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FIVE ESTUARIES  
OFFSHORE WIND FARM  
PRELIMINARY ENVIRONMENTAL  
INFORMATION REPORT

VOLUME 5, ANNEX 4.8: NORTH FALLS  
OFFSHORE WIND FARM EXTENDED  
PHASE 1 HABITAT SURVEY 2021

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A	Dec-21	Final for PEIR	Royal Haskoning DHV	GoBe	VE OWFL

In general, field survey data used to inform the Five Estuaries Offshore Wind Farm PEIR were gathered specifically for the Project. However, in instances where the North Falls Offshore Wind Farm Project held pertinent survey data and reports, these have been provided to the Five Estuaries Offshore Wind Farm Project for use in the PEIR.

This annex is an example of information that has been provided by the North Falls Offshore Wind Farm Project for use by the Five Estuaries Offshore Wind Farm Project. It should be noted that all relevant technical information is included in the Five Estuaries Offshore Wind Farm Project PEIR, regardless of initial source.

# REPORT

## **North Falls Offshore Wind Farm - Extended Phase 1 Habitat Survey**

Client: North Falls Offshore Wind Ltd

Reference: PB9244-RHD-ZZ-ON-RP-EC-0085

Status: S0/P01.03

Date: 21 December 2021

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## 1 Introduction

### 1.1 Project background

The North Falls Offshore Wind Farm project (herein ‘the project’) is a proposed extension to the Greater Gabbard offshore wind farm, which is located off the east coast of England in the Southern North Sea and was opened in 2013. The project is being developed by North Falls Offshore Wind Farm Ltd. (NFOW), a joint venture between SSE Renewables and RWE.

The project is proposed in response to The Crown Estate’s (TCE) extension leasing round, launched in 2017, with TCE recognising that extensions to operational wind farms are proven to be a successful way of efficiently developing more offshore generating capacity. NFOW was awarded an Agreement for Lease (AfL) from TCE in September 2020. NFOW have begun the process of baseline data collection to inform an EIA for the project in support of a Development Consent Order (DCO) application proposed to be submitted to the Planning Inspectorate in 2023.

NFOW is currently awaiting a grid connection offer from National Grid, which will then inform the detailed site selection of the offshore cable corridor, landfall location, onshore cable route and onshore substation location. Whilst this process is ongoing, in order to ensure that adequate baseline data is collected to inform the project’s EIA, NFOW have undertaken a suite of ecological surveys in 2021 so that baseline data for the project can be gathered.

In the first instance, for these 2021 ecological surveys NFOW has targeted an area immediately landward of the coast between the settlements of Clacton-on-Sea and Frinton (herein the ‘cable landfall search area’). This area has been targeted as the most likely area in which cable will be brought ashore. Following receipt of preliminary information from National Grid in Summer 2021 regarding the location of potential grid connection points which will be offered to NFOW, NFOW has undertaken an initial site selection exercise to identify potential onshore cable corridor options. These initial onshore cable corridor options have then been used as the basis for identifying an footprint (herein the ‘onshore project area’, as shown in **Figure 1, Appendix A**) which is the subject of the surveys presented in this report.

Royal HaskoningDHV was commissioned to undertake an Extended Phase 1 Habitat Survey within and up to 50m from the onshore project area. This document has been produced to present information gathered during the Extended Phase 1 Habitat Survey, and to characterise the baseline environment and identify the requirement for Phase 2 species-specific surveys to inform and support the ecological impact assessment of the North Falls Preliminary Information Report (PEIR).

It is important to note that these surveys have been conducted on the widest possible onshore project area as understood at the time of survey, and as landfall and cable corridor options narrow down, the geographical extent of the Phase 2 species-specific surveys is likely to also reduce.

### 1.2 Purpose of this report

The purpose of this report is to:

- Present the results of the Extended Phase 1 Habitat Survey undertaken in April, July, September and October 2021;

- Provide an overall understanding of the existing ecological value of the environment within the onshore project area, in order to inform a future ecological impact assessment; and
- Inform the requirements and scope of Phase 2 species-specific surveys of the onshore project area.

In order to achieve this purpose, the Extended Phase 1 Habitat Survey consists of three components, which collectively enable a preliminary understanding of the ecological value of the habitats within and up to 50m from the onshore project area (hereafter the 'survey area'). These components include:

- A desk-based review that summarises information on existing protected species records and statutory and non-statutory nature conservation designations.
- A field survey, involving:
  - The recording of all habitats within the survey area.
  - An assessment of the likelihood of the survey area to support legally protected species or species of conservation concern.

This report has been prepared in accordance with the guidelines set out in the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines on Ecological Report Writing (CIEEM, 2017).

## 2 Legislation and Policy

**Table 2.1** presents the relevant information regarding the legal protection afforded to the habitats and species mentioned in this report. However, it should be noted that this is for information only and is not intended to be exhaustive or to replace specialised legal advice.

*Table 2.1 – Summary of key legislation and policy relevant to the Extended Phase 1 Habitat Survey area*

Legislation	Relevance
Environment Act 2021	The Environment Act makes provisions about targets, plans and policies for improving the natural environment and environmental protection, including biodiversity and conservation covenants. The Environment Act also includes the provision for biodiversity net gain to be a condition of planning permission in England, which includes Nationally Significant Infrastructure Projects (NSIPs).
Wildlife and Countryside Act 1981 (as amended)	Codifies the European Union (EU) Directive 2009/147/EC (the Birds Directive) into UK law; provides legal protection for European designated sites (Special Protection Areas (SPA), Ramsar sites) and Sites of Special Scientific Interest (SSSI); outlines legal offences in relation to wild birds, animals, and invasive species; and provides lists of species which are protected under the Act.
The Conservation of Habitats and Species Regulations 2017 (as amended)	Codifies the EU Directive 92/43/EEC (The Habitats Directive) into UK law, and provides legal protection for European designated sites (Special Area of Conservation (SAC)).  The Conservation of Habitats and Species Regulations (2017) were amended in 2019 with the EU Exit Regulations, which includes the provision that the protection of 'European' sites still apply following the UK's exit from the EU.
Natural Environment and Rural Communities Act 2006	Section 41 of the Act requires the relevant Secretary of State (SoS) to compile a list of habitats and species of principal



Legislation	Relevance
	importance for the conservation of biodiversity in England, which Local Authorities to consider in their daily operations.
Protection of Badgers Act 1992	Outlines legal offences in relation to badgers, including taking, injuring or killing badgers, and interfering with badger setts.
The Hedgerow Regulations 1997	Outlines the definition of 'important' hedgerows and legal offences in relation to their disturbance or removal.
UK Post-2010 Biodiversity Framework (JNCC 2012)	Supersedes the UK Biodiversity Action Plan (UK BAP), which fulfilled a legal obligation under the Convention on Biological Diversity to identify and produce action plans for priority habitats and species.

### 3 Methodology

#### 3.1 Study area

##### 3.1.1 Desk-based study area

The study area for the desk-based review comprised all land within, and within up to 2km of, the onshore project area (up to 5km for bat and bird species information).

##### 3.1.2 Field survey area

The survey area included all habitats within the onshore project area plus an additional 50m buffer. A buffer of 250m was used when searching for potential breeding ponds for great crested newts.

#### 3.2 Desk-based review

The Multi-Agency Geographic Information for the Countryside (MAGIC) website (Defra 2013, updated 2021) was reviewed in April and September 2021 for information on statutory designated nature conservation sites and notable habitats (e.g. ancient woodland) of nature conservation value, within the onshore project area and up to 5km from its boundaries.

