

Steeple Renewables Project
Appendix 7.7: Bat Report

Issuing office

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1 Introduction

1.1 This report is a technical appendix to accompany the Preliminary Environmental Information Report (PEIR) Chapter 7: Ecology and Biodiversity and includes the following information:

- Methods.
- Results including relevant Figures, and summary interpretation.

1.2 For ease of reference the following will be terms referred to within this report to define areas within the Site:

- Proposed Solar Areas: areas within the Site which have been provisionally identified for locating the solar panels, battery storage and other associated infrastructure.
- Biodiversity Mitigation Areas (Eastern and Western): areas of the Site that would not be used for development, and provisionally identified for use as biodiversity mitigation and enhancement.
- The Site: collectively including the Proposed Solar Areas and Biodiversity Mitigation Areas.

2 Methodology

Desk study

- 2.1 A data search for records of protected and notable species, including bats, within 2 km of the Site was requested from Nottinghamshire Biodiversity Records Centre (NBRC) and Lincolnshire Environmental Records Centre (LERC) in March 2024. Records up to twenty years old from the request date are included within this report as older records are less likely to be representative of the current baseline in the local area. Older records were reviewed as part of the desk study but are only included where considered to be directly relevant to the Site, for example they occur on or adjacent to the Site.
- 2.2 The Multi-Agency Geographic Information for the Countryside database (MAGiC) was accessed on 27 June 2024 to identify any granted European Protected Species licences for bats within 2 km of the Site (Defra, 2024).
- 2.3 Aerial photographs and mapping (Bing Maps, 2024; Google and Image Landsat / Copernicus, 2024) of the Site and its surroundings were examined to further assist in understanding the local context of the Site, in particular, to identify connectivity with potential bat roosting and foraging habitats offsite.
- 2.4 Available ecology reports relevant to the Site were reviewed as part of the desk study work. This included Nottinghamshire County Council planning application reference 1/46/06/00014, which is a quarry scheme (not yet implemented) adjacent to the Site's northeast boundary on the farmland between the Site and the River Trent. The survey boundary for the quarry application included areas of the Site to the south of West Burton Power Station in the Proposed Solar Area and part of the Eastern Biodiversity Mitigation Area. The ecology report for that application (ESL Ltd, 2010) presents the results of bat surveys undertaken in 2009 / 10.

Field survey

- 2.5 Surveys for bats have been undertaken in the Proposed Solar Areas only; this is referred to as the Survey Area. Surveys are not being undertaken in the Biodiversity Mitigation Areas (Eastern and Western) as there will not be any negative effects on bat foraging / commuting habitats or potential roost locations.
- 2.6 Note that Static Location 16 and the north-eastern section of transect Route 5 fall within the Eastern Biodiversity Mitigation Area (see Figures 7.7.1 and 7.7.2); this part of the Site was removed from the Survey Area after commencement of the bat activity surveys (see below). The data collected from this location has been included in the analysis given its proximity to the Survey Area (it is 420 m to the north-east of the Proposed Solar Area).

Preliminary ground level assessment

- 2.7 A daytime ground-level inspection of buildings, bridges and trees within the Survey Area was carried out to identify potential features that may be suitable for roosting bats. The survey was completed with reference to current industry guidance (Collins, 2023).
- 2.8 Locations of features with potential roosting habitat for bats are shown on Figures 7.7.3.1 – 7.7.3.7 in Section 5, including building and tree reference numbers. Tree references are taken from the Arboricultural Survey Report Tree Survey Plan (Barton Hyett Associates, 2024).
- 2.9 The survey was predominantly undertaken between March and April 2024, prior to foliage obscuring visibility¹. Surveys were carried out by Fiona Shuttle (Senior Ecologist, BSG Ecology), Emily McVean

¹ Survey of trees within west Burton Power Station was undertaken on 27 July 2024 due to access restrictions.

(Senior Ecologist, BSG Ecology) and Emma Bruce (Freelance Ecologist, EJB Ecology); of whom Fiona² and Emma³ both hold Natural England Bat Class Licences.

- 2.10 Offsite trees and buildings situated within 50 m of the Survey Area were also subject to a preliminary bat roost assessment from ground level, details of which are provided below.

Assessment of buildings & bridges (on-Site)

- 2.11 A total of five buildings, two railway bridges and ten culverts / bridges over drains which are present within or along the boundaries of the Survey Area were included in the preliminary bat roost assessment.
- 2.12 All buildings / bridges / culverts were inspected externally for evidence of roosting bats as well as to identify potential access points and features with bat roosting potential. A high-powered torch and binoculars were used to assist with the inspection. An internal inspection of the buildings was also undertaken (where possible) to search for bats or evidence of bats, such as bat droppings.
- 2.13 All buildings / structures were assigned a category defining their potential to support roosting bats ('high', 'moderate', 'low' or 'negligible' potential suitability), with reference to Bat Conservation Trust survey guidance (Collins, 2023).

Assessment of trees (on-Site)

- 2.14 All trees within and immediately adjacent to the Survey Area were included in the preliminary bat roost assessment.
- 2.15 During the survey, trees or groups of trees were inspected from the ground, using binoculars and a high-powered torch as necessary to look for potential roosting features suitable for bats, such as woodpecker holes, rot holes, splits or cracks, dead limbs, ivy cover and/or flaking bark. Any evidence of the use of these features by bats, such as droppings, was also recorded.
- 2.16 With reference to Collins (2023), trees were classified by the presence of different types of potential roost features suitable for different types of roosting, in order to guide assessment of likely impacts and mitigation measures:
- PRF-I: Potential roosting features are only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats.
 - PRF-M: Potential roosting features are suitable for multiple bats and may therefore be used by a maternity colony.
- 2.17 Trees with no potential roosting features are not suitable to support roosting bats; a photo of each was taken for reference, but they were not otherwise included in the report and their locations are not shown on the figures in Section 5.

Offsite buildings and trees

- 2.18 Offsite trees and buildings within 50 m of the Survey Area were subject to a preliminary bat roost assessment; a 50 m buffer was adopted based on the predicted Zone of Influence (Zoi) of the Development in respect of bats, taking into consideration potential impacts that could arise to any bat roosts (should they be present) through factors such as loss of habitat connectivity (in particular the fragmentation of habitat corridors), disturbance (particularly during construction phases) and impacts arising from new lighting (if required).
- 2.19 In this case a 50 m buffer around the Survey Area was considered to be appropriate as habitat loss will only occur within the Proposed Solar Area and lighting and disturbance effects are unlikely to extend as far as 50 m from its boundaries.

² Natural England Bat Class Licence reference 2021-51224-CLS-CLS.

³ Natural England Bat Class Licence reference 2022-10318-CL17-BAT.

- 2.20 A precautionary approach was adopted to broadly assess whether offsite buildings and trees had 'some' or 'negligible' bat roost potential. Given that no direct impacts on any offsite building / tree are anticipated, and that indirect impacts can likely be avoided through appropriate scheme design, more detailed assessment was not considered necessary at this stage.
- 2.21 A desk-based search was undertaken to identify all buildings and trees within 50 m of the Survey Area using aerial photography (Google and Image Landsat / Copernicus, 2024). A walkover survey was undertaken of all that were easily accessible, to identify any that have negligible suitability for roosting bats (i.e. no potential roost features were present), and which can be excluded from further consideration. Where visual access to offsite buildings / trees was not possible from within the Survey Area or from public footpaths, close up inspection was not undertaken and this is considered further in the Limitations section below.
- 2.22 Any building or tree that was not subject to survey, or those that were found to have 'some' potential for roosting bats were labelled as 'building / tree that may have potential to support roosting bats'.
- 2.23 Further survey of offsite buildings and the remainder of the trees was not considered necessary at this stage, as there will be no direct impacts on them and indirect impacts are unlikely. The work completed is proportionate and will allow for indirect effects to be adequately considered, such as through appropriate site design and other measures where necessary.
- 2.24 Six offsite buildings within 50 m of the Survey Area fall within West Burton Power Station demolition zone to the north; these were excluded from the survey as it is anticipated that they will be demolished prior to the commencement of the current application scheme as part of ongoing decommissioning of West Burton Power Station.
- 2.25 Survey of offsite trees is ongoing; results will be updated upon completion of these surveys.

Bat activity surveys

- 2.26 An initial assessment of the Survey Area concluded that it provides medium potential suitability for foraging and commuting bats, with reference to industry standard guidance (Collins, 2023). Arable farmland is the dominant habitat within the Survey Area, which is typically considered to provide poor opportunities for foraging bats; however the hedgerows, streams and field drains provide linear foraging resources and connectivity across the Survey Area. Small, isolated pockets of woodland are also present that provide potential foraging habitat.
- 2.27 As recommended in Collins (2023), activity surveys for sites of moderate suitability for bats should include seasonal Night-time Bat Walkover (NBW) surveys and monthly static bat detector surveys between April and October.
- 2.28 Survey details are summarised in Appendix 7.7.1, including dates, surveyors present and weather conditions during each survey.

Night-time bat walkover

- 2.29 Three seasonal NBW surveys have been undertaken. At the time of writing the results of the September visit have not been analysed but the results of the first two surveys (May and June) have been analysed and are presented in this report. This section will be updated in the final ES ecology chapter.
- 2.30 During each survey visit, five routes were walked on the same night to provide appropriate survey coverage across the Site. Each route was walked by two ecologists. Each route was designed to follow field boundaries, drains and other habitat features that are most likely to be used by foraging and commuting bats. The direction of the transect was varied on each occasion; this helped to understand the temporal use of different parts of the Survey Area by bats.
- 2.31 At the start of each NBW, pairs of surveyors were positioned on potential flight lines close to potential roost sources (both on and offsite) such as woodland, groups of buildings or mature trees. Each survey started at sunset and surveyors remained in position for at least 30 minutes, recording

behaviour of any bats observed. Following which, surveyors walked at a slow pace for two to three hours after sunset along pre-determined routes. NBW start locations and walked routes are illustrated on Figure 7.7.1 in Section 5.

- 2.32 Anabat Scout bat detectors were used to aid bat identification along each route. Where bat activity was recorded, the time and species were noted on a map. In addition, the flight direction and behaviour of the bat(s) was also recorded where this could be determined (e.g. foraging, commuting or social calling). Bat calls were later analysed using Kaleidoscope software (Wildlife Acoustics, 2024) to allow identification of the bat species present.

