



# Hornsea Project Four: Environmental Statement (ES)

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## Volume A6, Annex 3.11 – Bat Activity Transect Survey Report Part B

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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

Term	Definition
	construction works, including the offshore and onshore ECC, intertidal working area and landfall compound. Where the offshore cables come ashore east of Fraisthorpe.
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
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
ECC	Export cable corridor
EECW	Environmental and Ecological Clerk of Works
EIA	Environmental Impact Assessment
EP1HS	Extended Phase 1 Habitat Survey
EPS	European Protected Species
ERYC	East Riding Yorkshire Council
ES	Environmental Statement
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

Acronym	Definition
MHWS	Mean High Water Spring
NE	Natural England
NERC	Natural Environment and Rural Communities
NEYEDC	North and East Yorkshire Ecological Data Centre
NET	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
km	kilometre
m	metre

## 1 Introduction

### 1.1 Project background

- 1.1.1.1 Orsted Hornsea Project Four Limited (the 'Applicant') is proposing to develop the 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 onshore Hornsea Four Order Limits (i.e. the landfall, onshore export cable corridor (ECC), the OnSS, 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 technical report has been split into two parts:
- [Annex 3.10: Bat Activity Transect Survey Report Part A](#) – outlines the methodology, survey results, conclusions and mitigations; and
  - [Annex 3.11: Bat Activity Transect Survey Report Part B](#) (this document) – 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 these bat survey reports require consideration.

## 2 Bat Activity Transect Survey Results

- 2.1.1.1 [Table 1](#) presents the full survey dates for the Hornsea Four bat activity transect survey and indicates any instances of inclement weather that was experienced. Please refer to Figure 2 to Figure 11 in [Annex 3.10: Bat Activity Transect Survey Report Part A](#), for the location of all transects presented in this report.



**Table 1: 2019 Hornsea Four bat activity transect survey dates.**

Activity transect	Survey Visit					
	May 2019	June 2019	July 2019	August 2019	September 2019	October 2019
Transect 1a	No survey - Inclement weather	26 June 2019	25 July 2019	21 August 2019	19 September 2019	10 October 2019
Transect 1b	No survey - Inclement weather	25 June 2019	25 July 2019	22 August 2019	19 September 2019	10 October 2019
Transect 2	23 May 2019	No survey - Inclement weather	24 July 2019	22 August 2019	18 September 2019	7 October 2019
Transect 3	23 May 2019	25 June 2019	23 July 2019	20 August 2019	18 September 2019	9 October 2019
Transect 4	No survey – No access	No survey – No access	24 July 2019	21 August 2019	17 September 2019	9 October 2019
Transect 5	22 May 2019	27 June 2019	23 July 2019	20 August 2019	17 September 2019	8 October 2019
Transect 6	21 May 2019	27 June 2019	23 July 2019	20 August 2019	17 September 2019	8 October 2019
Transect 7	20 May 2019	24 June 2019	22 July 2019	19 August 2019	16 August 2019	7 October 2019
Transect 8	20 May 2019	24 June 2019	22 July 2019	19 August 2019	16 September 2019	8 October 2019
Transect 9	No survey - Inclement weather	24 June 2019	22 July 2019	19 August 2019	18 September 2019	7 October 2019

### 3 Feature Descriptions

3.1.1.1 A brief description of the habitats noted to be within each activity transect is provided within [Table 2](#). Please refer to [Annex 3.8: Bat Static Detector Survey Report Part A](#) and [Annex 3.9: Bat Static Detector Survey Report Part B](#) for further information on specific static detectors.

