conifer forest and others were converted to arable agriculture. Lack of traditional management has resulted in the remnant areas of heath being subject to successional changes, with the consequent spread of bracken, shrubs and trees, although recent conservation management work is resulting in their restoration. The heaths support both acid grassland and heather-dominated plant communities, with dependant invertebrate and bird communities of conservation value. Woodlark *Lullula arborea* and Nightjar *Caprimulgus europaeus* have also adapted to breeding in the large conifer forest blocks, using areas that have recently been felled and recent plantation, as well as areas managed as open ground.

Size of SPA: The SPA covers an area of 3,391.80 ha.

Qualifying species:

The site qualifies under **article 4.1** of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:

Annex 1 species	Count and Season	Period	% of GB population
Nightjar <i>Caprimulgus europaeus</i>	109 males - breeding	Count as a 1992	3.2% GB
Woodlark <i>Lullula arborea</i>	154 pairs - breeding	Count as at 1997	10.3% GB

Bird figures from:

Morris, A., Burges, D., Fuller, R.J., Evans, A.D. & Smith, K.W. 1994. The status and distribution of nightjars *Caprimulgus europaeus* in Britain in 1992. A report to the British Trust for Ornithology. *Bird Study* **41**: 181-191.

Wotton, S.R. & Gillings, S. 2000. The status of breeding woodlarks in Britain in 1997. *Bird Study* **47**: 212-224.

Status of SPA

Sandlings was classified as a Special Protection Area on 10 August 2001.



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 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.

European Site Conservation Objectives for Outer Thames Special Protection Area Site Code: UK9020309



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:

A001 *Gavia stellata*; Red-throated diver (Non-breeding)

A193 *Sterna hirundo*; Common tern (Breeding)

A195 *Sternula albifrons*; Little tern (Breeding)

This is a European Marine Site

This SPA is a part of the Outer Thames European Marine Site (EMS). These Conservation Objectives should be used in conjunction with the Conservation Advice document for the EMS. Natural England's formal Conservation Advice for European Marine Sites can be found via [GOV.UK](https://www.gov.uk).

Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2017 (as amended) ('the Habitats Regulations'). 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 and the prevention of deterioration of habitats and significant disturbance of its qualifying features

These Conservation Objectives are set for each bird feature for a [Special Protection Area \(SPA\)](#).

Where these objectives are being 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: 21 February 2019 (version 3). This document updates and replaces an earlier version dated 20 December 2017 to reflect the consolidation of the Habitats Regulations in 2017.

European Site Conservation Objectives for Sandlings Special Protection Area Site Code: UK9020286



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:

A224 *Caprimulgus europaeus*; European nightjar (Breeding)

A246 *Lullula arborea*; Woodlark (Breeding)

Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2017 (as amended) ('the Habitats Regulations'). 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 and the prevention of deterioration of habitats and significant disturbance of its qualifying features

These Conservation Objectives are set for each bird feature for a [Special Protection Area \(SPA\)](#).

Where these objectives are being 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: 21 February 2019 (version 3). This document updates and replaces an earlier version dated 30 June 2014 to reflect the consolidation of the Habitats Regulations in 2017.

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)	
Total habitat cover	100%

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
Over winter the area regularly supports:	
<i>Circus cyaneus</i>	2% of the GB population 5 year peak mean, 1985/6-1989/90

ARTICLE 4.2 QUALIFICATION (79/409/EEC)	
During the breeding season the area regularly supports:	
<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
Over winter the area regularly supports:	
<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
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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

U	K	0	0	1	3	6	9	0
U	K	0	0	3	0	3	7	1

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	201008
date site designated as SAC	

2. Site location:

2.1 Site centre location

longitude	latitude
01 32 41 E	51 54 58 N

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

2.5 Administrative region

NUTS code	Region name	% cover
0	Marine	100.0%

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	Migratory		Population	Conservation	Isolation	Global
Breed	Winter	Stage						
A001	<i>Gavia stellata</i>		6466	I	A		C	

4. Site description:

4.1 General site character

Habitat classes	% cover
Marine areas. Sea inlets	100.0
Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	
Salt marshes. Salt pastures. Salt steppes	
Coastal sand dunes. Sand beaches. Machair	
Shingle. Sea cliffs. Islets	
Inland water bodies (standing water, running water)	
Bogs. Marshes. Water fringed vegetation. Fens	
Heath. Scrub. Maquis and garrigue. Phygrana	
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	
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)	
Total habitat cover	100%

4.1 Other site characteristics

Soil & geology:

Gravel, Mud, Sand

Geomorphology & landscape:

Range of mobile sediments, Tidal current stream

4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC)

Over winter the area regularly supports:

Gavia stellata

(North-western Europe - wintering)

38% of the population in Great Britain
peak mean over the period 1989-2006/07

ARTICLE 4.2 QUALIFICATION (79/409/EEC)

4.3 Vulnerability

The northernmost extent of the SPA contains some areas licenced for aggregate extraction and other prospecting areas. The site contains several constructed or consented offshore windfarms. There are proposals for extensions to several such windfarms. Furthermore, there is the possibility that new windfarms will be consented under Round 3. Certain shipping channels within the site have been and will continue to be subject to maintenance dredging. There may be a requirement for capital dredging in association with newly developed and future port developments. The Thames supports important commercial fisheries (as well as estuarine and marine recreational angling). There is also a well-established cockle harvesting industry. The potential impacts of many of these existing or future activities will be addressed through the relevant licence requirements and under the provision of the Habitats Regulations (including the review of consents process). Ongoing research associated with offshore windfarm development will improve understanding of the environmental factors influencing red-throated diver distribution and the extent of apparently suitable seabed habitat within the site.

Red throated divers are highly sensitive to non-physical disturbance by noise and visual presence during the winter. Locally, significant disturbance and displacement effects are predicted to arise from noise and visual impacts from wind farm construction, maintenance traffic and visually from the turbines themselves. Disturbance and displacement effects may also arise from shipping (including recreational boating) and boat movements associated with marine aggregate and fishing activities. Marine aggregates activities tend to be temporary and localised. Dredging and shipping activities are expected to be confined to existing shipping channels, which are already known to be avoided by divers. In all these cases it is expected that activity will be lowest during the winter months (when the birds are present) due to the limitations imposed by poor weather conditions. Prince's Channel (which runs through the southern area of the outer Thames SPA) carries a significant amount of vessel traffic in and out of ports in the inner Thames Estuary. Fisherman's Gat is also an active commercial shipping channel. In addition, smaller vessels use the shallower inshore channels across the site. The impacts of many of these existing or future activities will be addressed through the relevant licence requirements and under the provision of the Habitats Regulations. (including the review of consents process).

A number of operators discharge effluent into freshwater input sources upstream of the site and directly into coastal waters adjacent to the site. Direct discharges into the site include low levels of radionuclides and heavy metals. Deterioration of invertebrate and small fish populations as a result of large oil and chemical spills can have a significant impact on important food resources. Oil on the surface and in the water column would present a threat to diving and feeding seabirds. There is a considerable amount of shipping traffic within the site, mostly confined within recognised shipping channels. A small level of contamination will exist as a result of normal shipping activities. There is however, always the risk of a catastrophic spillage event from normal shipping traffic and there is an additional issue of ship-to-ship (s-t-s) oil transfers just off Southwold within 12nm.

Discharges to the freshwater environment upstream of the site will be subject to the requirements of relevant licencing. All major ports such as the Port of London will have oil spill contingency plans to deal with catastrophic events. All s-t-s transfers are well managed by the Maritime and Coastguard Agency (MCA).

Fishing activities within the site include: suction dredging for cockles, set and drift-net tramelling, drift gill netting, potting and a limited amount of beam trawling. Removal of fish and larger molluscs can have a significant impact on the structure and functioning of benthic communities. Mechanisms for these activities to impact on red-throated divers may be a direct or indirect reduction in food availability. However, the overall level of exposure of red-throated divers to prey species depletion from biological disturbance is currently considered low. Any future significant changes to the way in which certain fishing activities, such as cockle suction dredging, are conducted (eg total catch, timing etc) will be assessed under the provision of the Habitats Regulations, and will in any case likely be subject to licence arrangements and by-law restrictions overseen by the Marine Management Organisation and/or local Inshore Fishery and Conservation Authority.

Entanglement in static fishing nets is an important cause of death for red-throated divers in the UK waters. Thus, static/passive fishing gear methods such as set gillnets and drift netting represent potentially the most serious direct risk from fishing activity to the birds themselves. Netting is widespread across the sandbanks, however this is seasonally focussed and occurs primarily at times of year outwith the period when the red-throated diver population is at its peak. The scale of the by-catch within the site is unknown. Therefore, consideration of any fishery management measures will need to be preceded by monitoring of the scale of the by-catch problem within the site itself.

5. Site protection status and relation with CORINE biotopes:

5.1 Designation types at national and regional level

Code	% cover
UK00 (N/A)	100.00

NATURA 2000 – STANDARD DATA FORM

Special Protection Areas under the EC Birds Directive.

Each Natura 2000 site in the United Kingdom has its own Standard Data Form containing site-specific information. The data form for this site has been generated from the Natura 2000 Database submitted to the European Commission on the following date:

22/12/2015

The information provided here, follows the officially agreed site information format for Natura 2000 sites, as set out in the [Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011](#) (2011/484/EU).

The Standard Data Forms are generated automatically for all of the UK's Natura 2000 sites using the European Environment Agency's Natura 2000 software. The structure and format of these forms is exactly as produced by the EEA's Natura 2000 software (except for the addition of this coversheet and the end notes). The content matches exactly the data submitted to the European Commission.

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

Further technical documentation may be found here
http://bd.eionet.europa.eu/activities/Natura_2000/reference_portal

As part of the December 2015 submission, several sections of the UK's previously published Standard Data Forms have been updated. For details of the approach taken by the UK in this submission please refer to the following document:
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

More general information on Special Protection Areas (SPAs) in the United Kingdom is available from the [SPA home page on the JNCC website](#). This webpage also provides links to Standard Data Forms for all SPAs in the UK.

Date form generated by the Joint Nature Conservation Committee
25 January 2016.



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE UK9020286
SITENAME Sandlings

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- [1. SITE IDENTIFICATION](#)
- [2. SITE LOCATION](#)
- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
- [5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES](#)
- [6. SITE MANAGEMENT](#)

1. SITE IDENTIFICATION

1.1 Type A	1.2 Site code UK9020286	Back to top
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1.3 Site name

Sandlings

1.4 First Compilation date 2001-08	1.5 Update date 2015-12
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1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee
Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY
Email:

1.7 Site indication and designation / classification dates

Date site classified as SPA:	2001-08
National legal reference of SPA designation	Regulations 12A and 13-15 of the Conservation Habitats and Species Regulations 2010, (http://www.legislation.gov.uk/uksi/2010/490/contents/made) as amended by The Conservation of Habitats and Species (Amendment) Regulations 2011 (http://www.legislation.gov.uk/uksi/2011/625/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude

1.4425

Latitude

52.07888889

2.2 Area [ha]:

3405.72

2.3 Marine area [%]

0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code

Region Name

UKH1	East Anglia
------	-------------

2.6 Biogeographical Region(s)

Atlantic (100.0
%)

3. ECOLOGICAL INFORMATION

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3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species			Population in the site							Site assessment				
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D		A B C	
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A224	Caprimulgus europaeus			r	109	109	p		G	B		C	
B	A246	Lullula arborea			r	154	154	p		G	B		C	

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N09	11.5
N07	0.9
N06	1.5
N17	57.6
N23	1.8
N16	10.6
N14	0.1
N08	14.6
N19	1.4
Total Habitat Cover	100.00000000000001

4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC) During the breeding season the area regularly supports: *Caprimulgus europaeus* 3.2% of the GB breeding population Count as at 1992 *Lullula arborea* 10.3% of the GB breeding population Count as at 1997

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
H	I02		B
H	H04		B
H	G01		I
H	M02		B
H	K02		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
H	B02		I
H	A02		I
H	A04		I
H	D05		I

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): <http://publications.naturalengland.org.uk/category/6490068894089216>

http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

<http://publications.naturalengland.org.uk/category/3212324>

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No, but in preparation
<input checked="" type="checkbox"/>	No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS

The codes in the table below are also explained in the [official European Union guidelines for the Standard Data Form](#). The relevant page is shown in the table below.

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	Designated Special Protection Area	53
B	SAC (includes candidates Special Areas of Conservation, Sites of Community Importance and designated SAC)	53
C	SAC area the same as SPA. Note in the UK Natura 2000 submission this is only used for Gibraltar	53

3.1 Habitat representativity

CODE	DESCRIPTION	PAGE NO
A	Excellent	57
B	Good	57
C	Significant	57
D	Non-significant presence	57

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippophila rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	15%-100%	58
B	2%-15%	58
C	< 2%	58

3.1 Conservation status habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global grade habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	15%-100%	62
B	2%-15%	62
C	< 2%	62
D	Non-significant population	62

3.2 Conservation status species (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' Or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Assemblages types

CODE	DESCRIPTION	PAGE NO
WATR	Non breeding waterfowl assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Scree, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic resources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
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I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
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K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK02	Marine Nature Reserve	67
UK04	Site of Special Scientific Interest (UK)	67

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: LEISTON-ALDEBURGH

DISTRICT: SUFFOLK COASTAL

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

Local Planning Authorities: SUFFOLK COASTAL DISTRICT COUNCIL, Suffolk County Council

National Grid Reference: TM 461595 Area: 534.34 (ha.) 1,319.82 (ac.)

Ordnance Survey Sheet 1:50,000: 156 1:10,000: TM 45 NE, TM 46 SE

Date Notified (Under 1949 Act): 1955 Date of Last Revision: –

Date Notified (Under 1981 Act): 1986 Date of Last Revision: 1999

Other Information:

Part RSPB and Suffolk Wildlife Trust reserves.

The site was named 'North Warren and Thorpeness Mere', before the 1999 boundary revision.

Description and Reasons for Notification:

Leiston-Aldeburgh contains a rich mosaic of habitats including acid grassland, heath, scrub, woodland, fen, open water and vegetated shingle. This mix of habitats in close juxtaposition and the associated transition communities between habitats is unusual in the Suffolk Coast and Heaths. The variety of habitats support a diverse and abundant community of breeding and overwintering birds, a high number of dragonfly species and many scarce plants.

The heathland of North Warren, Aldringham Common, The Walks and Thorpeness Common is a fragment of the once extensive Sandlings heaths of coastal Suffolk and is of varying composition. There are patches of sand sedge *Carex arenaria* and heather *Calluna vulgaris* dispersed within acid grassland. Bracken *Pteridium aquilinum* and scrub, notably gorse *Ulex europaeus* and *U. gallii* also form part of the heathland. The short sward acidic grassland is dominated by sheep's-fescue *Festuca ovina* and common bent *Agrostis capillaris* with some bare patches, bryophytes and lichens. There is a varied associated flora including lady's bedstraw *Galium verum*, sheep's sorrel *Rumex acetosella* and the nationally scarce mossy stonecrop *Crassula tillea* and clustered clover *Trifolium glomeratum*.

On the vegetated shingle there is a gradual transition between the strandline community and the shingle heath resulting from increasing stability and distance from tidal influence. On the open shingle, sea-kale *Crambe maritima* and yellow horned-poppay *Glaucium flavum* are frequent with the irregularly occurring sea spurge *Euphorbia paralias*. The stable shingle areas support many species including early hair-grass *Aira praecox*, the nationally scarce sand catchfly *Silene conica*, dune fescue

Vulpia fasciculata, bur medick *Medicago minima*, suffocated clover *Trifolium suffocatum* and sea pea *Lathyrus japonicus*.

Thorpeness Mere is a shallow, eutrophic water body on a peat substrate. The adjacent areas of swamp and carr woodland are hydrologically dependant on the mere. To the south of the mere, grey willow *Salix cinerea* woodland surrounds a fragmentary mosaic of fen communities, mostly reed dominant *Phragmites australis* with nettle *Urtica dioica*, hemp-agrimony *Eupatorium cannabinum* and wild parsnip *Pastinaca sativa*. In the fen meadow areas there is a richer suite of species including a large colony of adder's tongue *Ophioglossum vulgatum*.

Church Farm Marshes south of the mere consists of grassland that is mostly a mix of creeping bent *Agrostis stolonifera*, Yorkshire-fog *Holcus lanatus* and perennial ryegrass *Lolium perenne* with frequent crested dog's-tail *Cynosurus cristatus*. It is dissected by ditches dominated by spiked water-milfoil *Myriophyllum spicatum* and fennel pondweed *Potamogeton pectinatus* with water-crowfoot *Ranunculus baudotii* in the shallow margins.

The Fens area is dominated by common reed *Phragmites australis* with occasional lesser bulrush *Typha angustifolia*, yellow iris *Iris pseudacorus*, great willowherb *Epilobium hirsutum*, purple-loosestrife *Lythrum salicaria* and nationally scarce marsh sow-thistle *Sonchus palustris*. Water mint *Mentha aquatica* is present in the understorey with cleavers *Galium aparine* and bittersweet *Solanum dulcamara* frequent in the drier areas. Surrounding, and in many places merging into the fen, is grey willow *Salix cinerea* woodland and alder *Alnus glutinosa* woodland with a field layer containing a mix of remnant swamp species.

Many species of bird regularly breed using the great mix of habitats available. These include nightjar, woodlark and skylark on the dry grassland and heath. The scrub and woodland supports tree pipit, turtle dove, bullfinch and nightingale. The marshes, the open water and their margins, in particular, support a diverse range of breeding birds, including water rail, marsh harrier, gadwall and grasshopper warbler. The site is also attractive to wintering waterfowl including Bewick's swan and bittern and regularly supports important populations of white-fronted goose, gadwall and teal.

The variety of water bodies and terrestrial habitats provides suitable breeding and hunting areas for many species of dragonfly and damselfly, including the nationally scarce hairy dragonfly *Brachytron pratense*.

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*.

COUNTY: SUFFOLK SITE NAME: SIZEWELL MARSHES

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 466638 Area: 104.33 (ha.) 257.80 (ac.)

Ordnance Survey Sheet 1:50,000: 156 1:10,000: TM 46 SE

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

Date Notified (Under 1981 Act): 1987 Date of Last Revision: 1992

Other Information:

The site has been extended at the 1992 revision.

Description and Reasons for Notification:

Sizewell Marshes are important for their large area of lowland, unimproved wet meadows which support outstanding assemblages of invertebrates and breeding birds. Several nationally scarce plants are also present.

The site occupies a low-laying basin of deep fen peat. The water table is permanently high, with the area being prone to flooding, and there is an extensive network of ditches across the site.

In the areas of unimproved wet meadow the principal grass species are Sweet Vernal-grass *Anthoxanthum odoratum*, Crested Dog's-tail *Cynosurus cristatus*, Rough-stalked Meadow-grass *Poa trivialis* and Yorkshire-fog *Holcus lanatus*. There are many other typical species including Marsh Pennywort *Hydrocotyle vulgaris*, Ragged Robin *Lychnis flos-cuculi*, Large Bird's-foot-trefoil *Lotus uliginosus*, Marsh-orchids *Dactylorhiza* spp., Bogbean *Menyanthes trifoliata*, Bog Pimpernel *Anagallis tenella*, Yellow Iris *Iris pseudacorus*, sedges *Carex* spp. and rushes *Juncus* spp. The nationally scarce Marsh Dock *Rumex palustris* and Greater Water-parsnip *Sium latifolium* are also present. It is considered that these communities are representative of the *Juncus subnodulosus* – *Cirsium palustre* fen-meadow and the *J. effusus/acutiflorus* – *Galium palustre* rush-pasture, as described in the National Vegetation Classification. In addition, several areas of reedbed dominated by Common Reed *Phragmites australis* and alder carr occur.

The extensive ditch system supports a diverse aquatic flora which includes the nationally scarce Soft Hornwort *Ceratophyllum submersum*, Fen Pondweed *Potamogeton coloratus* and Whorled Water-milfoil *Myriophyllum verticillatum*. The variety of ditch depths and widths, together with their fringing vegetation provide an important contribution to the site's habitat value for invertebrates and birdlife.

Sizewell Marshes are of exceptional interest for their invertebrate fauna, supporting a wide range of taxa and many nationally rare or scarce species. These include terrestrial and aquatic beetles (Coleoptera), flies (Diptera), moths (Lepidoptera), dragonflies (Odonata) and spiders (Araneae).

The breeding bird assemblage is also of national significance with many species that are typical of wet grassland and associated habitats, including Shoveler, Gadwall, Teal, Snipe and Lapwing.



VOLUME 6 CHAPTER 7, APPENDIX 7A:
ANNEX 7A.3: PRIMARY DATA

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Plates

None provided.

Figures (refer to Annex 7A.1)

Figure 7.1: Statutory Designated Sites Locations within 5km of Sizewell Link Road.

Figure 7.2: Non-Statutory Designated Sites within 2km of Sizewell Link Road

Figure 7.3 to 7.5: Phase 1 Habitat Plan of Sizewell Link Road

Figure 7.6 to 7.8: Great Crested Newt Survey Results for Sizewell Link Road

Figure 7.9 to 7.11 Schedule 1, Red List and NERC Species Recorded at Sizewell Link Road during Breeding Bird Surveys in April-June 2019

Figure 7.12 to 7.14: Bat Surveyor Locations for Sizewell Link Road

Figure 7.15 to 7.18: Bat Tree Survey Results 2019 for Sizewell Link Road

1. Primary Data

1.1 Introduction

1.1.1 This annex provides details of the primary data collected for Sizewell link road site (from here on referred to as the site).

1.1.2 No targeted surveys were undertaken for reptiles or terrestrial mammals due to only small pockets of poorly connected sub-optimal habitat identified during the extended Phase 1 habitat and protected species survey. Combined with the desk-study data, low reptile potential within the site boundary was estimated. A low population of the four common species of reptile was therefore inferred for the assessment.

1.2 Plants and habitats

a) Methodology

i. Extended Phase 1 habitat and protected species survey

1.2.1 An extended Phase 1 habitat and protected species survey was undertaken in April and May 2019. The survey area consisted of the entire site boundary, with a 50m buffer either side where access was possible (see **Figure 7.3** to **7.5** in **Annex 7.1**).

1.2.2 The survey involved identifying and mapping the dominant habitat types following the Phase 1 habitat survey methodology recommended by Natural England (Joint Nature Conservation Committee (JNCC) (Ref. 1.1)). Dominant plant species were noted, as were any uncommon species or species indicative of particular habitat types. Botanical names follow ‘New Flora of the British Isles’ (Ref. 1.2). Any non-native invasive species present within and adjacent to the site (for example Japanese Knotweed (*Fallopia japonica*)) were also recorded.

1.2.3 Particular attention was paid to the hedgerows and trees, and the status of each hedgerow with regard to the Hedgerows Regulations (Ref. 1.3) was also assessed using the Wildlife and Landscape Criteria. Further detail of the assessment of hedgerows is detailed in **section 1.2a)ii**.

1.2.4 The survey was extended to involve a critical assessment of the value of the habitats present for their use by protected species or species of conservation interest, as outlined below:

- the value of the site for invertebrates was assessed and any habitats or features of particular value were identified;

- the value of the site for reptiles was assessed and any habitats or features of particular value for reptiles were identified;
- the value of the site for breeding birds was assessed;
- an external inspection of all trees within the site was carried out to assess their suitability for occupancy by roosting and/or hibernating bats. The likely value of the various habitat features for foraging and commuting bats was also critically assessed;
- the site was investigated for its use by badgers (*Meles meles*) by searching for the characteristic signs of badger activity including setts, latrines, paths, footprints, hairs, and feeding signs. The survey area was extended where necessary to search adjacent areas for badger setts;
- the site was assessed for its potential to be used by dormice (*Muscardinus avellanarius*) and the connectivity of the site to areas of woodland habitat in the surrounding area; and
- the value of the site for terrestrial mammals was assessed and any habitats or features of particular value for terrestrial mammals were identified.

1.2.5 Full access to the entire survey area was not obtained for the Site (**Figure 7.3 to 7.5 in Annex 7.1**); however, it was considered that sufficient access was obtained to be able to make a reasonable assessment of the value of the habitats to protected or notable species.

ii. Hedgerow Regulations

1.2.6 The Hedgerow Regulations (Ref. 1.3) only apply to hedgerows adjacent to land in agricultural/horticultural use. A hedgerow may be classified as ‘important’ for archaeological/historical reasons, or according to the Wildlife and Landscape criteria. To be classified as ‘important’ under the Wildlife and Landscape criteria, the hedgerow must be over 30 years old and should comprise one of the following:

- at least seven woody species/30m¹;

¹ If the hedgerow is situated wholly or partly in one of the counties listed in Criteria 7 sub-paragraph (2) of the Hedgerows Regulations (Ref. 1.3), the number of woody species should be reduced by one. Note that Suffolk is not one of the counties listed in Criteria 7 sub-paragraph (2) of the Hedgerow Regulations and therefore is not subject to this reduction.

- at least six woody species/30m and at least three features¹;
- at least six woody spp/30m including any one of Pn/Sot/Tic/Tip¹;
- *at least five woody species and at least four features; and
- or if adjacent to a bridleway/footpath, at least four woody species and at least two features.

1.2.7 Note that a hedgerow may also be classified as ‘important’ due to the presence/recorded presence of particular animal and plant species (see Criteria 6 sub-paragraphs (1)-(4) of the Hedgerows Regulations for details (Ref. 1.3)).

1.2.8 The woody species ‘recognised’ by the Hedgerows Regulations (Ref. 1.3) are listed in **Table 1.1**, along with the species codes to be used on the record sheet:

Table 1.1: Woody species recognised by Hedgerows Regulations (Ref. 1.3)

Spp code	Latin name	English name	Spp code	Latin name	English name
Ac	<i>Acer campestre</i>	Field Maple	Pa	<i>Prunus avium</i>	Wild Cherry
Ag	<i>Alnus glutinosa</i>	Alder	Pp	<i>Prunus padus</i>	Bird Cherry
Bpe	<i>Betula pendula</i>	Silver Birch	Ps	<i>Prunus spinosa</i>	Blackthorn
Bpu	<i>Betula pubescens</i>	Downy Birch	Pyc	<i>Pyrus communis</i>	Pear
Bxs	<i>Buxus sempervirens</i>	Box	Qp	<i>Quercus petraea</i>	Sessile Oak
Cb	<i>Carpinus betulus</i>	Hornbeam	Qr	<i>Quercus robur</i>	Pedunculate Oak
Cos	<i>Cornus sanguinea</i>	Dogwood	Rc	<i>Rhamnus catharticus</i>	Buckthorn
Ca	<i>Corylus avellana</i>	Hazel	Ruv	<i>Ribes uva-crispa</i>	Gooseberry
Cla	<i>Crataegus laevigata</i>	Midland Hawthorn	Ros	<i>Rosa spp.</i>	Rose
Cm	<i>Crataegus monogyna</i>	Hawthorn	Rac	<i>Ruscus aculeatus</i>	Butcher’s-broom
Cys	<i>Cytisus scoparius</i>	Broom	Sx	<i>Salix spp.</i>	Willow
DI	<i>Daphne laureola</i>	Spurge-laurel	Sxv	<i>Salix viminalis</i>	Osier
Ee	<i>Euonymus europaeus</i>	Spindle	Sn	<i>Sambucus nigra</i>	Elder

NOT PROTECTIVELY MARKED

Spp code	Latin name	English name	Spp code	Latin name	English name
Fs	<i>Fagus sylvatica</i>	Beech	Sac	<i>Sorbus aucuparia</i>	Rowan
Fa	<i>Frangula alnus</i>	Alder Buckthorn	Sor	<i>Sorbus spp.</i>	Whitebeam
Fe	<i>Fraxinus excelsior</i>	Ash	Sot	<i>Sorbus torminalis</i>	Wild Service-tree
Hr	<i>Hippophae rhamnoides</i>	Sea-buckthorn	Tb	<i>Taxus baccata</i>	Yew
la	<i>Ilex aquifolium</i>	Holly	Tic	<i>Tilia cordata</i>	Small-leaved Lime
Jr	<i>Juglans regia</i>	Walnut	Tip	<i>Tilia platyphyllos</i>	Large-leaved Lime
Jc	<i>Juniperus communis</i>	Common Juniper	Ue	<i>Ulex europaeus</i>	Gorse
Liv	<i>Ligustrum vulgare</i>	Wild Privet	Ug	<i>Ulex gallii</i>	Western Gorse
Ms	<i>Malus sylvestris</i>	Crab Apple	Umi	<i>Ulex minor</i>	Dwarf Gorse
Pal	<i>Populus alba</i>	White Poplar	Um	<i>Ulmus spp.</i>	Elm
Pn	<i>Populus nigra sub-species betulifolia</i>	Black-poplar	VI	<i>Viburnum lantana</i>	Wayfaring-tree
Pot	<i>Populus tremula</i>	Aspen	Vop	<i>Viburnum opulus</i>	Guelder Rose
an	<i>Populus canescens</i> x	Grey Poplar			

1.2.9 The presence of several features along a hedgerow influences the classification under the Hedgerows Regulations (Ref. 1.3). The terms used on the record sheet are explained in **Table 1.2**.

Table 1.2: Explanation of terms used on the Hedgerows Regulations record sheet

Term	Description
Bank/wall	The hedgerow is supported along at least half of its length by a bank/wall.
Bridleway/path	The hedgerow runs parallel to a designated bridleway/footpath.
Connections ≥4 points	A hedgerow must score four or more 'connections points', where connections with an adjoining hedgerow(s) score one point each, and a connection with a pond or woodland (in which the majority of the trees are broad-leaved) scores two points each. A hedgerow is connected if it meets the feature, or if it has a point within 10m of it and would meet it if the line of the hedgerow continued.
Ditch	There is a ditch along at least half of the length of the hedgerow.
Ground flora spp.	A list of the dominant and any notable ground flora species recorded along the hedgerow.
Hedge No.	Hedgerow number (within survey area/site).

Term	Description
Important	Would the hedgerow be classified as 'important' under the Hedgerows Regulations?
Intact	The hedgerow contains less than 10% gaps along its length.
Parallel hedge	A parallel hedgerow is present within 15m.
Pn/Sot/Tic/Tip	The presence of these trees within the hedgerow influences the classification. An explanation of the species codes is given above.
Three flora spp.	The hedgerow supports at least three of the valuable ground flora species defined by the Hedgerows Regulations. The hedgerow is considered to support a plant if it is rooted within 1m (in any direction) of the hedgerow.
Trees	The hedgerow supports at least one standard tree per 50m length of hedgerow (standard trees are defined as those which when measured at 1.3m above ground level have a diameter of at least 20cm, or 15cm for multi-stemmed trees).
Woody species	A list of the woody species found along the hedgerow (this is likely to list more species than are present along 30m length(s)).

1.2.10 An explanation of additional terms used on the Hedgerows Regulation Record Sheet follows:

1.2.11 **Table 1.3** details valuable ground flora species with regard to the Hedgerows Regulations (Ref. 1.3), while **Table 1.4** details species codes for other species often found in hedgerows.

Table 1.3: Valuable ground flora species with regard to the Hedgerows Regulations (Ref. 1.3)

Spp code	Latin name	English name
Amos	<i>Adoxa moschatellina</i>	Moschatel
Ajr*	<i>Ajuga reptans</i>	Bugle
Alu*	<i>Allium ursinum</i>	Ramsons
An*	<i>Anemone nemorosa</i>	Wood Anemone
Amac	<i>Arum maculatum</i>	Lord's-and-Ladies
Aff*	<i>Athyrium filix-femina</i>	Lady-fern
Bsp*	<i>Blechnum spicant</i>	Hard-fern
Bs*	<i>Brachypodium sylvaticum</i>	False Brome
Bram	<i>Bromopsis ramosa</i>	Hairy Brome
Clat	<i>Campanula latifolia</i>	Giant Bellflower
Ctra	<i>Campanula trachelium</i>	Nettle-leaved Bellflower
Cxsy	<i>Carex sylvatica</i>	Wood Sedge
Cl*	<i>Circaea lutetiana</i>	Enchanter's Nightshade
Cmaj	<i>Conopodium majus</i>	Pignut

NOT PROTECTIVELY MARKED

Spp code	Latin name	English name
Daff	<i>Dryopteris affinis</i>	Scaly Male-fern
Dcar	<i>Dryopteris carthusiana</i>	Narrow Buckler-fern
Dfm	<i>Dryopteris filix-mas</i>	Male-fern
Ehel	<i>Epipactis helleborine</i>	Broad-leaved Helleborine
Esyl	<i>Equisetum sylvaticum</i>	Wood Horsetail
Eamy	<i>Euphorbia amygdaloides</i>	Wood Spurge
Fgig	<i>Festuca gigantea</i>	Giant Fescue
Fv*	<i>Fragaria vesca</i>	Wild Strawberry
Godo	<i>Galium odoratum</i>	Woodruff
Gsx*	<i>Galium saxatile</i>	Heath Bedstraw
Gro*	<i>Geranium robertianum</i>	Herb-Robert
Gu*	<i>Geum urbanum</i>	Wood Avens
Hn*	<i>Hyacinthoides non-scripta</i>	Bluebell
Lgal	<i>Lamiastrum galeobdolon</i>	Yellow Archangel
Lsqu	<i>Lathraea squamaria</i>	Toothwort
Ls*	<i>Luzula sylvatica</i>	Greater Wood-rush
Lnem	<i>Lysimachia nemorum</i>	Yellow Pimpernel
Mpra	<i>Melampyrum pratense</i>	Common Cow-wheat
Msyl	<i>Melampyrum sylvaticum</i>	Small Cow-wheat
Muni	<i>Melica uniflora</i>	Wood Melick
Mp*	<i>Mercurialis perennis</i>	Dog's Mercury
Meff	<i>Milium effusum</i>	Wood Millet
Omas	<i>Orchis mascula</i>	Early-purple Orchid
Oxa*	<i>Oxalis acetosella</i>	Wood Sorrel
Pqua	<i>Paris quadrifolia</i>	Herb Paris
PSCO	<i>Phyllitis scolopendrium</i>	Hart's-tongue
Pnem	<i>Poa nemoralis</i>	Wood Meadow-grass
Pvul	<i>Polypodium vulgare</i>	Polypody
Pacu	<i>Polystichum aculeatum</i>	Hard Shield-fern
Pset	<i>Polystichum setiferum</i>	Soft Shield-fern
Pere	<i>Potentilla erecta</i>	Tormentil
Pste	<i>Potentilla sterilis</i>	Barren Strawberry
Pela	<i>Primula elatior</i>	Oxlip
Pvul	<i>Primula vulgaris</i>	Primrose
Raur	<i>Ranunculus auricomus</i>	Goldilocks Buttercup

Spp code	Latin name	English name
Sne*	<i>Sanicula europaea</i>	Sanicle
Tsn*	<i>Teucrium scorodonia</i>	Wood Sage
Vmon	<i>Veronica montana</i>	Wood Speedwell
Vodo	<i>Viola odorata</i>	Sweet Violet
Vrei	<i>Viola reichenbachiana</i>	Early Dog-violet
Vriv	<i>Viola riviniana</i>	Common Dog-violet

*Denotes code taken from Phase 1 handbook.

Table 1.4: Species codes for other species often found in hedgerows

Spp code	Latin name	English name
Ae	<i>Arrhenatherum elatius</i>	False Oat-grass
Agt	<i>Agrostis stolonifera</i>	Creeping Bent
Apet	<i>Alliaria petiolata</i>	Garlic Mustard
Aste	<i>Anisantha sterilis</i>	Barren Brome
Asy*	<i>Anthriscus sylvestris</i>	Cow Parsley
At	<i>Agrostis capillaris</i>	Common Bent
Car*	<i>Cirsium arvense</i>	Creeping Thistle
Cha	<i>Chamerion angustifolium</i>	Rosebay willowherb
Cop*	<i>Chrysosplenium oppositifolium</i>	Opposite-leaved Golden-saxifrage
Cxrm	<i>Carex remota</i>	Remote Sedge
Cyc	<i>Cynosurus cristatus</i>	Crested dog's-tail
Ddl*	<i>Dryopteris dilatata</i>	Broad Buckler-fern
Dp*	<i>Digitalis purpurea</i>	Foxglove
Ephir	<i>Epilobium hirsutum</i>	Greater Willowherb
Fu*	<i>Filipendula ulmaria</i>	Meadowsweet
Gap*	<i>Galium aparine</i>	Cleavers
Gh*	<i>Glechoma hederacea</i>	Ground-ivy
Gmol	<i>Galium mollugo</i>	Hedge Bedstraw
Gro	<i>Geranium robertianum</i>	Herb-Robert
Hh*	<i>Hedera helix</i>	Ivy
HI*	<i>Holcus lanatus</i>	Yorkshire-fog
Hlup	<i>Humulus lupulus</i>	Hop
Ig*	<i>Impatiens glandulifera</i>	Indian Balsam
Lped	<i>Lotus pedunculatus</i>	Greater Bird's-foot-trefoil

Spp code	Latin name	English name
Lpc*	<i>Lonicera periclymenum</i>	Honeysuckle
Ocro	<i>Oenanthe crocata</i>	Hemlock Water-dropwort
Oreg	<i>Osmunda regalis</i>	Royal Fern
Pt*	<i>Pteridium aquilinum</i>	Bracken
Pver	<i>Primula veris</i>	Cowslip
Rf*	<i>Rubus fruticosus</i> agg.	Bramble
Sd	<i>Solanum dulcamara</i>	Bittersweet
Shol	<i>Stellaria holostea</i>	Greater Stitchwort
Ssyl	<i>Stachys sylvatica</i>	Hedge Woundwort
So	<i>Smyrnium olusatrum</i>	Alexanders
Hand	<i>Hypericum androsaemum</i>	Tutsan
Ud*	<i>Urtica dioica</i>	Common Nettle
Vio	<i>Viola</i> spp.	Violet species
Vm	<i>Vaccinium myrtillus</i>	Bilberry
Vriv	<i>Viola riviniana</i>	Common Dog-violet

*Denotes code taken from Phase 1 handbook.

b) Results

i. Extended Phase 1 habitat and protected species survey

1.2.12 **Table 1.5** details the Target Notes (TN) of the extended Phase 1 habitat and protected species survey, full results presented on **Figure 7.3 to 7.5, Annex 7.1.**

Table 1.5 Extended Phase 1 habitat and protected species survey Target Notes

Target number	note	Description
1		A small, scrubby woodland surrounding a pond. The tree canopy layer comprises Hazel (<i>Corylus avellana</i>) and Beech (<i>Fagus sylvatica</i>) with a shrub layer of Bramble (<i>Rubus fruticosus</i> agg.), Hawthorn and willow (<i>Salix</i> spp.). The ground flora consists of Ground Ivy (<i>Glechoma hederacea</i>) and Lord's-and-Ladies.
2		A sparse woodland with mature oaks (<i>Quercus</i> spp.) and a shrub layer pf Hawthorn, Hazel and willow. The ground flora is sparse and largely consists of Bramble, Dog's Mercury and Common Nettle.
3		A semi-mature Hazel woodland outside the site and not fully surveyed
4		A block of broad-leaved plantation woodland with a tree canopy of oak and Wild Cherry (<i>Prunus avium</i>), outside the site boundary and immediately adjacent to the

Target number	note	Description
		southern boundary of the site. The ground flora is predominately Common Nettle and Cleavers.
5		A woodland copse with a tree canopy of Wild Cherry, oak and Ash. Sparse ground flora includes Ivy, Dog’s Mercury, Common Nettle and Cow Parsley
6		A woodland with a tree canopy of Hornbeam, Pedunculate Oak and Beech, no understory. Ground flora includes Herb-Robert, Ivy, Dog’s Mercury and False Brome.
7		Narrow species-rich road verge with Agrimony (<i>Agromonia eupatoria</i>), Common Knapweed (<i>Centaurea nigra</i>), Yarrow (<i>Achillea millefolium</i>), Meadow Vetchling (<i>Lathyrus pratensis</i>), False Brome, Goat’s-beard (<i>Tragopogon pratensis</i>) and Black Medic (<i>Medicago lupulina</i>).
8		A plantation woodland with tree canopy of young to semi-mature oak and Ash. The shrub layer supports Hawthorn, Hazel and Beech and the ground flora is Common Ivy and Dog’s Mercury-dominated.
9		A small woodland copse of oak, Ash and Scots Pine (<i>Pinus sylvestris</i>) with sparse shrub layer of Hawthorn. The ground flora comprises Ground Ivy, Broad-leaved Dock (<i>Rumex obtusifolius</i>), Hogweed (<i>Heracleum sphondylium</i>) and Cow Parsley.
10		Plumtreehills Covert. A mature woodland with a sparse understory. Containing trees of mixed age, with a Sweet Chestnut (<i>Castanea sativa</i>)-dominated tree canopy by. The understory Hazel and Elder. Ground flora Bluebell-dominated with Common Nettle, Lesser Celandine (<i>Ficaria verna</i>) and Ground-ivy. No access granted, woodland surveyed from adjacent land.
11		A woodland with tree canopy of Lime, Hornbeam, Oak and Sweet Chestnut and an understory of Hawthorn, Holly, Rose, Field Maple, Honeysuckle and Elm. The ground flora Bluebell -dominated with, Cleavers, Sweet Woodruff, Lesser Celandine, Violet species, Primrose, Pignut, Lord’s-and-Ladies, False Brome and Wood Avens.
12		A woodland with tree canopy of oak and Wild Cherry without a well-developed understory. The ground flora of Hogweed, Cleavers and Common Nettle.
13		Grassy margin beside an arable field and road.
14		A woodland with tree canopy of Hornbeam, Sycamore, English Oak and the occasional Ash and with an understory of Hawthorn and Elder. The Ground layer covered by Alexanders and Cleavers with the occasional Broad-leaved Dock, Herb-Robert and Greater Burdock (<i>Arctium lappa</i>).

ii. Hedgerow Regulations

1.2.13 All hedgerows assessed under the Hedgerows Regulations (Ref. 1.3) are target-noted with ‘hedgerow numbers’ (e.g. H1) on **Figure 7.3 to 7.5 (Annex 7.1)**. Species abbreviations follow the ‘Handbook for Phase 1 habitat survey’ (Ref. 1.1). **Table 1.6** details the Hedgerows Regulations record sheets.

