



Hornsea Project Four: Environmental Statement (ES)

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APFP Regulation 5(2)(a)

Volume A6, Annex 3.10 – Bat Activity Transect Survey Report Part A

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Glossary

Term	Definition
Commitment	<p>A term used interchangeably with mitigation and enhancement measures. The purpose of Commitments is to reduce and/or eliminate Likely Significant Effects (LSEs), in EIA terms.</p> <p>Primary (Design) or Tertiary (Inherent) are both embedded within the assessment at the relevant point in the EIA (e.g. at Scoping, Preliminary Environmental Information Report (PEIR) or ES).</p> <p>Secondary commitments are incorporated to reduce LSE to environmentally acceptable levels following initial assessment i.e. so that residual effects are acceptable.</p>
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
EIA Directive	European Union Directive 85/337/EEC, as amended by Directives 97/11/EC, 2003/35/EC and 2009/31/EC and then codified by Directive 2011/92/EU of 13 December 2011 (as amended in 2014 by Directive 2014/52/EU).
EIA Regulations	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.
Energy balancing infrastructure (EBI)	The onshore substation includes energy balancing Infrastructure. These provide valuable services to the electrical grid, such as storing energy to meet periods of peak demand and improving overall reliability.
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Directive and EIA Regulations, including the publication of an Environmental Statement (ES).
Environmental Statement (ES)	A document reporting the findings of the EIA and produced in accordance with the EIA Directive as transposed into UK law by the EIA Regulations
Export cable corridor (ECC)	The specific corridor of seabed (seaward of Mean High Water Springs (MHWS)) and land (landward of MHWS) from the Hornsea Project Four array area to the Creyke Beck National Grid substation, within which the export cables will be located.
High Voltage Alternating Current (HVAC)	High voltage alternating current is the bulk transmission of electricity by alternating current (AC), whereby the flow of electric charge periodically reverses direction.
High Voltage Direct Current (HVDC)	High voltage direct current is the bulk transmission of electricity by direct current (DC), whereby the flow of electric charge is in one direction.
Hornsea Project Four Offshore Wind Farm	The term covers all elements of the project (i.e. both the offshore and onshore). Hornsea Four infrastructure will include offshore generating stations (wind turbines), electrical export cables to landfall, and connection to the electricity transmission network.. Hereafter referred to as Hornsea Four.
Landfall	The generic term applied to the entire landfall area between Mean Low Water Spring (MLWS) tide and the Transition Joint Bay (TJB) inclusive of all construction works, including the offshore and onshore ECC, intertidal working area and landfall compound. Where the offshore cables come ashore east of Fraisthorpe.

Term	Definition
National Grid Electricity Transmission (NGET) substation	The grid connection location for Hornsea Four at Creyke Beck.
Onshore substation (OnSS)	Comprises a compound containing the electrical components for transforming the power supplied from Hornsea Project Four to 400 kV and to adjust the power quality and power factor, as required to meet the UK Grid Code for supply to the National Grid. If a HVDC system is used the OnSS will also house equipment to convert the power from HVDC to HVAC.
Order Limits	The limits within which Hornsea Project Four (the 'authorised project') may be carried out.
Orsted Hornsea Project Four Ltd.	The Applicant for the proposed Hornsea Project Four Offshore Wind Farm Development Consent Order (DCO).
Planning Inspectorate (PINS)	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects (NSIPs).

Acronyms

Acronym	Definition
ACIEEM	Associate Member of the Chartered Institute of Ecology and Environmental Management
BCT	Bat Conservation Trust
C.Env	Chartered Environmentalist
CIEEM	Chartered Institute of Ecology and Environmental Management
CIWEM	Chartered Institute of Water and Environmental Management
C.WEM	Chartered Water and Environmental Manager
DCO	Development Consent Order
EBI	Energy Balancing Infrastructure
ECC	Export cable corridor
EECW	Environmental and Ecological Clerk of Works
EIA	Environmental Impact Assessment
EP1HS	Extended Phase 1 Habitat Survey
ERYC	East Riding Yorkshire Council
ES	Environmental Statement
EPS	European Protected Species
ERYC	East Riding Yorkshire Council
FRGS	Fellow of the Royal Geographical Society
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
LP	Listening Point
LWS	Local Wildlife Site
MCIWEM	Member of Chartered Institute for Water and Environmental Management
MEECW	Member of the Ecological and Environmental Clerk of Works
MHWS	Mean High Water Spring

Acronym	Definition
NE	Natural England
NERC	Natural Environment and Rural Communities
NEYEDC	North and East Yorkshire Ecological Data Centre
NGET	National Grid Electricity Transmission
OnSS	Onshore substation
OS	Ordnance Survey
PRoW	Public Right of Way
SoS	Secretary of State
SSSI	Site of Special Scientific Interest
UK BAP	United Kingdom Biodiversity Action Plan
WCA	Wildlife and Countryside Act

Units

Unit	Definition
cm	centimetre
km	kilometre
kV	kilovolt
m	metre

1 Introduction

1.1 Project background

- 1.1.1.1 Orsted Hornsea Project Four Limited (the 'Applicant') is proposing to develop Hornsea Project Four Offshore Wind Farm (hereafter 'Hornsea Four'). Hornsea Four will be located approximately 69 km offshore the East Riding of Yorkshire in the Southern North Sea and will be the fourth project to be developed in the former Hornsea Zone. Hornsea Four will include both offshore and onshore infrastructure including an offshore generating station (wind farm), export cables to landfall, and on to an onshore substation (OnSS) with energy balancing infrastructure (EBI), and connection to the electricity transmission network.
- 1.1.1.2 Royal HaskoningDHV was commissioned to undertake a suite of bat activity transect surveys of all features identified as part of the Extended Phase 1 Habitat Survey (EP1HS) ([Annex 3.1: Extended Phase 1 Habitat Survey Report](#) and [Annex 3.2: Extended Phase 1 Target Note Tables](#)) and assessed as providing moderate or high potential for commuting and/or foraging bats within and up to a 50 m buffer of the Hornsea Four Order Limits (i.e. the landfall, onshore export cable corridor (ECC), the OnSS including EBI, and 400 kV National Grid Electricity Transmission (NGET) connection area).
- 1.1.1.3 This technical annex has been produced to characterise the baseline environment to inform and support the ecological impact assessment set out in [Volume A3, Chapter 3: Ecology and Nature Conservation](#) of the Hornsea Four Environmental Statement (ES).
- 1.1.1.4 Due to the amount of data collated during the Hornsea Four bat surveys, this survey report has been split into two parts:
- [Annex 3.10: Bat Activity Transect Survey Report Part A](#) (this document) – outlines the methodology, survey results, conclusions and mitigation; and
 - [Annex 3.11: Bat Activity Transect Survey Report Part B](#) – presents the full survey data, including timings for each survey, as well as detailed information relating to the habitats and features within each transect location.
- 1.1.1.5 Bat static detector and bat emergence and re-entry surveys have also been undertaken for Hornsea Four, and these can be found in [Annex 3.8: Bat Static Detector Survey Report Part A](#); [Annex 3.9: Bat Static Detector Survey Report Part B](#); [Annex 3.12: Bat Emergence and Re-entry Survey Report Part A](#) and [Annex 3.13: Bat Emergence and Re-entry Survey Report Part B](#), respectively. For a full understanding of the results of the bat survey programme, all the bat survey reports require consideration.

1.2 Aims

- 1.2.1.1 The aim of the bat activity transect survey effort was to determine the presence or likely absence of bat species utilising habitats and linear features for commuting and/or foraging purposes within and up to 50 m of the onshore Hornsea Four Order Limits.

1.2.1.2 The purpose of this report is to present the findings of the 2019 Hornsea Four bat activity transect survey and to provide an initial understanding of the presence of commuting and/or foraging bat species within and up to 50 m of the onshore Hornsea Four Order Limits.

1.2.1.3 This report has been prepared following the guidelines as set out in the Chartered Institute of Ecology and Environmental Management’s (CIEEM) Guidelines on Ecological Report Writing (CIEEM 2017), and the survey reporting guidelines in the Bat Conservation Trust’s (BCT) Bat Surveys for Professional Ecologists (Collins 2016) and Bat Surveys: Good Practice Guidelines (2nd Edition) (Hundt 2012).

2 Legislation

2.1.1.1 **Table 1** summarises the relevant information regarding the legal protection afforded to bats. It should be noted that this is for information only and is not intended to be comprehensive or to replace specialised legal advice.

Table 1: Summary of key legislation and policy relevant to bats.

Legislation	Relevance
Wildlife and Countryside Act 1981 (as amended) (WCA 1981)	This Act makes it an offence to intentionally kill, injure or take any animal listed in schedule 5 of the Act. All bat species are listed on Schedule 5.
Natural Environment and Rural Communities Act 2006 (NERC 2006)	Section 41 of the Act requires the Secretary of State (SoS) to compile a list of habitats and species of principal importance for the conservation of biodiversity in England. Decision makers of public bodies, in the execution of their duties, must have regard to the conservation of biodiversity in England, and the list is intended to guide them. Natural England has compiled a list of species of Principal Importance. The following species are on this list: <ul style="list-style-type: none"> • Barbastelle <i>Barbastella barbastellus</i>; • Bechstein’s <i>Myotis bechsteinii</i>; • Noctule <i>Nyctalus noctule</i>; • Soprano pipistrelle <i>Pipistrellus pygmaeus</i>; • Brown long-eared <i>Plecotus auratus</i>; • Greater horseshoe <i>Rhinolophus ferrumequinum</i>; and • Lesser horseshoe <i>Rhinolophus hipposideros</i>
Conservation of Habitats and Species Regulations 2017 (as amended) (Conservation of Habitats and Species Regulations 2017)	Codifies the EU Directive 92/43/EEC (The Habitats Directive) into UK law, and provides legal protection for European Protected Species (EPS) and designated sites. All bat species are EPS.

