The Sizewell C Project

6.8 Volume 7 Yoxford Roundabout and Other Highway Improvements

Chapter 7 Terrestrial Ecology and Ornithology

Appendix 7A Ecological Baseline and Method Statement

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VOLUME 7, CHAPTER 7, APPENDIX 7A – ECOLOGICAL BASELINE AND METHOD STATEMENT

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 - NON-LICENSABLE METHOD STATEMENT:

- ANNEX 7A.5A - 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 7, 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 the proposed Yoxford roundabout[1] (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 Yoxford roundabout. 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, amphibians, reptiles, birds, bats, and terrestrial mammals. These ZoIs are considered to be conservative.

Desk-study data from the Suffolk Biodiversity Information Service (SBIS) was obtained within the 2 x 2 kilometre (km) Ordnance Survey (OS) tetrad covering the site for notable species of conservation interest from the last ten years. 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, including hedgerow and badger survey;
- great crested newt (*Triturus cristatus*) Habitat Suitability Index (HSI) and eDNA surveys; and
- bat tree roost assessments (ground level-assessment only).

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

The area within the site boundary predominantly consists of species-poor semi-improved grassland used for pasture and bounded by fences and two hedgerows, as well the A12 and B1122. One hedgerow is intact and species-rich; however, the other hedgerow is defunct and was considered species-poor. Neither hedgerow is classified as 'Important' under the Wildlife and Landscape Criteria of the Hedgerow Regulations

[1] The Environmental Impact Assessment (EIA) includes for the Yoxford roundabout as well as road improvements at five locations. Due to the small scale, minor nature of the works proposed at the five road improvement locations, these have been screened out of the Ecological Impact Assessment (EcIA) and therefore this Technical Appendix baseline. This Technical Appendix only reports on the ecological baseline information collated for the Yoxford roundabout.

(Ref 1.1). Eleven waterbodies (ponds) are present within 500m of the site, none of which are within the site boundary.

There are no habitats on the site suitable to support notable plants or hazel dormouse (*Muscardinus avellanarius*). Habitats present within the site are largely sub-optimal for invertebrates, amphibians, reptiles, and badger (*Meles meles*). There were records of two species of bat within the ZoI, and three trees with the potential to support roosting bats are present within the site. The pasture fields within the site are of limited value to bats; however, the hedgerows and mature trees provide limited foraging and commuting opportunities. The habitats are of value to farmland birds, otter (*Lutra lutra*), water vole (*Arvicola amphibius*), brown hare (*Lepus europaeus*) and hedgehog (*Erinaceus europaeus*).

To ensure a robust Ecological Impact Assessment (EcIA) process, species and habitats of conservation interest and/or legally protected or designated species and habitats within the relevant ZoI of the sites 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 EcIA (Ref 1.2) In addition, habitats and species have been assessed in accordance with the standard EIA methodology used elsewhere within this Environmental Statement (ES).

The CIEEM guidelines (Ref 1.2) 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 EcIA.

On the basis of the above criteria, the following sites/species/habitats within the ZoI of the proposed development have been classified as IEFs and scoped into the detailed assessment of the EcIA:

- Minsmere to Walberswick Heaths and Marshes Special Protected Area (SPA), Special Area of Conservation (SAC), Ramsar site, and Site of Special Scientific Interest (SSSI) is an IEF at the international level under CIEEM guidelines (Ref 1.2) and of high importance following the EIA-specific methodology;
- Roadside Nature Reserve (RNR) 197 is an IEF at the national level under CIEEM guidelines (Ref 1.2) and of high importance following the EIA-specific methodology;
- Minsmere Valley Reckford Bridge to Beveriche Manor CWS and Darsham Marshes CWS are IEFs at the county level under CIEEM guidelines (Ref 1.2) and of medium importance following the EIA-specific methodology; and

- river habitat (River Yox) is an IEF at the county level under CIEEM guidelines (Ref 1.2) and of medium importance following the EIA-specific methodology.

1. Introduction

1.1 Purpose of this appendix

1.1.1 SZC Co.[2] 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**).

1.1.3 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 proposed Yoxford Roundabout (hereafter referred to as the 'proposed development')[3]. The Yoxford roundabout site (herein referred to as the 'site') is located to the east of Yoxford.

1.1.4 To carry out a robust Ecological Impact Assessment (EcIA) 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.

1.1.5 This appendix to **Chapter 7** of **Volume 7** 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 7** of the **ES**.

[2] NNB Generation Company (SZC) Limited

[3] The Environmental Impact Assessment (EIA) includes for the Yoxford roundabout as well as road improvements at five locations. Due to the small scale, minor nature of the works proposed at the five road improvement locations, these have been screened out of the Ecological Impact Assessment (EcIA) and therefore this Technical Appendix baseline. This Technical Appendix only reports on the ecological baseline information collated for the Yoxford roundabout.

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 proposed development and wider study area. ZoI, 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, ZoI(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 ZoI. 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 1.2) 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 EcIA. 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 (an international designation);
- national designations: (Sites of Special Scientific Interest (SSSIs)); and
- statutory and non-statutory local (county) designations (Local Nature Reserves (LNRs) 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 1.3). They are designated on behalf of rare and vulnerable birds (as listed on Annex I), and for regularly occurring migratory species.

1.3.4 SACs are designated under the EC 'Habitats Directive' (Ref 1.4). Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive. The listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds).

1.3.5 Ramsar Sites are wetlands of international importance designated under the Ramsar Convention (Ref 1.5). 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 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 1.6), SSSIs were re-notified under the Wildlife and Countryside Act (W&CA) (Ref 1.7). Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act (Ref 1.8). 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 1.6) and the W&CA (Ref 1.7).

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 LNRs are statutory sites designated at the county/local level. They are designated by principal local authorities under Section 21 of the National Parks and Access to the Countryside Act (Ref 1.6), amended by Schedule 11 of the Natural Environment and Rural Communities (NERC) Act (Ref 1.9).

1.3.11 An LNR can also be a SSSI or may have other designations (although an LNR cannot also be an NNR). An LNR can be given protection against damaging operations. It also has protection against development on and around it. This protection is usually given via the local plan, (produced by the planning authority), and often supplemented by local by-laws. Unlike national designations, the level and type of protection afforded an LNR is decided locally and varies from site to site.

1.3.12 The constituent habitats and species listed within LNR citations are of county importance for nature conservation.

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

1.3.14 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 designated as either SSSIs or CWSs.

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

c) Legally protected and controlled species

1.3.16 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 1.7), species included on Schedules 2 and 5 of The Conservation of Habitats and Species Regulations (Ref 1.10), and badgers (*Meles meles*), which are protected under the Protection of Badgers Act (Ref 1.11).

1.3.17 Species that are fully protected under the W&CA (Ref 1.7) and/or Conservation of Habitats and Species Regulations (Ref 1.10), known as protected species and European Protected Species (EPS), respectively, tend to be the focus of impact assessments and nature conservation action in the UK. However, the geographical scale at which they are important varies from species to species. Thus, the designation of a species as an EPS does not necessarily mean that all individuals of that species are of European importance.

1.3.18 In addition, Schedule 9 of the W&CA (Ref 1.7) lists controlled species of animal 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

1.3.19 Public bodies have a duty to conserve biodiversity, in accordance with Section 40 of the NERC Act (Ref 1.9). 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 EcIA, although the level at which they are considered important will vary.

1.3.20 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 1.9);
- species listed as being of conservation interest in the relevant UK Red Data Book (RDB) or the Birds of Conservation Concern (BoCC) Red List (Ref 1.12);
- 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); and
- habitats and species listed in the Suffolk's Biodiversity Action Plan (BAP) (Ref 1.13) and Suffolk's Priority Species and Habitats list (Ref 1.14).

1.3.21 It should be noted that a large number of habitats and species will qualify under more than one of the above groupings 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 1.9), 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.

1.3.22 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', 'ZoI', 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 7** of the **ES** and this ecological baseline.

c) Defining the Zones of Influence

1.4.3 The ZoI is defined as '*the area over which ecological features may be affected by biophysical changes caused by a proposed project and associated activities*' (Ref 1.2).

1.4.4 It is not a simple task to define the extent of the ZoI for the proposed development, as it follows that the ZoI 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 ZoI 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 site and the likelihood that effects arising from the proposed development will be highly localised, 5km is considered to be a suitable maximum radius over which to considered potential effects, unless otherwise defined for specific species or species groups. Statutory designated sites (SPAs, SACs, Ramsar sites and SSSIs) have been considered within a 5km radius, and 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 ZoI 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 ZoI 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 ZoI defined for the considered ecological features is provided in **Table 1.1**.

d) Defining the study area and survey area

1.4.8 The study area is the land within the red line boundary and ZoI (as defined within **Table 1.1**). 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 (*Triturus cristatus*) surveys were undertaken within the site boundary and a 500 metre (m) radius from the site boundary, whilst no targeted surveys were undertaken for invertebrates, reptiles, birds, or terrestrial mammals as the extended Phase 1 habitat and protected species survey determined suitability of habitats for these species within the red line boundary to be non-existent or to be sub-optimal.

1.4.10 Professional judgement has been used to ensure that sufficient ecological information has been obtained within the likely ZoI that has been defined for each habitat and species assemblage. The study area for each habitat and species assemblage generally closely corresponds to the ZoI, 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 data obtained within the defined study area.

1.4.11 Full access to the entire survey area was not obtained; 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. Areas where access was not obtained for survey are shown on **Figure 7.3**.

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

1.4.12 **Table 1.1** defines the ZoI, study area and survey area for the considered ecological features.

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

Ecological Feature		ZoI	Study Area	Survey Area
Designated Sites	Statutory designated	5km	5km	N/A
	Non-statutory designated	2km	2km	N/A
Plants and Habitats		2km	2km	Within the site boundary.
Invertebrates		2km	2km	Not surveyed as habitat sub optimal.
Reptile		2km	2km	Not surveyed as no suitable habitat identified.
Amphibians		2km	2km	Within the site boundary and a 500m buffer area*.
Birds		2km	2km	Not surveyed as no habitats of bird importance identified.
Bats		2km	2km	Within the site boundary (and a 10m buffer area for bat tree roost assessments).
Terrestrial Mammals		2km	2km	Within the site boundary.

* This is in accordance with standing advice from Natural England for assessing the impacts of developments on great crested newts (Ref 1.15).

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 the 2 x 2km Ordnance Survey (OS) tetrad covering the site were requested and obtained from SBIS in July 2018.

1.5.2 Statutory and non-statutory designated sites were considered within the following radii from the site boundary:

- internationally (SPA, SAC and Ramsar) and nationally (SSSI and NNR) recognised sites within 5km; and

- locally recognised sites (LNR, CWS, and RNR) 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) (Ref 1.16) and Natural England's (Ref 1.17) websites. The citations were reviewed to allow for an assessment of the likely presence of any species or habitats of nature conservation importance which may pose a constraint to the proposed development.

1.5.4 Suffolk's Priority Species and Habitats list (Ref 1.14), and the habitats and species of principal importance listed under Section 41 of the NERC Act (Ref 1.9), 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 Surveys carried out in 2019 included:

- extended Phase 1 habitat and protected species survey and hedgerow assessment, including a badger survey;
- great crested newt Habitat Suitability Index (HSI)[4] and eDNA survey; and
- bat tree roost assessment (ground-level assessment only).

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

b) Results

i. Designated sites

1.5.7 Six statutory designated sites (one SPA, two SACs, one Ramsar Site, and two SSSIs) were identified within 5km 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**.

[4] 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 designated sites located within 5km of the site

Site name	Distance from the nearest point of the site (km)	Reason for designation
Dew's Ponds SAC and SSSI	3km north	This site has been selected as an SAC under the EC Habitats Directive (Ref 1.4) as it supports the following Annex II species that are the primary reason for selection of this site: great crested newt. The site supports one of the largest known breeding populations of great crested newt in the UK and this is also the reason for its notification as a SSSI under Section 28 of the W&CA (Ref 1.7).
Minsmere to Walberswick Heaths and Marshes SPA, SAC, Ramsar Site, and SSSI	4km east	This site has been selected as an SAC under the EC Habitats Directive (Ref 1.4) as it supports the following Annex I habitats that are the primary reason for selection of this site: 'annual vegetation of drift lines', and 'European dry heaths'. It also supports the habitat 'perennial vegetation of stony banks', which are present as a qualifying feature. This site qualifies as an SPA under Article 4.1 of the EC Birds Directive (Ref 1.3) by supporting populations of European importance of the following species listed on Annex I of the Directive during the breeding season: avocet (*Recurvirostra avosetta*), bittern (*Botaurus stellaris*), little tern (*Sterna albifrons*), marsh harrier (*Circus aeruginosus*), nightjar (*Caprimulgus europaeus*), and woodlark (*Lullula arborea*); and over winter: avocet and hen harrier (*Circus cyaneus*). The site is a wetland of international importance and is therefore also designated as a Ramsar Site under the Ramsar Convention (Ref 1.5). Finally, the composite site is also a SSSI notified under Section 28 of the W&CA (Ref 1.7) for its complex series of habitats, notably mudflats, shingle beach, reedbeds, heathland and grazing marsh, which combine to create an area of exceptional scientific interest.

1.5.8 The proposed development would involve no direct land take from any of these statutory designated sites; however, the site is hydrologically linked to the Minsmere to Walberswick Heaths and Marshes SPA, SAC, Ramsar Site, and SSSI via the River Yox.

1.5.9 Six non-statutory designated sites (four CWSs and two RNRs) were identified within 2km of the site boundary. Details of these sites are provided in **Table 1.3** whilst their locations are presented on **Figure 7.2** in **Annex 7A.1**.

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

Site name	Distance from the nearest point of the site (km)	Reason for designation
RNR 197	Adjacent to the site boundary	This site has been designated due to the presence of the Sandy Stilt Puffball fungus (*Battarraea phalloides*), which is listed on Schedule 8 of the W&CA (Ref 1.7) and are included on the Suffolk Priority habitats and species list (Ref 1.14).
Minsmere Valley Reckford Bridge to Beveriche Manor CWS	320m east	This area of marsh represents the western third of the Minsmere Valley. The entire valley is of great importance for wildlife; forming unspoilt and least improved of Suffolk's large marshland river valleys. Habitats include unimproved marsh, open water, scrub, mature woodland, and fen. The area is also important for barn owl (*Tyto alba*) and otter (*Lutra lutra*).
Yoxford Wood CWS Also an Ancient and Semi-Natural Woodland (ASNW) and on the Ancient Woodland Inventory (AWI)	1.35km north-west	This wood is marked on all sides by a ditch and bank boundary system and contains ancient coppice, mainly Hornbeam (*Carpinus betulus*). The wood still retains an interesting flora including ancient woodland indicator species. There are also a few ponds which add to the variety of habitats present and support their own flora.
Darsham Marshes CWS (and SWT reserve)	1.76km east	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. 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 warblers. Many different raptor and owl species hunt over the marshes.
Suffolk Coastal 212 CWS and RNR 102	1.96km south	Sulphur Clover (*Trifolium ochroleucon*) and Dyer's Greenweed (*Genista tinctoria*) can be found on this CWS and RNR.

1.5.10 These sites comprise coastal and floodplain grazing marsh, rivers and streams, ponds, mixed deciduous woodland, and fens, all of which are listed under Section 41 of the NERC Act (Ref 1.9) and these habitats are also targeted for action under Suffolk's Priority Species and Habitats list (Ref. 1.14).

1.5.11 RNR 197 is adjacent to the site boundary and would be retained in its entirety. In addition, the site is also hydrologically linked to Minsmere Valley Reckford Bridge to Beveriche Manor CWS and Darsham Marshes CWS via the River Yox.

1.5.12 The proposed development would involve no direct land take nor is linked to any of the other non-statutory designated sites.

ii. Plants and habitats

1.5.13 The desk-study identified records of three notable fungi and plants within 2km of the site boundary. These records have been examined to identify those recorded within or close to the site boundary. The results are presented below.

1.5.14 There was one desk-study record of Sandy Stilt Puffball (*Battarraea phalloides*). This record was from the RNR 197 which is designated due to the presence of this species. Whilst habitats on the site are suitable for this species, this species was not recorded during the survey, likely due to the time of year the Phase 1 habitat survey was conducted (April/May 2019) as the Sandy Stilt Puffball main fruiting period is typically during autumn (Ref 1.18); however, this species does not fruit every year (Ref 1.19). Sandy Stilt Puffball is listed on Schedule 8 of the W&CA (Ref 1.7), is listed under Section 41 of the NERC Act (Ref 1.9), and is also on Suffolk's Priority Species and Habitats list (Ref 1.14).

1.5.15 Records of two notable plant species were recorded by the desk-study. There was one record of Rough Hawk's-beard (*Crepis biennis*) from over 750m from the site, and one record of Sanicle (*Sanicula europaea*) for which the location datum was not of sufficient resolution to determine its location in relation to the site. Both species are listed on the Suffolk Rare Plant Register (Ref 1.20).

1.5.16 Rough Hawk's-beard is found in improved grassland, road verges, and brownfield habitats. Sanicle is mostly found in deciduous woods on damp calcareous soils, but also on shady road verges or hedge banks. Habitats on site were considered suitable only for Rough Hawk's-beard; however, this species was not recorded during the survey. Habitats on site were not suitable for Sanicle.

1.5.17 The Phase 1 habitat plan and associated Target Notes (TNs) are presented on **Figure 7.3** 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 1.1) are also indicated by 'hedgerow numbers' (e.g. H1) on **Figure 7.3** in **Annex 7A.1**. The results of the hedgerow assessment are also presented in **Annex 7A.3**.

1.5.18 No non-native invasive plant species were identified within or immediately adjacent to the site boundary.

1.5.19 The site comprises predominantly poor semi-improved grassland as pasture fields and highway land. No botanically-rich field margins or notable plant species were recorded on the site.