Table 1.6: Hedgerow Regulations record sheets

Hedge No.	H2	H3	H4	H5	H6	H7
Important	No	Yes	Yes	Yes	Yes	Yes
Bridleway/path				✓		
Pn/Sot/Tic/Tip						
No. woody spp./30m	4	5	6	5	5	6
Bank/wall	✓					
Intact		✓	✓	✓	✓	✓
Trees		✓	✓	✓	✓	✓
3 flora spp.						
Ditch	✓	✓	✓	✓	✓	✓
Connect >4 points		✓	✓	✓		
Parallel hedge					✓	
Woody spp. present	Qr Cm Ps Ac	Cm Ps Fe Ros Ac	Cm Ps Ros Ca Sn Cos	Ros Cm Ps Ac Qr	Cm Ps Ros Ac Qr	Ros Cm Qr Sn Ee Ps
Ground flora (dominant)	Gap* Ud* Asy*	Mp*				
Other ground flora (including notable species)	Amac	Amac		Amac	Amac	

NOT PROTECTIVELY MARKED

Hedge No.	H8	H9	H10	H11	H13	H14	H15
Important	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bridleway/path				✓			
Pn/Sot/Tic/Tip							
No. woody spp./30m	7		6				
Bank/wall					✓	✓	✓
Intact		✓		✓	✓	✓	✓
Trees	✓	✓	✓		✓	✓	
3 flora spp.			✓				
Ditch	✓	✓	✓		✓	✓	✓
Connect >4 points		✓		✓	✓	✓	✓
Parallel hedge				✓	✓		
Woody spp. present	Fe Cm Sx Ps Ros Ac Qr	Ros Fe Qr Cos Ps	Ps Cm Fe Qr Ros Ca	Cm Qr Ps Ros Ca Um	Ac Um Cm Ps Fe Ros Cos Qr	Cm Ps Ac Ros Fe Qr Cos Ca	Cm Um Ros Ac Cos Ps Qr
Ground flora (dominant)		Vriv	Sparse ground flora		Bs*		
Other ground flora (including notable species)	Amac Mp*	Amac	Mp* Amac Bs*				

NOT PROTECTIVELY MARKED

Hedge No.	H17	H18	H19	H23	H30	H31	H32
Important	Yes	Yes	Yes	Yes	No	Yes	No
Bridleway/path							
Pn/Sot/Tic/Tip							
No. woody spp./30m							3
Bank/wall				✓			
Intact		✓	✓	✓	✓	✓	
Trees	✓	✓	✓	✓	✓	✓	✓
3 flora spp.							✓
Ditch	✓	✓	✓		✓	✓	
Connect >4 points	✓	✓		✓			
Parallel hedge		✓		✓			
Woody spp. present	Fe Um Ac Ps Ros Cos	Cm Ps Ros Ac	Cm Ps Ca Fe Ac Ros Cos	Cm Ps Ac Ros Qr Cos	Um Cm Ps Qr	Um Cm Ps Ros Fe	Cm Um Ros
Ground flora (dominant)	Tall ruderals				Pvul Bs*		Asy*White Dead Nettle Gh*Common Mallow
Other ground flora (including notable species)						Mp*Primrose Amac	

NOT PROTECTIVELY MARKED

Hedge No.	H34	H35	H36	H37	H38	H39	H40
Important	No	Yes	Yes	Yes	No	No	No
Bridleway/path				✓			
Pn/Sot/Tic/Tip							
No. woody spp./30m	3	6					
Bank/wall					✓		
Intact	✓	✓	✓	✓	✓	✓	
Trees	✓	✓	✓	✓		✓	✓
3 flora spp.	✓						
Ditch	✓	✓	✓	✓			✓
Connect >4 points				✓			✓
Parallel hedge							
Woody spp. present	Cm Sn Um	Ros Cos Qr Ac Cm Ps	Cm Fe Ac Ros Ps Cos	Cm Ps Ac Qr Ros Fe	Cm Ac Ros	Ac Sn Cm Ps Fe Qr Ca	Sn Ps Cm Qr Ros Cos
Ground flora (dominant)		Amac Mp*	Amac Mp*	Amac Cleavers	Mp*		Amac Pvul Mp*
Other ground flora (including notable species)							

NOT PROTECTIVELY MARKED

Hedge No.	H41	H42	H44	H45	H48	H49	H50
Important	No	Yes	No	No	Yes	No	No
Bridleway/path						✓	
Pn/Sot/Tic/Tip							
No. woody spp./30m						2	6
Bank/wall							
Intact	✓	✓			✓		
Trees	✓	✓	✓		✓	✓	✓
3 flora spp.							
Ditch	✓	✓			✓	✓	✓
Connect >4 points							
Parallel hedge			✓	✓			
Woody spp. present	Ac Ps Cos Qr Sn		Ps Cm Sn	Cm	Fe Cm Ac Ros Cos	Um Cm Sn	Ros Ps Sn Ac Cm
Ground flora (dominant)	So	Amac Mp*Primrose	Amac	Common ruderals	Hn*Amac	Ps	
Other ground flora (including notable species)		Hh* Pvul So				Ca	No

NOT PROTECTIVELY MARKED

Hedge No.	H51	H53	H54	H55	H56	H57	H58
Important	Yes	No	No	No	No	No	No
Bridleway/path							
Pn/Sot/Tic/Tip							
No. woody spp./30m	7					1	4
Bank/wall					✓	✓	✓
Intact		✓		✓			✓
Trees	✓			✓			
3 flora spp.							
Ditch	✓			✓			
Connect >4 points							
Parallel hedge			✓	✓			
Woody spp. present	Fe Ros Cm Ps Ac Cos Qr	Ps Cm Qr Ros Um	Cm Ps Sn Um la	Um Ros Cm la	Um Ac Qr	Um	Um Ps Fe
Ground flora (dominant)	Tall ruderals		Tall ruderals				Ac
Other ground flora (including notable species)							

1.3 Amphibians

a) Methodology

i. 2019 surveys

- 1.3.1 A review of Ordnance Survey (OS) maps and aerial photos (from the Bing maps website) (Ref. 1.4) of land associated with the site was carried out to identify any waterbodies within 500m of the site boundary (see **Figure 7.6 to 7.8** in **Annex 7.1**).
- 1.3.2 A site visit to each pond was made between 1 April and 30 June 2019, for each pond where access was granted. During these visits, detailed site descriptions were taken for each waterbody, 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 waterbody.
- 1.3.3 Where appropriate, a Habitat Suitability Index (HSI) for great crested newts (*Triturus cristatus*) (Ref. 1.5) was calculated for each waterbody. The HSI scores a waterbody against ten habitat suitability 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. HSI 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 HSI for each pond was used to compare the general suitability of the ponds present for great crested newts. However, the HSI is not a substitute for undertaking newt surveys and, if a waterbody is awarded a high HSI score, this does not guarantee that great crested newts will be present, only that they are likely to be present.
- 1.3.5 Great crested newt eDNA surveys were undertaken at ponds identified as being potentially suitable for breeding amphibians during the scoping 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. 1.6). As required by Natural England, samples were collected by a licensed surveyor between 15 April and 30 June 2019.
- 1.3.6 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 (PCR) to amplify part of the cytochrome 1 gene found in mitochondrial DNA. The method followed details in Briggs *et al.* (Ref. 1.6).

- 1.3.7 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.
- 1.3.8 Suitable aquatic vegetation at the pond margins was also checked at this time for the presence/absence of newt eggs.
- 1.3.9 Appropriate biosecurity measures were adopted whilst undertaking the surveys to avoid the inadvertent spreading of chytridiomycosis. This is a fungal disease which can have a devastating effect on amphibian populations. Measures implemented 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.
- 1.3.10 The waterbodies occasionally exhibited conditions rendering certain survey methods impractical or unsafe. For example, certain ponds had banks too steep to safely allow the completion of eDNA collection. Occasionally, bank vegetation and conditions restricted access to sections of the waterbody, rendering surveying the entire perimeter of a pond impossible.

b) Results

- 1.3.11 One hundred and seven waterbodies were identified within approximately 500m of the site boundary (Table 1.7). Figure 7.6 to 7.8 (Annex 7.1) shows the locations of these ponds classified as follows: ponds which were scoped out as requiring further surveys (e.g. no longer extant, or dry at the time of survey); ponds where access was not granted for scoping or survey; ponds where great crested newt eDNA surveys were carried out; and ponds that were found to contain great crested newt populations.

Table 1.7: Ponds identified in 2019

Pond ID	Access	HSI Surveyed	eDNA surveyed
P031	Yes	Yes	Yes
P032	Yes	Yes	Yes

NOT PROTECTIVELY MARKED

Pond ID	Access	HSI Surveyed	eDNA surveyed
P033	No	No	No
P034	No	No	No
P035	Yes	Yes	Yes
P036	Yes	Yes	Yes
P037	No	No	No
P038	Yes	Yes	Yes
P039	Yes	No - Dry	No
P040	Yes	No - Dry	No
P041	Yes	Yes	Yes
P042	Yes	Yes	Yes
P043	Yes	No - Dry	No
P044	Yes	No - Dry	No
P045	Yes	No - Dry	No
P046	Yes	Yes	Yes
P047	Yes	Yes	Yes
P048	No	No	No
P049	No	No	No
P050	No	No	No
P051	Yes	Yes	No
P052	No	No	No
P053	Yes	Yes	Yes
P054	Yes	Yes	Yes
P055	No	No	No
P056	Yes	No - Dry	No
P057	No	No	No
P058	No	No	No
P059	No	No	No
P060	Yes	Yes	Yes
P061	No	No	No
P062	No	No	No

NOT PROTECTIVELY MARKED

Pond ID	Access	HSI Surveyed	eDNA surveyed
P063	No	No	No
P064	Yes	Yes	Yes
P065	No	No	No
P066	Yes	Yes	Yes
P067	No	No	No
P068	Yes	Yes	No
P069	No	No	No
P070	No	No	No
P071	No	No	No
P072	No	No	No
P075	No	No	No
P079	No	No	No
P080	Yes	No - Dry	No
P081	Yes	Yes	Ye
P082	Yes	No - Dry	No
P085	Yes	No – no pond	No
P103	No	No	No
P104	No	No	No
P105	No	No	No
P107	Yes	Yes	Yes
P108	Yes	Yes	Yes
P109	Yes	Yes	Yes
P114	No	No	No
P115	Yes	Yes	Yes
P116	Yes	No - Dry	No
P117	No	No	No
P118	Yes	No - Dry	No
P119	Yes	Yes	Yes
P120	Yes	No - Dry	No
P121	Yes	Yes	Yes

NOT PROTECTIVELY MARKED

Pond ID	Access	HSI Surveyed	eDNA surveyed
P122	No	No	No
P123	No	No	No
P124	No	No	No
P125	Yes	No – no pond	No
P126	No	No	No
P127	Yes	No – no pond	No
P128	Yes	No – no pond	No
P129	No	No	No
P130	Yes	Yes	No
P131	Yes	Yes	Yes
P132	No	No	No
P133	No	No	No
P134	No	No	No
P135	Yes	No - Dry	No
P136	No	No	No
P137	No	No	No
P138	Yes	No – no pond	No
P139	Yes	No - Dry	No
P140	Yes	Yes	Yes
P141	Yes	No – no pond	No
P142	No	No	No
P143	No	No	No
P144	No	No	No
P145	No	No	No
P146	No	No	No
P147	No	No	No
P148	No	No	No
P149	Yes	No – no pond	No
P150	No	No	No
P151	Yes	Yes	Yes

Pond ID	Access	HSI Surveyed	eDNA surveyed
P152	No	No	No
P153	No	No	No
P154	No	No	No
P158	No	No	No
P160	Yes	Yes	Yes
P163	Yes	Yes	Yes
P164	Yes	Yes	Yes
P165	Yes	No – Dry	No
P166	Yes	No – Dry	No
P167	Yes	No – Dry	No
P168	No	No	No
P169	Yes	No – no pond	No
P170	No	No	No
P171	No	No	No
P172	No	No	No

1.3.12 Access was not granted to 53 ponds for either scoping or survey work. Sixteen ponds P039, P040, P043, P044, P045, P056, P080, P082, P116, P118, P120, P135, P139, P165, P166 and P167 were scoped out for eDNA survey due to being dry and eight ponds P085, P125, P127, P128, P138, P141, P149 and P169 did not exist. A HSI survey was completed for 30 ponds and eDNA surveys for great crested newts were undertaken at 27 of these ponds. P051 and P068 were not eDNA surveyed due to it being unsafe to take water samples as there was deep mud round the pond edges. P130 was not eDNA surveyed due to access issues.

1.3.13 **Table 1.8** presents the results of the HSI assessments.

NOT PROTECTIVELY MARKED

Table 1.8: HSI for Ponds 031, 032, 035, 036, 038, 041, 042, 046, 047, 051, 053, 054, 060, 064, 066, 081,107, 108, 109, 115, 119, 121, 130, 131, 140, 151, 160, 163 and 164.

Feature	Pond ID								
	031	032	035	036	038	041	042	046	047
Location	1	1	1	1	1	1	1	1	1
Pond area (m ²)	1001-1100	151-200	51-100	501-600	251-300	151-200	<50	151-200	<50
Pond drying	Never	No more than 2 year in 10 or in drought	No more than 2 years in 10 or in drought	Never dries	Never	No more than 2 year in 10 or in drought	3 years in 10 or most years	Annually	Dries no more than 2 years in 10 or in drought
Water quality	Good	Poor	Moderate	Moderate	Moderate	Poor	Poor	Poor	Moderate
Shade (%)	20	65	60	60	75	25	65	90	5
Fowl	Minor	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Fish	Possible	Possible	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Ponds	12+	12+	12+	12+	12+	12+	12+	12+	12+
Terrestrial habitat	Moderate	Moderate	Poor	Moderate	Poor	Poor	Poor	Moderate	Good
Macrophytes (%)	0	15	0	10	0	0	0	25	5
HSI Score	0.77	0.67	0.60	0.83	0.67	0.62	0.48	0.52	0.64
Suitability for Great Crested Newt	Good	Average	Average	Excellent	Average	Average	Poor	Below Average	Average

NOT PROTECTIVELY MARKED


Feature	Pond ID								
	051	053	054	060	064	066	081	107	108
Location	1	1	1	1	1	1	1	1	1
Pond area (m ²)	101-150	201-250	201-250	101-150	151-200	1001-1100	301-350	51-100	<50
Pond drying	Annually	Never	No more than 2 years in 10 or in drought	Annually	Never drives	Never dries	Never dries	3 years in 10 to most years	Annually
Water quality	Poor	Moderate	Poor	Good	Moderate	Moderate	Good	Poor	Poor
Shade	20	20	100	0	20	70	5	50	75
Fowl	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Fish	Absent	Absent	Absent	Absent	Possible	Possible	Absent	Absent	Absent
Ponds	12+	12+	12+	12+	12+	12+	12+	12+	12+
Terrestrial habitat	Moderate	Moderate	Good	Good	Moderate	Moderate	Good	Poor	Poor
Macrophytes (%)	0	25	10	100	70	20	0	10	0
HSI Score	0.51	0.79	0.63	0.66	0.77	0.80	0.83	0.54	0.4
Suitability for Great Crested Newt	Below Average	Good	Average	Average	Good	Good	Excellent	Below Average	Poor

NOT PROTECTIVELY MARKED

Feature	Pond ID										
	109	115	119	121	130	131	140	151	160	163	164
Location	1	1	1	1	1	1	1	1	1	1	1
Pond area (m ²)	601-700	151-200	301-350	51-100	351-400	1701-1800	51-100	1401-1500	<50	<50	51-100
Pond drying	Never dries	Never	No more than 2 years in 10 or in drought	No more than 2 years in 10 or in drought	Never	Never	No more than 2 years in 10 or in drought	Never	Annually	No more than 2 years in 10 or in drought	Never dries
Water quality	Moderate	Moderate	Moderate	Bad	Good	Moderate	Moderate	Good	Poor	Moderate	Good
Shade	15	45	20	40	5	55	50	90	100	5	30
Fowl	Minor	Minor	Absent	Absent	Minor	Absent	Absent	Minor	Absent	Absent	Absent
Fish	Possible	Possible	Absent	Absent	Major	Absent	Absent	Minor	Absent	Absent	Possible
Ponds	12+	Unknown	12+	12+	12+	Unknown	12+	10	12+	12+	12+
Terrestrial habitat	0.87	5	5	0	Moderate	Poor	Good	Moderate	Poor	Good	Moderate
Macrophytes (%)	Excellent	0.67	0.79	0.43	20	0	20	10	10	5	60
HSI Score		Average	Good	Poor	0.51	0.71	0.71	0.66	0.36	0.64	0.71
Suitability for Great Crested Newt	0.87	5	5	0	Below Average	Good	Good	Average	Poor	Average	Good

1.3.14 Detailed pond descriptions are presented in **Table 1.9**. Ponds P051, P068 and P130 do not have detailed pond descriptions due to not being able to survey due to health and safety and access constraints.

Table 1.9 Detailed Pond Descriptions

Pond 031	
	
Grid reference	TM388673
Description	Large pond with scrubby edges, heavily shaded and no aquatic vegetation.
Area	1001-1100m ²
Scoped in/out	In

Pond 032



Grid reference	TM385667
Description	Very shallow field depression with bulrush present. Almost dry at the time of survey.
Area	151-200m ²
Scoped in/out	In

Pond 035



Grid reference	TM388670
Description	Woodland pond with no aquatic vegetation just leaf litter.
Area	51-100m ²
Scoped in/out	In

Pond 036



Grid reference	TM406675
Description	Pond with bulrush around the pond edges. No aquatic vegetation and partly shaded by large trees.
Area	501-600m ²
Scoped in/out	In

Pond 038



Grid reference	TM395670
Description	Leaf litter choked shallow pond shaded by numerous trees on the bank.
Area	251-300m ²
Scoped in/out	In

Pond 041



Grid reference	TM394673
Description	Woodland shallow pond choked with duckweed and partly shaded by trees on the pond edges.
Area	151-200m ²
Scoped in/out	In

Pond 042



Grid reference	TM393674
Description	Woodland depression with a very shallow water level and choked with leaf litter.
Area	<50m ²
Scoped in/out	In

Pond 046



Grid reference	TM398675
Description	Woodland depression with a very shallow water level and choked with leaf litter.
Area	151-200m ²
Scoped in/out	In

Pond 047



Grid reference	TM406671
Description	Large deep lake with floating pondweed and other aquatic vegetation. The banks are covered in large trees and mature scrub.
Area	601-700m ²
Scoped in/out	In

Pond 053



Grid reference	TM425661
Description	Woodland depression with a shallow water level and choked with leaf litter.
Area	201-250m ²
Scoped in/out	In

Pond 054



Grid reference	TM425661
Description	Heavily shaded waterbody choked with leaf litter.
Area	201-250m ²
Scoped in/out	In

Pond 060



Grid reference	TM434667
Description	Very shallow field depression
Area	101-150m ²
Scoped in/out	In

Pond 064



Grid reference	TM414678
Description	Small pond dominated by bulrush and duckweed.
Area	151-200m ²
Scoped in/out	In

Pond 066



Grid reference	TM408680
Description	Large deep lake with duckweed and banks dominated by willowherb and mature scrub.
Area	1001-1100m ²
Scoped in/out	In

Pond 081



Grid reference	TM425664
Description	Shallow pond with recently cleared banks void of vegetation.
Area	301-350m ²
Scoped in/out	In

Pond 107



Grid reference	TM395677
Description	Shallow pond heavily shaded by the surrounding woodland.
Area	51-100m ²
Scoped in/out	In

Pond 108



Grid reference	TM396671
Description	A circular ditch where some parts are dry and others filled with shallow water.
Area	<50m ²
Scoped in/out	In

Pond 109



Grid reference	TM397679
Description	Pond with 50% aquatic vegetation and surrounded by bulrush and common reed.
Area	601-700m ²
Scoped in/out	In

Pond 115



Grid reference	TM413683
Description	Deep pond with no aquatic vegetation surrounded by bramble scrub and semi-mature trees.
Area	151-200
Scoped in/out	In

Pond 119



Grid reference	TM404674
Description	Deep pond, surrounded by semi-mature trees and scrub vegetation. Algae blooms.
Area	301-350m ²
Scoped in/out	In

Pond 121



Grid reference	TM402672
Description	Shallow pond choked with duckweed and filamentous algae.
Area	51-100m ²
Scoped in/out	In

Pond 131



Grid reference	TM424670
Description	Shallow pond heavily shaded by scrub.
Area	1701-1800m ²
Scoped in/out	In

Pond 140



Grid reference	TM425661
Description	Pond with aquatic vegetation and surrounded by scrub and tall ruderals.
Area	51-100m ²
Scoped in/out	In

Pond 151



Grid reference	TM432657
Description	Deep lake covered in patches of filamentous algae.
Area	1401-1500m ²
Scoped in/out	In

Pond 160



Grid reference	TM392676
Description	Very small pond within a leaf litter filled woodland depression.
Area	<50m ²
Scoped in/out	In

Pond 163



Grid reference	TM425664
Description	Small pond with shallow water level, next to larger pond in strip of woodland.
Area	<50m ²
Scoped in/out	In

Pond 164



Grid reference	TM410677
Description	Small pond surrounded by horsetail and bulrush. Within a largely arable landscape.
Area	51-100m ²
Scoped in/out	In

1.3.15 Great crested newts were confirmed by eDNA in Ponds 32, 36, 53, 54, 64, 66, 81 107, 119, 121, 140,163 and 164. **Table 1.10** presents the results of the eDNA sampling.

Table 1.10: eDNA survey results for ponds surveyed in 2019

Pond	Date sampled	GCN detection	Inhibition	Degradation
P031	16/04/2019	Absent	No	No
P032	26/06/2019	Present	No	No
P035	16/04/2019	Inconclusive	No	Yes
P036	27/06/2019	Present	No	No
P038	17/04/2019	Absent	No	No
P041	17/04/2019	Inconclusive	No	Yes
P042	16/04/2019	Inconclusive	No	Yes
P046	17/04/2019	Absent	No	No
P047	27/06/2019	Absent	No	No
P053	17/04/2019	Present	No	No
P054	17/04/2019	Present	No	No
P060	15/04/2019	Absent	No	No
P064	26/06/2019	Present	No	No
P066	27/06/2019	Present	No	No
P081	19/03/2019	Present	No	No
P107	17/04/2019	Present	No	N0
P108	17/04/2019	Absent	No	No
P109	27/06/2019	Absent	No	No
P115	30/04/2019	Absent	No	No
P119	27/06/2019	Present	No	No
P121	27/06/2019	Present	No	No
P131	18/04/2019	Absent	No	No
P140	17/04/2019	Present	No	No
P151	02/05/2019	Absent	No	No
P160	16/04/2019	Absent	No	No
P163	17/04/2019	Present	No	No
P164	27/06/2019	Present	No	No

1.3.16 Analysis was conducted in the presence of the following controls: (1) extraction blank; and, 20 appropriate positive and negative PCR controls for each of the TaqMan assays (Great Crested Newt, Inhibition and Degradation). All controls performed as expected.

- 1.3.17 All ponds that were HSI surveyed were also surveyed for great crested newt eggs on egg laying vegetation around the pond edge. No great crested newt eggs were found within any of the ponds surveyed within the Zol of the proposed development.

1.4 Ornithology

a) Methodology

1.4.1 To establish the bird assemblage supported by the site, bird surveys were undertaken during the breeding season. Bird surveys were undertaken on a monthly basis during the breeding season between April and June 2019 (inclusive). The surveys aimed to identify any important breeding birds of nature conservation interest within the site and its surroundings using transect based bird surveys.

1.4.2 The surveys were undertaken in accordance with best practice survey guidance (Ref. 1.7).

1.4.3 The surveys extended along three transects which followed field boundaries, tractor-tracks, woodland edges and woodland tracks within the site boundary (where land access was permitted) (**Figure 7.9 to 7.11, Annex7A.1**) Particular focus was placed upon species of nature conservation importance (Schedule 1 species of the Wildlife and Countryside Act (W&CA) (Ref. 1.8)), Red and Amber List species of Birds of Conservation Concern (BoCC) (Ref. 1.9) and National Environment and Rural Communities (NERC) Act (Ref. 1.10) Section 41 listed species), with these species being mapped and recorded using standard British Trust for Ornithology (BTO) 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 1.11** provides the survey timing and weather conditions for the breeding bird surveys.

Table 1.11: Breeding bird survey visits timings and weather conditions

Date	Start	Finish	Transect	Weather	Wind speed	Wind direction	Cloud cover (Oktas)
02/04/2019	06:25	09:45	SLR1	Dry	Light air	South	0/8
14/05/2019	05:20	09:20	SLR1	Dry	Light breeze	East	0/8

Date	Start	Finish	Transect	Weather	Wind speed	Wind direction	Cloud cover (Oktas)
04/04/2019	06:35	10:15	SLR2	Dry with ground frost	Gentle breeze	South	3/8
16/05/2019	05:30	10:50	SLR2	Dry	Moderate breeze	East	0/8
05/04/2019	06:30	09:00	SLR3	Dry	Light breeze	South- east	1/8
17/05/2019	05:21	08:30	SLR3	Dry	Moderate breeze	North- east	8/8

c) Results

1.4.6 The results of the breeding bird surveys are detailed in **Table 1.12**.

Table 1.12 Breeding bird transect results 2019

Species	Schedule 1 W&CA	Conservation status (BoCC)	Section 41 NERC Act	Breeding season peak count
Skylark (<i>Alauda arvensis</i>)		Red List	✓	13 (SLR 2)
Yellowhammer (<i>Emberiza citronella</i>)	✓	Red List	✓	7 (SLR 2)
Linnet (<i>Linaria cannabina</i>)	✓	Red List	✓	10 (SLR 3)
Song thrush (<i>Turdus philomelos</i>)	✓	Red List	✓	1 (SLR 3)
Yellow wagtail (<i>Motacilla flava</i>)		Red List	✓	2 (SLR 2)
House sparrow (<i>Passer domesticus</i>)		Red List	✓	4 (SLR 2)
Cuckoo (<i>Cuculus canorus</i>)		Red List	✓	1 (SLR 3)
Black-headed gull (<i>Chroicocephalus ridibundus</i>)		Amber List		3 (SLR 2)
Meadow pipit (<i>Anthus pratensis</i>)		Amber List		7 (SLR 2)
Kestrel (<i>Falco tinnunculus</i>)		Amber List		2 (SLR 1)
Stock dove (<i>Columba oenas</i>)		Amber List		1 (SLR 1)
Marsh harrier (<i>Circus aeruginosus</i>)	✓	Amber List		1 (SLR 1)
House martin (<i>Delichon urbicum</i>)		Amber List		15 (SLR 2)
Dunnock (<i>Prunella modularis</i>)	✓	Amber List		6 (SLR 1)
Snipe (<i>Gallinago gallinago</i>)	✓	Amber List		1 (SLR 2 & 3)
Reed bunting (<i>Emberiza schoeniclus</i>)		Amber List	✓	2 (SLR 3)
Swift (<i>Apus apus</i>)		Amber List		2 (SLR 3)

NOT PROTECTIVELY MARKED

Species	Schedule 1 W&CA	Conservation status (BoCC)	Section 41 NERC Act	Breeding season peak count
Meadow pipit (<i>Anthus pratensis</i>)		Amber List		9 (SLR 2)
Moorhen (<i>Gallinula Chloropus</i>)	✓	Green List		1 (SLR 2 & 3)
Blackbird (<i>Turdus merula</i>)	✓	Green List		8 (SLR 2)
Blackcap (<i>Sylvia atricapilla</i>)		Green List		7 (SLR 1)
Blue tit (<i>Cyanistes caeruleus</i>)		Green List		39 (SLR 2)
Carrion crow (<i>Corvus corone</i>)		Green List		7 (SLR 1, 2 & 3)
Collared dove (<i>Streptopelia decaocto</i>)		Green List		2 (SLR 1 & 2)
Chiffchaff (<i>Phylloscopus collybita</i>)		Green List		10 (SLR 1)
Goldcrest (<i>Regulus regulus</i>)		Green List		3 (SLR 3)
Goldfinch (<i>Carduelis carduelis</i>)	✓	Green List		15 (SLR 2)
Great spotted woodpecker (<i>Dendrocopos major</i>)		Green List		3 (SLR 1)
Great tit (<i>Parus major</i>)		Green List		15 (SLR 2)
Jay (<i>Garrulus Glandarius</i>)	✓	Green List		1 (SLR 1 & 2)
Jackdaw (<i>Corvus monedula</i>)	✓	Green List		8 (SLR 2)
Long-tailed tit (<i>Aegithalos caudatus</i>)		Green List		11 (SLR 3)
Pheasant (<i>Phasianus Colchicus</i>)		Green List		6 (SLR 3)
Robin (<i>Erithacus rubecula</i>)		Green List		11 (SLR 3)
Red-legged partridge (<i>Alectoris rufa</i>)		Green List		10 (SLR 2)

NOT PROTECTIVELY MARKED

Species	Schedule 1 W&CA	Conservation status (BoCC)	Section 41 NERC Act	Breeding season peak count
Wood pigeon (<i>Columba palumbus</i>)	✓	Green List		22 (SLR 3)
Wren (<i>Troglodytes Troglodytes</i>)		Green List		15 (SLR 1)
Buzzard (<i>Buteo buteo</i>)		Green List		3 (SLR 2)
Coal tit (<i>Periparus ater</i>)		Green List		1 (SLR 2)
Green woodpecker (<i>Picus viridis</i>)		Green List		2(SLR 2)
Rook (<i>Corvus frugilegus</i>)		Green List		50 (SLR 3)
Chaffinch (<i>Fringilla coelebs</i>)	✓	Green List		29 (SLR 2)
Lesser whitethroat (<i>Sylvia curruca</i>)		Green List		5 (SLR 1)
Magpie (<i>Pica pica</i>)	✓	Green List		1 (SLR 1, 2 & 3)
Swallow (<i>Hirundo rustica</i>)		Green List		5 (SLR 2)
Wheatear (<i>Oenanthe Oenanthe</i>)		Green List		10 (SLR 2)
Greenfinch (<i>Carduelis Chloris</i>)	✓	Green List		2 (SLR 2)
Whitethroat (<i>Sylvia Communis</i>)		Green List		8 (SLR 2)

1.5 Bats

a) Methodology

- 1.5.1 During the 2019 extended Phase 1 habitat and protected species survey, 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 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 Any trees that were assessed from the ground as being moderate or high suitability for roosting bats were then either endoscoped or climbed by qualified tree climbers to further assess the potential and confirm bat presence.
- 1.5.3 Four activity transect surveys were undertaken across transect routes along the proposed development alignment on a monthly basis between April and October 2019 (Transects 1, 2, 3 and 4). An additional transect (Transect 5), was undertaken between July and October due to access restrictions prior to July 2019. Each transect route was undertaken simultaneously by two surveyors using Pettersson D240x time-expansion bat detectors, one listening at 35kHz and one at 50kHz. Each transect was undertaken from dusk for one and a half to two hours after sunset and undertaken for two hours prior to dawn until sunrise. Each transect route had one dusk and one dawn within a 24-hour period at each monthly visit. The routes for transects are illustrated on **Figure 7.12 to 7.14**.
- 1.5.4 Data collected during activity transects were analysed in BatSound by experienced analysts and a measure of relative activity in the form of the number of bat passes per hour (B/h)² calculated.
- 1.5.5 Eleven static detectors (Wildlife Acoustic Song Meter SM2BAT+), making full-spectrum recordings, were deployed within areas of suitable habitat (hereafter referred to as Monitoring Stations (MSs)). The location of these MSs are illustrated on **Figure 7.12 to 7.14**. Static detectors were deployed

² 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 transect for all bat species on each survey visit, and the total number of calls by a given species over a complete transect for all survey visits undertaken in 2019, 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.

on seven occasions, monthly, between April and October 2019. An additional MS (14) was deployed between May and October and an additional two MSs (5.1 and 5.2) were deployed between July and October due to access restrictions prior to July. On each occasion static detectors were deployed for a period of seven consecutive nights and were set to record between 20 minutes before sunset until 20 minutes after sunrise. The results of the static detector surveys are detailed in **Table 1.12**.

Table 1.13: Static detector survey periods in 2019

Survey visit	Survey Dates 2019
1	10 April – 17 April
2	21 May – 28 May
3	12 June – 19 June
4	3 July – 10 July
5	6 August – 13 August
6	4 September – 11 September
7	2 October – 9 October

1.5.6 Data collected during static detector surveys was analysed using SonoChiro auto-identification software and the results grouped into six species groups ((barbastelle (*Barbastella barbastellus*), ‘big bat’³ spp., *Plecotus* spp. (assumed to be brown long-eared bat⁴), *Pipistrellus* spp⁵., *Myotis* spp., and Nathusius’ pipistrelle (*Pipistrellus nathusii*)) and the mean number of passes per night calculated for further analysis.

1.5.7 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 (Ref. 1.11). The trials in the manual verification that is detailed in the report referenced refers to data that was collected prior to 2019. Due to the same software being used in similar environments it is considered appropriate that this would also be applicable to the 2019 survey data, and no further verification has been undertaken. Therefore, the result provided follow the conclusions found in this report.

³ 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).

⁴ 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. 1.12).

⁵ 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.

b) Results

i. Activity transect surveys results

1.5.8 Five activity transects were undertaken. The location of the transect routes are illustrated on **Figure 7.12** to **7.14**.

- Transect 1 was located at the most north-westerly section of the site;
- Transect 2, 3 and 5 were undertaken east of Transect 1, south of Middleton Moor. The three transects, as well as including areas within the site, also included areas of land adjacent to but not within the site boundary, where this habitat was considered suitable for bats; and
- Transect 4 was located at the most southerly part of the site, near Theberton.

1.5.9 At least six species were recorded across the transects with overall activity levels largely comparable between the transect routes. The results of surveys across Transects 1, 2, 3, 4 and 5 are detailed, by species/species group in **Table 1.14** to **Table 1.18** respectively below.

Table 1.14 Summary of all activity recorded during activity Transect 1 in 2019

Species	Number of passes recorded per species per survey visit and survey effort (hours)							Total	Bat passes per hour (B/h)**
	08.04.19 (2)	20.05.19 (2)	11.06.19 (2)	01.07.19 (2)	05.08.19 (2)	03.09.19 (2)	02.10.19 (2)		
Common pipistrelle	1	8	5	13	20		6	53	26.5
Soprano pipistrelle		2	2				6	10	5
Barbastelle						1		1	0.5
Myotis spp.		1		1				2	1
Serotine				1				1	0.5
Total	1	11	10	13	20	1	12		
Bat passes per hour (B/h)	0.5	5.5	3.5	7	10	0.5	6		

*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. 1.12 and Ref. 1.13)

** 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.

- 1.5.10 Common pipistrelle was found to be the most frequently encountered species. Activity was recorded across the entirety of the site with a cluster of activity recorded along hedgerows separating arable fields as illustrated on **Figure 7.12-7.14**.
- 1.5.11 Soprano pipistrelle was the second most frequently encountered species.
- 1.5.12 One serotine bat pass was recorded in July. No big bat spp. we encountered during the surveys.
- 1.5.13 Only low levels of *Myotis* spp. activity was recorded. The location of *Myotis* spp. passes are illustrated on **Figure 7.12-7.14**.
- 1.5.14 One barbastelle pass was recorded in September on Transect 1.

Table 1.15: Summary of all activity recorded during activity Transect 2 in 2019

Species	Number of passes recorded per species per survey visit and survey effort (hours)									Total	Bat passes per hour (B/h)**
	09.04.19 (2.25)	21.05.19 (2.25)	11.06.19 (2.25)	02.07.2019 (dawn (2.25))	02.07.2019 (dusk (2.25))	14.08.2019 (2.25)	04.09.2019 dawn (2.25)	04.09.2019 dusk (2.25)	01.10.2019 (2)		
Common pipistrelle		10	5	5	15	11	7	4		58	26.3
Soprano pipistrelle		3	3	6	7	3	6			28	12.6
Barbastelle		1			1					2	0.9
Brown Long-eared			1							1	0.5
Myotis spp.			1							1	0.5
'Big bat' spp.			1			2				3	1.4
Serotine				1						1	0.5
Total	0	14	11	11	23	16	13	4	0		
Bat passes per hour (B/h)	0	6.2	4.9	4.9	10.2	7.1			0		

*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. 1.12 and Ref. 1.13)

** 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.

- 1.5.15 Common pipistrelle was found to be the most frequently encountered species. Activity was recorded across the entirety of the site with a cluster of activity recorded along hedgerows separating arable fields as illustrated on **Figure 7.12-7.14**.
- 1.5.16 Soprano pipistrelle was the second most frequently encountered species.
- 1.5.17 Big bat spp. passes were recorded in June, July and August 2019. The big bat spp. activity recorded was low with the peak being two bat passes throughout a single survey visit. Bat passes belonging to the 'big bat' group (consisting of serotine, noctule and *Nyctalus* spp.) are illustrated on **Figure 7.12-7.14**. Of the bat passes recorded, only one could be confirmed as a serotine bat, the other calls could not be confirmed to species level.
- 1.5.18 Only low levels of *Myotis* spp. activity was recorded. The location of *Myotis* spp. passes are illustrated on **Figure 7.12-7.14**.
- 1.5.19 Two barbastelle passes were recorded across all survey visits, one in May and one in July.
- 1.5.20 Only one brown long-eared bat pass was recorded across all survey visits. It is considered likely that brown long-eared bats were under-represented, due to the quiet nature of their echolocation calls.

Table 1.16: Summary of all activity recorded during activity Transect 3 in 2019

Species	Number of passes recorded per species per survey visit and survey effort (hours)							Total	Bat passes per hour (B/h)**
	10.04.19 (2.25)	22 05 19 (2.25)	03.07.2019 (dusk (2.25))	04.07.2019 (dawn (2.25))	12.08.2019 (2.25)	11.09.2019 (2.25)	02.10.2019 (2.25)		
Common pipistrelle		14	12	5	19		4	54	24
Soprano pipistrelle		3	6		13	11	1	34	15.1
Barbastelle			2	1		3	1	7	3.1
'Big bat' spp.		1	2			1		4	1.8
Noctule				1		1		2	0.9
Serotine					1			1	0.4
Total	0	18	22	7	33	16	6		
Bat passes per hour (B/h)	0	8	9.8	3.1	14.7	7.1	2.7		

- 1.5.21 Common pipistrelle was found to be the most frequently encountered species. Activity was recorded across the entirety of the site with a cluster of activity recorded along hedgerows separating arable fields as illustrated on **Figure 7.12-7.14**.
- 1.5.22 Soprano pipistrelle was the second most frequently encountered species.
- 1.5.23 One noctule pass was recorded in July and September 2019 and one serotine pass was recorded during the August 2019 survey visit.
- 1.5.24 Big bat spp. passes were recorded in May July and September 2019. The big bat spp. activity recorded was low with the peak being two bat passes throughout a single survey visit. Bat passes belonging to the 'big bat' group (consisting of serotine, noctule and *Nyctalus* spp.) are illustrated on **Figure 7.12-7.14**.
- 1.5.25 No *Myotis* spp. activity was recorded.
- 1.5.26 Seven barbastelle passes were recorded across all survey visits, in July, September and October 2019 on Transect 2.

Table 1.17: Summary of all activity recorded during activity Transect 4 in 2019

Species	Number of passes recorded per species per survey visit and survey effort (hours)								Total	Bat passes per hour (B/h)**
	11 04.19 (2.25)	23 05 19 (2.25)	13.06.19 (2.25)	04.07.2019 (2.25)	08.08.2019 (2.25)	10.09.2019 dawn (2.25)	10.09.2019 dusk (2.25)	03.10.2019 (2.25)		
Common pipistrelle		14	6	16	18			3	57	25.3
Soprano pipistrelle		14	5	7	20		11	3	60	26.7
Nathusius' Pipistrelle (<i>Pipistrellus nathusii</i>)					1				1	0.4
Barbastelle			1				1	2	4	1.8
Brown Long-eared		1		1					2	0.9
Myotis spp.	1				1		1		3	1.3
'Big bat' spp.		3			2		2		7	3.1
Total	1	32	12	24	42	0	15	8		
Bat passes per hour (B/h)	0.4	14.2	5/3	10.7	18/7	0	6.7	3.6		

- 1.5.27 Soprano pipistrelle was found to be the most frequently encountered species. Activity was recorded across the entirety of the site with a cluster of activity recorded along hedgerows separating arable fields as illustrated on **Figure 7.12-7.14**.
- 1.5.28 Common pipistrelle was the second most frequently encountered species with one Nathusius Pipistrelle recorded in August.
- 1.5.29 Big bat spp. passes were recorded in May, August and September 2019 but could not be identified down to species level. The big bat spp. activity recorded was low with the peak being three bat passes throughout a single survey visit in May. Bat passes belonging to the 'big bat' group (consisting of serotine, noctule and *Nyctalus* spp.) are illustrated on **Figure 7.12-7.14**.
- 1.5.30 Only low levels of *Myotis* spp. activity was recorded with a total of three bat passes over the course of the surveys undertaken. The location of *Myotis* spp. passes are illustrated on **Figure 7.12-7.14**.
- 1.5.31 Four barbastelle passes were recorded across all survey visits, one in June and September with two recorded in October.
- 1.5.32 Two brown long-eared bat passes were recorded across all survey visits. It is considered likely that brown long-eared bats were under-represented, due to the quiet nature of their echolocation calls.

Table 1.18: Summary of all activity recorded during activity Transect 5 in 2019

Species	Number of passes recorded per species per survey visit and survey effort (hours)				Total	Bat passes per hour (B/h)**
	15.08.2019 dawn (2.25)	15.08.2019 dusk (2.25)	12.09.2019 (2.25)	2.25.10.2019 (0)		
Common pipistrelle	9	24	4	6	43	19.7
Soprano pipistrelle	3	12	7	4	26	11.9
Barbastelle		4			4	1.8
Serotine		1			1	0.5
Noctule				1	1	0.5
'Big bat' spp.			3		3	1.4
Total	12	41	14	11		
Bat passes per hour (B/h)						

- 1.5.33 Common pipistrelle was found to be the most frequently encountered species. Activity was recorded across the entirety of the site with a cluster of activity recorded along hedgerows separating arable fields as illustrated on **Figure 7.12-7.14**.
- 1.5.34 Soprano pipistrelle was the second most frequently encountered species.
- 1.5.35 Big bat spp. passes were recorded in August, September and October 2019. The big bat spp. activity recorded was low with the peak being three bat passes throughout a single survey visit. Bat passes belonging to the 'big bat' group (consisting of serotine, noctule and *Nyctalus* spp.) are illustrated on **Figure 7.12-7.14**. A single serotine pass was confirmed in August and a single Noctule pass confirmed in October. Three other 'big bat' passes were recorded in September but could not be identified down to species level.
- 1.5.36 No *Myotis* spp. activity was recorded during the transect 5 surveys.
- 1.5.37 Four barbastelle passes were recorded in August. No other barbastelle bat passes were recorded over the course of the transect 5 surveys. Three brown long-eared bat passes were recorded across all survey visits. It is considered likely that brown long-eared bats were under-represented, due to the quiet nature of their echolocation calls.
- c) [Static detector surveys](#)
- 1.5.38 Full details of the results of static detector surveys in the form of mean number of passes per night (mppn) across the red line boundary are provided in **Table 1.19** below. Recorded data has been grouped into six species groups (barbastelle, Nathusius' pipistrelle, *Myotis* spp., 'big bat' spp., long-eared bat spp., and pipistrelle spp.).
- 1.5.39 Peak activity levels across all survey occasions for each species group are indicated in green.

