

# **Lincolnshire Lakes, Scunthorpe**

## **Bat Transect Surveys Report**

### **Keepmoat**

**May 2023**

## Ecus Ltd

**Report to:** Keepmoat

**Report Title:** Lincolnshire Lakes, Scunthorpe  
Bat Transect Surveys Report

**Version:** V4.0

**Issue Date:** May 2023

**Report Ref:** 18552

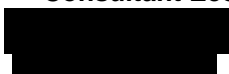
**Originated By:**



**Francesca Thorley**  
Consultant Ecologist

Date: 5<sup>th</sup> September 2022

**Reviewed By:**



**Natasha Firth**  
Senior Ecologist

Date: 13<sup>th</sup> September 2022

**Approved By:**



**Faye Durkin**  
Regional Director

Date: 20<sup>th</sup> September 2022

*Prepared by:*  
Brook Holt, 3 Blackburn Road, Sheffield, S61 2DW  
01142 669 292

Version	Author	Description	Date
V0.1	Francesca Thorley	Report drafted.	05.09.2022
V0.2	Jennie Caddick	Initial Review	06.09.2022
V0.3	Natasha Firth	Quality Assurance (QA) Check 1	13.09.2022
V0.4	Francesca Thorley	Amends following QA1	14.09.2022
V0.5	Faye Durkin	QA2	19.09.2022
V1.0	Jennie Caddick	Issue	20.09.2022
V2.0	Francesca Thorley	Update to refer to new layout	19.01.2023
V3.0	Francesca Thorley	Update to refer to new layout	18.05.2023
V4.0	Francesca Thorley	Update to refer to new layout	31.05.2023

The report and the site assessments carried out by Ecus on behalf of the client in accordance with the agreed terms of contract and/or written agreement form the agreed Services. The Services were performed by Ecus with the skill and care ordinarily exercised by a reasonable Environmental Consultant at the time the Services were performed. Further, and in particular, the Services were performed by Ecus taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between Ecus and the client.

Other than that expressly contained in the paragraph above, Ecus provides no other representation or warranty whether express or implied, in relation to the services.

This report is produced exclusively for the purposes of the client. Ecus is not aware of any interest of or reliance by any party other than the client in or on the services. Unless expressly provided in writing, Ecus does not authorise, consent or condone any party other than the client relying upon the services provided. Any reliance on the services or any part of the services by any party other than the client is made wholly at that party's own and sole risk and Ecus disclaims any liability to such parties.

This report is based on site conditions, regulatory or other legal provisions, technology or economic conditions at the time of the Service provision. These conditions can change with time and reliance on the findings of the Services under changing conditions should be reviewed.

Ecus accepts no responsibility for the accuracy of third party data used in this report.

## Contents

<b>EXECUTIVE SUMMARY</b> .....	<b>IV</b>
<b>1. INTRODUCTION</b> .....	<b>1</b>
1.1 OVERVIEW.....	1
1.2 BACKGROUND.....	1
<b>2. METHODOLOGY</b> .....	<b>2</b>
2.1 BAT TRANSECT SURVEYS.....	2
2.2 AUTOMATED/STATIC SURVEYS.....	3
2.3 SURVEY LIMITATIONS.....	3
<b>3. FINDINGS AND EVALUATION</b> .....	<b>5</b>
3.1 BAT TRANSECT SURVEYS.....	5
3.2 AUTOMATED/STATIC SURVEYS.....	5
<b>4. ASSESSMENT AND MITIGATION</b> .....	<b>7</b>
4.2 PROPOSALS.....	7
4.3 LEGISLATION.....	7
4.4 ASSESSMENT.....	8
4.5 MITIGATION AND COMPENSATION.....	9
<b>5. REFERENCES</b> .....	<b>11</b>
<b>FIGURES 1A- C. BAT TRANSECT SURVEYS: SPRING, SUMMER &amp; AUTUMN</b> .....	<b>12</b>
<b>FIGURE 2. AUTOMATED/STATIC MONITORING LOCATIONS</b> .....	<b>13</b>
<b>APPENDIX 1. STATIC MONITORING DATA</b> .....	<b>14</b>

## Executive Summary

Ecus Limited (Ltd) was commissioned in April 2022 by Keepmoat to undertake bat transect surveys at the Lincolnshire Lakes, land east of M181 and north of Burringham Road, Scunthorpe (central Ordnance Survey National Grid Reference (OSNGR) SE 86163 08625), hereafter referred to as 'the Site' (Figure 1a and 1b).