1.5.20 The fields are bounded by fences and hedgerows. Hedgerow H1 is intact, contains trees, and is species-rich supporting a diverse mix of tree and shrub species including Field Maple (*Acer campestre*), Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), willow (*Salix* sp.), Pedunculate Oak (*Quercus robur*), and Alder (*Alnus glutinosa*). Hedgerow H2 is defunct, contains trees, and is species-poor; containing Pedunculate Oak, Elder (*Sambucus nigra*), Elm (*Ulmus* sp.), Hawthorn, and rose (Rosa sp.). Neither hedgerow is 'Important' when assessed against the Wildlife and Landscape Criteria of the Hedgerows Regulations (Ref 1.1). Hedgerows are a Suffolk BAP priority habitat (Ref 1.13) and are listed under Section 41 of the NERC Act (Ref 1.9).

1.5.21 To the north of the site adjacent to the site boundary is the River Yox. The river is slow flowing, moving in a west to east direction. The water depth is approximately 30cm and the channel is approximately 1m wide. Rosebay Willowherb (*Chamerion angustifolium*) and Yellow Iris (*Iris pseudacorus*) are present throughout the watercourse. Tall ruderals, predominantly Common Nettle (*Urtica dioica*) are present along banks with occasional willow trees (*Salix* sp.) scattered along the bankside Rivers are a Suffolk BAP priority habitat (Ref 1.13) and are listed under Section 41 of the NERC Act (Ref 1.9).

1.5.22 No ponds are within the site boundary. Eleven waterbodies (ponds) are present within 500m of the site boundary, two of which were scoped out from further assessment due to separation from the site by a primary road (the A12) and intensive agricultural land. Ponds are a habitat listed under Suffolk's Priority Species and Habitats list (Ref 1.14).

iii. Invertebrates

1.5.23 There were three desk-study records of invertebrate species within 2km of the site; a freshwater air-breathing snail (*Anisus spirorbis*), small heath butterfly (*Coenonympha pamphilus*), and wall butterfly (*Lasiommata*

megera). The record for the snail was over 800m north of the site, whilst the location data of the of records for small heath butterfly and wall butterfly were not of sufficient resolution to determine their location in reference to the site. Small heath butterfly and wall butterfly are listed under Section 41 of the NERC Act (Ref 1.9) and are also on Suffolk's Priority Species and Habitats list (Ref 1.14).

1.5.24 *Anisus spirorbis* is found in temporary natural waterbodies in lowlands and river plains, on water plants, and in periodic swamps and moist meadows. The only pond in close proximity to the site, P084, is thought to be a permanent waterbody with no aquatic vegetation, used as a water source for grazing animals, and is therefore, not thought to be suitable for this species of snail. The River Yox is located along the northern boundary of the site and is a permanent waterbody. The river supports several species of aquatic plants and is hydrologically linked to the site, however, it is considered unlikely that this species would be present within the site. Small heath butterfly occur on grassland where there are fine grasses (especially fescues (*Festuca* spp.), meadow-grasses (*Poa* spp.) and bents (*Agrostis* spp.)) with dry, well-drained soils and short, sparse vegetation, such as heathland, and sand dunes, but also road verges, moorland, and woodland rides. Only fescue (*Festuca* sp.) was recorded on the site and the sward was tall, and so small heath butterfly is considered unlikely to be present on the site. Wall butterfly also favours short open grassland where the ground is broken or rocky, as well as sand dunes, quarries, and brownfield land, and is therefore, not expected to be present on the site.

1.5.25 The extended Phase 1 habitat and protected species survey identified a range of common habitats which may be of moderate value to invertebrates; including grassland, scrub, hedgerows, running water, trees, and Bracken. However, the site is not expected to support a diverse or notable invertebrate assemblage.

iv. Amphibians

1.5.26 There were desk-study records of common frog (*Rana temporaria*; two records), smooth newt (*Lissotriton vulgaris*; one record), and great crested newt (one record) within 2km of the site. One common frog record and the smooth newt record were from within 100m of the site. The second common frog record was from over 500m north-west of the site; whilst the location datum of the great crested newt record was not of sufficient resolution to determine its location in reference to the site.

1.5.27 Suffolk is a stronghold for great crested newt, particularly in the north-east of the county, where there is a higher abundance of ponds (Ref 1.21). Great crested newts are protected under Schedule 5 of the W&CA (Ref 1.7), are listed under Section 41 of the NERC Act (Ref 1.9) and Suffolk's Priority

Species and Habitats list (Ref 1.14). Great crested newts are also protected under Schedule 2 of the Conservation of Habitats and Species Regulations (Ref 1.10).

1.5.28 Eleven ponds are present within 500m of the site boundary. Two ponds (P073 and P074) were scoped out from further assessment as these are on the west side of the A12 which is considered a barrier to great crested newt movement. Nine ponds were scoped in as requiring further survey; however, access was not provided to eight of these ponds (P070, P071, P072, P075, P110, P111, P112, and P113). Therefore, no further surveys were undertaken on ten of the eleven ponds which were originally identified. The locations of all ponds identified within 500m of the site boundary are shown on **Figure 7.4** in **Annex 7A.1**.

1.5.29 One farm pond (P084) is present within 10m of the site boundary, to the east of the site, and was subject to an HSI survey and eDNA survey. This pond resulted in a 'poor' HSI score category (HSI = 0.49) when assessed for suitability for great crested newts, and an 'inconclusive' result was returned from the eDNA testing service. Pond P084 is devoid of vegetation, had evidence of poaching and impacts from livestock, and had a high level of dirt and particulates, likely resulting in the inconclusive results. Due to the level of impact from livestock, it is considered highly likely that great crested newts are absent from this pond. For full details of survey results, please refer to **Annex 7A.3**.

1.5.30 While the great crested newt eDNA survey result for pond P084 was inconclusive, the aquatic and terrestrial habitats within the site boundary were considered to be of limited value to great crested newts, as well as being subject to a high level of disturbance. The terrestrial habitats (field margins, hedgerows, and woodland blocks) and network of ponds in the wider ZoI comprise suitable breeding and foraging habitat, and hibernation sites; however, connectivity to suitable breeding ponds is poor, and the site is isolated from these suitable habitats. It is, therefore, considered unlikely that great crested newt or other common amphibian species would be present on the site.

v. Reptiles

1.5.31 There were no desk-study records of reptiles within 2km of the site. The review of Suffolk's Priority Species and Habitats list identified adder (*Vipera berus*), common lizard (*Zootoca vivipara*), grass snake (*Natrix helvetica*), and slow-worm (*Anguis fragilis*) as priority species (Ref 1.14). In addition, all four species are included within Section 41 of the NERC Act (Ref 1.9).

1.5.32 Within the site boundary, habitats comprise species-poor semi-improved grassland, hedgerows, scrub, and road verges; however, large areas of

species-poor semi-improved grassland, disturbed by grazing animals, make up most of the site and the site does not provide the mosaic of varied habitat that is required by reptiles to bask, forage and shelter. The habitats on site are, therefore, considered to be of limited value to reptiles.

vi. Birds

1.5.33 The desk study presented in **Annex 7A.2** returned a considerable number of bird records.

1.5.34 Some of the species recorded are associated with wetland and coastal habitats. Habitats on site are agricultural and, therefore, not functionally-linked to wetland and coastal habitats. As such, wetland and coastal bird species are not expected to be present within the site boundary.

1.5.35 Professional judgement has therefore been used to identify those notable species considered most likely to use the habitats present within the site, listed in **Table 1.4**, alongside their conservation status and/or legislative protection.

Table 1.4: Desk-study records for notable bird species within 2km of the site and their conservation status and/or legislative protection

Species	No. of records	Sch 1 W&CA*	Section 41 NERC Act	Red List (BoCC)	Amber List (BoCC)
Barn owl (*Tyto alba*)	13	✓			
Bullfinch (*Pyrrhula pyrrhula*)	6		✓		✓
Cetti's warbler (*Cettia cetti*)	1	✓			
Common (mealy) redpoll (*Acanthis flammea*)	1				✓
Cuckoo (*Cuculus canorus*)	1		✓	✓	
Dunnock (*Prunella modularis*)	11		✓		✓
Fieldfare (*Turdus pilaris*)	5	✓		✓	
Grey partridge (*Perdix perdix*)	3		✓	✓	
Grey wagtail (*Motacilla cinerea*)	2			✓	

Species	No. of records	Sch 1 W&CA*	Section 41 NERC Act	Red List (BoCC)	Amber List (BoCC)
Hobby (*Falco subbuteo*)	2	✓			
House martin (*Delichon urbicum*)	6				✓
House sparrow (*Passer domesticus*)	8		✓	✓	
Kestrel (*Falco tinnunculus*)	7				✓
Kingfisher (*Alcedo atthis*)	3	✓			✓
Lapwing (*Vanellus vanellus*)	2		✓	✓	
Linnet (*Linaria cannabina*)	6		✓	✓	
Meadow pipit (*Anthus pratensis*)	1				✓
Mistle thrush (*Turdus viscivorus*)	6			✓	
Nightingale (*Luscinia megarhynchos*)	3			✓	
Red kite (*Milvus milvus*)	1	✓			
Redwing (*Turdus iliacus*)	7	✓		✓	
Skylark (*Alauda arvensis*)	8		✓	✓	
Song thrush (*Turdus philomelos*)	10		✓	✓	
Spotted flycatcher (*Muscicapa striata*)	3		✓	✓	
Starling (*Sturnus vulgaris*)	8		✓	✓	
Stock dove (*Columba oenas*)	10				✓
Swift (*Apus apus*)	10				✓
Tawny owl (*Strix aluco*)	6				✓
Turtle dove (*Streptopelia turtur*)	5		✓	✓	

Species	No. of records	Sch 1 W&CA*	Section 41 NERC Act	Red List (BoCC)	Amber List (BoCC)
Willow warbler (*Phylloscopus trochilus*)	1				✓
Yellowhammer (*Emberiza citrinella*)	8		✓	✓	

*Sch 1 W&CA = Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) Ref. 1.7

1.5.36 In addition to the above, records of a further three species that are either included on the Green List of BOCC (Ref 1.12) or of low conservation concern were also returned by the desk-study.

1.5.37 Of the bird species listed in **Table 1.4**, an assemblage of birds typical of farmland habitats, such as grey partridge, lapwing, linnet, turtle dove, and yellowhammer, as well as ground-nesting species such as skylark, are most likely to be present close-to or on the site. It is also possible, but unlikely, that some bird species listed on Schedule 1 of the W&CA (Ref 1.7), such as woodlark, could use the site for breeding.

1.5.38 Although no specific bird surveys were undertaken, the assumed presence of a farmland bird assemblage is supported by breeding bird surveys undertaken in the area for other associated development sites (**Volume 3, Appendix 7A** and **Volume 6, Appendix 7A**), which also concluded presence of a farmland bird assemblage. Farmland birds have been declining nationally since the 1970's (Ref 1.22) and many species are included within Section 41 of the NERC Act (Ref 1.9) as well as being listed on Suffolk's Priority Species and Habitats list (Ref 1.14).

vii. Bats

1.5.39 There were four desk-study records of bats within 2km of the site. Species recorded comprised soprano pipistrelle (*Pipistrellus pygmaeus*; one record), and brown long-eared bat (*Plecotus auratus*; three records).

1.5.40 One of the brown long-eared bat records was related to a roost located approximately 460m north-west of the site. The other records of brown long-eared bat and soprano pipistrelle were distributed around the site between 270m and 580m from the site boundary.

1.5.41 All species of bats found in the UK are protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (Ref 1.10) and Schedule 5 of the W&CA (Ref 1.7). Certain species of bat; barbastelle (*Barbastella barbastellus*), Bechstein's bat (*Myotis bechsteinii*), noctule

(*Nyctalus noctula*), soprano pipistrelle, brown long-eared bat, greater horseshoe bat (*Rhinolophus ferrumequinum*), and lesser horseshoe bat (*Rhinolophus hipposideros*); are listed under Section 41 of the NERC Act (Ref. 7A.10). In addition to the Section 41 species, serotine (*Eptesicus serotinus*), Brandts (*Myotis brandtii*), Daubenton's (*Myotis daubentonii*), whiskered bat (*Myotis mystacinus*), natterer's bat (*Myotis nattereri*), Leisler's bat (*Nyctalus leisleri*), nathusius' pipistrelle (*Pipistrellus nathusii*), and common pipistrelle (*Pipistrellus pipistrellus*) are also listed on Suffolk's Priority Species and Habitats list (Ref 1.14).

1.5.42 A summary of the bat surveys undertaken at the site is provided below. Full details of the results of these surveys can be found in **Annex 7A.3**.

1.5.43 The extended Phase 1 habitat and protected species survey identified the habitats present to be primarily agricultural fields of limited value to bats. Hedgerows and scattered mature trees are also present, which have potential to support roosting bats and provide limited foraging and commuting opportunities.

1.5.44 The bat tree roost assessment survey identified two trees with the potential to support roosting bats (comprising a total of three potential roost features) within the site boundary. The locations of these trees are illustrated on **Figure 7.5** in **Annex 7A.1**. A summary of the results is provided in **Table 1.5**. Two dead trees (T1 and T2) were located in hedgerow H1 in the centre-west of the site. Access was not granted to these trees for further surveys to be undertaken.

Table 1.5: Summary of bat tree roost assessment results

Overall suitability category of tree to support roosting bats	Number of trees	Number of potential roost features
Moderate	1	2
Low	1	1

viii. Terrestrial mammals

1.5.45 There were no desk-study records of hazel dormice (*Muscardinus avellanarius*) and limited habitat suitable to support this species recorded on the site, therefore this species is considered to be absent from the site and is not considered further within this report.

1.5.46 There were no desk-study records of otter or water vole (*Arvicola amphibius*) within 2km of the site. The River Yox, adjacent to the northern boundary of the site (TN2), is suitable habitat to support otter and water vole. Otters are protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (Ref 1.10) and Schedule 5 of the W&CA (Ref 1.7). Water

voles are protected under Schedule 5 of the W&CA (Ref 1.7). Both species are also listed under Section 41 of the NERC Act (Ref 1.9) and Suffolk's Priority Species and Habitats list (Ref 1.14).

1.5.47 The desk-study returned two records of badger. These records were from 740m and 800m south-east of the site. No badger setts or signs of badgers were recorded during the extended Phase 1 habitat and protected species survey and the habitats on site were assessed as being of limited value to foraging badgers. Badgers are considered to be absent from the site and are not considered further in this assessment.

1.5.48 There were no desk-study records of brown hare (*Lepus europaeus*) within 2km of the site. The habitats on site, including fields and hedgerows, are of moderate value to brown hare. Brown hare are listed under Section 41 of the NERC Act (Ref 1.9) and Suffolk's Priority Species and Habitats list (Ref 1.14).

1.5.49 There were16 records of hedgehog (*Erinaceus europaeus*) within 2km of the site. The hedgehog desk-study records were mostly from west, north-west, north, and north-east of the site, with two records from south-east of the site. The closest record was from 30m north-east of the site. No signs of hedgehog were recorded during the extended Phase 1 habitat and protected species survey. The habitats on site are of moderate value to hedgehog. Hedgehog is listed under Section 41 of the NERC Act (Ref 1.9) and Suffolk's Priority Species and Habitats list (Ref 1.14).

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 ZoI of the site boundary, and to use this information, in the context of the wider distribution, to assess the importance of the habitats and species that could be affected by the proposed development. This assessment will then be used, in conjunction with a description of the extent and magnitude of the predicted impacts of the scheme, to carry out the detailed ecological impact assessment presented in **Chapter 7** of **Volume 7** of the **ES**.

1.6.2 To comply with both the CIEEM Guidelines for Ecological Impact Assessment (Ref 1.2) and with the standard EIA methodology used elsewhere within the ES, both methodologies have been used to assess the habitats and species within the ZoI of the proposed development.

1.6.3 Under the CIEEM guidelines (Ref 1.2), 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 EcIA 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 EcIA.

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 EcIA 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 1.2), 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. England);
- Regional importance (i.e. the East of England);
- County importance (i.e. Suffolk); and
- Local importance (within ZoI of the scheme).

1.6.6 The following table (**Table 1.6**) has also been used in order to assess the ecological features in accordance with the wider EIA methodology.

Table 1.6: 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 of regional or county importance, such as CWSs, county BAP habitats, etc.).

Importance	Criteria	
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 ZoI	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 feature is addressed in the Environment Statement. [Note that Importance and Sensitivity are 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 1.2) and the wider EIA assessment methodology.

1.6.8 As outlined in **section 1.3,** 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.

c) Feature: Designated sites

i. Description and distribution

1.6.9 Six statutory designated sites (one Ramsar site, one SPA, two SACs, and two SSSIs) were identified within 5km of the site boundary. Six non-statutory designated sites (four CWSs and two RNRs) were identified within 2km of the site boundary, with one RNR (RNR 197) adjacent to the site boundary. These sites are detailed in **Table 1.2** and **Table 1.3**.

ii. Assessment

1.6.10 Given that for statutory designated site Dew's Ponds SAC and SSSI:

- supports an Annex II species of European importance listed under the EC Habitats Directive (Ref 1.4), great crested newt, which is also a species of national importance; however
- no direct land take from these sites will occur and no obvious impact pathways have been identified.;

then Dew's Ponds SAC and SSSI would:

- be an IEF at the international level under the CIEEM guidelines (Ref 1.2);
- be of high importance following the EIA-specific assessment methodology; and
- be scoped out of the detailed assessment as there would be no direct or indirect impacts;

1.6.11 Given that for statutory designated site Minsmere to Walberswick Heaths and Marshes SPA, SAC, Ramsar site, and SSSI:

- supports Annex I habitats of European importance listed under the EC Habitats Directive (Ref 1.4), supports Annex I species of European importance listed on Article 4 of the EC Birds Directive (Ref 1.3), is a wetland of international importance, and also supports habitats of national importance;
- while there will be no direct land take from Minsmere to Walberswick Heaths and Marshes SPA, SAC, Ramsar Site, and SSSI, the site is hydrologically linked to this designated site through the River Yox which is directly adjacent to the site.

then Minsmere to Walberswick Heaths and Marshes SPA, SAC, Ramsar site, and SSSI would:

- be an IEF at the international level under the CIEEM guidelines (Ref 1.2);
- be of high importance following the EIA-specific assessment methodology; and
- be scoped into the detailed assessment.