A search for waterbodies using 1:25,000 Ordnance Survey (OS) maps was also undertaken to identify the potential aquatic habitats used by great crested newt *Triturus cristatus*. A 250m buffer is considered appropriate having considered the habitats within and around the survey area. Although great crested newt can use suitable terrestrial habitat up to 500m from a breeding pond (English Nature, 2001), research suggests that newts are likely to travel no more than 250m from ponds where suitable habitats for foraging and hibernation exist close to their breeding ponds (Cresswell and Whitworth, 2004).

Biological records data was obtained from the Essex Wildlife Trust biological records centre<sup>1</sup> and supplemented with additional data requested from the Essex Field Club. Information on non-statutory sites was not included within the data received, but has subsequently been requested. The report will be further updated once the data on non-statutory sites within the onshore project area has been received. Details of those species listed on the Essex Biodiversity Action Plan (BAP) are also noted.

<sup>1</sup> Initial biological records were obtained from Essex Wildlife Trust, however this facility was closed on 30<sup>th</sup> September 2021, therefore when updated records were required, to account for changes in the onshore project area, additional records were obtained in October 2021 from the Essex Field Club.

### 3.3 Field survey methodology

The Extended Phase 1 Habitat Survey was undertaken over the following dates:

- 20<sup>th</sup> – 30<sup>th</sup> April 2021;
- 10<sup>th</sup> – 11<sup>th</sup> July 2021; and
- 20<sup>th</sup> September – 10<sup>th</sup> October 2021.

The purpose of the Extended Phase 1 Habitat Survey was to record the habitats within the survey area and to assess the suitability of the habitats present for supporting legally protected and notable species, therefore providing an overall understanding of the existing ecological value of the environment within the onshore project area. For selected species (e.g. badgers), evidence of presence / likely absence was also recorded.

The Extended Phase 1 Habitat Survey was undertaken in accordance with the methodology set out in the Guidelines for Baseline Ecological Assessment (Institute of Environmental Assessment (IEMA 1995)). This method of survey enabled information on the habitats within the survey area to be provided and in turn enabled an assessment of the potential for legally protected species to be present within or adjacent to the survey area. Habitats have been recorded within the survey area using the system set out within the Joint Nature Conservation Committee (JNCC) *'Handbook for Phase 1 habitat survey: A technique for environmental audit'* (JNCC, 2010).

All of the habitats within the survey area that were accessible at the time of the survey have been mapped and Target Notes (TN) have been used to provide details of characteristic habitats, species composition and to highlight any features of ecological interest. All TN descriptions, with photographs where available, are presented in **Appendix B – Target Notes**. In addition, areas where landowner access had not been granted at the time of the survey have been digitised using aerial imagery and will be ground-truthed during a further survey effort once landowner access has been agreed.

An assessment of hedgerows within the survey area was also undertaken. The methodology of which followed that outlined in the Hedgerow Survey Handbook (Defra, 2007) and is in line with The Hedgerow Regulations 1997. All hedgerows were recorded in line with the JNCC habitat classifications (JNCC, 2010). The full hedgerow results are presented in **Appendix C – Hedgerow Results**.

In accordance with the Guidelines for Baseline Ecological Assessment (CIEEM, 2017), the Extended Phase 1 Habitat Survey was 'extended' to make preliminary investigations in respect to the following legally protected and/or notable species:

#### 3.3.1 Birds

As part of the Extended Phase 1 Habitat Survey, a search of all habitats with suitability to support breeding and/or over-wintering birds was undertaken, with a focus on those habitats with the suitability to support birds listed in Annex I of the EU Birds Directive, Schedule 1 of the Wildlife & Countryside Act 1981, all nearby SPA and SSSI qualifying features and/or rare, Red-listed species in the Birds of Conservation Concern (BoCC) (Eaton et al., 2015). Such habitats include trees, hedgerows, waterbodies, grazing marsh and agricultural land.

Specific over-wintering and breeding bird surveys have been undertaken, the findings from which are reported separately and not repeated in this document.

### 3.3.2 Badgers

A search for signs of badgers *Meles meles* within the survey area was undertaken concurrently with the Extended Phase 1 Habitat Survey. Signs such as setts, tracks, hairs, bedding and spoil heaps, snuffle holes and latrines were checked for. The results of the badger survey are included within **Appendix D – Badger Survey Results (Confidential)**.

Where active setts were noted, they were classified using the following categories which follows the Scottish National Heritage (SNH) guidance on badger surveys (SNH, 2004):

- **Main sett** – several holes with large spoil heaps and obvious paths leading from and between sett entrances.
- **Annex sett** – normally less than 150m from a main sett, comprising several holes. These setts may not be in use all the time, even if main setts are very active.
- **Subsidiary sett** – these are usually at least 50m from a main sett with no obvious paths connecting to other setts. These may only be used intermittently.
- **Outlier sett** – little spoil outside holes, with no obvious paths connecting to other setts. These are only used sporadically and may also be used by foxes and/or rabbits.

### 3.3.3 Bats

All trees, buildings and structures (e.g. bridges and farm buildings) were assessed for their potential to support roosting bats from the ground and using binoculars. Each feature was assigned a classification of either ‘negligible’, ‘low’, ‘moderate’ or ‘high’ suitability for supporting roosting bats and in accordance with the guidelines set out in Table 4.1 of the Bat Conservation Trust’s (BCT) Bat Surveys for Professional Ecologists: Good Practice Guidelines (BCT, 2016).

All linear features (e.g. tree lines, waterbodies and hedgerows) were also assessed for their potential to provide commuting and foraging habitat for bats, in accordance with Table 4.1 the BCT guidelines (BCT, 2016).

### 3.3.4 Water vole and otter

All standing and running waterbodies within the survey area were assessed for their suitability to support water voles and otters. Assessments of a waterbody’s suitability to support water voles and/or otters was made in line with the Mammal Society guidance (Dean et al., 2016) and standing advice from Natural England (Natural England, 2015).

### 3.3.5 Great crested newts

All standing water bodies (i.e. ponds and ditches) within the survey area have been mapped and were subject to a Habitat Suitability Index (HSI) assessment for their suitability to support breeding populations for great crested newts (following Oldham et al., 2000).

### 3.3.6 Reptiles

Areas of potential reptile habitat were recorded during the Extended Phase 1 Habitat Survey. Such habitat includes habitat mosaics comprising suitable habitats for reptile hibernation, basking and/or foraging. These habitats also include habitat transitions (ecotones), rank grassland, piles of debris or bare ground (Edgar et al., 2010).

### 3.3.7 Invertebrates

High quality and diverse habitats considered to provide suitable opportunities for terrestrial invertebrates were recorded during the Extended Phase 1 Habitat Survey. These habitats include areas of previously developed or 'brownfield' land, areas of flower rich grassland, suitable ponds and damp areas, areas of scrub and woodland or hedgerows, and mature/veteran trees. Of particular importance are where these habitats exist as a mosaic with the ability to support significant invertebrate populations throughout their lifecycle (Buglife, 2019).

### 3.3.8 Hazel dormice

Areas of habitat suitable for hazel dormice *Muscardinus avellanarius* were recorded during the Extended Phase 1 Habitat Survey. These included woody habitats including hedgerows and areas of species rich scrub and grassland that are connected to woodland areas with high degree of species diversity within tree and shrub species (English Nature, 2006).