Static bat detector survey

- 2.33 Static remote bat detectors have been deployed every month between April and October (seven surveys) and left *in situ* for a minimum of five consecutive nights to record bat activity. Survey details are summarised in Appendix 7.7.1, including dates and weather conditions during each survey period.
- 2.34 At the time of writing, July – October 2024 surveys are yet to be analysed. The results of the first three survey periods (April, May and June 2024) are presented within this report in Section 2; results and preliminary conclusions drawn will be updated upon completion of results analysis.
- 2.35 A total of 16 bat detectors were deployed each month (13 SM4 and three Song Meter Mini detectors – these detectors are both made by Wildlife Acoustics). The detector locations are summarised in Appendix 7.7.2 and illustrated on Figure 7.7.2, Section 5.
- 2.36 The bat detectors were located so that they sampled representative habitats across the whole Survey Area, including habitats where bat activity was most likely to be focussed, considering bat ecology and behaviour of most species considered likely to be encountered (i.e., next to features such as woodland edge and watercourses).
- 2.37 Three of the detectors (Locations 3, 7 and 10) were positioned in the middle of arable fields and each were ‘paired’ with a static detector which was positioned on the closest field boundary, within a hedgerow (Locations 4, 6 and 9). The purpose was to provide comparative data between the field centre and the field boundary hedgerow. As less bat activity is typically expected in the field centres, the pairing of detectors allows comparison on a selection of fields to see whether evidence aligns with this concept and to gain an indication of the use of different parts of the fields, considering that the field centres would be the typical habitat type directly impacted by the Proposed Development. Given the physical limitations of installing SM4 bat detectors in field centres (mainly due to their size), Song Meter Mini detectors were deployed in the three field centre locations. This is given further consideration in the Limitations section below. Detectors were attached to a pole approximately 1 m high so that the microphone was not obscured by crops which could potentially reduce the detectability of bats.
- 2.38 For each deployment period, the detector was set to record from half an hour before sunset to half an hour after sunrise.
- 2.39 Bat calls were analysed using *Kaleidoscope* software (Wildlife Acoustics, 2024) to allow identification of the bat species present, where possible, and their relative levels of activity.
- 2.40 For *Pipistrellus* species the following criteria based on measurements of peak frequency were used to classify calls:
- Common pipistrelle ≥ 42 and <49 KHz
 - Soprano pipistrelle ≥ 51 KHz
 - Nathusius pipistrelle <39 KHz
 - Common / soprano pipistrelle ≥ 49 and <51 KHz
 - Common / Nathusius pipistrelle ≥ 39 and <42 KHz

- 2.41 In addition, the following categories are used for calls which cannot be identified with confidence due to the overlap in call characteristics between species or species groups:
- *Myotis* sp.
 - *Nyctalus* sp. (either Leisler's bat or noctule)

2.42 All other species identification followed the parameters described in Russ (2012).

2.43 The data provided by automated bat detectors were entered into and analysed using a Microsoft Excel spreadsheet to determine the total number of bat registrations recorded and also the pass rate (i.e. the average number of bat registrations recorded per hour of night). It is challenging to assess actual bat numbers from the information collected by static bat detectors. Where multiple bat calls are recorded these could, for example, either have been produced by a single bat repeatedly flying back and forth past the detector or by multiple bats, each flying past on a single occasion. The data obtained therefore provides a relative measure of bat activity at different locations and at different times, rather than a measure of population size.

Consideration of potential limitations

2.44 Internal access to Buildings 2 and 5 were not possible during the ground level assessment. The exterior of each building was surveyed for suitable access/egress points for bats, and a search was undertaken around the exterior for signs such as droppings or staining. This limitation has been considered as part of the assessment of potential suitability of each building for bats and a precautionary assessment has been made where necessary. It is considered unlikely that these buildings will be directly impacted by the Proposed Development.

2.45 During the offsite ground level assessment of trees and buildings within 50 m of the Survey Area boundaries, close inspection was not undertaken in several instances due to access restrictions. This is not considered to be a significant limitation to the purpose of the survey, which was to broadly characterise the roosting potential of each tree / building and this was possible from a distance and a precautionary approach was adopted when there remained any uncertainty.

2.46 During the April static survey, one of the detectors (Location 4, see Figure 7.7.2) provided two nights of bat activity data rather than five due to equipment failure. This was taken into account during analysis calculations and equipment was repaired ahead of further survey visits. This is not considered to be a significant constraint on the bat activity surveys as data from the following survey periods was collected successfully and overall provided an adequate data set with which to evaluate the importance of the Survey Area for foraging and commuting bats. A total of 106 hours of survey data was collected from this Static Location between April and June; 18 hours of data was missing which accounted for 15% of the total survey period between April and June. Overall, this minor data gap is not considered to be a significant constraint to the assessment.

2.47 During the April static survey, minimum overnight temperatures recorded were between 2 – 10 °C. Overnight temperatures below 10 °C are typically considered to be sub-optimal for bat surveys, with reference to the Bat Conservation Trust survey guidance (Collins, 2023), due to reduced availability of invertebrate prey. This could not be avoided as the temperatures recorded in the April survey period were typical for the time of year; colder temperatures were forecast throughout the remainder of the month. The potential effect of lower temperatures upon bat activity has been taken into account during the interpretation of results. This is not considered to be a significant constraint on the bat activity surveys as the minimum overnight temperature during the following survey periods exceeded 10 °C.

2.48 During the static surveys at paired detector locations, Song Meter Mini detectors were deployed in field centres (Locations 3, 7 and 10), whilst Song Meter SM4 detectors were deployed at the paired locations in adjacent field boundary hedgerows (Locations 4, 6 and 9) due to physical limitations of installing SM4 detectors in the central field locations (see Section 1.37). The two types of detector are considered to have comparable recording quality; they both record in full spectrum, are produced by the same manufacturer, the same recording settings were used (e.g. sample rate and filters) and bat calls were analysed using the same software. For the purpose of giving an indication of the use of different part of the fields, this is not considered to be a significant limitation.

3 Results and Summary Interpretation

Desk study

- 3.1 The data search of MAGiC identified no European Protected Species Licence granted by Natural England for bats within 2 km of the Survey Area.
- 3.2 The data search with NBGRC and GLNP provided 331 records of bats within 2 km of the Survey Area. Records were for eight species: common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Nathusius' pipistrelle *Pipistrellus nathusii*, noctule *Nyctalus noctula*, Leisler's bat *Nyctalus leisleri*, Daubenton's bat *Myotis daubentonii*, brown long-eared bat *Plecotus auritus* and whiskered bat *Myotis mystacinus* or Brandt's bat *Myotis brandtii*⁴. Additionally of note, no records of Natterer's bat *Myotis nattereri* were provided within the last 20 years, but two records were provided within 2 km of the Survey Area from 1993.
- 3.3 Records of four roosts were associated with buildings within West Burton power station situated immediately north of the Survey Area; three common pipistrelle roosts (up to two bats per roost; all recorded in 2023) and a brown long eared roost (single bat, recorded in 2006).
- 3.4 Other notable desk study records include a record of a *Myotis* species emerging from a tree within the Eastern Biodiversity Mitigation Area in 2010 (grid reference SK 81744 83374). Additionally, Littleborough church, situated adjacent to the southern boundary of the Eastern Biodiversity Mitigation Area, has records of brown long eared bat droppings and a grounded bat (also brown long eared), as well as common pipistrelle droppings, from 2018. Both records are situated over 400 m from the Survey Area.
- 3.5 Static detector surveys were undertaken in June and July 2010 as part of the Steeple quarry application (ESL, 2010), which concluded that the hedgerows and drains provided the best feeding and commuting corridors and the arable farmland was not attractive to bats. The species assemblage was considered to be unremarkable; five bat species were recorded in total, with common and soprano pipistrelle the only two species present in increased numbers (other species recorded were *Myotis* species and noctule). Two emergence surveys were also undertaken of trees as part of the application; during which one bat (unknown species) was observed to emerge from a tree. This was situated outside the Steeple Renewables Project boundary, located approximately 170 m from the Eastern Biodiversity Mitigation Area (grid reference SK 81620 83662).

Field survey

Ground level assessment

Buildings and bridges (on-Site)

- 3.6 Of the nine buildings within the Survey Area, one building has high potential to support roosting bats, one building has moderate potential and three buildings have low potential, whilst the remaining four buildings have negligible potential for roosting bats. Bat droppings (unidentified species) were found within Building 3, but given that it is an open-sided building, it is unclear whether bats roost within the building, or if they use it for foraging / as a sheltered feeding perch.
- 3.7 Two railway bridges with potential roosting features are situated along the Survey Area boundaries; the bridge on the western boundary has low potential to support roosting bats whilst the bridge along the southern boundary has moderate potential. Additionally, nine small bridges / brick-enforced culverts are present along field drains which have low potential to support roosting bats.
- 3.8 Detailed descriptions of the buildings / bridges, potential roost features and photos are presented in Appendix 7.7.3. Locations are shown on Figure 7.7.3 in Section 5.
- 3.9 The results of the preliminary roost inspections of built structures are summarised in Table 1 below.

⁴ Two records of 'whiskered / Brandts' were provided from 2003 and 2006.

Table 1. Summary of building bat roost inspection results

Building number	Summary description	Location	Roost suitability
B1	Open sided agricultural shelter	Within west of Survey Area	Negligible
B2	Agricultural store / barn	Within west of Survey Area	Low
B3	Open-sided brick-built garage	Within west of Survey Area	High
B4	Small flat roof signal building in woodland	Within west of Survey Area, adjacent to railway.	Low
B5	Agricultural store / barn	Within south of Survey Area (within Site Access Corridor)	Negligible
B6	Flat roofed office cabins	West Burton Power Station, in the north of Survey Area	Low
B7	Single storey brick built, flat roof 'café house'	West Burton Power Station, in the north of Survey Area	Moderate
B8	Double storey flat roof offices	West Burton Power Station, in the north of Survey Area	Negligible
B9	Substation warehouse	West Burton Power Station, in the north of Survey Area	Negligible
Railway bridge - south	Tall brick-built bridge beneath railway line	Along the southern Survey Area boundary	Moderate
Railway bridge - west	Tall brick-built bridge beneath railway line	Along Survey Area boundary in the south-west	Low
Bridges over field drains (x 9)	Bridges / brick built culverts over field drains	Two brick culverts within north-west of Survey Area; the rest along Survey Area boundaries	Low

- 3.10 All potential roosting features recorded within buildings, railway bridges and bridges over field drains are likely to be fairly common in the local area given the abundance of agricultural buildings, buildings in villages and arable fields with field drains in the surrounding landscape.

Trees (on-Site)

- 3.11 The preliminary ground level tree assessment identified 72 trees and four groups of trees within the Survey Area with PRF-M features (potentially suitable for multiple bats), 47 trees and one group of trees with PRF-I features (potentially suitable for individual bats). The remaining trees were considered to have negligible potential for roosting bats.
- 3.12 The results of the preliminary ground level tree assessment are summarised in Table 2 below.

Table 2. Summary of ground level tree assessment results

Bat suitability	Tree references (see Figures 7.7.3.1 – 7.7.3.7)
PRF-M	T20, T26, T33, T39, T46, T51, T67, T72, T74, T80, T83, T97, T117, T150, T195, T197, T229, T230, T235, T237, T246, T250, T281, T285, T288, T328, T330, T333a, T342, T343, T350, T351, T352, T353, T355, T356, T357, T358, T360, T365a, T365b, T368, T370, T372, T373, T374, T377, T378, T379, T380, T390b, T391, T395, T398, T400, T402, T403, T406, T424, G14, G16, G19.1, G19.2, G26, G28.1, G28.2, G39.1, G77, G99, G106.1, G108.2, G109.1, G109.5, G113.5, H107, H244.1
PRF-I	T30, T31, T32, T35, T36, T37, T55, T68, T73, T75, T76, T78, T234, T248, T252, T347, T348, T354, T359, T371, T386, T390, T390a, T390c, T390d, T396, T397, T404, T405, T425, G25, G39.2, G53.1, G53.2, G81, G105.2, G106.3, G106.4, G106.5, G106.6, G109.2, G109.3, G109.4, G112.1, H170, H244.2, H373.1, H373.2

3.13 Typical PRF-M features recorded on trees within the Survey Area include: woodpecker holes, knot holes leading into a branch / stem cavity, tear out wounds and dead / hollow stems. Typical PRF-I features recorded include: shallow desiccation cracks, shallow hazard beams, lifted bark, shallow knot holes and small wounds to the stem. These features are all considered to be fairly common in the local area given the abundance of hedgerows containing trees in the surrounding landscape.