**Table 2: Habitat descriptions for each activity transect location.**

Activity transect reference	Description of habitat	Static detector deployed
Transect 1a	Transect consisted of arable fields, hedgerows and a watercourse. Wide field margins and some areas of set aside consisting of a wildflower mix were also present.	No
Transect 1b	Transect consisted of similar habitat mix as transect 1a, with the addition of small, isolated wooded copses.	Yes – Static_01
Transect 2	Transect consisted of an area of grassland, hedgerows, arable fields and a road, incorporating Barmston Main Drain to the south.	Yes – Static_05 and Static_06
Transect 3	Transect consisted of hedgerows, arable fields, an area of grassland with grazing horses, incorporating Foston Beck and White Dyke main drains.	Yes – Static_07 and Static_08
Transect 4	Transect consisted of a small woodland, arable fields and hedgerows. Due to a lack of landowner access, no survey was undertaken within transect 4 during May and June 2019. Surveys were completed within this transect between July and October 2019 (inclusive).	Yes – Static_09
Transect 5	Transect consisted of a mix of woodland, arable fields and hedgerows, incorporating Bryan Mills Beck and Bealey's Beck.	Yes – Static_16 and Static_17
Transect 6	Transect consisted of woodland edges, hedgerows and arable fields, incorporating the Moor Lane Local Wildlife Site (LWS)	Yes – Static_23 and Static_25
Transect 7	Transect consisted of woodland edges, hedgerows and arable fields, incorporating Jillywood lane LWS.	Yes – Static_26 and Static_29
Transect 8	Transect consisted of standalone trees, hedgerows and arable fields.	Yes – Static_29, Static_30 and Static_35
Transect 9	Transect consisted of arable fields, hedgerows and large areas of scrub vegetation, including a Public Right of Way (PRoW) situated to the north of the Hornsea Four OnSS. This transect also included the areas surrounding the existing National Grid Electricity Transmission (NGET) Substation at Cottingham.	Yes – Static_36

## 4 Activity Transect Survey Results

4.1.1.1 The following sections include the full survey proformas for each survey undertaken throughout the Hornsea Four bat activity transect survey effort. As described within [Annex 3.10: Bat Activity Transect Survey Report Part A](#), the following information was recorded by surveyors during each month's survey; number of bats, flight direction (if seen) and behaviour (i.e. feeding and/or commuting) and is presented in [Table 3](#) to [Table 50](#). These tables should be read in conjunction with the figures contained in [Annex 3.10: Bat Activity Transect Survey Report Part A](#) which show each transect route and their Listening Points (LPs).

4.1.1.2 It should be noted that only listening points where bat activity was recorded during the survey are listed within [Table 3](#) to [Table 50](#).

4.1.1.3 All transects were subject to one walked activity survey per month, weather permitting and as indicated [Table 1](#), in line with standard industry guidance (Collins 2016). Furthermore, the surveys undertaken in September 2019 consisted of one dusk survey and one dawn survey within a single 24-hour period.

## 4.2 Transect 1a Results

4.2.1.1 No survey was undertaken during May 2019 due to inclement weather conditions (strong winds and persistent rain) (see [Table 1](#)).

**Table 3: June 2019 survey results for transect 1a.**

Location	Species	Time	Activity
LP-1a-02	Common pipistrelle <i>Pipistrellus pipistrellus</i>	22:25	Commuting
LP-1a-03	Common pipistrelle	23:00	Foraging
LP-1a-04	Common pipistrelle	23:03	Foraging
LP-1a-05	Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	23.22	Commuting
LP-1a-06	Common pipistrelle	23.24	Social call - commuting

**Table 4: July 2019 survey results for transect 1a.**

Location	Species	Time	Activity
LP-1a-04	Common pipistrelle	21.56	1 pass, commuting
LP-1a-06	Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	22.06	Heard not seen

4.2.1.2 No bat activity was recorded during the August 2019 survey.

4.2.1.3 No bat activity was recorded during both the dusk and dawn surveys undertaken in September 2019.

4.2.1.4 No bat activity was recorded during the October 2019 survey.

## 4.3 Transect 1b Results

4.3.1.1 No survey was undertaken during May 2019 due to inclement weather conditions (strong winds and persistent rain) (see [Table 1](#)).

**Table 5: June 2019 survey results for transect 1b.**

Location	Species	Time	Activity
LP-1b-01	Common pipistrelle	22:48	Multiple passes foraging.
LP-1b-01	Soprano pipistrelle	22:48	Multiple passes foraging.

Location	Species	Time	Activity
LP-1b-02	Common pipistrelle	22:55	Multiple passes foraging (flying overhead).
LP-1b-02	Soprano pipistrelle	22:55	Multiple passes foraging.
LP-1b-03	Nathusius pipistrelle	22:57	Multiple passes foraging.
LP-1b-04	Common pipistrelle	23:09	3 passes foraging.
LP-1b-05	Soprano pipistrelle	23:11	11 passes foraging.
LP-1b-06	Common pipistrelle	23:14	4 passes foraging.

**Table 6: July 2019 survey results for transect 1b.**

Location	Species	Time	Activity
LP-1b-02	Common pipistrelle	21:55	Foraging along hedgerow.
LP-1b-04	Nathusius pipistrelle	22:17	Not seen.
LP-1b-04	Common pipistrelle	22:18	Foraging in field margin on hedgerow.
LP-1b-06	<i>Myotis spp.</i>	22:34	Not seen.