### 3.3.9 Invasive non-native species

Where present, the location and extent of invasive non-native species was recorded within the survey area. The Extended Phase 1 Habitat Survey focused on those species listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

## 3.4 Surveyors

The Extended Phase 1 Habitat was conducted by a team of four Royal HaskoningDHV ecologists. The survey was led by Charlotte Clements, BSc (Hons) who is an Associate Member of CIEEM with six years' of Extended Phase 1 Habitat surveying experience, and Claire Smith, MSc, BSc (Hons) who is a Full Member of CIEEM and has 12 years of experience. The survey team included:

- Ashleigh Holmes MSc, BSc (Hons).
- Lewis Ashton MSc, BSc (Hons).

## 3.5 Weather conditions

**Table 3.1** summarises the weather conditions encountered during the Extended Phase 1 Habitat Survey.

Table 3.1 – Weather conditions during the Extended Phase 1 Habitat Survey

Survey Date	Weather conditions
20 <sup>th</sup> April 2021	Dry, fine and moderate breeze. Approximately 15° Celsius
22 <sup>nd</sup> April 2021	Dry, fine and moderate breeze. Approximately 18° Celsius
27 <sup>th</sup> April 2021	Dry, fine and moderate breeze. Approximately 16° Celsius
28 <sup>th</sup> April 2021	Dry, fine and moderate breeze. Approximately 15° Celsius
30 <sup>th</sup> April 2021	Dry, fine and moderate breeze. Approximately 16° Celsius
10 <sup>th</sup> July 2021	Dry, fine and moderate breeze. Approximately 22° Celsius
11 <sup>th</sup> July 2021	Dry, fine and moderate breeze. Approximately 24° Celsius
20 <sup>th</sup> September 2021	Dry, fine and moderate breeze. Approximately 16° Celsius
21 <sup>st</sup> September 2021	Dry, fine and moderate breeze. Approximately 18° Celsius
22 <sup>nd</sup> September 2021	Dry, fine and moderate breeze. Approximately 17° Celsius

Survey Date	Weather conditions
23 <sup>rd</sup> September 2021	Dry, fine and moderate breeze. Approximately 20 °Celsius
24 <sup>th</sup> September 2021	Dry, fine and moderate breeze. Approximately 21 °Celsius
27 <sup>th</sup> September 2021	Dry, mild. clear, moderate wind (gusts). Approximately 16 °Celsius
28 <sup>th</sup> September 2021	Dry, mild. clear, moderate wind (gusts). Approximately 14 °Celsius
1 <sup>st</sup> October 2021	Intermittent rain, mild. moderate wind (gusts). Approximately 13 °Celsius
8 <sup>th</sup> October 2021	Dry, overcast, mild and moderate breeze. Approximately 14 °Celsius
12 <sup>th</sup> October 2021	Intermittent rain, overcast, mild and moderate breeze. Approximately 14 °Celsius
13 <sup>th</sup> October 2021	Dry, overcast, mild and moderate breeze. Approximately 13 °Celsius
14 <sup>th</sup> October 2021	Dry, overcast, mild and moderate breeze. Approximately 11 °Celsius
15 <sup>th</sup> October 2021	Dry, overcast, mild and moderate breeze. Approximately 13 °Celsius

### 3.6 Survey limitations

The 2021 Extended Phase 1 Habitat Survey covered approximately 75% of the onshore project area (as defined the time of writing). The remaining 25% equates to an area that is currently unsurveyed due to no landowner access being granted at the time of the 2021 survey. In the absence of field survey data, the habitats present within the unsurveyed areas have been digitised using aerial mapping, and are these habitats are also shown on **Figure 3a** to **Figure 3q** in **Appendix A** using a separate colour scheme to those habitats which have been identified in the field.

Some areas of habitats could not be fully accessed during the 2021 survey due to the presence of physical barriers, such as (but not limited to) dense scrub, which prevented safe entry for the surveyors. However, such areas were small and discrete and were encountered infrequently. In the few locations where they were encountered, they were noted as potentially providing field signs which could not be confirmed during the 2021 survey.

The 2021 survey was undertaken in April, July, September and early-October, which are considered to be within the optimal surveying window for identifying ground flora species and habitat communities. Therefore, sufficient evidence of key indicator species was found which in turn has enabled the successful identification of habitat communities present within the survey area. Additionally, the majority of habitats encountered within the survey area is consistent with those expected of agricultural landscapes and colonised by identifiable species, for example scrub dominated by bramble and hawthorn. Therefore, it is considered that the survey (and its findings) are robust in being used to characterise the existing site conditions and in turn be used to inform and support the ecological impact assessment that will be presented in the PEIR.

Although the survey team made the utmost effort to cover every habitat and pick up all field signs present during the 2021 survey, on occasion some field signs can be missed. Despite this, the data presented in this report is considered to provide an accurate description of the habitats within the survey area.

## 4 Results

### 4.1 Desk study results

#### 4.1.1 Designated sites

The following designated sites are located within a 2km buffer of the onshore project area:

- Statutory designated sites:
  - Hamford Water (Site of Special Scientific Interest (SSSI), Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar and National Nature Reserve (NNR);
  - Holland Haven Marshes SSSI;
  - Holland On-Sea Cliff SSSI;
  - Holland Haven Local Nature Reserve (LNR); and
  - Pickers Ditch Meadow LNR.
- Non-statutory designated sites:
  - Great Holland Pits Local Wildlife Site (LWS).

The location of these designated sites are shown on **Figure 1 in Appendix A** and **Table 4.1** summarises the qualifying features/reasons for their notification. Note that Holland On-Sea Cliff is a geological SSSI only, is not considered further within this report. At the time of writing this report, we are yet to receive confirmation on any additional non-statutory sites from the Essex Field Club, the report will be updated once this data is received.

Table 4.1 – Designated sites for nature conservation of relevance to the onshore project area

Site Name	Designation	Distance from onshore project area	Qualifying features/reasons for notification
Holland Haven Marshes	SSSI	Within onshore project area	An area of reclaimed estuarine saltmarsh and freshwater marsh situated between Holland-on-Sea and Frinton-on-Sea. The site is bisected by Holland Brook and its tributaries, from which an extensive ditch system radiates. The ditch network represents an outstanding example of a freshwater to brackish water transition intimated by the aquatic plant communities, which include a number of nationally and locally scarce species. The adjoining grasslands are of botanical importance in their own right as well as acting as a buffer zone to the ditch system. Further interest is provided by the aquatic and terrestrial invertebrates and the birds which frequent the area, especially in winter.
Holland Haven	LNR	Within onshore project area	This site comprises mown amenity grassland, hawthorn scrub, rough grassland, wet grazing marsh, scrape area and ponds. This site is known to support invertebrates such as the ruddy darter dragonfly <i>Sympetrum sanguineum</i> , larger carder bee <i>Bombus muscorum</i> , Roesel's bush cricket <i>Metrioptera roeselii</i> . Plants include birds foot trefoil <i>Lotus corniculatus</i> , birds foot fenugreek <i>Trigonella foenum-graecum</i> and soft hornwort <i>Ceratophyllum submersum</i> . A large number of bird species have also been recorded on site including purple sandpiper <i>Calidris maritima</i> , avocet <i>Recurvirostra avosetta</i> and short eared owl <i>Asio flammeus</i> .
	SPA	50m	Qualifies under Article 4.1 of the EU Birds Directive by supporting:

Site Name	Designation	Distance from onshore project area	Qualifying features/reasons for notification
Hamford Water			<p><i>During the breeding season:</i></p> <p><i>Sterna albifrons</i> – breeding (Eastern Atlantic) - 2.3% of the UK breeding population.</p> <p><i>Over winter:</i></p> <p><i>Recurvirostra avosetta</i> – breeding (Western Europe/Western Mediterranean) - 25% of the UK population.</p> <p>Qualifies under Article 4.2 of the EU Birds Directive by supporting over winter:</p> <p><i>Anas crecca</i> (North-western Europe) - 2.7% of the population in UK 5 year peak mean 1991/92-1995/96;</p> <p><i>Branta bernicla bernicla</i> (Western Siberia/Western Europe) - 2.3% of the population 5 year peak mean 1991/92-1995/96;</p> <p><i>Charadrius hiaticula</i> (Europe/Northern Africa - wintering) - 1.1% of the population 5 year peak mean 1991/92-1995/96;</p> <p><i>Limosa limosa islandica</i> (Iceland - breeding) - 1.7% of the population 5 year peak mean 1991/92-1995/96;</p> <p><i>Pluvialis squatarola</i> (Eastern Atlantic - wintering) - 7.5% of the population in UK 5 year peak mean 1991/92-1995/96;</p> <p><i>Tadorna tadorna</i> (North-western Europe) - 2.2% of the population in UK 5 year peak mean 1991/92-1995/96; and</p> <p><i>Tringa totanus</i> (Eastern Atlantic - wintering) - 0.8% of the population 5 year peak mean 1991/92-1995/96.</p>
	Ramsar	50m	<p>Qualifies under Criterion 6 (A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird):</p> <p><i>Species with peak counts in spring/autumn:</i></p> <p>Ringed plover, <i>Charadrius hiaticula</i> (Europe/Northwest Africa)</p> <p>Common redshank, <i>Tringa totanus totanus</i></p> <p><i>Species with peak counts in winter:</i></p> <p>Dark-bellied brent goose, <i>Branta bernicla bernicla</i>,</p> <p>Black-tailed godwit, <i>Limosa limosa islandica</i> (Iceland/W Europe)</p> <p>Grey plover, <i>Pluvialis squatarola</i> (E Atlantic/W Africa -wintering)<sup>2</sup></p>
	SAC	50m	Annex II species that are a primary reason for selection of the site: 4035 Fisher's estuarine moth <i>Gortyna borelii lunata</i>
	NNR	50m	<p>Unlike many of the other Essex NNRs, Hamford Water is not an estuary as it does not have a major river running into it. Instead it is classified as a coastal embayment that has been formed due to a natural dip in the underlying geology of the area. The bird life that this variety of habitats attracts is outstanding, especially the waders and waterfowl that can be seen in winter.</p> <p>Main habitats: salt marsh, intertidal mud flats, coastal, grazing marsh, sands, shingle, small freshwater ponds and ditches</p>

<sup>2</sup> Species/populations identified subsequent to designation for possible future consideration under criterion 6.



Site Name	Designation	Distance from onshore project area	Qualifying features/reasons for notification
	SSSI	50m	Hamford Water is a tidal inlet whose mouth is about three miles south of Harwich. It is a large and shallow estuarine basin comprising tidal creeks, intertidal mud and sand flats, saltmarshes, islands, beaches and marsh grasslands. The site is of international importance for breeding Little Terns and wintering Dark-bellied Brent Geese, wildfowl and waders, and of national importance for many other bird species. It also supports communities of coastal plants which are rare or extremely local in Britain, including Hog's Fennel <i>Peucedanum officinale</i> which is found elsewhere only in Kent.
Holland on Sea Cliff	SSSI	300m	Geological SSSI.
Pickers Ditch Meadow	LNR	500m	Meadow surrounding Pickers Ditch tributary, representing a valuable green space in the Great Clacton area. Hedge planting along the border helps screen the site, whilst tree planting in the adjacent area provides a copse area surrounding the existing footpath.
Great Holland Pits	LWS	Within onshore project area	Old gravel pit that now supports many flowering plants, open grassland and pasture with remnants of old woodland with ponds and wet depressions.

#### 4.1.2 UK Habitats of Principal Importance

The following UK Habitats of Principal Importance are present within the survey area and are shown on **Figure 2, Appendix A:**

- Coastal and floodplain grazing marsh.
- Ancient woodland.
- Deciduous woodland.
- Semi-improved grassland.
- Hedgerows.
- Arable field margins.
- Lowland meadows.
- Reedbeds.
- Rivers.
- Ponds.

#### 4.1.3 Protected species

This section summarises the records of all legally protected and notable species which have been obtained from the biological records search from the Essex Wildlife Trust and the Essex Field Club. Details of those species which are also Essex BAP species are all provided (whether or not they have been recorded locally).

##### 4.1.3.1 Birds

The Essex Field Club hold records of 240 notable or protected bird species within 5km of the onshore project area, of which 41 are listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Two of the bird records are dated from 1985 with the remaining records are within the last 10 years (i.e. from 2011).



The following species are subject to the Essex Species BAP:

- Sky lark *Alauda arvensis*,
- Bittern *Botaurus stellaris*,
- Grey partridge *Perdix perdix*,
- Stone curlew *Burhinus oediconemus*, and
- Song thrush *Turdus philomelos*.

#### 4.1.3.2 Badgers

Records provided in relation to badgers are provided in **Appendix D**.

#### 4.1.3.3 Bats

The Essex Field Club hold records of 15 species of bat within 5km of the onshore project area. Namely the western barbastelle *Barbastella barbastellus*, serotine *Eptesicus serotinus*, natterer's bat *Myotis nattereri*, lesser noctule *Nyctalus leisleri*, nathusius's pipistrelle *Pipistrellus nathusii*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and brown long-eared bat *Plecotus auritus*.

The following species are subject to the Essex Species BAP:

- Common Pipistrelle *Pipistrellus pipistrellus*.

#### 4.1.3.4 Water Vole

The Essex Field Club holds 57 records for water vole within 2km of the survey area. Of the 57 records, three are within the last 10 years, these three records were shown within the Harwich Gateway retail park, the Dovercourt Dock river, and the River Colne, which are all outside of the onshore project area.

Consultation with Natural England through the project's Evidence Plan Process (Andrew Hartley, pers. comm., 13 January 2022) indicated that Holland Haven Marshes has historically supported populations of water voles.

Water voles are subject to the Essex Species BAP.

#### 4.1.3.5 Otter

The Essex Field Club holds 14 records for otter within 2km of the survey area. Of the 14 records, five are within the last 10 years. These five records were shown within Holland Haven, Ardleigh reservoir, Alresford Creek, and Tenpenny Brook.

Otters are subject to the Essex Species BAP.

#### 4.1.3.6 Great crested newts

The Essex Field Club holds 10 records of great-crested newt within 2km of the survey area. Of the 10 records, four are within the last 10 years. These records are shown within Weeley, Kirby Cross, and Ardleigh.

#### 4.1.3.7 Reptiles

The Essex Field Club holds records of 24 adders *Vipera berus*, 68 common lizards *Zootoca vivipara*, 33 grass snakes *Natrix natrix* and 49 slow-worms *Anguis fragilis* throughout (and up to 2km from) the survey area.

#### 4.1.3.8 White-clawed crayfish

The Essex Field Club holds no records for white-clawed crayfish within 2km of the survey area.

White-clawed crayfish are subject to the Essex Species BAP.

#### 4.1.3.9 Invertebrates

The Essex Field Club holds 329 of invertebrates within 2km of the survey area, including notable bee, dragonfly, butterfly, moth, cricket and beetle species.