Table 1.19: Summary of static detector results 2019

Survey dates	Monitoring location	Mean passes per night					
		Barbastelle	<i>Myotis</i> spp. *	Big Bat spp. **	Nathusius' pipistrelle ***	Pipistrelle spp. ****	Long-eared bat spp. *****
April 2019							
11/04/2019 – 16/04/2019	1	0	0	0	1	0.2	0
11/04/2019 – 16/04/2019	2	5.2	0	0	0	0.4	0
11/04/2019 – 16/04/2019	3	2.8	0.2	0	0	1.4	0.2
11/04/2019 – 16/04/2019	4	3.4	0.4	0.2	0	0.6	0
09/04/2019 – 14/04/2019	5	0	0.2	0	0	0	0
10/04/2019 – 15/04/2019	6	0.2	1.4	0	0	1.6	0
09/04/2019 – 14/04/2019	7	0	0.2	0	0	0	0
09/04/2019 – 14/04/2019	8	0	1.2	0.2	0	0.6	0
	9	Not deployed due to technical difficulties					
	10	Not deployed due to technical difficulties					
11/04/2019 – 16/04/2019	11	6.4	2	1.4	0	13.8	0.4
09/04/2019 – 14/04/2019	12	21.4	0.2	7.6	1.4	7	0
		Not deployed due to technical difficulties.					
May 2019							
21/05/2019 – 26/05/2019	1	6.6	3.2	0	1	84	0
21/05/2019 – 26/05/2019	2	1.4	0.6	0.8	0	96.8	0.6
21/05/2019 – 26/05/2019	3	0.4	2.6	0	0.2	74	4.4
21/05/2019 – 26/05/2019	4	1.4	4.2	0.2	0.2	97.2	0.6
21/05/2019 – 26/05/2019	5	11	0.8	2	0	112.6	1.8
22/05/2019 – 27/05/2019	6	1	1.2	7.8	0.2	417.8	1.2
22/05/2019 – 27/05/2019	7	18.4	0.4	2.4	0	254.5	1.8

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. *****
21/05/2019 – 26/05/2019	8	1.8	12.8	0.4	0	724.8	0.8
	9	Not deployed due to technical difficulties					
	10	Not deployed due to technical difficulties					
23/05/2019 – 28/05/2019	11	6.8	11.6	4.4	1.4	729.6	2.4
23/05/2019 – 28/05/2019	12	3.2	0	0.6	0	56	0
23/05/2019 – 28/05/2019	13	2.6	0.6	4.4	0.4	122.2	1
23/05/2019 – 28/05/2019	14	3.6	1.2	0.2	0	52.4	1.6
June 2019							
11/06/2019 – 19/06/2019	1	2.4	2	0.2	1.2	195.8	0
11/06/2019 – 19/06/2019	2	1.2	0.6	0	1.8	283.4	0
11/06/2019 – 19/06/2019	3	0	2	0	0.2	32.4	0
11/06/2019 – 19/06/2019	4	1.2	3.4	0.8	0.2	44.8	0
09/06/2019 – 19/06/2019	5	19.4	7.8	1	0.2	228.6	0
12/06/2019 – 18/06/2019	6	0	2.8	34.2	0.2	229.6	0
12/06/2019 – 18/06/2019	7	93.6	1.6	1.8	1.2	152.8	0
11/06/2019 – 19/06/2019	8	4.2	4	2.2	0.4	557.2	0
	9	Not deployed due to technical difficulties.					
	10	Not deployed due to technical difficulties.					
12/06/2019 – 20/06/2019	11	0	12.6	59.4	0	1069.2	0
	12	Not deployed due to technical difficulties.					
12/06/2019 – 20/06/2019	13	0	0	0	0	0	0
	14	Not deployed due to technical difficulties.					
July 2019							

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. *****
02/07/2019 – 10/07/2019	1	0.8	1.4	0.2	7.6	177	0
02/07/2019 – 10/07/2019	2	0.8	1	0.4	9.2	228.4	1
02/07/2019 – 10/07/2019	3	0.4	4	0.2	0.6	14.4	0.8
02/07/2019 – 10/07/2019	4	0	1	1	0	17.4	0.8
02/07/2019 – 10/07/2019	5	7.4	21.8	1.4	0.4	216.6	2.4
11/07/2019 – 18/07/2019	5.1	0	0	0	0	0	0
11/07/2019 – 18/07/2019	5.2	0	2.8	0.2	0.8	88	0
03/07/2019 – 09/07/2019	6	0	0	0	0	0	0
03/07/2019 – 09/07/2019	7	2.8	1.8	2.2	2.6	291	0
02/07/2019 – 10/07/2019	8	0.6	9	23	0.4	501.4	0
	9						
	10						
03/07/2019 – 10/07/2019	11	4.8	15.8	12.8	2.8	1073.6	0
03/07/2019 – 10/07/2019	12	0	2.2	0	0	30.4	0
03/07/2019 – 10/07/2019	13	0	0	0	0	0	0
03/07/2019 – 10/07/2019	14	0.8	13.8	3.4	0.6	63.2	0
August 2019							
06/08/2019 – 15/08/2019	1	12.8	7.4	0.2	19.2	54.8	0
06/08/2019 – 15/08/2019	2	4.4	6.8	1	4.6	220	0
06/08/2019 – 15/08/2019	3	3.6	1.4	4.6	1.6	19.4	0
06/08/2019 – 15/08/2019	4	9.8	3.2	0.6	0	95	0
06/08/2019 – 15/08/2019	5	0	0	0	0	0	0
15/08/2019 – 21/08/2019	5.1	51.4	14.4	1	20.4	449.8	0

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. *****
15/08/2019 – 21/08/2019	5.2	0.4	0.8	0	0	60.8	0
07/08/2019 – 12/08/2019	6	2.2	11.8	1	1.2	153.4	0
07/08/2019 – 12/08/2019	7	16.8	17.8	14.2	5.2	242.6	0
06/08/2019 – 12/08/2019	8	3.6	6.8	5.2	1.2	30.8	0
	9						
	10						
07/08/2019 – 12/08/2019	11	2.2	0.2	0.6	70.2	1848.6	0
07/08/2019 – 12/08/2019	12	0.8	2	0.4	0.2	91.4	0
15/08/2019 – 21/08/2019	13	0	14.4	0	0	0	0
15/08/2019 – 21/08/2019	14	0	0.8	0	0	0	0

* *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/Nyctulus*

*** Nathusius' Pipistrelle includes those calls identified by SonoChiro specifically as Nathusius' pipistrelle in addition to those identified as Nathusius'/Kuhl/Savi pipistrelle and those as Kuhl pipistrelle but which manual checks showed to be Nathusius' pipistrelle

**** Pipistrelle Sp. includes those calls identified by SonoChiro specifically as Common and Soprano pipistrelles in addition to those identified to a group level as common/soprano pipistrelle

***** 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.

d) Tree Assessment results

1.5.40 Full details of the features identified during the tree assessment survey are provided in **Table 1.20** and are illustrated on **Figure 7.15** to **7.18**.

Table 1.20 Results of tree assessment survey in 2019

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree potential
75	Ash, Mature, DBH: 40cm, Height: 10m, Single-stem	Stem, Type: Lifting Bark, Height: 0.2m	Negligible	Negligible
75a	Ash, Mature, DBH: 30cm, Height: 8m, Single-stem	Stem, Type: Tear Outs, Height 4m, Aspect: East.	High	High
76	Field Maple, Mature, DBH: 30cm, Height: 8m, Single-stem	Stem, Type: Wounds, Height: 1m, Aspect: South	Low	High
		Limb, Type: Hazard Beam, Height: 2m, Aspect: West	High	
77	Ash, Mature, DBH: 30cm, Height: 8m, Multi-stem	Stem, Type: Butt Rot, Height: 0m, Aspect: South	Low	Moderate
		Stem, Type: Wounds, Height: 3m, Aspect: South	Moderate	
78	Ash, Mature, DBH: 30cm, Height: 8m, Multi-stem	Limb, Type: Knot Hole, Height: 2m, Aspect: North	Moderate	Moderate
79	Ash, Mature, DBH: 30cm, Height: 8m, Multi-stem	Limb, Type: Knot Hole, Height: 4m, Aspect: North	Low	Low
80	Pedunculate Oak, Mature, DBH: 40cm, Height: 10m, Single-stem	Limb, Type: Lifting Bark, Height: 3m, Aspect: South	Moderate	Moderate
81	Pedunculate Oak, Mature, DBH: 60cm, Height: 10m, Single-stem	Limb, Type: Tear Outs, Height: 4m, Aspect: North	Moderate	Moderate
82	Field Maple, Mature, DBH: 15cm, Height: 3m, Single-stem	Stem, Type: Tear Outs, Height: 0.25m, Aspect: East	Moderate	Moderate

NOT PROTECTIVELY MARKED

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree potential
83	Field Maple, Mature, DBH: 20cm, Height: 8m, Single-stem	Stem, Type: Tear Outs, Height: 0.25m, Aspect: East	Moderate	Moderate
84	Lime, Mature, DBH: 15cm, Height: 10m, Multi-stem	Stem, Type: Tear Outs, Height: 1m	Moderate	Moderate
85	Lime, Mature, DBH: 15cm, Height: 10m, Multi-stem	Stem, Type: Tear Outs, Height: 1m	Low	Low
86	Lime, Mature, DBH: 20cm, Height: 8m, Single-stem	Stem, Type: Tear Outs, Height: 2 to 5m	Low	Low
87	Pedunculate Oak, Mature, DBH: 80cm, Height: 10m, Single-stem	Limb, Type: Impact Shatter, Height: 5m, Aspect: East	Negligible	Low
		Limb, Type: Hazard Beam, Height: 9m, Aspect: East	Low	
		Limb, Type: Tear Outs, Height: 9m, Aspect: East	Negligible	
88	Dead, Mature Tree unknown species, DBH: 15cm, Height: 8m, Single-stem	Stem, Type: Lifting Bark	Low	Low
89	Ash, Fallen over fence, Mature, DBH: 20cm, Height: 6m, Single-stem	Stem, Type: Tear Outs, Height: 1m, Aspect: West	Moderate	Moderate
90	Lime, Mature, DBH: 20cm, Height: 13m, Multi-stem	Stem, Type: Tear Outs, Height: 1m	Negligible	Negligible
91	Ash, Mature, DBH: 20cm, Height: 10m, Multi-stem	Stem, Type: Tear Outs, Height: 2m, Aspect: East	Moderate	Moderate
92	Pedunculate Oak, Mature, DBH: 80cm, Height: 13m, Single-stem	Stem, Type: Knot Hole, Height: 2m, Aspect: East	Moderate	Moderate
		Limb, Type: Lifting Bark, Height: 5m, Aspect: East	Low	
93	Horse Chestnut, Mature, DBH: 20cm, Height: 10m, Multi-stem	Stem, Type: Tear Outs, Height: 1m, Aspect: West	Low	Low
94	Pedunculate Oak, Mature, DBH: 50cm, Height: 8m, Single-stem	Stem, Type: Knot Hole, Height: 3m, Aspect: South	Moderate	Moderate

NOT PROTECTIVELY MARKED

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall potential tree
116	Lime, Mature, DBH: 25cm, Height: 10m, Multi-stem	Limb, Type: Tear Outs, Aspect: West	Moderate	Moderate
117	Pedunculate Oak, Mature, DBH: 80cm, Height: 10m, Single-stem	Limb, Type: Tear Outs, Aspect: South	Moderate	Moderate
		Type: Lifting Bark	Moderate	
118	Pedunculate Oak, Mature, DBH: 80cm, Height: 10m, Single-stem	Limb, Type: Wounds, Height: 5m, Aspect: South	Low	Low
119	Ash, Mature, DBH: 40cm, Height: 10m, Multi-stem	Limb, Type: Tear Outs, Height: 6m, Aspect: East	Negligible	Moderate
		Limb, Type: Knot Hole, Height: 2m, Aspect: North	Low	
		Limb, Type: Tear Outs, Height: 3m, Aspect: North	Moderate	
120	Pedunculate Oak, Mature, DBH: 80cm, Height: 10m, Multi-stem	Limb, Type: Tear Outs, Height: 8m, Aspect: East	Negligible	Negligible
121	Ash, Mature, DBH: 80cm, Height: 13m, Single-stem	Stem, Type: Tear Outs, Height: 8, Aspect: West	Low	Low
		Limb, Type: Tear Outs, Height: 8, Aspect: West	Low	
122	Pedunculate Oak, Mature, DBH: 80cm, Height: 10m, Multi-stem	Stem, Type: Wounds, Height: 0.5m, Aspect: North	Negligible	Negligible
123	Crab Apple, Mature, DBH: 40cm, Height: 10m, Single-stem	Stem, Type: Knot Hole, Height: 1m, Aspect: South	Moderate	Moderate
		Limb, Type: Hazard Beam, Height: 2m, Aspect: South	Low	
124	Pedunculate Oak, Mature, DBH: 100cm, Height: 13m, Single-stem	Stem, Type: Wounds, Height: 1.5m, Aspect: South	Low	Low
125	Pedunculate Oak, Mature, DBH: 250cm, Height: 8m, Single-stem	Stem, Type: Wounds, Height: 2m, Aspect: South	Low	Low

NOT PROTECTIVELY MARKED

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall potential tree
126	Pedunculate Oak, Mature, DBH: 120cm, Height: 12m, Single-stem	Limb, Type: Tear Outs, Height: 4m, Aspect: East	Low	Low
127	Other, Dead Tree, DBH: 60cm, Height: 10m, Single-stem	Stem, Type: Wounds, Height: 3m, Aspect: North	Low	Low
128	Pedunculate Oak, Mature, DBH: 100cm, Height: 12m, Single-stem	Limb, Type: Knot Hole, Height: 3m, Aspect: North	Low	Low
129	Pedunculate Oak, Mature, DBH: 110cm, Height: 12m, Single-stem	Stem, Type: Lifting Bar, Height: 8m, Aspect: West	Low	Low
130	Pedunculate Oak, Mature, DBH: 100cm, Height: 12m, Single-stem	Stem, Type: Hazard Beam, Height: 7m, Aspect: South East	Moderate	Moderate
131	Ash, Semi-mature, DBH: 20cm, Height: 11m, Single-stem	Stem, Type: Butt Rot, Height: 0.2m, Aspect: West	Moderate	Moderate
132	Pedunculate Oak, Mature, DBH: 200cm, Height: 14m, Single-stem	Limb, Type: Lifting Bark, Height: 8m, Aspect: South	Moderate	Moderate
133	Pedunculate Oak, Mature, DBH: 180cm, Height: 12m, Single-stem	Stem, Type: Knot Hole, Height: 3.5m, Aspect: North	Low	Low
134	Pedunculate Oak, Mature, DBH: 200cm, Height: 12m, Single-stem	Stem, Type: Knot Hole, Height: 3.5m, Aspect: North East	Low	Low
135	Ash, Mature, DBH: 90cm, Height: 12m, Single-stem	Limb, Type: Wounds, Height: 7m, Aspect: South	Moderate	Moderate
136	Pedunculate Oak, Mature, DBH: 75cm, Height: 8m, Single-stem	Limb, Type: Lifting Bark, Height: 4m, Aspect: South	Low	Low
137	Pedunculate Oak, Mature, DBH: 100cm, Height: 12m, Single-stem	Limb, Type: Woodpecker Hole, Height: 6m, Aspect: North	Moderate	Moderate

NOT PROTECTIVELY MARKED

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree potential
138	Ash, Mature, DBH: 90cm, Height: 14m, Single-stem	Limb, Type: Tear Outs, Height: 7m, Aspect: West	Moderate	Moderate
139	Ash, Semi-mature, DBH: 45cm, Height: 8m, Multi-stem	Limb, Type: Tear Outs, Height: 4m, Aspect: South West	Low	Low
140	Field Maple, Semi-mature, DBH: 60cm, Height: 10m, Single-stem	Limb, Type: Frost Crack, Height: 5m, Aspect: West	Low	Low
141	Pedunculate Oak, Mature, DBH: 100cm, Height: 10m, Single-stem	Stem, Type: Knot Hole, Height: 5m, Aspect: South West	Moderate	Moderate
142	Pedunculate Oak, Mature, DBH: 110cm, Height: 10m, Single-stem	Stem, Type: Knot Hole, Height: 3m, Aspect: South West	Moderate	Moderate
		Limb, Type: Knot Hole, Height: 3.5m, Aspect: South West	Moderate	
143	Field Maple, Mature, DBH: 30cm, Height: 10m, Single-stem	Stem, Type: Subsidence Split, Height: 1m, Aspect: South	Low	Low
144	Hornbeam, Mature, DBH: 25cm, Height: 10m, Multi-stem	Stem, Type: Welds, Height: 1m, Aspect: South	Moderate	Moderate
145	Ash, Mature, DBH: 20cm, Height: 12m, Multi-stem	Stem, Type: Knot Holes, Height: 5m, Aspect: South	Low	Low
146	Ash, Semi-mature, DBH: 25cm, Height: 8m, Single-stem	Stem, Type: Knot Holes, Height: 5m, Aspect: East	Low	Low
147	Pedunculate Oak, Mature, DBH: 50cm, Height: 10m, Single-stem	Limb, Type: Transverse Snap, Height: 7m, Aspect: East	Moderate	Moderate
148	Ash, Mature, DBH: 50cm, Height: 12m, Single-stem	Stem, Type: Woodpecker Hole, Height: 5m, Aspect: North	Moderate	Moderate

NOT PROTECTIVELY MARKED

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree potential
		Limb, Type: Knot Hole, Height: 9m, Aspect: East	Moderate	
149	Pedunculate Oak, Mature, DBH: 100cm, Height: 12m, Single-stem	Limb, Type: Hazard Beam, Height: 6m, Aspect: North West	Moderate	Moderate
		Limb, Type: Wounds, Height: 5m, Aspect: North West	Moderate	
150	Pedunculate Oak, Mature, DBH: 75cm, Height: 12m, Single-stem	Stem, Type: Knot Hole, Height: 3m, Aspect: South	Moderate	Moderate
151	Pedunculate Oak, Mature, DBH: 100cm, Height: 12m, Single-stem	Stem, Type: Lifting Bark, Height: 6m, Aspect: East	Low	Low
152	Pedunculate Oak, Mature, DBH: 80cm, Height: 11m, Single-stem	Stem, Type: Knot Hole, Height: 3m, Aspect: East	Low	Low
153	Pedunculate Oak, Mature, DBH: 75cm, Height: 10m, Single-stem	Limb, Type: Lifting Bark, Height: 6m, Aspect: East	Low	Low
154	Pedunculate Oak, Mature, DBH: 75cm, Height: 10m, Single-stem	Limb, Type: Frost Crack, Height: 5m, Aspect: West	Moderate	Moderate
155	Pedunculate Oak, Mature, DBH: 100cm, Height: 10m, Single-stem	Stem, Type: Lifting Bark, Height: 3m, Aspect: South	High	High
		Limb, Type: Tear Outs, Height: Not Specified, Aspect: South	High	
		Stem, Type: Wounds, Height: Not Specified, Aspect: West	High	
156	Pedunculate Oak, Mature, DBH: 50cm, Height: 11m, Single-stem	Stem, Type: Woodpecker Hole, Height: 8m, Aspect: North East	Moderate	Moderate

NOT PROTECTIVELY MARKED

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall potential tree
157	Sycamore, Semi-mature, DBH: 25cm, Height: 10m, Single-stem	Stem, Type: Tear Outs, Height: 7m, Aspect: South	Moderate	Moderate
158	Pedunculate Oak, Mature, DBH: 75cm, Height: 10m, Single-stem	Stem, Type: Knot Hole, Height: 7m, Aspect: North East	Low	Low
159	Pedunculate Oak, Mature, DBH: 80cm, Height: 10m, Single-stem	Limb, Type: Lifting Bark, Height: 6m, Aspect: East	Moderate	Moderate
160	Sycamore, Semi-mature, DBH: 30cm, Height: 8m, Single-stem	Stem, Type: Tear Outs, Height: 6m, Aspect: East	Moderate	Moderate
161	Ash, Semi-mature, DBH: 30cm, Height: 12m, Single-stem	Limb, Type: Knot Holes, Height: 9m, Aspect: South East	Low	Low
162	Pedunculate Oak, Mature, DBH: 75cm, Height: 12m, Single-stem	Limb, Type: Knot Hole, Height: 8m, Aspect: South	Moderate	Moderate
163	Pedunculate Oak, Mature, DBH: 85cm, Height: 12m, Single-stem	Limb, Type: Lifting Bark, Height: 5m, Aspect: North East	Low	Low
164	Sycamore, Mature, DBH: 25cm, Height: 14m, Multi-stem	Limb, Type: Transverse Snap, Height: 6m, Aspect: North	Negligible	Negligible
165	Sweet Chestnut, Mature, DBH: 30cm, Height: 14m, Multi-stem	Limb, Type: Subsidence Split, Height: 6m, Aspect: North	Low	Low
166	Ash, Mature, DBH: 40cm, Height: 12m, Single-stem	Stem, Type: Butt Rot, Height: 0.5m, Aspect: South	Moderate	Moderate
167	Pedunculate Oak, Mature, DBH: 55cm, Height: 11m, Single-stem	Limb, Type: Wounds, Height: 7m, Aspect: North East	Low	Low
168	Pedunculate Oak, Mature, DBH: 75cm, Height: 10m, Single-stem	Stem, Type: Lifting Bark, Height: 3m, Aspect: West	Low	Low

NOT PROTECTIVELY MARKED

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall potential tree
169	Ash, Mature, DBH: 30cm, Height: 10m, Multi-stem	Stem, Type: Knot Hole, Height: 3m, Aspect: West	Negligible	Negligible
170	Ash, Mature, DBH: 100cm, Height: 12m, Single-stem	Stem, Type: Wounds, Height: 2m, Aspect: East	Negligible	Negligible
171	Pedunculate Oak, Mature, DBH: 60cm, Height: 10m, Single-stem	Stem, Type: Lifting Bark, Height: 9m, Aspect: South	Moderate	Moderate
		Stem, Type: Knot Hole, Height: 4m, Aspect: East	Negligible	
172	Ash, Mature, DBH: 20cm, Height: 10m, Multi-stem	Stem, Type: Tear Outs, Height: 2,5m, Aspect: East	Low	Low
173	Pedunculate Oak, Mature, DBH: 120cm, Height: 12m, Single-stem	Limb, Type: Tear Outs, Height: 10m, Aspect: East	Moderate	Moderate
174	Pedunculate Oak, Dead, DBH: 80cm, Height: 12m, Single-stem	Stem, Type: Woodpecker Holes, Height: 4m, Aspect: East	Moderate	Moderate
		Stem, Type: Woodpecker Holes, Height: 2m, Aspect: South	Moderate	

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VOLUME 6, CHAPTER 7, APPENDIX 7A: ANNEX 7A.4:
BIODIVERSITY NET GAIN REPORT

SIZEWELL C PROJECT ENVIRONMENTAL STATEMENT

Biodiversity Metric Calculations – Sizewell link road

JANUARY 2020



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Executive summary

Arcadis Consulting (UK) Limited has been commissioned on behalf of SZC C, to undertake Biodiversity Metric calculations. This is to support the Environmental Statement for Sizewell C Project. This report focusses on the Biodiversity Metric calculations of the Sizewell link road 'Additional Development' site.

Under current proposals it is estimated that there is a potential increase in biodiversity unit values for habitats of 63.35%, and an increase in biodiversity unit values for hedgerows of 5.40%. This increase in hedgerow units is partly due to the predicted doubling of the total length of hedgerows on the site from 9.30km to 17.62km.

In addition to the Sizewell link road, the main development site and a series of other off-site associated developments were also assessed via the biodiversity metric (Two Village Bypass and Yoxford Roundabout) and these are presented in separate reports. These sites were chosen for assessment via the metric as they were considered to have potential for permanent habitat loss. When considered as a whole there is predicted to be an approximate 18% increase in biodiversity net gain across the main development site and three associated developments.

An increase in area is predicted for the most valuable habitats on the site; grassland and woodland and forest. An increase in the biodiversity unit value of grassland is also predicted. Cropland is predicted to undergo reductions in area and unit value. However, this was considered to be the most acceptable habitat to replace in terms of biodiversity value.

The achievement of these units scores is reliant upon achieving the target condition for created habitats, which will require creation and management plans.

It is recommended that post planning, additional surveys are undertaken through the planning process to update the report and to inform the necessary detailed design, habitat creation and management plans.

1 INTRODUCTION

1.1 Overview

Arcadis Consulting (UK) Limited has been commissioned on behalf of SZC Co., to undertake Biodiversity Metric calculations. This is to support the Environmental Statement for Sizewell C Project, which includes main development site and Associated Development (AD) sites.

This report focusses on the Sizewell link road which will comprise a new, permanent, 6.8 kilometre (km) single carriageway road, with a design speed of 60 miles per hour (mph), which begins at the A12 south of Yoxford, bypasses Middleton Moor and Theberton before joining the B1122. The red line boundary is presented in Plate 1. 1. Two other associated developments and the main development site were assessed via the biodiversity metric, in separate reports. These sites were chosen for assessment via the metric as they were considered to have potential for permanent habitat loss. In addition to the Sizewell link road these other assessed associated developments are:

- A permanent road to bypass Stratford St Andrew and Farnham (referred to as the 'two village bypass' (TVB)) to alleviate traffic on the A12 through the villages (Volume 5, Annex 7.4); and
- Permanent highway improvements at the junction of the A12 and B1122 east of Yoxford (referred to as the 'Yoxford roundabout' (Yoxford) and other road junctions to accommodate Sizewell C construction traffic (Volume 7, Annex 7.4).

Plate 1. 1: Aerial imagery of the site and redline boundary



1.2 Site overview

The proposed development sits approximately 3km from the east coast and extends to the west. It is located 400m to the north-west of the Main Development Site. The site, presented in Plate 1. 1 and in Figures 7.3-7.5 in Appendix 7A of Volume 6, predominantly comprises intensively managed arable land bounded by hedgerows. There are also small areas of species-poor semi-improved grassland. No designated sites are present within the site.

1.3 Proposed scheme

The route of the Sizewell link road, shown in Figures 2.1-2.7 in Chapter 2 of Volume 6, would bypass a section of the B1122 with a new 6.8km long single carriageway road to the south-west. The proposed road would be 7.3 metres (m) wide, with additional 1m hard strips and 2.5m wide verges. Along the route of the Sizewell link road, there would be swales approximately 3.5m wide for highway drainage. The road starts at the A12 south of Yoxford, bypasses Middleton Moor and Theberton before joining the B1122 to the west of the main development site.

1.4 Biodiversity Targets

This report has been prepared in response to EDF, government and stakeholder interest around quantifying biodiversity. Defra (Department for Environment Food and Rural Affairs) has presented their intentions for biodiversity, in their summary of responses to the biodiversity net gain consultations published in July 2019 (Defra, 2019).

A requirement to commit to a 10% increase in biodiversity units to achieve net gain for new developments is likely to be mandated through the upcoming Environment Bill, although it is unclear that this would include Nationally Significant Infrastructure Projects (NSIPs).

The scope of this report and analysis is to present the biodiversity unit change due to the proposed development. The ecological impacts and associated mitigation to ensure legislative and policy compliance are presented in the ES (ES Volume 2, Chapter 14) and its associated documents.

2 METHODOLOGY

2.1 Biodiversity metric 2.0

The purpose of this document is to evaluate the potential of the proposed development to achieve biodiversity net gain. This approach utilises information on the habitats and features of the site before and after the Development to calculate a biodiversity value, utilising this information to calculate a change in the biodiversity value of the Outline Planning Area (OPA). The Defra biodiversity metric 2.0 (details can be found at Crosher et al., 2019b) was the latest version of the metric at the time the calculations were done, so it is this methodology that is utilised within this report.

When considering baseline conditions, the metric takes account of several factors, detailed below. The numbers in brackets show the multipliers used by the metric for each category.

- Habitat type;
- Size of habitat parcel;
- The distinctiveness of the habitat type
 - Value predetermined for each habitat type on a scale of Very Low (0), Low (2), Medium (4), High (6) and Very High (8).
 - Distinctiveness considers the rarity of the habitat, the amount of the percentage of habitat protected in SSSIs, the UK Priority Habitat Status and the European Red List Categories for the habitat.
- The condition of each habitat parcel;
 - Value assigned based on a scale of Poor (1), Fairly Poor (1.5), Moderate (2), Fairly Good (2.5) and Good (3). For some habitat types this is pre-determined.
 - Condition sheets (provided in Crosher et al., 2019b) were used where possible to assess the condition.
- How ecologically connected the parcels are; and
 - Value assigned based on a scale of Low (1), Medium (1.1) and High (1.15).
- Whether the parcels are in locations identified as local nature priorities.
 - Value assigned based on a scale of Low (1), Medium (1.1) and High (1.15) strategic importance.

Data is entered into the metric under the UK habitat classification typologies. Baseline data was largely collected under Phase 1 Habitat survey Typologies. A conversion was carried out using a table within the tool and using the guidance document produced by UK Habitat Classification Working Group (2018).

2.2 Valuation of habitats

To calculate the biodiversity value of the site, a 'value' of each of the habitats is formulated and multiplied by the size of this habitat, as described within the Defra metric (Crosher et al., 2019a). The 'value' is based upon the habitat's distinctiveness, condition, ecological connectivity and strategic significance. For non-linear habitats, such as woodland or grassland, the area of the habitat is used to assess its size, whereas length is used for linear habitats, such as hedgerows and rivers. The biodiversity values of area-based habitats, hedgerows and rivers are separate and cannot be summed. As such they should be evaluated separately. Area based habitats and hedgerows are largely assessed in the same way and any differences are highlighted below.

This section describes how this value has been applied to the existing 'before' habitats and the proposed 'after' (post-development) habitats. Full details of the Biodiversity Metric 2.0 can be found in Crosher et al. (2019a and b).

2.2.1 Habitat distinctiveness

The metric assigns a distinctiveness band to each of the habitats and linear features. These are based upon different criteria, so are considered separately below.

2.2.1.1 Area based habitats

As detailed in Crosher et al. (2019a), this assessment is based upon "species richness, rarity (at local, regional, national and international scales), and the degree to which a habitat supports species rarely found in other habitats". Table 1 provides detail of the bandings to which each area based habitat is assigned.

Table 1: Area based habitat distinctiveness valuation bandings

Distinctiveness band	Multiplier	Typical habitats
Very High	8	Priority habitats as defined in Section 41 of the Natural Environment and Rural Communities (NERC) Act that are highly threatened, internationally scarce and require conservation action e.g. blanket bog
High	6	Priority habitats as defined in Section 41 of the NERC Act requiring conservation action e.g. lowland fens
Medium	4	Semi-natural habitats not classed as a Priority Habitat
Low	2	Habitat of low biodiversity value. Temporary grass and clover ley; intensive orchard; rhododendron scrub
Very low	0	Little or no biodiversity value e.g. hard standing or sealed surface

2.2.1.2 Hedgerows

The distinctiveness of hedgerows is based upon their physical structure, the woody species composition and any association with physical features, such as banks and ditches. An assessment of ground flora is not included within the metric. Table 2 details the distinctiveness categories of each of the types of hedgerows and line of trees. Further detail is provided in Crosher et al. (2019a).

Table 2: Hedgerow distinctiveness categories and multipliers

Associated features	Woody plant structural composition				
	Species rich hedgerow (inc. hedgerow with trees)	Native species hedgerow	Other hedgerow (ornamental / non-native species)	Line of trees (ecologically valuable)	Line of trees
Associated earth bank or ditch	High 6	Medium 4	Low 2	Medium 4	Low 2
None	Medium 4	Low 2	Very Low 1	Medium 4	Low 2

2.2.2 Habitat condition assessment

The condition of the habitat is defined as: “the biological ‘working-order’ of a habitat type judged against the perceived ecological optimum state for that particular habitat.” (Crosher et al., 2019b). This provides a measure of variation in the quality of areas of the same habitat type.

2.2.2.1 Area based habitats

A habitat condition assessment sheet is provided for each habitat type within Crosher et al. (2019b), which should be used to assign each habitat parcel to each of the categories detailed in Table 3. Each condition sheet is composed of a list of pass/fail criteria. The ratio of ‘passes’ to ‘fails’ is used to determine the habitat condition.

Table 3: Condition bandings for the habitats on the site

Category	Multiplier
Good	3
Fairly good	2.5
Moderate	2
Fairly poor	1.5
Poor	1
N/A – Agriculture	1
N/A – other	0

2.2.2.2 Hedgerows

A single condition sheet is provided for hedgerows, although lines of trees have a separate sheet. Both of these can be found in Crosher et al. (2019a), along with the pass/fail ratios for both types of linear feature. The condition categories and multipliers are the same as shown in Table 3, but ‘fairly good’ and ‘fairly poor’ are not options.

2.2.3 Ecological connectivity assessment

Version 2.0 of the metric includes a valuation of ‘ecological connectivity’. The connectivity factor relates to the relationship of a “particular habitat patch to other surrounding similar or related semi-natural habitats facilitating flows of species and ecosystem services” (Crosher et al., 2019b). Increased connectivity with the surrounding area corresponded to a higher value for the ecological connectivity factor. Higher habitat connectivity increases the value of a habitat, all else being equal. For example, a well-connected area of woodland will likely have a higher biodiversity than an equivalent, unconnected woodland. A tool for assessing connectivity was released in December 2019, but it was found to be non-functional due to bugs within it. As such, professional judgement was utilised to assign a connectivity score to each habitat parcel. This was based upon the location of similar habitats and the potential for movement of animals and plants between them. The connectivity categories are shown in Table 4.

Table 4: Connectivity categories and multipliers

Connectivity	Multiplier
High	1.15
Medium	1.1
Low	1

2.2.4 Strategic significance assessment

Strategic significance assesses the value of habitats from the point of view of environmental objectives and preferred locations for biodiversity. Local and national policy was reviewed to quantify the strategic significance of each habitat area. Table 5, based upon Table 5-5 in Crosher et al. (2019a), was used to assist with this assessment.

Table 5: Strategic significance categories and multipliers

Category	Description	Multiplier
High	Within area formally identified in local strategy	1.15
Medium	Location ecologically desirable but not in local strategy	1.1
Low	Area/compensation not in local strategy/ no local strategy	1

2.3 Pre-development calculations

The number of biodiversity units provided by each habitat currently within the proposed development site is calculated by multiplying the values for Distinctiveness, Condition, Connectivity, Strategic location and the size of each habitat in hectares (ha). Hedgerows are evaluated in the same way, but base upon their length (in km), rather than area. This value represents the baseline condition of the site, in terms of biodiversity units. Further detail can be found in Crosher et al. (2019a and b). The Phase 1 habitat map presented in Figures 7.3-7.5 in Appendix 7A of Volume 6, and satellite mapping (Google Earth, 2019) were used to inform these baseline calculations.

2.4 Post-development calculations

The site is then reassessed for the post-development conditions that will be present after the landscape treatments are implemented. The number of biodiversity units provided by each habitat within the proposed development site is calculated in the same way as the baseline habitats, but with the additional multipliers detailed in Table 6. Further detail regarding these multipliers is presented in 2.5.

Table 6: Risk components included in post-developments calculations

Risk factor	Description
Difficulty of creating or restoring a habitat	A standard score based on how difficult the habitat type is to create.
Temporal risk	A standard score based on how long the habitat type takes to establish.

The following sources were used to assess the on-site conditions after the landscape treatments are implemented:

- Illustrative Masterplan of Sizewell Link Road (Figures 2.1-2.7 in in Chapter 2 of Volume 6)

2.5 Post-Development delivery risks

2.5.1 Difficulty of creating or restoring a habitat

This 'risk' relates to the difficulty of the habitat restoration or recreation. There are four bands from Low difficulty, to Very high difficulty, with the value multiplier shown below in Table 7.

Table 7: Difficulty categories and multiplier

Category	Multiplier
Very high	0.1
High	0.33
Medium	0.67
Low	1

There is also different terminology and different treatment for the mechanism by which habitat are created. For example, different biodiversity change scenarios carry different levels of risk and the multipliers are applied differently to reflect this. Three distinct biodiversity habitat change scenarios are recognised in the biodiversity metric 2.0:

- **Habitat creation.** Where one habitat type is replaced by another or the habitat is destroyed (e.g. by development works) and the same habitat is recreated.
- **Habitat enhancement** of an existing habitat to improve its distinctiveness and / or condition. An example of restoration would be the transformation of a derelict chalk grassland dominated by scrub and coarse grasses to a continuous area of chalk grassland with isolated woody species and an abundance of fine-leaved grasses.
- **Accelerated habitat succession.** This recognises that certain interventions are comparable with ecological succession processes which result in a more distinctive habitat type (for example, grassland changing into scrub and ultimately woodland). The biodiversity value of the original habitat is not abruptly lost, but gradually changes as the new habitat type emerges. Accelerated succession interventions are subject to 'trading down' principles. Accelerated succession is a purposeful sustained intervention and it is envisaged that there are a limited number of situations where this would apply. For example, the planting of an existing grassland with thorny shrubs to facilitate natural tree regeneration to establish a woodland without removing the grassland.

Habitat creation and accelerate succession have the greatest risk, while enhancement carries less risk. It should be noted that accelerated succession is not recognised as an option for hedgerows.

2.5.2 Temporal risk

Many factors influence how long a habitat takes to go from the point of creation or restoration to the desired end point condition. Factors are often site dependent but can include soil nutrient status, soil types and pH, site preparation, climate and the neighbouring habitats and species matrix available to colonise the new or restored habitat. The timeframe is also resource dependent. With sufficient time and money most habitats can be recreated more rapidly but allowing a more gradual process may be more beneficial to wildlife in the longer term.

For the purposes of the Defra Biodiversity Metric 2.0 average time estimates need to be used, accepting that there will be variation from this central estimation. For example, some sites will take longer, where conditions are more nutrient enriched or higher altitude or north facing. Average estimates of the time to target condition were largely expert driven and build upon the considerations that shaped judgements of the difficulty to create or restore a habitat. They were additionally informed by field experience, industry case studies and a body of practical experience. The time to target condition varies between 0 and greater than 32 years, with 0 years having a multiplier of 1. The multiplier decreases by 3.5% per year.

2.5.3 Spatial risk

A separate risk multiplier is applied to post-development sites outside of the main development site. This incentivizes the utilisation of sites nearby to the development, for ecological and social reasons. Sites within the same local planning authority area (LPA) or National Character Area (NCA), it is deemed sufficiently close to address ecological and social concerns. Higher multipliers are assigned to more distant sites, as shown in Table 8.

Table 8: Off-site risk categories (LPA – local planning authority area, NCA – National Character Area)

Category	Multiplier
Compensation inside LPA or NCA of impact site.	1
Compensation outside LPA or NCA of impact site but in neighbouring LPA or NCA.	0.75
Compensation outside LPA or NCA of impact site and beyond neighbouring LPA or NCA.	0.5

This multiplier does not apply to the calculations carried out here as no off-site areas were included.

2.6 Double counting areas

The total area input into the tool can be greater than the total area of the site. This is due to the three-dimensional nature of certain habitats. For example, the area covered by a tree is approximately the area

covered by its canopy, but if an area of grassland is underneath, both should be included in the metric. As such the area under the tree is ‘counted’ twice and can result in the area in the metric being larger than the area of the site.

2.7 Calculation of gains or losses

The net change in biodiversity or hedgerow units on and off-site is calculated within the tool by subtracting the baseline units from the post-development units. The overall net change is the sum of the change in units on-site and off-site. The percentage net gain is then calculated by dividing this overall net change by the number of baseline units on the site, as shown in the equation below:

$$\text{overall percentage net gain} = \frac{\text{change in units on site} + \text{change in units off site}}{\text{baseline units on site}} \times 100$$

A positive value indicates a net gain has been made and a negative value indicates a net loss has been made.

2.8 Changes in broad habitat type calculations

The UK habitat classification system is hierarchical in structure, so specific habitat types can be grouped into broad habitat types. The changes in area and biodiversity units associated with each of these broad habitat types was calculated using the baseline and post-development data.

2.9 Areas excluded from the assessment

The metric is not designed to assess impacts to habitats within statutory designated sites or “irreplaceable” habitats, as defined in Baker et al. (2019). There are no irreplaceable habitats, such as ancient woodland, or statutory designated sites present on the proposed development.

2.10 Assumptions and limitations

The following assumptions, were made to complete the assessment:

- The difficulty factors applied currently significantly reduce credits calculations for habitats such as acid grassland, calcareous grassland and heathland, resulting in a lower overall unit values when attempting to create or enhance to these habitats. In the main development site dry acid grassland is a large component of the target community and has resulted in such a credit reduction. The Beta version of the metric tool may be amended in the future to more evenly weight these units.
- Arcadis have used third party data as part of the assessments of the post-development and off-site habitats.
- Assumptions on the condition of the baseline habitats are inferred from existing data. No specific surveys or assessments were undertaken. Further, access was not available to all areas within the red line boundary. As such assumptions were made regarding the habitats present and their condition. It is recommended that ground truthing surveys are undertaken to confirm these habitat and condition assessment assumptions.
- Should a target be set for percentage net gain of biodiversity units, it is recommended that the condition scores of habitats to be created and enhanced are part of any subsequent management plan so that the conditions are appropriately targeted within the works as achieving net gain will be reliant on achieving the set condition scores.
- The tool released by Natural England for assessing ecological connectivity was released in December 2019, but it was found to be non-functional. As such previous guidance on professional judgement was used to assess available habitat data and satellite mapping to evaluate the connectivity of each habitat parcel.
- Baseline data was largely collected in the format of a Phase 1 Habitat Survey, but a conversion was required to UK habitat classification typology to enter this data into the metric.

It is not considered that these assumptions introduce a level of uncertainty into the assessment that would affect the veracity of the assumptions.

3 BASELINE CONDITIONS AND VALUATION (PRE-CONSTRUCTION)

The Sizewell Link Road Site is approximately 101ha in area. This section describes each of the habitats listed on site, shown in Figures 7.3-7.5 in Appendix 7A of Volume 6. Codes utilised in this section are those from the JNCC Phase 1 Habitat Survey Handbook (JNCC, 2010). Table 9 details the UK habitat classification types used in the Defra Metric 2.0 and how they relate to the Phase 1 Habitat Types. Also presented are the valuations of the condition, ecological connectivity and strategic significance of each habitat type. The baseline currently delivers 227.28 biodiversity units for habitats. When data was entered into the tool, some of the habitat parcels were divided up for the purposes of data handling.

Hedgerows are assessed separately to habitats by the metric. Table 10 follows the same format as Table 9, but details hedgerows, rather than areas of habitat. The baseline currently delivers 97.51 hedgerow units from 9.30km of hedgerows.

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Table 9: Baseline biodiversity units for areas of habitat within the Sizewell C Sizewell Link Road, detailing the Phase 1 habitat and UK habitat conversions

Phase 1 habitat type	UK habs/ broad habitat	UK habs/habitat type	Area (ha)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Habitat units
Broadleaved semi-natural woodland	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	0.57	High	Moderate	Low	Location ecologically desirable but not in local strategy	7.52
Broadleaved plantation woodland	Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.07	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	0.62
Dense scrub	Heathland and shrub	Heathland and shrub - Mixed scrub	0.7	Medium	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	6.16
Neutral semi-improved grassland	Grassland	Grassland - Modified grassland	2.01	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	4.02
Improved grassland	Grassland	Grassland - Modified grassland	0.42	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	0.84
Species-poor semi-improved grassland	Grassland	Grassland - Modified grassland	0.3	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	1.20
Tall ruderal	Sparsely vegetated land	Sparsely vegetated land - Ruderal/Ephemeral	0.13	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	0.26
Standing water	Lakes	Lakes - Ponds (Priority Habitat)	0.07	High	Fairly Poor	Low	Area/compensation not in local strategy/ no local strategy	0.63
Tall ruderal	Sparsely vegetated land	Sparsely vegetated land - Ruderal/Ephemeral	0.06	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	0.24
Hardstanding	Urban	Urban - Developed land; sealed surface	4.2	V. Low	N/A - Other	N/A	Area/compensation not in local strategy/ no local strategy	0.00

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Phase 1 habitat type	UK habs/ broad habitat	UK habs/habitat type	Area (ha)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Habitat units
Arable	Cropland	Cropland - Non-cereal crops	75.64	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	151.28
Dry ditch	Lakes	Lakes - Ditches	0.16	Medium	Poor	Low	Area/compensation not in local strategy/ no local strategy	0.64
Scattered scrub	Heathland and shrub	Heathland and shrub - Mixed scrub	0.02	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	0.16
Broadleaved scattered trees	Woodland and forest	Woodland and forest - Wood- pasture and parkland	0.1	High	Good	Medium	Location ecologically desirable but not in local strategy	2.18
Broadleaved scattered trees	Woodland and forest	Woodland and forest - Wood- pasture and parkland	0.16	High	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	2.11
Coniferous scattered trees	Woodland and forest	Woodland and forest - Other coniferous woodland	0.01	Low	Good	Medium	Area/compensation not in local strategy/ no local strategy	0.07
Coniferous scattered trees	Woodland and forest	Woodland and forest - Other coniferous woodland	0.01	Low	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	0.04
Area not surveyed – arable.	Cropland	Cropland - Non-cereal crops	0.6	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	1.20
Area not surveyed – arable.	Cropland	Cropland - Non-cereal crops	3.12	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	6.24
Area not surveyed – arable.	Cropland	Cropland - Non-cereal crops	8.28	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	16.56

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Phase 1 habitat type	UK habs/ broad habitat	UK habs/habitat type	Area (ha)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Habitat units
Area not surveyed – semi-natural broadleaved woodland	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	0.27	High	Moderate	Low	Location ecologically desirable but not in local strategy	3.56
Area not surveyed – running water	Lakes	Lakes - Ditches	0.03	Medium	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	0.26
Area not surveyed – species-poor semi-improved grassland	Grassland	Grassland - Modified grassland	0.23	Low	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	1.01
Area not surveyed – semi-natural broadleaved woodland	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	0.04	High	Moderate	Low	Location ecologically desirable but not in local strategy	0.53
Area not surveyed – semi-natural broadleaved woodland	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	0.92	High	Moderate	Low	Location ecologically desirable but not in local strategy	12.14
Area not surveyed – semi-improved neutral grassland	Grassland	Grassland - Other neutral grassland	0.01	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	0.08
Area not surveyed – arable	Cropland	Cropland - Non-cereal crops	0.01	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	0.02
Area not surveyed – arable	Cropland	Cropland - Non-cereal crops	2.55	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	5.10
Area not surveyed – species-poor semi-improved species poor grassland	Grassland	Grassland - Modified grassland	0.02	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	0.08
Area not surveyed – species-poor semi-improved species poor grassland	Grassland	Grassland - Modified grassland	0.1	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	0.40

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Phase 1 habitat type	UK habs/ broad habitat	UK habs/habitat type	Area (ha)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Habitat units
Area not surveyed – dense scrub	Heathland and shrub	Heathland and shrub - Mixed scrub	0.17	Medium	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	1.50
Area not surveyed – arable	Cropland	Cropland - Non-cereal crops	0	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	0.00
Area not surveyed – species-poor semi-improved species poor grassland	Grassland	Grassland - Modified grassland	0.05	Low	Fairly Poor	Low	Area/compensation not in local strategy/ no local strategy	0.15
Area not surveyed – species-poor semi-improved species poor grassland	Grassland	Grassland - Modified grassland	0.15	Low	Fairly Poor	Low	Area/compensation not in local strategy/ no local strategy	0.45
Area not surveyed – arable	Cropland	Cropland - Non-cereal crops	0.01	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	0.02
Totals			101.19					227.28

Table 10: Baseline biodiversity units for hedgerows within Sizewell C Sizewell Link Road, detailing the Phase 1 habitat and UK habitat conversions

Phase 1 habitat type	Hedgerow type	Length (km)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Hedgerow units
Intact native species rich hedge	Native Species Rich Hedgerow	0.529	Medium	Good	High	Area/compensation not in local strategy/ no local strategy	7.30
Intact native species rich hedge	Native Species Rich Hedgerow - Associated with bank or ditch	0.137	High	Good	High	Area/compensation not in local strategy/ no local strategy	2.84
Intact native species rich hedge	Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.053	High	Good	High	Area/compensation not in local strategy/ no local strategy	1.10

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Phase 1 habitat type	Hedgerow type	Length (km)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Hedgerow units
Species-poor intact hedge	Native Hedgerow	0.318	Low	Moderate	High	Area/compensation not in local strategy/ no local strategy	1.46
Species-poor intact hedge	Native Hedgerow with trees - Associated with bank or ditch	0.361	Medium	Moderate	High	Area/compensation not in local strategy/ no local strategy	3.32
Species-poor intact hedge	Native Hedgerow	0.009	Low	Good	High	Area/compensation not in local strategy/ no local strategy	0.06
Species-poor intact hedge	Native Hedgerow - Associated with bank or ditch	0.221	Medium	Moderate	High	Area/compensation not in local strategy/ no local strategy	2.03
Native species rich defunct hedge	Native Hedgerow	0.276	Low	Poor	High	Area/compensation not in local strategy/ no local strategy	0.63
Species poor defunct hedge	Native Hedgerow - Associated with bank or ditch	0.436	Medium	Poor	High	Area/compensation not in local strategy/ no local strategy	2.01
Species poor defunct hedge	Native Hedgerow with trees - Associated with bank or ditch	0.128	Medium	Poor	High	Area/compensation not in local strategy/ no local strategy	0.59
Species poor defunct hedge	Native Hedgerow with trees	0.019	Low	Poor	High	Area/compensation not in local strategy/ no local strategy	0.04
Species poor defunct hedge	Native Hedgerow	0.219	Low	Poor	High	Area/compensation not in local strategy/ no local strategy	0.50
Native species rich hedge and trees	Native Species Rich Hedgerow with trees - Associated with bank or ditch	2.318	High	Good	High	Area/compensation not in local strategy/ no local strategy	47.98
Native species rich hedge and trees	Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.336	High	Moderate	High	Area/compensation not in local strategy/ no local strategy	4.64
Native species rich hedge and trees	Native Species Rich Hedgerow with trees	0.644	Medium	Moderate	High	Area/compensation not in local strategy/ no local strategy	5.92
Species poor hedge and trees	Native Hedgerow with trees	0.327	Low	Moderate	High	Area/compensation not in local strategy/ no local strategy	1.50

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Phase 1 habitat type	Hedgerow type	Length (km)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Hedgerow units
Species poor hedge and trees	Native Hedgerow with trees	0.098	Low	Good	High	Area/compensation not in local strategy/ no local strategy	0.68
Species poor hedge and trees	Native Hedgerow with trees - Associated with bank or ditch	0.074	Medium	Moderate	High	Area/compensation not in local strategy/ no local strategy	0.68
Area not surveyed – hedge with trees with ditch*	Native Hedgerow with trees - Associated with bank or ditch	0.29	Medium	Moderate	High	Area/compensation not in local strategy/ no local strategy	2.67
Area not surveyed – hedge with trees*	Native Hedgerow with trees	0.483	Low	Moderate	High	Area/compensation not in local strategy/ no local strategy	2.22
Area not surveyed – hedge*	Native hedgerow	2.027	Low	Moderate	High	Area/compensation not in local strategy/ no local strategy	9.32
Total		9.30					97.51

*Hedges that were not surveyed were assigned to a hedgerow typology, not a phase 1 typology.