1.6.12 Given that for non-statutory designated sites Yoxford Wood CWS, and Suffolk Coastal 212 CWS and RNR 102:

- the CWSs support habitat types listed on Section 41 of the NERC Act (Ref 1.9) and that are targeted for action in the Suffolk BAP (Ref 1.13);
- the RNRs are designated to conserve good examples of species-rich plant areas and plants of national or county importance;
- no direct land take of these sites will occur, and these sites are sufficiently far away so that no indirect impact pathways have been identified;

then non-statutory designated sites Yoxford Wood CWS, and Suffolk Coastal 212 CWS and RNR 102 would:

- be IEFs at the county level under the CIEEM guidelines (Ref 1.2);
- be of medium importance following the EIA-specific assessment methodology; and
- be scoped out of the detailed assessment as there would be no direct or indirect impacts.

1.6.13 Given that for non-statutory designated site RNR 197:

- RNR 197 is designated for Sandy Stilt Puffball, a fungi listed on Schedule 8 of the W&CA (Ref 1.7), and is partially within the red line boundary;
- Sandy Stilt Puffball is also listed under Section 41 of the NERC Act (Ref 1.9), and on Suffolk's Priority Species and Habitats list (Ref 1.14).
- Sandy Stilt Puffball is known from approximately 30 sites in the UK, of which seven are in Suffolk (Ref 1.19);
- this RNR would be retained in its entirety; however, may experience indirect impacts.

then RNR 197 would be:

- an IEF at the national level under the CIEEM guidelines (Ref 1.2);
- of high importance following the EIA-specific assessment methodology; and
- be scoped into the detailed assessment.

1.6.14 Given that for non-statutory designated site Minsmere Valley Reckford Bridge to Beveriche Manor CWS and Darsham Marshes CWS:

- the CWSs support habitat types listed on Section 41 of the NERC Act (Ref 1.9) and that are targeted for action in the Suffolk BAP (Ref 1.13);
- while there will be no direct land take from Minsmere Valley Reckford Bridge to Beveriche Manor CWS and Darsham Marshes CWS, the site is hydrologically linked to these non-statutory designated sites through the River Yox which is directly adjacent to the site.

then Minsmere Valley Reckford Bridge to Beveriche Manor CWS and Darsham Marshes CWSs would be:

- IEFs at the county level under the CIEEM guidelines (Ref 1.2);
- of medium importance following the EIA-specific assessment methodology; and
- be scoped into the detailed assessment.

d) Feature: Plants and habitats

i. Description and distribution

1.6.15 To the north of the site adjacent to the site boundary is the River Yox. Rivers are a Suffolk BAP priority habitat (Ref 1.13) and are listed under Section 41 of the NERC Act (Ref 1.9).

1.6.16 Poor semi-improved pasture is the main habitat present, which is widespread in Suffolk, and no botanically-rich field margins were identified. One species-rich hedgerow is present within the site boundary, the other being species-poor and defunct. Neither hedgerow was 'important' when assessed against the Wildlife and Landscape Criteria of the Hedgerows Regulations (Ref 1.1). Hedgerows are a Suffolk BAP priority habitat (Ref 1.13) and are also listed under Section 41 of the NERC Act (Ref 1.9). At the last assessment (2004), there were an estimated 12,500km to 15,000km of species-rich hedgerow in the county (Ref 1.23).

1.6.17 The Suffolk BAP states that Suffolk '*has a very high density of ponds with an estimate of 22,635 across the county*' (Ref 1.21). Eleven ponds were identified within 500m of the site boundary; however, none of these were within the site boundary. Ponds are a habitat listed under Suffolk's Priority Species and Habitats list (Ref 1.14).

1.6.18 Habitats on site are considered suitable for the notable fungus Sandy Stilt Puffball and this species is known to occur in RNR 197 (for which this RNR

is designated) adjacent to the site. Sandy Stilt Puffball has therefore been considered as part of the assessment under RNR 197 and not on its own here.

1.6.19 Habitats on site are considered suitable for Rough Hawk's-beard; however, this species was not recorded during surveys. Rough Hawk's-beard is listed on the Suffolk Rare Plant Register (Ref 1.20).

ii. Assessment

1.6.20 River: Given than:

- rivers are included on Suffolk's Priority Species and Habitats list (Ref 1.14) and are also listed under Section 41 of the NERC Act (Ref 1.9);
- while the River Yox is outside the site boundary, it is adjacent to a small section (approximately 15m); therefore, this is the possibility of indirect impact;

then the river habitat within the ZoI would be:

- an IEF at the county level under the CIEEM guidelines (Ref 1.2); and
- of medium importance following the EIA-specific assessment methodology.

1.6.21 Hedgerows: Given that:

- hedgerows are a Suffolk BAP priority habitat (Ref 1.14) and are also listed under Section 41 of the NERC Act (Ref 1.9);
- only one species-rich hedgerow was identified within the site, that would be lost due to the proposed development; and
- hedgerows are widespread in Suffolk and none of the hedgerows were classified as 'important' under the Hedgerows Regulations (Ref 1.1);

then hedgerow habitats within the ZoI would:

- not be an IEF under the CIEEM guidelines (Ref 1.2); and
- be of low importance following the EIA-specific assessment methodology.

1.6.22 Semi-improved grassland: Given that:

- the species-poor semi-improved grassland is being grazed by livestock; and

- species-poor semi-improved pasture is widespread in Suffolk, and no botanically-rich field margins or notable plant species were recorded on the site;

then semi-improved grassland within the ZoI would:

- not be an IEF under the CIEEM guidelines (Ref 1.2); and
- be of very low importance following the EIA-specific assessment methodology;

1.6.23 Ponds: Given that no ponds were identified within the site boundary and none will be impacted by the proposed development; then pond habitats within the ZoI would:

- not be an IEF under the CIEEM guidelines (Ref 1.2); and
- be of very low importance following the EIA-specific assessment methodology.

1.6.24 Rough Hawk's-beard: While there are suitable habitats of this species within the site, and that it is listed on Suffolk Rare Plant Register (Ref 1.20), given that this was not recorded during baseline surveys and the desk-study record is 750m from the site, then Rough Hawk's-beard within the ZoI would:

- not be an IEF under the CIEEM guidelines (Ref 1.2); and
- be of low importance following the EIA-specific assessment methodology.

e) Feature: Invertebrates

i. Description and distribution

1.6.25 The Phase 1 habitat survey identified a range of common habitats which may be of limited value to invertebrates; including species-poor semi-improved grassland (that is grazed), scrub, hedgerows, running water, trees, and bracken. However, the site is not expected to support a diverse or notable invertebrate assemblage, nor be of particular importance to invertebrates.

ii. Assessment

1.6.26 Given that:

- the site largely comprised species-poor semi-improved grassland (that is grazed), bounded by scrub, hedgerows, running water, trees, and bracken;

- these habitats are common and widespread and the site is not expected to support a diverse or notable invertebrate assemblage;

then the invertebrate assemblage within the ZoI would:

- not be an IEF under the CIEEM guidelines (Ref 1.2); and
- be of very low importance following the EIA-specific assessment methodology.

f) Feature: Amphibians

i. Description and distribution

1.6.27 There were two desk-study records of common frog, one record of smooth newt, and one record of great crested newt within 2km of the site boundary.

1.6.28 Eleven ponds are present within 500m of the site boundary. Two ponds (P073 and P074) were scoped out from further assessment as these are on the west side of the A12 which is considered a barrier to great crested newt movement. Nine ponds were scoped in as requiring further survey; however, access for further surveys was not provided to eight of these ponds (P070, P071, P072, P075, P110, P111, P112, and P113). Access was granted to one farm pond (P084) within 10m of the boundary of the site. This pond resulted in a 'poor' HSI score category (HSI = 0.49), and an 'inconclusive' result was returned from the eDNA testing. Pond P084 is devoid of vegetation, had evidence of poaching and impacts from livestock, and had a high level of dirt and particulates, likely resulting in the inconclusive results. Due to the level of impact from livestock, it is considered highly likely that great crested newts are absent from this pond.

1.6.29 While the eDNA survey result for pond P084 was inconclusive, the aquatic and terrestrial habitats within the site boundary are of limited value to great crested newts, as well as being subject to a high level of disturbance. The terrestrial habitats (field margins, hedgerows, and woodland blocks) and network of ponds in the wider ZoI comprise suitable breeding and foraging habitat, and hibernation sites, however, connectivity to suitable breeding ponds is poor, and the site is isolated from these suitable habitats. It is, therefore, considered unlikely that great crested newt or other common amphibian species would be present on the site.

ii. Assessment

1.6.30 Given that:

- There were four desk-study records of common frog, smooth newt, and great crested newt within 2km of the site;
- great crested newts are protected under Schedule 2 of the Conservation of Habitats and Species Regulations (Ref 1.10), Schedule 5 of the W&CA (Ref 1.7), and are listed under Section 41 of the NERC Act (Ref 1.9) and Suffolk's Priority Species and Habitats list (Ref 1.14);
- the terrestrial habitats (field margins, hedgerows, and woodland blocks) and network of ponds in the wider ZoI comprise suitable breeding and foraging habitat, and hibernation sites;
- the great crested newt eDNA survey result for pond P084 was inconclusive; however, due to the nature and condition of the pond, great crested newts are likely to be absent;
- pond P084 would be retained in situ; and
- the aquatic and terrestrial habitats within the site boundary are of limited value to amphibians, and connectivity within the wider ZoI is poor;

then great crested newts and the remaining amphibian assemblage within the ZoI of would:

- not be an IEF under CIEEM guidelines (Ref 1.2); and
- be of very low importance following the EIA-specific assessment methodology;

g) Feature: Reptiles

i. Description and distribution

1.6.31 There were no desk-study records of reptiles within 2km of the site. Habitats comprise largely species-poor semi-improved grassland (disturbed by grazing animals), bounded by hedgerows, scrub, and road verges. The site does not provide the mosaic of varied habitat that is required by reptiles to bask, forage and shelter. The habitats onsite are, therefore, considered to be of limited value to reptiles.

ii. Assessment

1.6.32 Given that:

- the four common species of reptiles are included within Section 41 of the NERC Act (Ref 1.9) and are also listed on Suffolk's Priority Species and Habitats list (Ref 1.14);

- the desk-study returned no records of reptile species within 2km of the site; and
- large areas of poor semi-improved grassland, disturbed by grazing animals, make up most of the area, and the site does not provide the mosaic of varied habitat that is required by reptiles;

then, notwithstanding the legal protected afforded to these species, the reptile assemblage within the ZoI would:

- not be an IEF under CIEEM guidelines (Ref 1.2); and
- be of very low importance following the EIA-specific assessment methodology.

h) Feature: Birds

i. Description and distribution

1.6.33 The desk-study returned a considerable number of bird records. Some of these species are associated with wetland and coastal habitats; however, habitats on the site are agricultural and are not considered to be functionally-linked to these habitat types, and therefore, wetland and coastal bird species are not expected to be present within the site.

1.6.34 Of the other bird species desk-study records, an assemblage of birds typical of farmland habitats, such as grey partridge, lapwing, linnet, turtle dove, and yellowhammer, as well as ground-nesting species such as skylark, are likely to be present close-to or on the site. This is supported by breeding bird surveys undertaken at a similar Associated Development site which also recorded presence of a farmland bird assemblage.

ii. Assessment

1.6.35 Given that:

- there is likely to be an assemblage of farmland birds using the site;
- farmland birds have been declining nationally since the 1970's (Ref 1.22) and many species are included within Section 41 of the NERC Act (Ref 1.9) as well as being listed on Suffolk's Priority Species and Habitats list (Ref 1.14);
- intensively managed agricultural habitat is widespread in Suffolk;
- the agricultural habitat is not being managed specifically to benefit breeding birds;

- the habitats are small in area and of poor quality;
- the farmland bird assemblage using the site is likely to be low in numbers and have poor species diversity; and
- wetland and coastal bird species are not expected to be present on the site;

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

- not be an IEF under the CIEEM guidelines (Ref 1.2);
- be of low importance following the EIA-specific assessment methodology; and

i) Feature: Bats

i. Description and distribution

1.6.36 There were four desk-study records of bats within 2km of the site. Species recorded comprised soprano pipistrelle and brown long-eared bat. One of the brown long-eared bat records was related to a roost located approximately 460m north-west of the site. The other records of brown long-eared bat and soprano pipistrelle were distributed around the site between 270m and 580m from the site boundary.

1.6.37 The extended Phase 1 habitat and protected species survey identified the habitats present to be primarily agricultural fields of limited foraging and value to bats. Hedgerows and scattered mature trees are also present, which have potential to support roosting bats and provide limited foraging and commuting opportunities.

1.6.38 The bat tree roost assessment survey identified two trees with the potential to support roosting bats within the site boundary (comprising one tree with moderate potential (T1) and one tree with low potential (T2)). These trees would be lost due to the proposed development.

1.6.39 External to the site, within the ZoI, are hedgerows, small to medium sized woodland blocks, wood-pasture and parkland, coastal and floodplain grazing marsh, marshland and purple moor grass and rush pastures (associated with Minsmere Valley Reckford Bridge to Beveriche Manor CWS) which would provide ample, alternative foraging, commuting and roosting habitat for bats, that would not be affected by the proposed development. Bats would therefore not be dependent on the limited habitat available within the site boundary.

ii. Assessment

1.6.40 Given that:

- there were two trees within the site with moderate or low potential to support roosting bats which would be lost due to proposed development;
- all species of bats found in the UK are protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (Ref 1.10) and Schedule 5 of the W&CA (Ref 1.7), certain species of bat are listed under Section 41 of the NERC Act (Ref 1.9), and in addition to the Section 41 species, some other species are also listed on Suffolk's Priority Species and Habitats list (Ref 1.14);
- there were no records of bats within the site boundary;
- the habitats within the site boundary were of limited value to foraging and commuting bats;
- within the wider study are is extensive, better quality, optimal habitat for foraging, commuting and roosting bats, and bats would not be dependent on the limited habitat available within the site boundary.

then notwithstanding the legal protection afforded to roosting bats, the bat assemblage within the ZoI would:

- not be an IEF under the CIEEM guidelines (Ref 1.2);
- be of low importance following the EIA-specific assessment methodology; and

j) Feature: Terrestrial mammals

i. Description and distribution

1.6.41 There were no desk-study records of water vole or otter; however, the River Yox, adjacent to the northern boundary of the site (TN2), is suitable habitat to support both species. The proposed development would only be adjacent to the River Yox for 15m and would not include any direct impacts to the watercourse or river bank. The water vole and otter population would, therefore, not be affected, and any potential in direct impacts would be consider under the River IEF (detailed above).

1.6.42 There were no desk-study records of brown hare within 2km of the site. The habitats on site, including fields and hedgerows, are of moderate value to brown hares. East Anglia is a reservoir for brown hare, holding approximately

20% of the national population across the three counties (Cambridgeshire, Suffolk and Norfolk) (Ref 1.24). Brown hare is widespread in Suffolk (Ref 1.25); 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 1.26). The population of brown hare using the site would not comprise a significant contribution to the wider population of this highly mobile species.

1.6.43 The closest record of hedgehog was from 30m north-east of the site. No signs of hedgehog were recorded during the extended Phase 1 habitat and protected species survey. The habitats on site are of moderate value to hedgehog.

ii. Assessment

1.6.44 Otter and water vole: Given that:

- there were no desk-study records for otter and water vole;
- water voles are protected under Schedule 5 of the W&CA (Ref 1.7) and are also listed under Section 41 of the NERC Act (Ref 1.9) and Suffolk's Priority Species and Habitats list (Ref 1.14);
- otter is on Suffolk's Priority Species and Habitats list (Ref 1.14) and Section 41 of the NERC Act (Ref 1.9) and are protected under Schedule 5 of the W&CA (Ref 1.7) and Schedule 2 of the Conservation of Habitats and Species Regulations (Ref 1.10);
- the River Yox, adjacent to the northern boundary of the site, is suitable habitat to support water vole and otter; and
- the site would only be adjacent to the River Yox for 15m and would not include any direct impacts to the watercourse or riverbank. The water vole and otter population would, therefore, not be affected, and any potential indirect impacts would be consider under the River IEF (detailed above);

then otter and water vole within the ZoI would:

- not be an IEF under the CIEEM guidelines (Ref 1.2);
- be of low importance following the EIA-specific assessment methodology; and

Brown hare and hedgehog: Given that:

- there were no desk-study records of brown hare;

- brown hares and hedgehogs are listed on Suffolk's Priority Species and Habitats list (Ref 1.14) and Section 41 of the NERC Act (Ref 1.9);
- while the habitats on site were considered to be suitable for brown hares and hedgehogs, the populations of on site would not be a significant contribution to the wider population of this species;

then brown hare and hedgehog in the ZoI would:

- not be IEFs under the CIEEM guidelines (Ref 1.2); and
- be of very low importance following the EIA-specific assessment methodology.

1.7 Summary of ecological features/receptors

1.7.1 Following a review of the known baselines within the Zols, **Table 1.7** lists the ecological features/receptors and details that 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.