The following invertebrate species are subject to the Essex Species BAP:

- Bright wave moth *Idea ochrat*,
- Desmoulin's whorl snail *Vertigo moulinsiana*,
- Fisher's estuarine moth *Gortyna borelii lunata*,
- Heath fritillary *Melitaea athalia*,
- Hornet's robber fly *Asilus crabroniformis*,
- Shining ramshorn snail *Segmentina nitida*,
- Shril carder bee *Bombus sylvarum*, and
- Stag beetle *Lucanus cervus*.

#### 4.1.3.10 Invasive non-native species

The Essex Field Club holds 712 records of different invasive non-native species within 2km of the survey area.

Japanese knotweed has been recorded at 21 locations, including Clacton-Holland cliffs, Frating Green area, Frinton and Walton cliffs, Great Clacton, Stour Estuary, and Wivenhoe Marshes. In addition, American mink *Neovison vison*, butterfly bush *Buddleja davidii* have also been recorded.

#### 4.1.3.11 Other species

The Essex Field Club holds 29 records of hazel dormouse *Muscardinus avellanarius* and 64 records of brown hare *Lepus europaeus* within 2km of the survey area.

Both the hazel dormouse and brown hare are subject to the Essex Species BAP.

Notable plant species, primarily associated with the Holland Haven Marshes SSSI and Holland Haven LNR, have also been recorded within the onshore survey area.

## 4.2 Field survey results

### 4.2.1 Habitats

**Table 4.2** presents the key habitats that were recorded within the survey area during the field survey (as shown on **Figure 3a** to **Figure 3q** in **Appendix A**).

Table 4.2 – JNCC Phase 1 habitat areas recorded during the Extended Phase 1 Habitat Survey

JNCC Phase 1 Habitat Code	JNCC Phase 1 Habitat Survey Description	Area (ha)
A1.1.1	Broadleaved woodland - semi-natural	19.74
A1.1.2	Broadleaved woodland - plantation	2.96

JNCC Phase 1 Habitat Code	JNCC Phase 1 Habitat Survey Description	Area (ha)
A1.3.2	Mixed woodland - plantation	0.88
A2.1	Scrub - dense/continuous	29.47
A2.2	Scrub - scattered	0.83
A3.1	Broadleaved Parkland/scattered trees	3.74
A3.3	Mixed Parkland/scattered trees	1.49
B2.2	Neutral grassland - semi-improved	3.19
B4	Improved grassland	136.67
B5	Marsh/marshy grassland	10.97
B6	Poor semi-improved grassland	163.13
C3.1	Other tall herb and fern - ruderal	20.28
G1	Standing water	17.96
G2	Running water	6.86
H4	Boulders/rocks above high tide mark	0.47
H8.2	Soft cliff	0.74
J1.1	Cultivated/disturbed land - arable	1457.06
JNCC Phase 1 Habitat Code	JNCC Phase 1 Habitat Survey Description	Length (m)
G1	Standing water	5174.99
G2	Running water	788.74
J2.1.1	Intact hedge - native species-rich	1840.59
J2.1.2	Intact hedge - species-poor	22961.38
J2.2.1	Defunct hedge - native species-rich	458.38
J2.2.2	Defunct hedge - species-poor	9622.11
J2.3.1	Hedge with trees - native species-rich	10157.56
J2.3.2	Hedge with trees - species-poor	14681.18
J2.6	Dry ditch	12069.58
J2.8	Earth bank	190.64

In addition, the areas where no landowner access was agreed at the time of the Extended Phase 1 Habitat Survey have assigned habitats using a review of available aerial imagery, and the key habitats identified are summarised in **Table 4.3** below.

*Table 4.3 – Habitats digitised using aerial mapping*

JNCC Phase 1 Habitat Code	JNCC Phase 1 Habitat Survey Description	Area (ha)
A1	Woodland	18.15
B	Grassland	53.96
J1.1	Cultivated/disturbed land - arable	462.91
J3.6	Buildings	3.99

JNCC Phase 1 Habitat Code	JNCC Phase 1 Habitat Survey Description	Area (ha)
G1/G2	Standing water/Running water	1596.76
J2	Hedge	13,538.50

#### 4.2.1.1 Arable land

The largest habitat by area within the survey area is arable land (JNCC Phase 1 Habitat code J1.1). At the time of the 2021 survey, some of these fields were in crop and some were ploughed.

#### 4.2.1.2 Boundary features

Field boundaries within the survey area comprised predominately of hedgerows, with some field margin drainage ditches (both dry and wet), scattered scrub and trees. The predominant type of hedgerow recorded was species-poor intact (J2.1.2) (total of 101 features), alongside species-poor hedges with trees (J2.3.2) (total of 50), species-poor defunct hedges (J2.2.2) (total of 45), species-rich hedges with trees (J2.3.1) (total of 31) species-rich intact hedges (J2.1.1) (total of 6) and species-rich defunct hedges (J2.2.1) (total of 5). Key species recorded in hedgerows throughout the survey area consisted of hawthorn *Craetagus monogyna* and blackthorn *Prunus spinosa*, with bramble *Rubus fruticosus*, dog rose *Rosa Canina*, oak *Quercus robur*, ash *Fraxinus excelsior* and hazel *Corylus avellana*.

An additional 50 hedgerows have been identified using aerial imagery, with specific details to be ground-truthed to identify species present and what hedgerow classification they are (e.g. species-rich/species-poor etc.)

#### 4.2.1.3 Woodland

A total of 37 areas of woodland were recorded throughout the survey area and included semi-natural and plantation broad-leaved woodland as well as mixed plantation woodland. These areas ranged from larger areas of woodland to smaller roadside and field margin copses. A high number of woodland areas recorded contained game bird pens and feeding apparatus. Key species recorded included oak, ash, sweet chestnut *Castanea sativa*, hazel, sycamore *Acer pseudoplatanus*, birch *Betula spp.*, and pines.

An additional 33 areas of woodland have been identified using aerial imagery, with specific details to be ground-truthed to identify individual habitats and species present.

#### 4.2.1.4 Scrub

A total of 63 areas of dense and scattered scrub were recorded within the survey area and key species comprised bramble, nettle, cow parsley and cleavers. These areas represented a range of habitat sub-types including transitional habitat associated with boundary features, field margins, woodland successional habitats and watercourse margins.

#### 4.2.1.5 Improved grassland

A total of 51 areas of improved grassland was recorded across the survey area, mainly consisting of grazing pasture for sheep, cattle and horses. These grasslands were characterised by short sward perennial rye grass *Lolium perenne* with limited herbs consisting of ragwort *Jacobea vulgaris*, clover *Trifolium spp.*, and dandelion *Taraxacum officinale* with areas of scattered/dense shrubs and/or scrub.

#### 4.2.1.6 Semi-improved grassland and Poor semi-improved grassland

81 areas of semi-improved and poor semi-improved grassland were recorded throughout the onshore project area. These areas comprised coarse ruderal grass and herb species such as cock's foot *Dactylis glomerata* and broadleaf dock *Rumex obtusifolius*.

#### 4.2.1.7 Marshy grassland

A total of six areas of marshy grassland were recorded throughout the survey area, generally consisting of a mix of wet and dry areas with species such as hard rush *Juncus inflexus*, water forget-me-not *Myosotis scorpiodes*, lady's thumb *Persicaria maculosa*, creeping buttercup *Ranunculus repens* and bittercress *Cardamine hirsuta*.