Legislation	Relevance
Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019	Makes changes to the Conservation of Habitats and Species Regulations 2017 following the UK's exit from the European Union (EU).
Policy	Relevance
UK Post-2010 Biodiversity Framework (JNCC 2012)	Supersedes the UK Biodiversity Action Plan (UK BAP), which fulfilled legal obligation under the Convention on Biological Diversity to identify and produce action plans for priority habitats and species.

3 Methodology

3.1 Survey Area

3.1.1.1 The Hornsea Four bat activity transect survey area consisted of the onshore Hornsea Four Order Limits, plus an additional 50 m buffer (see [Figure 1](#)). The 50 m buffer was implemented to include any associated habitat and/or features immediately adjacent to the onshore Order Limits, in line with industry standard survey guidance.

3.2 Survey Methodology

3.2.1 Desk study

3.2.1.1 Biological data received from the North and East Yorkshire Data Centre (NEYEDC), initially obtained during the scoping stages of the project (NEYEDC 2018), and more recently updated in April 2020 was reviewed to identify the records relating to commuting and/or foraging bat species within the Hornsea Four bat activity transect study area. There is no specific date for determining that desk study records of a certain age are no longer valid, and therefore each record has been considered on its own merits. As the biological records data was updated in April 2020 it is therefore considered to remain valid.

3.2.1.2 During the updated Extended Phase 1 Habitat Survey (EP1HS)) ([Annex 3.1: Extended Phase 1 Habitat Survey Report](#) and [Annex 3.2: Extended Phase 1 Target Note Tables](#)) undertaken in February 2019, all features present within areas where landowner access had been granted (at the time this constituted approximately 50% of the Hornsea Four Order Limits) were identified and assessed from the ground for their suitability to support commuting and/or foraging bats. For the remaining 50% of the Hornsea Four Order Limits where landowner access had not been granted at the time of the 2019 survey effort, a review of the high resolution (~3 cm) aerial imagery was undertaken and a precautionary approach was undertaken to identify potential bat commuting/foraging habitats (see [Section 3.3](#) for further details).

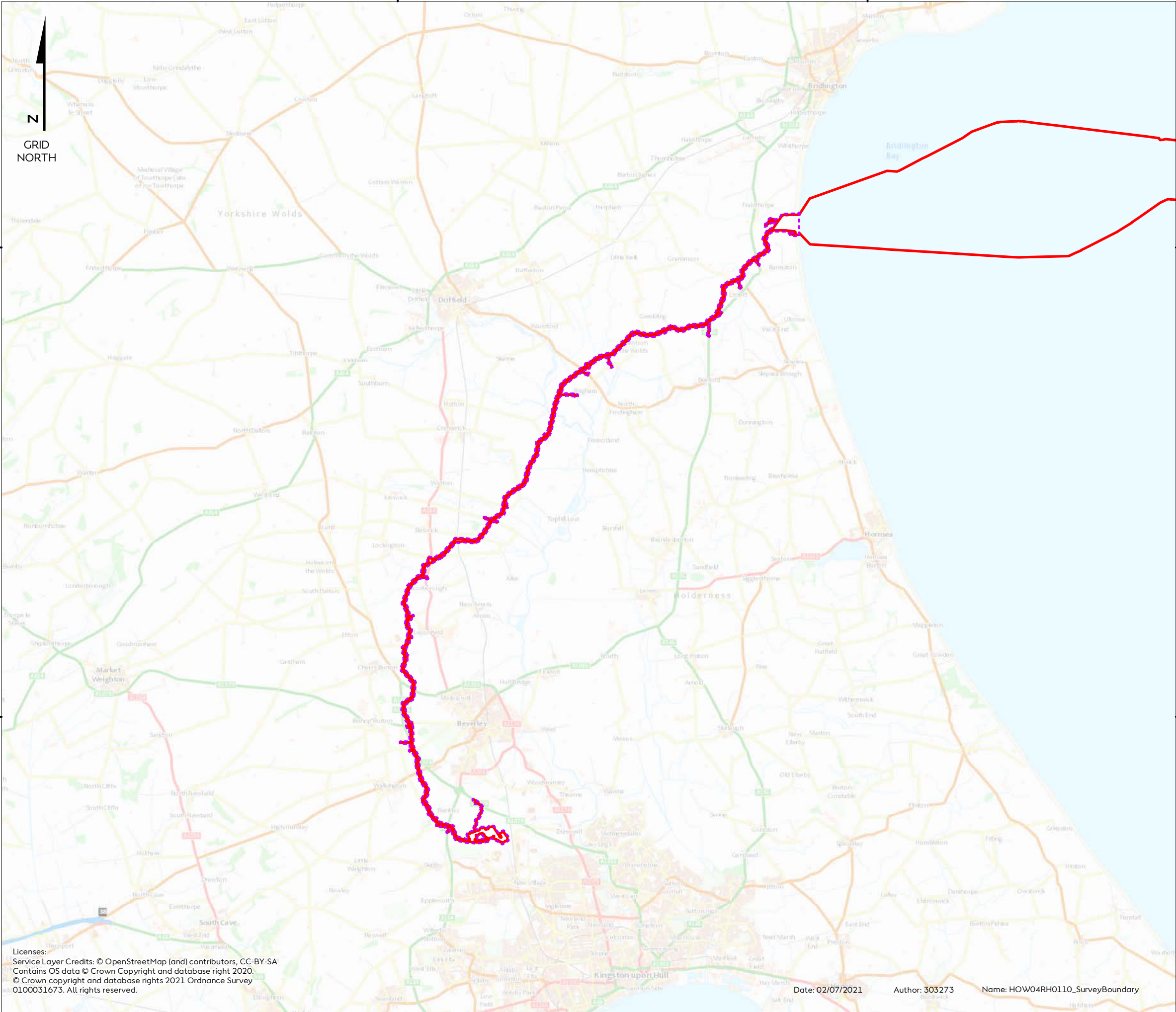
3.2.1.3 This approach was agreed with stakeholders (East Riding Yorkshire Council (ERYC), Natural England, Environment Agency (EA) and Yorkshire Wildlife Trust (YWT)) as part of the Hornsea

Four onshore Ecology Evidence Plan Technical Panel meeting held on the 8 April 2019 (ON-ECO-1.7).

- 3.2.1.4 Subsequent to the updated EP1HS undertaken in February 2019, further land access was granted and a further EP1HS was undertaken in areas not previously subject to survey. This total survey effort has resulted in 95% EP1HS coverage of the Hornsea Four Order Limits at the time of the 2019 bat survey effort. See [Annex 3.1: Extended Phase 1 Habitat Survey Report](#) and [Annex 3.2: Extended Phase 1 Target Note Tables](#)) for further details.
- 3.2.1.5 Ongoing consultation with landowners has been undertaken by The Applicant's land agents since 2019 and consequently access to the remaining 5 % unsurveyed in 2019 was granted in 2021. See [Annex 3.1: Extended Phase 1 Habitat Survey Report – 2021 Survey Addendum](#) and [Annex 3.2: Extended Phase 1 Target Note Tables – 2021 Survey Addendum](#)) for further details.
- 3.2.1.6 At the time of the 2019 bat survey effort, a precautionary approach was undertaken when identifying any potential features from the aerial imagery whereby all potential features were assessed as having a high potential for supporting roosting bats for the purposes of including them within the Hornsea Four bat activity transect survey effort. However, where landowner access was subsequently obtained, each of the survey transects was subject to a preliminary daytime assessment. This preliminary daytime assessment either confirmed that the bat foraging/commuting potential initially assigned was correct, or that the bat foraging/commuting potential was reassigned to either moderate, low or negligible potential, as appropriate.
- 3.2.1.7 No changes or additional areas were identified from the 2021 survey effort to those identified and surveyed in 2019.