1.7.2 There are a number of ecological receptors that, while not of significant nature conservation value within the Zols, 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 1.7: Determination of IEFs to be taken forward for detailed assessment

Feature/Receptor	Importance (CIEEM/EIA Methodology)	Justification	Scoped in/out
Statutory designated sites – Dew Ponds SAC and SSSI	International/High	Dew's Ponds SAC and SSSI supports an Annex II species of European importance listed under the EC Habitats Directive (Ref 1.4). Given the distance of these sites from the site, no direct land take of these sites will occur, and no obvious impact pathways have been identified. Dew's Ponds SAC and SSSI is, therefore, scoped out of the detailed assessment	Scoped out
Statutory designated sites – Minsmere to Walberswick Heaths and Marshes SPA, SAC, Ramsar Site, and SSSI	International/High	Minsmere to Walberswick Heaths and Marshes SPA, SAC, Ramsar Site, and SSSI supports Annex I habitats of European importance listed under the EC Habitats Directive (Ref 1.4), supports Annex I species of European importance listed on Article 4 of the EC Birds Directive (Ref 1.3), is a wetland of international importance, and also supports habitats of national importance. While there will be no direct land take from Minsmere to Walberswick Heaths and Marshes SPA, SAC, Ramsar site, and SSSI, the site is hydrologically linked to this designated site through the River Yox which is directly adjacent to the site. Therefore, Minsmere to Walberswick Heaths and Marshes SAC, SPA, Ramsar site, and SSSI is scoped in to the detailed assessment.	**Scoped in**
Non-statutory designated sites - Yoxford Wood CWS, and Suffolk Coastal 212 CWS and RNR 102	County/Medium	Yoxford Wood CWS and Suffolk Coastal 212 CWS support habitat types listed on Section 41 of the NERC Act (Ref 1.9) and that are targeted for action in the Suffolk BAP (Ref 1.13). RNR 102 is designated to conserve good examples of species-rich plant areas and plants of national or county importance. Given the distance of these sites from the site, no direct land take of these sites will occur, and no obvious impact pathways have been identified Yoxford Wood CWS, and Suffolk Coastal 212 CWS and RNR 102 are, therefore, scoped out of the detailed assessment.	Scoped out
Non-statutory designated sites – RNR 197	National/High	RNR 197 is designated for Sandy Stilt Puffball, a fungi listed on Schedule 8 of the W&CA (Ref 1.7). Sandy Stilt Puffball is also listed under Section 41 of the NERC Act (Ref 1.9) and on Suffolk's Priority Species and Habitats list (Ref 1.14). This species is known from approximately 30 sites in the UK, of which seven are in Suffolk (Ref 1.19). This non-statutory designated site	**Scoped in**

Feature/Receptor	Importance (CIEEM/EIA Methodology)	Justification	Scoped in/out
		is adjacent to the site boundary, and would be retained in its entirety; however, it may experience indirect impacts. RNR 197 is, therefore, scoped in to the detailed assessment.	
Non-statutory designated sites – Minsmere Valley Reckford Bridge to Beveriche Manor CWS and Darsham Marshes CWS	County/Medium	Minsmere Valley Reckford Bridge to Beveriche Manor CWS and Darsham Marshes CWS support habitat types listed on Section 41 of the NERC Act (Ref 1.9) and that are targeted for action in the Suffolk BAP (Ref 1.13). While there will be no direct land take from these designated sites, the site is hydrologically linked to both designated site through the River Yox which is directly adjacent to the site. Minsmere Valley Reckford Bridge to Beveriche Manor CWS and Darsham Marshes CWS are, therefore, scoped in to the detailed assessment.	**Scoped in**
River habitat (River Yox)	County/Medium	Rivers are included on Suffolk's Priority Species and Habitats list (Ref 1.14) and are also listed under Section 41 of the NERC Act (Ref 1.9). while the River Yox is outside the site boundary, it is adjacent to a small section; therefore, this is the possibility of indirect impacts. The River Yox has therefore been scoped in to the detailed assessment.	**Scoped in**
Hedgerows	Local/Low	Hedgerows are a Suffolk BAP priority habitat (Ref 1.14) and are also listed under Section 41 of the NERC Act (Ref 1.9). Hedgerows are widespread in Suffolk and none of the hedgerows were classified as 'important' under the Hedgerows Regulations (Ref 1.1). Hedgerows have therefore been scoped out of the detailed assessment.	Scoped out
Semi-improved grassland	Local/Very Low	This habitat type within the site is species-poor and grazed by livestock. Species-poor semi-improved pasture is widespread in Suffolk, and no botanically-rich field margins or notable plant species were recorded on the site. Semi-improved grassland has therefore been scoped out of the detailed assessment.	Scoped out

Feature/Receptor	Importance (CIEEM/EIA Methodology)	Justification	Scoped in/out
Ponds	Local/Very Low	Given that no ponds were identified within the site boundary and none will be impacted by the proposed development; ponds have been scoped out of the detailed assessment.	Scoped out
Rough Hawk's-beard	Local/Low	While there are suitable habitats of this species within the site, and that it is listed on Suffolk Rare Plant Register (Ref 1.20), This species was not recorded during baseline surveys the desk-study records the species as being over 750m from the site. Rough Hawk's-beard has therefore been scoped out of the detailed assessment; however, mitigation measures to protect this species have been included within the ES.	Scoped out
Invertebrate assemblage	Local/Very Low	No habitat of value to invertebrates was identified within the site. Most of the site comprises species-poor semi-improved pasture, with one species-rich hedgerow but with no other features of particular importance to invertebrate species. Therefore, invertebrates are scoped out of the detailed assessment.	Scoped out
Great crested newts and amphibian assemblage	Local/Low	Eleven ponds are present within 500m of the site boundary. Ponds P073 and P074 were scoped out from further assessment as these are on the west side of the A12 which is considered a barrier to great crested newt movement. Access was granted to only one pond (P084), within 10m of the boundary of the site. This pond resulted in a 'poor' HSI score category (HSI = 0.49), and an 'inconclusive' result was returned from the eDNA testing. Pond P084 is devoid of vegetation, had evidence of poaching and impacts from livestock, and had a high level of dirt and particulates, likely resulting in the inconclusive results. Due to the level of impact from livestock, it is considered highly likely that great crested newts are absent from this pond. The aquatic and terrestrial habitats within the site boundary are of limited value to great crested newt, as well as being subject to a high level of disturbance. The terrestrial habitats (field margins, hedgerows, and woodland blocks) and network of ponds in the wider ZoI comprise suitable breeding and foraging habitat, and hibernation sites, however, connectivity to suitable breeding ponds is poor, and the site is isolated from these suitable habitats. It is, therefore,	Scoped out

Feature/Receptor	Importance (CIEEM/EIA Methodology)	Justification	Scoped in/out
		considered unlikely that great crested newt or other common amphibian species would be present on the site. Great crested newt has therefore been scoped out of the detailed assessment.	
Reptile assemblage	Local/Very low	Habitat within the site boundary is of little value to reptile species. Habitats comprise largely species-poor semi-improved grassland (disturbed by grazing animals), bounded by hedgerows, scrub, and road verges. The site does not provide the mosaic of varied habitat that is required by reptiles to bask, forage and shelter. Reptiles have therefore been scoped out of the detailed assessment. However, all four common reptile species (adder, common lizard, grass snake and slow-worm) are protected under Section 41 of the NERC Act (Ref 1.9) and a limited amount of habitat to be lost was identified as having the potential to support a small population of foraging and/or hibernating reptiles. Mitigation measures employed to protect reptiles have been detailed within the ES.	Scoped out
Bird assemblage	Local/Low	There is expected to be a farmland bird assemblage present within the site representative of the farmland habitats present. The assemblage is likely to be low in numbers and have poor species diversity considering the small size and low quality of the habitats. Intensively managed farmland habitat is widespread in Suffolk and it is not being managed specifically to benefit birds. It is not considered that any significant impacts would occur on the bird populations as a result of the proposed development. Birds have therefore been scoped out of the detailed assessment, however, breeding birds are protected under the W&CA (Ref 7.7) and there may be the potential for impacts on breeding birds, should works be undertaken during the breeding bird period (end of February to end of August inclusive. Details of the mitigation measures employed to protect birds have been detailed within the ES.	Scoped out
Bat assemblage	Local/Low	All bat species in the UK are protected under the Conservation of Habitats and Species Regulations (Ref 1.10). Additional relevant legislation includes the W&CA (Ref 1.7), and the NERC Act (Ref 1.9). There were no records of bats within the boundary of the site and most of	Scoped out

Feature/Receptor	Importance (CIEEM/EIA Methodology)	Justification	Scoped in/out
		the habitats within the site were of limited value to foraging and commuting bats. There were three trees within the site with moderate or low potential to support roosting bats. External to the site, within the ZoI, are hedgerows, small to medium sized woodland blocks, wood-pasture and parkland, coastal and floodplain grazing marsh, marshland and purple moor grass and rush pastures (associated with Minsmere Valley Reckford Bridge to Beveriche Manor CWS) which would provide ample, alternative foraging, commuting and roosting habitat for bats, that would not be affected by the proposed development. Bats would therefore not be dependent on the limited habitat available within the site boundary. Bats have therefore been scoped out of the detailed assessment; however, details of mitigation measures employed to protect bats have been detailed within the ES.	
Otters and water voles	Local/Low	Water voles are protected under Schedule 5 of the W&CA (Ref 1.7) and are also listed under Section 41 of the NERC Act (Ref 1.9) and Suffolk's Priority Species and Habitats list (Ref 1.14). Otter is on Suffolk's Priority Species and Habitats list (Ref 1.14) and Section 41 of the NERC Act (Ref 1.9) and are protected under Schedule 5 of the W&CA (Ref 1.7) and Schedule 2 of the Conservation of Habitats and Species Regulations (Ref 1.10); The site would only be adjacent to the River Yox for 15m and would not include any direct impacts to the watercourse or riverbank. The water vole and otter population would, therefore, not be affected, and any potential indirect impacts would be considered under the River Yox IEF (detailed above). Otter and water voles have therefore been scoped out of the detailed assessment; however, and details of mitigation measures employed to protect these species have been detailed within the ES.	Scoped out
Brown hare and hedgehog	Local/Very Low	Brown hare and hedgehog are listed on Suffolk's Priority Species and Habitats list (Ref 1.14) and Section 41 of the NERC Act (Ref 1.9). The habitat within the site is suitable for brown hare and hedgehog; however, the populations of brown hare and hedgehog using the site would not	Scoped out

Feature/Receptor	Importance (CIEEM/EIA Methodology)	Justification	Scoped in/out
		be a significant contribution to the wider population of these species and effects are unlikely to be significant. Brown hare and hedgehog have therefore been scoped out of the detailed assessment; however, details of the mitigation measures employed to protect these species have been detailed within the ES.	

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None provided.

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None provided.

1. Desk Study

1.1 Methodology

1.1.1 Desk study records of protected or otherwise notable species of conservation interest from the last ten years within the 2 x 2 kilometre (km) tetrad covering the Yoxford roundabout site (hereafter referred to as the site) were obtained from Suffolk Biodiversity Information Service (SBIS) in July 2018.

1.1.2 The Environmental Impact Assessment (EIA) includes for the Yoxford roundabout as well as road improvements at five locations. Due to the small scale, minor nature of the works proposed at the five road improvement locations, these have been screened out of the Ecological Impact Assessment (EcIA) and therefore this desk study. This Annex only reports on the desk study records collated for the Yoxford roundabout.

1.2 Fungi and plants

1.2.1 **Table 1.1** below summarises the desk study results for plants recorded in the last ten years within the 2km Zone of Influence (ZoI) of the site.

Table 1.1: Desk study results for fungi and plants

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
Bee Orchid (*Ophrys apifera*)	Darsham	Service strip of southbound platform	TM4049169735	52.27267767	1.525470554	2014		1.03km north-east
Chicory (*Cichorium intybus*)	Darsham	Darsham / Yoxford	TM46E			2014		N/A*
Rough Hawk's-beard (*Crepis biennis*)	Darsham	Darsham / Yoxford	TM403696	52.27154963	1.522580176	2014		0.78km north-east
Sandy Stilt Puffball (*Battarraea phalloides*)	Yoxford B1122	South bank of the B1122 just before it comes to the junction with the A12	TM4000068650	52.26315498	1.517515805	2014	6 Count of present	Possibly within the red line boundary

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
Sanicle (Sanicula europaea)	Simpson's Fromus Valley		TM36Y			2015	1 Count of Occasional	N/A*

**Distance from the red line boundary can only be calculated where location of the record has been provided to sufficient accuracy.*

1.3 Invertebrates

1.3.1 **Table 1.2** below summarises the desk study results for invertebrates recorded in the last ten years within the 2km ZoI of the site.

Table 1.2: Desk study results for invertebrates

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
Anisus (Anisus) spirorbis	Yoxford	Cockfield Hall, Yoxford	TM3939769506	52.27109985	1.509303282	2014	16 Count	0.88km north-west
Small heath (*Coenonympha pamphilus*)	Yoxford	Yoxwood community wood (planted 2008)	TM3969			2012	1 Count of Abundant	N/A*
	Yoxford	Yoxford WCBS square	TM4069			2010	1 Count of A	N/A*
Wall (*Lasiommata megera*)	Yoxford		TM4069			2011	1 Count	N/A*

**Distance from the red line boundary can only be calculated where location of the record has been provided to sufficient accuracy.*

1.4 Amphibians

1.4.1 **Table 1.3** below summarises the desk study results for amphibians recorded in the last ten years within the 2km ZoI of the site.

Table 1.3: Desk study results for amphibians

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
Common frog (*Rana temporaria*)	Yoxford	7 Oakwood Park	TM399688	52.26454475	1.516159778	2011		0.01km west
	Yoxford	IP17 3 HP	TM392692	52.26843938	1.506204406	2015	1 Count	0.65km north-west
Great crested newt (*Triturus cristatus*)	Kelsale-cum-Carlton	pond in derelict orchard	TM3867			2013		N/A*
Smooth newt (*Lissotriton vulgaris*)	Yoxford	7 Oakwood Park	TM399688	52.26454475	1.516159778	2011		0.01km west

**Distance from the red line boundary can only be calculated where location of the record has been provided to sufficient accuracy.*

1.5 Reptiles

1.5.1 There were no desk study results for reptiles recorded in the last ten years within the 2km ZoI of the site.

1.6 Birds

1.6.1 **Table 1.4** below summarises the desk study results for birds recorded in the last ten years within the 2km ZoI of the site.

Table 1.4: Desk study results for birds

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
Barn owl (*Tyto alba*)	Yoxford		TM36Z			2016	2 Count	N/A*
	Darsham Marshes		TM4168	52.25688455	1.531678	2016	1 Count	1.02km south-east
	Yoxford	Yoxford (north-west)	TM3869	52.26716501	1.488509126	2015	1 Count	1.68km west
	Yoxford	NE-022	TM3973569 819	52.27376161	1.514470326	2015		0.82km north
	Darsham	Darsham (west)	TM4169	52.26585879	1.532391904	2014	1 Count	0.81km east
	Kelsale-cum-Carlton	Kelsale	TM36Y			2011	2 Probable Count of Breeding confirmed	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Yoxford	Yoxford (north)	TM3969	52.26673142	1.503137091	2011	1 Count	0.7km west
	Middleton Moor		TM4167	52.24791028	1.530964471	2011	1 Count	1.76km south-east
	Middleton Moor		TM46D			2011	1 Count	N/A*
	Yoxford		TM37V			2009	1 Count	N/A*
	Darsham	Darsham Station	TM4069	52.26629601	1.517764684	2009	1 Count	Possibly within the red line boundary
	Darsham		TM46E			2009		N/A*
	Darsham		TM47A			2009	1 Possible Count of Breeding confirmed	N/A*
Barnacle goose *(Branta leucopsis)*	Yoxford		TM396688	52.2646755	1.511771705	2014	2 Count	0.07km west
	Yoxford		TM3968	52.25775689	1.50242907	2014	2 Count	0.92km south-west

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
Black-headed gull (*Chroicocephalus ridibundus*)	Darsham	Darsham Train Station	TM4069	52.26629601	1.517764684	2016	1 Count of present	Possibly within the red line boundary
	Yoxford		TM36Z			2016	1 Count	N/A*
	Yoxford		TM396688	52.2646755	1.511771705	2014	2 Count	0.07km west
	Yoxford		TM37V			2010	447 Count	N/A*
	Middleton		TM46D			2009	2 Count	N/A*
	Darsham		TM47A			2009	1 Non- Count of Breeding confirmed	N/A*
	Darsham		TM46E			2009	19 Count	N/A*
Bullfinch (*Pyrrhula pyrrhula*)	Yoxford		TM36Z			2016	1 Count	N/A*
	Yoxford		TM396688	52.2646755	1.511771705	2016	1 Count	0.07km west
	Yoxford		TM3968	52.25775689	1.50242907	2014	2 Count	0.92km south-west
	Kelsale-cum-Carlton	Kelsale	TM36Y			2010	1 Count	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Middleton		TM46D			2009	1 Probable Count of Breeding confirmed	N/A*
	Darsham		TM47A			2009	1 Probable Count of Breeding confirmed	N/A*
Buzzard (*Buteo buteo*)	Darsham Marshes		TM4168	52.25688455	1.531678	2016	1 Count	1.02km south-east
	Yoxford		TM36Z			2016	1 Count	N/A*
	Yoxford		TM37V			2011	1 Count	N/A*
	Darsham		TM47A			2011	1 Probable Count of Breeding confirmed	N/A*
	Kelsale-cum-Carlton	Kelsale	TM36Y			2010	1 Count	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
Cetti's warbler (*Cettia cetti*)	Darsham Marshes		TM4168	52.25688455	1.531678	2016	1 Count	1.02km south-east
Common (mealy) redpoll (*Acanthis flammea*)	Yoxford		TM36Z			2009		N/A*
Common gull (*Larus canus*)	Yoxford		TM36Z			2016	1 Count of present	N/A*
	Yoxford		TM37V			2011	15 Count	N/A*
	Middleton		TM46D			2009	12 Count	N/A*
Cormorant (*Phalacrocorax carbo*)	Yoxford		TM396688	52.2646755	1.511771705	2014	1 Count	0.07km west
Cuckoo (*Cuculus canorus*)	Darsham Marshes		TM4168	52.25688455	1.531678	2016	1 Count	1.02km south-east
Dunnock (*Prunella modularis*)	Darsham Marshes		TM4168	52.25688455	1.531678	2016	3 Count	1.02km south-east
	Yoxford		TM36Z			2016	1 Count of present	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Darsham	Darsham Train Station	TM4069	52.26629601	1.517764684	2016	1 Count of present	Possibly within the red line boundary
	East Suffolk		TM3868	52.25819035	1.487804047	2016	1 Count of present	1.8km west
	Yoxford		TM396688	52.2646755	1.511771705	2014	1 Count	0.07km west
	Yoxford		TM37V			2011	1 Count	N/A*
	Middleton		TM46D			2009	2 Count	N/A*
	Darsham		TM407699	52.27406699	1.528645817	2009		1.11km north-east
	Yoxford		TM396687	52.26377806	1.511700717	2009		0.07km west
	Darsham		TM46E			2009	1 Possible Count of Breeding confirmed	N/A*
	Kelsale-cum-Carlton	Kelsale	TM36Y			2009	1 Possible Count of Breeding confirmed	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
Fieldfare (*Turdus pilaris*)	Middleton Moor		TM4167	52.24791028	1.530964471	2016	100 Count	1.76km south-east
	Yoxford		TM36Z			2015	1 Count	N/A*
	Yoxford		TM37V			2011	68 Count	N/A*
	Middleton		TM46D			2010	20 Count	N/A*
	Kelsale-cum-Carlton	Kelsale	TM36Y			2010	3 Count	N/A*
Grey heron (*Ardea cinerea*)	Darsham		TM47A			2010	1 Non- Count of Breeding confirmed	N/A*
	Middleton		TM46D			2009		N/A*
	Kelsale-cum-Carlton	Laurel Farmhouse Kelsale	TM36Y			2009	1 Count	N/A*
Grey partridge (*Perdix perdix*)	Darsham	Darsham (south-west)	TM4069	52.26629601	1.517764684	2014	2 Count	Possibly within the red line boundary

