Heckington Fen Solar Park

ENO10123

Environmental Statement | Volume 3: Technical Appendices

Appendix 8.8: Bat Survey Report- Energy Park

Applicant: Ecotricity (Heck Fen Solar) Limited

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APPENDIX 8.8: BAT SURVEYS

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Heckington Fen Energy Park - Bat Surveys

August 2022

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EXECUTIVE SUMMARY

Ecotricity (Heck Fen Solar) Ltd are seeking permission to create a ground mounted solar photovoltaic (PV) electricity generation and energy storage facility (referred to within this report as "the Energy Park") at Land at Six Hundreds Farm, Six Hundreds Drove, East Heckington, Sleaford, Lincolnshire. The Heckington Fen Energy Park will comprise of the following three elements: the Energy Park, cable route to, and above ground works at, the National Grid Bicker Fen Substation.

The proposed development site is north of the village of East Heckington and the A17 (Grid Ref TF 2028 4557). The town of Boston is 9km to the east of the site.

The site is a series of arable fields with field margins, ditches, woodland copses, some hedges and trees, and a series of old and new farm buildings. All linked by a series of stoned and grass tracks.

Between the 12th September 2021 and 4th August 2022, the following methodologies were carried out on farmland at East Heckington:

1. Desktop study to establish what bat species are present within the area of East Heckington.
2. Preliminary Bat Roost Assessment of all structures to identify potential bat roosts on site.
3. Presence/Absence Bat Surveys to establish if the identified roosts by the Preliminary Bat Roost Assessment are being used by bats.
4. Bat Transect surveys to record the number of bats and where on the site in the early part of the evening.
5. Static Bat recorders used to record the number of species that use particular areas and the level of bat activity (number of bat passes).

The surveys found that:

1. The desk top study revealed that there are two records of bats – Common Pipistrelle (*Pipistrellus pipistrellus*) and Daubenton's (*Myotis daubentonii*), both of which were recorded in 2014.
2. The Preliminary Bat Roost Assessment found missing mortar, missing pantiles, cracks in the walls, gaps between the joists and gaps under the lead flashing on the buildings. The trees had Woodpecker holes in, fissures, gaps in the bark and rot holes where bats could get in. The buildings were classed as medium, and the trees were classed as low potential for bats.
3. The Presence/Absence Bat Surveys found that two Common Pipistrelles and a Brown Long-eared (*Plecotus auritus*) bat were using the old workers cottages as a roost in September 2021. In May 2022, only one Common Pipistrelle was using the cottages, and another was using the nearby barn. No bats were seen emerging from the trees and no bats were observed flying towards the copse to the east of Six Hundreds Drove. Common Pipistrelle, Soprano Pipistrelle (*Pipistrellus pygmaeus*) and Brown Long-eared bats were recorded adjacent to this woodland in September 2021 and only a Soprano Pipistrelle in May 2022.
4. Bat Transect surveys were carried out in the evening of September 2021, May and August 2022. These transects found that there were mainly Common Pipistrelles foraging around the site with one pass by a Noctule (*Nyctalus noctula*) bat and one Soprano Pipistrelle.
5. Static Bat Recorders – 15 Static Bat Recorders were spread out across the site and showed that there were 8/9 bat species regularly using the site with a maximum of 11/12 species being recorded. The number difference is due to the fact that Brandt's (*Myotis brandtii*) and Whiskered (*Myotis mystacinus*) bats were recorded on site. These two species have a very similar echolocation calls, therefore one cannot distinguish whether or both species were recorded. Common Pipistrelle was the most frequently recorded species on site and the number of bat passes per evening varied from 0 to 184, with small numbers Soprano Pipistrelle, Noctule, Brown long-eared the occasional Leisler's (*Nyctalus leisleri*), Serotine (*Eptesicus serotinus*) Natterers (*Myotis nattereri*), Daubenton's (*Myotis daubentonii*) and two records of Barbastelle (*Barbastella barbastellus*) and Nathusius's pipistrelle (*Pipistrellus nathusii*).

From these survey results, KJ Ecology Ltd concludes that the proposed development at East Heckington will have no negative effects on the local bat populations. This is because the main foraging areas for the bats will not be affected by the works but will be enhanced with the species rich grasslands and new hedge lines. These new features should support more bats. The buildings and copses on site will not be affected so no roosts will be damaged on site. It is recommended that some woodcrete bat boxes are placed around the site where possible to encourage more bats to roost on site.

1 INTRODUCTION

1.1 Terms of Instruction

1.1.1. Ecotricity (Heck Fen Solar) Ltd instructed KJ Ecology Ltd to carry out a series of bat surveys between September 2021 and August 2022 to support their application for a ground mounted solar photovoltaic (PV) electricity generation and energy storage facility (referred to within this report as "the Energy Park") at Land at Six Hundreds Farm, Six Hundreds Drove, East Heckington, Sleaford, Lincolnshire. The Heckington Fen Energy Park will comprise of the following three elements: the Energy Park, cable route to, and above ground works at, the National Grid Bicker Fen Substation.

1.1.2. The bat surveys would establish if there were any bat roosts on site and how bats were using Heckington Fen.

1.2 Site Location

1.2.1. The proposed development site is north of the village of East Heckington and the A17 (Grid Ref TF 2028 4557), as shown in Map 1 (Appendix 1). The town of Boston is 9km to the east of the site.

1.3 Site Description

1.3.1. The site is a series of arable fields with field margins, ditches, woodland copses, some hedges and trees, and a series of old and new farm buildings. All linked by a series of stoned and grass tracks.

1.4 Proposed Development

1.4.1. The Heckington Fen Energy Park will comprise of the following three elements: the Energy Park, cable route to, and above ground works at, the National Grid Bicker Fen Substation. This survey considers the Energy Park element of the Proposed Development only.

1.5 Report Limitations

1.5.1. This report is for the sole use of the client and its' reproduction or use by anyone else is forbidden unless written consent is given by the author.

1.5.2. The ecological data in this report is only valid for 18 months from the survey date of 2nd August 2022, as wildlife, especially Protected Species move about, and natural conditions can change over time.

1.6 Background to KJ Ecology Ltd

1.6.1. Kevin Johnson BSc Pgd PGCE MCIEEM of KJ Ecology Ltd carried out a series of bat surveys between September 2021 and August 2022. Kevin has over 10 years of experience in environmental consultancy work and has volunteered for 30 years with Lincolnshire Wildlife Trust, including helping to manage Linwood Warren SSSI. Kevin was an Ecology and Environmental Lecturer at various Higher Education establishments and taught students how to carry out surveys and about the environment before becoming an environmental consultant.

2 METHODOLOGY

2.1 Desktop Study

2.1.1 The purpose of a desktop study is to identify what bat species are recorded within the area. Lincolnshire Environmental Records Centre was used as the source of information with a survey area of 2kms around the proposed Energy Park. In addition, a review of the original survey conducted in 2009 and 2010 for the wind farm application was undertaken

2.2 Bat Surveys

2.2.1 Preliminary Assessment of the site for Bats

2.2.1.1 A Preliminary assessment of the suitability of the site for bats including a Bat Roost Assessment was undertaken across the whole site and including all buildings and trees. Each building and tree was surveyed to Bat Conservation Trust - Bat Surveys for Professional Ecologists: Good Practice Guidelines 2016. Using ladders, binoculars and an endoscope, the buildings and trees were fully examined for potential access points, and any signs of bats. These signs included droppings, live or dead animals, urine, or fur staining, feeding remains, and scratch marks. The buildings around the site were then categorised into their suitability to support a bat roost using the following criteria outlined by Collins 2016 as shown in the table below. The categorisation of the buildings then determines the number of bat surveys required.

Table 1 - Bat roost suitability of structures and trees

Category (Potential to support roosting bats)	Description	Number of bat surveys required
Negligible suitability	Negligible habitat features on site likely to be used by roosting bats.	None
Low suitability	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e., unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential.	Trees – None Buildings - One
Moderate suitability	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions, and surrounding habitat but unlikely for a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Two
High suitability	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions, and surrounding habitat.	Three

2.2.1.2. This work was undertaken by licenced bat worker Kevin Johnson (2018-34450-SCI-SCI) of KJ Ecology Limited who is fully trained in bat surveys and has been carrying out bat surveys for over 10 years.

2.2.2 Presence/Absence Bat Surveys

2.2.2.1. A Presence/Absence Bat emergence Survey was carried out on all identified structures to Bat Conservation Trust - Good Practice Professional Guidelines 2016, with the surveyors located around the buildings/trees (Map 2 to Map 4, Appendix 1) so that the building/tree was silhouetted against the lighter night sky. The surveys started 15 minutes before sunset and the survey was completed one and half hours after sunset. The survey would allow any bats to be recorded (including flight path) if a roost was present

within the building/tree or if the bats were using the building/tree. As the buildings had been surveyed before in 2009/2010, only two evening surveys were carried out to confirm if bats were still utilising the buildings or not.

2.2.2.2. The surveyors included Kevin Johnson (2018-34450-SCI-SCI) of KJ Ecology Ltd who used an Anabat Walkabout, Rod Strawson (2015- 11495-CLS-CLS and 2015-11496-CLS-CLS) of Ecology and Forestry Limited who used an Echo Meter Touch Pro and five field assistants. Weather condition during emergence surveys are provide in Appendix 3, Tables 1 – 10.

2.2.3 Bat Transect Surveys

2.2.3.1 The initial assessment concluded that site is to be of low suitability to bats as it is mainly large intensively farmed arable fields cultivated to the edges of the field except where there is grass field margin under Mid-Tier Stewardship and those used for access. There are some woodland copses and remnants of hedges. There are ditches around the fields but most of these are dry during the summer with the exception of the main internal drainage board ditches. The habitat could be used by a small number of commuting bats, but there is limited foraging habitat, and this is not well connected to suitable bat habitat in the surrounding landscape. In line with BCT guidance three evening transect surveys were carried out to cover spring, summer, and autumn. Four Transects routes (A-D) were spread across the site to give to cover all the habitats on the site and give a good coverage (Map 5, Appendix 1). Whilst the 2009 and 2010 bat transects surveys are out of date, the Transects presented in the 2021 and 2022 surveys broadly follows those of 2009 and 2010, with a small alteration to Transect C to make it flow better.

2.2.3.2 For each transect, the survey was started 20 minutes after sunset to allow the bats to emerge and start foraging. Two people walked the designated route and if any bats were recorded by the detectors, the species, location, and direction of flying if possible were all noted. At the set Wait Points the surveyors stayed for three minutes and recorded any bat activity.

2.2.3.3 The surveyors included Kevin Johnson (2018-34450-SCI-SCI) of KJ Ecology Ltd who used an Anabat Walkabout, Rod Strawson (2015- 11495-CLS-CLS and 2015-11496-CLS-CLS) of Ecology and Forestry Limited who used an Echo Meter Touch Pro, Richard Green of Green Ecological Surveys (used an Echo meter Touch), and Andrea Green of Green Ecological Surveys (used a Magenta bat 5). Each group had the ability to record bat calls which could be checked later to confirm identification and timings of bat passes. Weather conditions during bat activity transect survey are given in Appendix 4.

2.2.4 Static Bat Recording Surveys

2.2.4.1 Fifteen static bat locations were chosen across the site to give a good representation across the large site. The static bat detectors (4 Anabat Expresses and 4 Anabat Swifts) were placed along ditches and field boundaries to record any bats utilising the most suitable bat habitat with the site. Seven static bat detectors were set out for five nights (Positions 1 to 7, Map 6, Appendix 1), then collected and the data downloaded. Eight static bat detectors were then deployed for another five nights (Positions 8 to 15, Map 6, Appendix 1). These static bat detectors were then recovered, and the data downloaded for analysis using Kaleidoscope Pro 5.4.8 and Anabat Insight 2.0.1-0g1ca0e76. As the site has low potential for bats as it is mainly arable land, the survey was carried out in each season. The first survey was carried out in September, the second in May and the third at the end of July/beginning of August.

2.3 Survey Constraints

2.3.1 There were no survey constraints when the surveys were carried out between September 2021 and August 2022. All static bat detectors functioned fully during survey periods except for the static detector at location 13 in August 2022. Weather conditions were suitable for surveys during the activity transects and emergence surveys (Appendix 3 and 4).

3 SURVEY RESULTS

3.1 Desktop Study

3.1.1 The desktop study revealed that the only bats recorded within the area are Common Pipistrelle (Pipistrellus pipistrellus) and Daubenton's (Myotis daubentonii), both of which were recorded in 2014.

3.2.1 Whilst bat surveys carried out in 2009 and 2010 for the wind farm application are now out of date it was noted that these surveys found a low level of bat activity of four bat species (Common Pipistrelle, Soprano Pipistrelle (Pipistrellus pygmaeus), Brown Long-eared bat (Plecotus auritus) and Daubenton's bat) across the site and record the emergence of a small number of Common Pipistrelle (maximum of 4) from the old red brick barn and one Common Pipistrelle from the derelict farm house in the Centre of the site.

3.2 Bat Surveys

3.2.1 Preliminary Bat Roost Assessment

3.2.1.1 Most of the barns are modern, made from steel with either cement, corrugated metal, or wooden sides with mainly metal corrugated roofs and two with cement/asbestos roofs (Photos 1 and 2, Appendix 2).

3.2.1.3 There is an old solid double brick barn with gable ends off Six Hundreds Drove (Photo 3, Appendix 2). This is in two parts with a single storey southern part which has a pantile roof and a two-storey northern part with a cement/asbestos roof. The northern part has some missing mortar along the gable ends of each side (Photo 4, Appendix 2) but due to the cement/asbestos roof the bats would not be in the roof area. Inside the northern part of the barn were gaps in the roof joists and in the brickwork (Photo 5, Appendix 2). The southern barn has bitumen felt underneath the pantiles so making it more suitable for bats, but there are holes within the felt (Photo 6, Appendix 2). There are also gaps in the brickwork and between the joists and the brickwork. This makes the barn moderately suitable for bats.