**Table 7: August 2019 survey results for transect 1b.**

Location	Species	Time	Activity
LP-1b-02	Noctule <i>Nyctalus noctula</i> Common pipistrelle	21.12	Both bats heard but not seen
LP-1b-03	Common pipistrelle	21.25	Heard not seen

4.3.1.2 No bat activity was recorded during both the dusk and dawn surveys undertaken in September 2019.

4.3.1.3 No bat activity was recorded during the survey undertaken in October 2019.

#### 4.4 Transect 2 Results

**Table 8: May 2019 survey results for transect 2.**

Location	Species	Time	Activity
LP-2-09	Common pipistrelle	20.53	6 passes, foraging
LP-2-08	Common pipistrelle	21.09	4 passes, commuting
LP-2-07	Common pipistrelle	21.14	8 passes, commuting
LP-2-06	Common pipistrelle	21.22	4 passes, foraging
LP-2-09	Common pipistrelle	21.47	11 passes, foraging
LP-2-10	Common pipistrelle	22.02	6 passes, foraging

4.4.1.1 No survey was undertaken in June due to inclement weather (heavy rain and strong wind) (see [Table 1](#)).

**Table 9: July 2019 survey results for transect 2.**

Location	Species	Time	Activity
LP-2-09	Noctule	21:20	Not seen.
LP-2-08	Common pipistrelle	21:43	Not seen.
LP-2-07	Common pipistrelle	22:09	Foraging in tress by bridge.
LP-2-06	Common pipistrelle	22:13	Foraging along road. 2 passes.
LP-2-09	<i>Myotis spp.</i>	22:24	Not seen.
LP-2-10	Common pipistrelle	22:33	Foraging along road.
LP-2-09	Common pipistrelle	22:36	As before.

**Table 10: August 2019 survey results for transect 2.**

Location	Species	Time	Activity
LP-2-09	Common pipistrelle	21.34	Commuting
LP-2-08	Soprano pipistrelle	21.45	Heard not seen
LP-2-07	Common pipistrelle	21.48	Heard not seen
LP-2-08	Daubenton's <i>Myotis daubentonii</i>	21.54	Commuting along Barmston Main Drain
LP-2-09	Common pipistrelle	22.04	Multiple passes, foraging

**Table 11: September 2019 survey results for transect 2 (dusk).**

Location	Species	Time	Activity
LP-2-06	Common pipistrelle	19.50	Commuting
	Soprano pipistrelle	19.53	Heard not seen
LP-2-05	Common pipistrelle	20.32	Heard not seen
	Daubenton's	23.36	Commuting along Barmston Main Drain
LP-2-07	Common pipistrelle	20.45	Multiple passes, foraging

4.4.1.2 No activity was recorded during the dawn survey undertaken in September 2019

**Table 12: October 2019 survey results for transect 2.**

Location	Species	Time	Activity
LP-2-09	Soprano pipistrelle	18.51	Heard not seen
	Common pipistrelle	18.53	Foraging, heard not seen
LP-2-08	Brown long eared <i>Plecotus auritus</i>	18.57	Heard not seen
LP-2-07	Common pipistrelle	19.12	Heard not seen
LP-2-04	Common pipistrelle	19.15	Heard not seen
LP-2-07	Common pipistrelle	19.26	Heard not seen
	Common pipistrelle	19.45	Heard not seen

## 4.5 Transect 3 Results

**Table 13: May 2019 survey results for transect 3.**

Location	Species	Time	Activity
LP-3-01	Common pipistrelle	22.11	1 pass, commuting
LP-3-02	Daubenton's	22.22	1 pass, commuting
LP-3-07	Common pipistrelle	22.28	1 pass, commuting
LP-3-03	Daubenton's	22.35	1 pass commuting

**Table 14: June 2019 survey results for transect 3.**

Location	Species	Time	Activity
LP-3-02	Noctule	21.41	Unseen
	Noctule	21.44	Unseen
LP-3-01	Common pipistrelle	22.15	Unseen

**Table 15: July 2019 survey results for transect 3.**

Location	Species	Time	Activity
LP-3-02	Noctule	21.39	3 passes, foraging
LP-3-03	Common pipistrelle	22.14	2 passes, commuting

**Table 16: August 2019 survey results for transect 3.**

Location	Species	Time	Activity
LP-3-02	Noctule	20.54	Heard not seen
LP-3-01	Common pipistrelle	20.58	3 passes
LP-3-03	Noctule	21.27	Heard not seen