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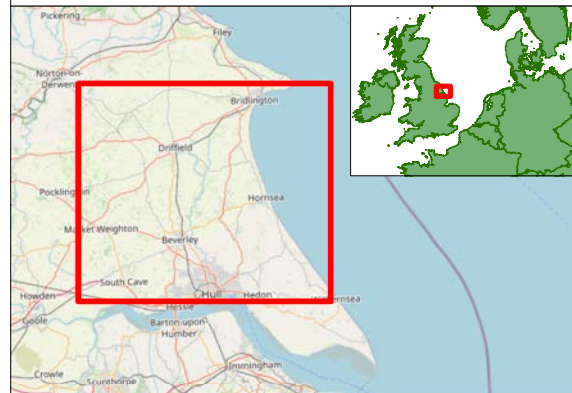


Hornsea Four

Figure 1

Survey Area

- Order Limits
- Bat Survey Area



Coordinate system: British National Grid
 Scale@A3: 1:160,000

0 2 4 8 Kilometres

0 1 2 4 Miles

REV	REMARK	DATE
	First Issue for DCO	02/07/2021

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Date: 02/07/2021 Author: 303273 Name: HOW04RH0110_SurveyBoundary

Title: Survey Area
 Document no: HOW04RH0110
 Created by: AZ
 Checked by: CC
 Approved by: CS



3.2.2 Field survey

- 3.2.2.1 In accordance with BCT guidelines (Collins 2016 and Hundt 2012) all features assessed during the updated Extended Phase 1 Habitat Survey (EP1HS) (see [Annex 3.1: Extended Phase 1 Habitat Survey Report](#) and [Annex 3.2: Extended Phase 1 Target Note Tables](#)) as providing moderate or high suitability for supporting commuting and/or foraging bats were subject to a suite of monthly surveys within the optimal period (May to October, inclusive). From this assessment, a total of 44 features were identified (as providing moderate or high potential to support commuting and/or foraging bats) and therefore formed the basis of the Hornsea bat activity transect survey. Of those 44 features, 43 were assessed as providing moderate suitability and one feature was assessed as providing high suitability for commuting/foraging bats.
- 3.2.2.2 As the Hornsea Four bat activity transect survey was undertaken concurrently with the Hornsea Four bat static detector survey effort (see [Annex 3.8: Bat Static Detector Survey Report Part A](#) and [Annex 3.9: Bat Static Detector Survey Report Part B](#)), the 43 features assessed for commuting and/or foraging bats were grouped into 10 walkable survey transects, and were designed to include those features assessed as providing moderate suitability for commuting and/or foraging bats. These transects are shown on [Figure 2](#) to [Figure 11](#). However, some of these features were situated within remote locations and therefore in these instances only static detectors were deployed (as agreed with YWT in advance of the surveys and as part of the Evidence Plan process (ON-ECO-1.7)). The one feature assessed as providing high potential for commuting/foraging bats was subject to a static detector survey only (please see **Static_S11** on Figure 6 in [Annex 3.8: Bat Static Detector Survey Report Part A](#) for the location of this feature). This approach was agreed with stakeholders (i.e. Natural England, EA, ERYC and the YWT) as part of the Hornsea Four onshore Ecology Evidence Plan Technical Panel meeting held on the 8 April 2019 (ON-ECO-1.7).
- 3.2.2.3 All features assessed as providing low suitability for supporting commuting and/or foraging bats have still been considered as potentially supporting small numbers of bats. However, no further surveys have been undertaken. This approach was presented to, and agreed by, stakeholders (i.e. EA, ERYC, Natural England and YWT) at the third onshore Ecology Evidence Plan Technical Panel Meeting, held on 8 April 2019 (ON-ECO-1.7).
- 3.2.2.4 In accordance with the BCT guidelines (Collins 2016 and Hundt 2012), those features assessed as providing moderate or high suitability for commuting and/or foraging bats were subject to one activity transect survey each month during the active bat season (which is typically between April and October, inclusive). The months of April and October are outside the optimal survey period, due to potentially changeable weather conditions, but nonetheless where possible should be included unless determined otherwise by a suitably qualified ecologist. Due to a lack of landowner access at the outset of the Hornsea Four bat activity transect survey effort, no surveys were undertaken during April 2019, therefore all activity transect surveys commenced in May 2019 and continued through to October 2019 (inclusive).

3.2.2.5 Each transect subject to a survey in 2019 was walked by one experienced ecologist plus an additional surveyor for health and safety purposes. Each transect was walked at a consistent speed, with programmed stops (Listening Points (LP)) every 150 -200 m. A total of five to ten minutes was spent at each LP, recording observations such as number of bats, flight direction and behaviour. A copy of the survey proforma for each month's survey for each transect is provided in [Annex 3.11: Bat Activity Transect Survey Report Part B](#).

3.2.2.6 Hand-held bat detectors and recording equipment were used to record any activity during each survey. A combination of the following equipment was used:

- Echo Meter Touch (EMT) 2;
- Bat Box Duet;
- Anabat SD2;
- Anabat Walkabout;
- Echo Meter Touch 2 Pro; and
- Echo Meter 3+.

3.2.3 Data analysis

3.2.3.1 Following each survey, the recordings were downloaded and assessed using the Wildlife Acoustics Kaleidoscope software in order to confirm and further identify the calls of any bat species recorded using the detectors during the survey. The Kaleidoscope software is an integrated suite of bat data tools that has been designed to convert bat recording files quickly, sort and categorises the bat data by species, verify survey findings as well as visually presenting the recorded data. It is the widely accepted software to use when analysing bat recordings. Weather conditions including temperature, wind speed, precipitation and humidity were recorded at the start and end of each survey.

3.2.3.2 Each activity transect survey commenced at sunset and ceased 2-3 hours after sunset. The Hornsea Four bat activity transect survey also included one dusk and pre-dawn survey within a single 24-hour period undertaken in September 2019. A summary of the 2019 bat activity transect survey dates is presented in [Table 2](#).

3.2.4 Surveyors

3.2.4.1 The Hornsea Four bat activity transect surveys were designed and led by Charlotte Clements, a Royal HaskoningDHV ecologist with 5 years' experience of undertaking bat surveys. Charlotte is an associate member of the Chartered Institute of Ecology and Environmental Management (ACIEEM). Charlotte also undertook all the analysis of the data collected throughout the Hornsea Project Four bat surveys.

3.2.4.2 Charlotte was supported by two bat licenced ecologists and the following additional surveyors throughout the Hornsea Four bat activity transect survey:

- Paul Hiscocks, BSc. (Hons) MCIEEM MEECW, Natural England CL18 Bat Class Level 2 Licence (Licence No 2015-10145-CLS-CLS);

- Marten Hall, Fd.Sc MCIEEM MEECW, Natural England CL18 Bat Class Level 2 Licence (Licence No 2015-13847-CLS-CLS);
- Maria Walentek, BSc MSc, ACIEEM, C.Env, MIEMA;
- Ella Moseley, BSc (Hons), MCIWEM, C.WEM, FRGS; and
- Ashleigh Holmes, BSc (Hons).

3.3 Limitations

- 3.3.1.1 As set out in [Paragraph 3.2.2.4](#), due to a lack of landowner access, no surveys were undertaken during April 2019. The Hornsea Four bat activity transect surveys commenced in May 2019, with surveys undertaken each month through to October 2019 (inclusive).
- 3.3.1.2 A total of 10 activity transects were designed, which incorporated the 43 features that had been assessed as offering moderate suitability for commuting and/or foraging bats. However, since the initial identification of these locations (i.e. at the time of submitting the Preliminary Environmental Information Report (PEIR) (Orsted 2019), the Hornsea Four Order Limits has been refined. No new potential foraging/commuting habitat for bats have been identified, however some sections of the 10 transects are now located outside the Hornsea Four Order limits and therefore have not been considered any further. Consequently, this report only covers those features that are located within the Hornsea Four bat activity transect study area (i.e. up to and including 50 m of the Hornsea Four Order Limits), as shown in [Figure 1](#).
- 3.3.1.3 The weather conditions during the majority of the survey period was considered optimal for the undertaking of bat surveys although a period of colder than average weather was experienced in the survey period during September ([Table 2](#)). In addition, inclement weather consisting of strong winds and heavy rain resulted in the surveys in May and June 2019 being stopped. This only affected a total of four of the 10 activity transects, with transects 1a, 1b, 2 and 9 not walked during these months (see [Figure 2](#) to [Figure 11](#)).
- 3.3.1.4 Despite the inclement weather conditions experienced during some of the surveys and no surveys being undertaken during April (due to a lack of landowner access across the survey area), a diverse range of bat species have been recorded. Although potentially fewer numbers of each bat species may have been recorded during the surveys, this has not affected the identification of mitigation that will provide protection for commuting/foraging bats using the habitat features within the onshore Hornsea Four Order Limits. In addition, a further survey effort, post consent and pre-construction will be undertaken ensuring that the baseline conditions remain up-to-date (see [Volume F2, Chapter 3: Outline Ecological Management Plan](#)) and where required additional or revisions to the currently proposed mitigation measures can be made. It is therefore concluded that the results of the 2019 survey effort provide a robust evidence base to inform the impact assessment presented in [Volume A3, Chapter 3: Ecology and Nature Conservation](#) of the Hornsea Four ES.
- 3.3.1.5 Transect 2 ([Figure 4](#)) included grassland fields that, at the time of the survey design, were not occupied by livestock. However, at the start of the 2019 survey period, livestock were present within these fields which meant that safe access for surveyors throughout the entire

transect was not possible. This transect was redesigned to incorporate as many of the habitats as were safely accessible and in turn to ensure the survey transect remains to represent the area.

3.3.1.6 The Hornsea Four bat activity transect survey was undertaken concurrently with the Hornsea Four static bat detector survey. Therefore, this technical annex should be read in conjunction with the following technical annexes

- [Annex A3.8: Bat Static Detector Survey Report Part A](#); and
- [Annex A3.9: Bat Static Detector Survey Report Part B](#).

3.3.1.7 The survey team made the utmost effort to record the species and numbers of commuting and/or foraging bats within each walkable transect. However, due to human error it is possible that some activity may have been missed. However, the data presented in this report is believed to provide an accurate and robust account of the presence or likely absence of commuting and/or foraging bats within the Hornsea Four bat activity survey area.