The Site is approximately 24.95 hectares (ha) and comprises mainly arable farmland with additional habitats including dense bramble scrub, tall ruderal vegetation, semi-improved grassland, a hedgerow and a single ditch (D5) which is linked to offsite ditches (D1– D4 and D6).

Ecus Ltd have previously undertaken a '*Preliminary Ecological Appraisal and Water Vole Survey*' (report ref. 17942, V5.0, May 2023), which considered the habitats on the Site to be of low suitability for foraging/commuting bats. In accord with best practice guidelines (Collins, 2016) sites which display low suitability for foraging and commuting bats should be subject to one walked bat activity transect to be carried out per season (spring, summer and autumn) accompanied by static bat detector surveys.

The proposals for the Site have been taken from Nineteen47 '*Planning Layout – Lincolnshire Lakes*' (Dwg. 008, 26<sup>th</sup> May 2023) and includes the development of 599 dwellings and lake, along with associated infrastructure, including landscaping, public open space and play area, pedestrian and cycle links, pumping station and sub-station.

Considering the proposals it is considered that the loss of habitat in addition to the increased levels of light pollution has the potential to detrimentally impact the assemblage of foraging and commuting bats recorded at up to the local level.

The boundary habitats where bat activity was recorded at its highest are set to be retained but due to the proposed development, there is a high probability under current proposals that external factors will result in a detrimental change to the characteristics of the current habitat. Areas of the site should be enhanced with open-spaced trees, native scrub and shrub mix planting and the creation of areas of wildflower grassland.

A sensitive lighting scheme should be designed by a lighting engineer and implemented within the new development. Light spill on the retained boundary features and central green corridor will need to be limited to a maximum of 3 lux as far as is practicable (Guidance Note 08/18, BCT ILP).

Should the layout and/or landscape proposals become available, impacts to foraging and commuting bats may need to be re-assessed.

The Chartered Institute of Ecology and Environmental Management (CIEEM) advise that surveys and reports between 18 months and three years old may still be valid in certain circumstances. In order to determine validity, an ecologist should be commissioned to undertake a site visit, to compare the current

---

site status with that recorded during the original survey(s). Where significant changes to the original survey conditions are identified it may be necessary to undertake some or all of the surveys again, including the desk study. There is also the possibility that surveys for 'new' species may be identified.

# 1. Introduction

## 1.1 Overview

- 1.1.1 Ecus Limited (Ltd) was commissioned in April 2022 by Keepmoat to undertake bat transect surveys at the Lincolnshire Lakes, land east of M181 and north of Burringham Road, Scunthorpe (central Ordnance Survey National Grid Reference (OSNGR) SE 86163 08625), hereafter referred to as 'the Site' (Figures 1a - 1c).
- 1.1.2 The Site is approximately 24.95 hectares (ha) and comprises mainly arable farmland with additional habitats including dense bramble scrub, tall ruderal vegetation, semi-improved grassland, a hedgerow and a single ditch (D5) which is linked to offsite ditches (D1– D4 and D6).

## 1.2 Background

- 1.2.1 Indicative proposals for the Site are displayed on the '*Planning Layout – Lincolnshire Lakes*' (Dwg. 008, 26<sup>th</sup> May 2023), produced by Nineteen47 in May 2023 and includes the development of 599 dwellings and lake, along with associated infrastructure, including landscaping, public open space and play area, pedestrian and cycle links, pumping station and sub-station.
- 1.2.2 Ecus Ltd have previously undertaken a '*Preliminary Ecological Appraisal and Water Vole Survey*' (report ref. 17942, V5.0, May 2023), which considered the habitats on the Site to be of low suitability for foraging/commuting bats. The PEA made recommendations for one walked bat activity transect to be carried out per season (spring, summer and autumn) accompanied by static bat detector surveys as per the best practice guidelines (Collins, 2016).
- 1.2.3 The aim of the surveys was to identify the level of use, habitats/areas of interest for foraging/commuting bats and type of bat species using the Site in order to inform the Site design (where necessary). This report details the findings of walked bat activity transect surveys and results of automated/static monitoring undertaken at the Site during 2022. Methodologies employed are described and an assessment of potential ecological impacts with respect to foraging and commuting bats, together with recommendations to avoid, minimise and/or mitigate potential impacts have also been provided.