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Yoxford		TM36Z			2011	1 Possible Count of Breeding confirmed	N/A*
	Yoxford		TM37V			2011	1 Probable Count of Breeding confirmed	N/A*
Grey wagtail (*Motacilla cinerea*)	Yoxford		TM37V			2010	1 Count	N/A*
	Kelsale-cum-Carlton	Laurel Farmhouse Kelsale	TM36Y			2009	1 Count	N/A*
Greylag goose (*Anser anser*)	Darsham		TM46E			2009	2 Count	N/A*
Herring gull (*Larus argentatus*)	Yoxford		TM396688	52.2646755	1.511771705	2014	2 Count	0.07km west
Hobby (*Falco subbuteo*)	Yoxford	A12 YOXFORD	TM3968	52.25775689	1.50242907	2016	1 Count	0.92km south-west

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Darsham		TM47A			2009	1 Possible Count of Breeding confirmed	N/A*
House martin (*Delichon urbicum*)	Yoxford		TM36Z			2016	12 Count	N/A*
	East Suffolk		TM3868	52.25819035	1.487804047	2016	1 Count of present	1.8km west
	Yoxford		TM37V			2011		N/A*
	Darsham	Darsham station	TM46E			2010	2 Confirmed Count of Breeding confirmed	N/A*
	Darsham		TM47A			2009	1 Confirmed Count of Breeding confirmed	N/A*
	Middleton		TM46D			2009	1 Confirmed Count of	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
							Breeding confirmed	
House sparrow (*Passer domesticus*)	Yoxford		TM36Z			2016	6 Count	N/A*
	Yoxford		TM37V			2011	1 Probable Count of Breeding confirmed	N/A*
	Kelsale-cum-Carlton	Kelsale	TM36Y			2010	1 Confirmed Count of Breeding confirmed	N/A*
	Darsham		TM47A			2009	1 Confirmed Count of Breeding confirmed	N/A*
	Darsham		TM46E			2009	1 Possible Count of Breeding confirmed	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Middleton		TM46D			2009	1 Confirmed Count of Breeding confirmed	N/A*
	Yoxford		TM394684	52.26117279	1.50856261	2009		0.36km south-west
	Yoxford		TM394690	52.26655747	1.508988173	2009		0.33km north-west
Iceland gull (*Larus glaucoides*)	Yoxford		TM396688	52.2646755	1.511771705	2014	1 Count	0.07km west
Kestrel (*Falco tinnunculus*)	Darsham Marshes		TM4168	52.25688455	1.531678	2016	1 Count	1.02km south-east
	East Suffolk		TM3868	52.25819035	1.487804047	2016	1 Count of present	1.8km west
	Yoxford		TM36Z			2016	1 Count	N/A*
	Darsham		TM47A			2009	1 Possible Count of Breeding confirmed	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Middleton		TM46D			2009	1 Possible Count of Breeding confirmed	N/A*
	Kelsale-cum-Carlton	Laurel Farmhouse Kelsale	TM36Y			2009	1 Count	N/A*
	Darsham		TM46E			2009	1 Count	N/A*
Kingfisher (*Alcedo atthis*)	Yoxford		TM36Z			2016	1 Count	N/A*
	Darsham Marshes		TM4168	52.25688455	1.531678	2015	1 Count	1.02km south-east
	Darsham		TM46E			2009	1 Possible Count of Breeding confirmed	N/A*
Lapwing (*Vanellus vanellus*)	Yoxford		TM37V			2010	9 Count	N/A*
	Kelsale-cum-Carlton	Kelsale	TM36Y			2009	1 Count	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
Lesser black-backed gull (*Larus fuscus*)	Darsham		TM47A			2010	1 Non- Count of Breeding confirmed	N/A*
Linnet (*Linaria cannabina*)	Yoxford		TM36Z			2016	1 Count	N/A*
	Darsham Marshes		TM4168	52.25688455	1.531678	2016	1 Count	1.02km south-east
	Yoxford		TM37V			2011	1 Probable Count of Breeding confirmed	N/A*
	Middleton		TM46D			2009	1 Probable Count of Breeding confirmed	N/A*
	Darsham		TM46E			2009	1 Possible Count of Breeding confirmed	N/A*
	Darsham		TM47A			2009	1 Probable Count of	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
							Breeding confirmed	
Little egret (*Egretta garzetta*)	Yoxford		TM36Z			2010	1 Count	N/A*
Little owl (*Athene noctua*)	Yoxford		TM36Z			2016	1 Count	N/A*
	Yoxford	Yoxford Brick Kiln Farm	TM3870	52.27613966	1.489214576	2015	1 Count	N/A*
	Yoxford		TM3968	52.25775689	1.50242907	2014	1 Count	0.92km south-west
	Yoxford		TM396688	52.2646755	1.511771705	2014	1 Count	0.07km west
	Darsham	Darsham (west)	TM4169	52.26585879	1.532391904	2014	1 Count	0.81km east
	Yoxford	Woodhill Farm Yoxford	TM37V			2011	1 Possible Count of Breeding confirmed	N/A*
	Darsham	Trustan's Farm Darsham	TM46E			2009	1 Probable Count of	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
							Breeding confirmed	
Mallard (*Anas platyrhynchos*)	East Suffolk		TM3868	52.25819035	1.487804047	2016	1 Count of present	1.8km west
	Darsham Marshes		TM4168	52.25688455	1.531678	2016	1 Count	1.02km south-east
	Yoxford		TM36Z			2015	2 Count	N/A*
	Yoxford		TM396688	52.2646755	1.511771705	2014	2 Count	0.07km west
	Yoxford	Woodhill Farm Yoxford	TM37V			2011	1 Possible Count of Breeding confirmed	N/A*
	Darsham		TM47A			2010	1 Probable Count of Breeding confirmed	N/A*
	Middleton		TM46D			2009	1 Probable Count of	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
							Breeding confirmed	
	Darsham		TM46E			2009	2 Count	N/A*
Marsh harrier (*Circus aeruginosus*)	East Suffolk		TM3868	52.25819035	1.487804047	2016	1 Count of present	1.8km west
	Yoxford		TM3968	52.25775689	1.50242907	2012	1 Count	0.92km south-west
	Yoxford	North Boundary Farm Yoxford	TM37V			2010	1 Non- Count of Breeding confirmed	N/A*
	Darsham		TM47A			2009	1 Non- Count of Breeding confirmed	N/A*
Marsh tit (*Poecile palustris*)	Yoxford		TM36Z			2016	2 Count	N/A*
	Darsham Marshes		TM4168	52.25688455	1.531678	2016	1 Count	1.02km south-east
	Yoxford		TM396688	52.2646755	1.511771705	2016	2 Count	0.07km west

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Yoxford		TM37V			2011	2 Count	N/A*
	Darsham		TM47A			2011	1 Probable Count of Breeding confirmed	N/A*
Meadow pipit (*Anthus pratensis*)	Middleton Moor		TM4167	52.24791028	1.530964471	2016	20 Count	1.76km south-east
Mistle thrush (*Turdus viscivorus*)	Yoxford		TM397688	52.26463194	1.5132344	2016	1 Count	Possibly within the red line boundary
	Middleton Moor		TM4167	52.24791028	1.530964471	2016	2 Count	1.76km south-east
	Yoxford		TM396688	52.2646755	1.511771705	2014	2 Count	0.07km west
	Middleton		TM46D			2010	1 Count	N/A*
	Kelsale-cum-Carlton	Kelsale	TM36Y			2010	4 Confirmed Count of Breeding confirmed	N/A*
	Darsham		TM47A			2009	1 Probable Count of	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
							Breeding confirmed	
Moorhen (*Gallinula chloropus*)	East Suffolk		TM3868	52.25819035	1.487804047	2016	1 Count of present	1.8km west
	Darsham Marshes		TM4168	52.25688455	1.531678	2016	1 Count	1.02km south-east
	Yoxford		TM396688	52.2646755	1.511771705	2014	1 Count	0.07km west
	Yoxford	Woodhill Farm Yoxford	TM37V			2011	1 Possible Count of Breeding confirmed	N/A*
	Yoxford		TM36Z			2011		N/A*
	Darsham		TM46E			2009	1 Possible Count of Breeding confirmed	N/A*
	Middleton		TM46D			2009	2 Count	N/A*
	Darsham		TM47A			2009	1 Confirmed Count of	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
							Breeding confirmed	
Nightingale (*Luscinia megarhynchos*)	Darsham		TM47A			2010	1 Probable Count of Breeding confirmed	N/A*
	Middleton		TM46D			2009	1 Possible Count of Breeding confirmed	N/A*
	Darsham		TM46E			2009	1 Probable Count of Breeding confirmed	N/A*
Oyster-catcher (*Haematopus ostralegus*)	Bramfield		TM37V			2011	1 Confirmed Count of Breeding confirmed	N/A*
Red Kite (*Milvus milvus*)	Middleton Moor		TM4167	52.24791028	1.530964471	2016	1 Count	1.76km south-east

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
Redwing (*Turdus iliacus*)	Darsham	Darsham Train Station	TM4069	52.26629601	1.517764684	2016	1 Count of present	Possibly within the red line boundary
	Middleton Moor		TM4167	52.24791028	1.530964471	2016	1 Count	1.76km south-east
	Yoxford		TM37V			2011	12 Count	N/A*
	Kelsale-cum-Carlton	Kelsale	TM36Y			2010	7 Count	N/A*
	Yoxford		TM36Z			2010	1 Count	N/A*
	Darsham		TM46E			2009	2 Count	N/A*
	Middleton		TM46D			2009	12 Count	N/A*
Reed bunting (*Emberiza schoeniclus*)	Darsham Marshes		TM4168	52.25688455	1.531678	2016	1 Count	1.02km south-east
	Darsham		TM46E			2009	1 Possible Count of Breeding confirmed	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
Ring ouzel (*Turdus torquatus*)	Darsham		TM4169	52.26585879	1.532391904	2016	1 Count of present	0.81km east
Siskin (*Spinus spinus*)	Yoxford		TM36Z			2016	1 Count	N/A*
	Yoxford		TM37V			2011	40 Count	N/A*
	Kelsale-cum-Carlton	Kelsale	TM36Y			2010	1 Count	N/A*
	Darsham		TM46E			2009	4 Count	N/A*
Skylark (*Alauda arvensis*)	Darsham Marshes		TM4168	52.25688455	1.531678	2016	1 Count	1.02km south-east
	East Suffolk		TM3868	52.25819035	1.487804047	2016	1 Count of present	1.8km west
	Yoxford		TM37V			2011	1 Probable Count of Breeding confirmed	N/A*
	Yoxford		TM36Z			2011	1 Possible Count of	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
							Breeding confirmed	
	Darsham	Trustan's Farm Darsham	TM46E			2011	1 Possible Count of Breeding confirmed	N/A*
	Darsham		TM47A			2011	1 Probable Count of Breeding confirmed	N/A*
	Kelsale-cum-Carlton	Kelsale	TM36Y			2009	1 Possible Count of Breeding confirmed	N/A*
	Middleton		TM46D			2009	1 Possible Count of Breeding confirmed	N/A*
Snipe (*Gallinago gallinago*)	East Suffolk		TM3868	52.25819035	1.487804047	2016	1 Count of present	1.8km west

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Darsham		TM46E			2009	1 Count	N/A*
Song thrush (*Turdus philomelos*)	East Suffolk		TM3868	52.25819035	1.487804047	2016	1 Count of present	1.8km west
	Yoxford		TM36Z			2016	3 Count	N/A*
	Darsham Marshes		TM4168	52.25688455	1.531678	2016	3 Count	1.02km south-east
	Yoxford		TM396688	52.2646755	1.511771705	2014	2 Count	0.07km west
	Yoxford	Woodhill Farm Yoxford	TM37V			2011	1 Possible Count of Breeding confirmed	N/A*
	Kelsale-cum-Carlton	Kelsale	TM36Y			2010	1 Confirmed Count of Breeding confirmed	N/A*
	Middleton		TM46D			2010	1 Count	N/A*
	Darsham		TM46E			2009	1 Possible Count of	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
							Breeding confirmed	
	Darsham		TM47A			2009	1 Probable Count of Breeding confirmed	N/A*
	Yoxford		TM396687	52.26377806	1.511700717	2009		0.07km west
Sparrow-hawk (*Accipiter nisus*)	Darsham		TM47A			2009	1 Possible Count of Breeding confirmed	N/A*
	Darsham		TM46E			2009	1 Possible Count of Breeding confirmed	N/A*
	Kelsale-cum-Carlton	Laurel Farmhouse Kelsale	TM36Y			2009	1 Count	N/A*
	Middleton		TM46D			2009	1 Probable Count of	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
							Breeding confirmed	
Spotted flycatcher (*Muscicapa striata*)	Darsham Marshes		TM4168	52.25688455	1.531678	2015	1 Count	1.02km south-east
	Middleton Moor		TM4167	52.24791028	1.530964471	2014	4 Count	1.76km south-east
	Yoxford		TM36Z			2011	1 Confirmed Count of Breeding confirmed	N/A*
Starling (*Sturnus vulgaris*)	Yoxford		TM37V			2011		N/A*
	Yoxford		TM36Z			2011	1 Confirmed Count of Breeding confirmed	N/A*
	Yoxford		TM395685	52.26202671	1.510096142	2009		0.23km south-west
	Darsham		TM46E			2009	69 Count	N/A*
	Middleton		TM46D			2009	44 Count	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Yoxford		TM396688	52.2646755	1.511771705	2009		0.07km west
	Darsham		TM47A			2009	1 Possible Count of Breeding confirmed	N/A*
	Yoxford		TM396687	52.26377806	1.511700717	2009		0.07km west
Stock dove (*Columba oenas*)	Darsham Marshes		TM4168	52.25688455	1.531678	2016	1 Count	1.02km south-east
	Yoxford		TM36Z			2016	1 Count	N/A*
	East Suffolk		TM3868	52.25819035	1.487804047	2016	1 Count of present	1.8km west
	Yoxford	E216	TM3938869 470	52.27078069	1.509146077	2015		0.64km north-west
	Yoxford	E215	TM4010069 300	52.26894468	1.519440873	2015		0.31km north
	Yoxford		TM396688	52.2646755	1.511771705	2014	1 Count	0.07km west
	Yoxford		TM37V			2011		N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Middleton		TM46D			2009	1 Possible Count of Breeding confirmed	N/A*
	Darsham		TM47A			2009	1 Probable Count of Breeding confirmed	N/A*
	Darsham		TM46E			2009	1 Probable Count of Breeding confirmed	N/A*
Swift (*Apus apus*)	Yoxford		TM36Z			2016	4 Count	N/A*
	Yoxford		TM39546879	52.26461189	1.510886989	2012	4 Count	0.13km west
	Yoxford		TM39446898	52.26636057	1.509559088	2012	6 Count	0.28km north-west
	Darsham		TM408691	52.26684381	1.529537842	2012		0.66km north-east

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Darsham		TM40896919	52.26761208	1.530918551	2012	6 Count	0.77km north-east
	Yoxford		TM394689	52.26566002	1.508917237	2012		0.29km west
	Yoxford		TM395687	52.2638216	1.510238048	2012		0.17km west
	Darsham		TM46E			2009	1 Possible Count of Breeding confirmed	N/A*
	Middleton		TM46D			2009	1 Confirmed Count of Breeding confirmed	N/A*
	Darsham		TM47A			2009	1 Confirmed Count of Breeding confirmed	N/A*
Tawny owl (*Strix aluco*)	Yoxford	Satis house Yoxford	TM3968	52.25775689	1.50242907	2016	1 Count	0.92km south-west

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Yoxford	Yoxford (north-west)	TM3869	52.26716501	1.488509126	2014	1 Count	1.68km west
	Kelsale-cum-Carlton	Laurel Farmhouse Kelsale	TM36Y			2010	1 Count	N/A*
	Yoxford		TM37V			2010	1 Count	N/A*
	Darsham		TM47A			2009	1 Probable Count of Breeding confirmed	N/A*
	Darsham		TM46E			2009	1 Possible Count of Breeding confirmed	N/A*
Turtle dove (*Streptopelia turtur*)	Yoxford	Woodhill Farm Yoxford	TM37V			2011	1 Possible Count of Breeding confirmed	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Kelsale-cum-Carlton	Kelsale	TM36Y			2010	1 Possible Count of Breeding confirmed	N/A*
	Middleton		TM46D			2009	1 Probable Count of Breeding confirmed	N/A*
	Darsham		TM47A			2009	1 Probable Count of Breeding confirmed	N/A*
	Darsham		TM46E			2009	1 Probable Count of Breeding confirmed	N/A*
Willow warbler (*Phylloscopus trochilus*)	Darsham Marshes		TM4168	52.25688455	1.531678	2016	1 Count	1.02km south-east

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
Woodcock (*Scolopax rusticola*)	Kelsale-cum-Carlton	Kelsale	TM36Y			2009	1 Count	N/A*
	Yoxford Wood		TM3970	52.27570592	1.503845484	2009	3 Count	1.3km north-west
	Middleton		TM46D			2009	3 Count	N/A*
	Yoxford Wood		TM37V			2009	3 Count	N/A*
Yellow-hammer (*Emberiza citrinella*)	Yoxford		TM36Z			2016	1 Count	N/A*
	Darsham	Darsham Train Station	TM4069	52.26629601	1.517764684	2016	1 Count of present	Possibly within the red line boundary
	East Suffolk		TM3868	52.25819035	1.487804047	2016	1 Count of present	1.8km west
	Yoxford		TM37V			2011		N/A*
	Darsham		TM47A			2011	1 Probable Count of Breeding confirmed	N/A*

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary*
	Darsham	Trustan's Farm Darsham	TM46E			2011	1 Possible Count of Breeding confirmed	N/A*
	Middleton		TM46D			2010	1 Count	N/A*
	Kelsale-cum-Carlton	Kelsale	TM36Y			2009	1 Possible Count of Breeding confirmed	N/A*

**Distance from the red line boundary can only be calculated where location of the record has been provided to sufficient accuracy.*

1.7 Bats

1.7.1 **Table 1.5** below summarises the desk study results for bats recorded in the last ten years within the 2km ZoI of the site.