3.14 The location of these features are shown on Figures 7.7.3.1 – 7.7.3.7.

Offsite buildings / trees

3.15 Survey of offsite trees is currently ongoing; results will be updated upon completion of these surveys.

Bat activity surveys

3.16 The Survey Area provides foraging and commuting habitat for bats, particularly the hedgerows, streams, field drains, scattered trees and small areas of woodland edge. However, the primary habitat within the Survey Area is arable cropland which is considered to be of low value for foraging bats: monoculture crops typically provide limited structural and species diversity of vegetation and are subject to application of agricultural chemicals (including herbicides, pesticides and fertilisers) which typically limit the abundance of invertebrate prey.

3.17 Habitats within the Survey Area are connected to other foraging, commuting and roosting resources in the wider landscape; in particular, vegetated railways are adjacent to the Survey Area boundaries (centrally and to the south) which provide linear commuting corridors for bats; and the River Trent is adjacent to the Eastern Biodiversity Mitigation Area and situated 1.1 km to the east of the Proposed Solar Areas, but with some habitat connectivity typically along hedgerows and drains.

Night-time bat walkover

3.18 The results of the first two NBW surveys are included within this report, and were undertaken in early May and mid-June 2024, following each of the five routes shown on Figure 7.7.1, Section 5. This report will be updated upon completion of analysis of the final NBW survey that was carried out in September. The results of the surveys analysed to date are summarised below and shown on Figures 7.7.4.1 – 7.7.4.6 in Section 5 and further detail is provided in Appendix 7.7.4.

3.19 Low numbers of bats were recorded across all NBW routes during both surveys. Common pipistrelle was the most frequently recorded species from all transects and soprano pipistrelle was recorded occasionally. Overall, seven passes of unidentified *Myotis* species were identified across both May and June surveys, whilst a total of six passes of noctule and two of Leisler's were recorded. Bats were typically seen as individuals or in small numbers commuting or foraging along linear and boundary habitat features such as hedgerows and field drains.

3.20 Bat activity was higher during the May survey than the June survey; between nine and 30 passes were recorded during the May NBW survey during any route, whilst between eight and 16 passes were recorded during the June survey.

3.21 Bat activity levels were fairly similar across the routes, however slightly lower numbers of bats were recorded on Route 1 in the north-west of the Survey Area during both May and June NBW surveys (a total of eight and nine bat passes recorded). The highest numbers of bats recorded were from Route 4 in May (a total of 30 bat passes) in the north-east of the Survey Area and Route 2 in June (a total of 16 bat passes) in the south-west of the Survey Area. The railway line adjacent to the Survey Area in the west was well used for foraging by individual / low numbers of common pipistrelle, as was the road / track to the east of Fenton, in the south-east of the Survey Area. Increased levels of bat activity (predominantly foraging and commuting individual common pipistrelle bats) were also recorded along Cross Common Lane in the north-east of the Survey Area and along nearby hedgerows.

3.22 Common and soprano pipistrelle activity was fairly widespread across all Routes, whilst five of the seven *Myotis* passes recorded overall were from the south-west of the Survey Area. The majority of noctules were observed in the north-west of the Survey Area during the May NBW survey (three of

five passes) and the two Leisler's passes recorded were along the railway in the south-west of the Survey Area.

- 3.23 No bats were recorded within the first 30 minutes of any of the stationary observations. During the May NBW survey, the first bat recorded was a common pipistrelle at 21:19 (33 minutes past sunset). During the June survey, the first bat recorded was common pipistrelle at 22:11 (37 minutes past sunset).
- 3.24 A summary of bat activity recorded during each NBW survey, including species and numbers of bats recorded, is provided in the table in Appendix 7.7.4 and shown on Figures 7.7.4.1 – 7.7.4.6.
- 3.25 Overall, bat activity was predominantly recorded along the tracks (each lined with two hedgerows), railway and field drains that intersect the Survey Area / run adjacent to the Survey Area boundaries. Increased activity was also found along field boundary hedgerows. Little activity associated with the open arable fields was recorded.

Static bat detector survey

- 3.26 A summary of the data obtained from the automated bat detector survey is provided in Tables A to E in Appendix 7.7.5 and shown on Figures 7.7.5.1 – 7.7.5.3. Three survey periods have been analysed at the time of writing (April – June 2024), results of which are presented in this report. This report will be updated at a later stage with the results and analysis of the remaining four surveys (July – October 2024).
- 3.27 At least eight species of bat were recorded within the Survey Area during the static surveys (across all sixteen detectors and three survey periods; a total of 1946 hours across all detectors). These were:
- Common pipistrelle (24,419 passes / 12.53 bat passes per hour across all recorded hours);
 - *Myotis* species (5,235 passes / 2.65 passes per hour);
 - Soprano pipistrelle (2,335 passes / 1.19 passes per hour);
 - Leisler's bat (140 passes / 0.07 passes per hour);
 - Noctule (86 passes / 0.04 passes per hour);
 - Brown long-eared bat (84 passes / 0.04 passes per hour);
 - Nathusius' pipistrelle (10 passes / 0.02 passes per hour); and
 - Barbastelle bat *Barbastella barbastellus* (5 passes / 0.003 passes per hour).
- 3.28 There were additionally passes corresponding to either a common or soprano pipistrelle (395 passes / 0.20 passes per hour), noctule or Leisler's bat (169 passes / 0.09 passes per hour), and either common or Nathusius' pipistrelle (190 passes / 0.09 passes per hour).
- 3.29 Common pipistrelle accounted for 74% of bat passes, whilst *Myotis* species accounted for 16%, soprano pipistrelle 7% and the remainder accounting for 1% or under of all bat passes.
- 3.30 Overall, average pass rates were highest at:
- Static Location 16⁵ (69.4 passes per hour), followed by;
 - Location 13 (53.7);
 - Location 1 (36.5); and
 - Location 11 (25.5).
- 3.31 The average pass rates were lowest at:
- Location 7 (0.1 passes per hours), followed by;
 - Location 3 (0.3);
 - Location 4 (0.8); and
 - Location 10 (1.3).

⁵ Location 16 is located within the Eastern Biodiversity Mitigation Area, approximately 420 m to the north-east of the Proposed Solar Area (see Section 1.6 for methods). This location is closest to (750 m from) the River Trent.

- 3.32 The remainder of Static Locations had pass rates between 4.6 and 18.9 passes per hour.
- 3.33 The three Static Locations with highest activity (Locations 16, 13 and 1) are all situated adjacent to small, wooded copses within the Survey Area, whilst Static Location 11 (with the fourth highest activity) is situated along Catchwater Drain. These features are types of habitat that are typically considered to be of increased habitat suitability for bats within the Survey Area, and the increased levels of activity at these locations is not unexpected. Common pipistrelle was the most commonly recorded species at Locations 16 and 13 (averaging 57.5 and 49.1 passes per hour respectively between April - June), whilst Myotis species was most commonly recorded at Location 1 (averaging 27.2 passes).
- 3.34 The highest bat activity levels across all locations was recorded in May, (overall average pass rate of 34.69 passes per hour) followed by June (13.69 passes/hour) and April (3.72 passes/hour). The relative pass rate of most species followed this overall pattern. The lower number of bat passes in April may be related to the weather conditions on some nights, with lower overnight temperatures recorded (minimum temperatures ranging between 2 – 10 °C); such conditions are typically considered to be sub-optimal for bats due to reduced availability of invertebrate prey.
- 3.35 Analysing time periods through the night of bat activity gives an indication of how the Survey Area is likely to be used. For example, where bat passes are recorded close to emergence times, the data can give an indication that nearby roosts may be present. Passes recorded outside of the emergence periods may indicate that a site is more likely to be used by foraging bats (travelling to a site from more distant roosts).
- 3.36 Under 1% of all bat activity was recorded before / within the first 40 minutes after sunset (a total of 299 passes of all species, across 15 nights and across 16 locations); of which common pipistrelle accounted for the majority (204 passes). 4% of overall bat activity was recorded between 41 – 60 minutes after sunset (a total of 1446 passes); of which common pipistrelle accounted for the majority (1155 passes). The highest numbers of overall bat activity were recorded during the middle of the night period (over two hours after sunset / before two hours before sunrise).
- 3.37 The overall low bat activity recorded around peak emergence times, between seven minutes and 60 minutes after sunset (Collins, 2023), indicates that the majority of bat activity likely relates to foraging behaviour from bats associated with offsite roosts.

Middle of field locations (paired detectors)

- 3.38 Of the Static Locations with lowest activity, Locations 3, 7 and 10 are all situated in the middle of arable fields, indicating these locations are not regularly used by bats for foraging or commuting. Across the three survey periods (15 nights), Location 3 recorded 32 passes, Location 7 recorded 17 passes and Location 10 recorded 210 passes. Common pipistrelle was the most commonly recorded species (a maximum of 46 passes during a single night at Location 10), followed by noctule, Leisler's and unidentified Nyctalus species (up to seven passes of a Nyctalus species at Location 3 on a single night), whilst soprano pipistrelle, Myotis species and brown long eared bats were very rarely recorded in the middle of field locations (under two passes per night at any location).
- 3.39 A comparison of these middle of the field locations (Locations 3, 7 and 10) with their associated hedgerow detectors (Locations 4, 6 and 9) indicates much lower bat activity in the open fields, as shown in Table 3 below. Overall, the middle of the field locations recorded 86% less bat activity (of all species) than was recorded by the paired hedgerow locations.

Table 3 showing average bat pass rates of paired static detectors (for all bat species in April, May and June)

Static bat detector location		Average bat pass rate (passes per hour)	
Middle of arable field	Paired detector in hedgerow	Middle of arable field	Paired detector in hedgerow
3	4	0.26	0.83
7	6	0.14	5.38
10	9	1.33	5.78

- 3.40 The species and number of passes recorded when comparing the detectors in the centre of fields and the paired hedgerow detectors reflect the habitat preferences of each species. Common pipistrelle and *Myotis* species were the most commonly recorded species within the Survey Area as a whole. The preferred foraging habitat for these species include structured vegetation such as trees and hedgerows, relative to open habitats (Collins, 2023). These preferences are consistent with the fewer number of bat passes recorded at the middle of field locations relative to the field margin hedgerow locations.

Summary of bat activity survey results

- 3.41 The results of two (of three) NBW surveys and three (of seven) static survey periods have been analysed and are considered within this report (including data collected up to 30 June 2024). Initial interpretations of these results are provided below, which will be updated upon completion, analysis and interpretation of remaining bat activity surveys.
- 3.42 Overall, at least eight species of bat were recorded during bat activity surveys; common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, Leisler's bat, noctule, brown long-eared bat, *Myotis* species and barbastelle. Bat activity was fairly evenly recorded throughout the Survey Area, typically along hedgerows, with increased levels found along the railway in the west of the Survey Area, farm tracks (in particular Cross Common Lane), small woodlands and field drains / streams throughout the Survey Area. Low levels of bat activity were recorded within the arable fields.
- 3.43 A maximum of 3,764 bat passes was recorded during any one static survey period (all bat passes recorded across five nights). This was predominantly from *Myotis* species (3,295 passes) during the May survey period at Location 1, whilst Locations 13 and 16 also recorded increased numbers of common pipistrelle (4,125 and 4,878 passes) during May 2024.
- 3.44 An interpretation of the current understanding of levels of bat activity for each species recorded is provided below, taking into consideration results from all bat activity surveys completed between April and June 2024.