3.2.1.3 There are two workers cottages which are semi-detached off Six Hundreds Drove making one building (Photo 7, Appendix 2). This is a solid double brick building with pantiles, double gable ends and a chimney breast in the middle of each house. This is all boarded up except for the bottom south-west window (Photo 8, Appendix 2).

3.2.1.6 There are missing pantiles, missing mortar, gaps between the lead flashing and the pantiles and missing mortar on the ridge tiles (Photos 9 and 10, Appendix 2). These features gave the building a moderate suitability for bats.

3.2.1.6 There are four woodland copses on site and numerous individual trees. Examination of these trees found four suitable trees in the wood off Six Hundreds Drove near to the A17 and two along Six Hundreds Drove near to this wood (Photos 11 to 16, Appendix 2). The only other suitable tree found was an Ash (Fraxinus excelsior) tree (Photo 17, Appendix 2) – T10 in the target notes of the Phase 1 Report. The bat features found in these trees were woodpecker holes, fissures, bark coming away and rot holes. These all had a low potential for bats.

3.2.1.6 The surrounding area is predominantly arable fields which has a low suitability for bats. There are woodland copses, with some trees and remnants of Hawthorn hedge along the ditches. Most of the ditches were dry during all visits to the site with only the main drains holding water.

3.2.2 Presence/Absence Bat Surveys

3.2.2.1 Two evening bat emergence surveys were carried out in September 2021 and May 2022. These would show if the bats were still utilising the barns and workers cottages identified in 2009 and 2010 and if they were using identified the trees.

3.2.2.2 The trees were surveyed on the 15th September 2021 with the positions of the surveyors shown in Maps 2 and 4, Appendix 1. The weather conditions were good with warm temperatures (15 - 13ºC) and a light breeze. The surveys (Tables 1 and 2, Appendix 3) found that no bats were observed emerging from the trees, but Common Pipistrelle was recorded foraging around and within the vicinity of the trees. A Noctule (Nyctalus noctula) was recorded commuting near to the Ash tree T10. When these trees were surveyed again on 16th May 2022 (position of surveyors shown on Maps 2 and 4, Appendix 2), the temperatures were warmer (18 – 16ºC) but there was a gentle breeze which shouldn't have affected the bats. There was a lot less bat activity and only Common Pipistrelle was recorded.

3.2.2.3 The wood was first surveyed on the 17th September 2021 with the position of the surveyors shown in Map 4, Appendix 1. The results of the survey are shown in Table 5, Appendix 3. These results show that Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared bats were foraging around the wood. Even though no bats were seen emerging from a tree, it is suspected that these bats did emerge from the trees within the wood, as no bats were seen flying towards the wood. It was confirmed that a Soprano Pipistrelle bat did keep entering the south-west corner of the wood and it is believed the other bats did likewise. A Daubenton's was seen traveling south to north on the east side of the wood at 20:04. As Daubenton's bats are associated with water, then this bat was probably flying towards the Head Dike.

3.2.2.4 On the 17th May 2022, the wood was resurveyed. The weather conditions were good with warm temperatures (20-19ºC) with a moderate south-south-easterly breeze. It may have been because it was early in the season, but the only bat recorded was a Soprano Pipistrelle and probably the same individual. There were only three bat recordings all night compared with 18 on the 17th September 2021. The bat recordings on the 17th May 2022 were mainly on the western side of the wood due to the South-south-easterly breeze.

3.2.2.5 The barn was originally surveyed on the 16th September 2021 and the position of the surveyors for this survey and the May 2022 survey are shown in Map 3, Appendix 1. The weather was warm (18–13C), no cloud cover with a gentle west-south-westerly breeze. This survey (results shown in Table 3, Appendix 3) showed that no bats were recorded as emerging from the barn, but a Common Pipistrelle did fly south along the ridge of the barn before flying over to the open straw barns. Only a Barn Owl (Tyto alba) was observed leaning the northern most door on the western side of the barn. There was a lot of Common Pipistrelle activity on the 16th September 2021 but most of it was around the trees and shrubs around the houses.

3.2.2.6 When the barn was resurveyed (Table 8, Appendix 3) on the 16th May 2022 the temperatures were similar (18–16ºC), with 100% cloud cover and a light west-south-westerly breeze. These were ideal conditions for bats. Only one Common Pipistrelle emerged from the northern door of the southern part of the barn on the western side at 21:22. Later a Barn Owl emerged from the same door at 21:28. There was only two more Common Pipistrelle recordings all evening, one probably around the hedge of the houses and the other flying north along Six Hundred Drove. There were only three bat recordings all night as opposed to 28 on the 17th September 2021. There was also a Noctule bat recorded flying over in 2021.

3.2.2.7 The workers cottages were surveyed on the 16th September 2021 and the position of the surveyors for this survey and the May 2022 survey are shown in Map 3, Appendix 1. The weather was warm (18–13C), no cloud cover with a gentle West-south-westerly breeze. The results (Table 4, Appendix 3) revealed that a Common Pipistrelle emerged from the bottom of the top south-western window (Photo 18, Appendix 2). The survey also revealed that a Brown Long-eared bat emerged from the open lower south-west window and another Common Pipistrelle emerged from the western side of the chimney, probably where there is a gap in the lead flashing (Photo 18, Appendix 2). There was then plenty of bat activity, especially around the hedge line of the houses. A Barn Owl was recorded flying around the house and at 20:14 two Barn Owls were recorded around the house.

3.2.2.8 The survey (Table 9, Appendix 3) on the 16th May 2022 revealed that a Common Pipistrelle emerged from the bottom corner of the top south-west window as it did in September 2021. This is probably the same individual. This bat re-entered the house twice and emerged three times from the same spot. No other bats were recorded emerging from the houses. Another Common Pipistrelle did join this bat foraging around the garden at 21:27, but when the resident bat re-enters the house, the other Common Pipistrelle flies west. A Natterer's (Myotis nattereri) bat was recorded commuting east to west over the southern part of the garden. Even though there were similar temperatures for September 2021 and May 2022, there was more bat activity in September 2021 (21 recordings) compared to 11 recordings in May 2022. There were also more bat species recorded in September 2021 contrasted with May 2022.

3.2.3 Bat Transect Surveys

3.2.3.1 The proposed development at East Heckington has a low suitability for bats as it is mainly arable land. Following the Bat Conservation Trust - Bat Surveys for Professional Ecologists: Good Practice Guidelines 2016, transects were carried out in spring, summer and Autumn the results of which can be seen in Maps 7 to 9, Appendix 1. The majority bat activity was Common Pipistrelle with a Soprano Pipistrelle recorded on the 21st September 2021 and a Noctule on the 19th May 2022. As the transects were carried out over two nights there is the possibility that the same bats were recorded but in a different area. There are at least five or six Common Pipistrelles using the site if not more as recorded on the 19th May 2022.

3.2.3.2 The bats were mainly recorded around the buildings and along the ditches, especially the ones full of water which have numerous insect life. The highest recordings were along the main drain on Transect A which had 37 passes on the 21st September 2021, 45 passes on the 19th May 2022 but no passes on the 1st August 2022. Most recordings were single bats foraging along ditches except for two Common Pipistrelles recorded on the 23rd September 2021 on the north-west ditch of the site. There appeared to be more bat activity across the site in May 2022, than September 2021 but hardly any bat activity recorded in August 2022.

3.2.4 Static Bat Recording Surveys

3.2.4.1 As the static bat recorders were spread across the site (Map 6, Appendix 1) they gave a good indication of how bats use the site and the bat species. The static bat recorders do not state how many bats are using the site though. The weather (Appendix 4) was good when the statics were out and there were two small rain showers in May 2022 but that did not affect bat activity. The results (Tables 11 to 13, Appendix 3) show that there were 10/11 species of bat using the site in September 2021, 8/9 species using the site in May 2022 and 11/12 species using the site in July/August 2022. The different number in bat species using the site is because Brandt's (Myotis brandtii) and Whiskered (Myotis mystacinus) bats were recorded on site. These have a very similar echolocation and can only be distinguished in the hand. It is very probable that both species of bat are using the site. Noctules, Leislers (Nyctalus leisleri) and Serotines (Eptesicus serotinus) echolocations are close to each other, however due to the open nature of the site could be easily distinguished from clear sonograms

3.2.4.2 Common Pipistrelle was the most recorded species, and 184 passes were recorded at Static 2 on the 16th September 2021. Static 4 had the most recordings as it was next to a main drain and near a copse. 137 Common Pipistrelle recordings were taken on the 16th September 2021, 101 on the 14th May 2022 and 134 passes were noted on the 27th July 2022. All the other statics varied. The statics near water filled drains (statics 4, 11, 12, 13 and 14) had higher recordings than those which were dry. Only Static 13 in August 2022 was different with no recordings but there were logs showing that the machine was working properly.

3.2.4.3 The only other bat species to produce repeated passes was Soprano Pipistrelle, Noctules, Leisler's and Serotines (from July/August 2022) and Brown Long-eared in September 2021 on Static 2 as this was near to the house where it was roosting in September 2021. All these had lower recording of passes compared to Common Pipistrelle, for example two passes by a Brown long-eared bat on the 12th September 2021 on Static 2 and 49 passes on the 15th September 2021 on Static 1. There were two passes by a Daubenton's bat on 19th May 2022 on static 13 which was next to a main drain. All the other passes where single passes and mainly by myotis species of bats such as Natterer's bat.

3.2.4.4 It was interesting to record Barbastelle (Barbastella barbastellus) bat on site. There were two recordings of the Barbastelle on the 17th September 2021 on Statics 11 and 12, and again on the 3rd August 2022 with the same statics. The Barbastelle was always recorded first on Static 11 and later on Static 12. The time difference between the two recordings indicates that the Barbastelle was foraging around all the ditches within that area. Barbastelle are typically a woodland species but are known to move considerable distances during the autumn. There were two recordings of a Nathusius's Pipistrelle (Pipistrellus nathusii). One on the 31st July 2022 on Static 14 at 22:44 and another on 3rd August 2022 on Static 11 at 23:24. Nathusius's Pipistrelle are known to be long distant migrants and with improvements in bat detectors and longer deployment times, Nathusius's Pipistrelle are being recorded in small number across UK in late summer and autumn.

4 EVALUATION AND RECOMMENDATIONS

4.1 Evaluation

4.1.1 The Desktop Study only records two bat species for the East Heckington site – Common Pipistrelle and Daubenton's Bat from 2014. This gives the impression that there is a low population of bats and species within the rea.

4.1.2 The Preliminary Bat Roost Assessment found the old brick buildings to have moderate potential for bats while the modern agricultural buildings had negligible potential for bats to roost, but bats could forage around them. The brick buildings had missing mortar, cracks in the walls, gaps between the joists, gaps under the lead flashing and missing pantiles. There are a number of trees across the site with Woodpecker holes, fissures, gaps in the bark and rot holes that would offer a low potential for bats to roost. The landscape of the site is mainly arable fields which has a low potential for bats. These fields have grass margins and are dissected by ditches and drains. There are also the remnants of hedges with trees, and copses. These characteristics have a higher value for bats, especially the main drains filled with water as they can support a diverse range of insects.

4.1.3 The Presence/Absence bat surveys were carried out to confirm if bats were using the structures in 2021 and 2022. These structures were first surveyed in 2009 and 2010, and as they are not being affected by the proposed development, then only the presence of bats was required. The Presence/Absence bat surveys found that no bats were observed emerging from any of the trees with potential roost sites.

4.1.4 The September 2021 survey found that no bats emerged from the brick barn (only a Barn Owl emerged), but two Common Pipistrelles and a Brown Long-eared bat emerged from the house. The May 2022 survey found that a Common Pipistrelle emerged from the single storey barn along with a Barn Owl and another Common Pipistrelle emerged from house. The 2009 and 2010 surveys recorded small number of bats emerging from the same buildings. These recent surveys show that the buildings are still providing opportunities for a small number of bats, but no evidence of maternity roost has been recorded on site. Only two Common Pipistrelles were recorded leaving the buildings in 2021 compared to four in 2009, but there was a Brown Long-eared bat recorded leaving the house.

4.1.5 The transect results mainly recorded Common Pipistrelle (98.2% of passes) in various locations, especially along water filled drains. The only other species of bats recorded were Soprano Pipistrelle (1.2% of passes) and Noctule (0.6 % of passes). Some of the recordings had high number of passes for example on the 19th May 2022 on Transect A between points 11 and 12 there were 45 passes by two Common Pipistrelle and on the same evening on Transect B between points 1 and, 3 there was 12 passes by a Common Pipistrelle. As the bats could not be tracked it is not known if it is the same bats or different ones. The transects are only a brief snapshot of bat activity on the selected route at a particular time. However, overall, there was a low level of bat activity very similar to the 2009 and 2010 surveys.

4.1.6 Transects provide a snapshot of bats using the site, their direction and foraging habitats but the use of statics (Results and summary in Appendix 3) enables a good picture to be created on how many species of bat use the site and an estimate of the level of activity on the site. This system is complementary to the transect system. The weather was good for the statics as it was mainly dry when they were out except for the odd shower in May 2022. The statics across the site recorded between 10/11 species in September 2021, 8/9 species in May 2022 and 11/12 species in July/ August 2022. The difference in number is the fact that Brandt's/Whiskered bat were recorded which sound similar. It is possible that both species are on site.

4.1.7 Common Pipistrelle was the most recorded species on site (83.8% of passes were Common Pipistrelle). The greatest level of activity was Static location 4 next a main drain full of water and next to a copse. The static results show that there are three species regularly using the site during the bat active months. These being: Common Pipistrelle, Soprano Pipistrelle and Noctule. A small number of Brown Long-eared, Brandt's/Whiskered, Leisler, Natterer's and Daubenton's were also recorded. With occasional records of Serotine, Barbastelle and Nathusius's Pipistrelle.