Table 1.5: Desk study results for bats

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary
Brown long-eared bat (*Plecotus auritus*)	Yoxford		TM40686829	52.25962715	1.527204992	2013		0.59km south-east
	Yoxford		TM406682	52.25885445	1.525970849	2013		0.58km south-east
	Yoxford		TM393691	52.26749843	1.507596319	2010		0.46km north-west
Soprano pipistrelle (*Pipistrellus pygmaeus*)	Yoxford	Old High Road, Yoxford	TM3940068800	52.26476258	1.508846304	2014	1 Count	0.27km west

1.8 Terrestrial mammals

1.8.1 **Table 1.6** below summarises the desk study results for terrestrial mammals recorded in the last ten years within the 2km ZoI of the site.

Table 1.6: Desk study results for terrestrial mammals

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary
Eurasian badger (*Meles meles*)	Yoxford	Middleton Moor	TM408682	52.25876696	1.528895807	2015		0.74km south-east
	Yoxford		TM40896823	52.25899679	1.530233438	2015		0.8km south-east
West European hedgehog (*Erinaceus europaeus*)	Yoxford	Middleton Road, Yoxford	TM4051868390	52.26059543	1.52490697	2016	1 Count	0.4km south-east
	Yoxford	High Street, Saxmundham	TM3918769261	52.26899247	1.506057478	2016	1 Count	0.64km north-west
	Yoxford		TM39536895	52.26605215	1.510854274	2015		0.19km north-west
	Yoxford	Old High Road	TM3944168820	52.26492422	1.509460201	2015		0.23km west
	Yoxford	Main Road, Saxmundham	TM3996569904	52.27442411	1.517895663	2014	1 Count	0.89km north
	Yoxford	Oakwood Park, Yoxford	TM3951868813	52.26482788	1.510581518	2014	1 Count	0.16km west

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary
	Yoxford	Oakwood Park, Yoxford Primary School	TM3954068836	52.26502471	1.510919636	2014	1 Count	0.14km west
	Yoxford	Old High Road, Saxmundham	TM3937968628	52.26322811	1.508417151	2014	2 Count	0.3km west
	Yoxford	Old High Road, Saxmundham	TM3937268906	52.26572606	1.508511927	2014	1 Count of dead	0.32km west
	Yoxford	A12, Saxmundham	TM3988569265	52.26872439	1.516270908	2014	3 Count of dead	0.25km north
	Yoxford		TM396687	52.26377806	1.511700717	2014	1 Count of dead	0.07km west
	Yoxford	Sunnyside, High Street Road in Yoxford	TM3956168926	52.26582327	1.511290688	2014	1 Count of dead	0.15km north-west
	Yoxford	Westleton Road,	TM4020968880	52.26512786	1.520736395	2014	1 Count of dead	0.03km north-east

Species	Location	Site Detail	Grid reference	Latitude	Longitude	Year	Abundance	Approximate distance from the site boundary
		Yoxford on corner of A12						
	Yoxford	Yoxford Road, Saxmundham Dead hedgehog, at side of road B1122.	TM4046368435	52.26102331	1.524134624	2014	1 Count of dead	0.33km south-east
	Yoxford	Old High Road, Saxmundham Rear of Yoxford Primary School	TM3940968852	52.26522533	1.509014833	2014	1 Count	0.27km west
	Yoxford	Park Place, Yoxford	TM3942368886	52.26552437	1.509243734	2014	1 Count of dead	0.26km west

VOLUME 7, 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 56
Site Name	MINSMERE VALLEY;RECKFORD BRIDGE to BEVERICHE MANOR
Parish	WESTLETON
District	Suffolk Coastal
NGR	TM404687
Description	This area of marsh represents the western third of the Minsmere Valley. The entire valley is of great importance for wildlife forming perhaps the last unspoilt and least improved of Suffolk's large marshland river valleys. Part of this valley forms the nationally important Minsmere/Walberswick Site of Special Scientific Interest. There is an extensive area of unimproved marsh on this site. Such unimproved flower-rich grasslands are becoming increasingly rare as agricultural treatments and intensive farming destroy the flora. In such marshes may be found Suffolk rarities such as bogbean and bog 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.
RNR Number	0
Area	91.03

County Wildlife Site Citations

CWS Number	Suffolk Coastal 183
Site Name	YOXFORD WOOD
Parish	YOXFORD
District	Suffolk Coastal
NGR	TM391704
Description	This wood is marked on all sides by a ditch and bank boundary system and contains ancient coppice, mainly hornbeam. Other coppiced species are ash, field maple, hazel and hawthorn. Many young oaks are also present. The wood has been underplanted with conifers in parts, but these have been largely unsuccessful and the wood still retains an interesting flora. This includes such species as common spotted orchid, yellow pimpernel and remote sedge which have affinities with ancient woodland and are well distributed here. There are also a few shallow ponds and one deeper pond which add to the variety of habitats present and support their own flora which includes yellow iris and pendulous sedge.
RNR Number	0

Area 3.88

County Wildlife Site Citations

CWS Number Suffolk Coastal 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

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:

FOR OFFICE USE ONLY.

DD MM YY

Designation date | Site Reference Number

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

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 , *Circus aeruginosus*, Europe	16 pairs, representing an average of 10.5% of the GB population (5 year mean 1993-1997)
Mediterranean gull , *Larus melanocephalus*, Europe	2 apparently occupied nests, representing an average of 1.8% of the GB population (Seabird 2000 Census)
Black-headed gull , *Larus ridibundus*, N & C Europe	2558 apparently occupied nests, representing an average of 1.9% of the GB population (Seabird 2000 Census)
Little tern , *Sterna albifrons albifrons*, 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 , *Botaurus stellaris stellaris*, 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 , *Anas crecca*, NW Europe	3083 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3)
Ruff , *Philomachus pugnax*, 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 , *Limosa limosa islandica*, 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 , *Tringa erythropus*, Europe/W Africa	15 individuals, representing an average of 11% of the GB population (5 year peak mean 1998/9-2002/3)
Common greenshank , *Tringa nebularia*, 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 , *Anser albifrons albifrons*, NW Europe	212 individuals, representing an average of 3.6% of the GB population (5 year peak mean for 1996/7-2000/01)

Gadwall , *Anas strepera strepera*, NW Europe	261 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3)
Northern shoveler , *Anas clypeata*, 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, *Circus cyaneus*, Europe	15 individuals, representing an average of 2% of the GB population (5 year peak mean 1985/6-1989/90)
Water rail , *Rallus aquaticus*, Europe	5 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Pied avocet , *Recurvirostra avosetta*, 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 , *Pluvialis apricaria apricaria*, 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 , *Tringa totanus totanus*,	1386 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Lesser black-backed gull , *Larus fuscus graellsii*,	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, Photedes brevilinea, Senta flammea, Herminea tarsicrinalis, Haematopota grandis, Tipula marginata, Podalonia affinis, Arctosa fulvolineata, Eucosma catroptana, E.maritima, Melissoblaptes zelleri, Pima boisduvaliella, Acrotophthalmus bicolor, Limonia danica, Telmaturus tumidulus, Vertigo angustior (a Habitats Directive Annex II species (S1014)).

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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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Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
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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:	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

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.

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 K

1.2 Site code UK0012809

1.3 Compilation date 199506

1.4 Update 200101

1.5 Relationship with other Natura 2000 sites

U	K	9	0	0	9	1	0	1

1.6 Respondent(s) International Designations, JNCC, Peterborough

1.7 Site name **Minsmere to Walberswick Heaths and Marshes**

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) 1265.52

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
	X				

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

		Population			Site assessment			
	Resident	Migratory						
Species name		**Breed**	**Winter**	**Stage**	**Population**	**Conservation**	**Isolation**	**Global**
Triturus cristatus	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

Soil & geology:

Acidic, Sand, Shingle

Geomorphology & landscape:

Coastal, Lagoon, Lowland

4.2 Quality and importance

Annual vegetation of drift lines

- 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.

Perennial vegetation of stony banks

- for which the area is considered to support a significant presence.

European dry heaths

- 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

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 [redacted]e 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:

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
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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.

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.

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**

TABLE OF CONTENTS

- 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

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1.1 Type	1.2 Site code
B	UK0030133

1.3 Site name

Dew`s Ponds

1.4 First Compilation date	1.5 Update date
2001-07	2015-12

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	Latitude
1.500555556	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

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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.
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

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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)

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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:

☐	Yes
☐	No, but in preparation
X	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 Hippopha□ 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 Callitricho-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, Screes, 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 ressources	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 K

1.2 Site code UK0012809

1.3 Compilation date 199506

1.4 Update 200101

1.5 Relationship with other Natura 2000 sites

U	K	9	0	0	9	1	0	1

1.6 Respondent(s) International Designations, JNCC, Peterborough

1.7 Site name **Minsmere to Walberswick Heaths and Marshes**

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) 1265.52

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
	X				

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

		Population			Site assessment			
	Resident	Migratory						
Species name		**Breed**	**Winter**	**Stage**	**Population**	**Conservation**	**Isolation**	**Global**
Triturus cristatus	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

Soil & geology:

Acidic, Sand, Shingle

Geomorphology & landscape:

Coastal, Lagoon, Lowland

4.2 Quality and importance

Annual vegetation of drift lines

- 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.

Perennial vegetation of stony banks

- for which the area is considered to support a significant presence.

European dry heaths

- 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

COUNTY: SUFFOLK SITE NAME: DEW'S PONDS

DISTRICT: SUFFOLK COASTAL

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

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

National Grid Reference: TM 390719 Area: 6.74 (ha.)

Ordnance Survey Sheet 1:50,000: 156 1:10,000: TM 37 SE

Date Notified (Under 1981 Act): 2000 Date of Last Revision: –

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

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

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

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

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

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

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

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

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

DISTRICT: SUFFOLK COASTAL/WAVENEY

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

VOLUME 7, 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 Location of statutory designated sites within 5km of Yoxford Roundabout

Figure 7.2 Location of non-statutory designated sites within 2km of Yoxford Roundabout

Figure 7.3 Phase 1 habitat plan for Yoxford Roundabout

Figure 7.4 Great crested newt survey results for Yoxford Roundabout

Figure 7.5 Bat tree roost assessment results for Yoxford Roundabout

1. Primary Data

1.1 Introduction

1.1.1 This annex provides details of the primary data collected for the proposed Yoxford roundabout site (from here on referred to as the site). The Environmental Impact Assessment (EIA) includes for the Yoxford roundabout as well as road improvements at five locations. Due to the small scale, minor nature of the works proposed at the five road improvement locations, these have been screened out of the Ecological Impact Assessment (EcIA) and therefore this ecological baseline. This annex only reports on the ecological baseline information collected for the Yoxford roundabout.

1.1.2 No targeted surveys were undertaken for invertebrates, reptiles, birds, and terrestrial mammals as the extended Phase 1 habitat and protected species survey determined suitability of habitats for these species within the site boundary to be non-existent or sub-optimal. As such these taxa are not considered within this Annex.

1.2 Plants and habitats

a) Methodology

i. Extended Phase 1 habitat and protected species survey

1.2.1 Extended Phase 1 habitat and protected species survey was undertaken by Arcadis Consulting (UK) Limited (Arcadis) on 29 April 2019. The survey area consisted of the land within the site boundary (see **Figure 7.3** in **Annex 7A.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 1.1b)**.

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 on the site was carried out to assess their suitability for occupancy by roosting and/or hibernating bats and the likely value of the various habitat features for foraging and commuting bats was also critically assessed;
- the site was investigated for their use by badgers (*Meles meles*) by searching for the characteristic signs of badger activity including setts, latrines, paths, footprints, hairs, and feeding signs;
- the site was assessed for their potential to be used by dormice (*Muscardinus avellanarius*) and for connectivity to areas of woodland habitat in the surrounding area;
- the value of the site for otter (*Lutra lutra*) and water vole (*Arvicola amphibius*) was assessed and any habitats or features of particular value of otter and water vole were identified; and
- the site was assessed for its potential to be used by terrestrial mammals and any habitats or features of particular value to terrestrial mammals were identified.

1.2.5 Full access to the entire survey area was not obtained for the site. However, it was considered that sufficient access was obtained to be able to map the habitats present within the boundary of the site and make a reasonable assessment of the value of these habitats to protected or notable species. Areas where access was not obtained are shown on **Figure 7.3** in **Annex 7A.1**).

ii. Hedgerows Regulations

1.2.6 These Hedgerows 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 (spp)/30m[1];
- at least six woody spp/30m and at least three features[1];
- at least six woody spp/30m including any one of Pn/Sot/Tic/Tip (see **Table 1.1**)[1];
- at least five woody species and at least four features; or
- 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 (Ref 1.3) for details.

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

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

Spp code	Scientific name	Common name	Spp code	Scientific name	Common name
Ac	*Acer campestre*	Field Maple	**Pa**	*Prunus avium*	Wild Cherry
Ag	*Alnus glutinosa*	Alder	**Pp**	*Prunus padus*	Bird Cherry
Bpe	*Betula pendula*	Silver Birch	**Ps**	*Prunus spinosa*	Blackthorn
Bpu	*Betula pubescens*	Downy Birch	**Pyc**	*Pyrus communis*	Pear

[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, 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.

Spp code	Scientific name	Common name	Spp code	Scientific name	Common name
Bxs	*Buxus sempervirens*	Box	**Qp**	*Quercus petraea*	Sessile Oak
Cb	*Carpinus betulus*	Hornbeam	**Qr**	*Quercus robur*	Pedunculate Oak
Cos	*Cornus sanguinea*	Dogwood	**Rc**	*Rhamnus cathartica*	Buckthorn
Ca	*Corylus avellana*	Hazel	**Ruv**	*Ribes uva-crispa*	Gooseberry
Cla	*Crataegus laevigata*	Midland Hawthorn	**Ros**	*Rosa* sp(p)	Rose
Cm	*Crataegus monogyna*	Hawthorn	**Rac**	*Ruscus aculeatus*	Butcher's-broom
Cys	*Cytisus scoparius*	Broom	**Sx**	*Salix* sp(p)	Willow
Dl	*Daphne laureola*	Spurge-laurel	**Sxv**	*Salix viminalis*	Osier
Ee	*Euonymus europaeus*	Spindle	**Sn**	*Sambucus nigra*	Elder
Fs	*Fagus sylvatica*	Beech	**Sac**	*Sorbus aucuparia*	Rowan
Fa	*Frangula alnus*	Alder Buckthorn	**Sor**	*Sorbus* sp(p)	Whitebeam
Fe	*Fraxinus excelsior*	Ash	**Sot**	*Sorbus torminalis*	Wild Service-tree
Hr	*Hippophae rhamnoides*	Sea-buckthorn	**Tb**	*Taxus baccata*	Yew
Ia	*Ilex aquilfolium*	Holly	**Tic**	*Tilia cordata*	Small-leaved Lime
Jr	*Juglans regia*	Walnut	**Tip**	*Tilia platyphyllos*	Large-leaved Lime
Jc	*Juniperus communis*	Common Juniper	**Ue**	*Ulex europaeus*	Gorse
Liv	*Ligustrum vulgare*	Wild Privet	**Ug**	*Ulex gallii*	Western Gorse
Ms	*Malus sylvestris*	Crab Apple	**Umi**	*Ulex minor*	Dwarf Gorse
Pal	*Populus alba*	White Poplar	**Um**	*Ulmus* sp(p)	Elm
Pn	*Populus nigra sub-species betulifolia*	Black-poplar	**Vl**	*Viburnum lantana*	Wayfaring-tree
Pot	*Populus tremula*	Aspen	**Vop**	*Viburnum opulus*	Guelder Rose
Pcan	*Populus x canescens*	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 to describe these features, and other additional terms, on the record sheet are explained in **Table 1.2** below, and their presence in the hedgerow is indicated by a '✓' on the record sheet.