3.4 Weather Conditions

3.4.1.1 [Table 2](#) summarises the prevailing weather conditions during each of the Hornsea Four bat activity transect surveys.

Table 2: Weather conditions during the Hornsea Four bat activity transect survey effort.

Survey month	Activity transect survey dates	Weather conditions
May 2019	20 th May – 23 rd May 2019	Moderate breeze, dry, overnight temperature between 8°C and 11 °C
June 2019	24 th June – 27 th June 2019	Moderate breeze, occasional showers, overnight temperature between 11 °C and 13°C
July 2019	22 nd July – 25 th July 2019	Light breeze, dry, overnight temperature between 10°C and 17 °C
August 2019	19 th August – 22 nd August 2019	Moderate breeze, occasional showers, overnight temperature between 8 °C and 17°C
September 2019	16 th September – 19 th September 2019	Light breeze, dry, overnight temperatures between 5°C and 13°C
October 2019	7 th October – 10 th October 2019	Light breeze, occasional showers, overnight temperatures between 8 °C and 13°C.

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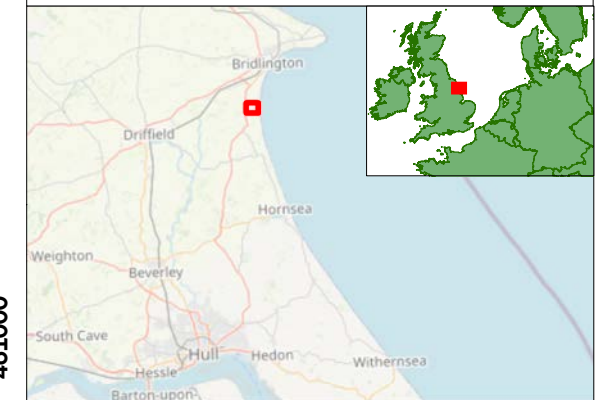


Hornsea Four

Figure 2

Bat Activity Transect: 1a
- Sheet 1 of 10

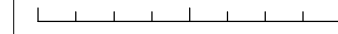
-  Order Limits
-  Bat Survey Area
-  Bat Listening Point
-  Transect



Coordinate system: British National Grid

Scale@A3: 1:5,000

0 50 100 200 Meters



0 50 100 200 Yards

REV	REMARK	DATE
	First Issue for DCO	18/06/2021

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 Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA
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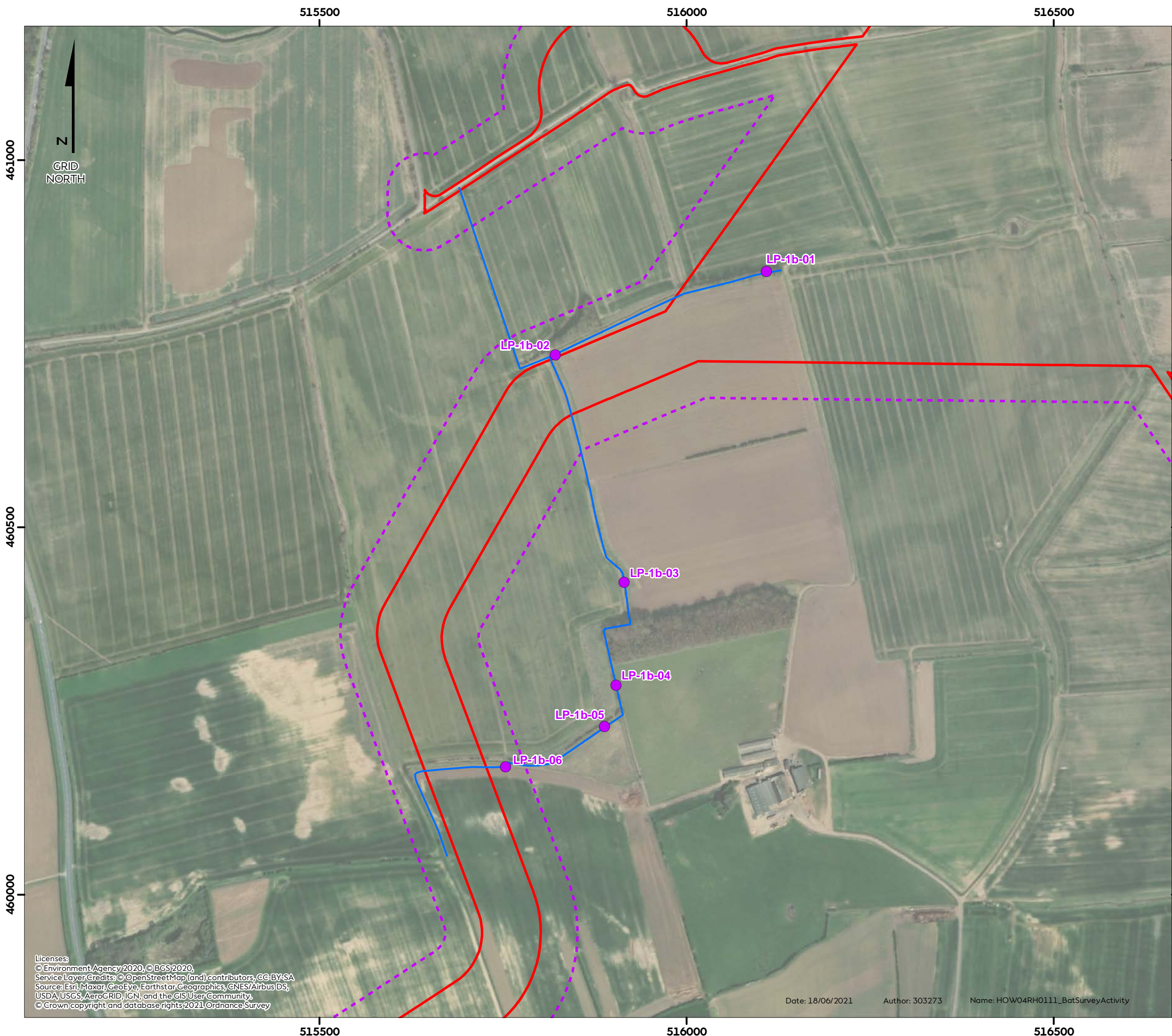
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Author: 303273

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 Checked by: CC
 Approved by: CS

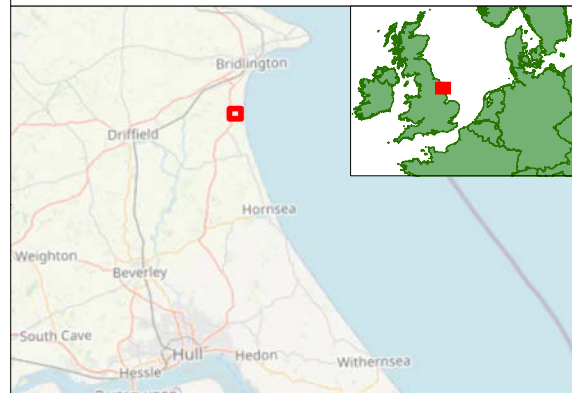




Hornsea Four

Figure 3
Bat Activity Transect: 1b
- Sheet 2 of 10

- Order Limits
- Bat Survey Area
- Bat Listening Point
- Transect



Coordinate system: British National Grid
Scale@A3: 1:5,000

0 50 100 200 Meters

0 50 100 200 Yards

REV	REMARK	DATE
	First Issue for DCO	18/06/2021

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Document no: HOW04RH0111
Created by: AZ
Checked by: CC
Approved by: CS



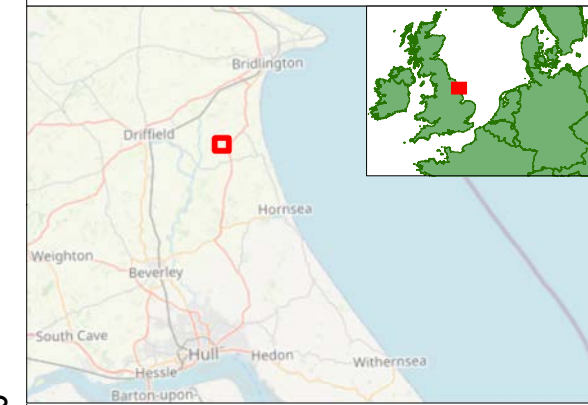
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Hornsea Four

Figure 4
Bat Activity Transect: 2
- Sheet 3 of 10

- Order Limits
- Bat Survey Area
- Bat Listening Point
- Transect



Coordinate system: British National Grid
Scale@A3: 1:6,000

0 60 120 240 Meters

0 60 120 240 Yards

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Date: 18/06/2021 Author: 303273 Name: HOW04RH0111_BatSurveyActivity

Title: Bat Activity
Document no: HOW04RH0111
Created by: AZ
Checked by: CC
Approved by: CS