**Table 17: September 2019 survey results for transect 3 (dusk).**

Location	Species	Time	Activity
LP-3-01	Noctule	19:36	Commuting
LP-3-02	Common pipistrelle	19:45	Heard not seen
LP-3-07	Common pipistrelle	19:53	Heard not seen
LP-3-03	<i>Myotis spp.</i>	20.01	Heard not seen
LP-3-01	Common pipistrelle	20:11	Heard not seen
LP-3-02	Noctule	20:13	Heard not seen
LP-3-07	Common pipistrelle	20:15	Heard not seen

4.5.1.1 No activity was recorded during the dawn survey undertaken in September 2019.

**Table 18: October 2019 survey results for transect 3.**

Location	Species	Time	Activity
LP-3-01	Common pipistrelle	18.56	Multiple passes, foraging
LP-3-02	<i>Myotis spp.</i>	19.23	Multiple passes, foraging
LP-3-07	Common pipistrelle	19.25	1 pass, commuting
LP-3-03	Noctule	19.43	3 passes, foraging
LP-3-01	Common pipistrelle	19.44	1 pass, commuting

## 4.6 Transect 4 Results

4.6.1.1 No survey was undertaken in May 2019 due to a lack of landowner access agreements.

4.6.1.2 No survey was undertaken in June 2019 due to a lack of landowner access agreements.

**Table 19: July 2019 survey results for transect 4.**

Location	Species	Time	Activity
LP-4-01	Common pipistrelle	21.04	Multiple passes, foraging
LP-4-02	Common pipistrelle	21.08	Heard not seen
LP-4-03	Brown long eared	21.34	1 pass, commuting
LP-4-04	Common pipistrelle	21.45	Heard not seen
	Common pipistrelle	21.56	Heard not seen

**Table 20: August 2019 survey results for transect 4.**

Location	Species	Time	Activity
LP-4-01	Common pipistrelle	21.00	3 passes, foraging along woodland edges
LP-4-02	Common pipistrelle	21.18	1 pass, foraging above pond
LP-4-03	Brown long eared	21.42	Heard not seen
LP-4-04	Common pipistrelle	21.55	Heard not seen
LP-4-03	Common pipistrelle	22.07	Heard not seen
LP-4-02	Common pipistrelle	22.14	Heard not seen

**Table 21: September 2019 survey results for transect 4 (dusk).**

Location	Species	Time	Activity
LP-4-01	Common pipistrelle	20.56	1 pass, commuting
LP-4-02	Soprano pipistrelle	21.12	Heard not seen
LP-4-04	Common pipistrelle	21.34	Heard not seen
LP-4-03	Common pipistrelle	21.46	Heard not seen
LP-4-02	Common pipistrelle	22.01	Heard not seen

4.6.1.3 No activity was recorded during the dawn survey undertaken in September 2019

**Table 22: October 2019 survey results for transect 4.**

Location	Species	Time	Activity
LP-4-01	Soprano pipistrelle	18.55	Unseen

## 4.7 Transect 5 Results

**Table 23: May 2019 survey results for transect 5.**

Location	Species	Time	Activity
LP-5-08	<i>Myotis spp</i>	22:03	Foraging x 3 passes
LP-5-07	Common pipistrelle	22:14	Foraging x 1 pass
LP-5-07	Soprano pipistrelle	22:16	Foraging x 1 pass
LP-5-07	Common pipistrelle	22:17	Foraging x 1 pass
LP-5-08	Nathusias pipistrelle	22:20	Foraging x 1 pass
LP-5-08	<i>Myotis sp</i>	22:20	Foraging x 2 passes
LP-5-08	Daubenton's	22:22	Foraging x 1 pass
LP-5-08	Common pipistrelle	22:23	Foraging x 2 passes
LP-5-08	Common pipistrelle	22:25	Foraging x 3 passes
LP-5-08	Noctule	22:25	Foraging x 1 pass
LP-5-08	<i>Myotis spp</i>	22:28	Foraging x 1 pass
LP-5-07	Common pipistrelle	22:30	Foraging x 1 pass
LP-5-07	Daubenton	22:30	Foraging x 2 passes
LP-5-05	Soprano pipistrelle	22:35	Foraging x 1 pass
LP-5-08	Daubenton's	22:40	Foraging x 1 pass
LP-5-08	Daubenton's	22:46	Foraging x 1 pass
LP-5-09	Common pipistrelle	22:54	Foraging x 2 passes
LP-5-09	Common pipistrelle	22:58	Foraging x 1 pass

**Table 24: June 2019 survey results for transect 5.**

Location	Species	Time	Activity
LP-5-07	Noctule	22.22	Unseen
LP-5-09	Soprano pipistrelle	22.43	1 pass, commuting