4 POST-DEVELOPMENT CONDITIONS AND VALUATION

The illustrative masterplan, shown in Figures 2.1-2.7 in Chapter 2 of Volume 6, was used as the basis for these calculations.

The sources used to assess the biodiversity value of each of these habitat compartments are presented in Section 2.4.

The on-site post development biodiversity units total 371.26, representing an increase of 143.98 biodiversity units from the baseline 227.28 units. This loss will be offset by gains in biodiversity elsewhere within the main development site and additional development sites.

A total of 102.78 hedgerow units would be delivered from 17.62km of hedgerows post-development from a baseline of 97.51 hedgerow units resulting in an increase of 5.27 units. This is a 5.40% increase. This is partly the result of the length of hedgerows on the site predicted to almost double from 9.30km to 17.62km.

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Table 11: Biodiversity units for Sizewell C Sizewell Link Road from habitats post-development

Habitat type	UK habs/ broad habitat	UK habs/habitat type	Area (ha)	Habitat scenario for creation	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Time to target condition	Difficulty	Biodiversity units
Broadleaved semi-natural woodland	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	0.57	Retained	High	Moderate	Low	Location ecologically desirable but not in local strategy	N/A	N/A	7.52
Dense scrub	Heathland and shrub	Heathland and shrub - Mixed scrub	0.37	Retained	Medium	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	N/A	N/A	3.26
Standing water	Lakes	Lakes - Ponds (Priority Habitat)	0.04	Retained	High	Fairly Poor	Low	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.36
Hardstanding	Urban	Urban - Developed land; sealed surface	0.76	Retained	V. Low	N/A - Other	N/A	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.00
Dry ditch	Lakes	Lakes - Ditches	0.04	Retained	Medium	Poor	Low	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.16
Broadleaved scattered trees	Woodland and forest	Woodland and forest - Wood-pasture and parkland	0.03	Retained	High	Good	Medium	Location ecologically desirable but not in local strategy	N/A	N/A	0.65

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Habitat type	UK habs/ broad habitat	UK habs/habitat type	Area (ha)	Habitat scenario for creation	Distinctiven ess	Condition	Ecological connectivity	Strategic significance	Time to target condition	Difficulty	Biodiversity units
Broadleaved scattered trees	Woodland and forest	Woodland and forest - Wood-pasture and parkland	0.02	Retained	High	Moderate	Medium	Area/compen sation not in local strategy/ no local strategy	N/A	N/A	0.26
Area not surveyed – semi-natural broadleaved woodland	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	0.12	Retained	High	Moderate	Low	Location ecologically desirable but not in local strategy	N/A	N/A	1.58
Hardstanding	Urban	Developed land; sealed surface	9.46	Created	V. Low	N/A - Other	N/A	Area/compen sation not in local strategy/ no local strategy	0	Low	0.00
Grassed embankment/ cuttings*	Grassland	Modified grassland	8.47	Created	Low	Poor	Low	Area/compen sation not in local strategy/ no local strategy	1	Low	16.35
Proposed planting*	Woodland and forest	Other woodland; broadleaved	13.1	Created	Medium	Moderate	Medium	Area/compen sation not in local strategy/ no local strategy	30	Medium	26.52
Grassed areas*	Grassland	Other neutral grassland	34.16	Created	High	Good	Low	Area/compen sation not in local strategy/ no local strategy	30	High	240.22

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Habitat type	UK habs/ broad habitat	UK habs/habitat type	Area (ha)	Habitat scenario for creation	Distinctiven ess	Condition	Ecological connectivity	Strategic significance	Time to target condition	Difficulty	Biodiversity units
Infiltration basin*	Urban	Sustainable urban drainage feature	2.36	Created	Low	Good	Medium	Area/compensation not in local strategy/ no local strategy	5	Medium	8.73
Swale*	Urban	Bioswale	1.58	Created	Low	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	1	Medium	4.49
Semi-natural broadleaved woodland	Woodland and forest	Lowland mixed deciduous woodland	0.02	Created	High	Fairly Good	Low	Location ecologically desirable but not in local strategy	32+	High	0.03
Plantation broadleaved woodland	Woodland and forest	Other woodland; broadleaved	0.06	Created	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	30	Medium	0.12
Dense scrub	Heathland and shrub	Mixed scrub	0.04	Created	Medium	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	3	Low	0.32
Neutral semi- improved grassland	Grassland	Other neutral grassland	0.61	Created	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	10	Low	3.42
Improved grassland	Grassland	Modified grassland	0.26	Created	Low	Moderate	Low	Area/compensation not in local strategy/	10	Low	0.73

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Habitat type	UK habs/ broad habitat	UK habs/habitat type	Area (ha)	Habitat scenario for creation	Distinctiven ess	Condition	Ecological connectivity	Strategic significance	Time to target condition	Difficulty	Biodiversity units
								no local strategy			
Species-poor semi- improved grassland	Grassland	Modified grassland	0.14	Created	Low	Moderate	Low	Area/comp ensation not in local strategy/ no local strategy	10	Low	0.39
Tall ruderal	Sparsely vegetated land	Ruderal/Ephe meral	0.05	Created	Low	Poor	Low	Area/comp ensation not in local strategy/ no local strategy	1	Low	0.10
Arable	Cropland	Non-cereal crops	28.64	Created	Low	N/A - Agricultural	Low	Area/comp ensation not in local strategy/ no local strategy	1	Low	55.28
Broadleaved scattered trees	Woodland and forest	Wood-pasture and parkland	0.02	Created	High	Good	Medium	Location ecologically desirable but not in local strategy	32+	Very High	0.01
Broadleaved scattered trees	Woodland and forest	Wood-pasture and parkland	0.03	Created	High	Moderate	Medium	Area/comp ensation not in local strategy/ no local strategy	32+	Very High	0.01
Coniferous scattered trees	Woodland and forest	Other coniferous woodland	0.01	Created	Low	Moderate	Medium	Area/comp ensation not in local strategy/ no local strategy	25	Low	0.02

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Habitat type	UK habs/ broad habitat	UK habs/habitat type	Area (ha)	Habitat scenario for creation	Distinctiven ess	Condition	Ecological connectivity	Strategic significance	Time to target condition	Difficulty	Biodiversity units
Species-poor semi- improved grassland	Grassland	Modified grassland	0.23	Created	Low	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	10	Low	0.71
Broadleaved semi-natural woodland	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	0.57	Retained	High	Moderate	Low	Location ecologically desirable but not in local strategy	N/A	N/A	7.52
Dense scrub	Heathland and shrub	Heathland and shrub - Mixed scrub	0.37	Retained	Medium	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	N/A	N/A	3.26
Standing water	Lakes	Lakes - Ponds (Priority Habitat)	0.04	Retained	High	Fairly Poor	Low	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.36
Hardstanding	Urban	Urban - Developed land; sealed surface	0.76	Retained	V. Low	N/A - Other	N/A	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.00
Dry ditch	Lakes	Lakes - Ditches	0.04	Retained	Medium	Poor	Low	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.16

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Habitat type	UK habs/ broad habitat	UK habs/habitat type	Area (ha)	Habitat scenario for creation	Distinctiven ess	Condition	Ecological connectivity	Strategic significance	Time to target condition	Difficulty	Biodiversity units
Broadleaved scattered trees	Woodland and forest	Woodland and forest - Wood-pasture and parkland	0.03	Retained	High	Good	Medium	Location ecologically desirable but not in local strategy	N/A	N/A	0.65
Broadleaved scattered trees	Woodland and forest	Woodland and forest - Wood-pasture and parkland	0.02	Retained	High	Moderate	Medium	Area/compen sation not in local strategy/ no local strategy	N/A	N/A	0.26
Area not surveyed – semi-natural broadleaved woodland	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	0.12	Retained	High	Moderate	Low	Location ecologically desirable but not in local strategy	N/A	N/A	1.58
Hardstanding	Urban	Developed land; sealed surface	9.46	Created	V. Low	N/A - Other	N/A	Area/compen sation not in local strategy/ no local strategy	0	Low	0.00
Grassed embankment/ cuttings	Grassland	Modified grassland	8.47	Created	Low	Poor	Low	Area/compen sation not in local strategy/ no local strategy	1	Low	16.35
Proposed planting	Woodland and forest	Other woodland; broadleaved	13.1	Created	Medium	Moderate	Medium	Area/compen sation not in local strategy/ no local strategy	30	Medium	26.52

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Habitat type	UK habs/ broad habitat	UK habs/habitat type	Area (ha)	Habitat scenario for creation	Distinctiven ess	Condition	Ecological connectivity	Strategic significance	Time to target condition	Difficulty	Biodiversity units
Grassed areas	Grassland	Lowland calcareous grassland	34.16	Created	High	Good	Low	Area/compensation not in local strategy/ no local strategy	30	High	69.68
Infiltration basin	Urban	Sustainable urban drainage feature	2.36	Created	Low	Good	Medium	Area/compensation not in local strategy/ no local strategy	5	Medium	8.73
Swale	Urban	Bioswale	1.58	Created	Low	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	1	Medium	4.49
Semi-natural broadleaved woodland	Woodland and forest	Lowland mixed deciduous woodland	0.02	Created	High	Fairly Good	Low	Location ecologically desirable but not in local strategy	32+	High	0.03
Plantation broadleaved woodland	Woodland and forest	Other woodland; broadleaved	0.06	Created	Medium	Moderate	Low	Location ecologically desirable but not in local strategy	30	Medium	0.12
Dense scrub	Heathland and shrub	Mixed scrub	0.04	Created	Medium	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	3	Low	0.32

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Habitat type	UK habs/ broad habitat	UK habs/habitat type	Area (ha)	Habitat scenario for creation	Distinctiven ess	Condition	Ecological connectivity	Strategic significance	Time to target condition	Difficulty	Biodiversity units
Neutral semi-improved grassland	Grassland	Other neutral grassland	0.61	Created	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	10	Low	3.42
Improved grassland	Grassland	Modified grassland	0.26	Created	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	10	Low	0.73
Species-poor semi-improved grassland	Grassland	Modified grassland	0.14	Created	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	10	Low	0.39
Tall ruderal	Sparsely vegetated land	Ruderal/Ephemeral	0.05	Created	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	1	Low	0.10
Arable	Cropland	Non-cereal crops	28.64	Created	Low	N/A - Agricultural	Low	Area/compensation not in local strategy/ no local strategy	1	Low	55.28
Broadleaved scattered trees	Woodland and forest	Wood-pasture and parkland	0.02	Created	High	Good	Medium	Location ecologically desirable but not in local strategy	32+	Very High	0.01

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Habitat type	UK habs/ broad habitat	UK habs/habitat type	Area (ha)	Habitat scenario for creation	Distinctiven ess	Condition	Ecological connectivity	Strategic significance	Time to target condition	Difficulty	Biodiversity units
Broadleaved scattered trees	Woodland and forest	Wood-pasture and parkland	0.03	Created	High	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	32+	Very High	0.01
Coniferous scattered trees	Woodland and forest	Other coniferous woodland	0.01	Created	Low	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	25	Low	0.02
Species-poor semi- improved grassland	Grassland	Modified grassland	0.23	Created	Low	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	10	Low	0.71
Broadleaved semi-natural woodland	Woodland and forest	Woodland and forest - Lowland mixed deciduous woodland	0.57	Retained	High	Moderate	Low	Location ecologically desirable but not in local strategy	N/A	N/A	7.52
Dense scrub	Heathland and shrub	Heathland and shrub - Mixed scrub	0.37	Retained	Medium	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	N/A	N/A	3.26
Totals			101.19								371.26

*Habitat typologies are from the illustrative masterplan (Figures 2.1-2.7 in Chapter 2).

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Table 12: Biodiversity units for Sizewell C Sizewell Link Road from hedgerows post-development

Hedgerow type	Length (km)	Habitat scenario for creation	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Time to target condition	Difficulty	Habitat units
Native Species Rich Hedgerow	0.121	Retained	Medium	Good	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	1.67
Native Species Rich Hedgerow - Associated with bank or ditch	0.034	Retained	High	Good	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.70
Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.034	Retained	High	Good	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.70
Native Hedgerow	0.115	Retained	Low	Moderate	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.53
Native Hedgerow with trees - Associated with bank or ditch	0.235	Retained	Medium	Moderate	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	2.16
Native Hedgerow	0.009	Retained	Low	Good	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.06
Native Hedgerow - Associated with bank or ditch	0.089	Retained	Medium	Moderate	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.82
Native Hedgerow	0.151	Retained	Low	Poor	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.35
Native Hedgerow - Associated with bank or ditch	0.068	Retained	Medium	Poor	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.31
Native Hedgerow with trees - Associated with bank or ditch	0.057	Retained	Medium	Poor	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.26
Native Hedgerow with trees	0.018	Retained	Low	Poor	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.04
Native Hedgerow	0.143	Retained	Low	Poor	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.33

Sizewell C Sizewell Link Road – Biodiversity Metric Calculations

Hedgerow type	Length (km)	Habitat scenario for creation	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Time to target condition	Difficulty	Habitat units
Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.980	Retained	High	Good	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	20.29
Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.296	Retained	High	Moderate	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	4.08
Native Species Rich Hedgerow with trees	0.114	Retained	Medium	Moderate	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	1.05
Native Hedgerow with trees - Associated with bank or ditch	0.134	Retained	Medium	Moderate	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	1.23
Native hedgerow	1.132	Retained	Low	Moderate	High	Area/compensation not in local strategy/ no local strategy	N/A	N/A	5.21
Native Species Rich Hedgerow with trees	13.889	Created	Medium	Good	High	Area/compensation not in local strategy/ no local strategy	20	Medium	62.98
Total	17.619								102.78

5 CHANGES IN BROAD HABITAT TYPES

The development will result in changes to the amount and quality of the habitats on the site. The UK habitat classification system used within the metric contains a tiered system, grouping similar habitats into “Broad habitats” and more specific “Habitat types”. For example, “Grassland” is a “Broad habitat”, that can contain “Lowland calcareous grassland” and “Other neutral grassland”, among others. The area and biodiversity unit changes in these broad habitat types are shown in Table 13 and Table 14.

The highest value habitats, woodland and forest and grassland, are increasing in area and biodiversity units. Cropland is considered to be the least valuable habitat and therefore the most acceptable habitat to lose for this scheme. As a result, reductions in the area of cropland is predicted. For the remaining habitats only small changes in area and units are predicted.

Table 13: The changes in the total areas of the broad habitat types

Broad habitat type	On-site baseline	On-site post-development	Change in area
Cropland	90.21	28.64	-61.57
Grassland	3.29	43.87	40.58
Heathland and shrub	0.89	0.41	-0.48
Lakes	0.26	0.08	-0.18
Sparsely vegetated land	0.19	0.05	-0.14
Urban	4.20	14.16	9.96
Woodland and forest	2.15	13.98	11.83

Table 14: The changes in the total biodiversity unit values of the broad habitat types

Broad habitat type	On-site baseline	On-site post-development	Change in biodiversity units
Cropland	180.42	55.28	-125.14
Grassland	8.23	261.81	253.58
Heathland and shrub	7.82	3.57	-4.24
Lakes	1.53	0.52	-1.01
Sparsely vegetated land	0.50	0.10	-0.40
Urban	0.00	13.23	13.23
Woodland and forest	28.78	36.75	7.97

6 AREAS EXCLUDED FROM ASSESSMENT

No statutory designated sites or 'irreplaceable' habitats were present within the site, so no areas were excluded from the assessment.

7 SUMMARY

The summary results of the assessment, using the Defra biodiversity metric 2.0 calculator are presented in Plate 1. 2, below.

Plate 1. 2: Results summary

On-site baseline	Habitat units	227.28
	Hedgerow units	97.51
	River units	0.00
On-site post-intervention (Including habitat retention, creation, enhancement & succession)	Habitat units	371.26
	Hedgerow units	102.78
	River units	0.00
Off-site baseline	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation, enhancement & succession)	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention/creation)	Habitat units	143.98
	Hedgerow units	5.27
	River units	0.00
Total net % change (including all on-site & off-site habitat creation + retained habitats)	Habitat units	63.35%
	Hedgerow units	5.40%
	River units	0.00%

Under current plans, a 63.35% increase in biodiversity units and 5.40% increase in hedgerow units is predicted.

The changes in the area and biodiversity units of each broad habitat type are shown in Table 15. The habitats considered to be most valuable, grassland and woodland and forest, are both increasing in area and unit values. Cropland is considered to be the least valuable habitat and therefore the most acceptable habitat to lose for this scheme. As a result, the largest losses are in cropland, resulting in the overall net loss of biodiversity units.

Table 15: Changes in area and biodiversity units of broad habitat types

Broad habitat type	Change in area	Change in biodiversity units
Cropland	-61.57	-125.14
Grassland	40.58	253.58
Heathland and shrub	-0.48	-4.24
Lakes	-0.18	-1.01
Sparsely vegetated land	-0.14	-0.40
Urban	9.96	13.23
Woodland and forest	11.83	7.97

8 DEVELOPMENT OVERVIEW RESULTS

The results of this assessment can be considered within the context of the portion of the development that has been assessed using the biodiversity metric (i.e. main development site and three of the AD sites). These AD sites were chosen for assessment via the metric as they were considered to have potential for permanent habitat loss. Table 16 shows the changes in biodiversity units for each of these assessed sections. An increase of 289.56 units is predicted across these main development site and associated developments, corresponding to an approximate 18% net gain. This net gain demonstrates that the portion of the development that has been assessed using the biodiversity metric, is predicted to have a positive impact on the biodiversity value of the Sizewell area.

Table 16: Overview of entire development results

Site	Baseline units	Change in units	Percentage change
Main development site	1265.25	129.03	10.20%
Two village bypass	133.29	16.73	12.55%
Sizewell Link Road	227.28	143.98	63.35%
Yoxford roundabout	5.55	-0.18	-3.24%
Net	1631.37	289.56	17.75%

9 CONCLUSION

Under current proposals it is estimated that there is a potential increase in biodiversity unit values for habitats of 63.35%, and an increase in hedgerow unit values for hedgerows of 5.40%. This increase in hedgerow units is partly due to the predicted doubling of the total length of hedgerows on the site from 9.30km to 17.62km.

In addition to the Sizewell Link Road, the main development site and a series of other off-site associated developments were also assessed via the biodiversity metric (Two Village Bypass and Yoxford Roundabout) and these are presented in separate reports. These sites were chosen for assessment via the metric as they were considered to have potential for permanent habitat loss. When considered as a whole there is predicted to be an approximate 18% increase in biodiversity net gain across the main development site and three associated developments.

An increase in both area and unit value is predicted for the most valuable habitats on the site; grassland and woodland and forest. Cropland is predicted to undergo reductions in area and unit value. However, as a habitat, this was considered to be the most acceptable habitat to replace in terms of biodiversity value.

The achievement of these units scores is reliant upon achieving the target condition for the created habitats, which will require creation and management plans.

It is recommended that post planning, additional surveys are undertaken at an appropriate point in the planning process to update this report and to inform the necessary detailed design, habitat creation and management plans.

10 REFERENCES

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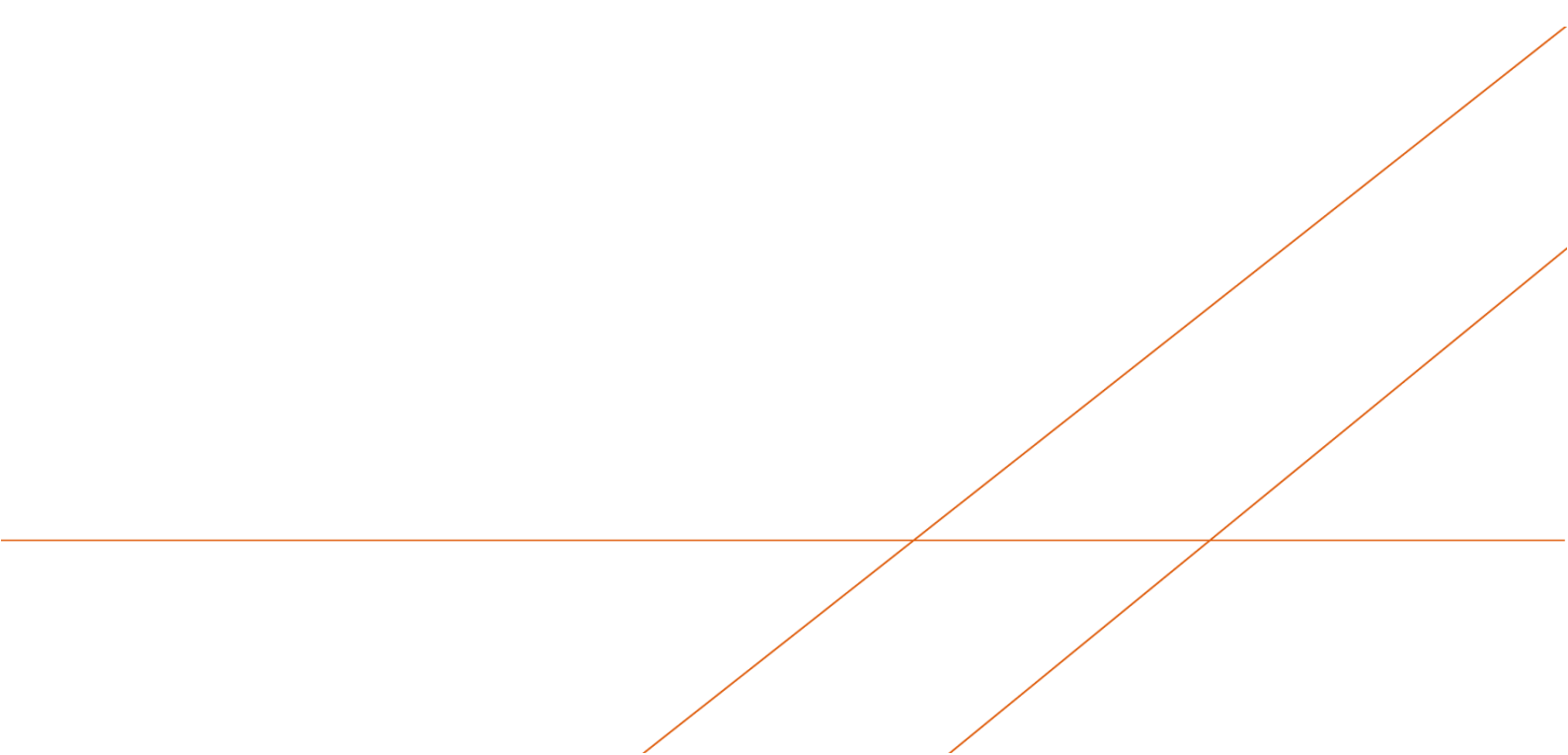
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VOLUME 6, CHAPTER 7, APPENDIX 7A:
ANNEX 7A.5:
SIZEWELL LINK ROAD – DRAFT GREAT CRESTED NEWT
MITIGATION LICENCE APPLICATION

1 INTRODUCTION

1.1 Background and Scheme Overview

1.1.1 EDF Energy 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 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 document relates to the proposed 'Sizewell Link Road' development, which comprises the creation of a permanent 6.8km single carriageway road linking the A12 to the Sizewell C main development site, which begins at the A12 south of Yoxford, bypasses Middleton Moor and Theberton before joining the B1122. to alleviate traffic from the B1122 through Theberton and Middleton Moor.

1.2 Purpose of this Document

1.2.1 Survey work carried out with respect to the ponds within the Sizewell Link Road (SLR) site recorded evidence of Great Crested Newt (GCN), such that the proposed development will result in the temporarily destruction of GCN breeding ponds and has the potential to cause injury/ mortality to this protected species. Accordingly, in order to facilitate the SLR development, a draft GCN mitigation licence application has been prepared in support of the DCO application. This would be updated and submitted for approval to Natural England at the appropriate juncture.

1.2.2 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 compiled subsequent to the granting of the DCO, and submitted along with the documents which form this Annexe, updated as necessary.



SIZEWELL C – SIZEWELL LINK ROAD – DRAFT GREAT CRESTED NEWT MITIGATION LICENCE APPLICATION

WML-A14-2 GCN METHOD STATEMENT

**The Conservation of Habitats and Species Regulations 2017 (as amended)
Method Statement to support application for licence under Regulation 55(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?...

B - Background & Site Info

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.

This is a draft EPS licence to be submitted with the application to grant a Development Consent Order (DCO) a Habitat Management and Maintenance Plan will be evolved and will be submitted to support the formal licence application.

Please provide below a brief summary of how the current application relates to the larger project.

Current application comprises a link road between the main development site (Sizewell C, the new nuclear power station) and the nearby Main Road (A12).

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 client and the LPA.

Notes: Include any projects within 100m of site boundary, and any further away that are likely to seriously

B - Background & Site Info

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 impact the same GCN population as covered within this application. A review of European Protected Species applications within the past five and located within 100m of the site, was undertaken using MAGIC. This review returned no records of European Protected Species Licences for GCN within 100m of the site.

A single granted GCN licence is present 4.1km south west of the site (ref: EPSM2013-5525), dated between 2013 and 2017. This licence involved the destruction of a GCN breeding site. There are a number of main roads between the licenced site and the site that this application refers to, it is therefore unlikely that the works set out within this licence will impact the same population of GCN. A further three historic applications (references: EPSM2009-1044, EPSM2009-1450 and EPSM2012-460) dated between 2009 and 2014 were discovered over 6km of the site. These licences also involved the destruction of GCN resting places. Due to their distance from the development 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.

No pre-existing survey data

C1.2 Age of pre-existing survey data (years between now and latest survey)

C1.3 Source(s) of pre-existing survey data; also include a copy or summary in an appendix

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

611 records of GCN within 10km on NBN. This equates to ~6 record per km². There is a high density of ponds within the 10km area surrounding the site and 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 Figure C3.2a

- Provide justification for the area surveyed (whether 250m or 500m of the site)

eDNA surveys were conducted on ponds within the redline and 500m of the site to inform this draft licence. A 500m survey area was adopted in accordance with Natural England's recommended buffer area for surveying ponds for GCN. Of the 107 ponds present within 500m, 53 ponds were not surveyed due to restricted landowner access (as shown on Figure C3.2a). In addition, a further 16 ponds were not surveyed due to being dry at the time of the 2019 survey work. Similarly, eight ponds present on OS mapping were no longer present at the time of the 2019 survey work. Additional population surveys will need to be conducted in order to inform the licence application.

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
P031	Large pond with scrubby edges, heavily shaded and no aquatic vegetation north of the site boundary.
P032	Very shallow field depression south of the site boundary.
P033	No description, south of the site boundary.
P034	No description, south of the site boundary.
P035	Woodland pond east of the site boundary.
P036	Large pond with bulrush around the pond edges. No aquatic vegetation and partly shaded by large trees, within the site boundary.
P037	No description, south of the site boundary.
P038	Leaf litter choked shallow pond shaded by numerous trees on the bank, south of the site boundary.
P039	No description, south of the site boundary.
P040	No description, south 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
P031		Yes	
P032		Yes	
P033		No - access permission denied	
P034		No - access permission denied	
P035		Yes	
P036		Yes	
P037		No - access permission denied	
P038		Yes	
P039		No - other reason	dry pond at time of survey
P040		No - other reason	dry pond at time of survey

Add more records here [Additional records page](#)

C3.4 Habitat description: terrestrial habitats.

What is the total area (ha) of the development site?

99.3

- 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 total area of the Scheme (DCO) boundary is 99.3ha. The DCO boundary predominately comprises large agricultural fields (arable land: 75.53ha) which may facilitate GCN migration/dispersal and potentially foraging but are considered suboptimal for GCN, lacking resting and overwintering opportunities. Terrestrial opportunities are largely restricted to field margins which are typically defined by hedgerow (c. 4391m of hedgerow is situated within the DCO boundary); however, areas of semi-natural woodland (0.50ha), plantation woodland (0.07ha), improved grassland (0.41ha), neutral semi-improved grassland (2.00ha), poor semi-

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improved grassland (0.30ha) and dense scrub (0.40ha) and ruderal vegetation (0.11ha) are present, providing higher quality terrestrial habitats. Areas of buildings and hardstanding (4.11ha) within the DCO boundary are of no value for GCN, and whilst a number of aquatic habitats in the form of ponds are also present (0.003ha). Access restrictions limited the areas of the site which could be surveyed, with approximately 15.88ha of land not having been surveyed to date.

The terrestrial habitats in the wider area are largely similar, comprising expansive agricultural fields with boundary hedgerows and woodland copses, whilst locally a high number of ponds are present.

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					
Pond ref	P031	P032	P033	P034	P035
SI1 - Location	1	1			1
SI2 - Pond area	0.93	0.3			0.1
SI3 - Pond drying	0.9	1			1
SI4 - Water quality	1	0.33			0.67
SI4 - Shade	1	0.9			1
SI6 - Fowl	0.67	1			1
SI7 - Fish	0.67	0.67			1
SI8 - Ponds	1	1			1
SI9 - Terr'l habitat	0.67	0.67			0.33
SI10 - Macrophytes	0.3	0.45			0.3
HSI	0.77	0.67			0.61

Date HSI assessment undertaken					
Pond ref	P036	P037	P038	P039	P040
SI1 - Location	1		1		
SI2 - Pond area	1		0.5		
SI3 - Pond drying	0.9		0.9		
SI4 - Water quality	0.67		0.67		
SI4 - Shade	1		0.7		
SI6 - Fowl	1		1		
SI7 - Fish	1		1		

C - Survey Info

SI8 - Ponds	1		1		
SI9 - Terr'l habitat	0.67		0.33		
SI10 - Macrophytes	0.4		0.3		
HSI	0.83		0.68		

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:

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:

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:

Method:	Refuge search	Pitfall	Night search	Other**
Effort				
No. of newts*				
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
P031	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P032	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P033	No - access permission denied	N/A
P034	No - access permission denied	N/A
P035	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P036	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P037	No - access permission denied	N/A
P038	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P039	Pond dry at time of survey	N/A
P040	Pond dry at time of survey	N/A

Add more records here [Additional records page](#)

C. Complete the following table

Pond reference	Date eDNA sample taken	Result (presence or absence)
P031	16/04/2019	Absent

C - Survey Info

P032	26/04/2019	Present
P033		N/A
P034		N/A
P035	16/04/2019	Absent
P036	27/06/2019	Present
P037		N/A
P038	17/04/2019	Absent
P039		N/A
P040		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](#)

Neil Madden: Sizewell C - Sizewell Link Road

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
P032	Yes	0		0.67			
P036	Yes	0		0.83			
P041	Yes	0		0.65			
P053	Yes	0		0.79			
P054	Yes	0		0.63			
P064	Yes	0		0.79			
P066	Yes	0		0.80			
P081	Yes	0		0.83			
P107	Yes	0		0.57			
P119	Yes	0		0.79			

*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: 0

** 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:

*** 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.

No peak counts as only eDNA survey data has been collected.

Site status assessment (see Section 5.8.5 of *Great crested newt mitigation guidelines* for guidance):

Quantitative	Unknown
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

C - Survey summary

Due to the lack of quantitative data available, as no population size class estimate surveys have been undertaken, the qualitative assessment of the site has assumed that a breeding population of GCN are present within the site and the surrounding area on a precautionary basis. Nevertheless, the habitats present within the site are largely agricultural and relatively common and widespread, it is therefore considered unlikely that the site will be of high value to GCN in the local area. The site is dominated by arable land, which is intensively farmed and considered suboptimal for GCN, due to the lack of resting and overwintering opportunities.

Given the scale of the site, in addition to the presence of hedgerows between the arable land that makes up the majority of the site and the surrounding area, it is considered unlikely that there are any significant dispersal barriers to newt distribution across the likely meta-population that exists within and adjacent to the site. Whilst roads such as the B1122 bisect portions of the site, this road supports various sections where kerbs are absent and the grassland field margins and hedgerows immediately abuts the road, maintaining connectivity. It is therefore possible that multiple metapopulations are present across the site and within the surrounding area.

- 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.

A constraint of the survey data available in support of this licence application is that only presence/ absence survey data has been collected by eDNA surveys and no population estimates have been undertaken, during the survey period, on the the ponds that have been found to support GCN.

- Justify why constrained survey data is considered to accurately represent the size and distribution of the GCN population(s) present

Whilst the surveys carried out to date have deviated from the GCNMG survey methodology, the presence/absence data, obtained to date, from the eDNA surveys is considered sufficient to inform this licence application. The ponds supporting GCN within the site that are to be impacted by the works will only temporarily lose their functionality and will be reinstated upon the completion of works. Moreover, a medium population of GCN present within each pond (given the favourable status of the onsite ponds but the lack of optimal terrestrial opportunities), has been assumed as a worst case scenario and it is considered that the mitigation measures provided are sufficient to safeguard GCN within the site.

[Further survey work to be carried out in 20XX]

[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 m² or m² to ha please [use this converter](#)

Total Area of Development (ha):

99.3

D1.1 Breakdown of terrestrial impacts

Permanent		Temporary	
Habitat type	Area lost (ha)	Habitat type	Area damaged (ha)
Plantation Woodland	0.01	Plantation Woodland	0.06
Semi-natural Woodland	0.39	Semi-natural Woodland	0.11
Dense Scrub	0.29	Dense Scrub	0.11
Neutral Semi-improved Grassland	1.41	Neutral Semi-improved Grassland	0.59
Improved Grassland	0.16	Improved Grassland	0.25
Poor Semi-improved Grassland	0.18	Poor Semi-improved Grassland	0.11
Tall Ruderal Vegetation	0.07	Tall Ruderal Vegetation	0.04
Arable Land	50.27	Arable Land	25.26
Hardstanding and Buildings	3.57	Hardstanding and Buildings	0.54
Unsurveyed (No access)	12.43	Unsurveyed (No access)	3.45
Total Loss	68.78	Total Damage	30.52

D1.2 Core, intermediate and distant terrestrial impacts

	Permanent	Temporary
	Area lost (ha)	Area damaged (ha)
Core (<50m from pond)	1.20	0.70
Intermediate (50-250m from pond)	11.86	5.65
Distant (>250m from pond)	55.72	24.17
Total (ha)	68.78	30.52

D1.3 Aquatic impacts

	Permanent		Temporary	
	Number lost	Area lost (m ²)	Number damaged	Area damaged (m ²)
GCN Ponds	4	14.45	0	0.00
Other Ponds	6	25.29	0	0
Total	10	39.7397	0	0.00

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

D - Impact assmt

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.

• 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."

As set out above, approximately 68.78ha and 30.52ha of terrestrial habitat within the site is to be lost and damaged respectively as a result of the proposed development.

Ponds P036, P119, P164 (all of which are known to support GCN) and P041 (in which GCN presence has precautionarily been assumed) will be temporarily lost in the short term (construction phase), as they are present within the site and, whilst not present within the immediate footprint of the scheme, are present within the boundaries of the site. As a result, a worst-case scenario of temporary loss of functionality has been assumed, such that mitigation measures are required to ensure the safeguarding of any GCN present within these ponds at the time of works. Accordingly, mitigation ponds will need to be created to mitigate for the temporary loss of these ponds. A minimum of two ponds will need to be created per pond lost to compensate for this and will need to be created before these ponds are lost so that GCN can be translocated. Such mitigation provisions will be created prior to the commencement of the construction activities within the site, with eight mitigation ponds provided and a trapping and translocation exercise being carried out to ensure the safeguarding of any GCN that may be present at the time of the proposed works. The construction phase activities will require standard operations including vegetation clearance and topsoil stripping to facilitate the proposed works, therefore ecological hand searching and destructive searches will need to be carried out to reduce the risk of harming any GCN that may be present.

Furthermore, the scheme will also result in the temporary loss of core and intermediate terrestrial GCN habitat in the form of arable land and hedgerows. Whilst the loss of this habitat from within the core and intermediate areas surrounding ponds known to support GCN will likely result in a loss of connectivity between the ponds within and adjacent to the site in the long term (as is discussed in section D3 below), given that the vast majority of the habitat to be lost comprises arable land (a habitat that is of low value to newts given the lack of resting places that it provides) it is considered that the proposed development will only result in the temporary loss of low value habitat. This habitat will be replaced with higher value grassland habitats under the proposed development, such that the proposed scheme has the opportunity to result in an enhancement for GCN in the short and mid-terms, with this enhancement also continuing into the long term following the completion of the proposed works.

Similarly, whilst direct effects on ponds P036, P041 and P119 (ponds considered to support GCN) and P041 (in which GCN presence has been assumed) are anticipated, a further six non-GCN supporting

D - Impact assmt

P041 (in which GCN presence has been assumed) are anticipated, a further six non-GCN supporting ponds in the area will also be impacted by land take from their intermediate and distant habitat zones, which will be replaced "like for like" post development. However, given the dominance of arable land within the intermediate and distant habitat zones, it is considered that habitats such as this provide no incentive for GCN commuting and/or foraging, such that the arable land within the distant habitat zones of these more distant ponds is considered to be of negligible significance to GCN. Accordingly, the loss of this habitat will not negatively impact the populations within the wider surrounds of the site. Nevertheless, as set out above, the provision of higher value habitats, of more diverse and varied structure such as species rich grassland and native shrub planting, will replace the habitat lost, and it is considered that the scheme will provide the opportunity to enhance the terrestrial habitats available to the GCN within the area. The scheme will also provide further aquatic opportunities for GCN through the provision of additional ponds, with a total of eight mitigation ponds provided, whilst a further six ponds are to be created under the scheme as set out within the environmental statement, which will function as an enhancement of the aquatic opportunities within the site post development.

As such, it is anticipated that the scheme will result in a minor negative impact on GCN in the short term, however this minor negative impact will be offset through the enhancement of the area in the mid and long term.



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."

As mentioned above within section D2, the proposed link road scheme is likely to have a minor negative impact on the connectivity between the ponds within and surrounding the development site, such that there is the possibility for the severance of ponds within the possible metapopulation that exists in the area (subject to confirmation from specific population size class estimates). In the absence of mitigation measures, the scheme is likely to bisect and separate known GCN ponds located north and south of the site, potentially isolating the GCN population present within pond P107, whilst also causing dispersal barriers to GCN within P121 from the metapopulation it likely forms with ponds P036, P064, P066, P119, and P164. Such separation between ponds within the metapopulation comprising ponds P053, P054, P081, P140 and P163 is considered unlikely to occur as a result of the scheme.

However, as previously discussed, the majority of the habitats that are to be lost under the proposed development comprise habitats of low value to GCN, including poorly structured arable land, such that their loss is likely of limited impact to commuting/ distributing GCN. Moreover, the provision of higher value habitat for GCN, in the form of species rich grassland habitat and native shrub planting, is considered to represent an instance where the site will be enhanced for GCN in the long term. The proposed scrub and tree planting are also likely to contribute to the maintenance of the connectivity between the GCN populations in the area.

Attempts to minimise fragmentation have been incorporated into the wider scheme through the inclusion of a flat road surface which does not support kerbs, thereby preventing the road from forming a barrier to GCN dispersal. Gully pots are not to be used within the scheme due to gully pots along roadside kerbs forming effective traps for amphibians, and so such features have not been included in areas close to known GCN ponds within the site (particularly P036, P041, P119 and P164), whilst also being positioned to ensure the continued connectivity between metapopulations, preventing the isolation of ponds such as P121 as a result of the scheme. However should gully pots be identified as a requirement, the design will ensure that amphibian friendly gully pot are used and that a means of egress is provided to ensure that any GCN, and amphibians more generally, have a means of escape should they enter the gully pots. Such measures will ensure the continued connectivity across the link road for GCN.

Where drop kerbs cannot be used, the development design includes embankments or cuttings, in addition to specific GCN crossing points which will provided near the known to GCN ponds. Such measures are considered to provide sufficient mitigation for the loss of high value connective habitats, such as the lost hedgerows.

Accordingly, it is considered that the scheme includes adequate mitigation provision to ensure that continued opportunities for GCN movement across the site are present in the long term.

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 major risk of post development impacts to GCN is their incidental trapping within the road drainage network. This will be avoided by not including combined kerb stones or gully pots within 500m of known GCN ponds, with these features being replaced with filter drains or amphibian friendly gully pots that have means of egress is provided. Where the inclusion of gully pots or combined kerb stones are required, the development design includes embankments, cuttings and specific GCN culverts in the areas surrounding the known GCN ponds to further minimise the risk of post development interference impacts on to the GCN populations present.