#### 4.2.1.8 Amenity grassland

41 areas of amenity grassland were recorded within the survey area, generally consisting of short sward perennial rye grass subject to frequent mowing.

In addition, a further 51 areas of grassland have been identified using aerial imagery, with specific details to be ground-truthed with regard to species present and habitat type.

#### 4.2.1.9 Other tall herb and fern – ruderal

19 areas of ruderal herbs were recorded within the survey area, ranging from large areas through to field margins and set-aside areas within arable crops. Key species noted included, bristly ox-tongue *Helminthotheca echioides*, common and ribwort plantain *Plantago spp.*, fleabane *Pulicaria dysenterica*, common hogweed *Heracleum sphondylium*, nettle *Urtica dioica*, ox-eye daisy *Leucanthemum vulgare* and teasel *Dipsacus fullonum*.

#### 4.2.1.10 Standing and running water

There are 80 watercourses (i.e. ditches and rivers, excluding ponds) within the survey area and these include both field margin/boundary ditches, standing water and running water such as rivers.

#### 4.2.1.11 Other habitats

The following habitats were also recorded within the survey area (number of areas recorded in brackets):

- Caravan site (2);
- Buildings (251);
- Bare ground (50);
- Artificial sea wall (2); and
- Earth bank (1).

### 4.2.2 Protected species

This section should be read in conjunction with **Figure 3a to Figure 3q** in **Appendix A**.

#### 4.2.2.1 Birds

All hedgerows, trees, grassland, scrub and woodland habitats that were recorded potentially provide suitable nesting habitat for protected, notable and common species of birds.

The following birds were also recorded utilising habitats within the survey area (all figures can be found in **Appendix A**):

- Oystercatcher *Haematopus ostralegus* (TN002, **Figure 3a**);
- Skylark *Alauda arvensis* (TN005, **Figure 3a**);
- Dunnock *Prunella modularis* (TN407, **Figure 3e**);
- Buzzard *Buteo buteo* *Falco tinnunculus* (TN472, **Figure 3j**); and
- Kestrel (TN411, **Figure 3f**).

In addition, several barn owl boxes (TN089 and TN110, **Figure 3a**; TN333, **Figure 3c**) and relic nests (e.g. old nests from previous breeding season(s)) (TN027 and TN102, **Figure 3b**; TN415, **Figure 3f** and TN478, **Figure 3m**) were also present within the survey area.

Additional findings from the separate over-wintering and breeding bird surveys are reported separately and have not been repeated in this document.

#### 4.2.2.2 Badger

Field survey results relating to badger are provided separately in **Appendix D – Badger Survey Results (Confidential)**.

#### 4.2.2.3 Bats

All features (e.g. trees and structures) recorded within the survey area were assessed from the ground level and using binoculars for cracks, crevices, splits, herein referred to as Potential Roost Features (PRFs). The presence of PRFs, or lack of, allows each feature to be categorised for their suitability to support roosting bats, in accordance with the BCT guidelines (BCT, 2016).

In total 331 features were assessed for their suitability to support roosting bats. Of these 86 were assessed as providing negligible suitability for roosting bats, 110 were assessed as providing low suitability, 122 as providing moderate suitability and 13 as having high suitability. The full details for each bat roost assessment is in **Appendix E – Bat Roost Assessment Results**, including a feature description, photograph and reference.

All linear features (e.g. watercourses, hedgerows) were also assessed for their potential suitability to support commuting and/or foraging bats, in accordance with the BCT guidelines (BCT, 2016).

In total, 215 features were assessed as for their suitability for commuting and foraging bats. Of these, 97 were assessed as providing negligible suitability, 15 features as providing low suitability, 100 as providing moderate suitability and three as having high suitability. Details regarding features assessed for their suitability for commuting and foraging bats are presented in **Appendix C – Hedgerow Results**

#### 4.2.2.4 Water vole and otter

A total of 80 watercourses were recorded within the survey area which comprised of standing water, running water (e.g. rivers or ditches) and dry ditches. Of these 80 watercourses, 8 were assessed as being suitable to support water voles and 1 as being suitable to support otters.

The remaining 76 watercourses were assessed as sub-optimal for water voles and/or otters, primarily as they were field drains of insufficient size and depth to support either of these species, as well as being dry at the time of the survey. In addition, these watercourses were not functionally linked to the wider river/ditch network and therefore concluded unfavourable to these species.

#### 4.2.2.5 Great crested newt

A total of 52 waterbodies (i.e. ponds and ditches) were subject to a HSI assessment during the 2021 survey, for which the full results are in **Appendix F – Full HSI Results**. All pond references are also included on **Figure 3a to Figure 3q in Appendix A**. A numerical score is derived from the ten suitability indices described in the Amphibian and Reptile Groups (ARG) of the United Kingdom Advice Note 5 (Oldham et al., 2000), which broadly considers habitat attributes (i.e. pond size, water quality, presence of fish or fowl etc.), that are considered to influence the suitability of a waterbody for breeding great crested newts. The approximate indication of habitat suitability is as follows:

- < 0.5 (poor quality habitat);
- 0.5 – 0.59 (below average quality habitat);
- 0.6 – 0.69 (average quality habitat);
- 0.7 – 0.79 (good quality habitat); and
- ≥ 0.8 (excellent quality habitat).

A summary of the HSI results undertaken during the Extended Phase 1 Habitat Survey is presented in **Table 4.4**.

Table 4.4 – Summary of HSI results of ponds assessed during the Extended Phase 1 Habitat Survey

HSI score	Number of waterbodies
< 0.5	7
0.5 – 0.59	13
0.6 – 0.69	14
0.7 – 0.79	13
≥ 0.8	5

#### 4.2.2.6 Reptiles

A total of 15 areas of habitat potentially suitable for common reptile species was recorded within the survey area. These includes areas of rank grassland, debris piles, scrub, woodland edges and other ecotones. Of these 15 areas, a total of six have been identified as suitable habitat mosaics that could support large populations of common reptile species.

In addition, 8 locations that could potentially be used by hibernating reptile species was also recorded, consisting of log piles and deadwood/fallen logs.

#### 4.2.2.7 Hazel dormice

A total of 13 areas of suitable habitat for dormice was recorded within the survey area primarily consisting of hazel rich hedgerows connected to woodland. These hedgerows were identified as suitable for dormice due to a rich species diversity as well as presence of hazel and connectivity to a wider woodland habitat. The locations of these habitats are as follows, the majority of which are hedgerows adjacent (and associated) with the Great Holland Pits LWS:

- TN401, H075, H076, H077, H078, H079 and H085, H087, H089 (**Figure 3e**);
- TN410 (**Figure 3d**)
- H127 and H136 (**Figure 3h**); and
- H149 (**Figure 3i**)



#### 4.2.2.8 Invasive non-native species

One area of giant hogweed was recorded within the survey area (TN437, **Figure 3g**).

## 5 Recommendations

**Section 4.2** identifies those habitats within the survey area that have been noted as having the potential to support legally protected or notable species, and also sightings/field signs for selected legally protected species. In light of these findings and in order to characterise the ecological baseline, further Phase 2 species-specific surveys have been identified are required to characterise the ecological baseline. Further details relating to these Phase 2 species specific surveys are provided in the following sections.

### 5.1 Phase 2 species specific surveys

#### 5.1.1 Birds (over-wintering and breeding)

Over-wintering and breeding bird surveys have been undertaken (and are still ongoing) and the methodology and findings are reported separately so have not been repeated here.