Common pipistrelle, soprano pipistrelle, brown long eared bat and noctule

- 3.45 These species are common, widespread bat species in the UK which are commonly recorded throughout Nottinghamshire (Nottinghamshire Bat Group, 2024). Common pipistrelle was the dominant bat species recorded during the bat activity surveys (averaging 12.5 passes per hour and accounting for 74% of all passes during the April to June surveys), whilst soprano pipistrelle were regularly recorded (1.2 passes per hour and 7% of all passes); these species were recorded throughout the Survey Area with activity typically comprising individual bats along hedgerows, around watercourses and the small woodlands. Brown long-eared bat and noctule were less regularly recorded (each averaging 0.04 passes per hour and accounting for under 1% of all passes). Both species were recorded in low numbers across much of the Survey Area, with individual noctule bats recorded typically flying higher above the Survey Area, including occasional foraging above hedgerows and the arable fields, whilst the maximum activity of brown long eared bat recorded was at Location 8 along a tree-lined stream in the south-west of the Survey Area.
- 3.46 It is considered unlikely that noctule or brown long eared bats are roosting within the Survey Area in large numbers. A total of eleven noctule bat passes were recorded within the first 40 minutes of

sunset across all activity surveys, whilst their peak emergence time is approximately seven minutes after sunset (Collins, 2023). No brown long-eared bats were recorded within the first 60 minutes after sunset and a total of 14 brown long eared bat passes were recorded within the first two hours after sunset; the peak emergence time for this species is 61 minutes after sunset (Collins, 2023). The low numbers and timings of noctule and brown long eared bat passes recorded indicate that low numbers of roosts of these species are present within the local area.

- 3.47 It is possible that the Survey Area supports roosts of common pipistrelle and soprano pipistrelle given the large size of the Survey Area, the activity levels recorded and the presence of numerous potential roost features for these species including gaps between brickwork of buildings / bridges and various features in trees (including crevice-like gaps and larger cavities). However, the bat activity survey results found no evidence indicative of maternity roosts (e.g. large numbers of passes recorded at peak emergence times) and should roosts be present, they are considered likely to be of small numbers of bats.

Myotis species

- 3.48 *Myotis* species bat calls cannot reliably be separated to a species level based on calls alone due to overlapping characteristics. Alcathe *Myotis alcathe*, Bechstein's *Myotis bechsteinii* and greater mouse-eared bat *Myotis myotis* (which are the rarest *Myotis* species in the UK) have not previously been recorded in Nottinghamshire and are not known to be present in the East Midlands region of England, so they are not considered further. Desk study records of more common *Myotis* species were provided within 2 km of the Survey Area including Daubenton's bat whiskered bat or Brandts bat⁶ and Natterer's bat⁷.
- 3.49 It is likely that a high proportion of the *Myotis* passes recorded within the Survey Area are associated with Daubenton's bat, a *Myotis* species that is more commonly found in the county, as this species is commonly found along aquatic habitats such as the streams and field drains intersecting the Survey Area. However, the taller hedgerows, small woodlands and tree-lined Oswald Beck (where increased numbers of *Myotis* species passes were recorded in May) also provide potential habitat for Natterer's, whiskered and Brandt's bat.
- 3.50 *Myotis* bats were the second-most common species / species group recorded throughout the Survey Area and were recorded at every Static Location with an average of 2.7 passes per hour during the April to June surveys (accounting for 16% of all passes).
- 3.51 Given the large size of the Survey Area, the activity levels recorded and the availability of potential suitable roost features in trees and buildings (see Sections 2.6 – 2.14 above), it is possible that the Survey Area supports roosts of a *Myotis* species (assumed Daubenton's, Natterer's, whiskered and / or Brandt's). However, only 0.5% of all *Myotis* bat activity recorded during the static activity surveys was from within the first hour of sunset and 70% of activity was from the middle of the night survey period. As such, should roosts be present, they are considered likely to be of small numbers of bats.
- 3.52 Over half of all *Myotis* passes recorded during the static activity surveys were from the May survey period at Location 1, situated along Oswald Beck in the north-west of the Survey Area. The majority (>80%) of *Myotis* passes at this location in May were recorded during the 'middle of the night' period, indicating that the majority of passes are likely to be associated with foraging or commuting activity. No *Myotis* passes were recorded within 60 minutes after sunset (at Location 1 in May), suggesting it is highly unlikely that this peak in activity was related to a *Myotis* roost within the Survey Area.
- 3.53 Of the remainder of *Myotis* passes recorded, 11% were recorded at Location 5, adjacent to a hedge-lined track to the east of the railway, 5% at Location 13 along hedgerows next to a small wooded copse and the remainder of locations each accounted for <5% of all *Myotis* passes recorded. This suggests a habitat preference of *Myotis* for hedgerows, small wooded copses and streams (including Oswald Beck) within the Survey Area.

⁶ Two records of 'whiskered / Brandts' were provided from 2003 and 2006.

⁷ Noting that a total of two desk study records of Natterer's were provided; both of which are over 20 years old, from 1993.

Barbastelle

- 3.54 The Survey Area is located at the northern edge of the range for barbastelle in the UK, which is one of the rarest bat species in the UK and Nottinghamshire (Nottinghamshire Bat Group, 2024). Only five passes of this species were recorded throughout the bat activity surveys. All were recorded in the west of the Survey Area during the May static survey; a single pass was recorded on 10 May 2024 at Location 2 on the corner of a small wooded copse, a single pass on 13 May 2024 at Location 6 along hedgerows and three passes on 13 May 2024 at Location 8 along a tree-lined stream.
- 3.55 All barbastelle passes were recorded in the middle of the night survey period (after two hours past sunset), indicating they are not likely to be roosting close by. The Survey Area provides limited roosting habitat for this species, which typically prefers large bark plates and splits / cracks for roosting and they typically choose roosting sites in woodland trees in undisturbed locations amongst thick vegetation cover (Collins, 2023); neither are commonly recorded within the Survey Area. As such, there is considered to be a low likelihood of roosts of barbastelle in the Survey Area.
- 3.56 The Survey Area also provides limited riparian habitat, woodland and unimproved grassland, which are this species' preferred foraging habitats (Collins, 2023). Given the very low number of barbastelle passes (an average of 0.003 passes per hour during the static detector surveys) recorded, the Survey Area is not considered likely to be an important habitat resource for barbastelle.

Nathusius' pipistrelle

- 3.57 *Nathusius pipistrelle* bats were recorded in low numbers within the Survey Area; this species is uncommon at a county and national level (Nottinghamshire Bat Group, 2024). A maximum of 16 passes were recorded during any night at a single location during the static surveys (on 17 May at Location 16 in the Eastern Biodiversity Mitigation Area; including 13 records which could have been attributed to common or *Nathusius' pipistrelle*). The Survey Area provides limited roosting opportunities for *Nathusius' pipistrelle* – they typically choose buildings as roost sites (Nottinghamshire Bat Group, 2024), of which there are few within the Survey Area. The earliest *Nathusius' pipistrelle* recorded during static surveys was after an hour past sunset (and only five records of unidentified common / *Nathusius' pipistrelle* were recorded before this time), noting that the peak emergence time for this species is 30 minutes after sunset (Collins, 2023).
- 3.58 *Nathusius' pipistrelle* is typically considered to be a long-distance migrant and exhibits seasonal patterns of activity, with the peak migration period for this species in late summer / autumn or in spring with an influx of bats entering England from continental Europe (Nottinghamshire Bat Group, 2024). As this species has been recorded in May and June within the Survey Area, it is likely that there is a resident population in the local area. However, given the limited opportunities for roosting within the Survey Area and considering the timing of bat passes recorded, it seems unlikely that *Nathusius' pipistrelle* roosts are present on the Site. The number of passes recorded during the surveys does not indicate that the Survey Area provides a significant habitat resource for the species locally.

Leisler's bat

- 3.59 This species is rare / has a restricted distribution within the UK and is uncommon within Nottinghamshire (Nottinghamshire Bat Group, 2024). *Leisler's* bats were recorded within the Survey Area during the static surveys, with a maximum of 17 passes recorded during any night at a single location (on 12 June at Location 8 along the stream passing through the south of the Survey Area). The overall passes per hour for *Leisler's* across all static detector locations during April, May and June is 0.07 passes per hour.

There are trees within the Survey Area that provide roosting opportunities for *Leisler's* bats, whilst the woodland edges, hedges and field drains provide foraging habitat for this species. The peak emergence time of *Leisler's* bat from roosts is approximately 18 minutes after sunset but can be up to one hour after sunset (Collins, 2023). A total of three *Leisler's* bats were recorded within the first 60 minutes after sunset. Given the low number of passes recorded overall, it is unlikely that significant roosts are present within the Survey Area and it is unlikely that the Survey Area provides a significant habitat resource for the species locally.

Summary and Key Points

- 3.60 The desk study returned no records of bats situated within the Proposed Solar Areas (which was also the Survey Area boundary for all bat surveys). Records within 2 km of the Survey Area included small numbers of roosting common pipistrelle and brown long eared bat within 25 m of the Survey Area and a *Myotis* species (undefined roosting) within the Eastern Biodiversity Mitigation Area. Other species of note identified within 2 km of the Survey Area included Nathusius' pipistrelle, Leisler's bat, and up to four *Myotis* species; Daubenton's, Natterer's whiskered and / or Brandt's bats.
- 3.61 The preliminary ground level building assessment identified one building with high potential to support roosting bats, one building with moderate potential, three buildings with low potential and ten brick culverts / bridges over field drains with low potential to support roosting bats within the Survey Area. Two railway bridges are also present along the Survey Area boundaries and these have low to moderate potential to support roosting bats. Evidence of bats was found in Building 3, in which bat droppings were found, which could be associated with a roost / foraging activity within the building. No other evidence of roosting bats was found during the surveys.
- 3.62 The preliminary ground level tree assessment identified 71 trees and four groups of trees within the Survey Area which have PRF-M features (potentially suitable for multiple bats), as well as 47 trees and one group of trees with PRF-I features (potentially suitable for individual bats). No evidence of roosting bats was found during the surveys.
- 3.63 Preliminary assessment of offsite buildings and trees within 50 m of the Survey Area is ongoing and results are yet to be provided in this report. The results of the April, May and June 2024 bat activity surveys have been included within this report. This report will be updated upon completion of analysis of the final October 2024 surveys.
- 3.64 During the May and June 2024 NBW surveys, low numbers of bat passes were recorded across the Survey Area during both surveys, and a total of five species of bat were recorded. Bat activity was predominantly recorded along access tracks (each lined with two hedgerows), the vegetated railway and field drains which intersect the Survey Area / run adjacent to the Survey Area boundaries, with increased activity also found along field boundary hedgerows. Little activity associated with the open arable fields was recorded.
- 3.65 During the April, May and June 2024 static bat detector surveys, at least eight species of bat were recorded within the Survey Area: common pipistrelle accounted for the majority of bat activity (74% of all passes), with a *Myotis* species (likely Daubenton's, Natterer's, Brandt's and / or whiskered bats) and soprano pipistrelle commonly present. Leisler's, noctule, brown long eared, Nathusius' pipistrelle and barbastelle each accounted for 1% or under of all bat activity. Commuting and foraging bat activity was fairly evenly distributed throughout the Survey Area, predominantly associated with the hedgerows, field drains and small pockets of woodland. Little bat activity was associated with the middle of arable fields relative to the nearby hedgerows on field margins. Overall, bat activity levels are typical for the geographic location of the Survey Area and the habitats present.
- 3.66 No roosts have been identified within the Survey Area to date, noting that further assessment would be necessary to determine whether trees / buildings present support roosting bats, should the Proposed Development be anticipated to impact any trees or buildings with potential roosting features. Overall, given the potential roosting resources available within the Survey Area and considering the bat activity observed during the April, May and June 2024 activity surveys, the roosting assemblage is likely to be typical for the size of the Survey Area, its geographic location and the habitats and roosting opportunities present. Should roosts be present within the Survey Area, they are likely to be small roosts of common, widespread species associated with trees or buildings.