More specifically, GCN culverts will be installed in close proximity to ponds P041 and P121 as part of the proposed development, to ensure the continued connectivity of these GCN supporting ponds with the other ponds within each respective metapopulation.

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 are predicted to have minor temporary impact on the great crested newt population. Once construction is complete the site area will be restored and enhanced to include habitat suitable for GCN, therefore the direct impacts to GCN aquatic and terrestrial habitats are considered to be negligible and only for the duration of the works. This licence application will only cover the proposed scheme works up until Sizewell Link Road is operational.

Whilst the scheme will likely result in minor impacts to the connectivity of ponds in the area for GCN, it is anticipated that the mitigation provisions (including the absence of kerbs and the use of filter drains and culverts) will ensure that the GCN populations in the area do not become isolated from one another.

The majority of the affected terrestrial habitats are considered to be of low value for GCN, given that the arable land provides fewer resting, foraging and overwintering opportunities for the species. Once the scheme is implemented the areas now considered to be of low value for the species will be enhanced with the sowing of a species rich grassland and the addition of refugia/resting places suitable not only for GCN but also other amphibians and reptiles present within the site.

The temporary loss of four ponds where GCN are present (Ponds P036, P041, P119 and P164) may impact the GCN populations present within the site in the absence of mitigation, however given there will be a provision of 2:1 with respect to mitigation ponds created per each loss of a pond, it is considered that the minor short term impact to GCN will be offset in the long term through the enhancement of the aquatic opportunities available to GCN immediately prior to and subsequent to the proposed development, creating a more varied mosaic of habitat features within the area.

As such, in addition to minimising the impacts of GCN present, the scheme will provide a net gain in optimal GCN habitat, both with regards to terrestrial and aquatic provisions. Moreover, measures have been employed to ensure that the scheme does not isolate GCN populations or present a significant barrier to GCN commuting/foraging.

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; abundance unknown

E2.2 Survey information for receptor site if different from the survey for the application proposal.

N/A - Receptors created prior to commencement of works

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).
Mitigation Ponds	TM41046800	Within site	0
Areas of species rich	TM41046800	Within site	0

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?
Mitigation Ponds	Within site ownership	No
Areas of species rich	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
Mitigation Ponds	Newly created high quality GCN ponds, purpose built to act as high value mitigation ponds	0.16	Proposed to comprise grassland, scrub and trees.
Areas of species rich	Grassland with a rough / tussocky sward,	51.41	Bound the footprint of

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 m² or m² to ha please [use this converter](#)

Aquatic habitat	Impacts			Compensation		
	Effect	Number	Total Area (m ²)	Measure	Number	Total Area (m ²)
GCN ponds	Lost	10	39.7397	Created	8	1600

E - Mitign & compn

GCN ponds	Damaged	0	0.00	Restored / reinstated / enhanced	0	0
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Terrestrial habitat	Impacts		Compensation	
	Area lost (ha)		Area gained (ha)	
	Permanent	Temporary	Created	Restored / reinstated / enhanced
Core	1.2	0.7	1.0	0.9
Intermediate	11.9	5.7	12.6	6.0
Distant	55.7	24.2	7.1	6.8
Totals	68.8	30.5	20.7	13.7

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. The proposed habitat creation will significantly improve this, creating a mosaic of grassland, woodland and scrub habitat (supplemented by hibernacula and refuge piles) that provides foraging and overwintering opportunities. The proposals will also see a net increase in both pond number and area as a result of the 2:1 ratio of ponds created vs the ponds temporarily destroyed/ damaged. Moreover, the inclusion of culverts, drop kerbs and filter drains within the proposed development will ensure that continued GCN movement will be possible post development.

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 ²)	Max. Depth (m)	Design / enhancement measures and location
Mitigation ponds	200	3.5	Located within 500m of nearby breeding ponds. Surrounded by high value species rich grassland terrestrial habitat. Aquatic and emergent vegetation within ponds to provide egg laying opportunities for GCN

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**

E - Mitign & compn

	Created	Reinstated / Restored / Enhanced
Hedgerow planting	13560.84	848.30
Grassland re-seeding	38.28	0.96
Grassland management (just for GCN)	0.00	0.00
Scrub planting	13.14	0.11
Woodland planting	0.00	0.17
Hibernacula creation*	8	0
Refuge creation	10	0

** 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. The areas of grassland to be sown within the site will be left unmanaged to develop a tussocky structure of a higher value to GCN and other herpetofauna. It is also proposed that the core habitats surrounding each receptor/ existing pond be sown with a specific species rich seed mix suited to wet ground/ pondside habitats. Aside from some initial planting of emergent and aquatic vegetation, the newly created aquatic habitats will be left to colonise naturally with vegetation. However, occasional scrub clearance from the immediate vicinity of the ponds will be undertaken to prevent over shading of these water bodies.

Landowner agreement will be sought for the creation of hibernacula/ refuges which will be installed in close proximity to the newly created receptor sites 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.

•Temporary newt exclusion fencing would be installed around the development area, to prevent great crested newts from entering the site during development area but allow them to leave should they accidentally gain access.

E - Mitign & compn

- Fencing would be sited to ensure that ponds located south of the proposed link road maintain connectivity with existing, suitable great crested newt habitats and surrounding ponds. This fencing would be installed prior to construction, maintained throughout operation and would then be removed upon completion of the restoration works, with regular checks on the fencing structure undertaken during the development of the site. The fencing would be combined with pitfall traps, with any GCN encountered being translocated to the newly created mitigation ponds (which will also be surrounded by exclusion fencing to prevent translocated newts from entering the development area).
- Culverts will be placed strategically under the link road allow the passage of GCN to maintain connectivity between the northern and southern populations of GCN. Great crested newts would be directed to the culverts by one-way directional newt fencing. Monitoring of the pipes/culverts would be undertaken regularly by the designated ecologist at regular intervals during the course of the construction works.

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	Yes	
At pond: ring-fence, pitfall trap (+ fence & refuges)	Yes	
Away from pond: hand search	Yes	
Away from pond: destructive search	Yes	
Away from pond: fence, pitfall trap (& refuges)	Yes	
Away from pond: night search		
Away from pond: exclusion fence only		
Other or additional method(s) - state below:		

TBC - Specifications with respect to capture and exclusion effort levels to be confirmed upon completion of population size class assessments.

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.

It is proposed that a 30- 90 day trapping exercise is undertaken depending on the findings of the surveys.in which a medium population of GCN is assumed to be present within ponds known to support GCN. This trapping period has been chosen as it takes into consideration the largely sub-optimal terrestrial habitat present within the site. Should the population size class estimate surveys find that the ponds support a low population of GCN then this trapping effort will be reduced appropriately.

Exclusion fencing will encircle the development area in order to prevent GCN from entering the site during the construction activities. The areas of arable land will be cleared by a precautionary two stage strimming exercise, with hand searches for newts being undertaken immediately following the first stage of the clearance, as well as carrying out a further destructive search prior to the establishment of the fencing.

For the temporary loss of the four ponds supporting GCN, bottle trapping and subsequent translocation of captured GCN will be carried out.

In the event that the installation of the exclusion fence will require scrub clearance or the removal of logs and debris, a destructive search would be required in such areas immediately prior to establishment of the fencing.

[TBC – exact requirements will be confirmed once population size class estimate is calculated]

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	Yes
Clearance of shading tree or scrub cover around pond margins	Yes
Mowing, cutting or grazing of grassland	No
Desilting and clearance of leaf-fall	No
Woodland and scrub management	Yes
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	Yes
Checking pond condition and remedial action as required	Yes
Checking for and removal of dumped rubbish	Yes
Reinstatement following fire, acute pollution or other major damage	Yes
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:

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:

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.

All ponds present within the site post development, including the eight GCN mitigation ponds and the six other ponds to be created within the site.

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.....

Works are to take place exclusively within land owned by the applicant.

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.

[Next section](#)

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	Masterplan map 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	Map to show location of other nearby GCN mitigation sites to show development boundaries and compensation/mitigation areas.
Figure C3.2a	Yes	Survey map 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	-	Aerial photograph of site for information only to help better inform the application.
Photos C3.4	Yes	Photographs to show terrestrial and aquatic habitats on the development site and surrounding area (to include the receptor area).
Figure D	Yes	Impact map 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).

F-G-H Sum & Figs

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, newt friendly traffic and /or drainage features (dropped kerbs/set-back gully pots) etc.
Figure E4a	Yes	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.
Figure E4b	Yes, if non-standard measures are proposed	Non-standard capture and exclusion measures – diagrams or photographs to show designs/specifications.
Figure E5.1	Yes , 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.
Figure E5.2	Yes , 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.
Figure F1	Yes	Final development layout map 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

Document	Mandatory or not?
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](#)

Additional records

SI4 - Water quality					
SI4 - Shade					
SI6 - Fowl					
SI7 - Fish					
SI8 - Ponds					
SI9 - Terr'l habitat					
SI10 - Macrophytes					
HSI					

C4.2iii Continued

[Back to Original section](#)

Pond ref	GCN Surveyor / Accredited Agent	Licence Reference

4.2c Continued

[Back to Original section](#)

Pond reference	Date eDNA sample taken	Result (presence or absence)

E2.3 Receptor site locations. Continued

[Back to original section](#)

Site name	OS grid ref eg AB12345678	Administration area - if different from development site	Distance from development site

E2.4 Receptor site(s): continued

[Back to original section](#)

Site name	Site Ownership	Conservation Designation?

E2.5 Receptor site(s): continued

[Back to original section](#)

Additional records

Site name	Habitat description	Size (ha)	Adjacent Land Use

C3.3 Habitat description: waterbodies

C3.3i continued - all ponds

Pond ref	Description
P031	Large pond with scrubby edges, heavily shaded and no aquatic vegetation.
P032	Very shallow field depression with bulrush present. Almost dry at the time of survey.
P033	No description, south of the site boundary.
P034	No description, south of the site boundary.
P035	Woodland pond with no aquatic vegetation just leaf litter.
P036	Pond with bulrush around the pond edges. No aquatic vegetation and partly shaded by large trees.
P037	No description, south of the site boundary.
P038	Leaf litter choked shallow pond shaded by numerous trees on the bank.
P039	No description, south of the site boundary.
P040	No description, south of the site boundary.
P041	Woodland shallow pond choked with duckweed and partly shaded by trees on the pond edges.
P042	Woodland depression with a very shallow water level and choked with leaf litter.
P043	No description, north of the site boundary.
P044	No description, south of the site boundary.
P045	No description, south of the site boundary.
P046	Woodland depression with a very shallow water level and choked with leaf litter.
P047	Large deep lake with floating pondweed and other aquatic vegetation. The banks are covered in large trees and mature scrub.
P048	No description, south of the site boundary.
P049	No description, south of the site boundary.
P050	No description, south of the site boundary.
P051	No description, south of the site boundary.
P052	No description, south of the site boundary.
P053	Woodland depression with a shallow water level and choked with leaf litter.
P054	No description, south of the site boundary.
P055	No description, west of the site boundary.
P056	No description, west of the site boundary.
P057	No description, south of the site boundary.
P058	No description, east of the site boundary.
P059	No description, east of the site boundary.
P060	Very shallow field depression
P061	No description, north of the site boundary.
P062	No description, north of the site boundary.
P063	No description, north of the site boundary.
P064	Small pond dominated by bulrush and duckweed.
P065	No description, north of the site boundary.
P066	Large deep lake with duckweed and banks dominated by willowherb and mature scrub.
P067	No description, north of the site boundary.
P068	No description, north of the site boundary.
P069	No description, north of the site boundary.
P070	No information on location
P071	No information on location
P072	No information on location
P075	No information on location
P079	No description, south of the site boundary.
P080	No description, south of the site boundary.
P081	Shallow pond with recently cleared banks void of vegetation.
P082	No description, north of the site boundary.
P085	No description, pond not present at the time of survey.
P103	No description, west of the site boundary.
P104	No description, north of the site boundary.
P105	No description, south of the site boundary.
P107	Shallow pond heavily shaded by the surrounding woodland.
P108	A circular ditch where some parts are dry and others filled with shallow water.
P109	Pond with 50% aquatic vegetation and surrounded by bulrush and common reed.
P114	No description, north of the site boundary.
P115	Deep pond with no aquatic vegetation surrounded by bramble scrub and semi-mature trees.
P116	No description, pond dry at the time of survey.
P117	No description, north of the site boundary.
P118	No description, north of the site boundary.
P119	No description, within the south of the site.
P120	No description, pond within the site recorded to be dry at the time of survey.
P121	Shallow pond choked with duckweed and filamentous algae.
P122	No description, south of the site boundary.
P123	No description, south of the site boundary.
P124	No description, south of the site boundary.
P125	No description, pond not present at the time of survey.
P126	No description, north of the site boundary.
P127	No description, pond not present at the time of survey.
P128	No description, pond not present at the time of survey.
P129	No description, south of the site boundary.
P130	No description, south of the site boundary.
P131	Shallow pond heavily shaded by scrub.
P132	No description, north of the site boundary.
P133	No description, south of the site boundary.
P134	No description, north of the site boundary.
P135	No description, pond dry at the time of survey.
P136	No description, south of the site boundary.
P137	No description, south of the site boundary.
P138	No description, pond not present at the time of survey.
P139	No description, pond dry at the time of survey.
P140	Pond with aquatic vegetation and surrounded by scrub and tall ruderals.
P141	No description, pond dry at the time of survey.
P142	No description, west of the site boundary.
P143	No description, west of the site boundary.
P144	No description, west of the site boundary.
P145	No description, east of the site boundary.
P146	No description, west of the site boundary.
P147	No description, west of the site boundary.
P148	No description, west of the site boundary.
P149	No description, pond not present at the time of survey.
P150	No description, south of the site boundary.
P151	Deep lake covered in patches of filamentous algae.
P152	No description, east of the site boundary.
P153	No description, east of the site boundary.
P154	No description, east of the site boundary.
P158	No description, south of the site boundary.
P160	Very small pond within a leaf litter filled woodland depression.
P163	Small pond with shallow water level, next to larger pond in strip of woodland.
P164	Small pond surrounded by horsetail and bulrush. Within a largely arable landscape.
P165	No description, on site pond recorded to be dry at the time of survey.
P166	No description, pond dry at the time of survey.

P167	No description, pond dry at the time of survey.
P168	No description, south of the site boundary.
P169	No description, south of the site boundary.
P170	No description, north of the site boundary.
P171	No description, north of the site boundary.
P172	No description, north of the site boundary.

C3.3.ii Continued - distance from development site boundary and other ponds

Pond ref	Distance (m)	Surveyed or not?	If selected 'No- other reason' explain below
P031	19.0	Yes	
P032		Yes	
P033		No - access permission denied	
P034		No - access permission denied	
P035	6	Yes	
P036	0	Yes	
P037		No - access permission denied	
P038		Yes	
P039		No - other reason	Pond dry at time of survey
P040	17	No - other reason	Pond dry at time of survey
P041	0	Yes	
P042		Yes	
P043		No - other reason	Pond dry at time of survey
P044		No - other reason	Pond dry at time of survey
P045		No - other reason	Pond dry at time of survey
P046	0	Yes	
P047		Yes	
P048		No - access permission denied	
P049		No - access permission denied	
P050		No - access permission denied	
P051		Yes	
P052		No - access permission denied	
P053		Yes	
P054		Yes	
P055		No - access permission denied	
P056	5	No - other reason	Pond dry at time of survey
P057		No - access permission denied	
P058	0	No - access permission denied	
P059		No - access permission denied	
P060		Yes	
P061		No - access permission denied	
P062		No - access permission denied	
P063		No - access permission denied	
P064		Yes	
P065		No - access permission denied	
P066		Yes	
P067		No - access permission denied	
P068		Yes	
P069		No - access permission denied	
P070		No - access permission denied	
P071		No - access permission denied	
P072		No - access permission denied	
P075		No - access permission denied	
P079		No - access permission denied	
P080		No - other reason	Pond dry at time of survey
P081		Yes	
P082		No - other reason	Pond dry at time of survey
P085		No - other reason	Pond not present
P103		No - access permission denied	
P104	68	No - access permission denied	
P105		No - access permission denied	
P107		Yes	
P108		Yes	
P109		Yes	
P114		No - access permission denied	
P115		Yes	
P116		No - other reason	Pond dry at time of survey
P117		No - access permission denied	
P118		No - other reason	Pond dry at time of survey
P119	0	Yes	
P120	0	No - other reason	Pond dry at time of survey
P121		Yes	
P122		No - other reason	Pond dry at time of survey
P123		No - other reason	Pond dry at time of survey
P124		No - other reason	Pond dry at time of survey
P125		No - other reason	Pond not present
P126		No - access permission denied	
P127		No - other reason	Pond not present
P128		No - other reason	Pond not present
P129		No - access permission denied	
P130		Yes	
P131	0	Yes	
P132		No - access permission denied	
P133		No - access permission denied	
P134		No - access permission denied	
P135		No - other reason	Pond dry at time of survey
P136		No - access permission denied	
P137		No - access permission denied	
P138		No - other reason	Pond not present
P139		No - other reason	Pond dry at time of survey
P140		Yes	
P141		No - other reason	Pond not present
P142		No - access permission denied	
P143		No - access permission denied	
P144	0	No - access permission denied	
P145	0	No - access permission denied	
P146		No - access permission denied	
P147		No - access permission denied	
P148		No - access permission denied	
P149		No - other reason	Pond not present
P150		No - access permission denied	
P151	16	Yes	
P152	0	No - access permission denied	
P153		No - access permission denied	
P154		No - access permission denied	
P158		No - access permission denied	
P160		Yes	
P163		Yes	

P164	0	Yes	
P165	0	No - other reason	Pond dry at time of survey
P166	67	No - other reason	Pond dry at time of survey
P167	90	No - other reason	Pond dry at time of survey
P168		No - access permission denied	
P169		No - other reason	Pond not present
P170		No - access permission denied	
P171		No - access permission denied	
P172		No - access permission denied	

C3.5 Waterbodies: quantitative assessment - Continued

Date HSI assessment undertaken									
Pond ref	P031	P032	P033	P034	P035	P036	P037	P038	P039
SI1 - Location	1	1				1	1		1
SI2 - Pond area	0.93	0.3				0.1	1		0.5
SI3 - Pond drying	0.9	1				1	0.9		0.9
SI4 - Water quality	1	0.33				0.67	0.67		0.67
SI4 - Shade	1	0.9				0.8	1		0.7
SI6 - Fowl	0.67	1				1	1		1
SI7 - Fish	0.67	0.67				1	1		1
SI8 - Ponds	1	1				1	1		1
SI9 - Terri habitat	0.67	0.67				0.33	0.67		0.33
SI10 - Macrophytes	0.3	0.45				0.3	0.4		0.3
HSI	0.77	0.67			0.59	0.83		0.68	

Date HSI assessment undertaken									
Pond ref	P040	P041	P042	P043	P044	P045	P046	P047	P048
SI1 - Location		1	1				1	1	
SI2 - Pond area		0.4	0.05				0.4	0.05	
SI3 - Pond drying		1	0.5				0.1	1	
SI4 - Water quality		0.33	0.33				0.33	0.67	
SI4 - Shade		1	1				0.3	1	
SI6 - Fowl		1	1				1	1	
SI7 - Fish		1	1				1	1	
SI8 - Ponds		1	1				1	1	
SI9 - Terri habitat		0.33	0.33				0.67	1	
SI10 - Macrophytes		0.3	0.3				0.55	0.3	
HSI		0.65	0.49				0.52	0.63	

Date HSI assessment undertaken									
Pond ref	P049	P050	P051	P052	P053	P054	P055	P056	P057
SI1 - Location			1		1	1			
SI2 - Pond area			0.2		0.4	0.4			
SI3 - Pond drying			0.33		0.9	1			
SI4 - Water quality			0.33		0.67	0.33			
SI4 - Shade			1		1	0.2			
SI6 - Fowl			1		1	1			
SI7 - Fish			1		1	1			
SI8 - Ponds			1		1	1			
SI9 - Terri habitat			0.67		0.67	1			
SI10 - Macrophytes			0.3		0.55	0.35			
HSI			0.58		0.79	0.63			

Date HSI assessment undertaken									
Pond ref	P058	P059	P060	P061	P062	P063	P064	P065	P066
SI1 - Location			1				1		1
SI2 - Pond area			0.2				0.3		0.95
SI3 - Pond drying			0.1				0.67		0.9
SI4 - Water quality			1				1		0.67
SI4 - Shade			1				1		0.8
SI6 - Fowl			1				0.67		1
SI7 - Fish			1				1		0.67
SI8 - Ponds			1				1		1
SI9 - Terri habitat			1				0.67		0.67
SI10 - Macrophytes			0.8				1		0.5
HSI			0.66				0.79		0.80

Date HSI assessment undertaken									
Pond ref	P067	P068	P069	P070	P071	P072	P075	P079	P080
SI1 - Location									
SI2 - Pond area									
SI3 - Pond drying									
SI4 - Water quality									
SI4 - Shade									
SI6 - Fowl									
SI7 - Fish									
SI8 - Ponds									
SI9 - Terri habitat									
SI10 - Macrophytes									
HSI									

Date HSI assessment undertaken									
Pond ref	P081	P082	P085	P103	P104	P105	P107	P108	P109
SI1 - Location	1						1	1	1
SI2 - Pond area	0.6						0.2	0.1	1
SI3 - Pond drying	0.9						0.5	0.1	0.9
SI4 - Water quality	1						0.33	0.33	0.67
SI4 - Shade	1						1	0.7	0.67
SI6 - Fowl	1						1	1	0.67
SI7 - Fish	1						1	1	0.67
SI8 - Ponds	1						1	1	1
SI9 - Terri habitat	1						0.33	0.33	1
SI10 - Macrophytes	0.3						0.35	0.3	1
HSI	0.83						0.57	0.43	0.84

Date HSI assessment undertaken									
Pond ref	P114	P115	P116	P117	P118	P119	P120	P121	P122
SI1 - Location		1				1		1	
SI2 - Pond area		0.4				0.6		0.2	
SI3 - Pond drying		0.9				1		1	
SI4 - Water quality		0.67				0.67		0.01	
SI4 - Shade		1				1		1	
SI6 - Fowl		0.67				1		1	
SI7 - Fish		0.67				1		1	
SI8 - Ponds		1				1		1	
SI9 - Terri habitat		0.67				0.67		0.33	
SI10 - Macrophytes		0.3				0.35		0.3	
HSI		0.68				0.79		0.43	

Date HSI assessment undertaken	P123	P124	P125	P126	P127	P128	P129	P130	P131
Pond ref									
SI1 - Location								1	1
SI2 - Pond area								0.6	0.85
SI3 - Pond drying								0.9	0.9
SI4 - Water quality								1	0.67
SI4 - Shade								1	1
SI6 - Fowl								0.67	1
SI7 - Fish								0.01	1
SI8 - Ponds								1	
SI9 - Terrestrial habitat								0.67	0.33
SI10 - Macrophytes								0.5	0.3
HSI								0.51	0.72

Date HSI assessment undertaken	P132	P133	P134	P135	P136	P137	P138	P139	P140
Pond ref									
SI1 - Location									1
SI2 - Pond area									0.2
SI3 - Pond drying									1
SI4 - Water quality									0.67
SI4 - Shade									1
SI6 - Fowl									1
SI7 - Fish									1
SI8 - Ponds									1
SI9 - Terrestrial habitat									1
SI10 - Macrophytes									0.5
HSI									0.76

Date HSI assessment undertaken	P141	P142	P143	P144	P145	P146	P147	P148	P149
Pond ref									
SI1 - Location									
SI2 - Pond area									
SI3 - Pond drying									
SI4 - Water quality									
SI4 - Shade									
SI6 - Fowl									
SI7 - Fish									
SI8 - Ponds									
SI9 - Terrestrial habitat									
SI10 - Macrophytes									
HSI									

Date HSI assessment undertaken	P150	P151	P152	P153	P154	P158	P160	P163	P164
Pond ref									
SI1 - Location		1					1	1	1
SI2 - Pond area		0.85					0.1	0.1	0.2
SI3 - Pond drying		0.9					0.1	1	0.9
SI4 - Water quality		1					0.33	0.67	1
SI4 - Shade		0.3					0.2	1	1
SI6 - Fowl		0.67					1	1	1
SI7 - Fish		0.33					1	1	0.67
SI8 - Ponds		1					1	1	1
SI9 - Terrestrial habitat		0.67					0.33	1	0.67
SI10 - Macrophytes		0.35					0.35	0.35	0.9
HSI		0.64					0.39	0.69	0.77

Date HSI assessment undertaken	P165	P166	P167	P168	P169	P170	P171	P172
Pond ref								
SI1 - Location								
SI2 - Pond area								
SI3 - Pond drying								
SI4 - Water quality								
SI4 - Shade								
SI6 - Fowl								
SI7 - Fish								
SI8 - Ponds								
SI9 - Terrestrial habitat								
SI10 - Macrophytes								
HSI								

C4.2 Aquatic surveys for presence / absence using eDNA - Continued

Pond ref	GCN Surveyor / Accredited Agent	Licence Reference
P031	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P032	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P033	No - access permission denied	N/A
P034	No - access permission denied	N/A
P035	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P036	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P037	No - access permission denied	N/A
P038	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P039	Pond dry at time of survey	N/A
P040	Pond dry at time of survey	N/A
P041	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P042	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P043	Pond dry at time of survey	N/A
P044	Pond dry at time of survey	N/A
P045	Pond dry at time of survey	N/A
P046	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P047	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P048	No - access permission denied	N/A
P049	No - access permission denied	N/A
P050	No - access permission denied	N/A
P051	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P052	No - access permission denied	N/A
P053	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P054	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P055	No - access permission denied	N/A
P056	Pond dry at time of survey	N/A
P057	No - access permission denied	N/A
P058	No - access permission denied	N/A
P059	No - access permission denied	N/A
P060	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P061	No - access permission denied	N/A
P062	No - access permission denied	N/A
P063	No - access permission denied	N/A
P064	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN

P065	No - access permission denied	N/A
P066	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P067	No - access permission denied	N/A
P068	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P069	No - access permission denied	N/A
P070	No - access permission denied	N/A
P071	No - access permission denied	N/A
P072	No - access permission denied	N/A
P075	No - access permission denied	N/A
P079	No - access permission denied	N/A
P080	Pond dry at time of survey	N/A
P081	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P082	Pond dry at time of survey	N/A
P085	Pond not present	N/A
P103	No - access permission denied	N/A
P104	No - access permission denied	N/A
P105	No - access permission denied	N/A
P107	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P108	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P109	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P114	No - access permission denied	N/A
P115	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P116	Pond dry at time of survey	N/A
P117	No - access permission denied	N/A
P118	Pond dry at time of survey	N/A
P119	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P120	Pond dry at time of survey	N/A
P121	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P122	Pond dry at time of survey	N/A
P123	Pond dry at time of survey	N/A
P124	Pond dry at time of survey	N/A
P125	Pond not present	N/A
P126	No - access permission denied	N/A
P127	Pond not present	N/A
P128	Pond not present	N/A
P129	No - access permission denied	N/A
P130	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P131	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P132	No - access permission denied	N/A
P133	No - access permission denied	N/A
P134	No - access permission denied	N/A
P135	Pond dry at time of survey	N/A
P136	No - access permission denied	N/A
P137	No - access permission denied	N/A
P138	Pond not present	N/A
P139	Pond dry at time of survey	N/A
P140	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P141	Pond not present	N/A
P142	No - access permission denied	N/A
P143	No - access permission denied	N/A
P144	No - access permission denied	N/A
P145	No - access permission denied	N/A
P146	No - access permission denied	N/A
P147	No - access permission denied	N/A
P148	No - access permission denied	N/A
P149	Pond not present	N/A
P150	No - access permission denied	N/A
P151	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P152	No - access permission denied	N/A
P153	No - access permission denied	N/A
P154	No - access permission denied	N/A
P158	No - access permission denied	N/A
P160	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P163	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P164	Marielle James/ Bethany Hasell	2017-27800-CLS-CLS GCN
P165	Pond dry at time of survey	N/A
P166	Pond dry at time of survey	N/A
P167	Pond dry at time of survey	N/A
P168	No - access permission denied	N/A
P169	Pond not present	N/A
P170	No - access permission denied	N/A
P171	No - access permission denied	N/A
P172	No - access permission denied	N/A

C4.2 Aquatic surveys for presence / absence using eDNA.

C. Complete the following table

Pond ref	Year: 2019	
	Date eDNA sample taken	Result (presence or absence)
P031	16/04/2019	Absent
P032	26/04/2019	Present
P033	Not Surveyed	N/A
P034	Not Surveyed	N/A
P035	16/04/2019	Assumed Absent (Inconclusive eDNA and poor HSI)
P036	27/06/2019	Present
P037	Not Surveyed	N/A
P038	17/04/2019	Absent
P039	Not Surveyed	N/A
P040	Not Surveyed	N/A
P041	17/04/2019	Assumed Present (Inconclusive eDNA but within the red line boundary so worst case scenario assumed)
P042	16/04/2019	Assumed Absent (Inconclusive eDNA and poor HSI)
P043	Not Surveyed	N/A
P044	Not Surveyed	N/A
P045	Not Surveyed	N/A
P046	17/04/2019	Absent
P047	27/06/2019	Absent
P048	Not Surveyed	N/A
P049	Not Surveyed	N/A
P050	Not Surveyed	N/A
P051	Not Surveyed	N/A
P052	Not Surveyed	N/A
P053	17/04/2019	Present
P054	17/04/2019	Present
P055	Not Surveyed	N/A
P056	Not Surveyed	N/A
P057	Not Surveyed	N/A
P058	Not Surveyed	N/A
P059	Not Surveyed	N/A

P060	15/04/2019	Absent
P061	Not Surveyed	N/A
P062	Not Surveyed	N/A
P063	Not Surveyed	N/A
P064	26/06/2019	Present
P065	Not Surveyed	N/A
P066	27/06/2019	Present
P067	Not Surveyed	N/A
P068	Not Surveyed	N/A
P069	Not Surveyed	N/A
P070	Not Surveyed	N/A
P071	Not Surveyed	N/A
P072	Not Surveyed	N/A
P075	Not Surveyed	N/A
P079	Not Surveyed	N/A
P080	Not Surveyed	N/A
P081	19/03/2019	Present
P082	Not Surveyed	N/A
P085	Not Surveyed	N/A
P103	Not Surveyed	N/A
P104	Not Surveyed	N/A
P105	Not Surveyed	N/A
P107	17/04/2019	Present
P108	17/04/2019	Absent
P109	27/06/2019	Absent
P114	Not Surveyed	N/A
P115	30/04/2019	Absent
P116	Not Surveyed	N/A
P117	Not Surveyed	N/A
P118	Not Surveyed	N/A
P119	27/06/2019	Present
P120	Not Surveyed	N/A
P121	27/06/2019	Present
P122	Not Surveyed	N/A
P123	Not Surveyed	N/A
P124	Not Surveyed	N/A
P125	Not Surveyed	N/A
P126	Not Surveyed	N/A
P127	Not Surveyed	N/A
P128	Not Surveyed	N/A
P129	Not Surveyed	N/A
P130	Not Surveyed	N/A
P131	18/04/2019	Absent
P132	Not Surveyed	N/A
P133	Not Surveyed	N/A
P134	Not Surveyed	N/A
P135	Not Surveyed	N/A
P136	Not Surveyed	N/A
P137	Not Surveyed	N/A
P138	Not Surveyed	N/A
P139	Not Surveyed	N/A
P140	17/04/2019	Present
P141	Not Surveyed	N/A
P142	Not Surveyed	N/A
P143	Not Surveyed	N/A
P144	Not Surveyed	N/A
P145	Not Surveyed	N/A
P146	Not Surveyed	N/A
P147	Not Surveyed	N/A
P148	Not Surveyed	N/A
P149	Not Surveyed	N/A
P150	Not Surveyed	N/A
P151	02/05/2019	Absent
P152	Not Surveyed	N/A
P153	Not Surveyed	N/A
P154	Not Surveyed	N/A
P158	Not Surveyed	N/A
P160	16/04/2019	Absent
P163	17/04/2019	Present
P164	27/06/2019	Present
P165	Not Surveyed	N/A
P166	Not Surveyed	N/A
P167	Not Surveyed	N/A
P168	Not Surveyed	N/A
P169	Not Surveyed	N/A
P170	Not Surveyed	N/A
P171	Not Surveyed	N/A
P172	Not Surveyed	N/A

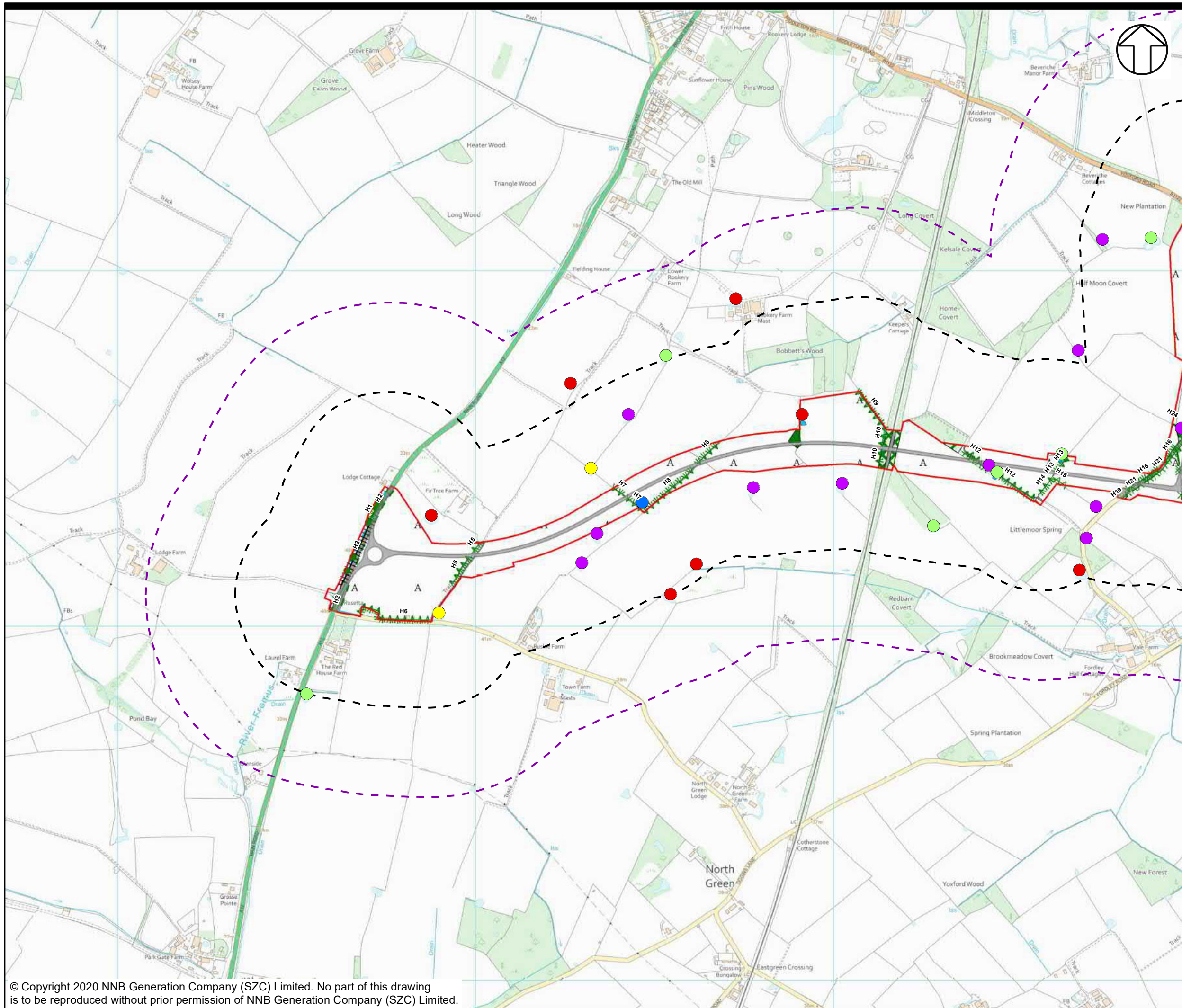
C5 Interpretation and evaluation**Summary of presence, peak count, population size class and habitat quality**

Pond ref	Gt. crested newts detected?	Peak adult count	Pop size class	HSI	Low detectability warning*	Peak count visit number
P032	Yes			0.67		
P036	Yes			0.83		
P041	Yes			0.65		
P053	Yes			0.79		
P054	Yes			0.63		
P064	Yes			0.79		
P066	Yes			0.80		
P081	Yes			0.83		
P107	Yes			0.57		
P119	Yes			0.79		
P121	Yes			0.43		
P140	Yes			0.76		
P163	Yes			0.69		
P164	Yes			0.77		



SIZEWELL C – SIZEWELL LINK ROAD – DRAFT GREAT CRESTED NEWT MITIGATION LICENCE APPLICATION

WML-A14-2 GCN METHOD STATEMENT – ACCOMPANYING FIGURES



NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT
- SITE BOUNDARY
- 250M BUFFER
- 500M BUFFER
- GREAT CRESTED NEWT (GCN) PRESENCE**
- GCN PRESENT
- GCN ABSENT
- INCONCLUSIVE GCN EDNA RESULT – ASSUMED PRESENCE
- INCONCLUSIVE GCN EDNA RESULT – ASSUMED ABSENCE
- DRY AT TIME OF SURVEY
- POND NOT PRESENT AT TIME OF SURVEY
- SCATTERED BROADLEAVED TREES
- SCATTERED CONIFEROUS TREES
- X SCATTERED SCRUB
- DRY DITCH
- DEFUNCT HEDGE - NATIVE SPECIES-RICH
- DEFUNCT HEDGE - SPECIES-POOR
- EARTH BANK
- FENCE
- HEDGE WITH TREES - NATIVE SPECIES-RICH
- HEDGE WITH TREES - SPECIES-POOR
- INTACT HEDGE - NATIVE SPECIES-RICH
- INTACT HEDGE - SPECIES-POOR
- RUNNING WATER
- A CULTIVATED/DISTURBED LAND - ARABLE
- BROADLEAVED WOODLAND - SEMI-NATURAL
- BROADLEAVED WOODLAND - PLANTATION
- BUILDINGS
- HARDSTANDING
- I IMPROVED GRASSLAND
- NEUTRAL GRASSLAND - SEMI-IMPROVED
- POOR SEMI-IMPROVED GRASSLAND
- RUNNING WATER
- STANDING WATER
- SCRUB - DENSE/CONTINUOUS
- STANDING WATER
- OTHER TALL HERB AND FERN - RUDERAL
- NO ACCESS

NOT PROTECTIVELY MARKED

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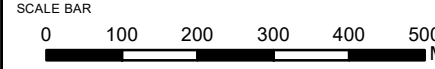


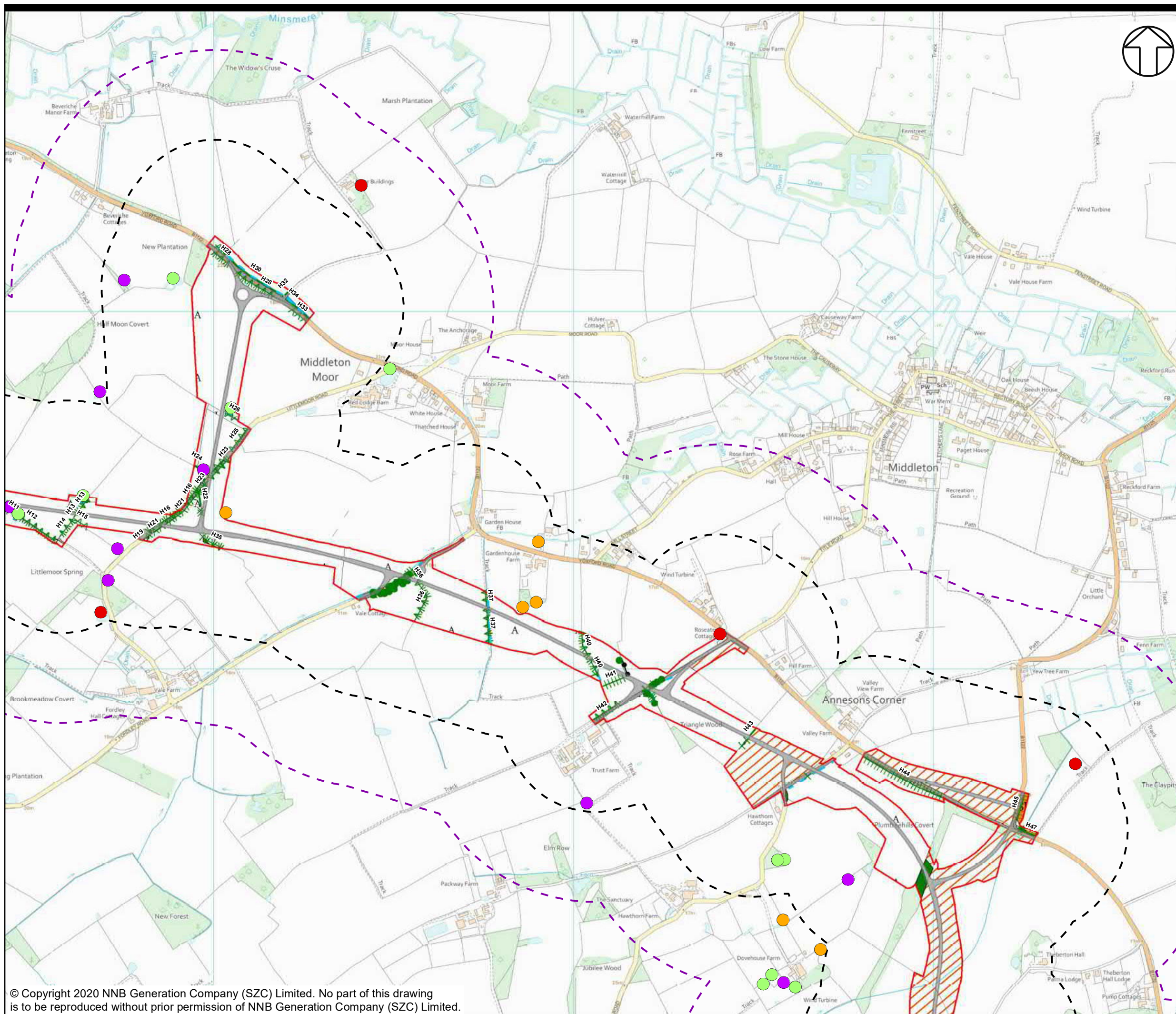
DOCUMENT:
 SIZEWELL C
 SIZEWELL LINK ROAD
 DRAFT GCN LICENCE METHOD STATEMENT

DRAWING TITLE:
 FIGURE C3.2a: SURVEY MAP
 SHEET 1 OF 3

DRAWING NO:
 FIGURE 7A-5.1

DATE: JAN 2020 **DRAWN:** R.G. **SCALE:** 1:10,000 @A3





NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT
- SITE BOUNDARY
- 250M BUFFER
- 500M BUFFER
- GREAT CRESTED NEWT (GCN) PRESENCE**
- GCN PRESENT
- GCN ABSENT
- INCONCLUSIVE GCN EDNA RESULT – ASSUMED PRESENCE
- INCONCLUSIVE GCN EDNA RESULT – ASSUMED ABSENCE
- DRY AT TIME OF SURVEY
- POND NOT PRESENT AT TIME OF SURVEY
- SCATTERED BROADLEAVED TREES
- SCATTERED CONIFEROUS TREES
- X SCATTERED SCRUB
- - - DRY DITCH
- - - DEFUNCT HEDGE - NATIVE SPECIES-RICH
- - - DEFUNCT HEDGE - SPECIES-POOR
- EARTH BANK
- FENCE
- - - HEDGE WITH TREES - NATIVE SPECIES-RICH
- - - HEDGE WITH TREES - SPECIES-POOR
- - - INTACT HEDGE - NATIVE SPECIES-RICH
- - - INTACT HEDGE - SPECIES-POOR
- - - RUNNING WATER
- A CULTIVATED/DISTURBED LAND - ARABLE
- BROADLEAVED WOODLAND - SEMI-NATURAL
- BROADLEAVED WOODLAND - PLANTATION
- BUILDINGS
- HARDSTANDING
- I IMPROVED GRASSLAND
- NEUTRAL GRASSLAND - SEMI-IMPROVED
- POOR SEMI-IMPROVED GRASSLAND
- - - RUNNING WATER
- - - STANDING WATER
- SCRUB - DENSE/CONTINUOUS
- OTHER TALL HERB AND FERN - RUDERAL
- NO ACCESS