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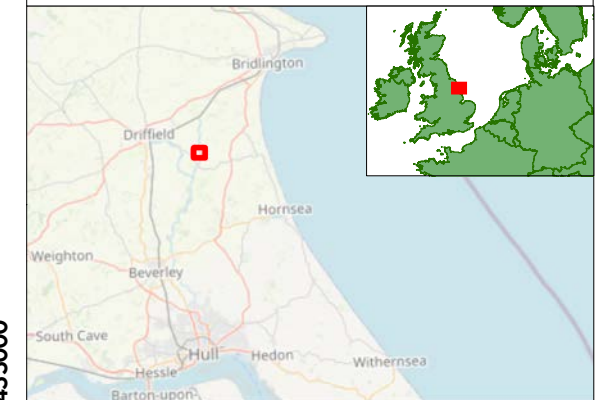
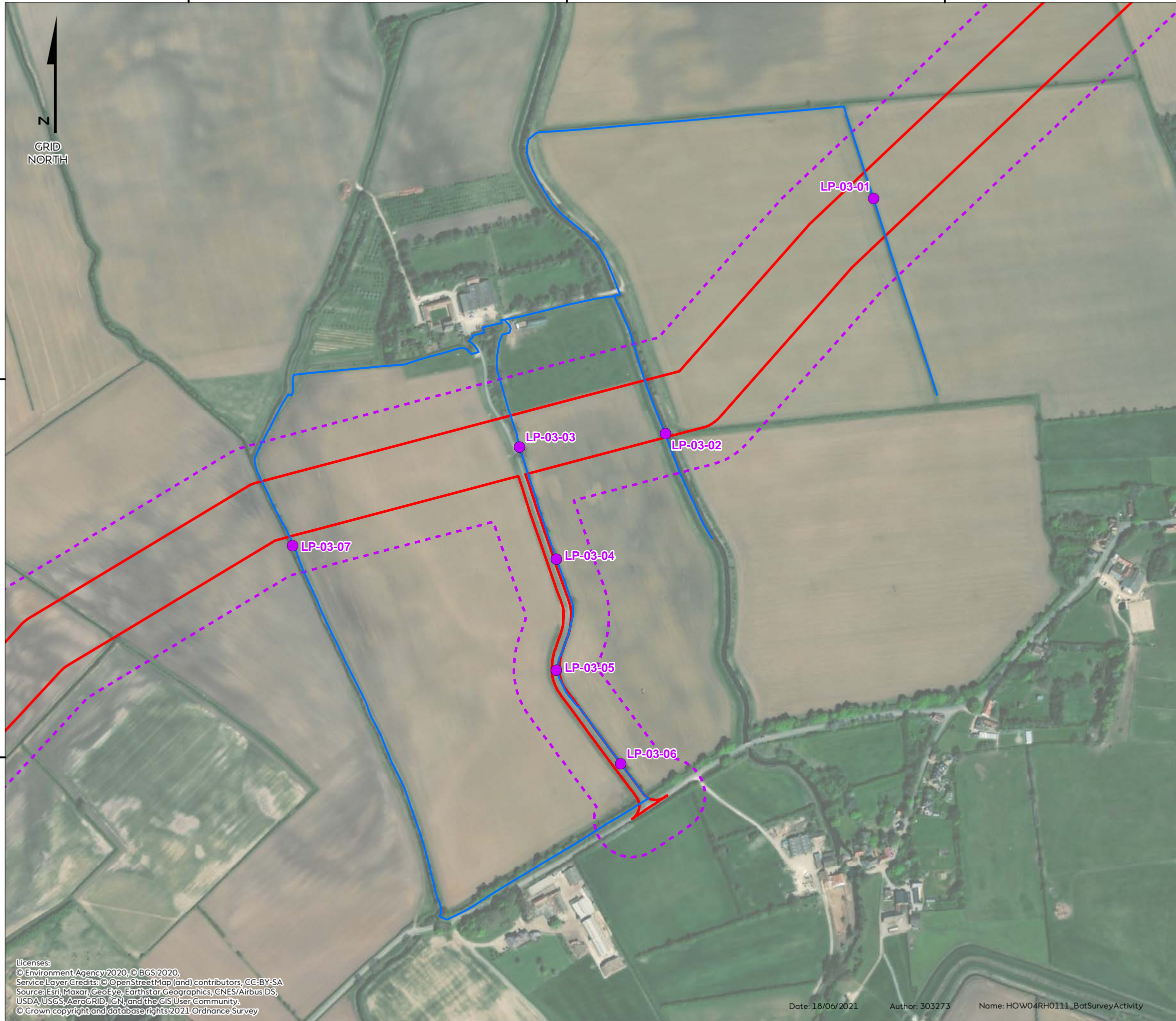
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Hornsea Four

Figure 5

Bat Activity Transect: 3 - Sheet 4 of 10

-  Order Limits
-  Bat Survey Area
-  Bat Listening Point
-  Transect



Coordinate system: British National Grid

Scale@A3: 1:5,000

0 50 100 200 Meters

0 50 100 200 Yards

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Author: 303273

Name: HOW04RH0111_BatSurveyActivity

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Hornsea Four

Figure 6

Bat Activity Transect: 4 - Sheet 5 of 10

-  Order Limits
-  Bat Survey Area
-  Bat Listening Point
-  Transect

455000

455000

454500

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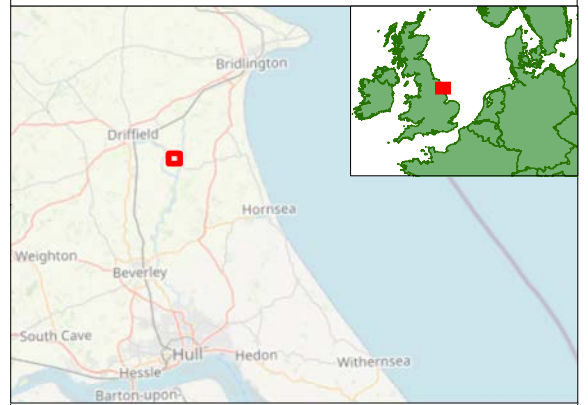
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NORTH

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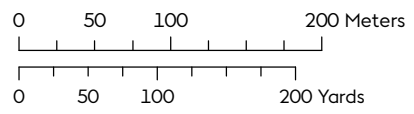
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LP-04-03

LP-04-04



Coordinate system: British National Grid
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0 50 100 200 Meters
 0 50 100 200 Yards

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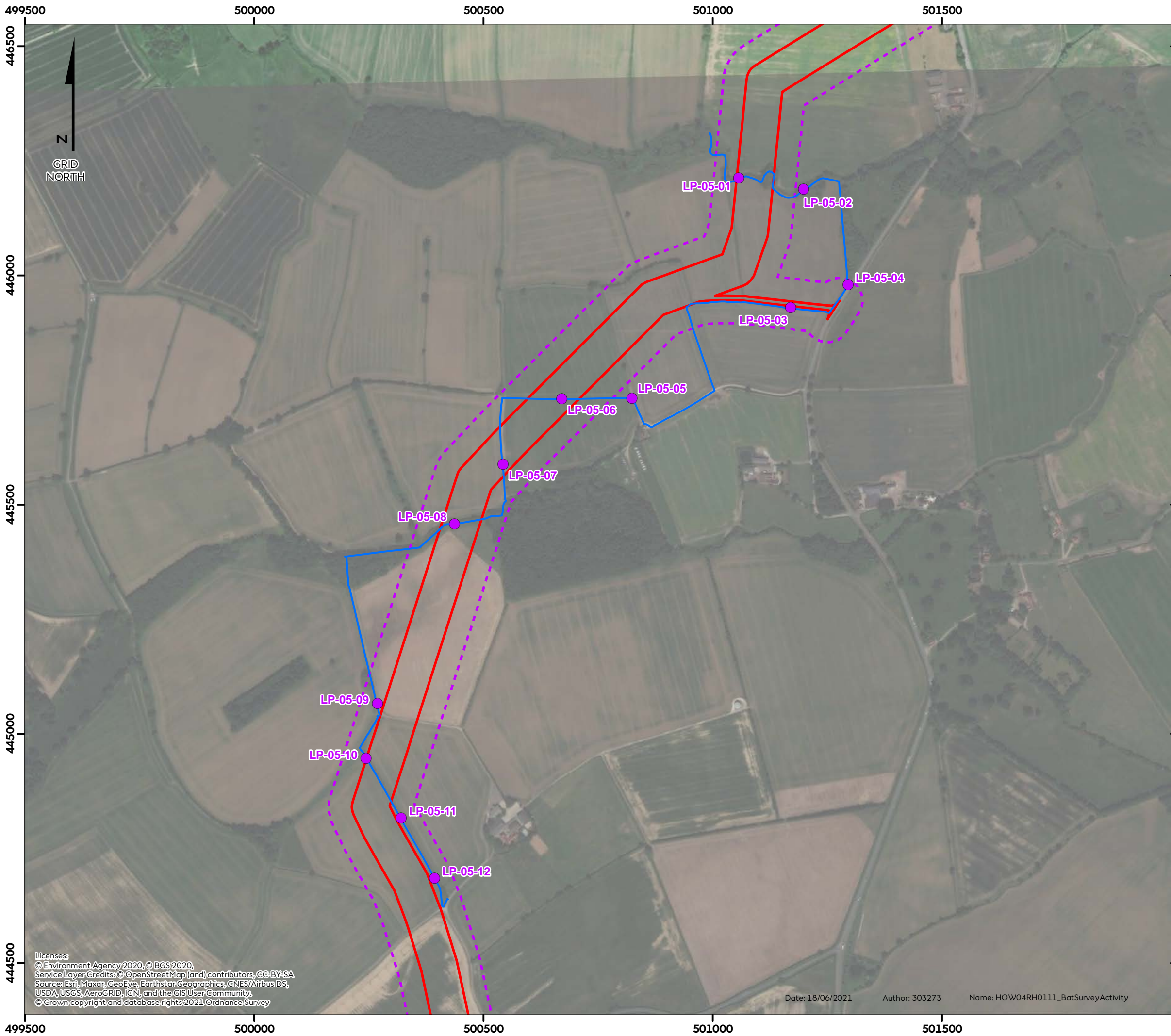
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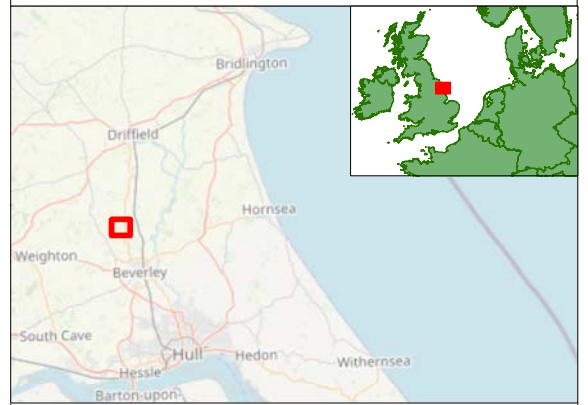
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Hornsea Four