## 2. Methodology

### 2.1 Bat Transect Surveys

- 2.1.1 Following the identification of low suitability habitat on Site for foraging/commuting bats (Ecus, 2022) walked bat transect surveys were carried out in suitable weather conditions during the spring (April/May), summer (June-August) and autumn (September/October) periods in accord with current published survey methodology (Collins, 2016).
- 2.1.2 The transect surveys were carried out at dusk by two suitably qualified and experienced bat surveyors, aided by the use of hand held recording devices (Peersonic RPA3) to record bat calls and field data forms to record the number, behaviour, location etc. of any bats encountered.
- 2.1.3 The transect comprised a predetermined route (Figures 1a- 1c) which was selected to incorporate the full extents of the Site, the full range of habitats on Site (with focus on habitats of higher value for bats) and on the basis of safe access. Transects commenced at sunset and continued for at least 2 hours after sunset.
- 2.1.4 The transect was walked at a consistent pace incorporating 11 stopping points. Stopping points are a recognised, effective means of obtaining data in homogenous landscapes with few features, such as farmland. On reaching a stopping point the surveyors remained stationary for 5 minutes and record any bats observed. The transect start point was varied across the surveys which allows clearer visualisation of the distribution of data over a continuous period.

**Table 1. Bat Transect Surveys Details**

Survey Date	Surveyors	Weather Conditions	Timings
Spring: 19 <sup>th</sup> May 2022	Francesca Thorley BSc (Hons) MSc ACIEEM and Fern Harrison BSc (Hons) MSc	15- 13°C, Beaufort Wind Scale (BF) 1- 0, 70- 90% Cloud Cover (CC), Dry but damp.	Sunset: 21:03 hrs Start: 21:03 hrs, End: 23:03 hrs
Summer: 12 <sup>th</sup> July 2022	Francesca Thorley and Fern Harrison	23- 21°C, BF 0, 10- 40% CC, Dry and cool.	Sunset: 21:28 hrs Start: 21:28 hrs, End: 23:40 hrs
Autumn: 1 <sup>st</sup> September 2022	Francesca Thorley and Kirsten Berry BSc (Hons)	18°C, BF 3, 10% CC, Dry.	Sunset: 19:53 hrs Start: 19:57 hrs, End: 21:53 hrs

## 2.2 Automated/Static Surveys

- 2.2.1 Each transect survey was accompanied by the placement of a single static bat detector; Anabat Swift, in accord with current guidance (Collins, 2016). The detector was left in-situ to collect quantitative bat data over five consecutive nights in suitable weather conditions.
- 2.2.2 The static detectors were placed at varied locations during the survey period in order to obtain a thorough understanding of the use of the Site by bats. The placements during the spring, summer and autumn periods was determined based on those habitats which were likely to be of higher value for bats and is annotated on Figure 2. Survey details are provided in Table 2.
- 2.2.3 The detectors were positioned on the ground with a microphone cable attached to a tree or hedgerow branch facing out into the Site so as to record bat activity from within proximity to their location and inside the Site.

**Table 2. Automated/Static Detector Survey Details**

Start Date	End Date	Location Ref	Mean Wind Speed (mph)	Min Temp (°C)	Max Temp (°C)	Mean Temp (°C)	Total Rain (mm)
19.05.2022	24.05.2022	Spring	6.6	11	17	12.6	20.9
12.07.2022	18.07.2022	Summer	3.2	15	17	16	0.6
01.09.2022	06.09.2022	Autumn	7.2	15	20	17.8	18.3

- 2.2.4 In order to aid comparison between data collected from different locations during different recording sessions, Bat Activity Indices (BAI) values were calculated using the formula below:

$$BAI = \text{Bat sound files} / \text{total number of night hours}$$

## 2.3 Survey Limitations

- 2.3.1 Following the second bat transect survey, the Site boundary was reduced by the client, therefore the transect route extends beyond the Site. This is not considered to affect the outcomes of the findings or recommendations as the transect route included all suitable habitat within the revised Site boundary (refer to Figures 1a-c) and similar suitable habitat adjacent the Site, within the original red line boundary.
- 2.3.2 The static bat detector placed during the Summer transect, was located outside of the revised Site boundary, however this is also not expected to have constrained the survey as it still captured bat activity within suitable habitat at and adjacent to the Site.