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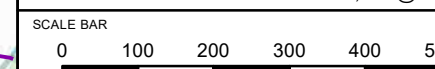


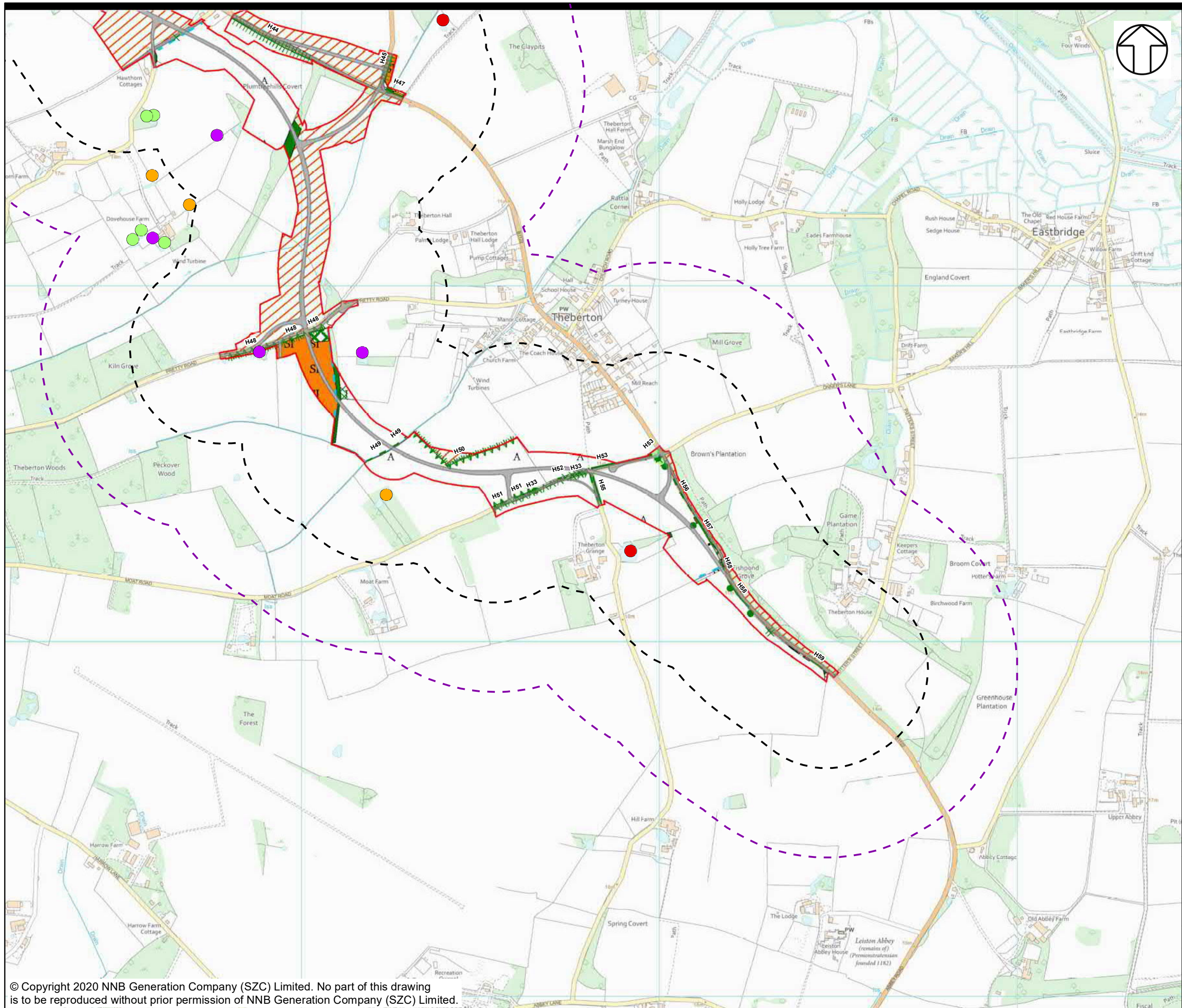
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 SHEET 2 OF 3

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NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT
- SITE BOUNDARY
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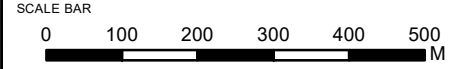


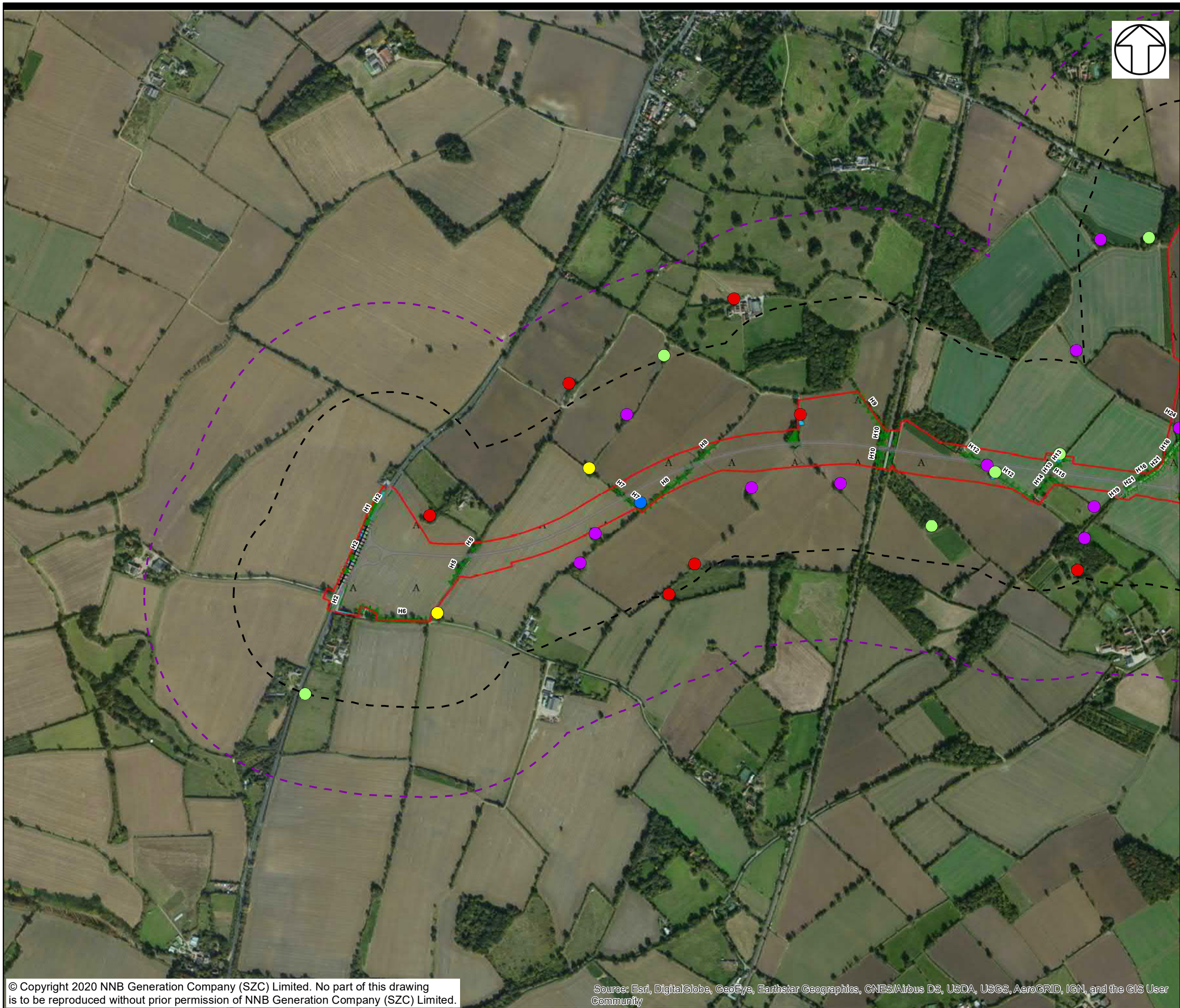
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 SHEET 3 OF 3

DRAWING NO:
 FIGURE 7A-5.1

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- - - DRY DITCH
- V V V DEFUNCT HEDGE - NATIVE SPECIES-RICH
- - - DEFUNCT HEDGE - SPECIES-POOR
- - - EARTH BANK
- H H H FENCE
- V V V HEDGE WITH TREES - NATIVE SPECIES-RICH
- H H H HEDGE WITH TREES - SPECIES-POOR
- V V V INTACT HEDGE - NATIVE SPECIES-RICH
- - - INTACT HEDGE - SPECIES-POOR
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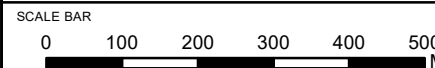


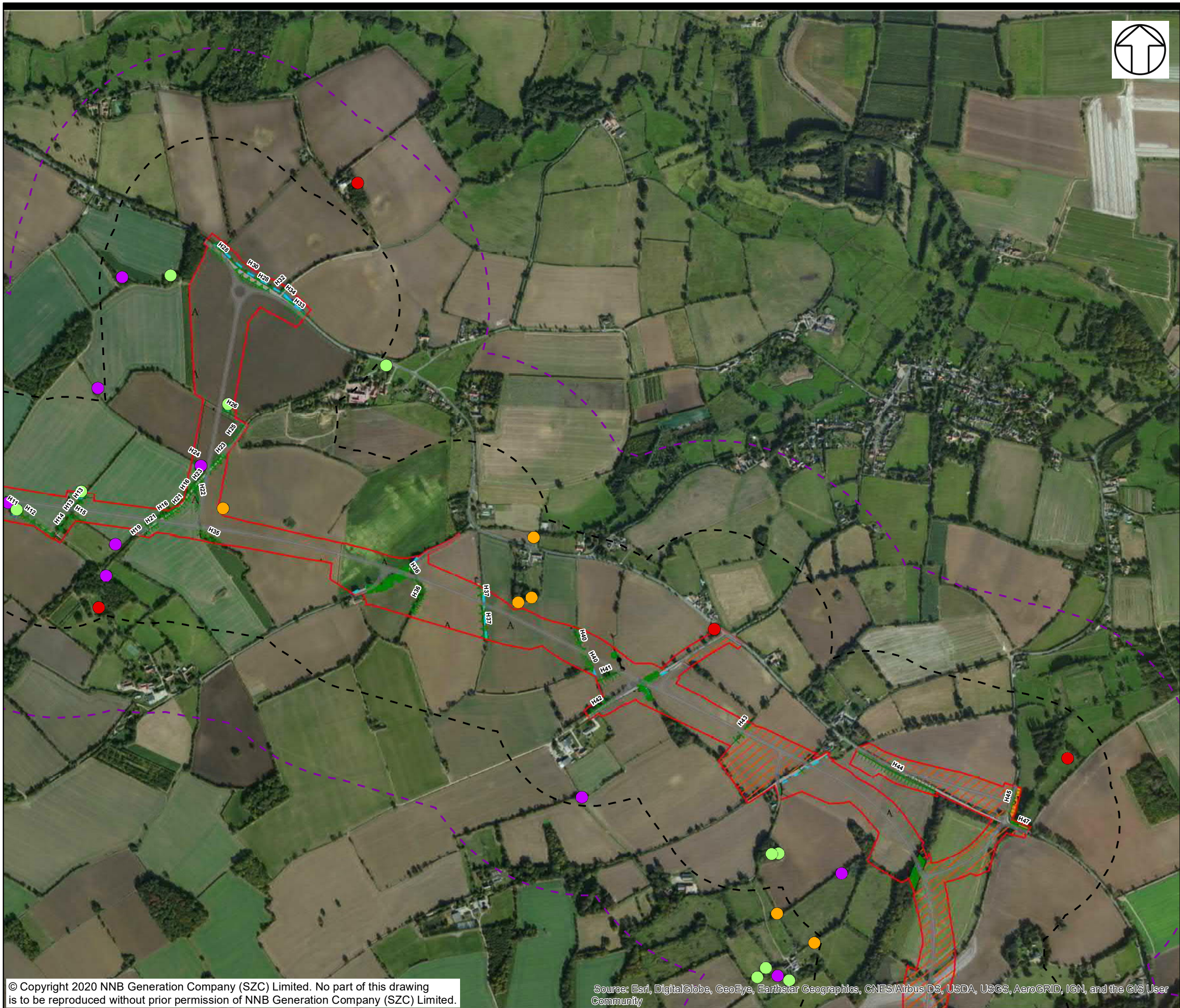
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 SHEET 1 OF 3

DRAWING NO:
 FIGURE 7A-5.2

DATE: JAN 2020	DRAWN: R.G.	SCALE: 1:10,000 @A3
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NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT
- SITE BOUNDARY
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- GREAT CRESTED NEWT (GCN) PRESENCE**
- GCN PRESENT
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- SCATTERED CONIFEROUS TREES
- x SCATTERED SCRUB
- DRY DITCH
- v DEFUNCT HEDGE - NATIVE SPECIES-RICH
- DEFUNCT HEDGE - SPECIES-POOR
- EARTH BANK
- | | | FENCE
- v HEDGE WITH TREES - NATIVE SPECIES-RICH
- | | | HEDGE WITH TREES - SPECIES-POOR
- v INTACT HEDGE - NATIVE SPECIES-RICH
- INTACT HEDGE - SPECIES-POOR
- RUNNING WATER
- CULTIVATED/DISTURBED LAND - ARABLE
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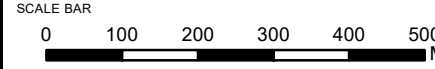


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 FIGURE C3.2b: AERIAL PHOTOGRAPH OF SITE
 SHEET 2 OF 3

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NOTES

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 FIGURE C3.2b: AERIAL PHOTOGRAPH OF SITE
 SHEET 3 OF 3

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 FIGURE 7A-5.2

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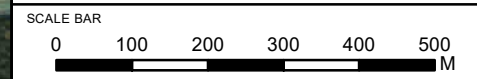
















Table 1: Ponds with Confirmed GCN Presence within 500m of the Scheme

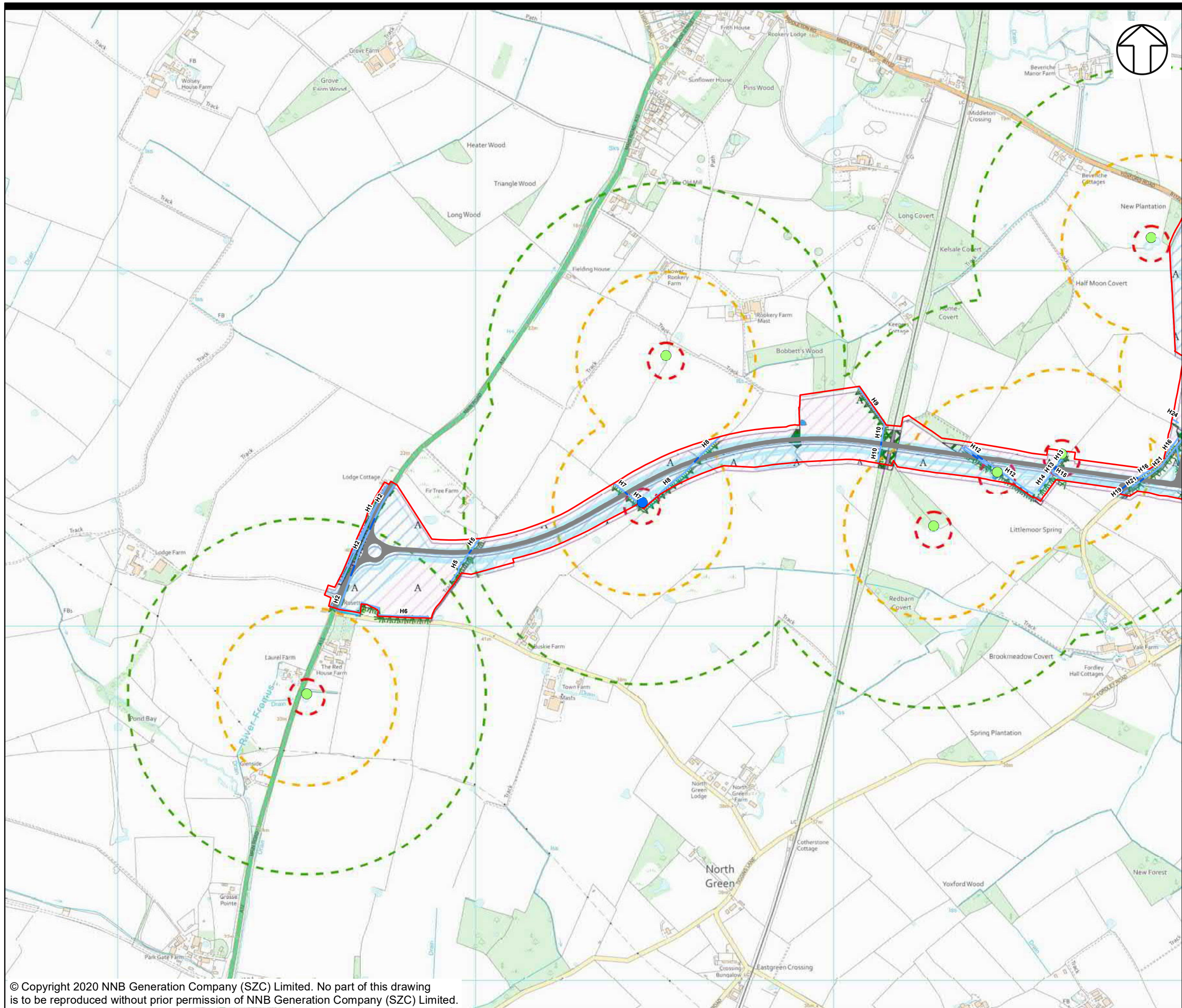
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Photograph	Description
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	P081
	P107

Photograph	Description
	P119
	P121
	P140

Photograph	Description
	P163
	P164



NOTES

- KEY**
- SIZEWELL LINK ROAD DEVELOPMENT SITE
 - BOUNDARY
 - 50M BUFFER
 - 250M BUFFER
 - 500M BUFFER
 - ROAD
 - PERMANENT HABITAT LOSS
 - TEMPORARY HABITAT LOSS
- GREAT CRESTED NEWT (GCN) SURVEY RESULTS**
- GCN PRESENT
 - INCONCLUSIVE GCN EDNA RESULT - ASSUMED PRESENCE
 - SCATTERED BROADLEAVED TREES
 - SCATTERED CONIFEROUS TREES
 - x SCATTERED SCRUB
 - DRY DITCH
 - DEFUNCT HEDGE - NATIVE SPECIES-RICH
 - DEFUNCT HEDGE - SPECIES-POOR
 - EARTH BANK
 - FENCE
 - HEDGE WITH TREES - NATIVE SPECIES-RICH
 - HEDGE WITH TREES - SPECIES-POOR
 - INTACT HEDGE - NATIVE SPECIES-RICH
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 - SCRUB - DENSE/CONTINUOUS
 - STANDING WATER
 - OTHER TALL HERB AND FERN - RUDERAL
 - NO ACCESS

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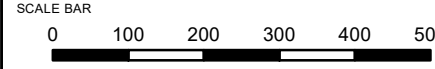


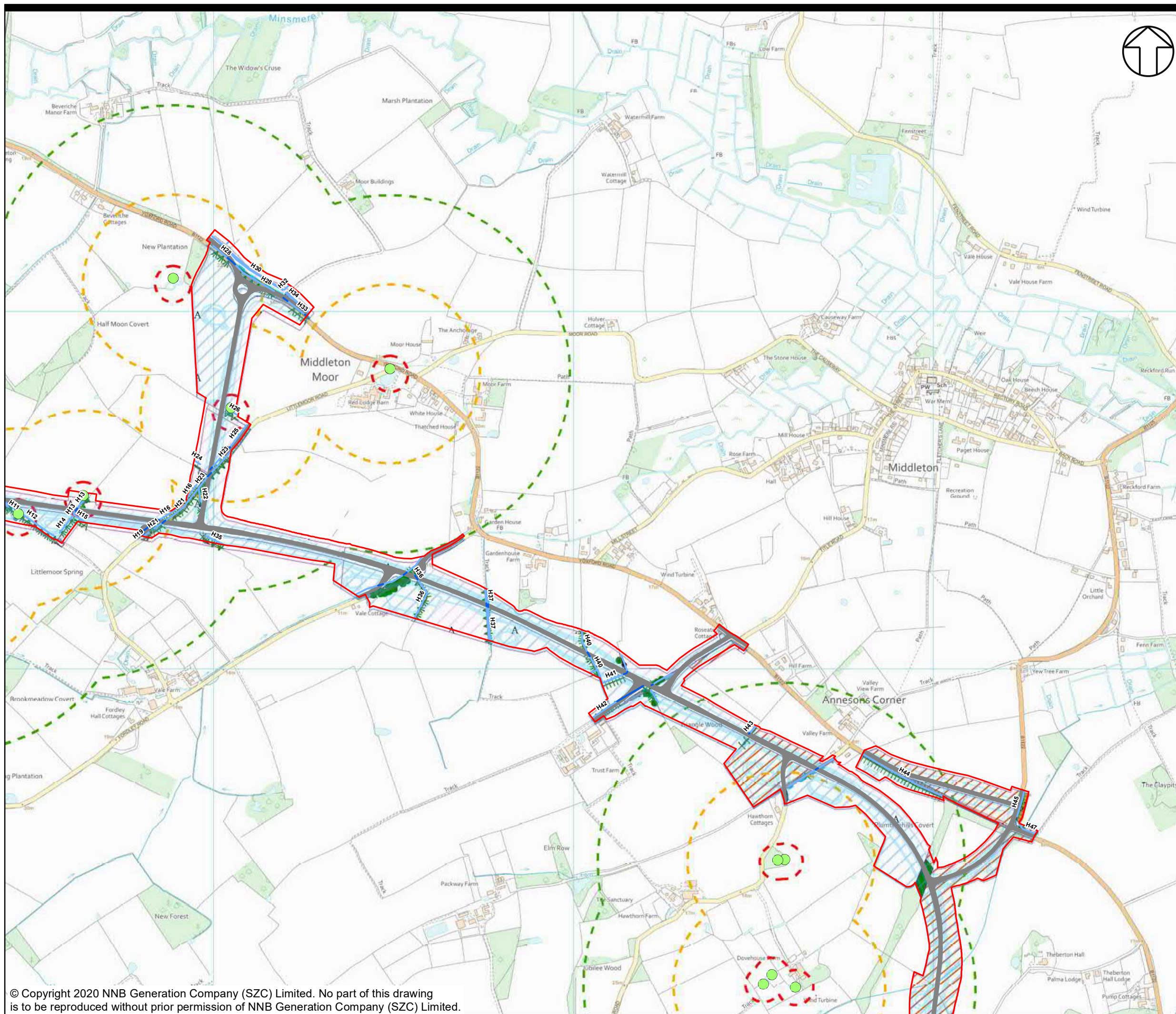
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 FIGURE D: IMPACT MAP
 SHEET 1 OF 3

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 FIGURE 7A-5.4

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NOTES

- KEY**
- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
 - 50M BUFFER
 - 250M BUFFER
 - 500M BUFFER
 - ROAD
 - PERMANENT HABITAT LOSS
 - TEMPORARY HABITAT LOSS
- GREAT CRESTED NEWT (GCN) SURVEY RESULTS**
- GCN PRESENT
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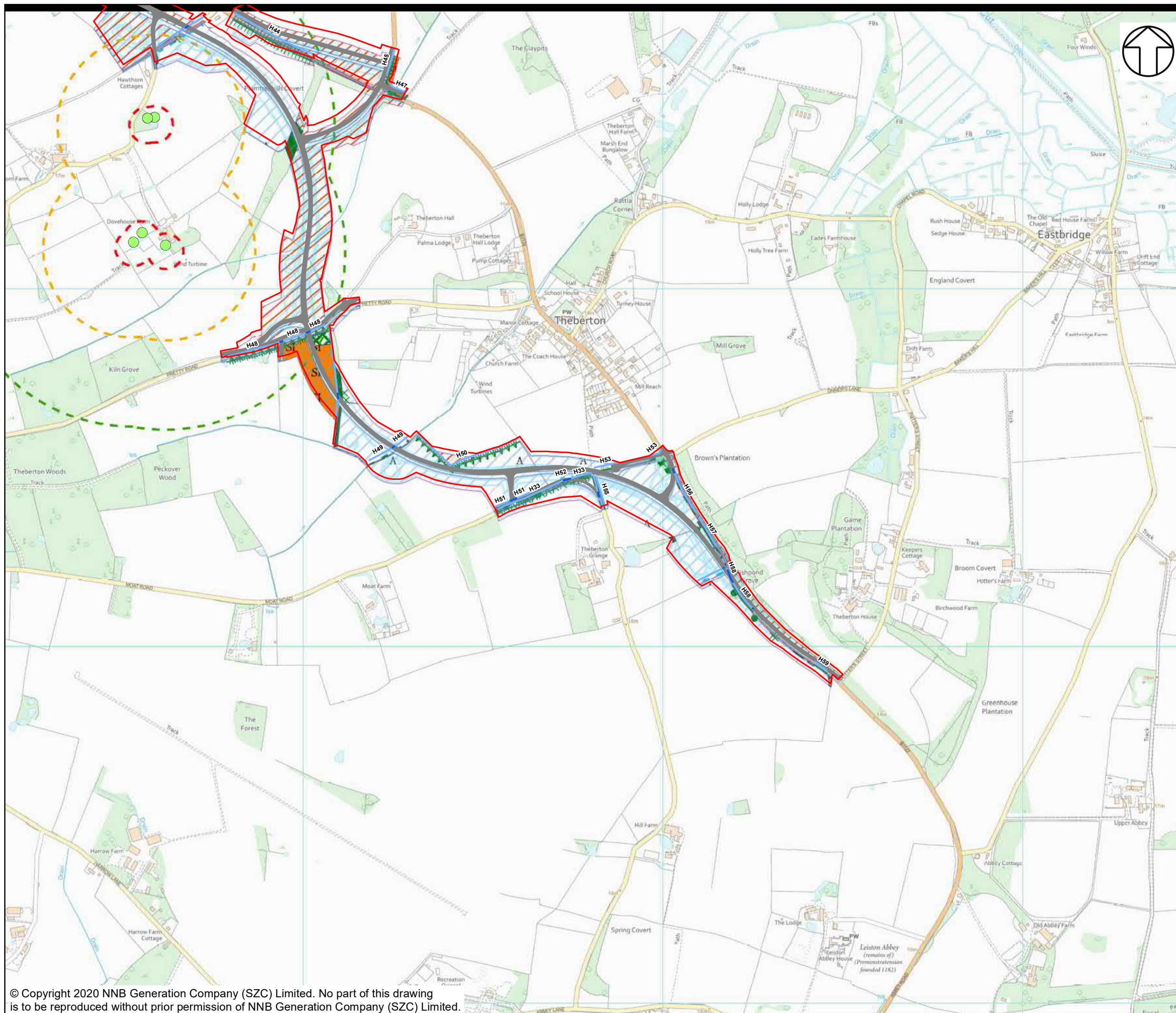
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 FIGURE D: IMPACT MAP
 SHEET 2 OF 3

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 FIGURE 7A-5.4

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NOTES

- KEY**
- SIZEWELL LINK ROAD DEVELOPMENT SITE
 - BOUNDARY
 - 50M BUFFER
 - 250M BUFFER
 - 500M BUFFER
 - ROAD
 - PERMANENT HABITAT LOSS
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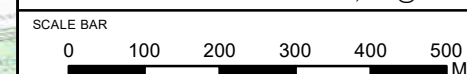


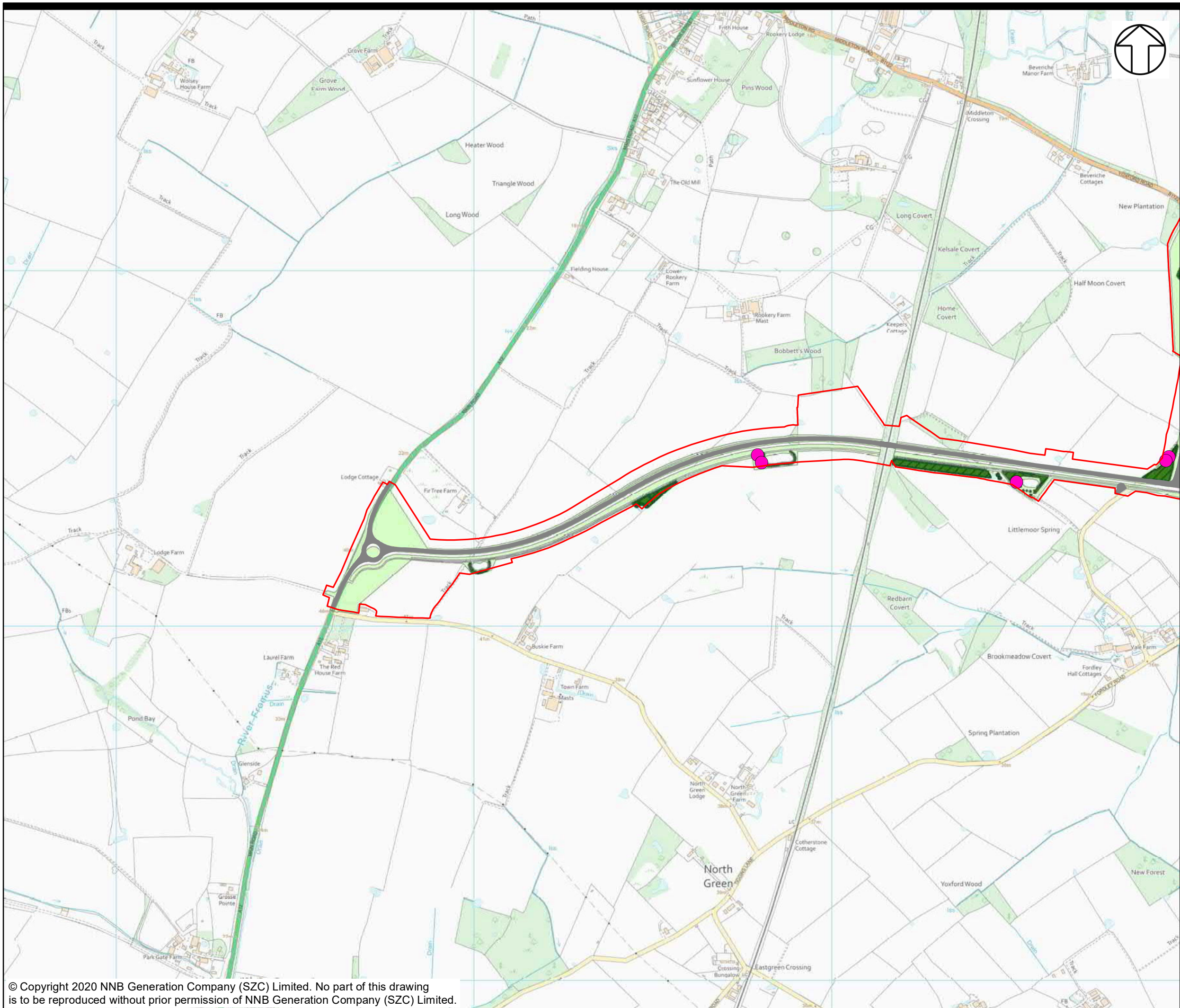
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 SHEET 3 OF 3

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 FIGURE 7A-5.4

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NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT
- SITE BOUNDARY
- MITIGATION POND – AQUATIC RECEPTOR SITE
- TERRESTRIAL RECEPTOR AREAS**
- SPECIES RICH GRASSLAND
- NATIVE SCRUB PLANTING

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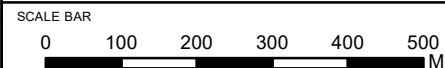


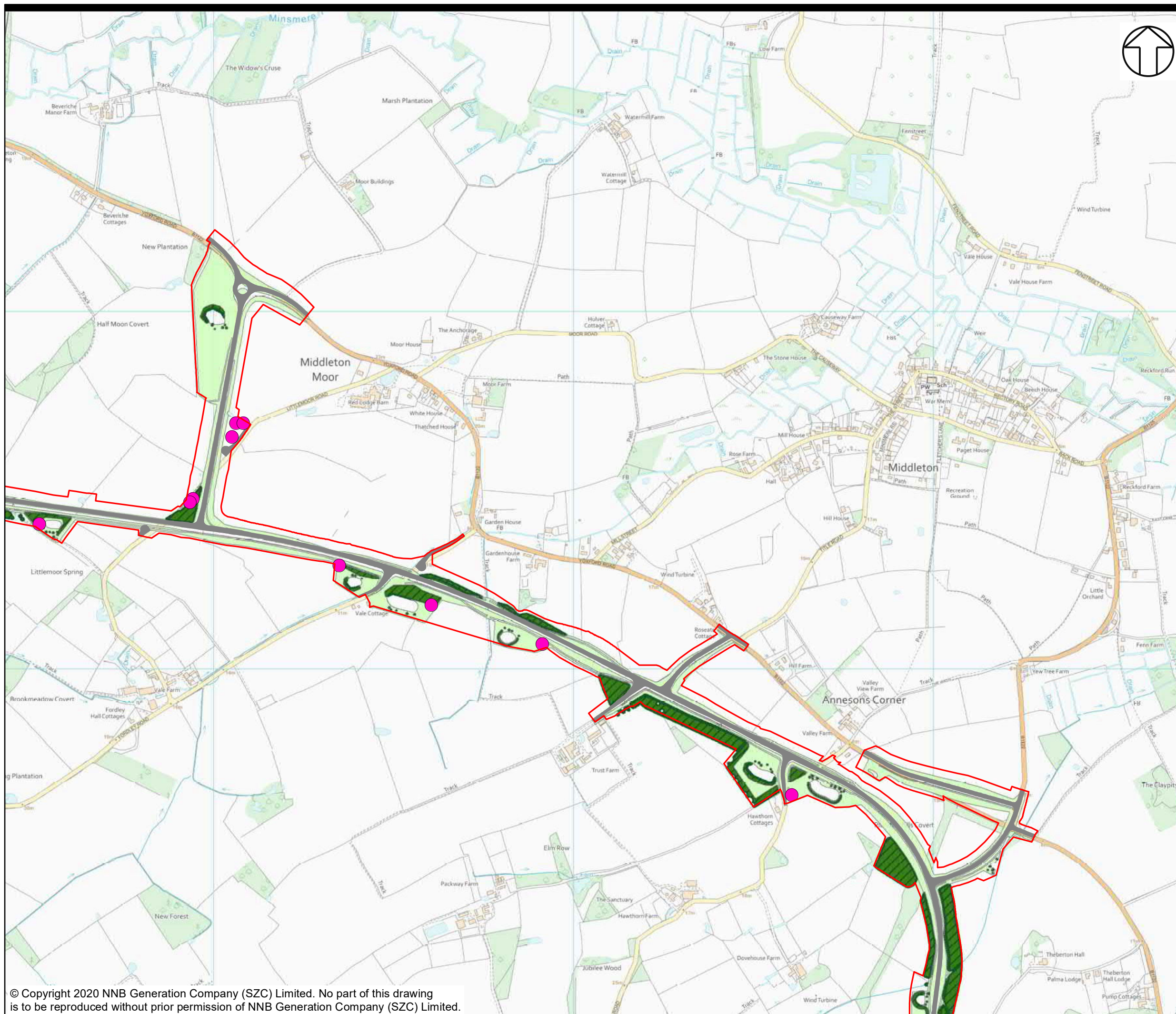
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 SHEET 1 OF 3

DRAWING NO:
 FIGURE 7A-5.5

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NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
- MITIGATION POND – AQUATIC RECEPTOR SITE
- TERRESTRIAL RECEPTOR AREAS**
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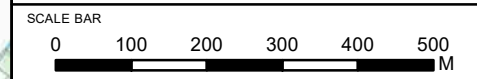


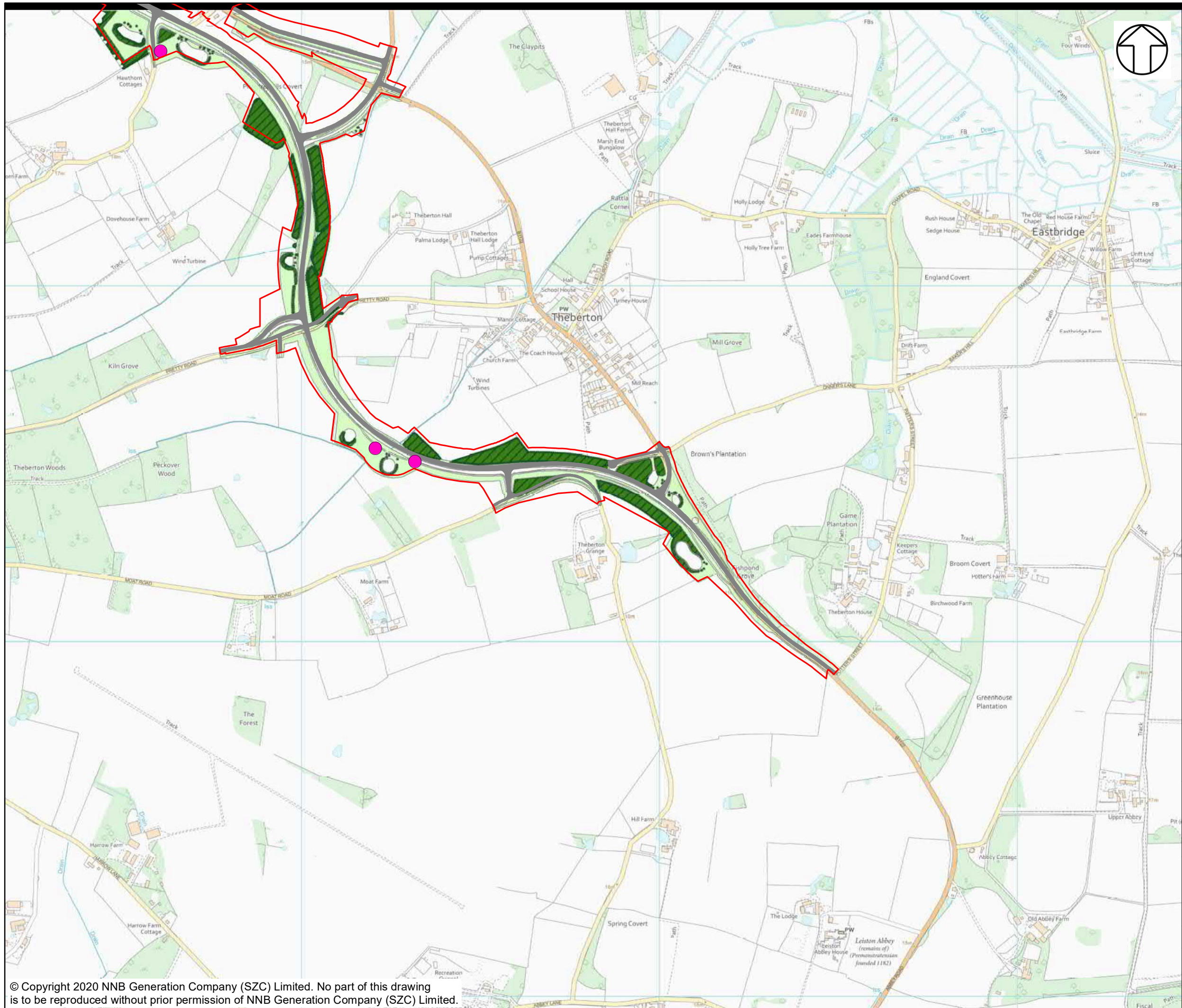
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 SHEET 2 OF 3

DRAWING NO:
 FIGURE 7A-5.5

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NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
- MITIGATION POND – AQUATIC RECEPTOR SITE
- TERRESTRIAL RECEPTOR AREAS**
- SPECIES RICH GRASSLAND
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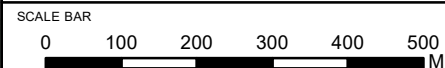


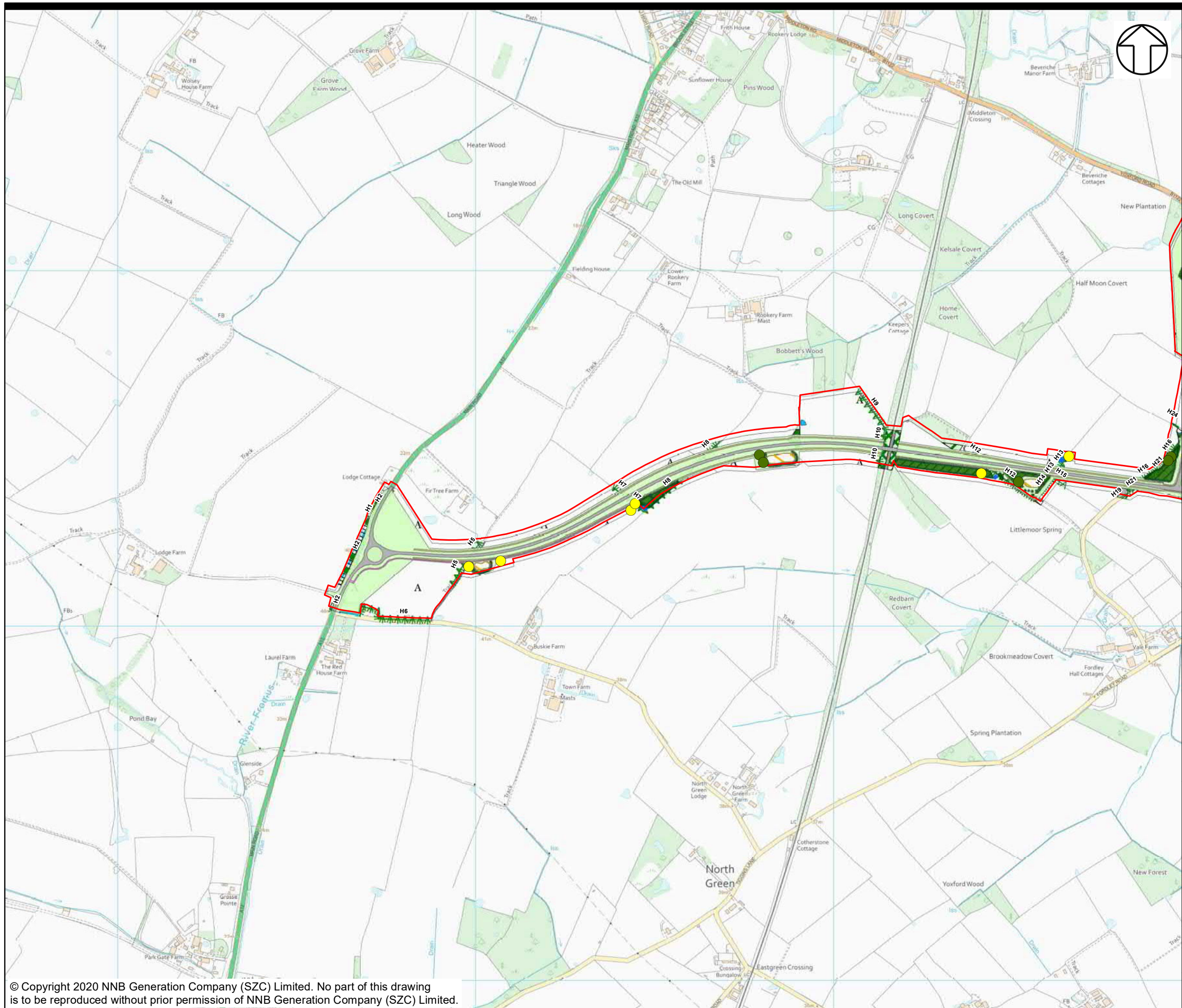
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 SHEET 3 OF 3

DRAWING NO:
 FIGURE 7A-5.5

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NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT
- SITE BOUNDARY
- HIBERNACULA REFUGE
- PONDS
- SCATTERED BROADLEAVED TREES
- SCATTERED CONIFEROUS TREES
- SCATTERED SCRUB
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- RUNNING WATER
- STANDING WATER
- SCRUB - DENSE/CONTINUOUS
- OTHER TALL HERB AND FERN - RUDERAL
- NO ACCESS
- SPECIES RICH GRASSLAND
- NATIVE SCRUB PLANTING
- ACCOMMODATION TRACK
- GENERAL CLEARANCE
- PROPOSED SWALE
- ROAD
- RETAINED POND
- SWALE