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5 Figures

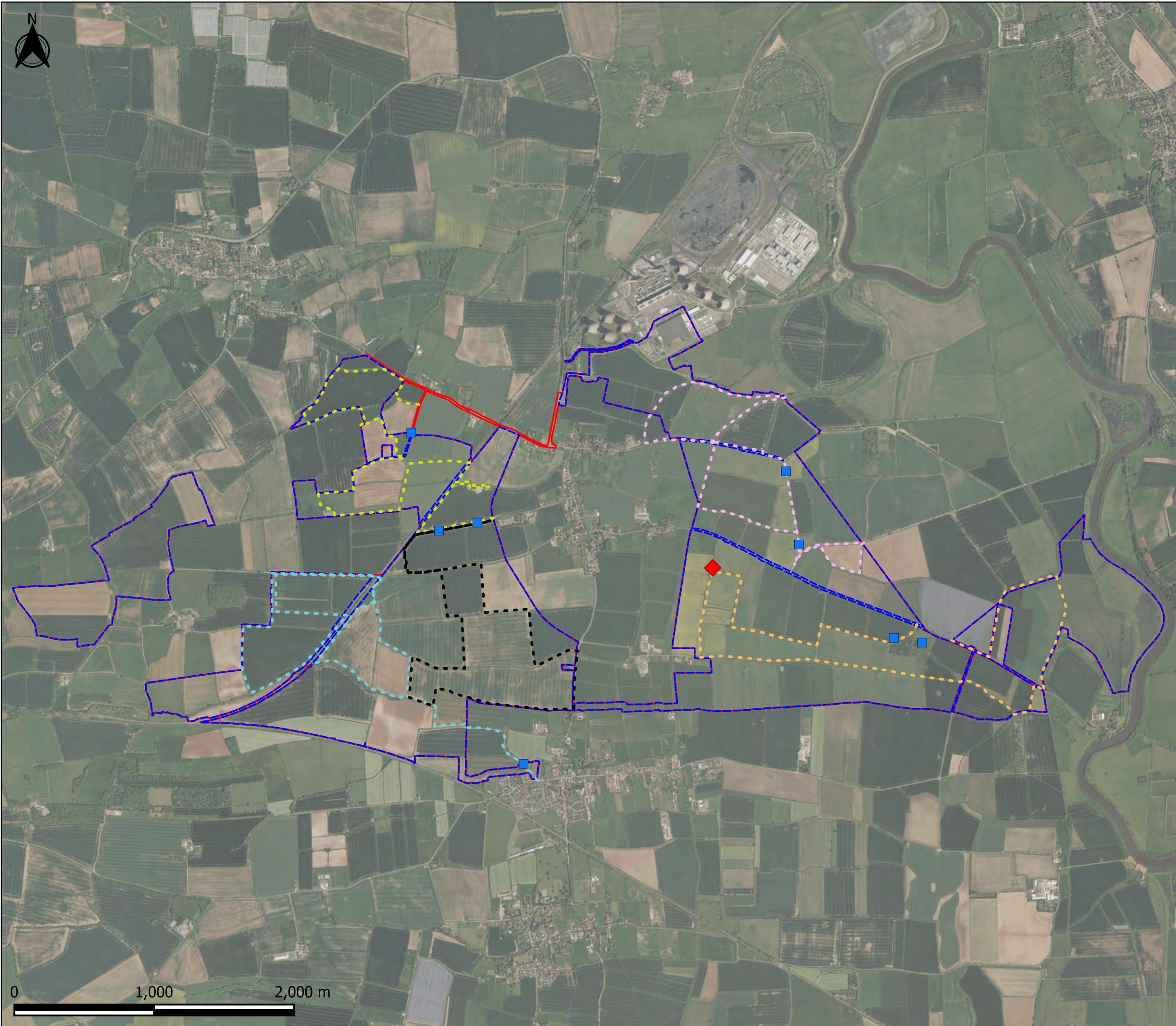
Figure 7.7.1 – Night-time bat walkover survey routes

Figure 7.7.2 – Static bat detector locations

Figures 7.7.3.1 to 7.7.3.7- Ground level tree and building assessment results

Figures 7.7.4.1 to 7.7.4.6 – Night-time bat walkover results (April – June)

Figures 7.7.5.1 to 7.7.5.3 – Static bat detector results (April – June)



- Legend**
- Incidental Sightings and Resting Site
 - ◆ Main - active
 - ▭ Site boundary
 - ▭ Survey boundary
 - Start locations of NBW surveys
 - Night-time Bat Walkover routes
 - Route 1
 - Route 2
 - Route 3
 - Route 4
 - Route 5



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Figure 7.7.1: Night-time bat walkover survey routes

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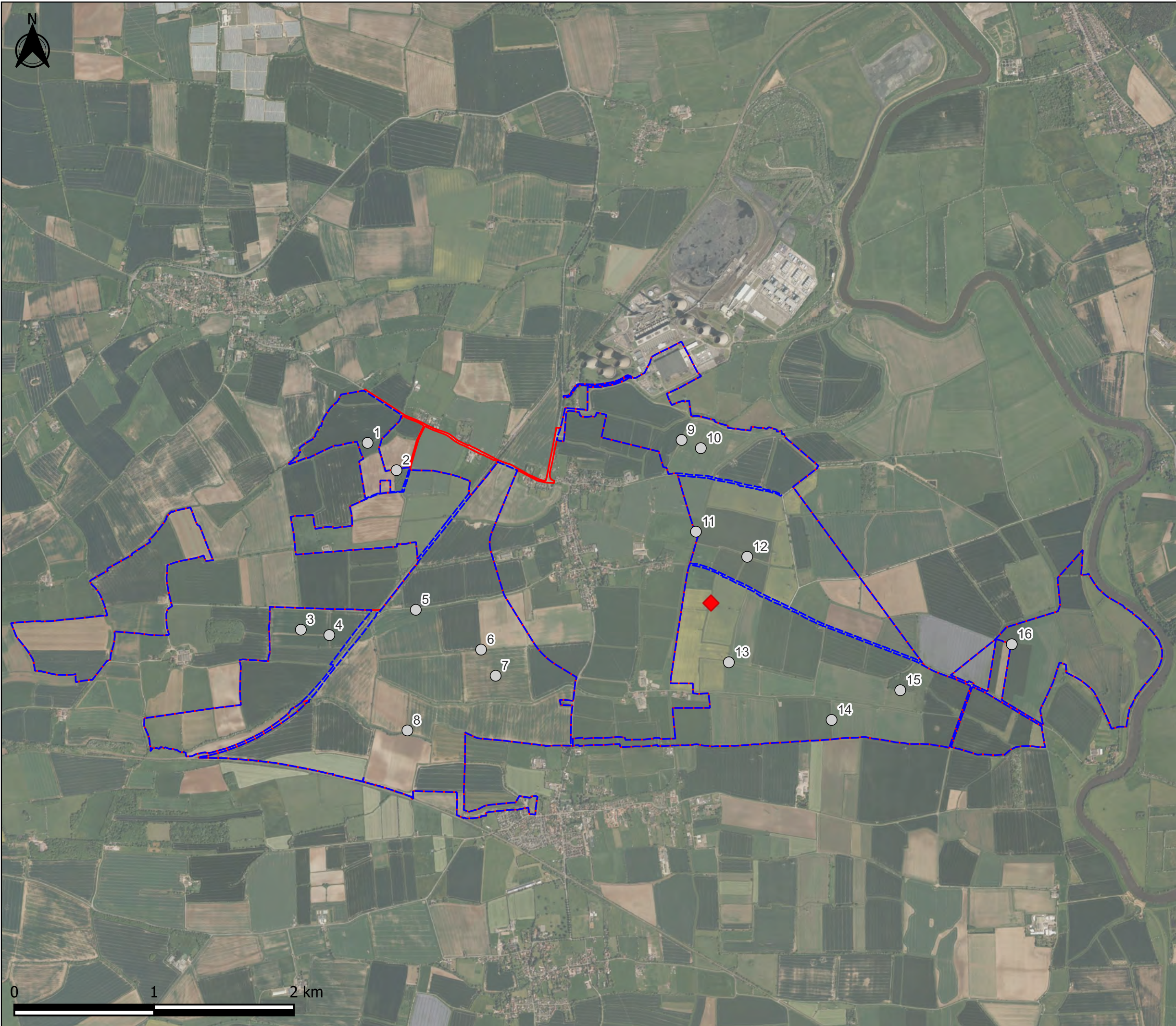
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Legend

 Site boundary

 Survey boundary

Incidental Sightings and Resting Site

 Main - active

 Static Point



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Figure 7.7.2: Static bat detector locations

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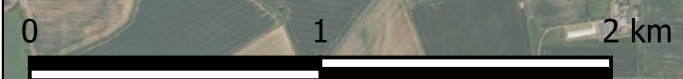
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Legend

 Site boundary



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Figure 7.7.3.1: Overview of GLTA Figures