**Table 25: July 2019 survey results for transect 5.**

Location	Species	Time	Activity
LP-5-08	Soprano pipistrelle	21.59	Commuting along track
LP-5-07	Common pipistrelle	22.06	Commuting along woodland edge
LP-5-09	Common pipistrelle	22.42	Foraging and commuting along hedgerow



**Table 26: August 2019 survey results for transect 5.**

Location	Species	Time	Activity
LP-5-08	Soprano pipistrelle	20.51	Commuting
LP-5-07	Common pipistrelle	21.03	Foraging
LP-5-09	Common pipistrelle	21.15	Commuting
	Common pipistrelle	21.17	Commuting
LP-5-04	Common pipistrelle	21.23	Commuting
	Common pipistrelle	21.25	Commuting
	Common pipistrelle	21.28	Commuting
LP-5-06	Common pipistrelle	21.48	Foraging
	Common pipistrelle	21.50	Commuting
LP-5-07	Common pipistrelle	21.55	Foraging
	Common pipistrelle	22.05	Commuting

**Table 27: September 2019 survey results for transect 5 (dusk).**

Location	Species	Time	Activity
LP-5-03	Common pipistrelle	19.47	Foraging, heard not seen
	Noctule	19.48	Foraging, heard not seen
	Common pipistrelle	19.48	Foraging, heard not seen
LP-5-07	Common pipistrelle	19.50	Foraging, numerous passes within woodland bordering Bealey's Beck
	Soprano pipistrelle	19.55	Foraging
LP-5-08	Common pipistrelle	20.15	2 passes, foraging
LP-5-09	Noctule	20.45	1 pass, foraging

4.7.1.1 No activity was recorded during the dawn survey undertaken in September 2019.

**Table 28: October 2019 survey results for transect 5.**

Location	Species	Time	Activity
LP-5-07	Soprano pipistrelle	18.55	Foraging
LP-5-08	Soprano pipistrelle	19.03	Foraging
LP-5-09	Common pipistrelle	19.13	Heard not seen
	Common pipistrelle	19.15	Heard not seen
LP-5-10	Common pipistrelle	19.20	Heard not seen
	Noctule	19.22	Heard not seen
LP-5-08	<i>Myotis spp</i>	19.32	Heard not seen
LP-5-07	Soprano pipistrelle	19.44	Foraging

## 4.8 Transect 6 Results

**Table 29: May 2019 survey results for transect 6.**

Location	Species	Time	Activity
LP-6-14	Common pipistrelle	21:45	Foraging x3
	Common pipistrelle	21:49	Foraging – 1x1 pass; 1x2 passes
LP-6-12	Common pipistrelle	21:53	Foraging x 5 passes
LP-6-11	Common pipistrelle	21:57	Foraging x 2 passes
LP-6-10	Common pipistrelle	22:02	Feeding x 4 passes
LP-6-09	Common pipistrelle	22:08	Foraging x 3 passes
	Common pipistrelle	22:09	2 x passes foraging
LP-6-08	Common pipistrelle	22:14	5 x passes foraging
	Common pipistrelle	22:15	3 x passes foraging along hedgerow
LP-6-06	Common pipistrelle	22:18	2 x passes foraging
	Common pipistrelle	22:19	8 x passes foraging & 4 on return
LP-6-05	Common pipistrelle	22:37	4 x passes foraging
LP-6-04	Common pipistrelle	22:45	Foraging x 2 passes
LP-6-02	Common pipistrelle	23:03	Foraging x 6 passes (potentially passes of Soprano pip)
LP-6-01	Common pipistrelle	23:09	Foraging x 2 passes
LP-6-03	Common pipistrelle	23:13	1 x pass foraging

**Table 30: June 2019 survey results for transect 6.**

Location	Species	Time	Activity
LP-06-13	Common pipistrelle	22.22	4 passes, foraging
LP-06-11	Common pipistrelle	22.44	1 pass, commuting
LP-06-05	Nathusias pipistrelle	23.22	2 passes, commuting

**Table 31: July 2019 survey results for transect 6.**

Location	Species	Time	Activity
LP-6-14	Common pipistrelle	21:30	Heard not seen
	Noctule	21:37	Heard not seen
LP-6-12	Noctule	21:39	Heard not seen
LP-6-11	Common pipistrelle	21:59	Commuting along hedgerow.
LP-6-10	Common pipistrelle	22:03	Commuting along hedgerow.
LP-6-09	Noctule	22:04	Heard not seen
	Common pipistrelle	22:06	Heard not seen
LP-6-08	Noctule	22:08	Heard not seen
	Common pipistrelle	22:10	Heard not seen
LP-6-06	Noctule	22:11	Heard not seen
	Noctule	22:19	Heard not seen