- 2.3.3 It should be noted that the transect point counts differ between each survey. The spring and summer transect each had 12 point counts (Point 1 – 11 and then a repeated point count at the end of the survey), however the autumn transect had a total of 13 point counts. This was due to the ease of traversing along the transect route. In spring and summer the arable crop within the field was at a substantial height which hindered movement between point counts, particularly in the summer. In autumn the arable crop had been harvested which meant that movement between point counts was easier. Whilst the surveyors did try to match the speed of the previous two transects in the autumn transect, it was slightly faster and resulted in one extra point count. However this is not expected to skew the survey results as all point counts were accounted for during each transect, and general bat activity was the same in each transect.
- 2.3.4 The autumn transect started four minutes late, with the transect starting at 19:57 when sunset occurred at 19:53. The late start time was due to traffic on surrounding roads. However this is not expected to limit the survey. This is because the previous transects (spring and summer) did not detect bat activity until at the earliest 38 minutes after sunset. Therefore it is not expected that bat activity would have been missed.
- 2.3.5 The detection range of a bat detector can be affected by atmospheric factors (including ambient temperature, relative humidity and air pressure), habitat factors (as a result of sound absorption and bat/habitat interactions) and the bat species being recorded (bats with high frequency, quiet or directional calls, such as long-eared bats, may sometimes only be detected at distances less than 5 m whereas bats with low frequency and loud calls, such as noctules *Nyctalus noctula*, may be detected as far away as 100 m or more).
- 2.3.6 Identification of bat calls to species level is not always possible, as calls may be faint, of poor quality or contain sound elements (including echoes or ambient noise) which distort the recording. It is frequently difficult to differentiate calls of different bat species within the same genus due to overlapping bat call parameters. In particular there is considerable overlap between echolocation calls of bat species in the *Myotis* genus. As such, in instances where *Myotis* bats have been recorded, it has only been possible to identify recordings of *Myotis* bats to genus level only. Where bats have been identified as indeterminate pipistrelle species, the echolocation call could not be confidently distinguished between common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *P. pygmaeus* (but does not include Nathusius' pipistrelle *P. nathusii*).

### 3. Findings and Evaluation

#### 3.1 Bat Transect Surveys

3.1.1 Bat transect surveys at the Site during spring, summer and autumn recorded two species of bat: common pipistrelle and noctule bat. Common pipistrelle were the most frequent (24 no. passes) with lower activity by noctule (9 no. passes).

3.1.2 During the spring visit activity was recorded in the north west of the Site, along the central ditch and in the east of the Site, with no more than 1- 5 passes recorded. During the summer visit activity was recorded in the north east of the Site, in the centre of the northern field and at the far south and south-western extent of the transect route and Site, with no more than 1- 5 passes recorded. During the autumn visit activity was lower and limited to the north west and south west of the Site, with no more than 1- 5 passes recorded. Overall bat activity was low during the three visits; see details of the breakdown in Table 3 below.

**Table 3. Summary of Bat Transect Survey Results**

Survey Date	Bat Species	No. of Passes
Spring: 19 <sup>th</sup> May 2022	Common pipistrelle	11
	Noctule	6
Summer: 12 <sup>th</sup> July 2022	Common pipistrelle	13
	Noctule	3
Autumn: 1 <sup>st</sup> September 2022	Common pipistrelle	2

#### 3.2 Automated/Static Surveys

3.2.1 The results of the static monitoring surveys are presented in Table 4 within Appendix 1 and are summarised by location per month below. The locations of static monitoring devices are detailed in Figure 2.

3.2.2 Automatic/static surveys undertaken in spring, summer and autumn recorded three species of bat: common pipistrelle; soprano pipistrelle *Pipistrellus pygmaeus*; and, noctule. Common pipistrelle were recorded most frequently across the three surveys.

### ***Spring***

**3.2.3** The spring static was located on the eastern boundary of the Site in a hedgerow (OSNGR SE 86492 08722). A single species, common pipistrelle, was recorded during the spring monitoring period. Very high levels of activity by this species was recorded (1811 sound files over five nights). The BAI for common pipistrelle is 48.49. The earliest bat was recorded eleven minutes before sunset and the latest bat was recorded 16 minutes after sunrise.

### ***Summer***

**3.2.4** The summer static was located on the southern boundary of the southern field, outwith the Site boundary, in a tree line (OSNGR SE 85837 08407). Three species, common pipistrelle, soprano pipistrelle and noctule, were recorded during the summer monitoring period. Very high levels of bat activity were recorded over the five recording nights with a total of 3676 sound files. Soprano pipistrelle was the most frequently recorded bat (1921 sound files over three nights) equating to a BAI of 88.81. Common pipistrelle were the second most frequently recorded species (1744 sound files over five nights) which equated to a BAI of 48.31. Very low levels of noctule activity were recorded (11 sound files over two nights) which equated to a BAI of 0.76. The earliest bat was a common pipistrelle recorded 17 minutes after sunset and the latest bat, also a common pipistrelle, was recorded 16 minutes before sunrise.