4.2 Conclusions

4.2.1 The proposed solar development at East Heckington will not result in the loss any roosting sites or of any identified routes or foraging habitat around the woodland or along permanently wet drains and therefore will have no effect on location bat populations.

4.3 Recommendations

4.3.1 The provision of 8m and 9m stand off from all the ditches will provide an opportunity to increase the area of bat foraging habitat within the site. Enhancement of this area of these area with species rich meadows would further improve the foraging habitat for bats. The buildings and copses on site will not be affected so no roosts will be damaged on site. It is recommended that a number woodcrete bat boxes are placed around the site where possible to encourage more bats to roost on site.

5 LEGISLATION AND POLICY GUIDANCE

5.1 In the 1960s and 1970s concerns were raised about the loss of wildlife habitats and species. This led to The Convention on the Conservation of European Wildlife and Natural Habitats 1979 (Berne Convention) which came into force in 1982. The aim of this Convention is to conserve wild flora and fauna and their natural habitats; Promote cooperation between countries in their conservation efforts and, give particular emphasis to endangered and vulnerable species including migratory species.

5.2 In the UK this Convention was implemented by the creation of the Wildlife and Countryside Act 1981 (as amended). This Act was further strengthened by the Countryside and Rights Of Way Act 2000.

5.3 The UK has signed up to the EEC Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna 1992 (Habitats Directive). The aim of the Habitats Directive is to contribute towards ensuring biodiversity by means of the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States. The UK transposed the Habitats Directive into The Conservation (Natural Habitats, &c.) Regulations 1994. To consolidate all the various amendments made to this Act, The Conservation of Habitats and Species Regulations 2017 has been introduced.

5.4 The UK has also signed up to The Convention on the Conservation of Migratory species of Wild Animals 1979 (The Bonn Convention) which came into force in 1983 and so is therefore party to various agreements.

5.5 Protected Species

5.5.1 European Protected Species

5.5.1.1 Water Voles (Arvicola amphibius), Otters (Lutra lutra), Bats and Great Crested Newts (Triturus cristatus) are classed as European Protected Species. All European Protected Species are protected under Schedules 5 and 6 of the Wildlife and Countryside Act 1981 (as amended) and are also protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2012. They are listed under Appendix III of the Bern Convention and Annex IV of the EC Habitats Directive. These species also have their habitats listed under Appendix II of The Bonn Convention and therefore the UK has an obligation to protect their habitat, including links to important feeding areas.

5.5.1.2 In relation to a development these laws and regulations make it illegal for a person to:

- Intentionally or recklessly kill, injure or take a European Protected Species;
- Intentionally or recklessly -
  - Damage or destroy any structure or place which any European Protected Species uses for shelter or protection;
  - Disturbs any such European Protected Species while it is occupying a structure or place which it uses for shelter or protection; or
  - Obstructs access to any structure or place which any such European Protected Species uses for shelter or protection;
- Deliberately or recklessly disturbs wild animals of any species in such a way as to be likely significantly to affect:
  - The ability of any significant group of animals to survive, breed, or rear or nurture their young; or
  - The local distribution or abundance of that species;
- Possess or transport European Protected Species or any part of them, unless acquired legally;
- Sell (or offer for sale) or exchange European Protected Species, or parts of European Protected Species.

5.5.1.3 This legislation applies, regardless of the life stage (including eggs).

5.5.1.4 A European Protected Species Licence is required to carry out any activity that would otherwise involve committing an offence.

5.6 National Planning Policy Framework

5.6.1 The National Planning Policy Framework (NPPF) was published on the 27th March 2012 and updated on the 24th July 2018 and further updated on the 19th February 2019. The NPPF sets out the Government's planning policies for England and how these should be applied. As this is an ecological report, the ecological side of the NPPF will be dealt with here. One part of the NPPF is in achieving sustainable development (Chapter 2) and how to secure net gains through the implementation of plans and the application policies with applications in presumption on favour of sustainable development.

5.6.2 Paragraph 8 (iii) states - An environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

5.6.3 To achieve sustainability and Biodiversity Net Gain, planning policies should make effective use of land, and conserve, and enhance the Natural Environment. Effective use of land can be achieved by:

- Supporting developments of under-utilised land and buildings;
- Recognising the multiple benefits from both urban and rural land;
- Developments that would enable new habitat creation or improve public access to the countryside;
- Recognise that some undeveloped land can perform many functions, such as for wildlife, recreation, flood risk mitigation, cooling/shading, carbon storage or food production.

5.6.4 To conserve and enhance the Natural Environment, leading to Biodiversity Net Gain, planning policies and decisions should contribute to and enhance the natural and local environment by:

- Protecting and enhancing the intrinsic value and beauty of the countryside e.g. Areas of Outstanding Beauty and Nature Reserves (Local and National);
- Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures. These include Wildlife Corridors, the Stepping Stones that connect them and areas identified by national, and local partnerships for habitat management, enhancement, restoration or creation;
- Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

6 REFERENCES

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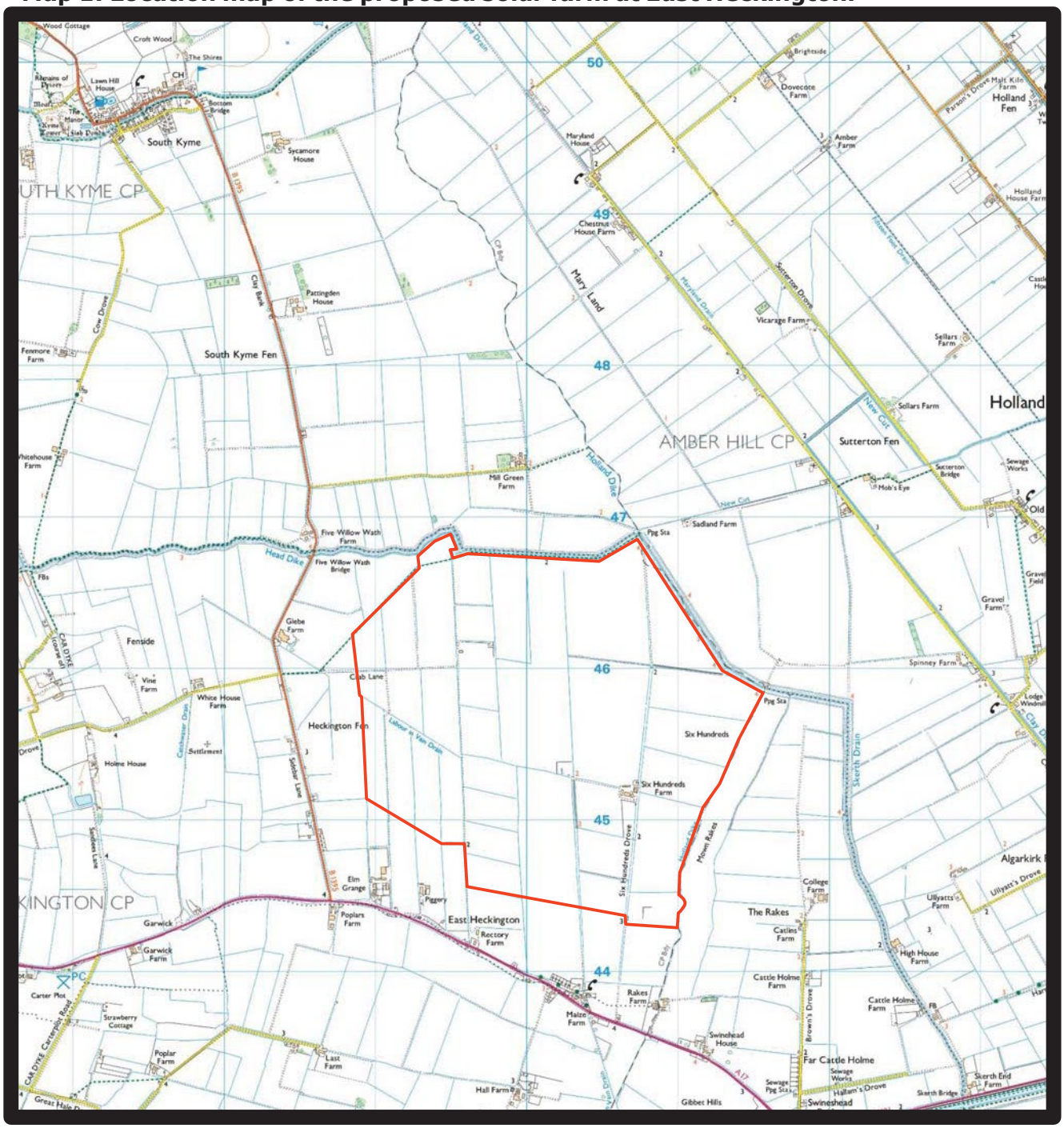
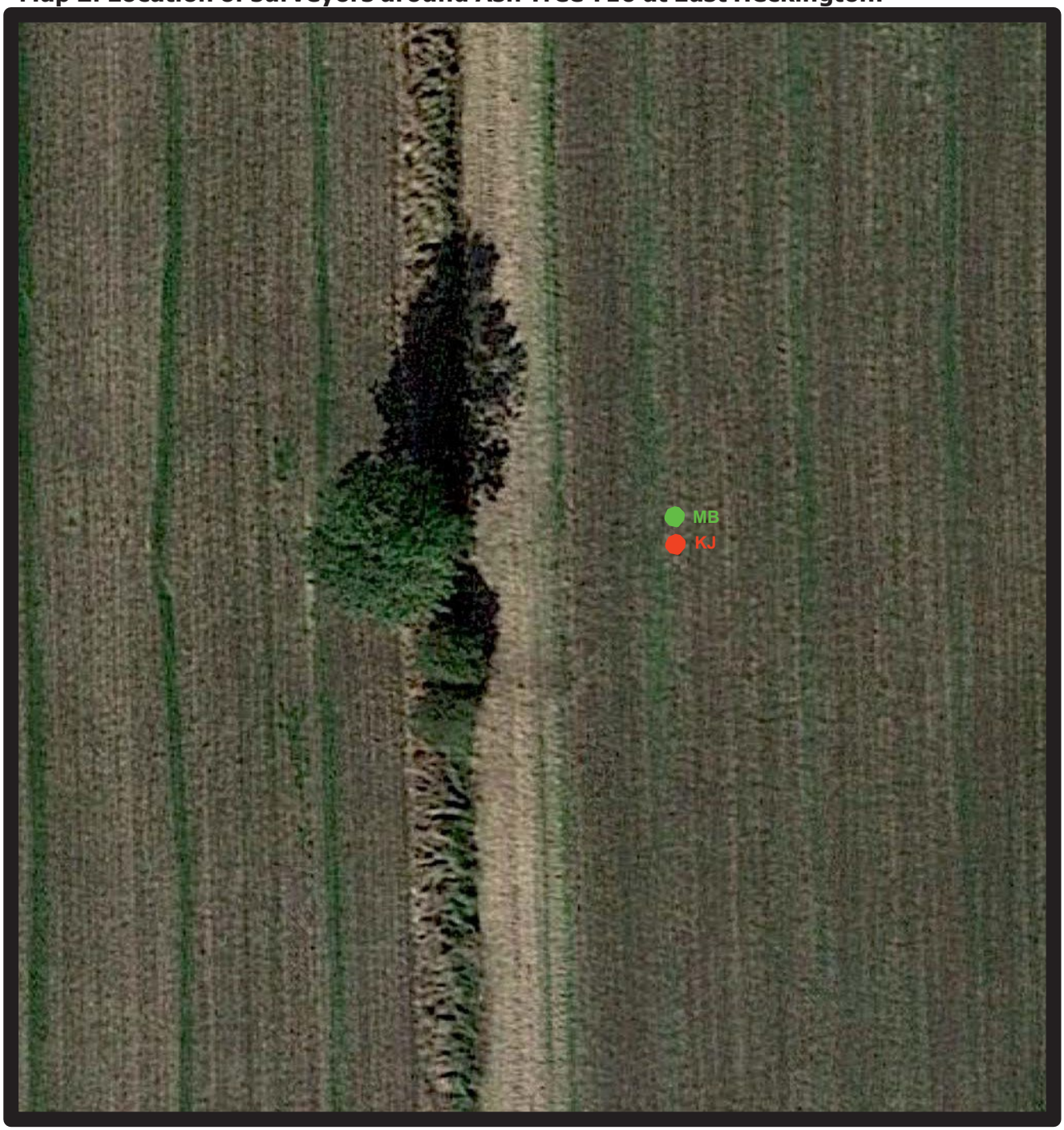
APPENDIX 1 – MAPS

Map 1: Location map of the proposed solar farm at East Heckington.



Map 2: Location of surveyors around Ash Tree T10 at East Heckington.



0 7.5 15m

Legend

- Location of surveyors on 16th September 2021
- Location of surveyors on 16th May 2022

KJ Kevin Johnson
MB Marissa Bulloch

KJ Ecology Ltd
Drawn by: KJ
Date: 20/08/2022

Site Plan

Map 3: Location of surveyors around the buildings at East Heckington.

0 10 20m

Site Plan

Legend

Location of surveyors on 16th September 2021

Location of surveyors on 16th May 2022

KJ Kevin Johnson
RS Rod Strawson
RG Richard Green
AG Andrea Green
AJ Alan Johnson
BM Bill Meek

KJ Ecology Ltd
Drawn by: KJ
Date: 20/08/2022

Map 4: Location of surveyors around the Wood and Ash Trees off Six Hundred Drove at East Heckington.