Location	Species	Time	Activity
LP-6-05	Common pipistrelle	22:19	Heard not seen
LP-6-04	Common pipistrelle	22:33	Heard not seen
LP-6-02	Common pipistrelle	22:37	Heard not seen
LP-6-01	Common pipistrelle	22:39	Foraging along hedgerow.
LP-6-03	Noctule	22:45	Heard not seen
	Common pipistrelle	22:48	Heard not seen

**Table 32: August 2019 survey results for transect 6.**

Location	Species	Time	Activity
LP-6-14	Common pipistrelle	20:46	Commuting along hedgerow

**Table 33: September 2019 survey results for transect 6 (dusk)**

Location	Species	Time	Activity
LP-6-13	Common pipistrelle	19:55	Heard not seen
LP-6-09	Common pipistrelle	20:18	Heard not seen

4.8.1.1 No activity was recorded during the dawn survey undertaken in September 2019.

4.8.1.2 No activity was recorded during the survey undertaken in October 2019.

## 4.9 Transect 7 Results

**Table 34: May 2019 survey results for transect 7.**

Location	Species	Time	Activity
LP-7-01	Common pipistrelle	21:14	2 passes, commuting along hedgerow
LP-7-02	Common pipistrelle	21:26	3 passes, commuting and foraging
LP-7-03	Common pipistrelle	21:37	Foraging along and around tree
LP-7-04	Common pipistrelle	21:43	Foraging along hedgerow
LP-7-05	Common pipistrelle	22:02	Heard not seen
LP-7-06	Common pipistrelle	21:10	Foraging along hedgerow
LP-7-11	Common pipistrelle	22:46	Heard not seen

**Table 35: June 2019 survey results for transect 7.**

Location	Species	Time	Activity
LP-7-01	Common pipistrelle	21:34	Multiple passes, commuting along hedgerow
LP-7-02	Common pipistrelle	21:45	1 pass, commuting
LP-7-03	Common pipistrelle	22:07	Multiple passes, foraging
LP-7-04	Common pipistrelle	22:13	2 passes, foraging
LP-7-05	Common pipistrelle	22:15	1 pass, commuting

Location	Species	Time	Activity
LP-7-06	Common pipistrelle	22.34	Heard not seen
LP-7-11	Common pipistrelle	22.36	Heard not seen
LP-7-01	Common pipistrelle	22.56	Heard not seen

**Table 36: July 2019 survey results for transect 7.**

Location	Species	Time	Activity
LP-7-01	Common pipistrelle	22.03	2 passes, heard not seen
LP-7-02	Common pipistrelle	22.23	2 passes, heard not seen
LP-7-03	Common pipistrelle	22.34	1 pass, heard not seen
LP-7-04	Common pipistrelle	22.43	1 pass, heard not seen
LP-7-05	Common pipistrelle	23.01	1 pass, heard not seen

**Table 37: August 2019 survey results for transect 7.**

Location	Species	Time	Activity
LP-7-01	Common pipistrelle	21.56	Heard not seen
LP-7-02	Common pipistrelle	22.03	Multiple passes, foraging, heard not seen
LP-7-03	Common pipistrelle	22.24	Heard not seen
LP-7-04	Common pipistrelle	22.35	1 pass, commuting

**Table 38: September 2019 survey results for transect 7 (dusk)**

Location	Species	Time	Activity
LP-7-01	Common pipistrelle	19.50	Heard not seen
LP-7-02	Common pipistrelle	20.04	Heard not seen
	Common pipistrelle	20.08	Heard not seen
LP-7-04	Common pipistrelle	20.29	Heard not seen
LP-7-05	Common pipistrelle	20.39	Heard not seen

4.9.1.1 No activity was recorded during the dawn survey undertaken in September 2019.

**Table 39: October 2019 survey results for transect 7.**

Location	Species	Time	Activity
LP-7-01	Common pipistrelle	18.39	Heard not seen
LP-7-06	Common pipistrelle	18.50	Foraging above piles of waste in corner of field adjacent to Cottingham Golf Course
LP-7-09	Common pipistrelle	18.55	Foraging along hedgerow
LP-7-10	Common pipistrelle	19.09	Foraging
LP-7-11	Common pipistrelle	19.34	Heard not seen
LP-7-12	Common pipistrelle	19.57	Heard not seen