### ***Autumn***

**3.2.5** The autumn static was located on the eastern boundary of the Site within a hedgerow (OSNGR SE 86481 08523). A single species, common pipistrelle, was recorded during the spring monitoring period. Very low levels of activity by this species was recorded (seven sound files over two nights). The BAI for common pipistrelle is 0.34. The earliest bat was recorded two hours and 12 minutes after sunset and the latest bat was recorded five hours and 38 minutes before sunrise.

## 4. Assessment and Mitigation

4.1.1 The Chartered Institute of Ecology and Environmental Management (CIEEM) advise that surveys and reports between 18 months and three years old may still be valid in certain circumstances. In order to determine validity, an ecologist should be commissioned to undertake a site visit, to compare the current site status with that recorded during the original survey(s). Where significant changes to the original survey conditions are identified it may be necessary to undertake some or all of the surveys again, including the desk study. There is also the possibility that surveys for 'new' species may be identified.

### 4.2 Proposals

4.2.1 Indicative proposals for the Site are displayed on the Nineteen47 'Planning Layout – Lincolnshire Lakes' (Dwg. 008, 26<sup>th</sup> May 2023) and includes the development of 599 dwellings and lake, along with associated infrastructure, including landscaping, public open space and play area, pedestrian and cycle links, pumping station and sub-station.

4.2.2 The majority of habitats within the Site will be lost as a result of the proposed development. The boundary hedgerow to the east of the Site will be retained and the tree line to the south of the Site will be retained but will be partially severed from the Site by the creation of a new junction and road from the M181 to the west. Boundary treatments are typically lacking from the Site, however adjacent ditches which form part of a ditch network in the wider area will be retained but culverted in places to facilitate road access at the northern extent of the Site. The central ditch will also be retained with some road and footpath crossings, maintaining a green link through the centre of the Site. New areas of open space will be created in the west of the Site with small areas across the Site. Landscape proposals were not available at the time of writing.

### 4.3 Legislation

4.3.1 All species of bat occurring within the UK are included in Schedule 2 of the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019. Under regulation 43 bats are protected from deliberate capture, injury or killing, from deliberate disturbance and from deliberate damage or destruction of a breeding site or resting place (roost)<sup>1</sup>.

4.3.2 All UK bats are also included on Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended)<sup>1</sup> where it is an offence to intentionally or recklessly disturb bats while they are occupying a structure or place used for shelter or protection, or to obstruct access to any such place.

4.3.3 Barbastelle *Barbastella barbastellus*, Bechstein's *Myotis bechsteinii*, brown long-eared bat *Plecotus auritus*, greater horseshoe *Rhinolophus ferrumequinum*, lesser horseshoe *Rhinolophus*

---

<sup>1</sup> See [www.legislation.gov.uk](http://www.legislation.gov.uk) for full legislative details

*hipposideros*, noctule and soprano pipistrelle bats are included as priority species within Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

#### **4.4 Assessment**

- 4.4.1 Common pipistrelle and noctule were observed foraging around the boundaries of the Site notably to the north and east, and south-west of the Site boundary. Common pipistrelle was the most frequently recorded species, with noctule activity recorded towards the end of the spring visit and throughout the summer visit. Noctule was not recorded during the autumn survey. Overall, bat activity was low during the walked transect surveys.
- 4.4.2 Bat activity recorded on the static detectors varied across the three survey months, with a significantly greater level of activity recorded during the summer monitoring period compared to May. Additionally, bat activity was significantly lower during the autumn monitoring period than during spring. The highest BAI recorded was 88.81 and related to soprano pipistrelle in summer. The greatest diversity of species was recorded during summer, with soprano pipistrelle the most abundant species recorded, with noctule also recorded, albeit at low levels. Common pipistrelle was recorded across all three survey months, with very high levels of activity in spring and summer equating to BAIs of 48.49 and 48.31 respectively. Recorded activity was very low in autumn, likely due to the cooler overnight temperatures and more changeable weather with more rainfall than during the summer survey. The recordings were by species that are typically common and widespread in the local area. The Site provides connecting habitat to woodland to the north and east of the Site and a golf course to the south and east, with farmland habitats in all directions. The proposed development will result in the loss of the majority of the interior habitat located within the Site.
- 4.4.3 Currently under the proposals most of the existing boundary habitats and those off-site to the south will be retained, maintaining a partial commuting and foraging corridors. However these corridors, notably to the east, north and through the centre of the Site, will be partially severed by roads and pedestrian routes with new housing and gardens being developed immediately adjacent. Additionally, the area to the south west of the Site where very high levels of bat activity were recorded during the summer visit will be effectively isolated from the Site by a proposed access and junction from the M181 to the west, to the Site. There was a very high level of bat activity pertaining to foraging and commuting bats recorded in these areas during the transect and static surveys, with approximately 1.5 bat echolocation calls recorded each minute during the summer static survey. It is not possible to determine from the static monitoring survey alone whether this relates to very frequent foraging by an individual bat, low levels of foraging by many bats or somewhere in between. Bats recorded during the summer survey were recorded within half an hour of sunset and sunrise which suggests a roost of one or more of the species recorded may be