0 25 50m

Site Plan

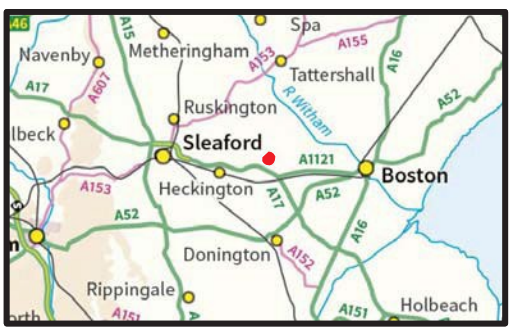
Legend

Location of surveyors on 15/09/2021 & 16/05/2022

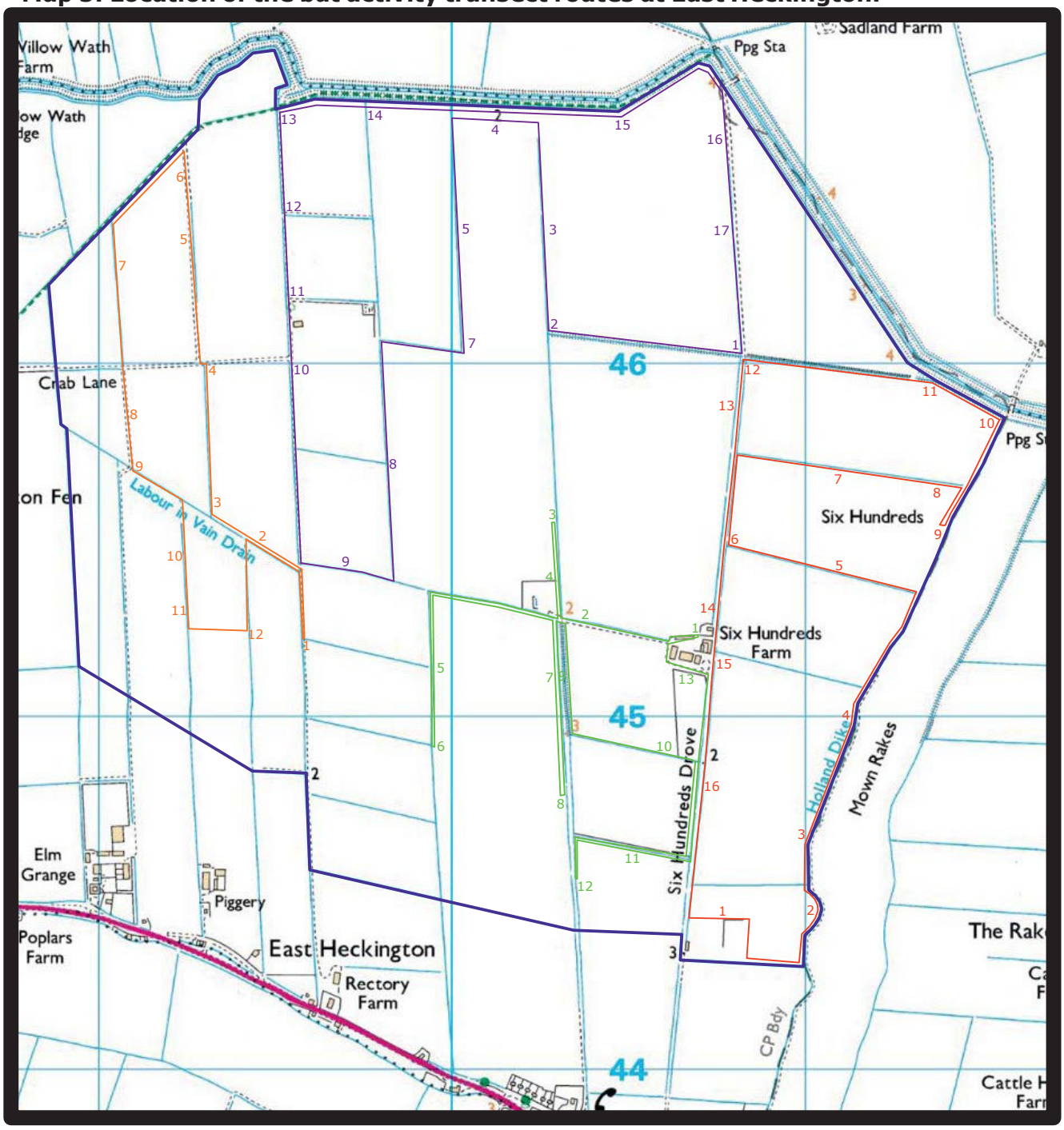
Location of surveyors on 17/09/2022 & 17/05/2022

KJ Kevin Johnson
RS Rod Strawson
RG Richard Green
AG Andrea Green

KJ Ecology Ltd
Drawn by: KJ
Date: 20/08/2022



Map 5: Location of the bat activity transect routes at East Heckington.



0 250 500m

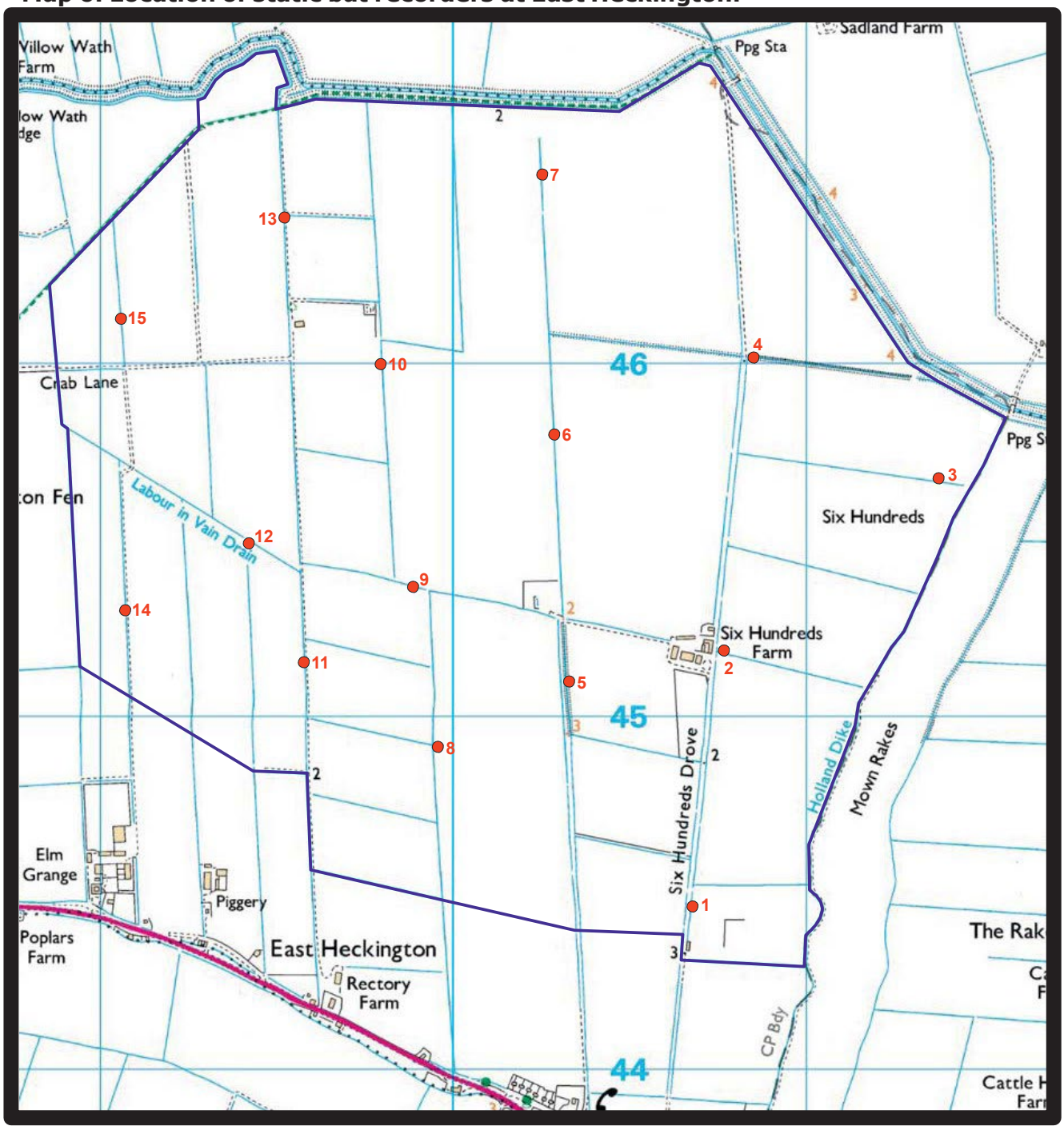
Site Plan

Legend

- Site boundary
- Transect A
- 1 Wait Point for Transect A
- Transect B
- 1 Wait Point for Transect B
- Transect C
- 1 Wait Point for Transect C
- Transect D
- 1 Wait Point for Transect D

KJ Ecology Ltd
Drawn by: KJ
Date: 20/08/2022

Map 6: Location of static bat recorders at East Heckington.



0 250 500m

Ordnance Survey C Crown Copyright 2022. All Rights reserved Licence Number 100051497. Plotted Scale 1:25,000

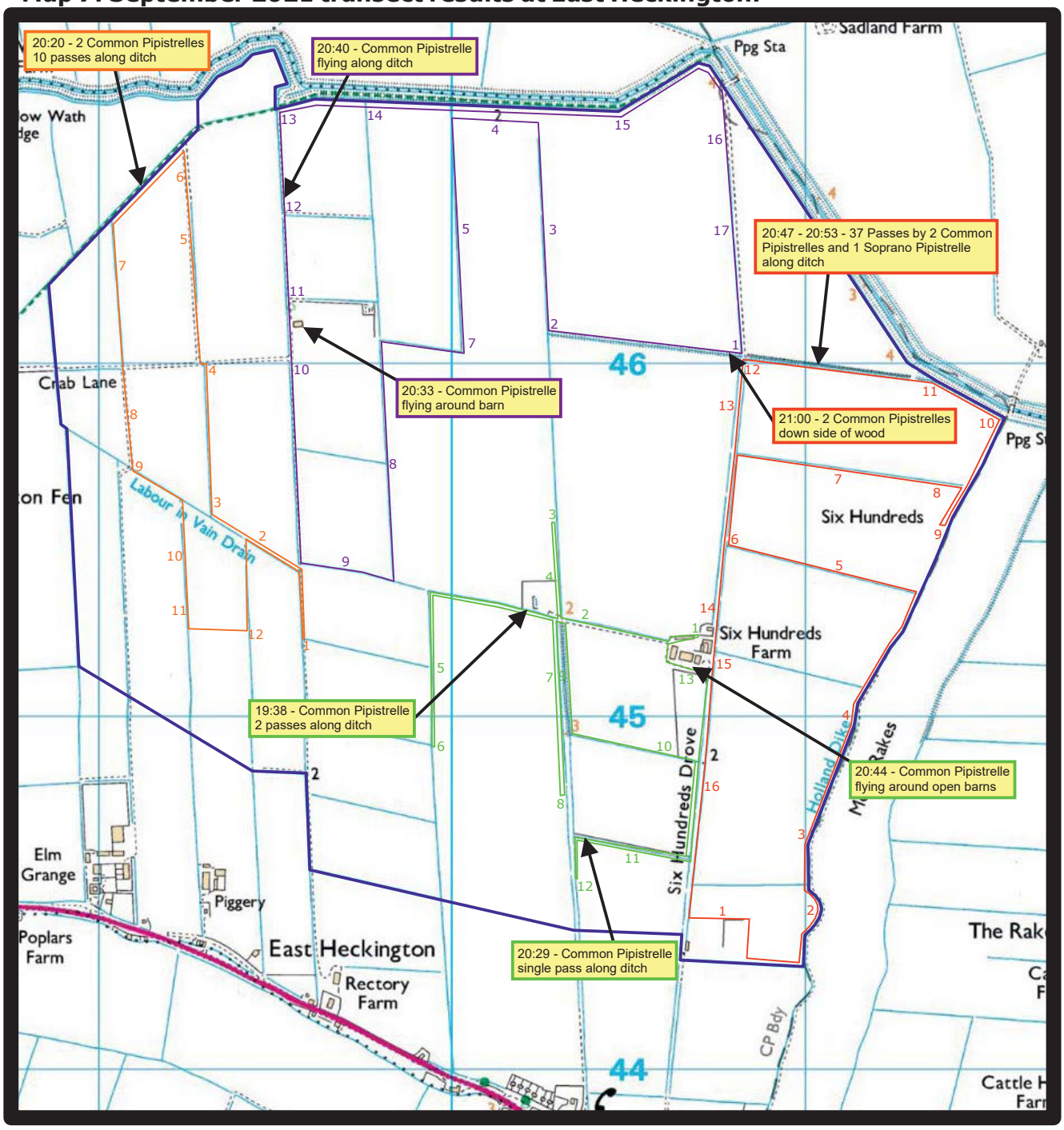
Legend

- Site boundary
- 1 Static bat recorder with number

Site Plan

KJ Ecology Ltd
Drawn by: KJ
Date: 20/08/2022

Map 7: September 2021 transect results at East Heckington.