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)
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 **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

Spp code	Scientific name	Common name
Amos	*Adoxa mochatellina*	Moschatel
Ajr*	*Ajuga reptans*	Bugle
Alu*	*Allium ursinum*	Ramsons
An*	*Anemone nemorosa*	Wood Anemone
Amac	*Arum maculatum*	Lord's-and-Ladies
Aff*	*Athyrium filix-femina*	Lady-fern
Bsp*	*Blechnum spicant*	Hard-fern
Bs*	*Brachypodium sylvaticum*	False Brome
Bram	*Bromopsis ramosa*	Hairy Brome
Clat	*Campanula latifolia*	Giant Bellflower
Ctra	*Campanula trachelium*	Nettle-leaved Bellflower
Cxsy	*Carex sylvatica*	Wood Sedge
Cl*	*Circaea lutetiana*	Enchanter's Nightshade
Cmaj	*Conopodium majus*	Pignut
Daff	*Dryopteris affinis*	Scaly Male-fern
Dcar	*Dryopteris carthusiana*	Narrow Buckler-fern
Dfm	*Dryopteris filix-mas*	Male-fern
Ehel	*Epipactis helleborine*	Broad-leaved Helleborine
Esyl	*Equisetum sylvaticum*	Wood Horsetail
Eamy	*Euphorbia amygdaloides*	Wood Spurge
Fgig	*Festuca gigantea*	Giant Fescue
Fv*	*Fragaria vesca*	Wild Strawberry
Godo	*Galium odoratum*	Woodruff
Gsx*	*Galium saxatile*	Heath Bedstraw
Gro*	*Geranium robertianum*	Herb-Robert
Gu*	*Geum urbanum*	Wood Avens
Hn*	*Hyacinthoides non-scripta*	Bluebell
Lgal	*Lamiastrum galeobdolon*	Yellow Archangel
Lsqu	*Lathraea squamaria*	Toothwort
Ls*	*Luzula sylvatica*	Greater Wood-rush
Lnem	*Lysimachia nemorum*	Yellow Pimpernel
Mpra	*Melampyrum pratense*	Common Cow-wheat
Msyl	*Melampyrum sylvaticum*	Small Cow-wheat
Muni	*Melica uniflora*	Wood Melick

Spp code	Scientific name	Common name
Mp*	*Mercurialis perennis*	Dog's Mercury
Meff	*Milium effusum*	Wood Millet
Omas	*Orchis mascula*	Early –purple Orchid
Oxa*	*Oxalis acetosella*	Wood Sorrel
Pqua	*Paris quadrifolia*	Herb Paris
Psco	*Asplenium scolopendrium*	Hart's-tongue
Pnem	*Poa nemoralis*	Wood Meadow-grass
Pvul	*Polypodium vulgare*	Polypody
Pacu	*Polystichum aculeatum*	Hard Shield-fern
Pset	*Polystichum setiferum*	Soft Shield-fern
Pere	*Potentilla erecta*	Tormentil
Pste	*Potentilla sterilis*	Barren Strawberry
Pela	*Primula elatior*	Oxlip
Pvul	*Primula vulgaris*	Primrose
Raur	*Ranunculus auricomus*	Goldilocks Buttercup
Sne*	*Sanicula europaea*	Sanicle
Tsn*	*Teucrium scorodonia*	Wood Sage
Vmon	*Veronica montana*	Wood Speedwell
Vodo	*Viola odorata*	Sweet Violet
Vrei	*Viola reichenbachiana*	Early Dog-violet
Vriv	*Viola riviniana*	Common Dog-violet

**Denotes code taken from Phase 1 handbook.*

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

Spp code	Scientific name	Common name
Ae	*Arrhenatherum elatius*	False Oat-grass
Agt	*Agrostis stolonifera*	Creeping Bent
Apet	*Alliaria petiolata*	Garlic Mustard
Aste	*Anisantha sterilis*	Barren Brome
Asy*	*Anthriscus sylvestris*	Cow Parsley
At	*Agrostis capillaris*	Common Bent
Car*	*Cirsium arvense*	Creeping Thistle
Cha	*Chamerion angustifolium*	Rosebay Willowherb
Cop*	*Chrysosplenium oppositifolium*	Opposite-leaved Golden-saxifrage
Cxrm	*Carex remota*	Remote Sedge

Spp code	Scientific name	Common name
Cyc	*Cynosurus cristatus*	Crested dog's-tail
Ddl*	*Dryopteris dilatata*	Broad Buckler-fern
Dp*	*Digitalis purpurea*	Foxglove
Ephir	*Epilobium hirsutum*	Greater Willowherb
Fu*	*Filipendula ulmaria*	Meadowsweet
Gap*	*Galium aparine*	Cleavers
Gh*	*Glechoma hederacea*	Ground-ivy
Gmol	*Galium mollugo*	Hedge Bedstraw
Gro	*Geranium robertianum*	Herb-Robert
Hh*	*Hedera helix*	Ivy
Hl*	*Holcus lanatus*	Yorkshire-fog
Hlup	*Humulus lupulus*	Hop
Ig*	*Impatiens glandulifera*	Indian Balsam
Lped	*Lotus pedunculatus*	Greater Bird's-foot-trefoil
Lpc*	*Lonicera periclymenum*	Honeysuckle
Ocro	*Oenanthe crocata*	Hemlock Water-dropwort
Oreg	*Osmunda regalis*	Royal Fern
Pt*	*Pteridium aquilinum*	Bracken
Pver	*Primula veris*	Cowslip
Rf*	*Rubus fruticosus* agg.	Bramble
Sd	*Solanum dulcemara*	Bittersweet
Shol	*Stellaria holostea*	Greater Stitchwort
Ssyl	*Stachys sylvatica*	Hedge Woundwort
So	*Smyrnium olusatrum*	Alexanders
Hand	*Hypericum androsaemum*	Tutsan
Ud*	*Urtica dioica*	Common Nettle
Vio	*Viola* spp	Violet species
Vm	*Vaccinium myrtillus*	Bilberry
Vriv	*Viola riviniana*	Common Dog-violet

**Denotes code taken from Phase 1 handbook.*

b) Results

i. Extended Phase 1 habitat and protected species survey

1.2.11 **Table 1.5** details the Target Notes (TNs) of the extended Phase 1 habitat and protected species survey. Results are presented on **Figure 7.3**, **Annex 7A.1**.

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

Target note number	Description
1	Pasture; species-poor semi-improved grassland, more floristically diverse at margins, used for cattle grazing. Dominated by grasses mainly Yorkshire-fog (*Holcus lanatus*), Fescue (*Festuca* sp.), Perennial Rye-grass (*Lolium perenne*), and Cock's-foot (*Dactylis glomerata*). Sward height 30-50cm. Non-grass species include occasional small patches of Common Nettle (*Urtica dioica*), Cleavers (*Galium aparine*), Ground-ivy (*Glechoma hederacea*), Dove's-foot Crane's-bill (*Geranium molle*), Small Nettle (*Urtica urens*), Spear Thistle (*Cirsium vulgare*), Dwarf Thistle (*Cirsium acaule*).
2	River Yox; slow moving stream adjacent to field. Flow direction west to east. 30cm deep, 1m wide. Rosebay Willowherb (*Chamerion angustifolium*) and Yellow Iris (*Iris pseudacorus*) present throughout watercourse. Tall ruderals, mainly Common Nettle (*Urtica dioica*), present along banks with occasional Willow trees (*Salix* sp.). Suitable for otter and water vole.
3	Scattered trees including Cherry (*Prunus* sp.) and Willow (*Salix* sp.) with tall ruderals including Common Nettle (*Urtica dioica*).
4	Bare ground.
5	Bracken (*Pteridium aquilinum*).
6	Dense Bramble (*Rubus fruticosus* agg.) scrub.
7	Scattered trees including lime (*Tilia* sp.), Hawthorn (*Crataegus monogyna*), and poplar (*Populus* sp.).
8	Scattered trees including birch (*Betula* sp.), Beech (*Fagus sylvatica*), and cherry (*Prunus* sp.).
9	Scattered broadleaved trees.
10	H1; species-rich hedgerow with trees.
11	H2; species-poor defunct hedgerow with trees

ii. Hedgerows Regulations

1.2.12 All hedgerows assessed under the Hedgerows Regulations (Ref 1.3) are target-noted with 'hedgerow numbers' (e.g. 'H1') on **Figure 7.3** (**Annex 7A.1**). **Table 1.6** details the Hedgerow Regulations record sheets. Species

abbreviations follow those detailed in **Table 1.1**, **Table 1.3**, and **Table 1.4**, above.

Table 1.6: Hedgerows Regulations record sheet results

Hedge No.	H1	H2
Important	No	No
Bridleway/path		
Pn/Sot/Tic/Tip		
No. woody spp./30m	6	5
Bank/wall		✓
Intact	✓	
Trees	✓	✓
3 flora spp.		
Ditch		
Connect >4 points		
Parallel hedge		
Woody ssp present	Ac	Qr
	Cm	Sn
	Ps	Um
	Sx	Cm
	Qr	Ros
	Ag	
Ground flora (dominant)	Gap, Ud	Gap
Other ground flora (including notable species)		Amac
Notes	None Available (N/A)	N/A

1.3 Amphibians

a) Methodology

1.3.1 A review of Ordnance Survey (OS) maps and aerial photographs (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 (see **Figure 7.4** in **Annex 7A.1**).

1.3.2 During the extended Phase 1 habitat and protected species survey (29 April 2019), a site visit to each pond was undertaken, 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) assessment 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 On these same site visits, all ponds that were holding water were sampled for great crested newt environmental DNA (eDNA) (see **Figure 7.4** in **Annex 7A.1**). 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 and took place between 15 April and 30 June 2016.

1.3.6 The samples were sent to Fera's eDNA testing service for analysis. The analysis method detects pond occupancy by 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 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.

b) Results

1.3.9 Eleven waterbodies (ponds) were identified within approximately 500m of the boundary of the site (**Table 1.7**). **Figure 7.4** (**Annex 7A.1**) shows the locations of these ponds classified as follows: ponds that were scoped out as not requiring further surveys (e.g. no longer extant, or dry at the time of survey); ponds where access was not granted; and ponds that had inconclusive great crested newt eDNA results.

Table 1.7: Ponds identified within 500m of the site

Pond ID	Scoped in/out	Access provided	Surveyed
P070	In	No	No
P071	In	No	No
P072	In	No	No
P073	Out	No	No
P074	Out	No	No
P075	In	No	No
P084	In	Yes	Yes (HSI & eDNA)
P110	In	No	No
P111	In	No	No
P112	In	No	No
P113	In	No	No

1.3.10 Two ponds (P073 and P074) were scoped out from requiring further survey as these are on the west side of the A12 which is considered a barrier to great crested newt movement. Nine ponds were scoped in as requiring further survey; however, access was only provided to one of these (P084).

1.3.11 **Table 1.8** presents the results of the HSI assessments for the surveyed ponds associated with the site.

Table 1.8: Pond HSI assessments

Feature	Pond ID
	P084
	Score
Location	1
Pond area	0.4
Pond drying	0.9
Water quality	0.01
Shade	1
Fowl	1
Fish	1
Ponds	1
Terrestrial habitat	0.67
Macrophytes	0.3
HSI Score	**0.49**
Suitability for Great Crested Newt	**Poor**

1.3.12 Pond 084 was located immediately to the east of the boundary of the site and was determined to have 'poor' suitability to support great crested newts.

1.3.13 Detailed pond descriptions are presented in **Table 1.9**.

Table 1.9: Pond descriptions

Pond 084	
	
Grid reference	TM 40000 68795
Description	Farm pond, devoid of vegetation, evidence of cattle poaching and surrounded by grazed, species-poor semi improved grassland.
Area	200m^2
Perimeter	133m
Scoped in/out	In

1.3.14 **Table 1.10** presents the results of the eDNA sampling of the surveyed ponds associated with the site. The test was inconclusive for great crested newt eDNA in Pond P084 due to degradation of the internal control being outside of accepted limits, indicating that the sample was degraded. Pond P084 is devoid of vegetation, had evidence of poaching and impacts from livestock, and had a high level of dirt and particulates, likely resulting in the inconclusive results. Due to the level of impact from livestock, it is considered highly likely that great crested newts are absent from this pond.

Table 1.10: eDNA survey results

Pond	Date sampled	GCN detection	GCN score	Inhibition	Degradation
P084	29/04/2019	Inconclusive	0	No	Yes

1.3.15 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 (GCN, Inhibition, and Degradation). All controls performed as expected.

1.4 Bats

a) Methodology

1.4.1 During the extended Phase 1 habitat and protected species survey (29 April 2019) an external inspection of all trees on the site was carried out to assess their suitability for occupancy by roosting and/or hibernating bats, following the methodology recommended by the Bat Conservation Trust (Ref 1.7). Potential roost features were observed from the ground (where accessible) 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.

b) Results

i. Extended Phase 1 habitat and protected species survey

1.4.2 During the extended Phase 1 habitat and protected species survey, one poplar (*Populus* sp.) tree and two dead trees with the potential to support roosting bats (comprising a total of four potential roost features) were identified within the site (Trees (T) 1 and 2). The two dead trees (T1 and T2) were located in hedgerow H1 in the centre-west of the site and the poplar tree (T3) was located within a line of trees in the south-west corner of the site. Access was not granted to these trees for further surveys to be undertaken.

1.4.3 One tree was considered to have moderate potential (T1) to support roosting bats and one tree was considered to have low potential (T2).

1.4.4 Additionally, hedgerow H1 was considered to provide limited foraging and commuting opportunities for bats (details of hedgerows are provided in **Table 1.6** and are illustrated on **Figure 7.3** in **Annex 7A.1**).

ii. Bat tree roost assessment survey

1.4.5 Full details of the features identified during the bat tree roost assessment survey are provided in **Table 1.11** and the results are illustrated on **Figure 7.5** in **Annex 7A.1**.

Table 1.11: Bat tree roost assessment results

Tree Number	Tree species and general tree description	Type of feature	Potential of feature	Overall tree potential
1	Dead tree, DBH: 70cm, Height: 10m	Stem, Type: Frost crack, Height: 9m, Aspect: East	Low	Moderate
		Stem, Type: Frost crack, Height: 1m, Aspect: East	Moderate	
2	Dead tree, DBH: 10cm, Height: 8m	Stem, Type: Desiccation fissure, Height: 1.5m, Aspect: East	Low	Low

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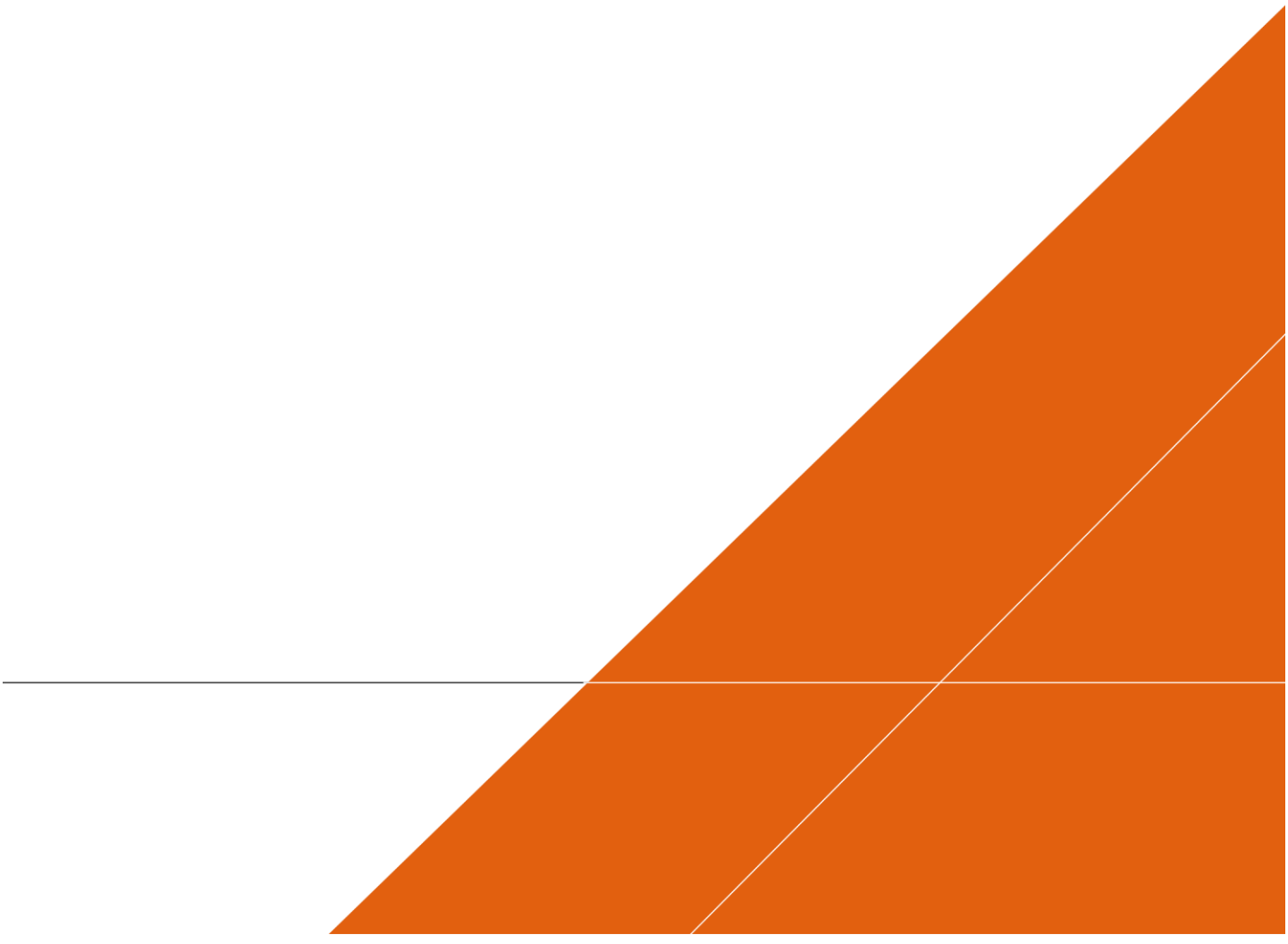
VOLUME 7, CHAPTER 7, APPENDIX 7A: ANNEX 7A.4: BIODIVERSITY NET GAIN REPORT

ARCADIS Design & Consultancy for natural and built assets

SIZEWELL C PROJECT ENVIRONMENTAL STATEMENT

Biodiversity Metric Calculations – Yoxford Roundabout

JANUARY 2020



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Executive summary

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. This report focusses on the Biodiversity Metric calculations of the Yoxford roundabout 'Associated Development' site. Only the changes to Yoxford roundabout are considered here, minor proposed changes to visibility splays and signage in the wider area are not considered.

Under current proposals it is estimated that there is a predicted decrease in biodiversity unit values 0.18 units, and an increase in hedgerow unit values of 0.86 units.

In addition to Yoxford roundabout, the main development site and a series of other off-site associated developments were also assessed via the biodiversity metric (specifically the Sizewell Link Road and Two Village Bypass) 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 these three associated developments.

Increases in the biodiversity unit value of grassland is predicted despite decrease in the area covered by this habitat. Decreases in the biodiversity unit value of woodland and forest are predicted, despite increases in the area covered by this habitat.

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 SZC Co., to undertake Biodiversity Metric calculations. This is submitted with the Environmental Statement for Sizewell C Project, which includes the main development site and associated development sites.