located close to the Site. However during the transect surveys no more than one bat was observed at any one time which suggests very frequent use by low numbers of bats.

- 4.4.4 In the absence of mitigation current proposals would likely result in a negative impact on the local bat population at up to the local level with the proposed road separating the tree line to the south-west from habitats to the north and partially severing boundary treatments within the site, deterring bats from using these corridors to commute and impacting on foraging behaviour. The current proposals will likely result in a greater level of artificial lighting pollution which is likely to be emitted from surrounding street lights installed along roadways and from adjacent houses located to the east and west. It is anticipated that light pollution will impact the bat species assemblage associated with the Site as the Site is currently unlit with an absence of people. Light pollution should be minimised across sensitive areas across the Site with a sensitive lighting scheme implemented to limit the potential impacts upon bats, especially along the boundaries of the Site and the green corridor through the centre of the Site. These areas should be maintained as dark corridors with no light spill as far as is reasonably practicable. The species most frequently recorded using the Site, soprano and common pipistrelles, are considered to be light opportunistic species in their foraging behaviour, however the very high levels of baseline activity recorded is anticipated to result from the current absence of light and this should be replicated as far as possible in the built out development.
- 4.4.5 Landscaping proposals were not available at the time of writing. It is recommended that new hedgerow and tree planting be undertaken around the boundaries and through the Site to maintain green corridors for foraging and commuting bats. Habitats to be created within the areas of open space should include areas of wildflower grassland, new trees and new native scrub which will provide additional valuable habitat for bats to forage and commute. However, as previously stated above, the addition of increased light pollution combined with the remaining habitats being divided up by the proposed roadways and housing developments, will result in the retained habitat being less optimal for use for foraging and commuting bats, with an overall reduction in habitat across the Site.
- 4.4.6 Considering the proposals it is considered that the loss of habitat in addition to the increased levels of light pollution has the potential to detrimentally impact the assemblage of foraging and commuting bats recorded at up to the local level.

## **4.5 Mitigation and Compensation**

- 4.5.1 The anticipated loss and severance of habitats in conjunction with increased light pollution resulting from the proposed development is considered to potentially detrimentally impact the assemblage of foraging and commuting bats. The boundary habitats where bat activity was recorded at its highest are set to be retained but due to the proposed development, there is a high probability

under current proposals that external factors will result in a detrimental change to the characteristics of the current habitat. Areas of the site should be enhanced with open-spaced trees, native scrub and shrub mix planting and the creation of areas of wildflower grassland.

- 4.5.2 This will partially maintain the connectivity of the Site for bats to forage and commute between the Site boundaries, with new tree and hedgerow planting helping provide connecting linear routes between the newly created habitats to the west of the Site for light opportunistic bat species such as pipistrelles.
- 4.5.3 The current proposals will involve new lighting being installed within the Site where there is currently none. It is anticipated this will affect the assemblage of bats species within the Site due to the high levels of bat activity recorded around the Sites boundary and wooded areas. Therefore, a sensitive lighting scheme should be designed by a lighting engineer and implemented within the new development. Light spill on the retained boundary features and central green corridor will need to be limited to a maximum of 3 lux as far as is practicable (Guidance Note 08/18, BCT ILP). The lighting strategy should be developed by a lighting engineer in close consultation with an ecologist who will need to review a lux plan to confirm compliance with the above recommendations.
- 4.5.4 Should the layout and/or landscape proposals become available, impacts to foraging and commuting bats may need to be re-assessed.

---

## 5. References

Collins, J. (ed.) (2016) '*Bat Surveys for Professional Ecologists: Good Practice Guidelines (3<sup>rd</sup> Edition)*'. The Bat Conservation Trust (BCT), London. ISBN-13 978-1-872745-96-1.