0 250 500m

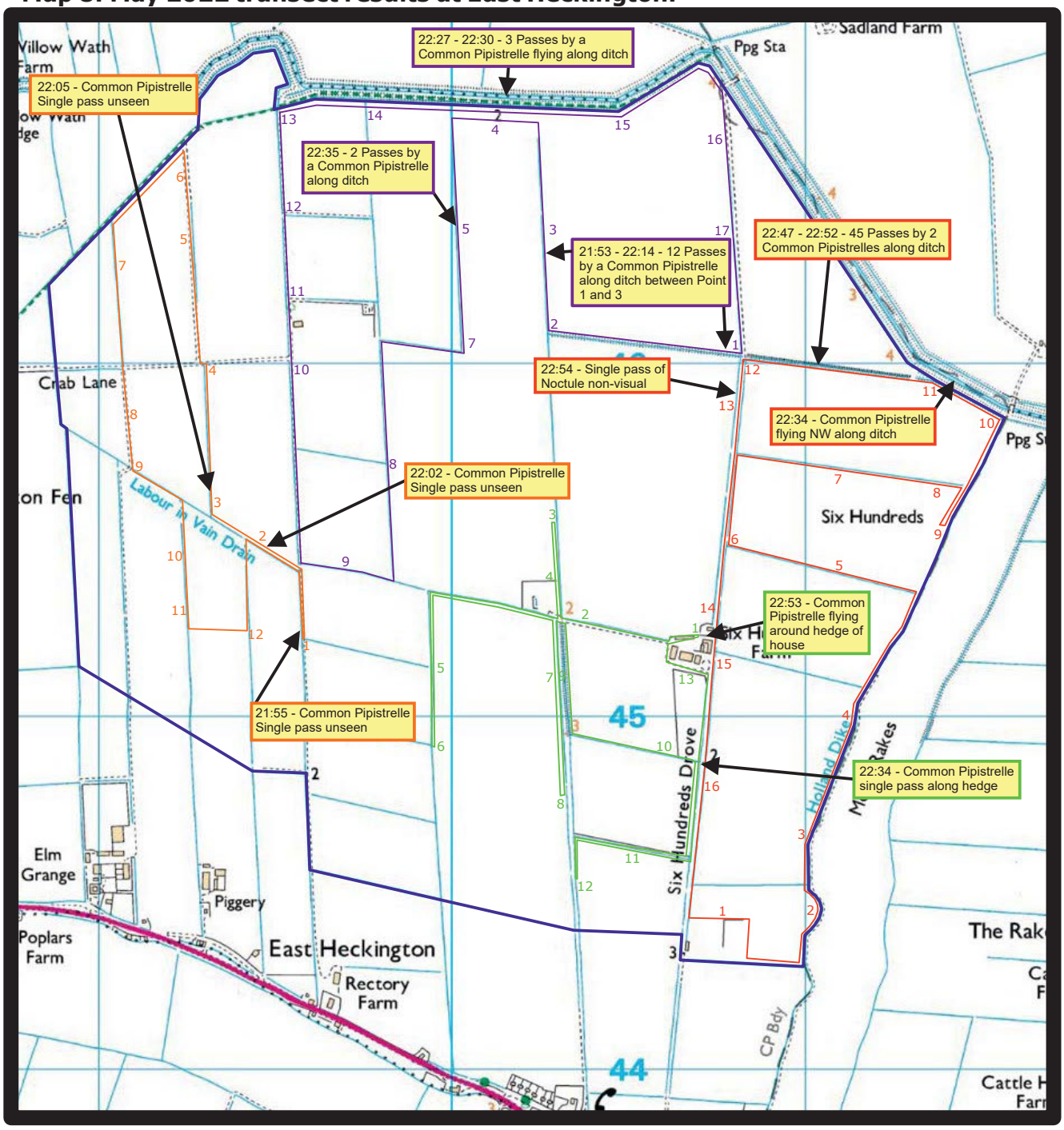
Site Plan 1:25,000

Legend

- Site boundary
- Transect A (Completed 21/09/2021)
- 1 Wait Point for Transect A
- Transect B (Completed 21/09/2021)
- 1 Wait Point for Transect B
- Transect C (Completed 23/09/2021)
- 1 Wait Point for Transect C
- Transect D (Completed 23/09/2021)
- 1 Wait Point for Transect D
- Bat Bat recording with Transect colour around box when observed

KJ Ecology Ltd
Drawn by: KJ
Date: 20/08/2022

Map 8: May 2022 transect results at East Heckington.



0 250 500m

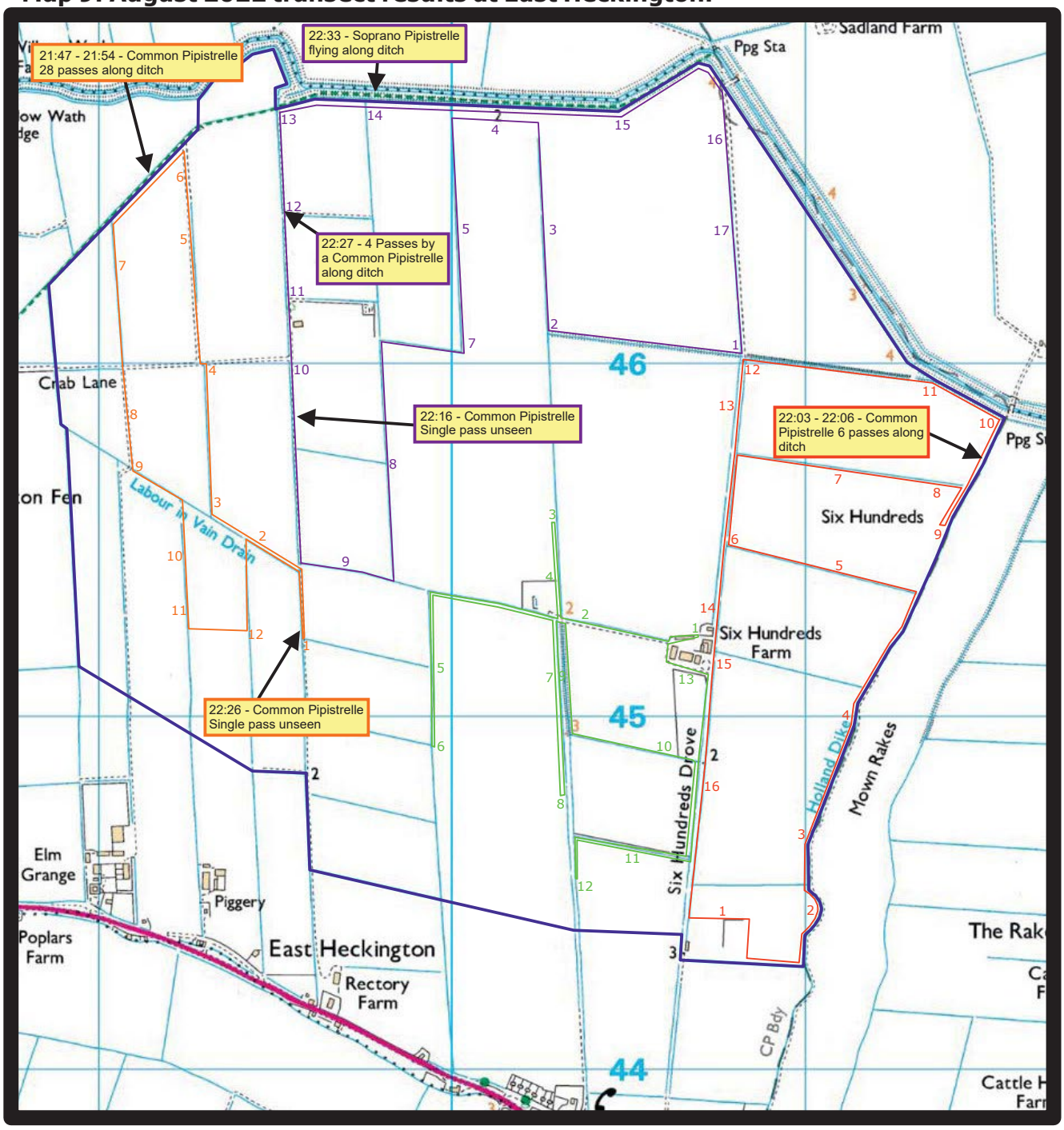
Site Plan 1:25,000

Legend

- Site boundary
- Transect A (Completed 19/05/2022)
- 1 Wait Point for Transect A
- Transect B (Completed 19/05/2022)
- 1 Wait Point for Transect B
- Transect C (Completed 21/05/2022)
- 1 Wait Point for Transect C
- Transect D (Completed 21/05/2022)
- 1 Wait Point for Transect D
- Bat Bat recording with Transect colour around box when observed

KJ Ecology Ltd
Drawn by: KJ
Date: 20/08/2022

Map 9: August 2022 transect results at East Heckington.



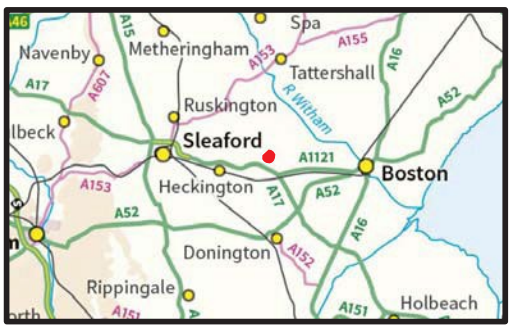
0 250 500m

Site Plan 1:25,000

Legend

- Site boundary
- Transect A (Completed 01/08/2022)
- 1 Wait Point for Transect A
- Transect B (Completed 01/08/2022)
- 1 Wait Point for Transect B
- Transect C (Completed 02/08/2022)
- 1 Wait Point for Transect C
- Transect D (Completed 02/08/2022)
- 1 Wait Point for Transect D
- Bat Bat recording with Transect colour around box when observed

KJ Ecology Ltd
Drawn by: KJ
Date: 20/08/2022



APPENDIX 2 – PHOTOS OF EAST HECKINGTON

Photo 1: Typical modern barn

Photo 2: Modern barns

Photo 3: Old barn

Photo 4: Missing mortar in gable end of north part of barn

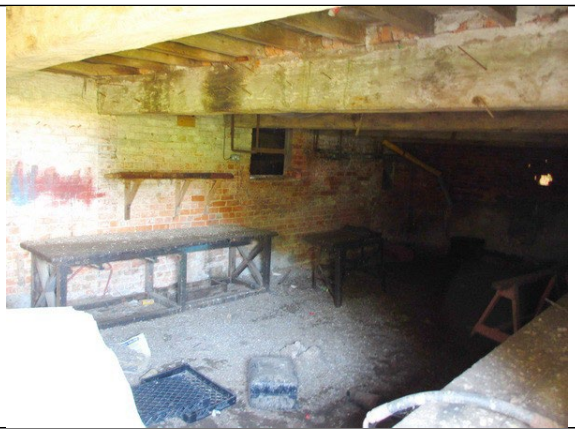


Photo 5: Inside the north part of the old barn

Photo 6: Inside the south side of the old barn

Photo 7: Worker's cottages

Photo 8: Open Window on south-west side of workers cottages

Photo 9: Missing pantiles on workers cottages

Photo 10: Gaps under lead flashing and missing mortar in ridge tiles

Photo 11: Ash tree in wood with bat suitability

Photo 12: Ash tree in wood with bat suitability

Photo 13: Ash tree in wood with bat suitability

Photo 14: Oak tree in wood with bat suitability

Photo 15: Southern Ash tree on Six Hundreds Drove

Photo 16: Northern Ash tree on Six Hundreds Drove

Photo 17: Ash tree T10

Photo 18: Emergence points for the bats out of the workers cottages

APPENDIX 3 -BAT SURVEY RESULTS

Table 1: Presence/Absence Emergence Bat Survey results for Ash Tree at East Heckington on the 15th September 2021

Location	Date	
Ash Tree, East Heckington	15/09/2021	
	Start	End
Time	19:01	20:46
Temp (C)	15	13
Cloud Cover (%)	50	50
Beaufort Wind Scale	2	2
Wind Direction	ENE	SSE

Surveyor
KJ = Kevin Johnson

Time & Surveyor	Species	Notes
19:38 (KJ)	Male Kestrel	Lands in tree for night
20:01 (KJ)	Common Pipistrelle	Non visual and faint
20:05 (KJ)	Noctule	Flying N to S over field
20:25 (KJ)	Common Pipistrelle	Non visual and faint
20:27 (KJ)	Common Pipistrelle	Non visual and faint
20:28 – 20:29 (KJ)	Common Pipistrelle	Foraging up and down the ditch

Table 2: Presence/Absence Emergence Bat Survey results for Ash Trees on Six Hundreds Drove at East Heckington on the 15th September 2021

Location	Date	
Ash Trees, Six Hundreds Drove, East Heckington	15/09/2021	
	Start	End
Time	19:01	20:46
Temp (C)	15	13
Cloud Cover (%)	50	50
Beaufort Wind Scale	2	2
Wind Direction	ENE	SSE

Surveyor
RG = Richard Green
AG = Andrea Green

Time & Surveyor	Species	Notes
19:59 (RG)	Common Pipistrelle	Single pass unseen
20:02 (AG, RG)	Common Pipistrelle	Flying North along hedge
20:10 (RG)	Common Pipistrelle	Other side of hedge?
20:15 (RG, AG)	Common Pipistrelle	Flying South along hedge
20:21 (RG)	Common Pipistrelle	Other side of hedge?
20:26 (RG, AG)	Common Pipistrelle	Flying South along hedge
20:40 (AG, RG)	Common Pipistrelle	Flying North along hedge

Table 3: Presence/Absence Emergence Bat Survey results for the barn off Six Hundreds Drove at East Heckington on the 16th September 2021

Location	Date	
Barn on Six Hundreds Drove, East Heckington	16/09/2021	
	Start	End
Time	18:59	20:44
Temp (C)	18	13
Cloud Cover (%)	0	0
Beaufort Wind Scale	2	2
Wind Direction	WSW	WSW