#### 5.1.2 Bat roost emergence/re-entry surveys

In accordance with the BCT guidance (BCT, 2016), all trees assessed as providing moderate or high suitability for supporting roosting bats will require additional surveys to be undertaken to confirm the likely presence and/or absence of a bat roost. In addition, any structures (i.e. buildings) that have been assessed as providing low, moderate or high suitability for roosting bats will also require a further survey effort.

All trees assessed as providing low suitability for supporting roosting bats will still be considered as potentially supporting opportunistic roosts in the future, but further surveys are not required to confirm presence or absence, following the guidelines set out by the BCT (BCT, 2016). Mitigation measures for trees assessed as providing low suitability for roosting bats will be required.

The Extended Phase 1 Habitat Survey identified the following numbers of features that will require a further survey effort:

- Low (structures only) – three;
- Moderate – 122; and
- High – 13.

Each emergence / re-entry surveys will be undertaken in accordance with the methodology outlined in the BCT guidelines (BCT 2016). For each building offering low suitability, one survey visit (i.e. one dusk emergence or one dawn re-entry) will be undertaken. For each building and/or tree offering moderate suitability, two survey visits (i.e. one dusk emergence survey and one dawn re-entry survey) will be undertaken. Each dusk emergence survey will commence 15 minutes before sunset and will stop 1.5-2 hours after sunset. The dawn re-entry surveys will commence 1.5-2 hours before sunrise and will stop 15 minutes after sunrise. All surveys will be undertaken at least two weeks apart and between May and September with one survey visit between May and August. For each building and/or tree offering high suitability, an additional dusk emergence or dawn re-entry survey will be undertaken, in line with the BCT guidelines.



Hand-held bat detectors (any type) and recording equipment to record any echolocation calls will be used for each survey. Laboratory sound-analysis will be used to identify the calls of any bat species picked up using the bat detectors. Species, timing, and activity will be noted for each bat picked up during the survey.

Weather conditions including temperature, wind speed and precipitation, will be recorded at the start and end of each survey visit. Surveys will not be carried out when the temperatures are below 10°C at sunset, or during heavy rain or strong wind unless justified by the surveying ecologist.

### 5.1.3 Bat activity transect and static detector surveys

Those linear habitats (i.e. hedgerows and watercourses) with the potential to support commuting and foraging bats will be subject to further survey effort to confirm the species assemblage utilising these habitats. In accordance with the BCT guidelines (BCT 2016), all habitats assessed as providing moderate or high suitability for supporting commuting and/or foraging bats will require further bat activity surveys in order to confirm the number of bats, whether they are used by foraging and/or commuting bats, and to identify the species which might be present.

All features assessed as providing low suitability for supporting commuting and/or foraging bats will still be considered as potentially supporting small numbers of commuting/foraging bats, but further surveys are not necessary to confirm presence or absence, as set out by the BCT guidelines (BCT 2016). Mitigation measures for features assessed as providing low suitability for commuting and/or foraging bats will be required.

The Extended Phase 1 Habitat Survey identified the following numbers of features that will require a further survey effort:

- Moderate – 100; and
- High – three.

Each monthly bat activity transect surveys will be undertaken in accordance with the guidelines (BCT 2016). Transect surveys will involve walking at a constant speed along each linear bat habitat recording observations such as number of bats, flight direction, flight height, behaviour, appearance and relative speed.

Static detector surveys will comprise the placement of a static detector at locations identified as suitable, such as within hedgerows or along woodland edges. Data from these surveys will be recorded and subject to laboratory sound-analysis to identify species and pass numbers following each survey.

Each habitat scoped into the survey, and assessed as providing moderate or high suitability for commuting or foraging bats will be subject to one transect survey visit per month between April and October (a total of seven visits), including one dusk and pre-dawn survey within a 24-hour period, and static bat detector surveys at up to three locations within each habitat collected on five consecutive nights per month, including one dusk and pre-dawn survey within a 24 hour period. Each transect survey will commence at sunset and stop 2-3 hours after sunset. The static detector surveys will commence 30 minutes before sunset and stop 15 minutes after sunrise.

The surveyors will use hand-held bat detectors (any type) and recording equipment to record any echolocation calls picked up during each survey. The same model of detector will be used for all surveys. Laboratory sound analysis will be used to identify the calls of any bat species picked up using the bat detectors.

Weather conditions including temperature, wind speed and precipitation, will be recorded at the start and end of each survey visit. Surveys will not be undertaken when the temperature is below 10°C at sunset, or during heavy rain or strong wind, unless justified by the surveying ecologist.

#### **5.1.4 Water vole and otter**

All eight waterbodies identified as providing optimal habitat for water vole and/or otter during the Extended Phase 1 Habitat Survey, plus all watercourse located within Holland Haven Marshes SSSI, will be subject to two separate survey visits.

The water vole surveys will be undertaken in accordance with the protocol for Environmental Assessment Surveys set out in the Water Vole Conservation Handbook (Strachan et al. 2011) and the Water Vole Mitigation Handbook (Dean et al., 2016). Surveys will be undertaken from the banks. Surveyors will search for field signs of water voles primarily within the marginal vegetation along the bank toe and along the length of the watercourse, including a buffer of 50m upstream and downstream, and up to 1m either side of this vegetation along one bank of the watercourse. All field signs of water vole will be recorded, including sightings, burrows, latrines, feeding stations, lawns, nests, footprints and runways. Field signs, habitat information, and weather conditions at the time of the survey will also be recorded alongside their location.

Otter surveys (comprising two separate visits) will be undertaken in accordance with the protocol set out by SNH (SNH, 2019). Surveys will be conducted on one bank for the full length of each optimal watercourse, plus an additional 250m upstream and 250m downstream. Each watercourse will be walked by an ecologist, and all field signs of otter will be recorded. This will include spraints, holts, couches, prints, feeding remains, anal jelly and sightings, as well as signs of mink. The field sign and its location will be recorded.

The water vole and/or otter survey will consist of two separate survey visits, one undertaken during the first half of the water vole breeding season (e.g. between April and June (inclusive)) and the second visit will be undertaken during the second half of the water vole breeding season (e.g. between July and September (inclusive)). Surveys for water vole and/or otter will not be undertaken following heavy rain.

Due to the potential overlap in survey methodology and in habitats, the otter survey may be undertaken concurrently with the water vole survey.

#### **5.1.5 Great crested newt**

All standing waterbodies (i.e. ponds and ditches) within and up to 250m of the onshore project area will be subject to an environmental DNA (eDNA) survey in accordance with the field sampling protocol set out in Biggs et al. (2014). The eDNA survey will be undertaken by licenced surveyors (Licence: CL08) at the appropriate time of year (e.g. between mid-March and the end of June (inclusive)). Water samples from each pond will be collected from around the accessible parts of each waterbody perimeter by a great crested newt licenced ecologist, including open water areas and areas with vegetation present. Each water body sampling will be completed with a fresh sampling pack to avoid cross contamination.

Each sample will then be sent to an approved laboratory for analysis for eDNA in accordance with approved field and laboratory protocols (Biggs et al., 2014). The presence or absence of great crested newt from each of the surveyed ponds will be determined based on the results of the eDNA analysis.

### 5.1.6 Reptiles

Areas of habitats suitable to support large numbers of common reptile species was recorded within the onshore project area. These habitat mosaics provide all the suitable habitat elements required by reptiles including hibernacula, basking and foraging areas.