<https://www.timeanddate.com/weather/@2638324/historic>

<https://www.worldweatheronline.com/scunthorpe-weather-history/lincolnshire/gb.aspx>

---

## **Figures 1a- c. Bat Transect Surveys: Spring, Summer & Autumn**



### Legend

- Site boundary  Walk section:
- Point count:
- 0 passes  →
  - 1-5 passes  →
  - 6-10 passes  →
  - 11+ passes  →

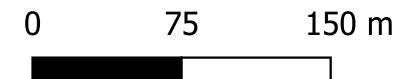
### Species Codes

Pp Common Pipestrelle  
Nn Noctule

### Transect times (h)

Start: 21:03 Stop: 23:03  
Sunset: 21:03

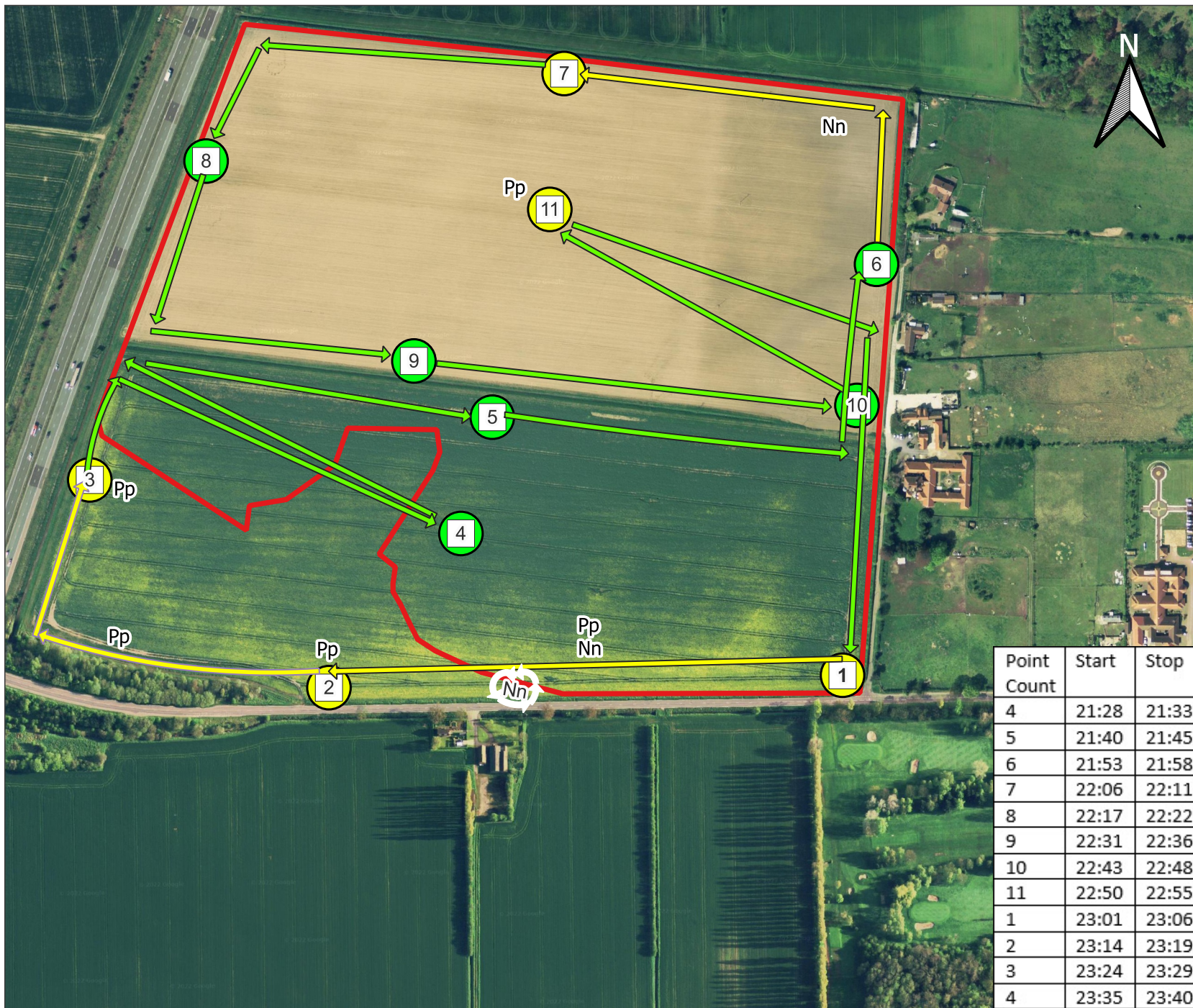
Point Count	Start	Stop
1	21:03	21:08
2	21:15	21:20
3	21:24	21:29
4	21:33	21:38
5	21:42	21:47
6	21:54	21:59
7	22:07	22:12
8	22:17	22:22
9	22:27	22:32
10	22:39	22:44
11	22:47	22:52
1	22:58	23:03