Surveyor
RG = Richard Green
AG = Andrea Green

Time & Surveyor	Species	Notes
19:46 (RG, AG)	Common Pipistrelle	Flying S along ridge of barn then over to open straw barns
19:49 (RG, AG)	Barn Owl	Appeared at door at N end of W side of barn, then flew S
19:49 (RG)	Common Pipistrelle	1 pass unseen, probably N of surveyor around trees and hedge
19:52 (RG)	Barn Owl	Left from N door on W side of barn, then flew over ridge of barn and S down drove
19:53 (RG)	Common Pipistrelle	1 pass unseen, probably N of surveyor around trees and hedge
19:53 (RG)	Barn Owl	Flying E past N end of barn
19:55 (AG, RG)	Barn Owl	Flying S down drove then W over centre of barn
19:55 (RG)	Common Pipistrelle	1 pass unseen, probably N of surveyor around trees and hedge
19:57 (RG)	Barn Owl	Flew from the W and entered barn through central door
19:58 (RG)	Common Pipistrelle	1 pass unseen, probably N of surveyor around trees and hedge
19:59 (RG)	Common Pipistrelle	2 passes unseen, probably N of surveyor around trees and hedge
20:00 (RG)	Common Pipistrelle	2 passes unseen, probably N of surveyor around trees and hedge
20:03 (AG)	Common Pipistrelle	Single pass unseen
20:05 - 20:09 (RG)	Common Pipistrelle	Numerous passes unseen, probably N of surveyor around trees and hedge
20:07 (RG)	Noctule	Single pass unseen
20:14 – 20:15 (RG)	Common Pipistrelle	Numerous passes unseen, probably N of surveyor around trees and hedge
20:17 – 20:18 (RG)	Common Pipistrelle	Numerous passes unseen, probably N of surveyor around trees and hedge
20:19 (RG)	Noctule	Single pass unseen

20:20 – 20:22 (RG)	Common Pipistrelle	Numerous passes unseen, probably N of surveyor around trees and hedge
20:25 – 20:26 (RG)	Common Pipistrelle	Numerous passes unseen, probably N of surveyor around trees and hedge
20:28 (AG)	Common Pipistrelle	Single pass unseen
20:29 (RG)	Common Pipistrelle	1 pass unseen, probably N of surveyor around trees and hedge
20:31 (RG)	Common Pipistrelle	2 passes unseen and social calls, probably N of surveyor around trees and hedge
20:33 – 20:36 (RG)	Common Pipistrelle	Numerous passes unseen, probably N of surveyor around trees and hedge
20:39 (RG)	Common Pipistrelle	3 passes unseen with social calls, probably N of surveyor around trees and hedge
20:41 (RG)	Common Pipistrelle	2 passes unseen, probably N of surveyor around trees and hedge

Table 4: Presence/Absence Emergence Bat Survey results for the workers cottages off Six Hundreds Drove at East Heckington on the 16th September 2021

Location	**Date**	
Farmhouse on Six Hundreds Drove, East Heckington	16/09/2021	
	Start	End
Time	18:59	20:44
Temp (C)	18	13
Cloud Cover (%)	0	0
Beaufort Wind Scale	2	2
Wind Direction	WSW	WSW

Surveyor
KJ = Kevin Johnson
RS = Rod Strawson

Time & Surveyor	**Species**	**Notes**
19:31 (KJ)	Common Pipistrelle	Flew out of gap in top SW window – see photo 18, Appendix 2
19:31 (KJ)	Brown Long-eared	Flew out of the bottom SW window – see photo 18, Appendix 2
19:36 (KJ)	Common Pipistrelle	Out of W side of chimney – possibly where there is a gap in the lead flashing – see Photo 19, Appendix 2
19:43 (KJ)	Common Pipistrelle	Foraging around trees and shrubs to S and W of house
19:45 (RS)	Common Pipistrelle	Commuting SW
19:46 (KJ, RS)	Common Pipistrelle	Foraging around trees and shrubs to S and W of house
19:50 (KJ)	Common Pipistrelle x2	Foraging around S side of house

19:54 (RS)	Barn Owl	Flying N up drove, lands on NE side of house, then flies S down drove
19:55 (KJ)	Common Pipistrelle	Foraging around trees and shrubs to S and W of house
19:56 (RS)	Common Pipistrelle	From house area goes NE up drain
19:58 (KJ, RS)	Common Pipistrelle x 2	Foraging around trees and shrubs to S and W of house
20:00 (KJ)	Common Pipistrelle	Foraging around trees and shrubs to S and W of house
20:02 (RS)	Barn Owl	Flying W of house and going NW of drain
20:04 (KJ)	Common Pipistrelle	Commuting along S side of house
20:06 – 20:07 (KJ)	Common Pipistrelle	Foraging around trees and shrubs to S and W of house
20:06 (RS)	Common Pipistrelle	W to E on front of N side of house and then away E
20:07 (KJ)	Noctule	Single pass unseen
20:08 – 20:09 (KJ, RS)	Common Pipistrelle	Foraging around trees and shrubs to S and W of house
20:13 (RS)	Common Pipistrelle	Brief and non-visual
20:14 – 20:44 (KJ, RS)	Common Pipistrelle	Foraging around trees and shrubs to S and W of house
20:14 (RS)	Barn Owl x 2	In quick succession, 1 going S to N and then returns, the other N to S along drove
20:44 (RS)	Brown Long-eared	Going E, N of house

Table 5: Presence/Absence Emergence Bat Survey results for the wood off Six Hundreds Drove at East Heckington on the 17th September 2021

Location	**Date**	
Wood on Six Hundreds Drove, East Heckington	17/09/2021	
	Start	End
Time	18:56	20:41
Temp (C)	19	16
Cloud Cover (%)	5	5
Beaufort Wind Scale	2	2
Wind Direction	SE	SE

Surveyor
KJ = Kevin Johnson
RS = Rod Strawson
RG = Richard Green
AG = Andrea Green

Time & Surveyor	**Species**	**Notes**
19:41 – 19:45 (AG)	Soprano Pipistrelle	Foraging around SW corner and into wood
19:49 – 19:50 (RG)	Common Pipistrelle	Foraging along W woodland edge
19:51 (KJ)	Common Pipistrelle	Foraging along N woodland edge
19:52 (RG)	Common Pipistrelle	Foraging along W woodland edge
19:58 (RG)	Common Pipistrelle	Foraging along W woodland edge
20:03 (AG)	Common Pipistrelle	Foraging along W woodland edge

20:04 (RS)	Daubenton's	Flying S to N on E side of wood
20:11 (KJ, RG)	Soprano Pipistrelle	Foraging along N and W woodland edge
20:12 – 20:17 (KJ)	Common Pipistrelle	Foraging along N woodland edge
20:12 (RG)	Soprano Pipistrelle	Foraging along W woodland edge
20:15 – 20:17 (RG, AG)	Common Pipistrelle	Foraging along W woodland edge
20:17 (KJ)	Brown Long-eared	Foraging along N woodland edge
20:21 – 20:22 (KJ)	Brown Long-eared	Foraging along N woodland edge
20:22 (KJ)	Common Pipistrelle	Foraging along N woodland edge
20:22 (KJ, RS, RG, AG)	Tawny Owl	Calling within wood
20:27 (KJ)	Common Pipistrelle	Foraging along N woodland edge
20:30 (KJ)	Common Pipistrelle	Foraging along N woodland edge
20:34 (RG)	Common Pipistrelle	Foraging along W woodland edge

Table 6: Presence/Absence Bat Emergence Survey results for Ash Tree at East Heckington on the 16th May 2022

Location	**Date**	
Ash Tree, East Heckington	16/05/2022	
	Start	End
Time	20:40	22:25
Temp (C)	18	16
Cloud Cover (%)	100	100
Beaufort Wind Scale	3	3
Wind Direction	SSW	SSW

Surveyor
MB = Marissa Bulloch

Time & Surveyor	**Species**	**Notes**
21:01 (MB)	Common Pipistrelle	Non visual and faint
21:15 (MB)	Common Pipistrelle	Non visual and faint
21:46 (MB)	Common Pipistrelle	Non visual and faint
22:07 (MB)	Common Pipistrelle	Non visual and faint

Table 7: Presence/Absence Bat Emergence Survey results for Ash Trees on Six Hundreds Drove at East Heckington on the 16th May 2022

Location	**Date**	
Ash Trees, Six Hundreds Drove, East Heckington	16/05/2022	
	Start	End
Time	20:40	22:25
Temp (C)	18	16
Cloud Cover (%)	100	100
Beaufort Wind Scale	3	3
Wind Direction	SSW	SSW

Surveyor
RG = Richard Green
AG = Andrea Green

Time & Surveyor	**Species**	**Notes**
21:34 (RG)	Common Pipistrelle	Single pass unseen
22:02 (AG, RG)	Common Pipistrelle	Flying North along hedge
22:24 (RG, AG)	Common Pipistrelle	Flying South along hedge

Table 8: Presence/Absence Emergence Bat Survey results for the barn off Six Hundreds Drove at East Heckington on the 16th May 2022

Location	Date	
Barn on Six Hundreds Drove, East Heckington	16/05/2022	
	Start	End
Time	20:40	22:25
Temp (C)	18	16
Cloud Cover (%)	100	100
Beaufort Wind Scale	3	3
Wind Direction	SSW	SSW

Surveyor
KJ = Kevin Johnson
RS = Rod Strawson

Time & Surveyor	Species	Notes
21:22 (KJ)	Common Pipistrelle	Exited from the N door of the single storey barn and flew SW
21:28 (KJ)	Barn Owl	Exited from the N door of the single storey barn and flew NE
21:29 (RS)	Common Pipistrelle	1 pass unseen, probably N of surveyor around trees and hedge
22:04 (KJ, RS)	Common Pipistrelle	Commuting S to N along Drove

Table 9: Presence/Absence Emergence Bat Survey results for the workers cottages off Six Hundreds Drove at East Heckington on the 16th May 2022

Location	Date	
Farmhouse on Six Hundreds Drove, East Heckington	16/05/2022	
	Start	End
Time	20:40	22:25
Temp (C)	18	16
Cloud Cover (%)	100	100
Beaufort Wind Scale	3	3
Wind Direction	SSW	SSW

Surveyor
AJ = Alan Johnson
BM = Bill Meek

Time & Surveyor	Species	Notes
21:11 – 21:14 (AJ)	Common Pipistrelle	Flew out of gap in top SW window (see photo), foraged around garden/trees/shrubs and then re-entered
21:20 - 20:29 (AJ)	Common Pipistrelle	Emerged as before then foraged around garden/trees/shrubs
21:27 – 21:29 (AJ)	Common Pipistrelle x 2	2nd individual joins original bat and both forage around garden/ trees/shrubs
21:30 (AJ)	Common Pipistrelle x 2	1st bat re-enters the building while the 2nd bat goes W
21:38 (AJ, BM)	Common Pipistrelle	Emerges again, then forages around garden/trees/shrubs then flies N over roof the S down Drove
21:52 (BM, AJ)	Jackdaw	Flew down chimney at W end of building
22:08 (BM, AJ)	Natterer's	E to W over S part of garden
220:09 (RG)	Common Pipistrelle	Foraging around garden/trees/ shrubs to S and W of house

22:11 (BM)	Common Pipistrelle	Commuting N up drain
22:13 (BM)	Common Pipistrelle	Single pass unseen

Table 10: Presence/Absence Emergence Bat Survey results for the wood off Six Hundred Drove at East Heckington on the 17th May 2022

Location	**Date**	
Wood on Six Hundreds Drove, East Heckington	17/05/2022	
	Start	End
Time	20:41	22:26
Temp (C)	20	19
Cloud Cover (%)	100	100
Beaufort Wind Scale	4	4
Wind Direction	SSE	SSE

Surveyor
KJ = Kevin Johnson
RS = Rod Strawson
RG = Richard Green
AG = Andrea Green

Time & Surveyor	**Species**	**Notes**
21:28 (AG)	Soprano Pipistrelle	Foraging around SW corner and into wood
21:32 – 21:33 (RG)	Soprano Pipistrelle	Foraging along W woodland edge and then W
21:35 (RS)	Soprano Pipistrelle	Non-visual

Table 11: September 2021 Static Results for East Heckington

Static	**Date**	**Species**	**Activity times**	**Number of passes**
1	12/09/2021	Common Pipistrelle	20:04 – 04:18	72
		Soprano Pipistrelle	19:58 – 03:22	38
		Noctule	22:31 – 04:11	7
	13/09/2021	Common Pipistrelle	19:50 – 23:10	51
		Soprano Pipistrelle	20:32 – 02:45	3
	14/09/2021	Common Pipistrelle	21:01 – 03:15	28
		Noctule	21:50 – 05:11	18
	15/09/2021	Common Pipistrelle	19:59 – 05:10	89
		Soprano Pipistrelle	20:15 – 00:22	49
		Brown Long-eared	22:15 – 03:24	4
	16/09/2021	Common Pipistrelle	19:30 – 02:45	10
		Noctule	23:10 – 06:20	15
2	12/09/2021	Common Pipistrelle	19:38 – 05:26	123
		Brown Long-eared	19:42 – 05:27	2
		Noctule	21:00 – 05:43	8
		Brandt's / Whiskered	23:22	1
	13/09/2021	Common Pipistrelle	20:08 – 06:00	50
		Brown Long-eared	23:42 – 05:46	18
	14/09/2021	Common Pipistrelle	19:28 – 05:37	95
		Brown Long-eared	20:13 – 04:52	5
		Noctule	21:02 – 04:28	7
	15/09/2021	Common Pipistrelle	19:42 – 05:58	64
		Noctule	23:42 – 06:29	13
	16/09/2021	Common Pipistrelle	19:32 – 06:25	184
		Brown Long-eared	19:34 – 05:01	2
		Noctule	20:02 – 06:23	27
3	12/09/2021	No Recordings		
	13/09/2021	Common Pipistrelle	21:34 – 04:47	4
	14/09/2021	Common Pipistrelle	23:07 – 03:56	2