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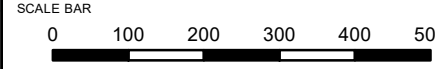


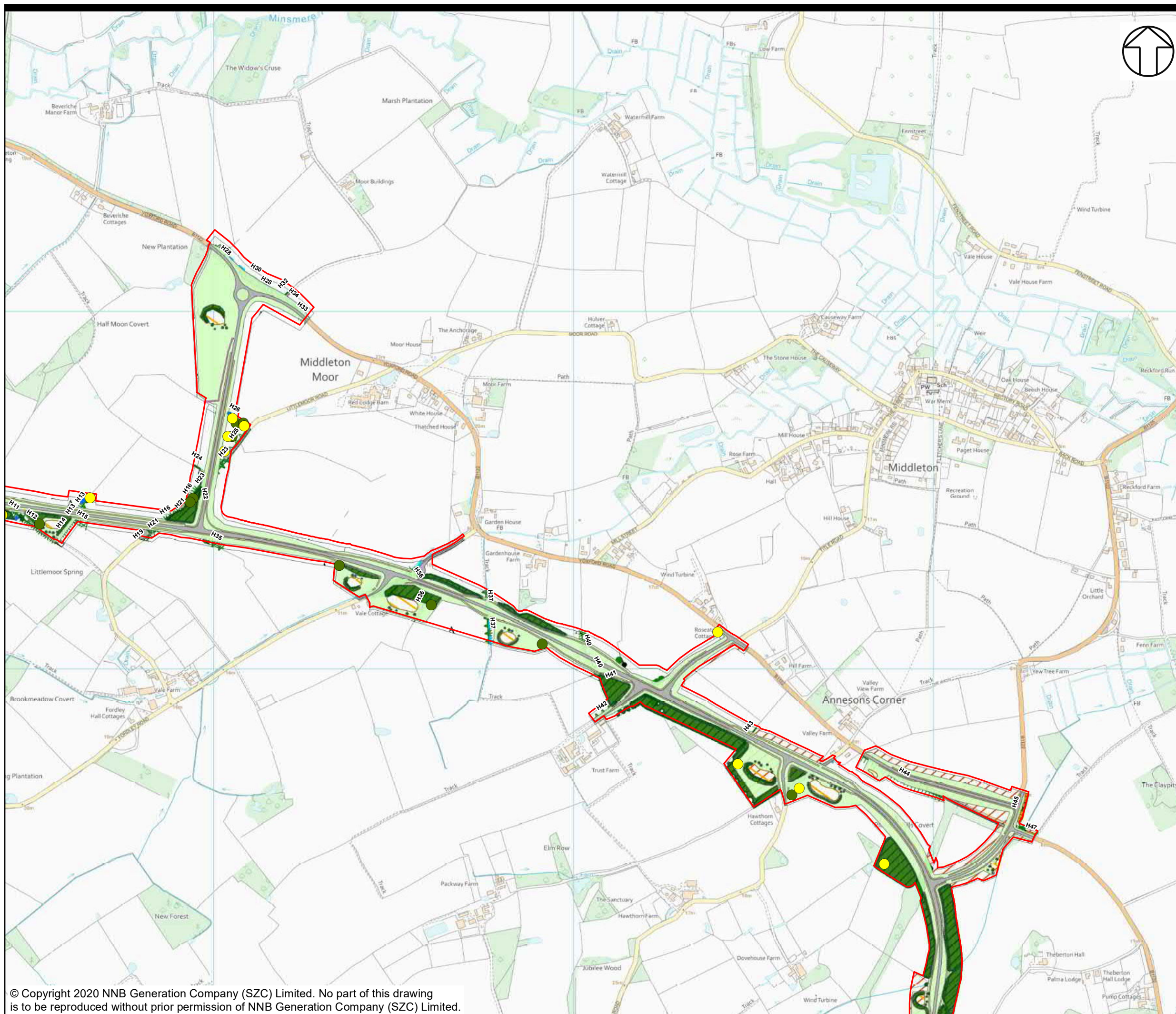
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 FIGURE E3.1: HABITAT MEASURES MAP
 SHEET 1 OF 3

DRAWING NO:
 FIGURE 7A-5.6

DATE: JAN 2020 **DRAWN:** R.G. **SCALE:** 1:10,000 @A3





NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
- HIBERNACULA REFUGE
- PONDS
- SCATTERED BROADLEAVED TREES
- SCATTERED CONIFEROUS TREES
- X SCATTERED SCRUB
- DRY DITCH
- V V DEFUNCT HEDGE - NATIVE SPECIES-RICH
- - DEFUNCT HEDGE - SPECIES-POOR
- EARTH BANK
- H H H H FENCE
- V V V HEDGE WITH TREES - NATIVE SPECIES-RICH
- H H H H HEDGE WITH TREES - SPECIES-POOR
- V V V INTACT HEDGE - NATIVE SPECIES-RICH
- - - INTACT HEDGE - SPECIES-POOR
- RUNNING WATER
- A CULTIVATED/DISTURBED LAND - ARABLE
- BROADLEAVED WOODLAND - SEMI-NATURAL
- BROADLEAVED WOODLAND - PLANTATION
- BUILDINGS
- HARDSTANDING
- I IMPROVED GRASSLAND
- NEUTRAL GRASSLAND - SEMI-IMPROVED
- POOR SEMI-IMPROVED GRASSLAND
- RUNNING WATER
- SCRUB - DENSE/CONTINUOUS
- STANDING WATER
- OTHER TALL HERB AND FERN - RUDERAL
- NO ACCESS
- SPECIES RICH GRASSLAND
- NATIVE SCRUB PLANTING
- ACCOMMODATION TRACK
- GENERAL CLEARANCE
- PROPOSED SWALE
- ROAD
- RETAINED POND
- SWALE

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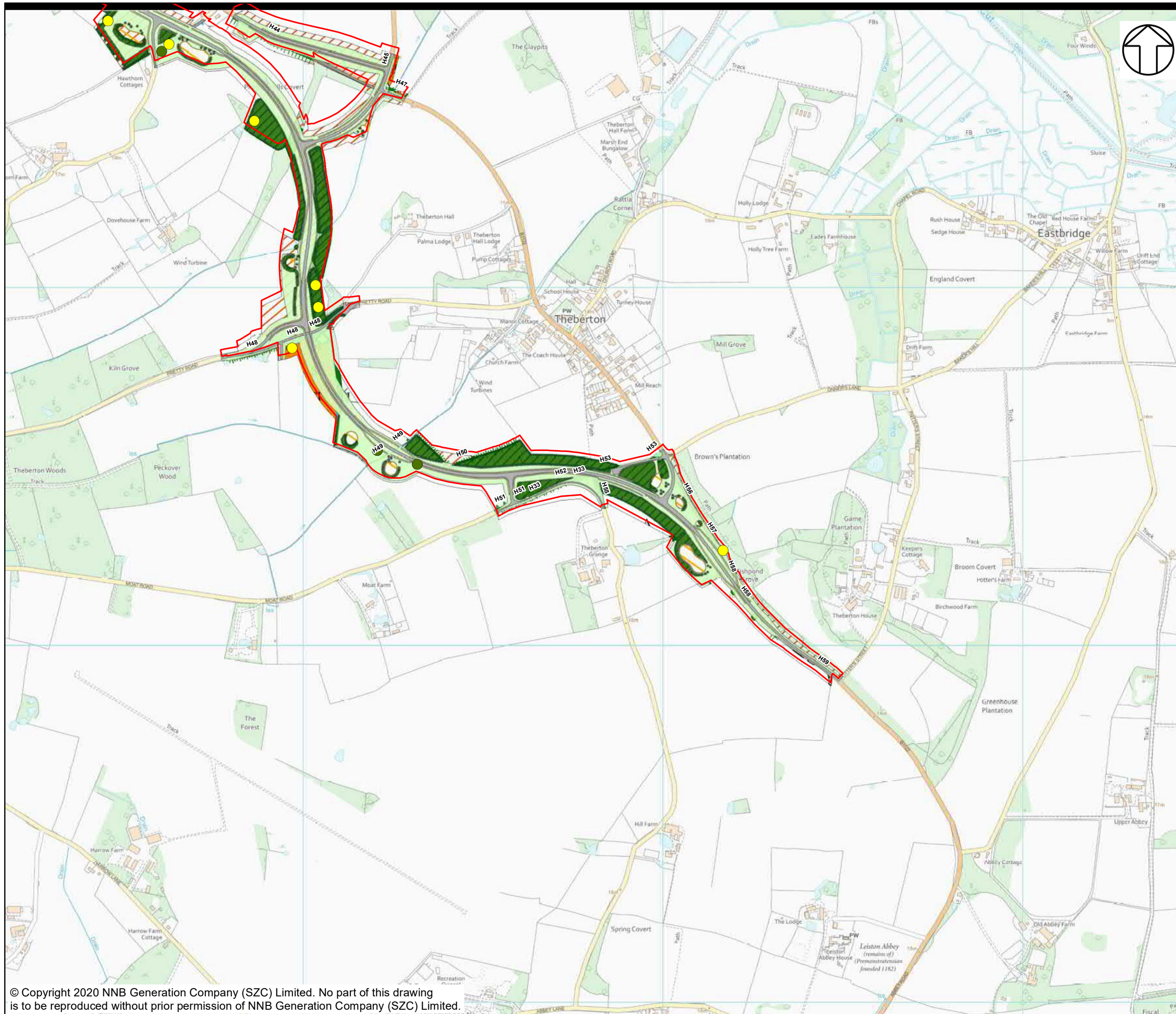
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DRAWING TITLE:
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 SHEET 2 OF 3

DRAWING NO:
 FIGURE 7A-5.6

DATE: JAN 2020 DRAWN: R.G. SCALE: 1:10,000 @A3





NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT
- SITE BOUNDARY
- HIBERNACULA REFUGE
- PONDS
- SCATTERED BROADLEAVED TREES
- SCATTERED CONIFEROUS TREES
- SCATTERED SCRUB
- DRY DITCH
- DEFUNCT HEDGE - NATIVE SPECIES-RICH
- DEFUNCT HEDGE - SPECIES-POOR
- EARTH BANK
- FENCE
- HEDGE WITH TREES - NATIVE SPECIES-RICH
- HEDGE WITH TREES - SPECIES-POOR
- INTACT HEDGE - NATIVE SPECIES-RICH
- INTACT HEDGE - SPECIES-POOR
- RUNNING WATER
- CULTIVATED/DISTURBED LAND - ARABLE
- BROADLEAVED WOODLAND - SEMI-NATURAL
- BROADLEAVED WOODLAND - PLANTATION
- BUILDINGS
- HARDSTANDING
- IMPROVED GRASSLAND
- NEUTRAL GRASSLAND - SEMI-IMPROVED
- POOR SEMI-IMPROVED GRASSLAND
- RUNNING WATER
- STANDING WATER
- SCRUB - DENSE/CONTINUOUS
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- NO ACCESS
- SPECIES RICH GRASSLAND
- NATIVE SCRUB PLANTING
- ACCOMODATION TRACK
- GENERAL CLEARANCE
- PROPOSED SWALE
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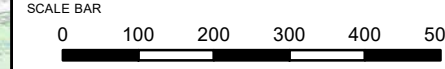


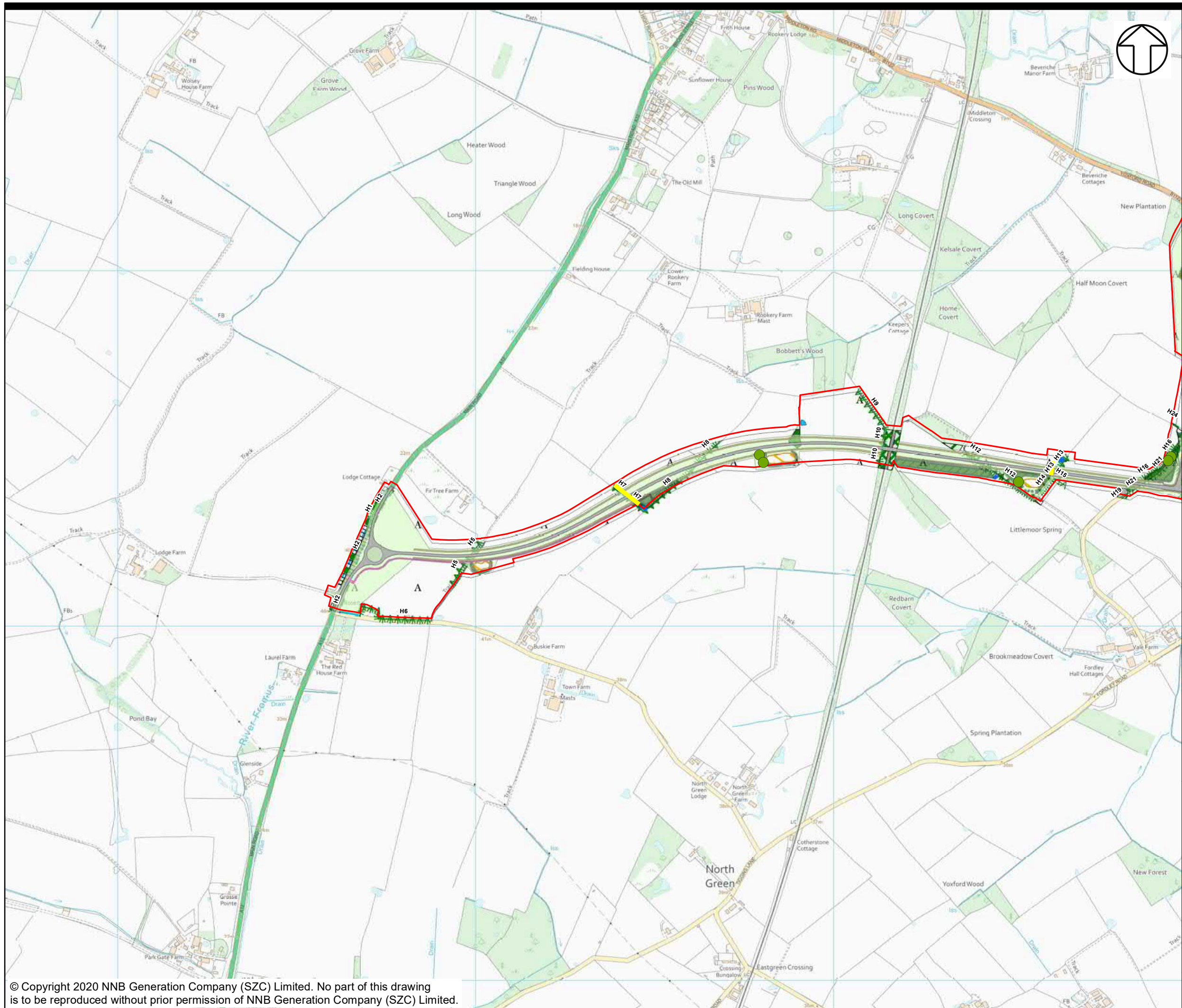
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 SHEET 3 OF 3

DRAWING NO:
 FIGURE 7A-5.6

DATE: JAN 2020 **DRAWN:** R.G. **SCALE:** 1:10,000 @A3





NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
- PONDS
- CULVERTS
- SCATTERED BROADLEAVED TREES
- SCATTERED CONIFEROUS TREES
- SCATTERED SCRUB
- DRY DITCH
- DEFUNCT HEDGE - NATIVE SPECIES-RICH
- DEFUNCT HEDGE - SPECIES-POOR
- EARTH BANK
- FENCE
- HEDGE WITH TREES - NATIVE SPECIES-RICH
- HEDGE WITH TREES - SPECIES-POOR
- INTACT HEDGE - NATIVE SPECIES-RICH
- INTACT HEDGE - SPECIES-POOR
- RUNNING WATER
- CULTIVATED/DISTURBED LAND - ARABLE
- BROADLEAVED WOODLAND - SEMI-NATURAL
- BROADLEAVED WOODLAND - PLANTATION
- BUILDINGS
- HARDSTANDING
- IMPROVED GRASSLAND
- NEUTRAL GRASSLAND - SEMI-IMPROVED
- POOR SEMI-IMPROVED GRASSLAND
- RUNNING WATER
- SCRUB - DENSE/CONTINUOUS
- STANDING WATER
- OTHER TALL HERB AND FERN - RUDERAL
- NO ACCESS
- SPECIES RICH GRASSLAND
- NATIVE SCRUB PLANTING
- ACCOMMODATION TRACK
- GENERAL CLEARANCE
- PROPOSED SWALE
- ROAD
- RETAINED POND
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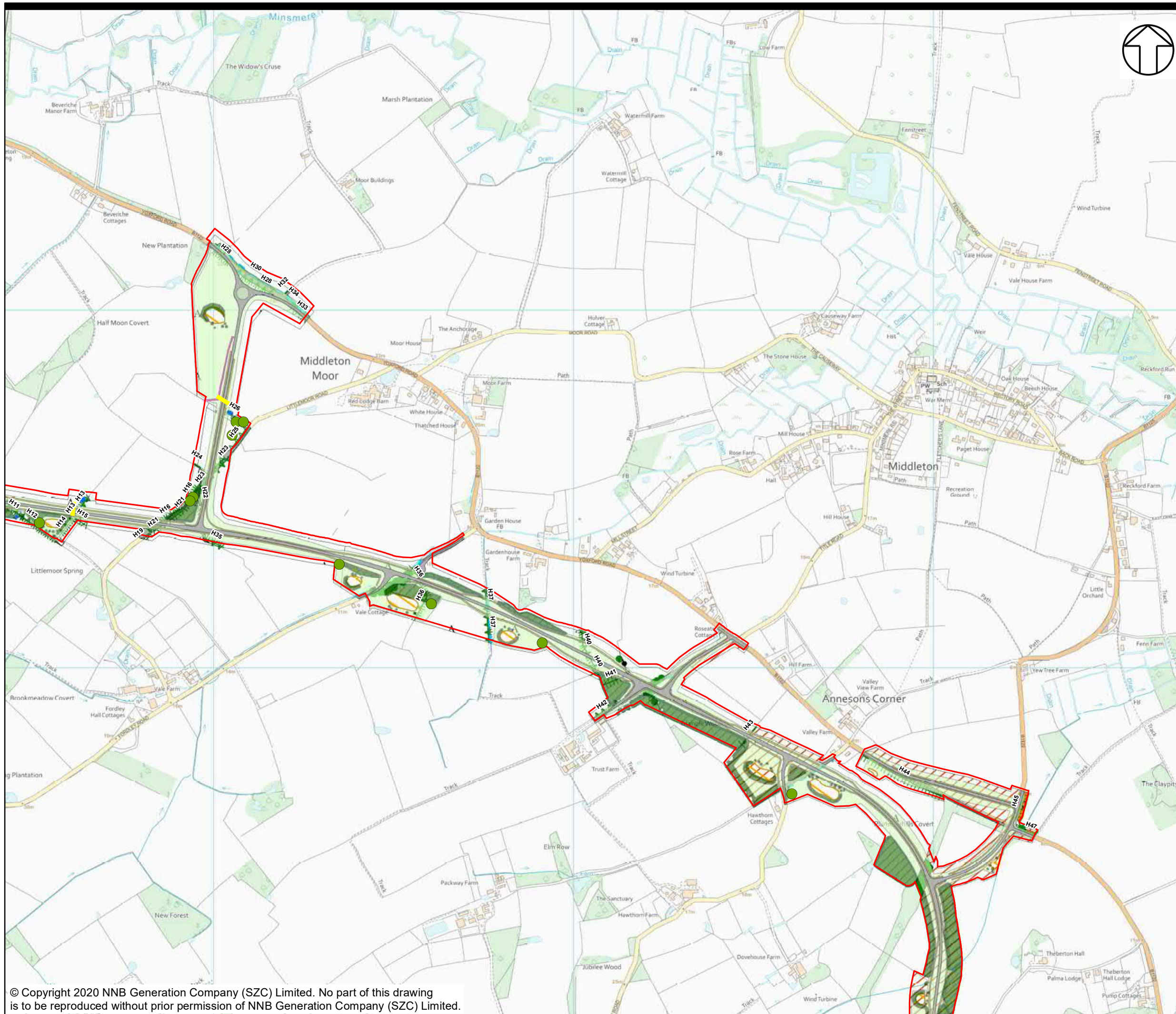
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DRAWING TITLE:
 FIGURE E3.3: CONNECTIVITY MAP
 SHEET 1 OF 3

DRAWING NO:
 FIGURE 7A-5.7

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NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
- PONDS
- CULVERTS
- SCATTERED BROADLEAVED TREES
- SCATTERED CONIFEROUS TREES
- SCATTERED SCRUB
- DRY DITCH
- DEFUNCT HEDGE - NATIVE SPECIES-RICH
- DEFUNCT HEDGE - SPECIES-POOR
- EARTH BANK
- FENCE
- HEDGE WITH TREES - NATIVE SPECIES-RICH
- HEDGE WITH TREES - SPECIES-POOR
- INTACT HEDGE - NATIVE SPECIES-RICH
- INTACT HEDGE - SPECIES-POOR
- RUNNING WATER
- CULTIVATED/DISTURBED LAND - ARABLE
- BROADLEAVED WOODLAND - SEMI-NATURAL
- BROADLEAVED WOODLAND - PLANTATION
- BUILDINGS
- HARDSTANDING
- IMPROVED GRASSLAND
- NEUTRAL GRASSLAND - SEMI-IMPROVED
- POOR SEMI-IMPROVED GRASSLAND
- RUNNING WATER
- SCRUB - DENSE/CONTINUOUS
- STANDING WATER
- OTHER TALL HERB AND FERN - RUDERAL
- NO ACCESS
- SPECIES RICH GRASSLAND
- NATIVE SCRUB PLANTING
- ACCOMMODATION TRACK
- GENERAL CLEARANCE
- PROPOSED SWALE
- ROAD
- RETAINED POND
- SWALE

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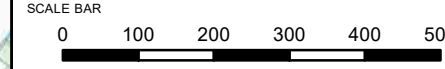


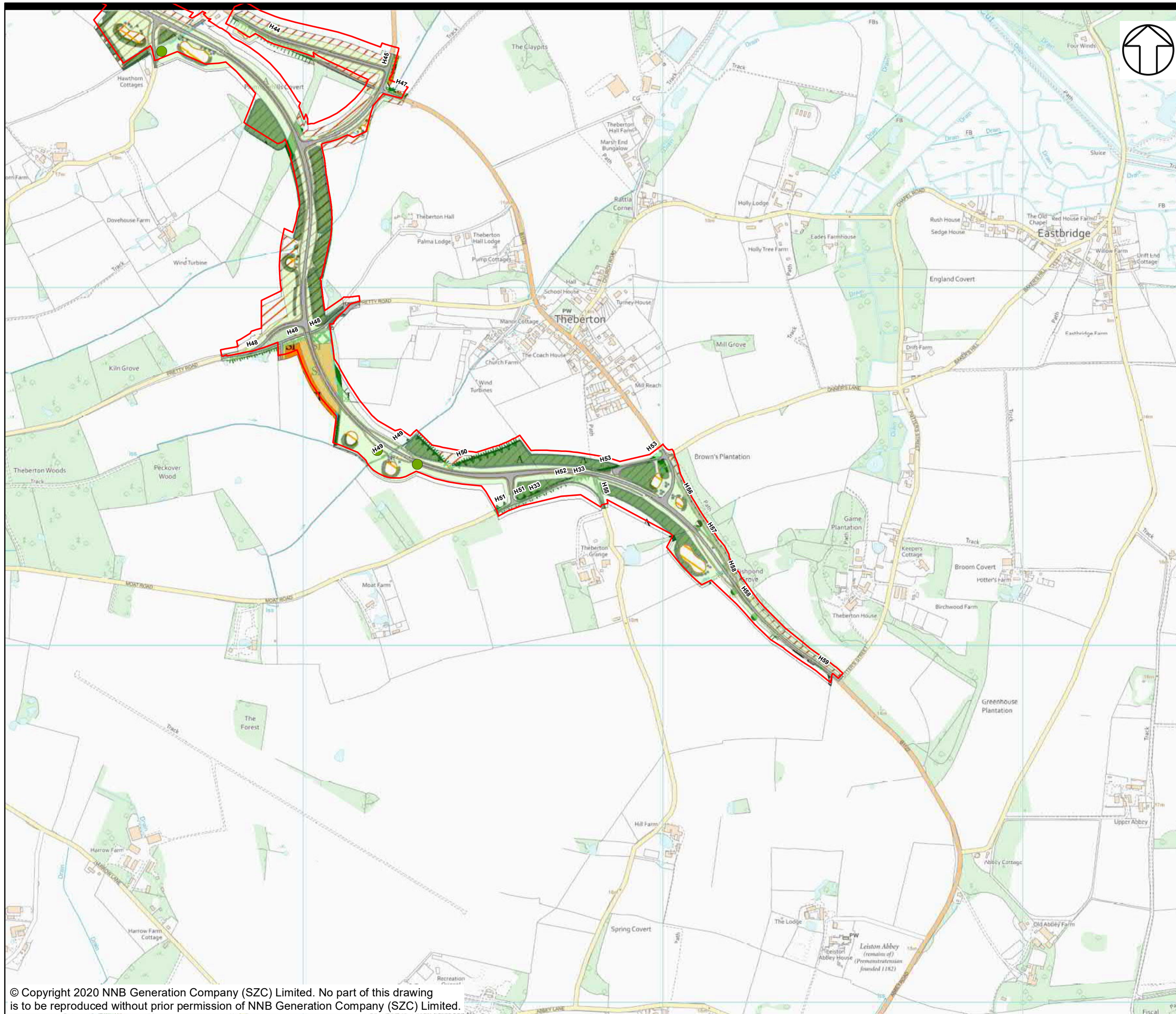
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 FIGURE E3.3: CONNECTIVITY MAP
 SHEET 2 OF 3

DRAWING NO:
 FIGURE 7A-5.7

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NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
- PONDS
- CULVERTS
- SCATTERED BROADLEAVED TREES
- SCATTERED CONIFEROUS TREES
- SCATTERED SCRUB
- DRY DITCH
- DEFUNCT HEDGE - NATIVE SPECIES-RICH
- DEFUNCT HEDGE - SPECIES-POOR
- EARTH BANK
- FENCE
- HEDGE WITH TREES - NATIVE SPECIES-RICH
- HEDGE WITH TREES - SPECIES-POOR
- INTACT HEDGE - NATIVE SPECIES-RICH
- INTACT HEDGE - SPECIES-POOR
- RUNNING WATER
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- STANDING WATER
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- ACCOMMODATION TRACK
- GENERAL CLEARANCE
- PROPOSED SWALE
- ROAD
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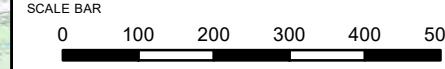


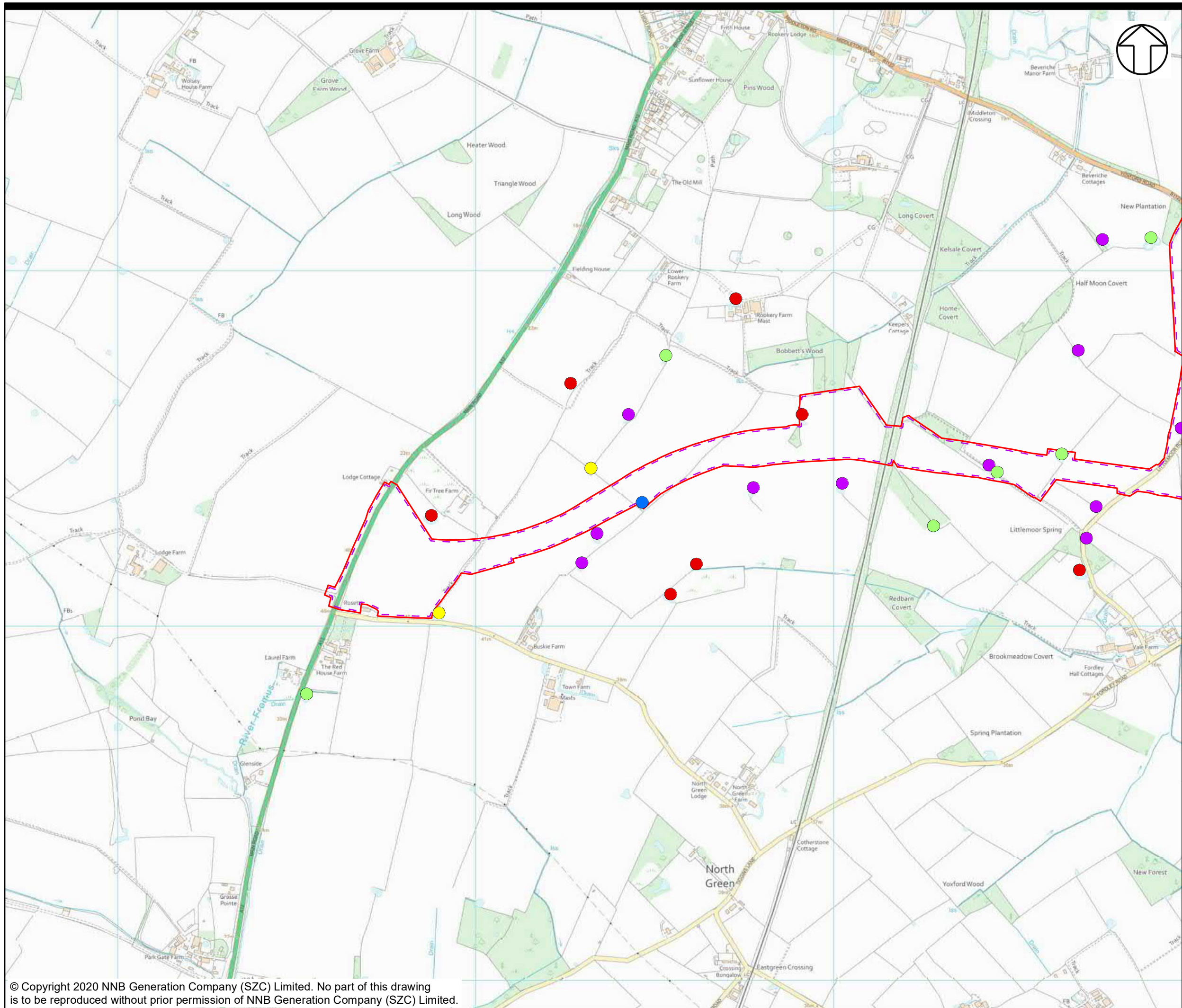
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 SHEET 3 OF 3

DRAWING NO:
 FIGURE 7A-5.7

DATE: JAN 2020 **DRAWN:** R.G. **SCALE:** 1:10,000 @A3





NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
- TEMPORARY ONE WAY FENCING
- GREAT CRESTED NEWT (GCN) PRESENCE**
- GCN PRESENT
- GCN ABSENT
- INCONCLUSIVE GCN EDNA RESULT – ASSUMED PRESENCE
- INCONCLUSIVE GCN EDNA RESULT – ASSUMED ABSENCE
- DRY AT TIME OF SURVEY
- POND NOT PRESENT AT TIME OF SURVEY

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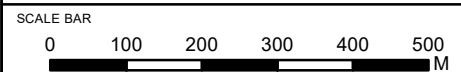


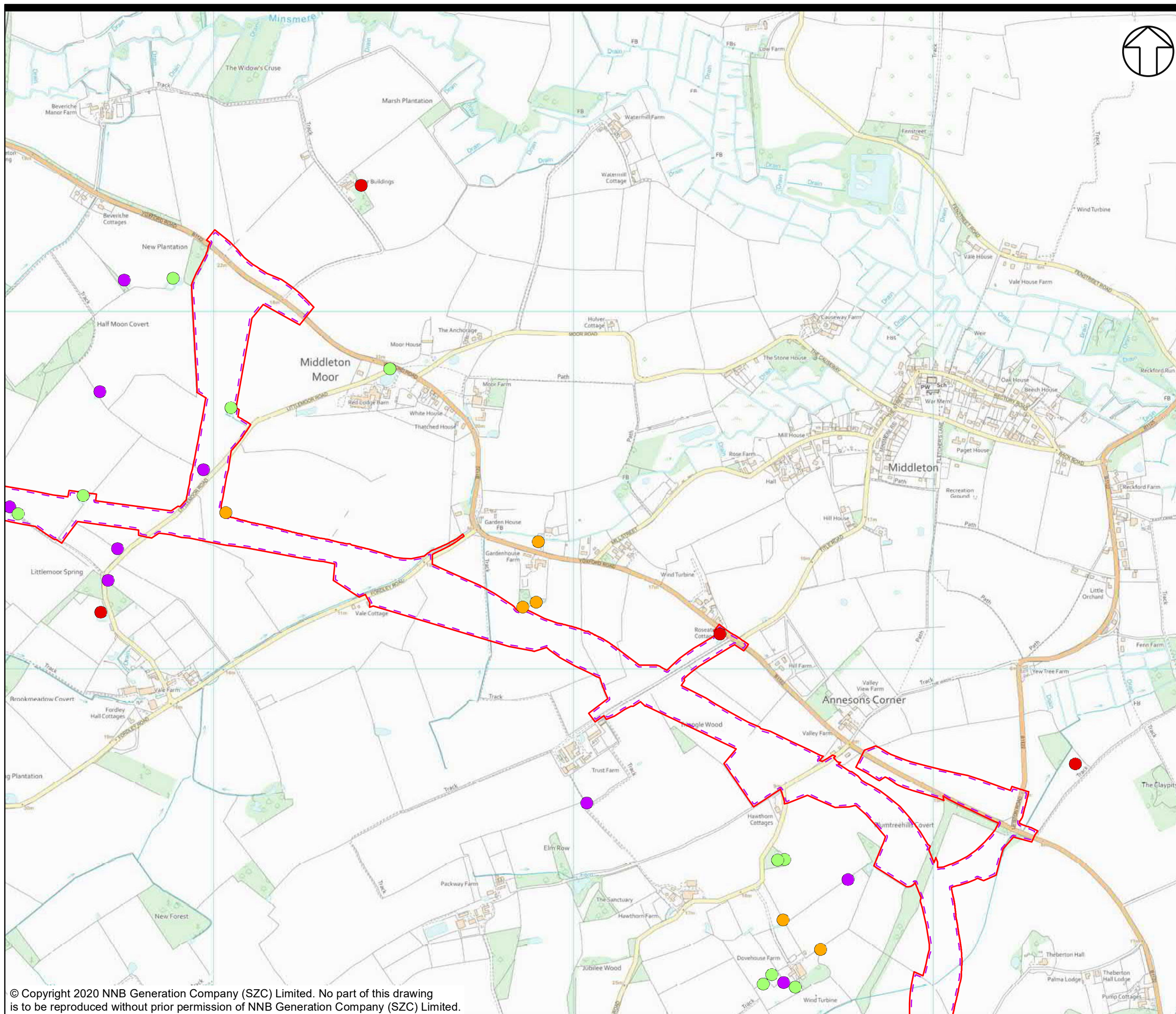
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 FIGURE E4a: CAPTURE AND EXCLUSION MAP
 SHEET 1 OF 3

DRAWING NO:
 FIGURE 7A-5.8

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NOTES

- KEY**
- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
 - TEMPORARY ONE WAY FENCING
- GREAT CRESTED NEWT (GCN) PRESENCE**
- GCN PRESENT
 - GCN ABSENT
 - INCONCLUSIVE GCN EDNA RESULT – ASSUMED PRESENCE
 - INCONCLUSIVE GCN EDNA RESULT – ASSUMED ABSENCE
 - DRY AT TIME OF SURVEY
 - POND NOT PRESENT AT TIME OF SURVEY

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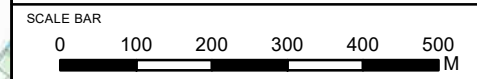


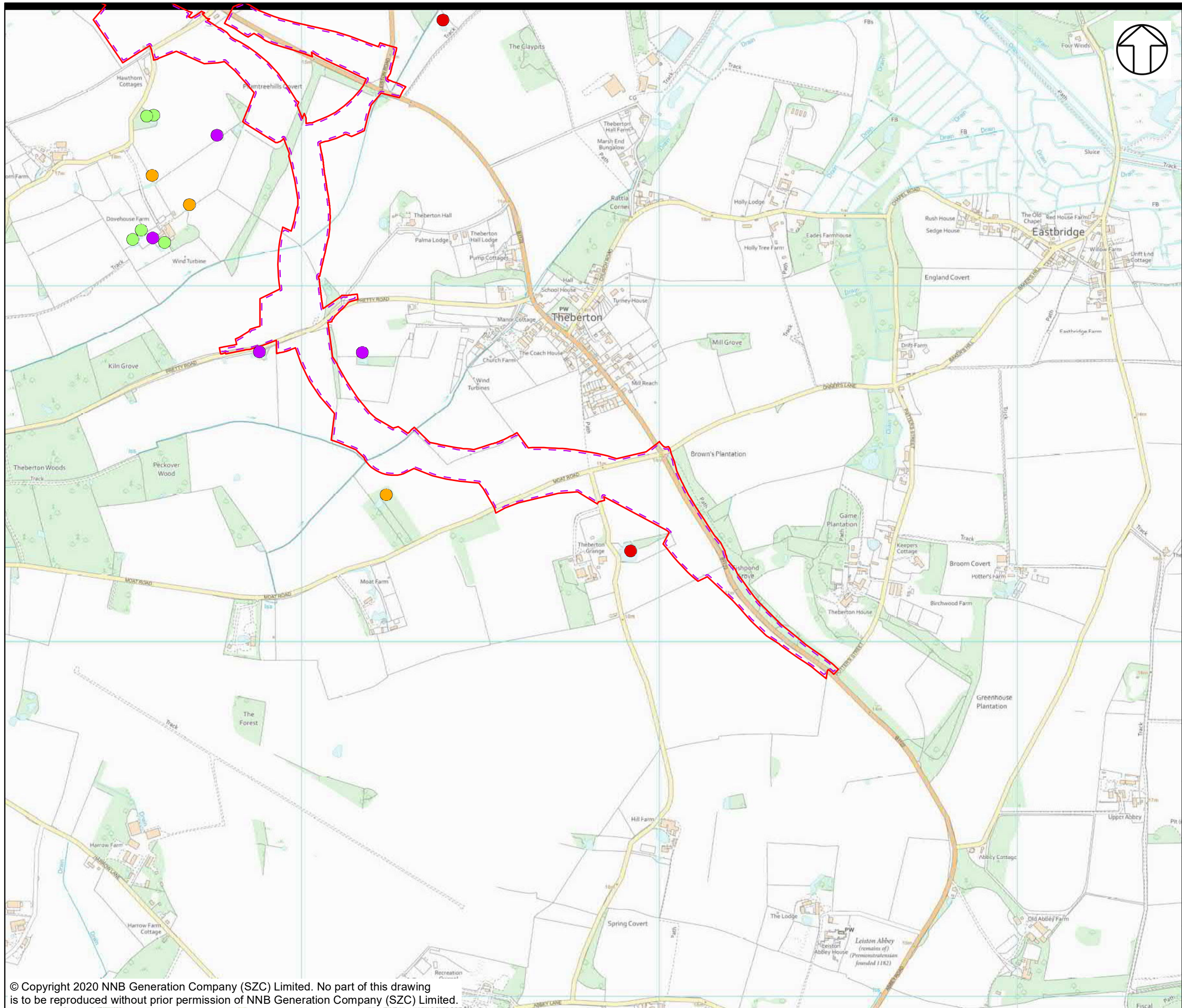
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 SHEET 2 OF 3

DRAWING NO:
 FIGURE 7A-5.8

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NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
- TEMPORARY ONE WAY FENCING
- GREAT CRESTED NEWT (GCN) PRESENCE**
- GCN PRESENT
- GCN ABSENT
- INCONCLUSIVE GCN EDNA RESULT – ASSUMED PRESENCE
- INCONCLUSIVE GCN EDNA RESULT – ASSUMED ABSENCE
- DRY AT TIME OF SURVEY
- POND NOT PRESENT AT TIME OF SURVEY

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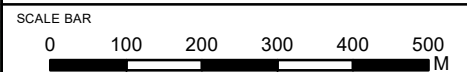


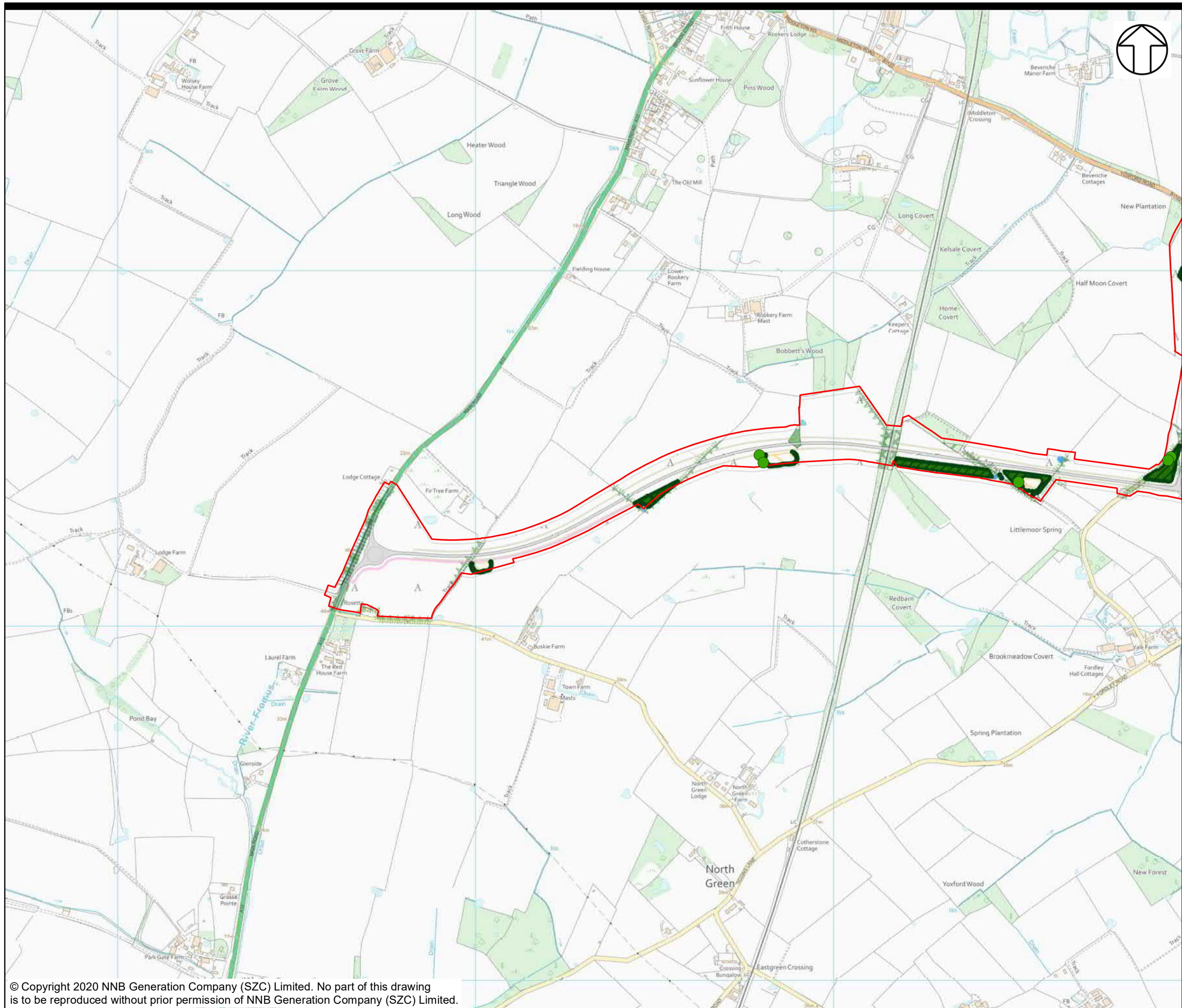
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 SHEET 3 OF 3