Figure 7
Bat Activity Transect: 5
- Sheet 6 of 10

- Order Limits
- Bat Survey Area
- Bat Listening Point
- Transect



Coordinate system: British National Grid
Scale@A3: 1:8,000

0 80 160 320 Meters

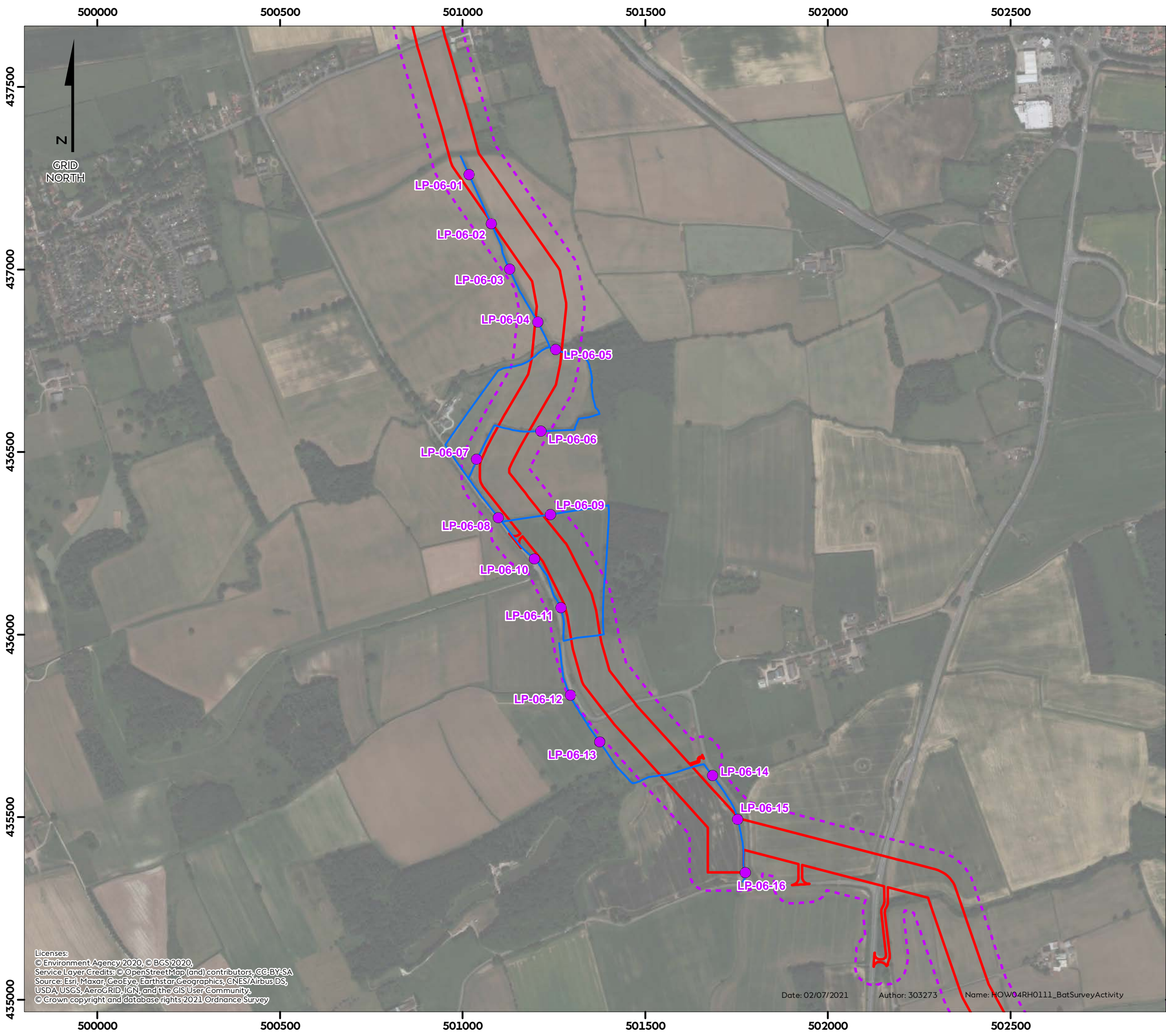
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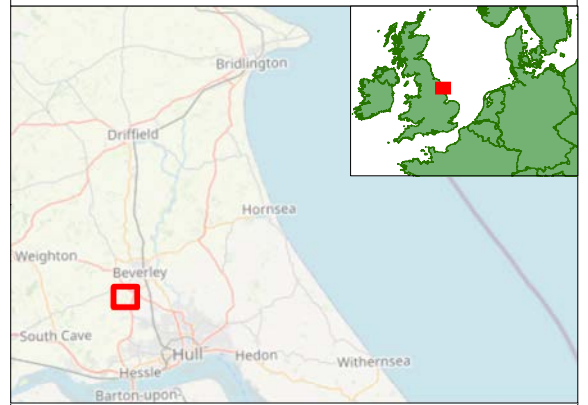
Hornsea Four

Figure 8

Bat Activity Transect: 6

- Sheet 7 of 10

- Order Limits
- Bat Survey Area
- Bat Listening Point
- Transect



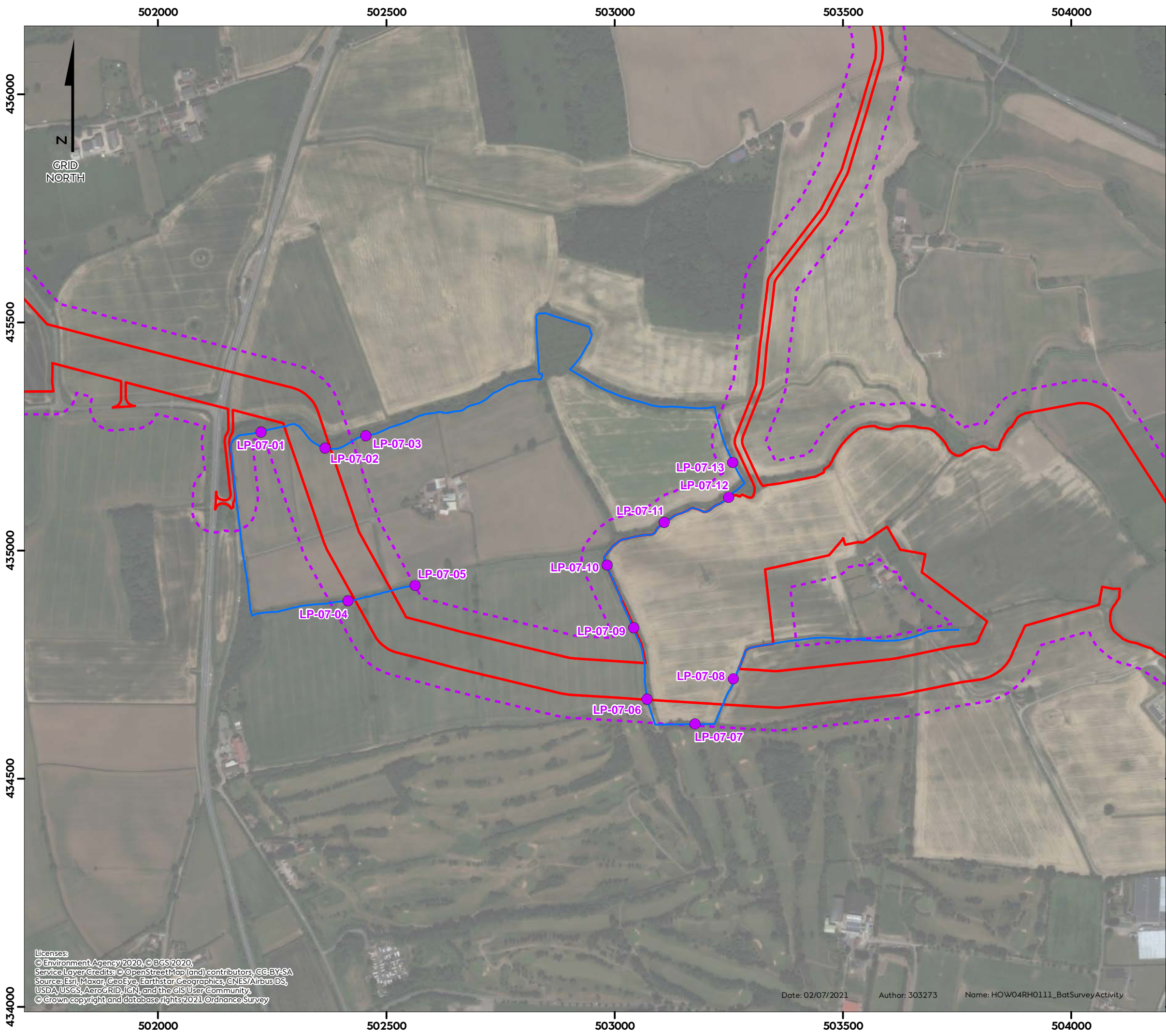
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 0 100 200 400 Yards