Static	Date	Species	Activity times	Number of passes
		Noctule	23:58 – 05:36	2
	15/09/2021	Common Pipistrelle	00:45	1
	16/09/2021	Leisler	04:23	1
4	12/09/2021	Common Pipistrelle	20:33 – 03:34	68
		Natterer's	21:09	1
		Leisler	04:17 – 06:36	4
	13/09/2021	Common Pipistrelle	20:20 - 22:40	6
		Brandt's / Whiskered	23:42	1
		Leisler	01:29 – 06:19	2
	14/09/2021	Common Pipistrelle	20:15 – 23:48	14
		Leisler	04:32 – 06:37	5
	15/09/2021	Noctule	18:57 – 06:19	5
		Common Pipistrelle	20:12 – 23:42	90
		Leisler	01:43 – 06:46	4
	16/09/2021	Leisler	19:18 – 06:28	2
		Common Pipistrelle	20:08 – 22:47	137
		Brandt's / Whiskered	22:38	1
		Noctule	01:47	1
5	12/09/2021	Common Pipistrelle	18:59 – 04:12	42
		Soprano Pipistrelle	19:21 – 03:42	12
	13/09/2021	Common Pipistrelle	19:12 – 06:00	49
		Soprano Pipistrelle	19:15 – 02:41	7
		Brandt's / Whiskered	00:27	1
	14/09/2021	Common Pipistrelle	20:00 – 05:28	7
		Natterer's	23:18	1
		Noctule	00:00 – 04:58	5
	15/09/2021	Common Pipistrelle	19:08 – 05:48	27
		Leisler	23:38 – 06:28	14
	16/09/2021	Common Pipistrelle	19:48 – 3:38	12
		Soprano Pipistrelle	20:46 – 05:12	14
		Noctule	22:00 – 06:02	4
		Leisler	22:33 – 04:17	5
		Brandt's / Whiskered	23:10	1
6	12/09/2021	Common Pipistrelle	20:02 – 23:14	4
		Brown Long-eared	23:46	1
		Noctule	00:15 – 06:05	4
	13/09/2021	No Recordings		
	14/09/2021	Common Pipistrelle	19:24 – 03:47	5
		Soprano Pipistrelle	20:09 – 23:41	8
		Noctule	22:13 – 04:50	6
	15/09/2021	Common Pipistrelle	19:57 – 02:36	5
		Soprano Pipistrelle	20:03 – 00:34	5
	16/09/2021	Common Pipistrelle	22:01 – 04:34	5
		Noctule	22:43 – 06:15	7
7	12/09/2021	Common Pipistrelle	22:56	1
		Brown Long-eared	23:03 – 01:00	2
		Noctule	23:20	1
		Soprano Pipistrelle	05:21	1
	13/09/2021	No Recordings		
	14/09/2021	Common Pipistrelle	03:23	1
	15/09/2021	No Recordings		
	16/09/2021	Noctule	22:34	1
		Serotine	06:24	1
		Noctule	19:08 – 06:20	6

Static	Date	Species	Activity times	Number of passes
8	17/09/2021	Common Pipistrelle	01:33	1
	18/09/2021	Noctule	18:56 – 06:30	4
		Brown Long-eared	21:30 – 02:33	2
	19/09/2021	Noctule	19:23 – 22:08	5
		Common Pipistrelle	20:13 – 23:46	4
		Brandt's / Whiskered	22:57	1
	20/09/2021	Noctule	21:03 – 06:50	4
		Common Pipistrelle	23:57	1
	21/09/2021	Brandt's / Whiskered	21:27	1
9	17/09/2021	Common Pipistrelle	20:47 – 02:04	35
		Noctule	23:01 – 03:47	10
	18/09/2021	Common Pipistrelle	19:01 – 06:17	48
		Noctule	20:28 – 06:02	5
	19/09/2021	Common Pipistrelle	20:11 – 03:40	28
		Brown Long-eared	01:59	1
		Brandt's / Whiskered	02:08	1
	20/09/2021	Common Pipistrelle	00:11 – 04:58	14
		Noctule	04:39	1
	21/09/2021	Common Pipistrelle	18:56 – 00:23	5
		Brandt's / Whiskered	23:46	1
10	17/09/2021	Common Pipistrelle	20:38 – 05:48	4
	18/09/2021	Noctule	22:04 – 03:02	6
	19/09/2021	Common Pipistrelle	00:12 – 02:24	2
		Brown Long-eared	23:28	1
	20/09/2021	Common Pipistrelle	21:58 – 03:07	8
		Noctule	03:48	1
		Brandt's / Whiskered	02:56	1
	21/09/2021	Common Pipistrelle	05:32	1
11	17/09/2021	Common Pipistrelle	20:36 – 00:03	4
		Daubenton's	22:43	1
		Barbastelle	02:02	1
		Noctule	04:11	1
		Leisler	06:40	1
	18/09/2021	Common Pipistrelle	20:20 – 02:01	4
		Soprano Pipistrelle	21:15 – 21:53	2
	19/09/2021	Common Pipistrelle	19:49 – 03:19	6
		Soprano Pipistrelle	20:23 – 21:18	2
		Noctule	07:00	1
	20/09/2021	Brown Long-eared	00:14	1
		Common Pipistrelle	00:17	1
	21/09/2021	Brown Long-eared	03:11	1
12	17/09/2021	Common Pipistrelle	19:23 – 06:12	114
		Daubenton's	00:45	1
		Barbastelle	02:12	1
		Noctule	04:14 – 06:03	7
	18/09/2021	Common Pipistrelle	21:18 – 05:43	56
		Noctule	23:07 – 05:32	4
	19/09/2021	Common Pipistrelle	19:31 – 04:59	32
		Leisler	20:56 – 06:27	10
	20/09/2021	Common Pipistrelle	22:01 - 02:34	12
		Noctule	23:14 – 05:17	4
	21/09/2021	Common Pipistrelle	19:27 – 06:16	48
		Leisler	19:59 – 04:47	7
		Common Pipistrelle	20:20 – 23:40	5

Static	Date	Species	Activity times	Number of passes
13	17/09/2021	Noctule	22:18	1
		Natterer's	02:17	1
	18/09/2021	Common Pipistrelle	19:47 – 00:38	18
		Soprano Pipistrelle	20:20	1
		Noctule	21:14 – 02:31	3
		Leisler	22:18	2
	19/09/2021	Common Pipistrelle	20:08 – 06:02	37
		Soprano Pipistrelle	20:08	2
		Leisler	01:44	1
	20/09/2021	Noctule	18:34 – 05:10	9
		Common Pipistrelle	20:06 – 21:57	3
		Leisler	05:07 – 05:09	17
	21/09/2021	Leisler	19:14	1
		Common Pipistrelle	20:34 – 23:04	4
		Noctule	23:18 – 06:16	4
14	17/09/2021	Common Pipistrelle	19:58 – 03:46	12
		Leisler	20:15 – 06:01	4
		Noctule	22:12 – 23:14	2
	18/09/2021	Common Pipistrelle	18:57 – 06:15	7
		Noctule	19:56 – 20:10	2
	19/09/2021	Soprano Pipistrelle	20:22 – 02:47	8
		Leisler	03:49 – 06:24	5
	20/09/2021	Common Pipistrelle	20:01 – 05:01	10
		Soprano Pipistrelle	20:18 – 01:07	6
		Noctule	00:01 – 05:58	7
	21/09/2021	Common Pipistrelle	00:28 – 04:38	10
15	17/09/2021	No Recordings		
	18/09/2021	Common Pipistrelle	03:45	1
		Soprano Pipistrelle	04:12 – 05:15	3
	19/09/2021	Soprano Pipistrelle	22:17 – 00:09	5
	20/09/2021	Common Pipistrelle	21:56 – 06:17	7
		Natterer's	23:18	1
		Noctule	03:38 – 04:25	4
	21/09/2021	Common Pipistrelle	22:10 – 23:12	5

Table 12: May 2022 Static results for East Heckington

Static	Date	Species	Activity times	Number of passes
1	12/05/2022	Common Pipistrelle	04:03	1
	13/05/2022	Common Pipistrelle	22:45 – 00:33	5
		Soprano Pipistrelle	00:23	1
		Noctule	04:55	1
	14/05/2022	Common Pipistrelle	22:14 – 01:48	9
	15/05/2022	Common Pipistrelle	23:16 – 03:04	3
		Natterers'	23:25 – 01:09	2
	16/05/2022	Common Pipistrelle	02:14 – 02:56	2
2	12/05/2022	Common Pipistrelle	22:26 – 03:33	2
	13/05/2022	No Recordings		
	14/05/2022	Common Pipistrelle	22:42 – 23:34	5
	15/05/2022	No Recordings		
	16/05/2022	Common Pipistrelle	02:11 – 02:20	2
3	12/05/2022	No Recordings		
	13/05/2022	No Recordings		

Static	Date	Species	Activity times	Number of passes
	14/05/2022	Common Pipistrelle	22:49 – 01:02	7
	15/05/2022	Common Pipistrelle	22:00 – 22:09	2
	16/05/2022	No Recordings		
4	12/05/2022	Common Pipistrelle	21:58 – 04:02	21
	13/05/2022	Common Pipistrelle	22:00 – 03:59	28
	14/05/2022	Common Pipistrelle	21:48 – 04:06	101
	15/05/2022	Common Pipistrelle	22:01 – 01:52	5
	16/05/2022	Common Pipistrelle	21:53 – 03:32	60
5	12/05/2022	Common Pipistrelle	22:07	1
		Noctule	03:51	1
		Leisler	01:42 – 03:50	2
	13/05/2022	Common Pipistrelle	22:13 – 01:33	4
		Brown Long-eared	22:15	1
		Leisler	00:56 – 02:34	6
	14/05/2022	Common Pipistrelle	22:23 – 02:06	5
	15/05/2022	No Recordings		
	16/05/2022	Common Pipistrelle	04:00	1
		Leisler	04:14 – 04:45	5
6	12/05/2022	Common Pipistrelle	21:59 – 03:25	5
	13/05/2022	Common Pipistrelle	21:50 – 04:09	7
	14/05/2022	Common Pipistrelle	22:13 – 04:09	10
	15/05/2022	No Recordings		
	16/05/2022	Common Pipistrelle	23:02 – 03:52	9
		Leisler	04:41	1
7	12/05/2022	Common Pipistrelle	21:48	3
	13/05/2022	Common Pipistrelle	21:53 – 00:18	5
	14/05/2022	Common Pipistrelle	21:55 – 01:15	13
		Soprano Pipistrelle	22:01	1
		Noctule	20:25	1
	15/05/2022	No Recordings		
	16/05/2022	Common Pipistrelle	23:46 – 02:04	3
		Daubenton's	02:06	1
8	17/05/2022	Common Pipistrelle	01:56	1
	18/05/2022	Common Pipistrelle	23:21	1
	19/05/2022	Leisler	22:53	1
	20/05/2022	No Recordings		
	21/05/2022	Leisler	05:22	3
		Noctule	05:21	3
9	17/05/2022	Common Pipistrelle	02:05 – 02:56	2
	18/05/2022	Common Pipistrelle	22:19 – 03:31	12
	19/05/2022	Common Pipistrelle	22:01- 23:15	2
	20/05/2022	Common Pipistrelle	22:00 – 22:13	4
	21/05/2022	Common Pipistrelle	22:10 – 22:11	2
		Daubenton's	22:28	1
10	17/05/2022	Common Pipistrelle	22:45 – 01:17	3
	18/05/2022	Common Pipistrelle	02:11	1
	19/05/2022	No Recordings		
	20/05/2022	Common Pipistrelle	22:22 – 03:25	2
	21/05/2022	Common Pipistrelle	02:02	1
11	17/05/2022	Common Pipistrelle	22:02 – 03:17	9
	18/05/2022	Common Pipistrelle	22:13 – 03:56	5
	19/05/2022	Common Pipistrelle	21:55 – 04:05	37
	20/05/2022	Common Pipistrelle	22:01 – 02:26	7
	21/05/2022	Common Pipistrelle	21:58 – 01:11	25

Static	Date	Species	Activity times	Number of passes
		Natterer's	22:51	1
12	17/05/2022	Common Pipistrelle	22:05 – 03:50	15
	18/05/2022	No Recordings		
	19/05/2022	Common Pipistrelle	22:26 – 04:50	60
	20/05/2022	Common Pipistrelle	22:01 – 01:29	17
	21/05/2022	Common Pipistrelle	21:56 – 22:21	18
13	17/05/2022	Common Pipistrelle	21:58 – 03:38	36
		Soprano Pipistrelle	00:50	1
		Daubenton's	00:27	1
	18/05/2022	Common Pipistrelle	23:13 – 23:29	9
	19/05/2022	Common Pipistrelle	21:52 – 03:53	62
		Soprano Pipistrelle	23:10	1
		Daubenton's	22:13 – 23:03	2
	20/05/2022	Common Pipistrelle	22:07 – 01:51	22
	21/05/2022	Common Pipistrelle	21:53 – 03:42	53
		Brandt's/ Whiskered	23:02	1
14	17/05/2022	Common Pipistrelle	22:43 – 02:43	3
		Leisler	01:28	1
	18/05/2022	Common Pipistrelle	22:05 – 22:24	2
	19/05/2022	Common Pipistrelle	21:49 – 04:14	5
	20/05/2022	Common Pipistrelle	01:23	1
	21/05/2022	Soprano Pipistrelle	21:58	1
15	17/05/2022	No Recordings		
	18/05/2022	No Recordings		
	19/05/2022	Common Pipistrelle	23:14	1
	20/05/2022	Common Pipistrelle	03:42	1
	21/05/2022	Common Pipistrelle	22:00 – 22:13	2