DRAWING NO:
 FIGURE 7A-5.8

DATE: JAN 2020 **DRAWN:** R.G. **SCALE:** 1:10,000 @A3





NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
- NEW POND - SUBJECT TO MANAGEMENT OF AQUATIC VEGETATION TO PREVENT OVER SHADING AND CHOKING OF PONDS
- NATIVE SCRUB PLANTING - SUBJECT TO REGULAR MANAGEMENT AROUND THE NEW PONDS TO PREVENT OVER SHADING

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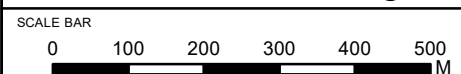


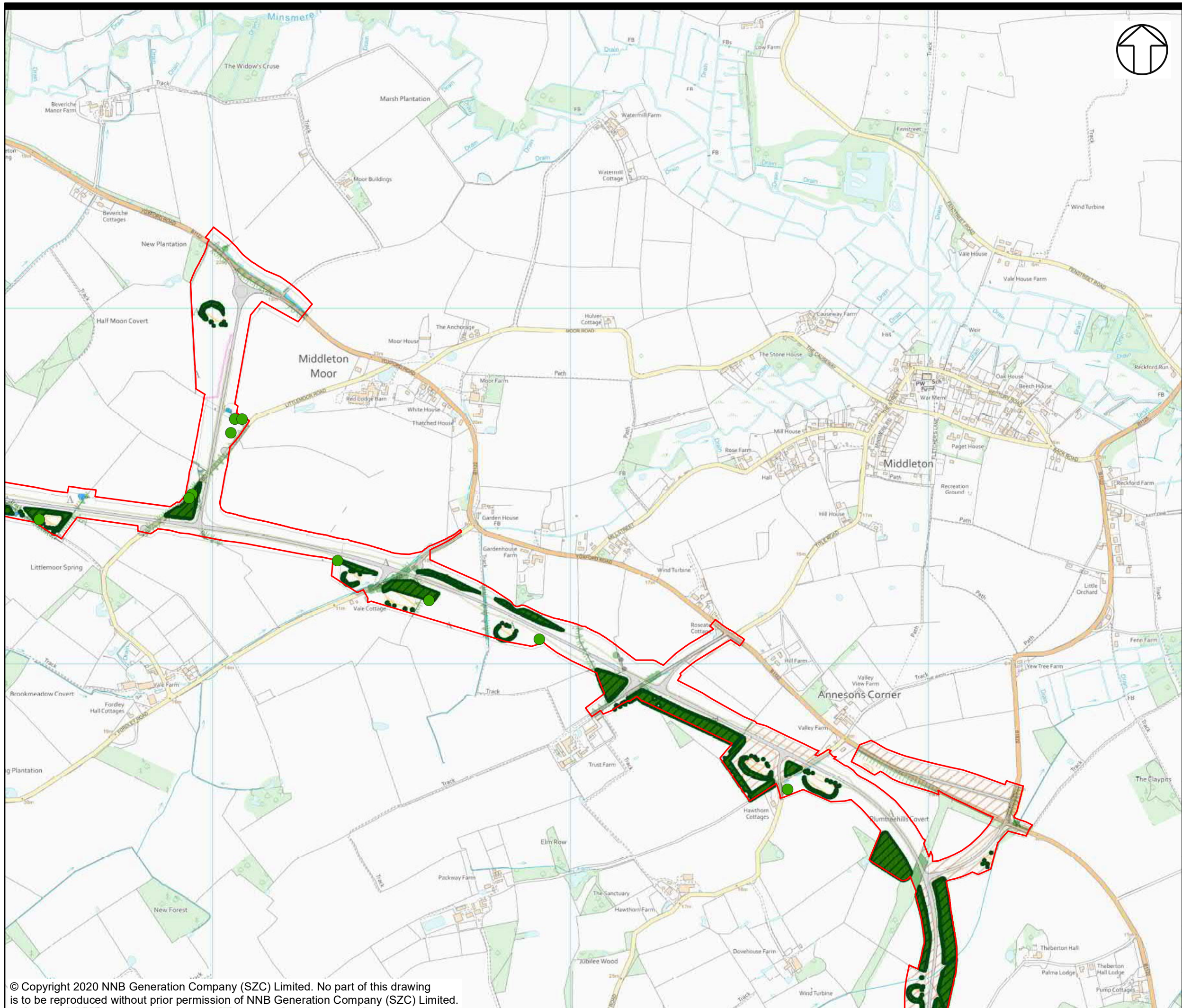
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 MANAGEMENT
 SHEET 1 OF 3

DRAWING NO:
 FIGURE 7A-5.9

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NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
- NEW POND - SUBJECT TO MANAGEMENT OF AQUATIC VEGETATION TO PREVENT OVER SHADING AND CHOKING OF PONDS
- NATIVE SCRUB PLANTING - SUBJECT TO REGULAR MANAGEMENT AROUND THE NEW PONDS TO PREVENT OVER SHADING

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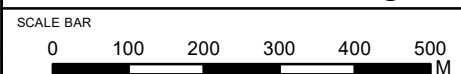


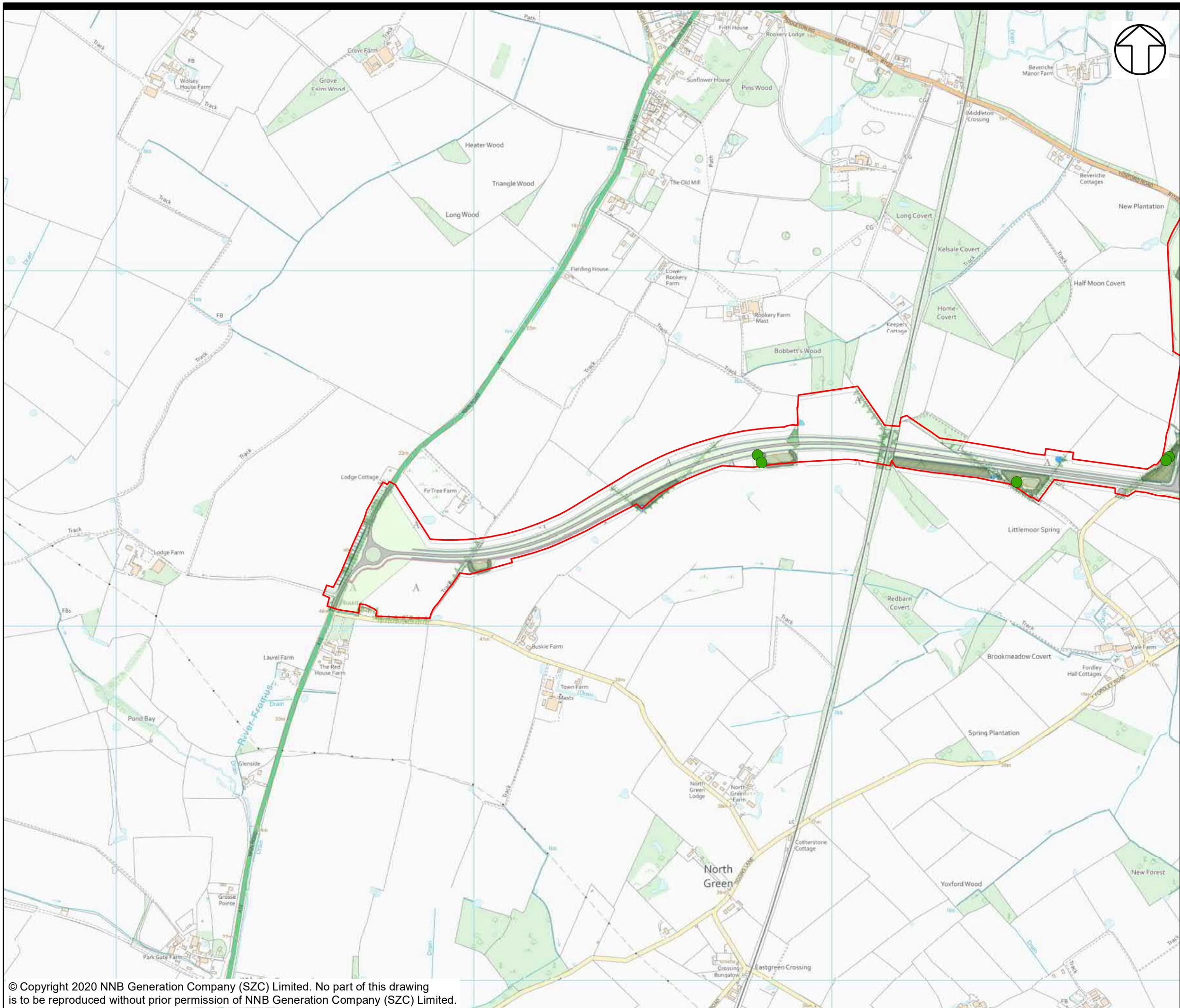
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 MANAGEMENT
 SHEET 2 OF 3

DRAWING NO:
 FIGURE 7A-5.9

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NOTES

- KEY**
- SIZEWELL LINK ROAD DEVELOPMENT
 - SITE BOUNDARY
 - POND WITHIN OWNERSHIP SUBJECT TO MONITORING WORKS

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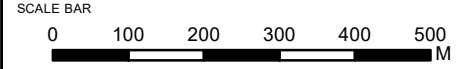


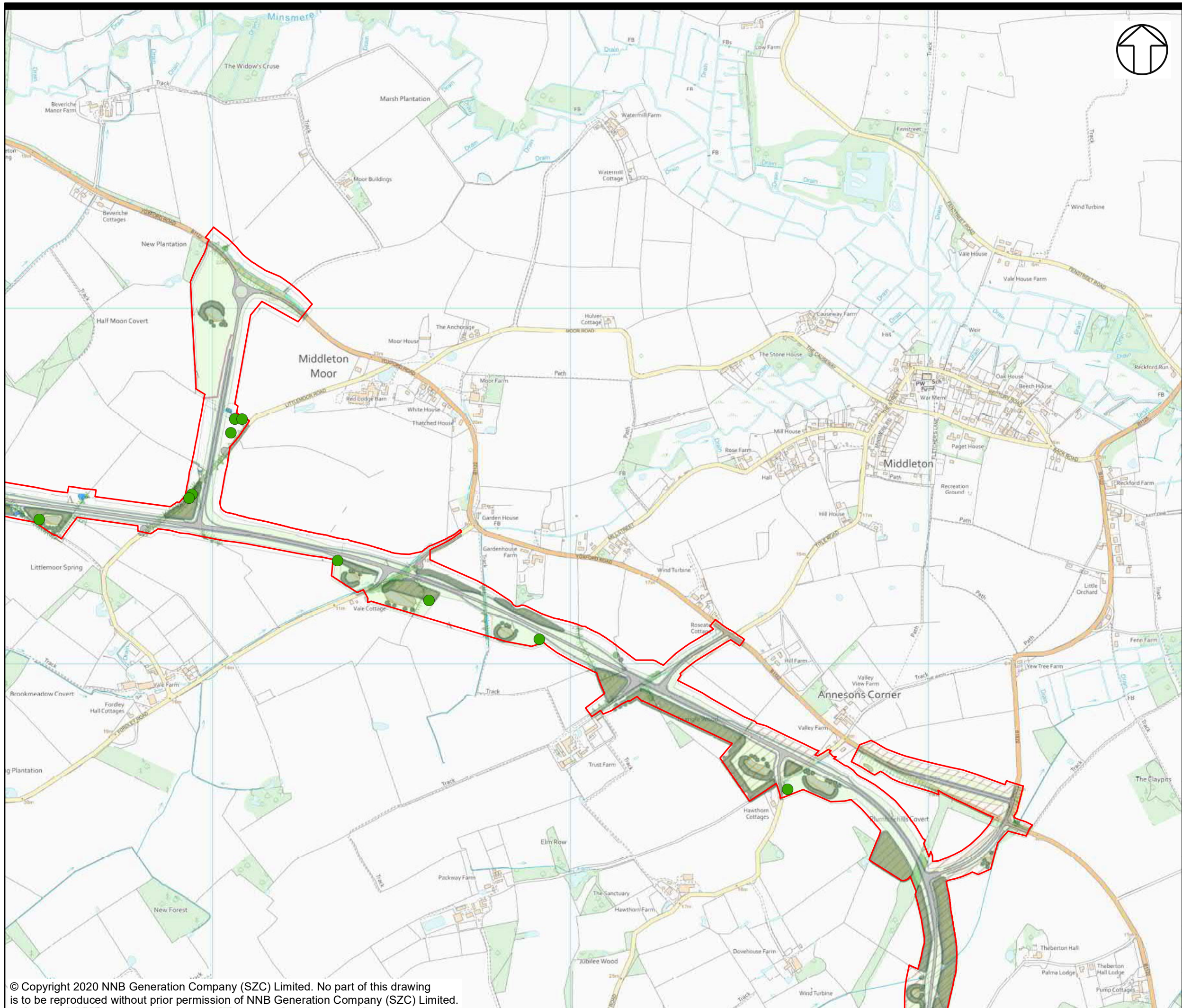
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 SHEET 1 OF 3

DRAWING NO:
 FIGURE 7A-5.10

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NOTES

KEY

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- SITE BOUNDARY
- POND WITHIN OWNERSHIP SUBJECT TO MONITORING WORKS

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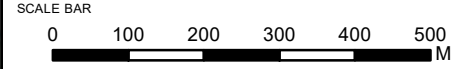


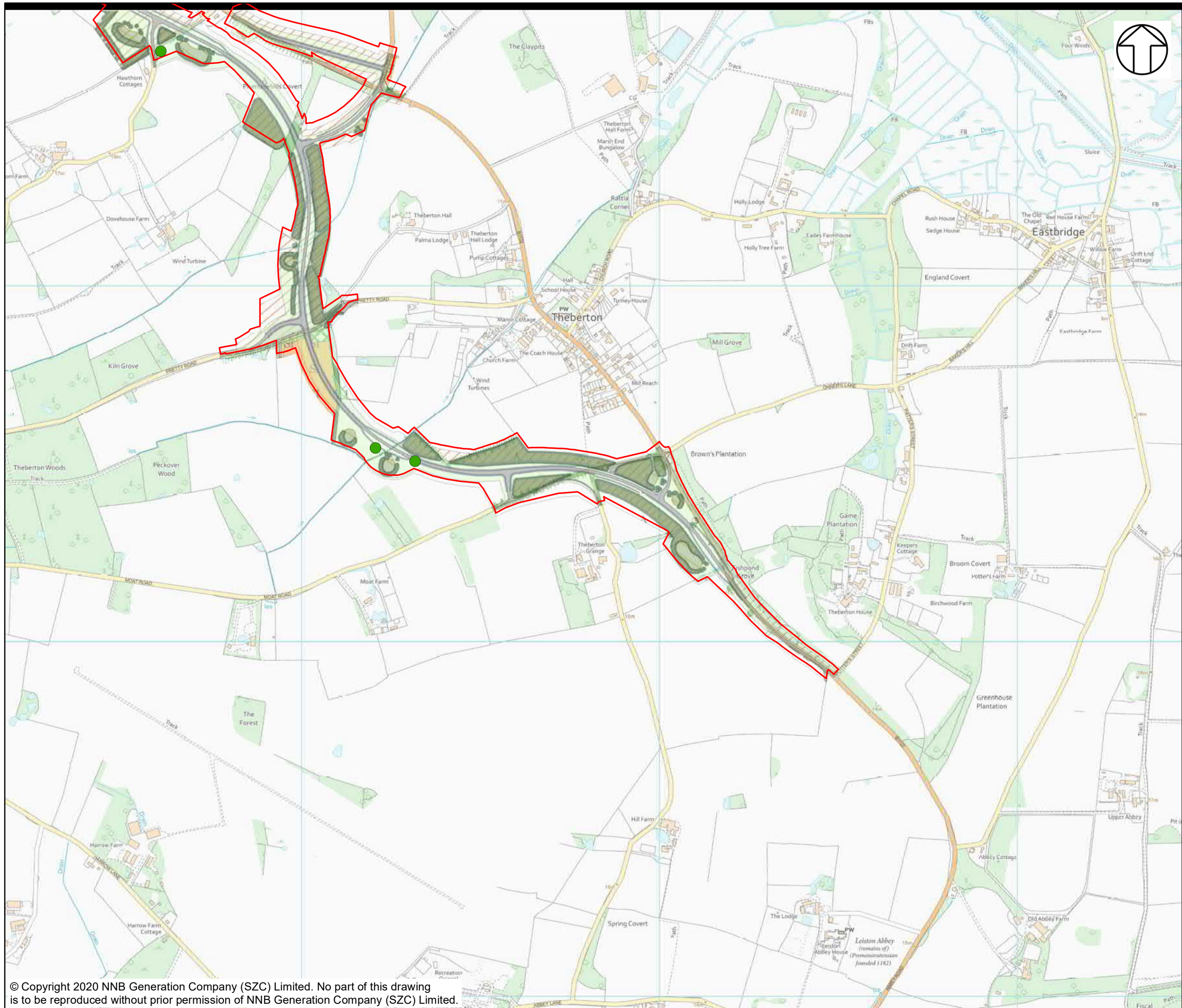
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 SHEET 2 OF 3

DRAWING NO:
 FIGURE 7A-5.10

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NOTES

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 - SITE BOUNDARY
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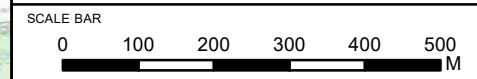


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 SHEET 3 OF 3

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 FIGURE 7A-5.10

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NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
- PONDS
- SCATTERED BROADLEAVED TREES
- SCATTERED CONIFEROUS TREES
- SCATTERED SCRUB
- DRY DITCH
- DEFUNCT HEDGE - NATIVE SPECIES-RICH
- DEFUNCT HEDGE - SPECIES-POOR
- EARTH BANK
- FENCE
- HEDGE WITH TREES - NATIVE SPECIES-RICH
- HEDGE WITH TREES - SPECIES-POOR
- INTACT HEDGE - NATIVE SPECIES-RICH
- INTACT HEDGE - SPECIES-POOR
- RUNNING WATER
- CULTIVATED/DISTURBED LAND - ARABLE
- BROADLEAVED WOODLAND - SEMI-NATURAL
- BROADLEAVED WOODLAND - PLANTATION
- BUILDINGS
- HARDSTANDING
- IMPROVED GRASSLAND
- NEUTRAL GRASSLAND - SEMI-IMPROVED
- POOR SEMI-IMPROVED GRASSLAND
- RUNNING WATER
- SCRUB - DENSE/CONTINUOUS
- STANDING WATER
- OTHER TALL HERB AND FERN - RUDERAL
- NO ACCESS
- SPECIES RICH GRASSLAND
- INFILTRATION/WATERCOURSE RELIEF BASIN
- NATIVE SCRUB PLANTING
- ROAD
- SWALE
- TRACK

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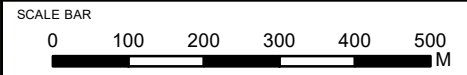


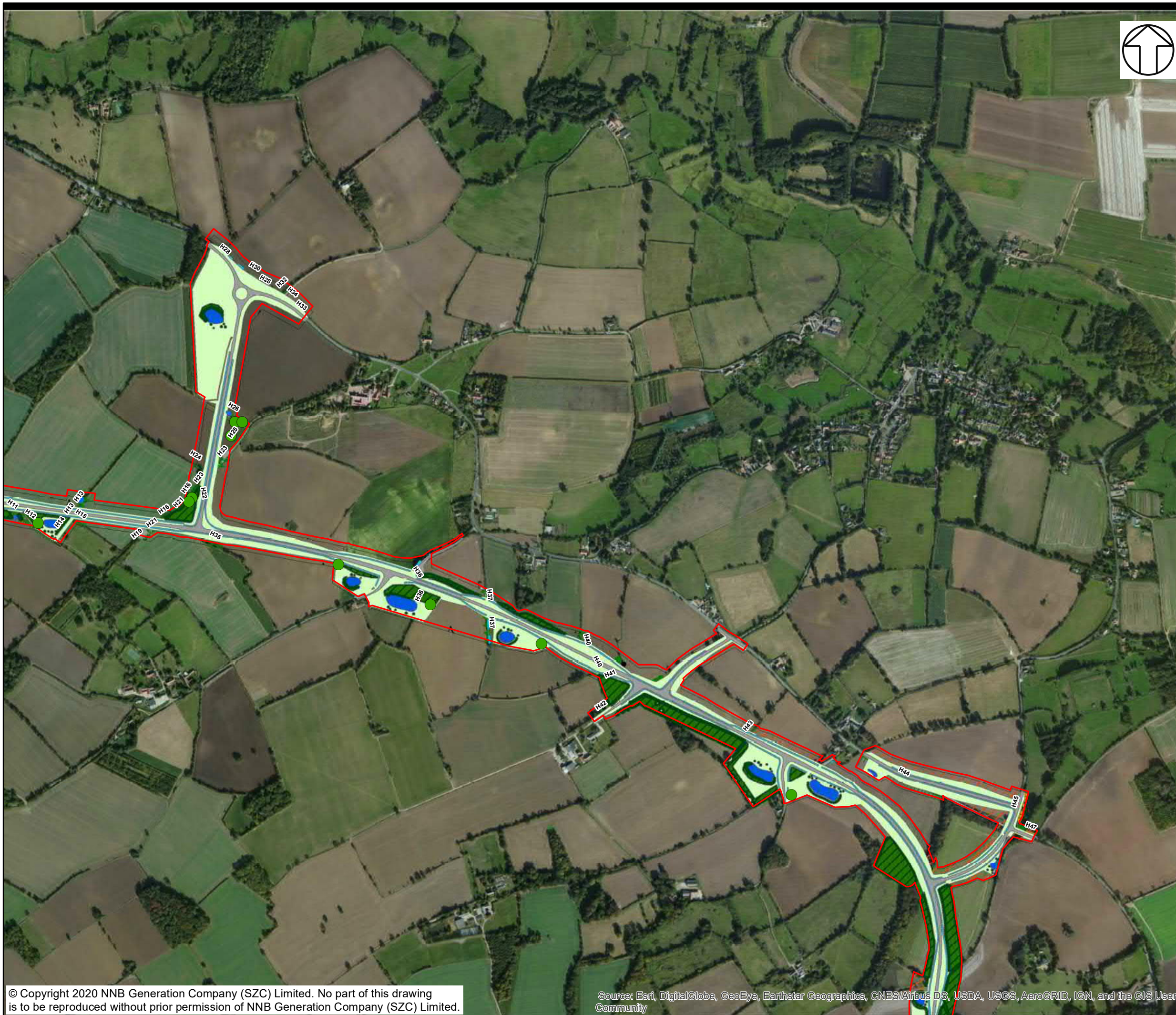
DOCUMENT:
 SIZEWELL C
 SIZEWELL LINK ROAD
 DRAFT GCN LICENCE METHOD STATEMENT

DRAWING TITLE:
 FIGURE F1: FINAL DEVELOPMENT LAYOUT MAP
 SHEET 1 OF 3

DRAWING NO:
 FIGURE 7A-5.11

DATE: JAN 2020 **DRAWN:** R.G. **SCALE:** 1:10,000 @A3





NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
- PONDS
- SCATTERED BROADLEAVED TREES
- SCATTERED CONIFEROUS TREES
- × SCATTERED SCRUB
- DRY DITCH
- ∨∨∨ DEFUNCT HEDGE - NATIVE SPECIES-RICH
- - - DEFUNCT HEDGE - SPECIES-POOR
- EARTH BANK
- ||||| FENCE
- ∨∨∨ HEDGE WITH TREES - NATIVE SPECIES-RICH
- ||||| HEDGE WITH TREES - SPECIES-POOR
- ∨∨∨ INTACT HEDGE - NATIVE SPECIES-RICH
- INTACT HEDGE - SPECIES-POOR
- RUNNING WATER
- A CULTIVATED/DISTURBED LAND - ARABLE
- BROADLEAVED WOODLAND - SEMI-NATURAL
- BROADLEAVED WOODLAND - PLANTATION
- BUILDINGS
- HARDSTANDING
- I IMPROVED GRASSLAND
- NEUTRAL GRASSLAND - SEMI-IMPROVED
- POOR SEMI-IMPROVED GRASSLAND
- RUNNING WATER
- STANDING WATER
- OTHER TALL HERB AND FERN - RUDERAL
- / NO ACCESS
- SPECIES RICH GRASSLAND
- INFILTRATION/WATERCOURSE RELIEF BASIN
- NATIVE SCRUB PLANTING
- ROAD
- SWALE
- TRACK

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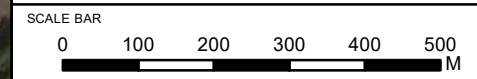


DOCUMENT:
 SIZEWELL C
 SIZEWELL LINK ROAD
 DRAFT GCN LICENCE METHOD STATEMENT

DRAWING TITLE:
 FIGURE F1: FINAL DEVELOPMENT LAYOUT MAP
 SHEET 2 OF 3

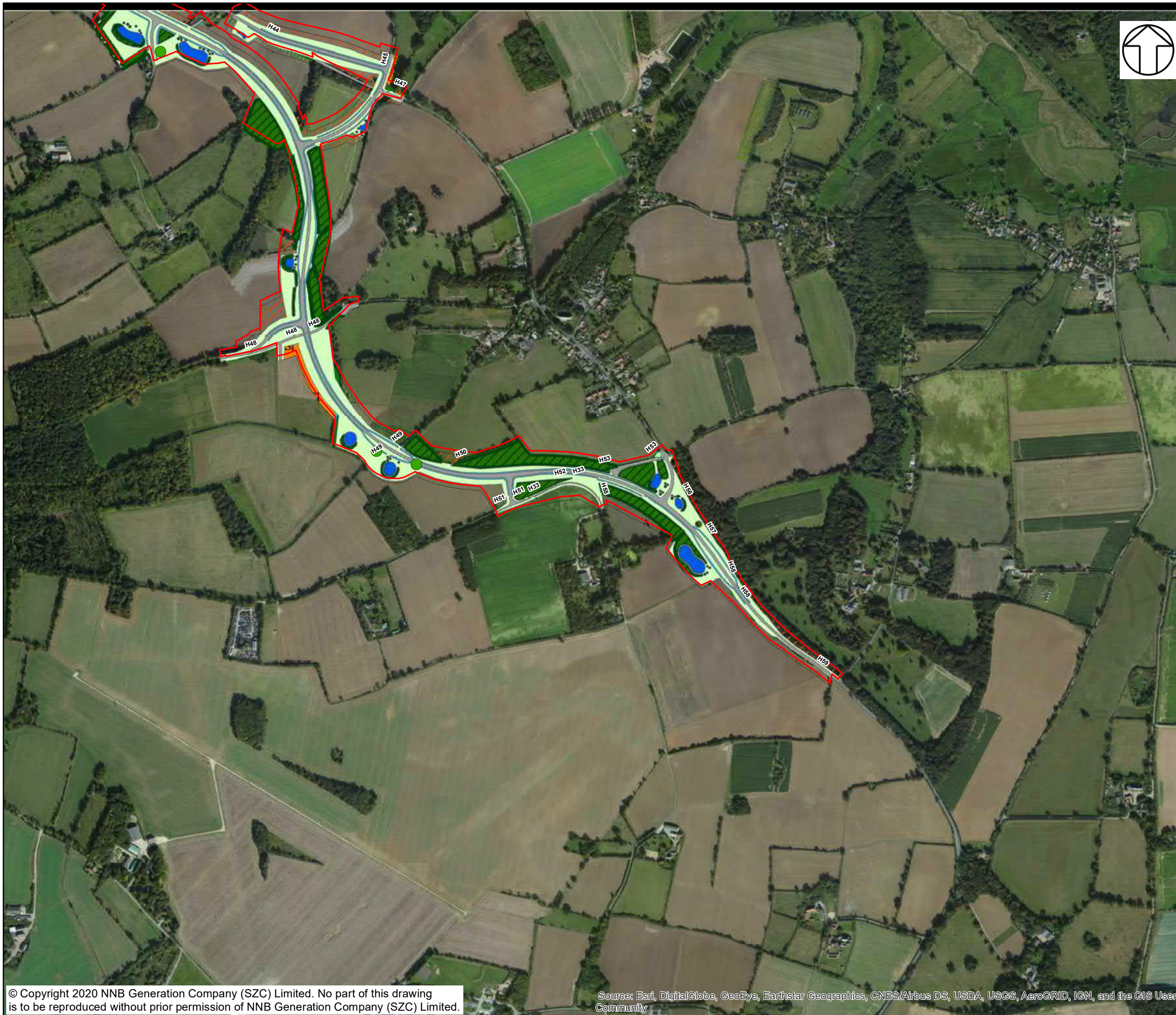
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NOTES

KEY

- SIZEWELL LINK ROAD DEVELOPMENT SITE BOUNDARY
- PONDS
- SCATTERED BROADLEAVED TREES
- SCATTERED CONIFEROUS TREES
- SCATTERED SCRUB
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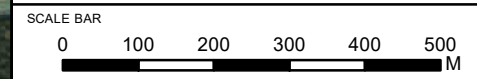


DOCUMENT:
 SIZEWELL C
 SIZEWELL LINK ROAD
 DRAFT GCN LICENCE METHOD STATEMENT

DRAWING TITLE:
 FIGURE F1: FINAL DEVELOPMENT LAYOUT MAP
 SHEET 3 OF 3

DRAWING NO:
 FIGURE 7A-5.11

DATE: JAN 2020 **DRAWN:** R.G. **SCALE:** 1:10,000 @A3





SIZEWELL C – SIZEWELL LINK ROAD – 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 - Sizewell Link Road

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.

PLEASE INCLUDE DATE OF SUBMISSION (e.g. 1 January 2016). This will be referenced in the licence →		February 2020
E6a) Pre, mid and post-development (other than monitoring, management and maintenance)		
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	Any time 2020 to 2024	Prior to commencement of construction works, with ponds created at least 6 months prior to translocation
Receptor site pond enhancement or restoration		
Receptor site terrestrial hab works - general e.g. reseeded, hedge planting		
Receptor site terrestrial hab works - features e.g. hibernacula, refuges	March to October 2020 to 2024	Prior to commencement of construction works. Recommend that works undertaken at same time as pond creation to allow terrestrial GCN to be translocated to appropriate receptor.
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 2020 to 2024	Prior to commencement of construction works
Newt capture (pitfall trapping etc - outside hibernation/dormancy periods only)	March to October 2020 to 2024	Prior to commencement of construction works
Pond draining and pond destruction (please indicate when each will occur)	March to June 2020 to 2024	Prior to commencement of construction works
Hand searches	March to October 2020 to 2024	Prior to commencement of construction works
Destructive searches (following completion of all other capture efforts)	June to October 2020 to 2024	Timing dependant on when other capture methods have been undertaken
Construction period (start and end dates)	January 2024 to January 2026	Construction of Sizewell to take place following the grant of a Sizewell C Draft Development Consent Order and is likely to be completed approximately nine to twelve years later. Sizewell Link Road to take place in early years of Sizewell C construction (assumed to be approx two years into development) and would take approx two years to complete.
Site checks & maintenance during construction	January 2024 to January 2026	On going following commencement of construction works, for the duration of the works
Drift fence removal (not to be undertaken during hibernation/dormancy periods)		
Newt fence removal (not to be undertaken during hibernation/dormancy periods)	Post January 2026	Upon the completion of the construction works
Ring fence removal (not to be undertaken during the hibernation/dormancy periods)		
Habitat reinstatement (for temporary impact schemes only)	Post January 2026	Upon the completion of the construction works
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.

Year:	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Population monitoring								TBC	TBC	TBC	TBC	Y
Habitat management								TBC	TBC	TBC	TBC	Y
Site maintenance								TBC	TBC	TBC	TBC	
Year:	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Population monitoring	Y	Y	Y	Y	Y							
Habitat management	Y	Y	Y	Y	Y							
Site maintenance												

VOLUME 6, CHAPTER 7, APPENDIX 7A:

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

- ANNEX 7A.6A - BATS

- ANNEX 7A.6B - REPTILES



VOLUME 6, CHAPTER 7, APPENDIX 7A.6A: BAT METHOD STATEMENT

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None provided.

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1. Bat Non-licensable Method Statement

1.1 Introduction

1.1.1 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.

a) Background and scheme overview

1.1.2 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).

1.1.3 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.

1.1.4 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.

1.1.5 The components listed above are referred to collectively as the ‘Sizewell C Project’.

1.1.6 In order to enable the proposed Sizewell Link Road, 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 (RAMs) 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

1.1.7 The Sizewell Link Road (SLR) site measures approximately 101ha and is located to the south of the B1122 and east of the A12. The site passes to the south of Middleton Moor and Theberton. The proposed development would comprise a new, permanent, 6.8km single carriageway road, with a design speed of 60 miles per hour, which begins at the A12 south of Yoxford, bypasses Middleton Moor and Theberton before joining the B1122.

- 1.1.8 Once operational, the proposed development would be used by the general public as well as construction workers arriving by car, park and ride buses from both the northern and southern park and ride sites, and goods vehicles (both light and heavy) delivering freight to the Sizewell C main development site.
- 1.1.9 The SLR site is dominated by arable land with arable field margin habitats. Some limited areas of species-poor, semi-improved grassland and neutral semi-improved grassland are also present within the site, which were recorded to be interspersed with patches of tall ruderal and scattered scrub. Twelve blocks of broadleaved semi-natural woodland and two plantation woodlands are present, wholly or partly, within the site whilst hedgerows, the majority of which were notes to be species rich and supported a number of trees, are also present along the boundaries of the arable land that dominates the site. With respect to aquatic habitat, the site supports four watercourses and six ponds.
- 1.1.10 The area covered by this MS is presented in **Plate 1.1** below.

Plate 1.1: Site location



c) Proposed works

- 1.1.11 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. The specific works covered by this method statement include vegetation clearance measures, and the lighting arrangements for the site.

1.1.12 A number of potential ecological constraints associated with the proposed facilitating works are set out below.

d) **Key ecological constraints**

1.1.13 Within this site, the following are the predicted potential constraints:

- bats;
- great crested newt; and
- reptiles.

1.1.14 This method statement only covers bats, there are associated method statements and draft protected species licences for the other receptors.

1.2 **Site Reasonable Avoidance Measures (RAMs) Method Statements for bats**

a) **Introduction**

1.2.1 This section provides a suite of dedicated RAMs Method Statements (MS) 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 RAMs MS. 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.6A.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.6A.2**) for those present to sign to confirm they have understood the constraints and actions presented.

1.3 Bats

a) Site status

- 1.3.1 The extended Phase 1 habitat and protected species survey identified the habitats present to be primarily arable fields of limited value to foraging bats. The boundary hedgerows contain several mature trees. These hedgerows together with the woodland blocks and scattered mature trees have the potential to support roosting bats and offer good commuting and foraging opportunities.
- 1.3.2 Eighty trees were assessed during bat tree assessments as having specific features potentially suitable for use by roosting bats, (three high, 41 moderate, 36 low).
- 1.3.3 Seven species (noctule, serotine, common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle (*Pipistrellus nathusii*) brown long-eared and barbastelle) and species belonging to two species groups ('big bat' and *Myotis* spp.) were identified during activity surveys at the site. Across all transects, common and soprano pipistrelle were the most frequently recorded. All other species were recorded at very low levels.
- 1.3.4 During the course of the static detector surveys, eight species were recorded (Natterer's bat, noctule, serotine common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, barbastelle and brown long-eared bat) as well as unidentified species belonging to four species groups ('big bat', *Myotis* spp., common/soprano pipistrelle and *Plecotus* spp., assumed to be brown long-eared bat). Recorded activity levels largely reflected those recorded during

transect surveys, with activity dominated by common and soprano pipistrelle. All other species groups were recorded at significantly lower levels.

- 1.3.5 Bats using the site are unlikely to be dependent on the sub-optimal habitats present within the site and would also be using a range of additional habitats in the Zol. This includes the more valuable broadleaved woodland, adjacent to the site.
- 1.3.6 The construction of the proposed development would result in the loss of primarily arable land, as well as hedgerows, broadleaved woodland, and mature trees with bat potential. There would be the loss of 43 trees with the potential to support roosting bats (two with high potential, 25 with moderate potential, 16 with low potential). The loss of habitat would cause a reduction in foraging habitat available to bats and the loss of features suitable for bats to roost in.
- 1.3.7 The proposed development would result in the loss of approximately 2.5ha of sub-optimal arable foraging habitat, 0.4ha broadleaved woodland and 4537m of hedgerow. During the construction phase there would be a temporary loss of habitat suitable to support foraging bats, this would be reinstated and new habitat planted upon the completion of the construction phase.
- 1.3.8 Bats will be impacted by both increased noise levels and increased lighting at this site. Provided the proposed mitigation measures are implemented, no significant effects on bat populations are expected as a result of the proposed development and those habitats most suitable for bats are retained.

b) Legislation

- 1.3.9 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.
- 1.3.10 The offence “recklessly” was added by the Countryside and Rights of Way Act 2000 (CRoW) (Ref 1.2).
- 1.3.11 All bat species in England receive further protection under Regulation 41 of The Conservation of Habitats and Species Regulations 2017 (Ref 1.3). 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.

1.3.12 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 1.4). 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](#)

1.3.13 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](#)

1.3.14 Presence of 10m buffer areas between the edge of the proposed development and lowland mixed deciduous woodland

1.3.15 Presence of 10m buffer areas between the edge of the proposed development and watercourses where practicable

- 1.3.16 Close-boarded fencing where the proposed development site abuts woodland.
- 1.3.17 Construction lighting would be designed to minimise light spill and the potential for light disturbance on adjacent land. 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 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.
- 1.3.18 In addition, although limited 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.
- 1.3.19 Initially all trees to be removed will be reassessed for bat roosting potential.
- 1.3.20 Any trees identified as having low bat roosting potential will be removed using a soft felling methodology with a suitability experienced, appropriately licensed, bat worker or bat worker assistant present. This is outlined below. It is recommended that trees are removed in October, thereby avoiding the sensitive maternity (April-September) and hibernation (November-February) periods for bats.
- 1.3.21 For any trees with moderate or high roosting potential, a pre works inspection for roosting bats will be undertaken. The methodology and required survey effort for these pre works checks will depend upon the status of the roosting features within the trees, but may include:
- a climbed or ground based tree inspection using an endoscope and / or torch; and
 - emergence / re-entry surveys.
- 1.3.22 Should any of the trees to be removed be found to support bat roosts, an EPS licence is likely to be required. The documents associated with this licence will outline the required mitigation, and the required measures are not discussed further within this report. If no roosts are found, the approach outlined below will be undertaken.
- 1.3.23 All trees with PRFs should be soft felled using the following precautionary measures:

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- where PRFs cannot be exhaustively checked they should be section felled, with each section carefully lowered to the ground. Cuts should be made at least 50 cm beyond the extent of the potential roost feature;
- if limbs or large branches require felling, consideration should be given to cracks which may close (crushing any bats inside) once the weight of the limb has been removed. If the crack cannot be thoroughly inspected to ensure bats are not present, the crack should be wedged open prior to removal of the limb/branch;
- the stems of dense ivy should be cut at ground level at least 48 hours before the tree is felled; and
- once the trees have been felled the potential roost features should be checked on the ground by a suitably experienced bat ecologist. If any potential roost feature can still not be exhaustively checked that section should be allowed a rest period of at least 24 hours to ensure that any individual bats that may have been missed are given the opportunity to relocate.

1.3.24 If any bats are encountered during the felling operations all works and activity must cease immediately, until the ECoW has advised on the most appropriate manner to deal with the situation.

1.3.25 To mitigate for the loss of the trees and potential roost resources, bat boxes would be installed on retained trees in suitable locations within the site boundary. One bat box would be installed per tree with moderate or high bat roost potential that is due to be lost, whether or not a roost has been identified. A variety of bat boxes would be used to support different species.

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. Vegetation clearance works would take place outside of the active bird breeding season (early March and late August inclusive) and no nesting bird checks would be required prior to the commencement of works. Nevertheless, if any vegetation clearance works was required 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.

- 1.4.2 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).
- 1.4.3 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).
- 1.4.4 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.
- 1.4.5 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 (2017). The Conservation of Habitats and Species Regulations. HMSO, London
- 1.4 HMSO (2006). The Natural Environment and Rural Communities Act. 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).

Appendix 7A.6A.1: Ecological Toolbox 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"> • Setts (d shaped burrow with a large spoil heap); • Latrines or dung pits; and • Snuffle holes and runs.
	<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 6, CHAPTER 7, APPENDIX 7A.6B: REPTILE METHOD STATEMENT

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1. Reptile Non-Licensable Method Statement

1.1 Introduction

1.1.1 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.

a) Background and scheme overview

1.1.2 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.

1.1.3 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. The project is being submitted as a component Nationally Significant Infrastructure Project (NSIP) and will be approved through the Development Control Order Process (DCO).

1.1.4 This Reptile Method Statement compiled by Arcadis Consulting (UK) Limited (hereafter referred to as ‘Arcadis’) outlines the key approaches to mitigating potential impacts to the reptile populations present within or adjacent to the construction site for Sizewell C main development site. It will be used by the ecological consultant, SZC Co and any relevant subcontractors, in relation to the proposal to build the Sizewell C.

1.1.5 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.

1.1.6 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.

1.1.7 The components listed above are referred to collectively as the ‘Sizewell C Project’.

b) Site location and setting

- 1.1.8 The Sizewell Link Road (SLR) site measures approximately 101ha in area and is located to the south of the B1122 and east of the A12. The site passes to the south of Middleton Moor and Theberton. The proposed development would comprise a new, permanent, 6.8km single carriageway road, with a design speed of 60 miles per hour, which begins at the A12 south of Yoxford, bypasses Middleton Moor and Theberton before joining the B1122.
- 1.1.9 Once operational, the proposed development would be used by the general public as well as construction workers arriving by car, park and ride buses from both the northern and southern park and ride sites, and goods vehicles (both light and heavy) delivering freight to the Sizewell C main development site.
- 1.1.10 The SLR site is dominated by arable land with arable field margin habitats. Some limited areas of species-poor, semi-improved grassland and neutral semi-improved grassland are also present within the site, which were recorded to be interspersed with patches of tall ruderal and scattered scrub. Twelve blocks of broadleaved semi-natural woodland and two plantation woodlands are present, wholly or partly, within the site whilst hedgerows, the majority of which were noted to be species rich and supported a number of trees, are also present along the boundaries of the arable land that dominates the site. With respect to aquatic habitat, the site supports four watercourses and six ponds.
- 1.1.11 The area covered by this method statement is presented in **Plate 1.1** below.

Plate 1.1: Site location



1.1.12 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**

1.1.13 The key potential legislative constraints associated with the site include:

- bats;
- great crested newt; and
- reptiles.

1.1.14 Given the presence of reptiles within the site, the 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 (RAMs) 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.

1.1.15 This method statement only covers guidance relating to reptiles, however method statements and draft protected species licences for the above species have also been prepared.

1.1.16 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 (RAMS) Method Statements for reptiles

a) Introduction

1.2.1 This section provides a suite of dedicated RAMs Method Statements (MS) 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 RAMs MS. 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, most of the land comprises arable fields with a small portion of semi-improved grassland to the south-east. The margins of the arable fields present within the site are regularly ploughed and therefore have limited potential to provide sheltering and foraging habitat for common reptile species. The arable fields themselves are also considered sub-optimal to support reptiles. The desk-study data received from the Suffolk Biodiversity Information Service (SBIS) returned 17 desk-study records of reptiles within 2km of the site.
- 1.3.2 Given the limited potential for reptiles within the site and the small number of records of this species group within the area, no targeted reptile surveys were conducted. However, during the Phase 1 habitat survey of the site, a single incidental observation of a grass snake (*Natrix natrix*) basking at the base of a hedgerow, south of B1122 Yoxford Road within the site boundary, was recorded, such that there is potential for reptiles 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 (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 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:

- vegetation clearance (below 150mm) and ground-breaking works will only be conducted in the active season (March to October inclusive seasonally dependant)¹ 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;

¹ Advanced works approach would integrate vegetation clearance in relation to breeding birds, reptiles, water voles 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

- 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 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. This location would be decided on a case-by-case basis, but it would be within the one designated reptile receptor areas (Kenton Hills, St. James Covert and Broom Covert) near to 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 RAMS. For example (**Plate 1.2**):
 - 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 removal 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 ideally 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 RAMS, For example (**Plate 1.3**):

- 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-I 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.2 Toolbox talk example

Appendix 7A6B.2: Declaration of Understanding

Toolbox talk title:	Ecology
Given by:	
Site:	
Date:	

Name	Company	Signature

Name	Company	Signature