REV	REMARK	DATE
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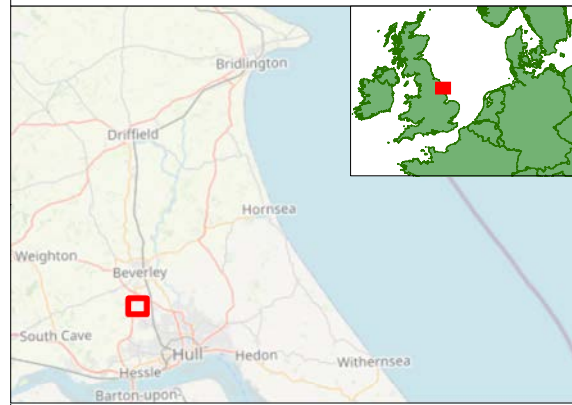




Hornsea Four

Figure 9
 Bat Activity Transect: 7
 - Sheet 8 of 10

- Order Limits
- Bat Survey Area
- Bat Listening Point
- Transect



Coordinate system: British National Grid
 Scale@A3: 1:8,000

0 80 160 320 Meters

0 80 160 320 Yards

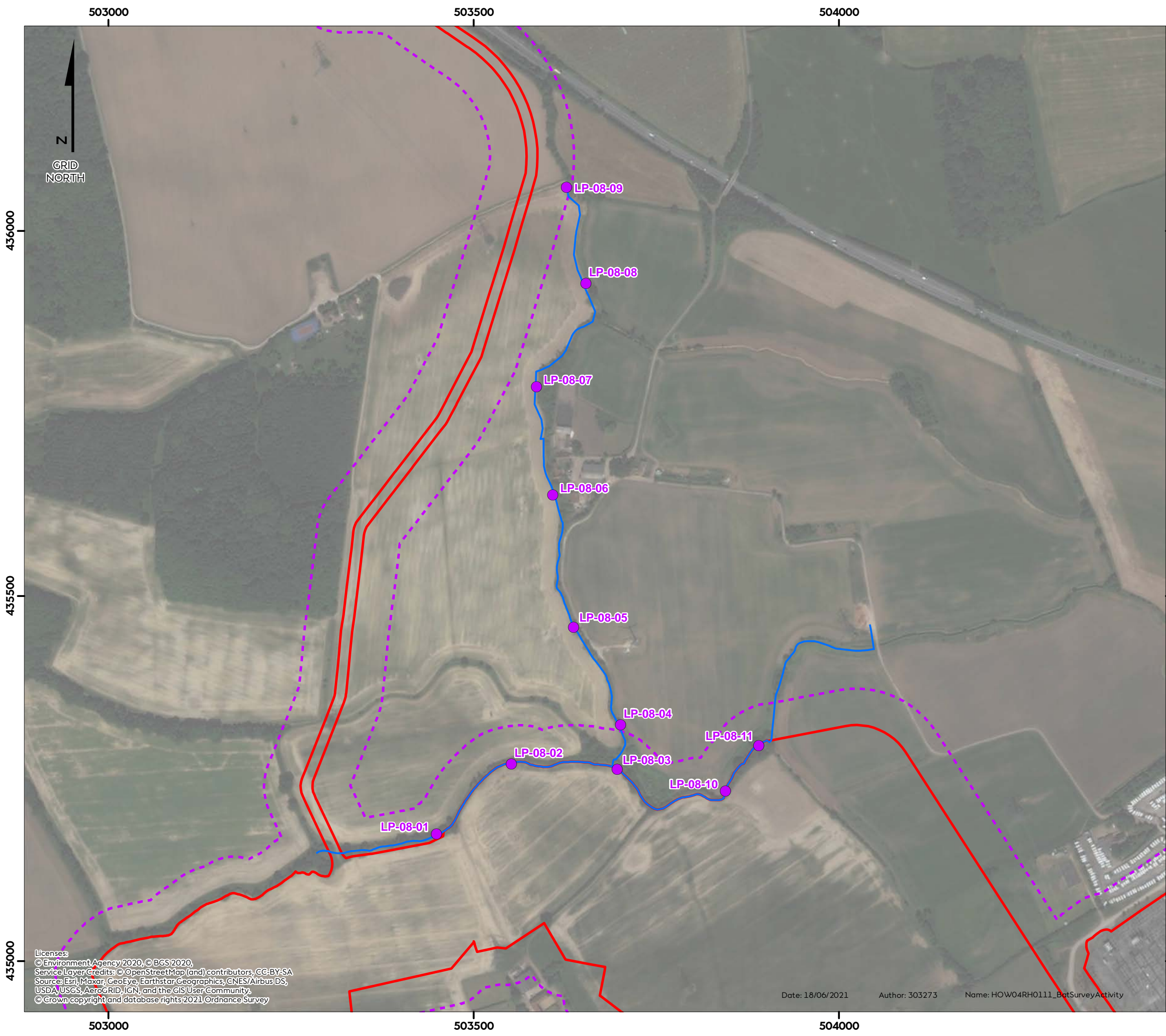
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 Document no: HOW04RH0111
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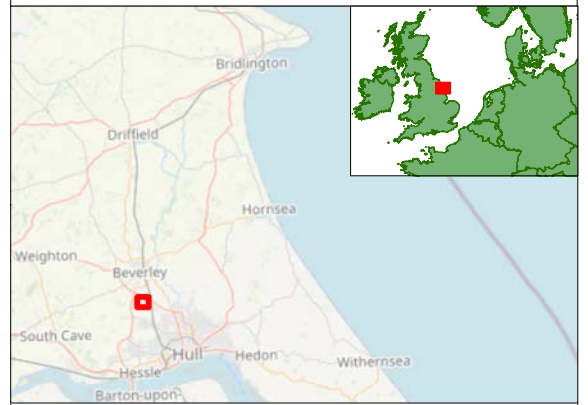
Hornsea Four

Figure 10

Bat Activity Transect: 8

- Sheet 9 of 10

- Order Limits
- Bat Survey Area
- Bat Listening Point
- Transect



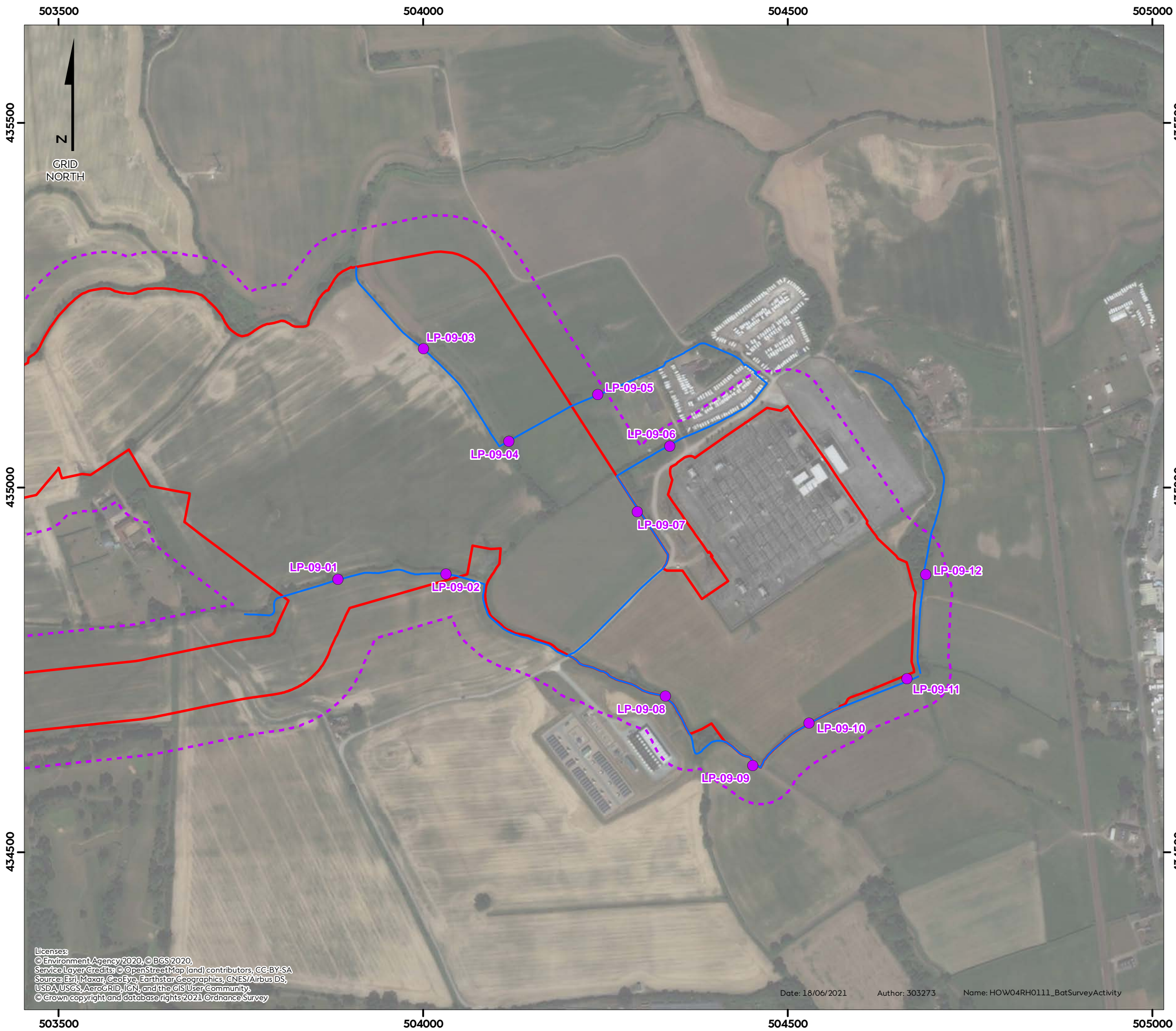
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	First Issue for DCO	18/06/2021