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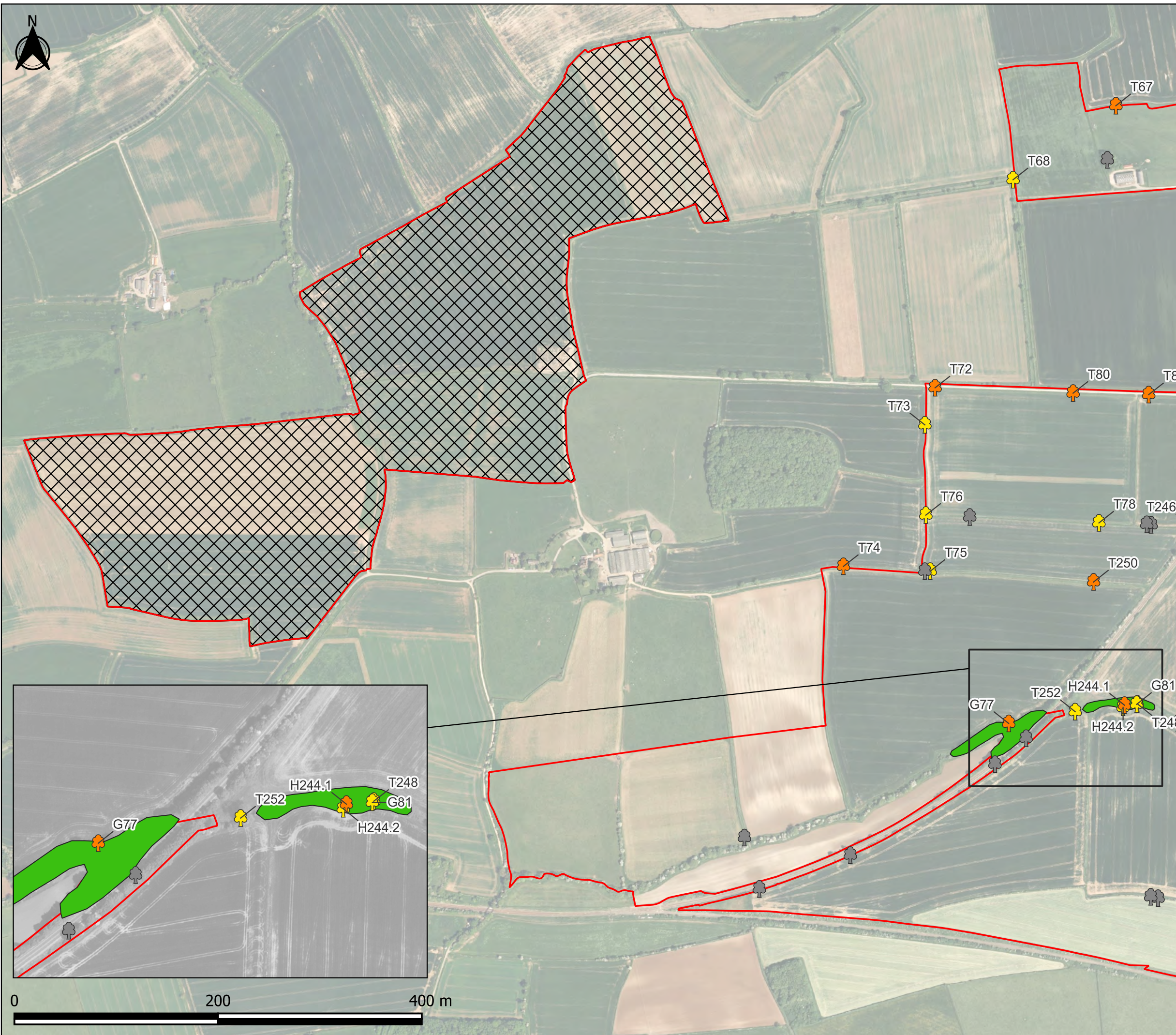
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Legend

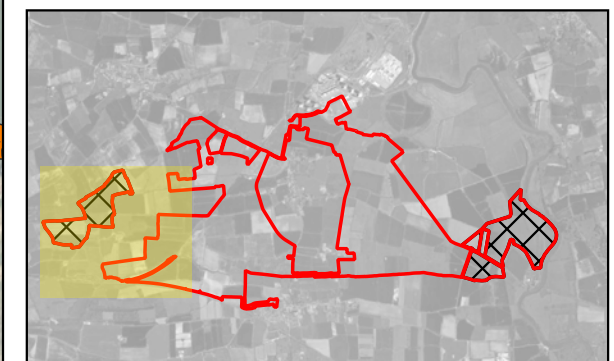
- Site boundary
- Areas not subject to GLTA
- Bridge over field drain with low potential to support roosting bats
- Brick culvert with low potential to support roosting bats

Building Assessment

- Negligible potential to support roosting bats
- Low potential
- High potential

Ground Level Tree Assessment

- Negligible roost potential
- Unknown/Not Recorded
- PRF-I
- PRF-M
- Tree Groups



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Figure 7.7.3.2: Ground Level Tree Assessment
Results Map 1 of 6

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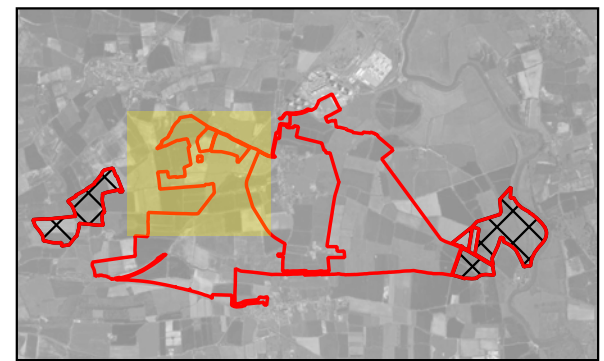
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Sources: BSG Ecology survey data

Graphics Ref. No.: 07208



- Legend**
- Site boundary
 - Areas not subject to GLTA
 - Bridge over field drain with low potential to support roosting bats
 - Brick culvert with low potential to support roosting bats
- Building Assessment**
- Negligible potential to support roosting bats
 - Low potential
 - High potential
- Ground Level Tree Assessment**
- 🌳 Negligible roost potential
 - 🌳 Unknown/Not Recorded
 - 🌳 PRF-I
 - 🌳 PRF-M
 - Tree Groups



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Figure 7.7.3.3: Ground Level Tree Assessment Results Map 2 of 6

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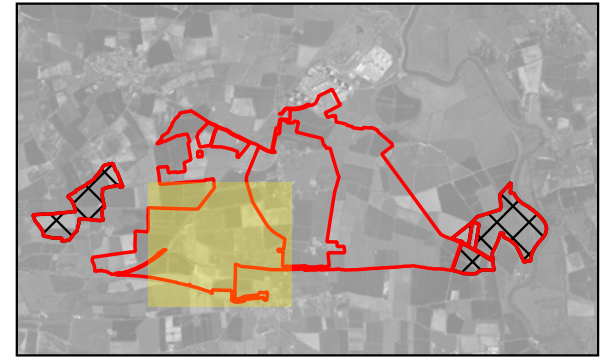
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- Legend**
- Site boundary
 - Areas not subject to GLTA
 - Bridge over field drain with low potential to support roosting bats
 - Brick culvert with low potential to support roosting bats
 - Railway bridge with low potential to support roosting bats
 - Railway bridge with moderate potential to support roosting bats
- Buildings**
- Negligible potential to support roosting bats
 - Low potential
 - High potential
- Ground Level Tree Assessment**
- 🌳 Negligible roost potential
 - 🌳 Unknown/Not Recorded
 - 🌳 PRF-I
 - 🌳 PRF-M
 - Tree Groups



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 Figure 7.7.3.4: Ground Level Tree Assessment Results Map 3 of 6

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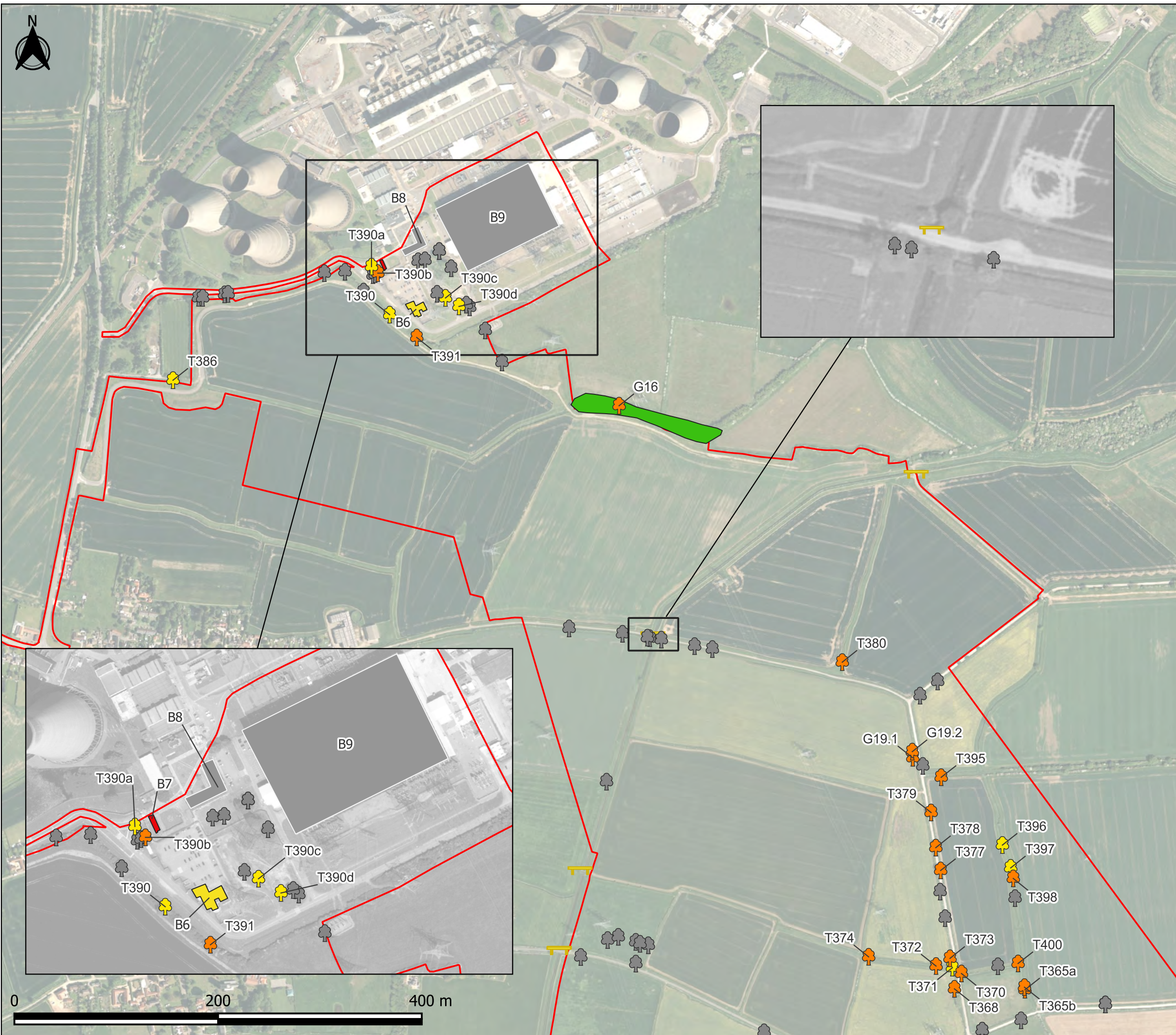
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Legend

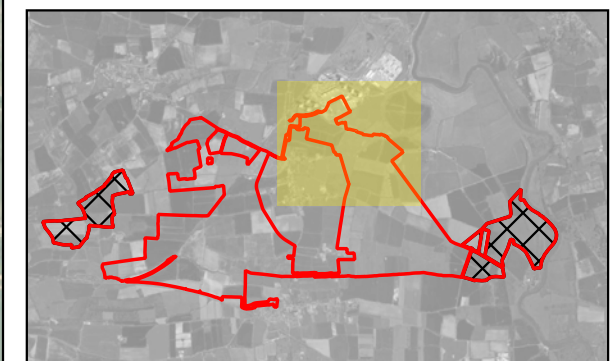
- Site boundary
- Areas not subject to GLTA
- Bridge over field drain with low potential to support roosting bats
- Brick culvert with low potential to support roosting bats

Building Assessment

- Negligible potential to support roosting bats
- Low potential
- High potential

Ground Level Tree Assessment

- Negligible roost potential
- Unknown/Not Recorded
- PRF-I
- PRF-M
- Tree Groups



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Figure 7.7.3.5: Ground Level Tree Assessment Results Map 4 of 6