Reptile presence/likely absence surveys will be undertaken in accordance with the protocol set out in the JNCC's Herpetofauna Worker's Manual (2003). The survey will involve the placement of artificial refugia (tiles/tins) within each suitable location and within area of optimal habitat. A total of seven separate visits will be undertaken and during each visit all refugia will be checked for the presence of reptiles. These visits will be undertaken during April, May and September. A minimum of 48hrs will be left between each survey visit.

Weather conditions will be recorded during each visit. Each survey visit will be undertaken during the morning and/or late afternoon, with the intention to coincide with the optimal temperature window (10-17 degrees Celsius).

### 5.1.7 Hazel dormice

Areas of suitable habitat for hazel dormice within the onshore project area will be subject to a dormouse presence/absence survey, using a combination of nest tubes and/or nest boxes. The survey will be undertaken in accordance with the methodology presented in the Dormouse Conservation Handbook (2<sup>nd</sup> Ed.) (English Nature, 2006). Nest tubes/nest boxes will be placed 15-20m apart within suitable habitat and checked every two months between April and October.

Weather conditions will be recorded during each visit and all surveys will be undertaken by an ecologist who holds a dormice survey and handling licence (Licence: CL10a).

### 5.1.8 Invertebrates

An invertebrate survey effort has been undertaken within the Holland Haven Marshes SSSI and the methodology and findings are reported separately and have not been repeated here.

### 5.1.9 National Vegetation Classification

A National Vegetation Classification (NVC) survey effort has been undertaken within the Holland Haven Marshes SSSI and the methodology and findings are reported separately and have not been repeated here.

## 5.2 Survey programme

Based on the results obtained from the 2021 survey, the provisional onshore ecology survey programme for 2022 is presented in **Table 5.1**.

*Table 5.1 – Proposed onshore ecology survey programme*

Survey	Proposed survey date
Over-wintering bird surveys	October 2020 – March 2021 (completed at cable landfall search area) October 2021 – March 2022
Functionally-linked land survey of ex situ SPA habitats	October 2021 – March 2022
Breeding bird surveys	April – July 2021 (completed at cable landfall search area)

Survey	Proposed survey date
Bat emergence/re-entry surveys	May – September 2022
Bat activity surveys	April – October 2022
Water vole surveys	Mid-April – June 2022 (1st survey visit) July – September 2022 (2nd survey visit)
Otter surveys	March – September 2022
Great crested newt surveys	Mid-April – June 2022
Reptile surveys	April – June, September 2022
Hazel dormice surveys	April – October 2022

### 5.3 Summary of Phase 2 survey requirements

**Table 5.2** provides a summary of the Phase 2 species-specific surveys that have been identified based on the findings of the Extended Phase 1 Habitat Survey. Further information on the suite of Phase 2 surveys is provided in **Section 5.1** and an indicative survey programme is provided in **Section 5.2**.

Table 5.2 – Summary of Phase 2 survey requirements

Species	Phase 2 survey required (yes/no)
Birds	<b>Yes</b> – a suite of over-wintering and breeding bird surveys have been undertaken in 2020/2021, no further surveys beyond these are proposed.
Badgers	Information relating to badger is reported in <b>Appendix D</b> .
Bats	<b>Yes</b> – further surveys to confirm the presence of roosting bats (dusk/dawn emergence/re-entry survey) and commuting/foraging bats (monthly activity and static detector surveys) will be undertaken within all suitable habitat within the onshore project area.
Water vole and otter	<b>Yes</b> – presence/absence surveys will be undertaken of all waterbodies within the onshore project area.
Great crested newt	<b>Yes</b> – an eDNA survey to establish the presence or likely absence of great crested newts in ponds and ditches within and up to 250m of the onshore project area will be undertaken.
Reptiles	<b>Yes</b> – presence/absence surveys will be undertaken within all areas of suitable habitat that may support significant populations of common reptile species within the onshore project area.
Hazel dormice	<b>Yes</b> – presence/absence surveys will be undertaken within all areas of suitable habitat within the onshore project area.

## 6 Conclusion

An Extended Phase 1 Habitat Survey was undertaken in April, July, September and October 2021 to record the habitats within the onshore project area plus a 50m buffer and to identify suitability for these habitats to support legally protected and notable species.

The following designated sites are located within a 2km buffer of the onshore project area:

- Statutory designated sites:
  - Hamford Water (SSSI, SPA, SAC, Ramsar and NNR);

- Holland Haven Marshes SSSI;
- Holland On-Sea Cliff SSSI;
- Holland Haven LNR; and
- Pickers Ditch Meadow LNR.
- Non-statutory designated sites:
  - Great Holland Pits LWS.

At the time of writing this report, we are yet to receive confirmation on any additional non-statutory sites from the Essex Field Club, the report will be updated once this data is received.

The following UK Habitats of Principal Importance are present within the onshore project area:

- Coastal and floodplain grazing marsh;
- Ancient woodland;
- Deciduous woodland;
- Semi-improved grassland;
- Hedgerows;
- Arable field margins;
- Lowland meadows;
- Reedbeds;
- Rivers; and
- Ponds.

The onshore project area is dominated by arable fields interspersed with field margin drains, rivers and areas of scattered and dense scrub. Field boundaries are typically hedgerows (species-poor intact and/or defunct) and dominated by hawthorn and/or blackthorn. Other habitats are present which are considered to be of a higher ecological value such as semi-improved grassland, improved grassland, marshy grassland, woodland (broadleaved and mixed semi-natural and plantation) waterbodies, trees, tall ruderal, woodland/scrub successional habitats and areas of scrub.

Key features for protected and notable species have been recorded within the onshore project area and further surveys to the confirm their presence and/or likely absence has been identified. A summary of the features recorded during the Extended Phase 1 Habitat Survey is provided in **Table 6.1**.

*Table 6.1 – Summary of features recorded during the Extended Phase 1 Habitat Survey*

Species	Summary of key findings
Bat (roosting)	In total 331 features were assessed for their suitability to support roosting bats. Of these 86 were assessed as providing negligible suitability for roosting bats, 110 were assessed as providing low suitability, 122 as providing moderate suitability and 13 as having high suitability.
Bats (commuting/foraging)	In total, 215 features were assessed as for their suitability for commuting and foraging bats. Of these, 97 were assessed as providing negligible suitability, 15 features as providing low suitability, 100 as providing moderate suitability and three as having high suitability.
Water vole and otter	A total of 80 watercourses were recorded within the survey area which comprised of standing water, running water (e.g. rivers or ditches) and dry ditches. Of these 80 watercourses, 8 were assessed as being suitable to support water voles and 1 as being suitable to support otters.
Great crested newt	A total of 52 waterbodies (i.e. ponds and ditches) were subject to a HSI assessment during the Extended Phase 1 Habitat Survey.

Reptiles	A total of 15 areas of suitable reptile habitat was recorded within the survey area, of which six are potentially suitable for supporting large numbers of common reptiles.
Hazel dormice	A total of 13 areas of suitable habitat for dormice was recorded within the survey area primarily consisting of hazel rich hedgerows connected to woodland.
Invasive non-native species	One area of giant hogweed was recorded within the survey area.

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## 8 Appendix A – Figures





## 9 Appendix B – Target Notes



## 10 Appendix C – Hedgerow Results



## 11 Appendix D – Badger Survey Results (Confidential)



## 12 Appendix E – Bat Roost Assessment Results



## 13 Appendix F – Full HSI Assessment Results



## 14 Appendix G – Biodiversity Net Gain Baseline Report



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