## 4.10 Transect 8 Results

**Table 40: May 2019 survey results for transect 8.**

Location	Species	Time	Activity
LP-8-01	Common pipistrelle	21:42	1 pass, heard not seen
	Common pipistrelle	21:45	4 passes, foraging along hedgerow
LP-8-02	Common pipistrelle	21:49	1 pass, foraging
LP-8-03	Common pipistrelle	21:52	1 pass, foraging
	Common pipistrelle	21:55	6 passes, foraging
LP-8-10	Common pipistrelle	22:00	8 passes, foraging
	Common pipistrelle	22:03	5 passes, foraging
LP-8-11	Common pipistrelle	22:08	3 passes, heard not seen
	Common pipistrelle	22:11	Multiple passes, foraging, heard not seen
LP-8-10	Common pipistrelle	22:18	1 pass, foraging
	Common pipistrelle	22:21	10 passes, foraging and social calls
	Common pipistrelle	22:23	7 passes, heard not seen
LP-8-04	Common pipistrelle	22:32	1 pass, heard not seen
	Common pipistrelle	22:39	7 passes, heard not seen
LP-8-05	Common pipistrelle	22:52	2 passes, heard not seen
	Common pipistrelle	22:55	5 passes, heard not seen

**Table 41: June 2019 survey results for transect 8.**

Location	Species	Time	Activity
LP-8-01	Common pipistrelle	22.15	1 pass, commuting
	Common pipistrelle	22.19	2 passes, commuting
LP-8-02	Common pipistrelle	22.20	5 passes, foraging
LP-8-03	Common pipistrelle	22.21	3 passes, foraging
	Common pipistrelle	22.22	2 passes, foraging
LP-8-10	Noctule	22.28	1 pass, commuting
	Common pipistrelle	22.39	2 passes, commuting
LP-8-11	Common pipistrelle	22.48	1 pass, commuting
	Common pipistrelle	22.54	3 passes, foraging
LP-8-10	Common pipistrelle	22.59	1 pass, commuting

**Table 42: July 2019 survey results for transect 8.**

Location	Species	Time	Activity
LP-8-01	Common pipistrelle	22:09	2 passes
	Common pipistrelle	22:27	4 passes
LP-8-02	Common pipistrelle	22:37	2 passes
LP-8-03	Common pipistrelle	22:44	4 passes

Location	Species	Time	Activity
	Common pipistrelle	22:51	2 passes
LP-8-10	Common pipistrelle	22:57	2 passes

Table 43: August 2019 survey results for transect 8.

Location	Species	Time	Activity
LP-8-01	<i>Myotis spp</i>	20.54	Heard not seen
	Common pipistrelle	20.59	Heard not seen
LP-8-02	Common pipistrelle	21.01	Heard not seen
LP-8-03	Common pipistrelle	21.04	Heard not seen
	Common pipistrelle	21.08	Heard not seen
LP-8-10	Common pipistrelle	21.11	Heard not seen

Table 44: September 2019 survey results for transect 8 (dusk).

Location	Species	Time	Activity
LP-8-01	Common pipistrelle	19.46	3 passes, foraging along treeline
	Common pipistrelle	19.49	3 passes, foraging along field margin/scrub
LP-8-02	Soprano pipistrelle	19.55	Foraging along hedgerow
LP-8-03	<i>Myotis</i> (Brandt's)	20.01	3 passes, foraging along treeline
	Common pipistrelle	20.02	1 pass, foraging along treeline
LP-8-10	Common pipistrelle	20.09	2 passes, foraging along ditch
	Common pipistrelle	20.20	3 passes, foraging along hedgerow
LP-8-11	Common pipistrelle	20.25	3 passes, foraging along hedgerow
LP-8-04	Common pipistrelle	20.28	7 passes, foraging along hedgerow
LP-8-06	Common pipistrelle	20.32	16 passes, foraging and social calls heard from inside farm building
LP-8-05	Common pipistrelle	20.37	1 pass, foraging along hedgerow
LP-8-04	<i>Myotis spp</i>	20.53	1 pass, foraging along hedgerow
	Common pipistrelle	21.01	12 passes, foraging, heard within farm building

4.10.1.1 No activity was recorded during the dawn survey undertaken in September 2019.

Table 45: October 2019 survey results for transect 8.