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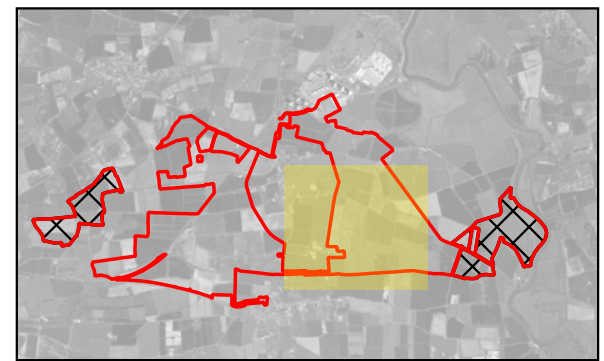
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- Legend**
- Site boundary
 - Areas not subject to GLTA
 - Bridge over field drain with low potential to support roosting bats
 - Brick culvert with low potential to support roosting bats
- Building Assessment**
- Negligible potential to support roosting bats
 - Low potential
 - High potential
- Ground Level Tree Assessment**
- 🌳 Negligible roost potential
 - 🌳 Unknown/Not Recorded
 - 🌳 PRF-I
 - 🌳 PRF-M
 - Tree Groups



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 Figure 7.7.3.6: Ground Level Tree Assessment Results Map 5 of 6

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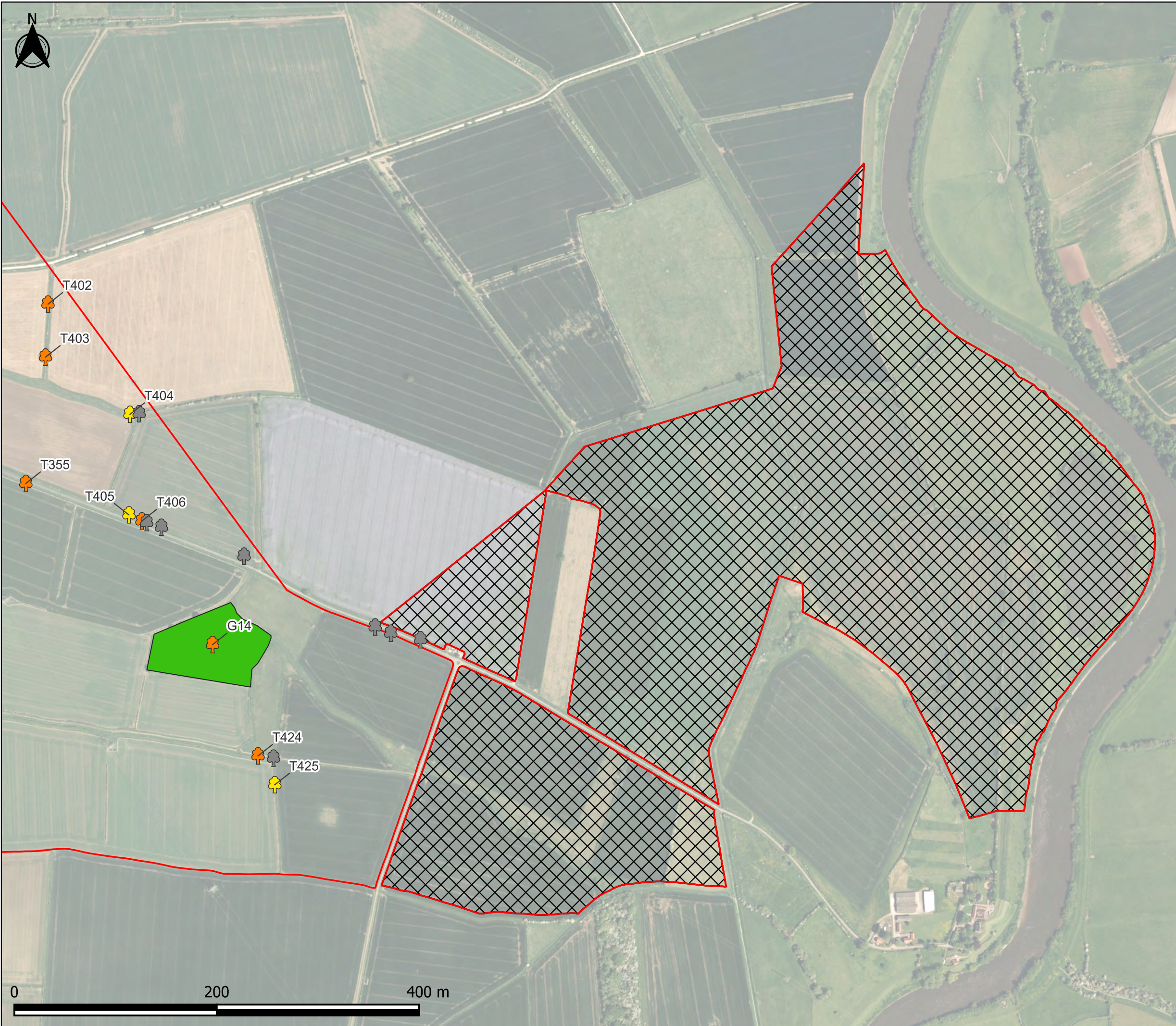
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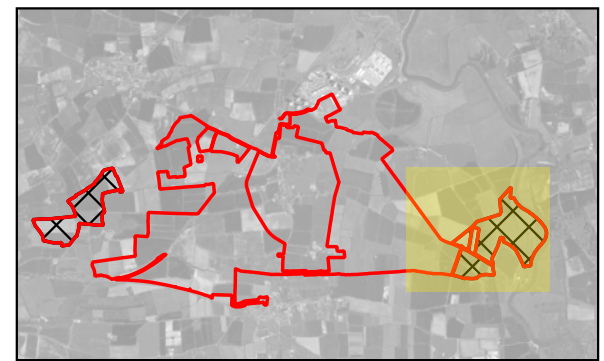
Projection: OSGB 1936/British National Grid - EPSG 27700

Sources: BSG Ecology survey data

Graphics Ref. No.: 07312



- Legend**
- Site boundary
 - Areas not subject to GLTA
 - Bridge over field drain with low potential to support roosting bats
 - Brick culvert with low potential to support roosting bats
- Building Assessment**
- Negligible potential to support roosting bats
 - Low potential
 - High potential
- Ground Level Tree Assessment**
- Negligible roost potential
 - Unknown/Not Recorded
 - PRF-I
 - PRF-M
 - Tree Groups



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Figure 7.7.3.7: Ground Level Tree Assessment Results Map 6 of 6

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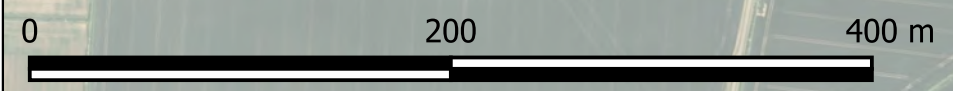
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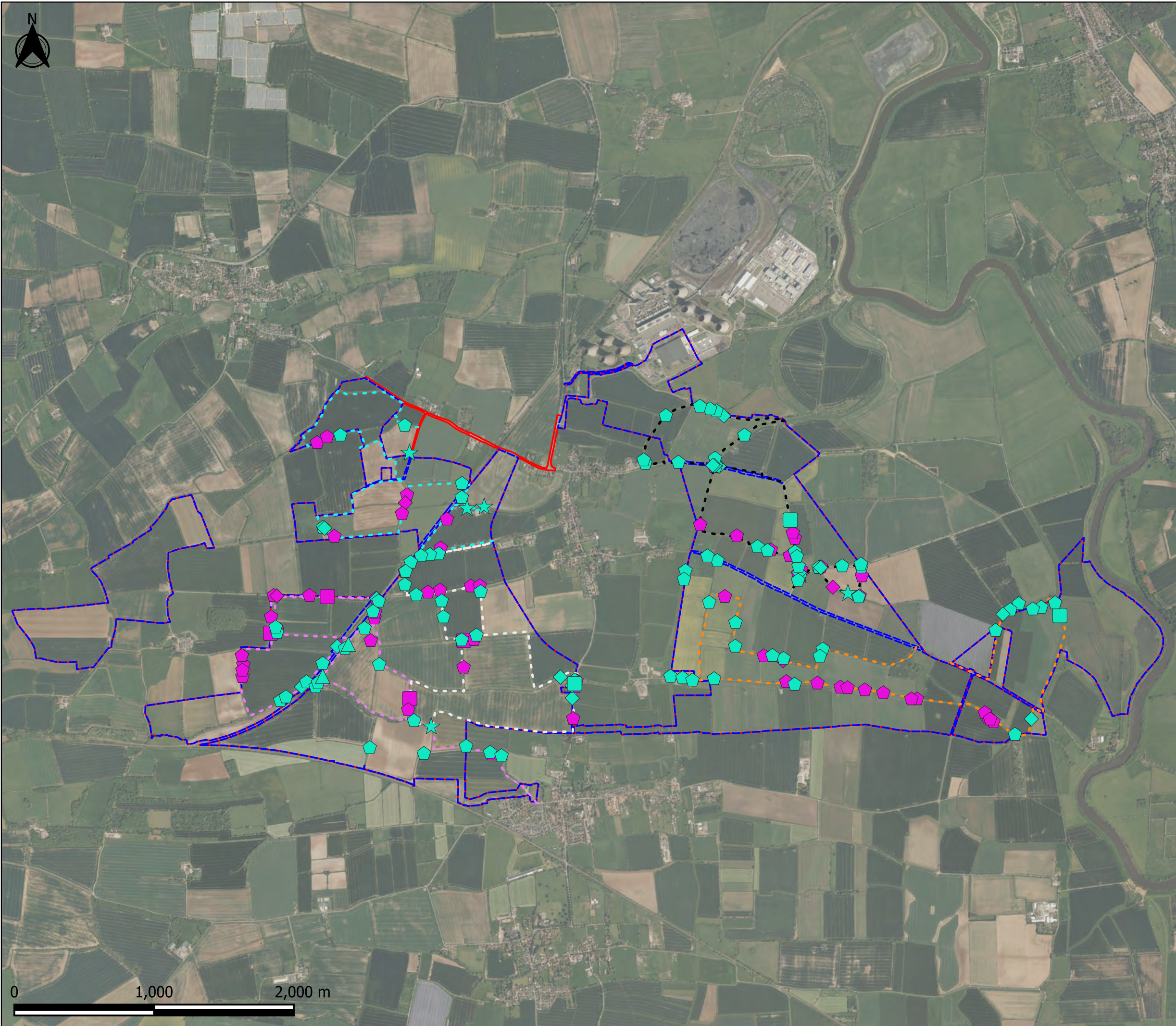
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Projection: OSGB 1936/British National Grid - EPSG 27700

Sources: BSG Ecology survey data



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- Legend**
- Survey boundary
 - Site boundary
- Night time Bat Walkover Route**
- Transect: 1
 - Transect: 2
 - Transect: 3
 - Transect: 4
 - Transect: 5
- May Results**
- ▲ Leisler's bat
 - Myotis bat
 - ★ Noctule bat
 - ⬠ Common Pipistrelle bat
 - ◆ Soprano Pipistrelle bat
- June Results**
- Myotis bat
 - ★ Noctule bat
 - ⬠ Common Pipistrelle bat
 - ◆ Soprano Pipistrelle bat
- Bat data results for April - June**



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Figure 7.7.4.1: Overview of Night-time Bat Walkover survey results