Keepmoat Homes  
Lincolnshire Lakes, Scunthorpe  
Bat Transect Surveys

Figure 1a  
Spring transect

Brook Holt 3 Blackburn Road Sheffield s61 2DW  
T: 0114 2669292 www.ecustd.co.uk



**Legend**

- Site boundary  Walk Section:
- Point Count
- 0 passes  1-5 passes 
  - 6-10 passes 
  - 11+ passes 

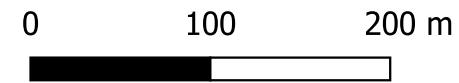
**Species Codes**

- Pp Common Pipestrelle
- Nn Noctule

**Transect times (h)**

Start: 21:28 Stop: 23:40  
Sunset: 21:28

Point Count	Start	Stop
4	21:28	21:33
5	21:40	21:45
6	21:53	21:58
7	22:06	22:11
8	22:17	22:22
9	22:31	22:36
10	22:43	22:48
11	22:50	22:55
1	23:01	23:06
2	23:14	23:19
3	23:24	23:29
4	23:35	23:40



Keepmoat Homes  
Lincolnshire Lakes, Scunthorpe  
Bat Transect Surveys

Figure 1b  
Summer survey

Brook Holt 3 Blackburn Road Sheffield s61 2DW  
T: 0114 2669292 www.ecusltd.co.uk



### Legend

- Site boundary  Walk Section
- Point Count
- 0 passes  1-5 passes →
  - 0 passes  6-10 passes →
  - 1-5 passes  11+ passes →
  - 6-10 passes
  - 11+ passes

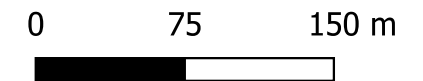
### Species Codes

Pp Common Pipestrelle  
Nn Noctule

### Transect times (h)

Start: 19:57 Stop: 21:53  
Sunset: 19:53

Point Count	Start	Stop
8	19:57	20:02
9	20:05	20:10
10	20:15	20:19
11	20:21	20:26
1	20:31	20:36
2	20:41	20:46
3	20:49	20:54
4	20:58	21:03
5	21:07	21:12
6	21:19	21:24
7	21:29	21:34
8	21:39	21:44
9	21:48	21:53



Keepmoat Homes  
Lincolnshire Lakes, Scunthorpe  
Bat Transect Surveys

Figure 1c  
Autumn Survey





Brook Holt 3 Blackburn Road Sheffield s61 2DW  
T: 0114 2669292 www.ecustd.co.uk

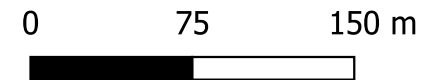
---

## Figure 2. Automated/Static Monitoring Locations



**Legend**

-  Site boundary
-  Spring
-  Summer
-  Autumn



Keepmoat Homes  
Lincolnshire Lakes, Scunthorpe  
Bat Transect Surveys

Figure 2  
Static locations

Brook Holt 3 Blackburn Road Sheffield s61 2DW  
T: 0114 2669292 [www.ecusltd.co.uk](http://www.ecusltd.co.uk)

## Appendix 1. Static Monitoring Data

Survey Reference	Start date	End date	Static unit location Grid Reference (ten figure)	Bat species	Number of sound files	Number of nights recorded	Total survey night hours	Time of first bat (h)	Time of last bat (h)	Sunset (h)	Sunrise (h)	Bat Activity Index (Sound files/night)	Bat Activity Index (Sound files/hour)
Spring	19.05.22	24.05.22	SE 86492 08722	Common Pipistrelle	1811	5	37.35	20:56	05:10	21:07	04:54	362.2	48.49
Summer	12.07.22	17.07.22	SE 85837 08407	Common Pipistrelle	1744	5	36.1	21:45	04:34	21:28	04:50	348.8	48.31
Summer	12.07.22	17.07.22	SE 85837 08407	Soprano Pipistrelle	1921	3	36.1	22:07	04:19	21:28	04:50	640.3	88.81
Summer	12.07.22	17.07.22	SE 85837 08407	Noctule	11	2	36.1	21:56	04:27	21:28	04:50	5.5	0.76
Autumn	01.09.22	03.05.22	SE 86483 08527	Common Pipistrelle	7	2	51.25	21:39	00:38	19:51	06:16	3.5	0.34