This report focusses on the Yoxford roundabout (hereafter referred to as "the site") which will involve the construction of a new three-arm roundabout at the junction of the A12 and B1122, located to the east of Yoxford. The works would include realignment of the A12 and B1122. The red line boundary is shown in Plate 1. 1. The other two associated developments and the main development site were assessed via the biodiversity metric, presented 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 Yoxford, the 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
- A permanent road linking the A12 to the Sizewell C main development site (referred to as 'Sizewell link road' (SLR)) to alleviate traffic from the B1122 through Theberton and Middleton Moor (Volume Annex 7.4).

Plate 1. 1: Aerial imagery of the site and redline boundary

1.2 Site overview

The site is approximately 8km to the west of the east coast and 6km to the north-west of the main development site. The site is predominantly comprised of species-poor semi-improved grassland used for pasture and bounded by fences and two hedgerows, as well the A12 and B1122. Roadside Nature Reserve 197 lies immediately adjacent to the southern edge of the site. This site has been designated due to the presence of the

Sandy Stilt Puffball fungus (*Battarraea phalloides*), which is listed on Schedule 8 of the Wildlife and Countryside Act (1981, as amended) and are included on the Suffolk Priority habitats and species list (SBIS, 2015).

1.3 Proposed scheme

The proposed Yoxford roundabout would be a three-arm roundabout, and would replace the existing ghost island for this junction to the east of Yoxford. The roundabout would increase capacity of the existing A12 and B1122 junction to minimise disruption during the peak construction phase of the Sizewell C Project.

The new roundabout would be approximately 90m north of the existing junction, largely on grazing land adjacent to the existing A12. It would have a diameter of 60m and would include a realignment of the A12 in order to connect to the roundabout. The A12 realignment would measure approximately 120m in length to the north and 160m to the south. The roundabout would be in a cutting of up to 2m to the east of the roundabout which becomes shallower where it ties-in to the B1122 to the south-east.

The B1122 would also be realigned to join the proposed A12 and B1122 Yoxford roundabout via a new section of road which would cross the existing agricultural land in a north westerly direction to meet up with the proposed roundabout. The B1122 realignment would measure approximately 220m in length.

The new sections of the A12 leading in to the A12 and B1122 Yoxford roundabout would be 7.3m in width, with the B1122 approach road 6m wide. All three of the approaches would flare to create additional width at their respective give way lines at the proposed A12/B1122 Yoxford roundabout.

As part of the works, a new access road, measuring approximately 75m in length, would be provided off the realigned B1122 to the south of the roundabout to maintain access to the row of houses south of the junction including Pinn's Piece and Rookery Lodge, as well as Public Right of Way (PRoW) E-584/020/0.

Between the roundabout and the southern access road there would be an infiltration basin.

Across the roundabout central island there would be a partially demountable section allowing for Abnormal Indivisible Loads (AILs) to pass through the Yoxford roundabout. This is required as vehicles transporting AILs would be of a size that could not negotiate the roundabout.

The proposed Yoxford roundabout would be retained following the completion of the Sizewell C main development site as a permanent replacement to the existing A12 and B1122 ghost island junction.

1.4 Biodiversity Targets

This report has been prepared in response to SZC Co., 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). These calculations were undertaken using the Biodiversity Metric 2.0 issued by Defra and Natural England (details can be found at Crosher et al., 2019 a and b) a spreadsheet-based tool into which data can be entered to carry out biodiversity net gain calculations. The version used for these calculations is that updated in October 2019, an updated version of the tool was released in late December 2019, however these were not material to these calculations. A connectivity tool released after the updated metric, but this was not functional due to the number of bugs present within it. As such, the approach detailed in section 2.2.3 for connectivity was taken.

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 is 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. hedgerpw 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 Figure 7.3 in Appendix 7A, of Volume 7 and satellite imagery (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. Details of the post-development typologies are illustrated on Figure 2.1 in Chapter 2 of Volume 7. 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 Yoxford roundabout (Figure 2.1 in Chapter 2)

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

Category	Multiplier
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:

$$overall\ percentage\ net\ gain = \frac{change\ in\ units\ on\ site + change\ in\ units\ off\ site}{baseline\ units\ on\ site} \times 100$$

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 within the site.

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. It is recommended that ground truthing surveys are undertaken to confirm the condition assessments made.
- 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 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 proposed development is approximately 2.9ha in area. This section describes each of the habitats listed on site, shown in Figure 7.3 in Appendix 7A of Volume 7. 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 5.55 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 0.22 hedgerow units from 0.03km of hedgerows.

Table 9: Baseline biodiversity units for areas of habitat within the Sizewell C Yoxford roundabout, 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
Species-poor semi-improved grassland	Grassland	Modified grassland	0.02	Low	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	0.09
Bracken	Grassland	Bracken	0.01	Medium	Poor	Low	Area/compensation not in local strategy/ no local strategy	0.04
Hardstanding	Urban	Developed land; sealed surface	0.61	V. Low	N/A - Other	N/A	Area/compensation not in local strategy/ no local strategy	0.00
Species-poor semi-improved grassland	Grassland	Modified grassland	1.65	Low	Poor	Medium	Area/compensation not in local strategy/ no local strategy	3.63
Dense scrub	Heathland and shrub	Mixed scrub	0.02	Medium	Poor	Low	Area/compensation not in local strategy/ no local strategy	0.08
Scattered broadleaved trees	Woodland and forest	Wood-pasture and parkland	0.04	High	Moderate	Low	Area/compensation not in local strategy/ Scattered no local strategy	0.48
Scattered coniferous trees	Woodland and forest	Other coniferous woodland	0.01	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	0.04
No access – appears to be species-poor semi-improved grassland	Grassland	Modified grassland	0.27	Low	Poor	Medium	Area/compensation not in local strategy/ no local strategy	0.59
No access – appears to be hardstanding	Urban	Developed land; sealed surface	0.01	V.Low	N/A - Other	N/A	Area/compensation not in local strategy/ no local strategy	0.00
No access – appears to be ephemeral/short perennial	Sparsely vegetated land	Ruderal/Ephemeral	0.30	Low	Poor	Low	Area/compensation not in local strategy/ no local strategy	0.60
Totals			**2.94**					**5.55**

Table 10: Baseline biodiversity units for hedgerows within Sizewell C main development site, 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
Native species-rich hedge with trees	Native Species Rich Hedgerow with trees	0.025	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	0.20
Species-poor hedge with trees	Native Hedgerow with trees - Associated with bank or ditch	0.002	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	0.02
Total		**0.03**					**0.22**

4 POST-DEVELOPMENT CONDTIONS AND VALUATION

The proposed post-development habitat typologies are illustrated on Figure 2.1 in Chapter 2.

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 5.37, representing a reduction in biodiversity units of 0.18 from the baseline 5.55 units.

A total of 1.08 hedgerow units would be delivered from 0.36km of hedgerows post-development from a baseline of 0.22 hedgerow units resulting in an increase of 0.86 units. Further details of the hedgerow units delivered is presented in Table 12.

Table 11: Biodiversity units for Sizewell C main development site 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
Road*	Urban	Developed land; sealed surface	0.75	Created	V. Low	N/A - Other	N/A	Area/compensation not in local strategy/ no local strategy	0	Low	0.00
Grass proposed*	Grassland	Modified grassland	1.11	Created	Low	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	10	Low	3.42
Footpath*	Urban	Developed land; sealed surface	0.17	Created	V. Low	N/A - Other	N/A	Area/compensation not in local strategy/ no local strategy	0	Low	0.00
Swale*	Urban	Bioswale	0.06	Created	Low	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	1	Medium	0.17
Vegetation proposed*	Woodland and forest	Other woodland; broadleaved	0.15	Created	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	30	Medium	0.28
Species-poor semi-improved grassland	Grassland	Grassland - Modified grassland	0.02	Created	Low	Moderate	Medium	Area/compensation not in local strategy/ no local strategy	10	Low	0.06
Species-poor semi-improved grassland	Grassland	Grassland - Modified grassland	0.68	Created	Low	Poor	Medium	Area/compensation not in local strategy/ no local strategy	1	Low	1.44
Totals			**2.94**								**5.37**

*Habitats from the post-development plans (shown in Figure 2.1 in Chapter 2) that are differ from Phase 1 typologies.

Table 12: Biodiversity units for Sizewell C main development site 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 with trees	0.015	Retained	Medium	Moderate	Low	Area/compensation not in local strategy/ no local strategy	N/A	N/A	0.12
Native Hedgerow with trees	0.342	Created	Low	Moderate	Low	Area/compensation not in local strategy/ no local strategy	10	Low	0.96
Total	**0.357**								**1.08**

5 CHANGES IN BROAD HABITAT TYPES

The proposed 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 "Other lowland acid 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 construction of the roundabout increases the area covered by urban habitats, so losses are predicted to occur in other habitats. Despite the small reduction in the area of grassland, an increase in biodiversity units is seen due to increased quality. Despite the tripling of woodland and forest on the site, a decrease in biodiversity units is predicted due to the penalties paid in the metric to create woodland. Small changes are seen in the other less valuable broad habitat types.

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
Grassland	1.95	1.81	-0.14
Heathland and shrub	0.02	0.00	-0.02
Sparsely vegetated land	0.30	0.00	-0.30
Urban	0.62	0.98	0.36
Woodland and forest	0.05	0.15	0.10

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
Grassland	4.35	4.92	0.57
Heathland and shrub	0.08	0.00	-0.08
Sparsely vegetated land	0.60	0.00	-0.60
Urban	0.00	0.17	0.17
Woodland and forest	0.52	0.28	-0.24

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 RESULTS

The summary results of the assessment, using the Biodiversity metric 2.0 calculator are presented in Plate 1. 2.

Plate 1. 2: Summary results

On-site baseline	*Habitat units*	5.55
	Hedgerow units	0.22
	River units	0.00
On-site post-intervention (Including habitat retention, creation, enhancement & succession)	*Habitat units*	5.37
	Hedgerow units	1.08
	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 &	*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*	-0.18
	Hedgerow units	0.86
	River units	0.00
Total net % change (including all on-site & off-site habitat creation + retained habitats)	*Habitat units*	-3.24%
	Hedgerow units	399.07%
	River units	0.00%

Under current plans, a reduction of biodiversity units by 0.18 units and an increase of 0.86 hedgerow units are predicted.

The changes in the area and biodiversity units of each broad habitat type are shown in Table 15. A decrease in the area of grassland, but an increase in this habitats biodiversity unit value is predicted. The reverse is predicted for woodland and forest.

Table 15: Changes in area and biodiversity units of broad habitat types

Broad habitat type	Change in area	Change in biodiversity units
Grassland	-0.14	0.57
Heathland and shrub	-0.02	-0.08
Sparsely vegetated land	-0.30	-0.60
Urban	0.36	0.17
Woodland and forest	0.10	-0.24

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 predicted decrease in biodiversity unit values 0.18 units, and an increase in hedgerow unit values of 0.86 units.

In addition to Yoxford Roundabout, the main development site and a series of other off-site associated developments were also assessed via the biodiversity metric (Sizewell Link Road and Two Village Bypass) 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.

Increases in the biodiversity unit value of grassland is predicted despite decrease in the area covered by this habitat. Decreases in the biodiversity unit value of woodland and forest are predicted, despite increases in the area covered by this habitat.

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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VOLUME 7, CHAPTER 7, APPENDIX 7A:

ANNEX 7A.5 - NON-LICENSABLE METHOD STATEMENT:

- ANNEX 7A.5A - REPTILES

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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.

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.

1.1.4 This Reptile Method Statement 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 Yoxford site measures approximately 2.9ha in area, and consists of existing road infrastructure and roadside vegetation, together with some grazing land and an element of private garden. The new roundabout would replace the existing A12 and B1122 ghost island junction in Yoxford approximately 90m north of the existing junction.

1.1.9 The proposed Yoxford roundabout would be a permanent, three-arm roundabout, and would replace the existing ghost island for this junction to the east of Yoxford. The roundabout would increase capacity of the existing A12 and B1122 junction to minimise disruption during the peak construction phase of the Sizewell C Project.

1.1.10 The site comprises predominantly poor semi-improved grassland as pasture fields and highway land. The fields within the site are bounded by hedgerows,

a number of which are considered to be species rich. In addition, areas of tall ruderal vegetation, amenity grassland and the River Yox are present adjacent to the boundaries of the site.

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 The purpose of the proposed development would be to increase capacity of the existing A12 and B1122 junction to minimise disruption during the peak construction phase of the Sizewell C Project. However, as a component of this, vegetation clearance and ground-breaking works (collectively referred to as “facilitating works” within this report) will be required in order to facilitate the proposed development. Accordingly, a number of potential ecological constraints are associated with the proposed facilitating works, as are set out below.

c) Key ecological constraints

1.1.13 The key potential legislative constraints associated with the facilitation works within the site are restricted exclusively to reptiles, for which this draft method statement provides guidance.

1.1.14 In order to enable the proposed development of the Yoxford site, as detailed above, a number of facilitating works (including vegetation clearance works and ground-breaking works) are required. Given the opportunities afforded to reptiles by the habitats present within the site, the proposed facilitating works have the potential to cause injury/ mortality to this species group should it 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.

1.2 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 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.5.1**) 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.5.2**) 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, habitats comprise species-poor semi-improved grassland, hedgerows, scrub, and road verges; however, large areas of species-poor semi-improved grassland, disturbed by grazing animals, make up most of the site and the site does not provide the mosaic of varied habitat that is required by reptiles to bask, forage and shelter. The habitats on site are, therefore, considered to be of limited value to reptiles. The desk-study data received from the Suffolk Biodiversity Information Service returned no records of reptiles within 2km of the site.

1.3.2 Accordingly, given that the extent of this habitat is quite limited such that it is unlikely that the site is of elevated potential to this species group. As a result, targeted presence/ absence surveys were not conducted on site. Nevertheless, given the presence of suitable habitat within and adjacent to the site, there is limited potential for this species group to be present on 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) and when the weather is suitable (i.e. it is warm, approximately 8^{o}C should be the minimum temperature). The works should not be conducted early in the morning before reptiles have had a chance to ‘warm up’;

- the ECoW will work with the contractor to determine a cutting regime whereby any animals present are encouraged away from the cutting into retained habitats and not isolated in an unsuitable area. This area will be walked by the ECoW to disturb reptiles prior to works commencing;
- the ECoW will also consider any impacts to ground nesting birds, if appropriate and assess any risk;
- initially, vegetation is to be cleared to reduce cover for reptiles (at a minimum 150mm from the ground in the first pass);
- subsequent to this, a suitable period of time as decided by the ECoW will be given to allow for any reptiles present at the time of works to move away from the cut areas;
- the grassland / remaining vegetation will then be cut to as close to ground level as possible;
- vegetation cuttings are to be piled within the site so as to create additional sheltering opportunities to reptiles within the site;
- any suitable reptile sheltering features (e.g. log piles, compost heaps or debris) will be identified by the on-site ecologist. These will be avoided if possible, if not they will be checked by the ECoW before their removal (should this be required). Any removal of sheltering habitats will be supervised by the ECoW. These will be dismantled by hand; this should be overseen by the ecologist. If a reptile is found the ecologist will decide whether or not it is appropriate to relocate the animal;
- shelter features that require removal should be reinstated near the clearance area in a quiet, sheltered location. This will ensure that no 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^{o}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

John Deere 3 series compact tractor	*John Deere 4 series tractor*
	
Brushcutter	
	

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

JCB 16C-I New Generation 1 Tonne Mini Digger	*Chapter 8 barrier/ Heras fencing*
	

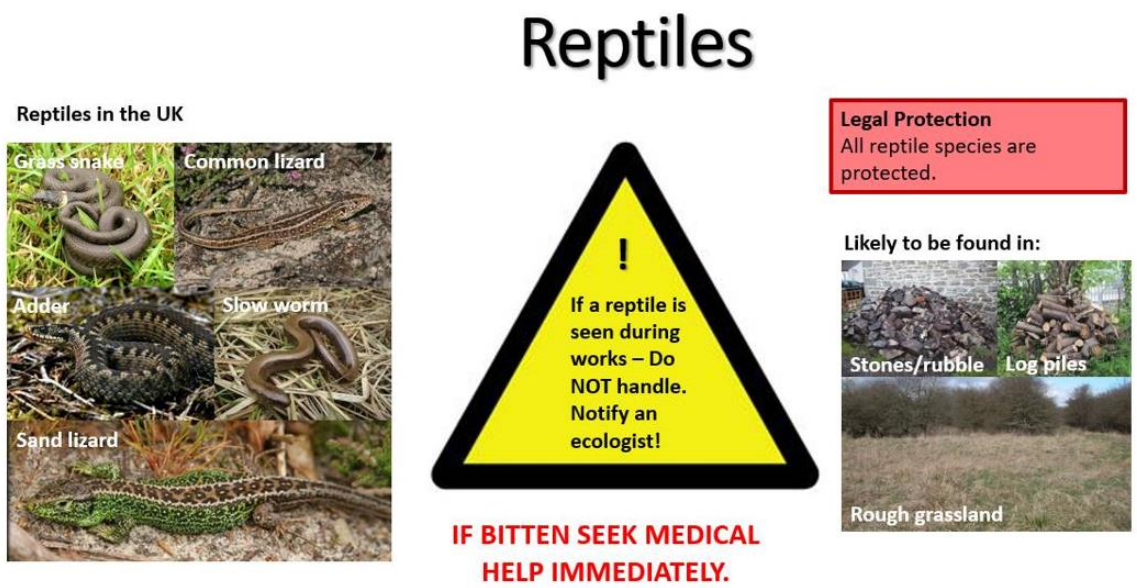
References

1.1 HMSO (1981). The Wildlife and Countryside Act (as amended). HMSO, London.

1.2 HMSO (2000) The Countryside Rights of Way (CRoW) Act. HMSO, London

1.3 HMSO (2006). The Natural Environment and Rural Communities Act. HMSO, London

Appendix 7A5.1: Toolbox Talk



Reptiles typically dormant between November and February. Sheltering/hibernation sites include log / brash piles, mammal burrows and tree / hedgerow roots.

Appendix 7A5.2: Declaration of Understanding

Toolbox talk title:	Ecology
Given by:	
Site:	
Date:	

Name	Company	Signature

Name	Company	Signature