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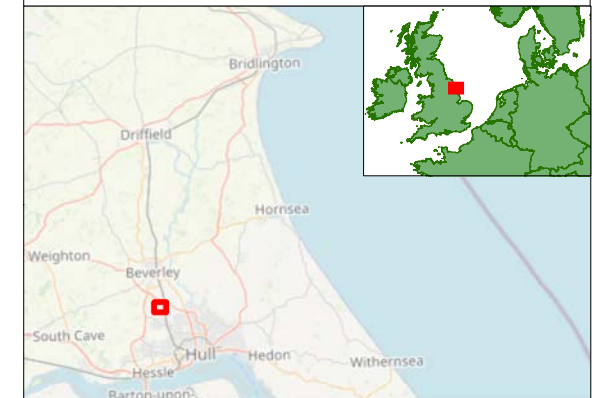


Hornsea Four

Figure 11

Bat Activity Transect: 9
- Sheet 10 of 10

- Order Limits
- Bat Survey Area
- Bat Listening Point
- Transect



Coordinate system: British National Grid

Scale@A3: 1:5,000

0 50 100 200 Meters

0 50 100 200 Yards

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Title: Bat Activity
Document no: HOW04RH0111
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Date: 18/06/2021

Author: 303273

Name: HOW04RH0111_BatSurveyActivity

4 Results

- 4.1.1.1 Full survey results and habitat descriptions for each transect is presented in [Annex 3.11: Bat Activity Transect Survey Report Part B](#).
- 4.1.1.2 Information on the habitat descriptions provided in [Table 3](#) is drawn on the findings from the updated Extended Phase 1 Habitat Survey. Further information on these habitats is provided in [Annex 3.1: Extended Phase 1 Habitat Survey Report](#) and [Annex 3.2: Extended Phase 1 Target Note Tables](#).
- 4.1.1.3 [Table 3](#) summarises the species and activity recorded within each activity transect across the Hornsea Four bat activity transect survey period, and should be read in conjunction with [Figure 2](#) to [Figure 11](#).

Table 3: Summary of the Hornsea Four bat activity transect survey effort (see **Figure 2 - Figure 11** for the Transects).

Transect	Habitat suitability	Species present	Key habitats / features and activity summary
Transect 1a	Moderate	Common pipistrelle <i>Pipistrellus pipistrellus</i> , Nathusias pipistrelle <i>Pipistrellus nathusii</i>	Transect largely consists of open arable spaces bound by hedgerows and watercourses. Bat activity was concentrated along hedgerows and within scrub vegetation to the south of the transect.
Transect 1b	Moderate	Common pipistrelle, Soprano pipistrelle <i>Pipistrellus pygmaeus</i> , Nathusias pipistrelle and Noctule <i>Nyctalus noctula</i>	Transect similar to transect 1a, with the addition of small wooded copses. Activity again largely concentrated along the north/south and east/west running hedgerows and along the edges of the woodlands.
Transect 2	Moderate	Common pipistrelle, Soprano pipistrelle, Daubenton <i>Myotis daubentonii</i> and Brown long eared <i>Plecotus auritus</i>	Activity concentrated around hedgerows along the north/south running road and along Barmston Main Drain, as well as in and around the farm buildings to the north of the transect. Bats also recorded utilising the hedgerows to the west of the transect.
Transect 3	Moderate	Common pipistrelle, Noctule and Daubenton	Majority of the activity recorded was along hedgerows associated with watercourses within this transect, as well as hedgerows along the main drive to Carr House Farm.
Transect 4	Moderate	Common pipistrelle, Soprano pipistrelle and Brown long eared	Activity concentrated along woodland edges to the west of the transect. Bats also recorded utilising hedgerows throughout the survey area and along the access road to the west.
Transect 5	Moderate	Common pipistrelle, Soprano pipistrelle, Nathusias' pipistrelle, Noctule, <i>Myotis spp.</i> ,	Activity concentrated along Bealey's Beck and adjacent woodland/hedgerow network. Limited activity recorded within northern section of transect due to presence of mostly defunct hedgerows.
Transect 6	Moderate	Common pipistrelle and Nathusias pipistrelle	Activity recorded throughout, along all hedgerows within this transect.
Transect 7	Moderate	Common pipistrelle	Activity recorded throughout the hedgerows within this transect, especially to the north along Jillywood Lane Local Wildlife Site and hedgerows bordering Cottingham Golf Course to the south.
Transect 8	Moderate	Common pipistrelle, Noctule, <i>Myotis spp.</i> , Soprano pipistrelle,	The majority of the activity within this transect was recorded along the Public Right of Way (PRoW) to the south.
Transect 9	Moderate	Common pipistrelle, Noctule, Nathusias pipistrelle	Activity recorded throughout the transect, including hedgerows to the west, north and east as well as within areas of scrub and arable field margins.

- 4.1.1.4 A total of six different species of bats were recorded throughout the Hornsea Four bat activity transect survey area, of which the most frequently recorded species was the Common pipistrelle. This species of bat was observed in all transects across the survey period and was noted to be commuting and foraging throughout suitable habitats (e.g. hedgerows, woodland edges). In addition, some social calls were also recorded (**transect 1a** and **transect 8**).
- 4.1.1.5 Nathusias' pipistrelle, a relatively infrequently recorded bat in East Yorkshire, was found to be present at a total of five transects across the survey period (**transect 1a, transect 1b, transect 5, transect 6** and **transect 9**). Activity recorded during the survey consisted of both commuting and foraging.
- 4.1.1.6 Noctule was recorded at five transects across the survey period (**transect 1b, transect 3, transect 5, transect 8** and **transect 9**).
- 4.1.1.7 Soprano pipistrelle was recorded at four transects across the survey period (**transect 1b, transect 2, transect 4** and **transect 5**). As per observations on previously mentioned bat species, Soprano pipistrelle were recorded both commuting and foraging throughout suitable habitats.
- 4.1.1.8 Less commonly observed during the survey period were bats from the *Myotis spp.*, such as Daubenton's, which was recorded at four transects (**transect 2, transect 3, transect 5** and **transect 8**). These aforementioned transects all included suitable bodies of open water where these species are known to prefer to hunt.
- 4.1.1.9 Furthermore, Brown long eared bats were recorded, albeit in fewer numbers, at two transects (**transect 2** and **transect 4**). These bats have been in decline within the UK in recent years and, alongside the Soprano pipistrelle, and noctule, are noted as a species of principal importance (NERC 2006).
- 4.1.1.10 A full description of the habitats found within each activity transect is presented in [Annex 3.11: Bat Activity Transect Survey Report Part B](#).

5 Summary and Conclusion

- 5.1.1.1 The most frequently observed species of bat recorded during the Hornsea Four bat activity transect survey effort was Common pipistrelle, this species was observed at all 10 activity transects.
- 5.1.1.2 Recorded in lower numbers were Brown long eared bats, Nathusias' pipistrelle and noctule. These are all species of principal importance (NERC 2006). They were observed at the following transects:
- Brown long eared – **transect 2** and **transect 4**;
 - Nathusias' pipistrelle – **transect 1a, transect 1b, transect 5, transect 6** and **transect 9**;

- Noctule – **transect 1b, transect 5, transect 8 and transect 9.**

5.1.1.3 With regard to the inclement weather that was experienced during some of the survey visits, (as described in [Paragraph 3.3.1.3](#)), although potentially fewer numbers of each particular species were recorded, a diverse range of bat species were found.

5.1.1.4 Additionally, further survey effort will ensure that any changes in the baseline conditions are recorded and allow any updates to the proposed mitigation. The results of the 2019 survey effort therefore provide a robust evidence base to inform the impact assessment presented in [Volume A3, Chapter 3: Ecology and Nature Conservation](#) of the Hornsea Four ES.

5.1.1.5 Mitigation measures relating to foraging/commuting bats that will be adhered to, associated with the onshore aspects of Hornsea Four, as agreed with stakeholders through the onshore Evidence Plan Technical Panel meeting process (ON-ECO-3.15), are presented in [Volume F2, Chapter 3: Outline Ecological Management Plan](#).

6 References

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