Location	Species	Time	Activity
LP-8-02	Common pipistrelle	18.48	Heard not seen
	Common pipistrelle	18.49	Heard not seen
LP-8-03	Common pipistrelle	18.57	Heard not seen
LP-8-10	Noctule	19.08	Heard not seen
LP-8-11	Common pipistrelle	19.13	Heard not seen

## 4.11 Transect 9 Results

4.11.1.1 No survey was undertaken in transect 9 during May 2019 due to inclement weather conditions (strong winds and persistent rain) (see [Table 1](#)).

**Table 46: June 2019 survey results for transect 9.**

Location	Species	Time	Activity
LP-9-12	Common pipistrelle	22.01	2 passes, feeding
	Common pipistrelle	22.06	1 pass, commuting
	Common pipistrelle	22.07	3 passes, commuting
LP-9-11	Common pipistrelle	22.09	3 passes, commuting
	Common pipistrelle	22.12	1 pass, commuting
LP-9-09	Common pipistrelle	22.36	1 pass, commuting
LP-9-02	Common pipistrelle	22.44	1 pass, commuting
	Common pipistrelle	22.47	1 pass, commuting
LP-9-01	Common pipistrelle	22.50	Unseen

**Table 47: July 2019 survey results for transect 9.**

Location	Species	Time	Activity
LP-9-12	Noctule	21.35	1 pass, commuting
	Noctule	21.46	1 pass, commuting
LP-9-11	Noctule	21.53	2 passes, commuting
	Common pipistrelle	21.58	4 passes, foraging
LP-9-09	Noctule	22.07	1 pass, commuting
	Common pipistrelle	22.09	5 passes, foraging
LP-9-02	Noctule	22.15	1 pass, commuting
	Common pipistrelle	22.17	6 passes, foraging
LP-9-01	Noctule	22.22	1 pass, commuting
	Noctule	22.24	1 pass, commuting
LP-9-02	Common pipistrelle	22.32	4 passes, foraging
LP-9-07	Nathusias pipistrelle	22.47	4 passes, foraging
LP-9-06	Common pipistrelle	22.50	6 passes, foraging
LP-9-05	Common pipistrelle	23.02	8 passes, foraging

**Table 48: August 2019 survey results for transect 9.**

Location	Species	Time	Activity
LP-9-12	Common pipistrelle	21.04	Commuting
LP-9-11	Common pipistrelle	21.10	Commuting
	Common pipistrelle	21.14	Commuting
	Common pipistrelle	21.17	Foraging
LP-9-09	Common pipistrelle	21.22	Commuting

Location	Species	Time	Activity
	Common pipistrelle	21.25	Commuting
	Common pipistrelle	21.27	Commuting
LP-9-02	Common pipistrelle	21.30	Commuting
	Common pipistrelle	21.31	Foraging
	Common pipistrelle	21.32	Foraging
LP-9-01	Common pipistrelle	21.42	Foraging
LP-9-07	Common pipistrelle	21.47	Foraging

**Table 49: September 2019 survey results for transect 9 (dusk).**

Location	Species	Time	Activity
LP-9-12	Common pipistrelle	19.39	Multiple passes, foraging along woodland
LP-9-11	Common pipistrelle	19.46	1 pass, foraging
	Common pipistrelle	19.47	2 passes, foraging
	Common pipistrelle	19.52	2 passes, foraging along treeline
LP-9-09	Common pipistrelle	19.54	2 passes, foraging
	Common pipistrelle	19.57	1 pass, commuting
	Common pipistrelle	19.57	6 passes, foraging along hedgerow
LP-9-02	Common pipistrelle	20.09	1 pass, foraging
LP-9-01	Nathusius pipistrelle	20.21	1 pass, foraging
LP-9-02	Common pipistrelle	20.30	1 pass, foraging
LP-9-07	Common pipistrelle	20.51	1 pass, foraging
	Common pipistrelle	20.57	1 pass, foraging
LP-9-06	Common pipistrelle	21.00	1 pass, foraging
LP-9-05	Common pipistrelle	21.07	4 passes, foraging

4.11.1.2 No activity was recorded during the dawn survey undertaken in September 2019.

**Table 50: October 2019 survey results for transect 9.**

Location	Species	Time	Activity
LP-9-12	Common pipistrelle	18.47	2 passes, foraging within scrub
LP-9-02	Common pipistrelle	18.58	Heard not seen
LP-9-07	Common pipistrelle	19.06	Heard not seen
LP-9-05	Noctule	19.13	Commuting along hedgerow
	Common pipistrelle	19.17	Commuting along hedgerow
LP-9-04	Common pipistrelle	19.22	Heard not seen
LP-9-03	Common pipistrelle	19.33	Heard not seen
	Common pipistrelle	19.34	Heard not seen



## 5 References

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