Table 13: July/August 2022 Static Results for East Heckington

Static	Date	Species	Activity times	Number of passes
1	26/07/2022	Common Pipistrelle	22:17 – 00:22	4
		Brandt's / Whiskered	22:19	1
	27/07/2022	Common Pipistrelle	21:46 – 00:29	4
	28/07/2022	Common Pipistrelle	22:20 – 02:16	3
	29/07/2022	Common Pipistrelle	21:51 – 01:22	6
		Serotine	03:39	1
		Natterer's	04:02	1
	30/07/2022	Daubenton's	01:08	1
		Soprano Pipistrelle	01:18	1
2	26/07/2022	No Recordings		
	27/07/2022	No Recordings		
	28/07/2022	No Recordings		
	29/07/2022	No Recordings		
	30/07/2022	No Recordings		
3	26/07/2022	Common Pipistrelle	21:56 – 23:31	6
		Brandt's / Whiskered	01:33	1
	27/07/2022	Common Pipistrelle	22:27 – 04:24	5
	28/07/2022	Common Pipistrelle	22:03 – 22:06	2
		Natterer's	01:48	1
	29/07/2022	Common Pipistrelle	22:22 – 22:50	4
		Soprano Pipistrelle	23:24	1

Static	Date	Species	Activity times	Number of passes
	30/07/2022	Common Pipistrelle	22:29 – 23:31	6
4	26/07/2022	Common Pipistrelle	22:14 – 03:48	50
		Natterer's	23:49 – 23:59	2
	27/07/2022	Common Pipistrelle	21:41 – 04:16	134
		Daubenton's	03:32	1
	28/07/2022	Common Pipistrelle	21:54 – 04:16	100
		Brandt's / Whiskered	01:15	1
		Natterer's	01:46	1
		Brown Long-eared	02:07	1
	29/07/2022	Common Pipistrelle	21:58 – 04:22	88
		Soprano Pipistrelle	22:06 – 23:26	2
		Natterer's	02:21	1
	30/07/2022	Leisler	22:00 – 22:14	21
		Common Pipistrelle	22:02 – 02:22	93
		Serotine	22:02 – 22:15	10
		Daubenton's	01:02	1
5	26/07/2022	Common Pipistrelle	21:54 – 00:11	18
		Natterer's	22:16	1
		Serotine	23:56	1
	27/07/2022	Common Pipistrelle	22:03 – 04:19	7
		Noctule	22:25	1
		Serotine	23:23 – 23:54	2
	28/07/2022	Common Pipistrelle	22:46 – 00:13	5
		Noctule	02:04	1
	29/07/2022	Leisler	22:12 – 23:57	2
		Common Pipistrelle	22:35	1
		Soprano Pipistrelle	22:37	1
		Daubenton's	04:00	1
	30/07/2022	Common Pipistrelle	22:06 – 01:58	17
		Leisler	02:49	1
6	26/07/2022	Common Pipistrelle	21:29 – 03:50	9
		Soprano Pipistrelle	21:34 – 22:18	2
		Leisler	00:41	1
	27/07/2022	Common Pipistrelle	22:12 – 01:31	3
		Soprano Pipistrelle	02:57	1
	28/07/2022	Common Pipistrelle	22:05 – 03:16	7
		Brown Long-eared	02:19	1
	29/07/2022	Common Pipistrelle	22:02 – 23:35	7
		Noctule	23:34	1
	30/07/2022	No Recordings		
7	26/07/2022	Common Pipistrelle	22:10 – 23:55	6
	27/07/2022	Serotine	20:34	1
		Soprano Pipistrelle	22:32	1
		Common Pipistrelle	23:16 – 03:45	6
	28/07/2022	Common Pipistrelle	22:35 – 03:38	8
	29/07/2022	Common Pipistrelle	22:09 – 01:01	80
	30/07/2022	Common Pipistrelle	21:47 – 23:46	45
8	31/07/2022	Common Pipistrelle	22:36 – 00:25	2
	01/08/2022	Daubenton's	22:11	1
		Soprano Pipistrelle	22:20	1
		Noctule	22:45	1
		Common Pipistrelle	23:39	1
		Leisler	03:55	1
	02/08/2022	Noctule	20:37	1

Static	Date	Species	Activity times	Number of passes
	03/08/2022	Common Pipistrelle	22:16 – 00:17	10
	04/08/2022	Common Pipistrelle	21:50	1
9	31/07/2022	Common Pipistrelle	22:06 – 04:08	17
		Daubenton's	01:42	1
	01/08/2022	Common Pipistrelle	22:20 – 23:54	7
	02/08/2022	Leisler	22:28	1
		Common Pipistrelle	23:24	1
	03/08/2022	Common Pipistrelle	22:46 – 03:06	16
		Soprano Pipistrelle	23:16	1
		Daubenton's	03:46	1
	04/08/2022	Common Pipistrelle	22:00 - 22:41	3
10	31/07/2022	Common Pipistrelle	21:50 – 03:44	6
		Noctule	23:58 – 02:01	4
	01/08/2022	Common Pipistrelle	23:31 – 23:48	2
	02/08/2022	Noctule	22:28 – 04:30	6
	03/08/2022	Common Pipistrelle	22:06 – 23:16	6
	04/08/2022	Common Pipistrelle	04:18	1
11	31/08/2022	Common Pipistrelle	22:10 – 04:19	13
		Soprano Pipistrelle	23:06	1
	01/08/2022	Common Pipistrelle	21:46 – 23:57	6
		Noctule	22:14 – 04:29	2
		Daubenton's	22:26	1
	02/08/2022	Noctule	00:38	1
	03/08/2022	Common Pipistrelle	22:05 – 04:13	17
		Serotine	22:47	1
		Barbastelle	23:02	1
		Noctule	23:11	1
		Nathusius's Pipistrelle	23:24	1
		Soprano Pipistrelle	23:50 – 03:49	2
	04/08/2022	Common Pipistrelle	22:04 – 22:40	2
12	31/07/2022	Common Pipistrelle	21:52 – 04:13	98
		Noctule	01:30	1
	01/08/2022	Common Pipistrelle	21:50 – 02:17	20
		Brandt's / Whiskered	00:20	1
	02/08/2022	Common Pipistrelle	22:43 – 22:48	2
	03/08/2022	Common Pipistrelle	21:42 – 02:50	44
		Noctule	22:17 – 22:18	2
		Brandt's / Whiskered	00:20	1
		Natterer's	00:28	1
		Barbastelle	01:29	1
	04/08/2022	Common Pipistrelle	22:18 – 23:49	4
		Soprano Pipistrelle	22:20	1
13	31/07/2022	No Recordings		
	01/08/2022	No Recordings		
	02/08/2022	No Recordings		
	03/08/2022	No Recordings		
	04/08/2022	No Recordings		
14	31/07/2022	Leisler	21:27 – 05:22	2
		Nathusius's Pipistrelle	22:44	1
		Soprano Pipistrelle	23:08	1
		Noctule	23:48 – 05:17	3
		Common Pipistrelle	00:10 – 01:45	3
		Natterer's	01:34	1
		Daubenton's	03:32	1

Static	Date	Species	Activity times	Number of passes
	01/08/2022	Common Pipistrelle	22:06 – 23:07	6
	02/08/2022	Noctule	22:41	1
		Common Pipistrelle	23:18 – 23:59	2
	03/08/2022	Common Pipistrelle	22:16 – 01:13	12
		Soprano Pipistrelle	23:33	1
		Leisler	02:52	1
	04/08/2022	Noctule	21:33	1
		Common Pipistrelle	21:55 – 00:58	3
		Brandt's / Whiskered	23:25	1
15	31/07/2022	Common Pipistrelle	21:53 – 00:06	5
		Daubenton's	03:34	1
	01/08/2022	Common Pipistrelle	22:04	1
	02/08/2022	Common Pipistrelle	00:51	1
	03/08/2022	Common Pipistrelle	22:29 – 22:47	3
	04/08/2022	Common Pipistrelle	21:43 – 22:25	2

Summary of bat recordings for each static

Abbreviations				
CPIP	Common Pipistrelle		BLE	Brown Long-eared
SPIP	Soprano Pipistrelle		NATT	Natterer's
NPIP	Nathusius's Pipistrelle		B/W	Brandt's/Whiskered
NOC	Noctule		DAUB	Daubenton's
LEI	Leisler		BARB	Barbastelle
SER	Serotine			

Static 1 On Six Hundred Drive close to hedgerow and woodland

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	50	18		8			0.8				
Spring	4	0.2		0.2				0.4			
Summer	3.4	0.2				0.2		0.2	0.2	0.2	

Static 2 At Six Hundred Farm buildings

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	103.2			11			5.4		0.2		
Spring	1.8										
Summer											

Static 3 On dry ditch

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	1.4			0.4	0.2						
Spring	1.8										
Summer	4.6	0.2						0.2	0.2		

Static 4 Adjacent to woodland and wet ditch

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	63			1.2	3.4			0.2	0.4		
Spring	43										
Summer	93	0.4			4.2	2	0.2	0.8	0.2	0.4	

Static 5 Adjacent to wet ditch and hedgerow

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	27.4	6.6		1.8	3.8			0.2	0.4		
Spring	2.2			0.2	2.6		0.2				
Summer	9.6	0.2		0.4	0.6	0.6		0.2		0.2	

Static 6 On dry ditch

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	3.8	2.6		3.4			0.2				
Spring	6.2				0.2						
Summer	5.2	0.6		0.2	0.2		0.2				

Static 7 On dry ditch

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	0.4	0.2		0.4		0.2	0.4				
Spring	4.8	0.2		0.2						0.2	
Summer	29	0.2				0.2					

Static 8 On a dry ditch

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	1.2			3.8			0.4		0.4		
Spring	0.4			0.6	0.8						
Summer	2.8	0.2			0.2					0.2	

Static 9 On wet IDB ditch

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	26			3.2			0.2		0.4		
Spring	4.4									0.2	
Summer	8.8	0.2			0.2					0.4	

Static 10 On a dry ditch

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	3			1.4			0.2		0.2		
Spring	1.4										
Summer	3			2							

Static 11 On a wet IDB drain

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	3	0.8		0.4	0.2		0.4			0.2	0.2
Spring	16.6							0.2			
Summer	7.6	0.6	0.2	0.8		0.2				0.2	0.2

Static 12 On a wet IDB drain (Labour in Vain Drain)

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	52.4			3	3.4					0.2	0.2
Spring	22										
Summer	33.6	0.2		0.6				0.2	0.4		0.2

Static 13 On wet IDB drain

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	13.4	0.6		3.4	4.2			0.2			
Spring	36.4	0.4							0.2	0.6	
Summer											

Static 14 On wet ditch

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	7.8	2.8		2.2	1.8						
Spring	2.2	0.2			0.2						
Summer	5.2	0.4	0.2	1	0.6			0.2	0.2	0.2	

Static 15 On dry ditch

	Average number of passes per night										
Species	CPIP	SPIP	NPIP	NOC	LEI	SER	BLE	NATT	B/W	DAUB	BARB
Autumn	2.6	1.6		0.8				0.2			
Spring	0.8										
Summer	2.2									0.2	

APPENDIX 4 - ADDITIONAL INFORMATION

Weather conditions for walked bat activity transects

Transect Date	Temp C	% Cloud Cover	Wind speed (Beaufort Scale)	Wind direction
21/09/2021	19 – 16	25 – 25	2	SW
23/09/2021	18 – 16	25 – 25	3	NW
19/05/2022	16 – 15	40 – 70	2	SE
20/05/2022	15 – 14	10 – 30	3	SE
01/08/2022	22 – 21	100 – 100	2	S
02/08/2022	22 - 21	20 - 20	3	WNW

NGR for Static Bat detector locations

Static No.	NGR +/- 3m
1	TF 20676 44467
2	TF 20764 45190
3	TF 71376 45684
4	TF 20849 46025
5	TF 20327 45104
6	TF 20285 45805
7	TF 20248 46542
8	TF 19957 44917
9	TF 19887 45373
10	TF 19793 46004
11	TF 19573 45258
12	TF 19417 45502
13	TF 19525 46418
14	TF 19069 45304
15	TF 19061 46134

Weather condition for periods Static Bat detectors deployed

Date	Temp C	% Cloud Cover	Wind speed (Beaufort Scale)	Wind direction
September 2021				
12/09/2021	16-14	100 - 100	2	ENE - NNE
13/09/2021	16-15	100 - 100	2	N - NE
14/09/2021	15-12	80 - 90	2	NE - W
15/09/2021	15-12	50 - 50	2	WSW - SW
16/09/2021	18-13	0 - 0	2	ENE - E
17/09/2021	19-14	5 - 5	2	NE - NNE
18/09/2021	20-17	80 - 100	2	NNE - NE
19/09/2021	18-13	100 - 30	3	N - WNW
20/09/2021	16 - 11	30 - 10	2	NNW - S
21/09/2021	19 - 11	25 - 0	2	SW - SE
May 2022				
12/05/2022	15 – 10	80 – 75	3	SE - SE
13/05/2022	16 – 10	50 – 20	3	SSE - SSE
14/05/2022	17 – 11	5 – 80	2	NE – NNE
15/05/2022	16 – 11	25 – 100	3	NNW – NNE
16/05/2022	16 – 12	15 – 20	3	SE – SE
17/05/2022	20 – 13	90 – 40	3	ENE – SE

Date	Temp C	% Cloud Cover	Wind speed (Beaufort Scale)	Wind direction
18/05/2022	19 – 12	75 – 100	3	E – E
19/05/2022	16 – 12	40 – 90	2	SE – SSE
20/05/2022	15 – 10	10 – 60	2	SE – SSE
21/05/2022	14 – 18	80 – 20	2	SSE – SE
July/ August 2022				
26/07/2022	18 – 13	30 – 30	2	NNE – ESE
27/07/2022	20 – 14	60 – 60	2	NNE – NE
28/07/2022	17 – 14	30 – 60	3	NNE - NE
29/07/2022	20 – 15	40 – 50	3	NE – SE
30/07/2022	20 – 16	50 – 70	2	SSW – SSW
31/07/2022	22 – 12	80 – 30	2	SW – SSW
01/08/2022	22 – 19	100 – 100	2	SE – SE
02/08/2022	22 – 18	20 – 25	3	S – SE
03/08/2022	20 – 15	20 – 100	2	WSW – SW
04/08/2022	18 – 10	50 – 10	3	SW - SSW