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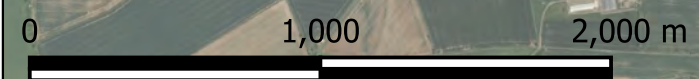
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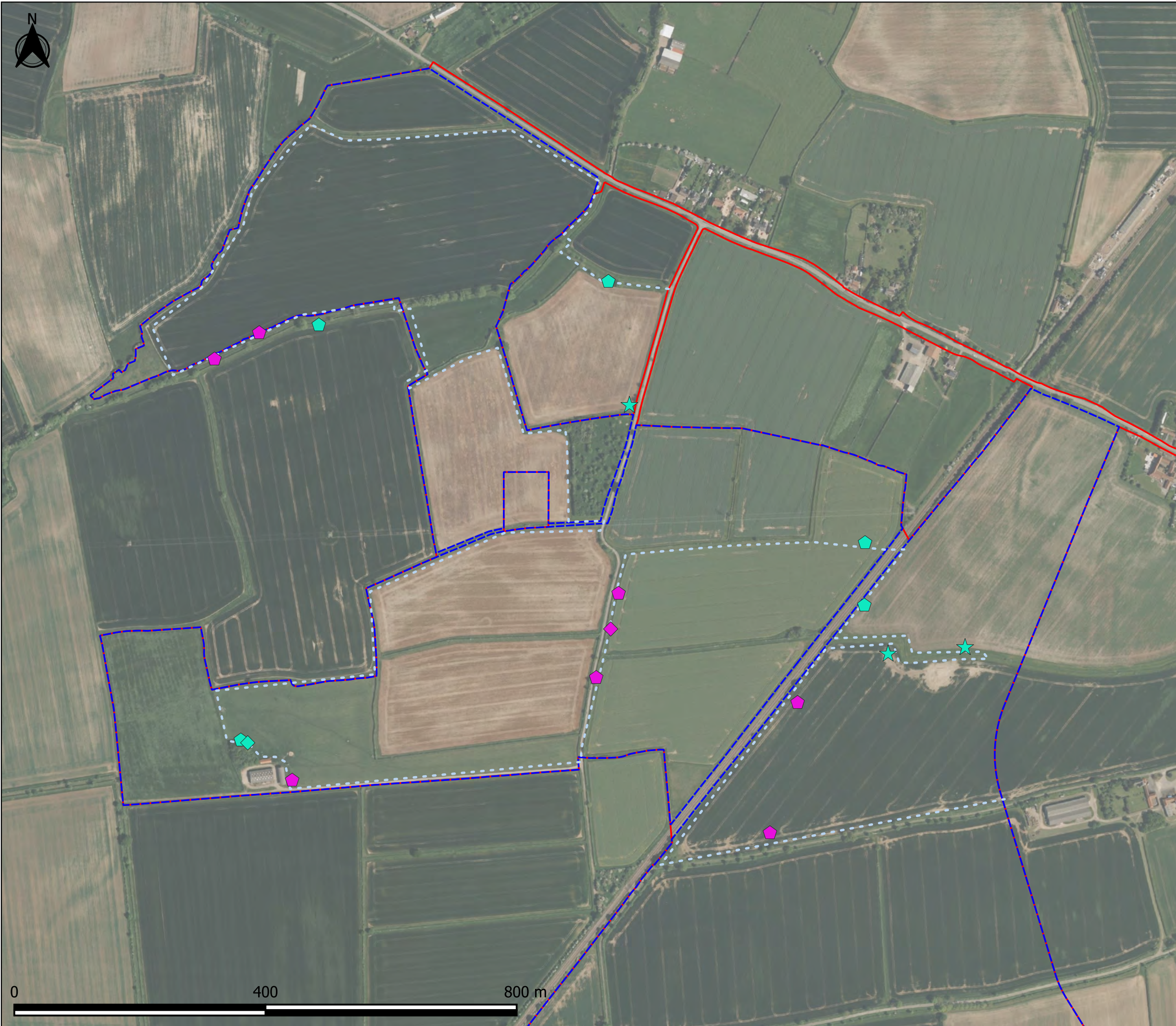
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Sources: BSG Ecology survey data



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- Legend**
- Site boundary
 - Survey boundary
 - Night-time bat walkover route
- May Results**
- ▲ Leisler's bat
 - Myotis bat
 - ★ Noctule bat
 - ⬠ Common Pipistrelle bat
 - ◆ Soprano Pipistrelle bat
- June Results**
- Myotis bat
 - ★ Noctule bat
 - ⬠ Common Pipistrelle bat
 - ◆ Soprano Pipistrelle bat
- Bat data for April - June**



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Figure 7.7.4.2: Night-time bat walkover results - Route 1

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Sources: BSG Ecology survey data

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- Legend**
- Site boundary
 - Survey boundary
 - Night-time bat walkover route
- May Results**
- ▲ Leisler's bat
 - Myotis bat
 - ★ Noctule bat
 - ⬠ Common Pipistrelle bat
 - ◆ Soprano Pipistrelle bat
- June Results**
- Myotis bat
 - ★ Noctule bat
 - ⬠ Common Pipistrelle bat
 - ◆ Soprano Pipistrelle bat
- Bat data for April - June**



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Figure 7.7.4.3: Night-time bat walkover results - Route 2

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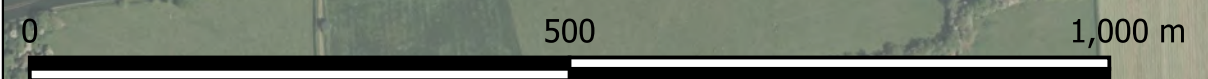
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- Legend**
- Site boundary
 - Survey boundary
 - Night-time bat walkover route
- May Results**
- ▲ Leisler's bat
 - Myotis bat
 - ★ Noctule bat
 - ⬠ Common Pipistrelle bat
 - ◆ Soprano Pipistrelle bat
- June Results**
- Myotis bat
 - ★ Noctule bat
 - ⬠ Common Pipistrelle bat
 - ◆ Soprano Pipistrelle bat
- Bat data for April - June**



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Figure 7.7.4.4: Night-time bat walkover results - Route 3

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Sources: BSG Ecology survey data

Graphics Ref. No.: 07321



- Legend**
- Site boundary
 - Survey boundary
 - Night-time bat walkover route
- May Results**
- ▲ Leisler's bat
 - Myotis bat
 - ★ Noctule bat
 - ⬠ Common Pipistrelle bat
 - ◆ Soprano Pipistrelle bat
- June Results**
- Myotis bat
 - ★ Noctule bat
 - ⬠ Common Pipistrelle bat
 - ◆ Soprano Pipistrelle bat

Bat data for April - June



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 Figure 7.7.4.5: Night-time bat walkover results - Route 4

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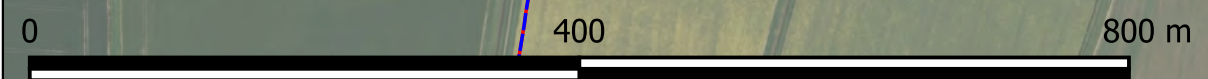
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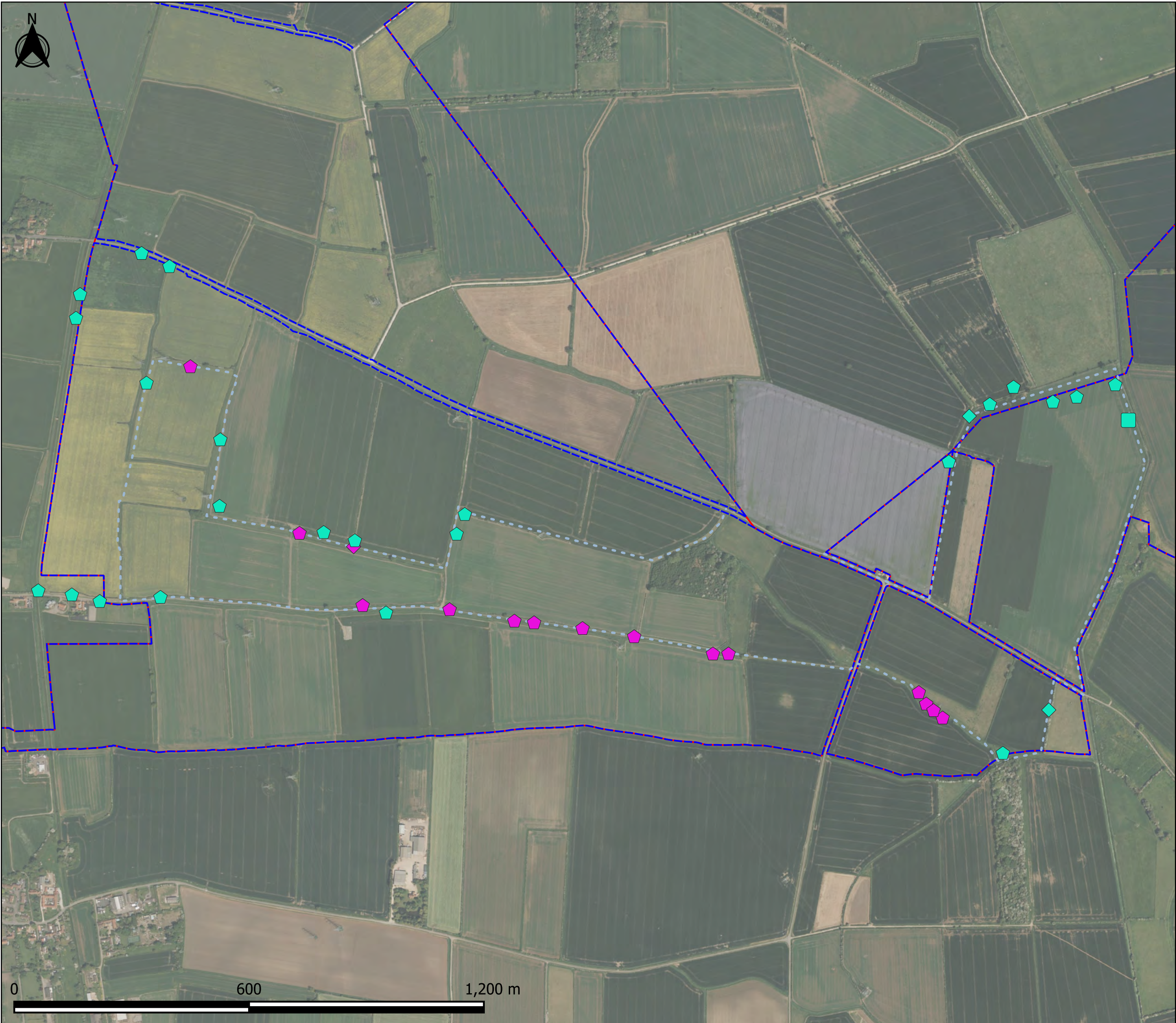
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Sources: BSG Ecology survey data



Graphics Ref. No.: 07322



- Legend**
- Site boundary
 - Survey boundary
 - Night-time bat walkover route
- May Results**
- ▲ Leisler's bat
 - Myotis bat
 - ★ Noctule bat
 - ⬠ Common Pipistrelle bat
 - ◆ Soprano Pipistrelle bat
- June Results**
- Myotis bat
 - ★ Noctule bat
 - ⬠ Common Pipistrelle bat
 - ◆ Soprano Pipistrelle bat

Bat data for April - June



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 Figure 7.7.4.6: Night-time bat walkover results - Route 5

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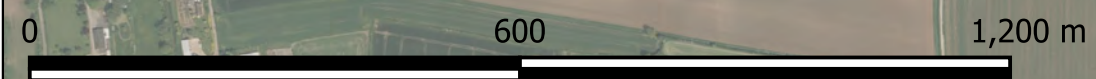
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Sources: BSG Ecology survey data

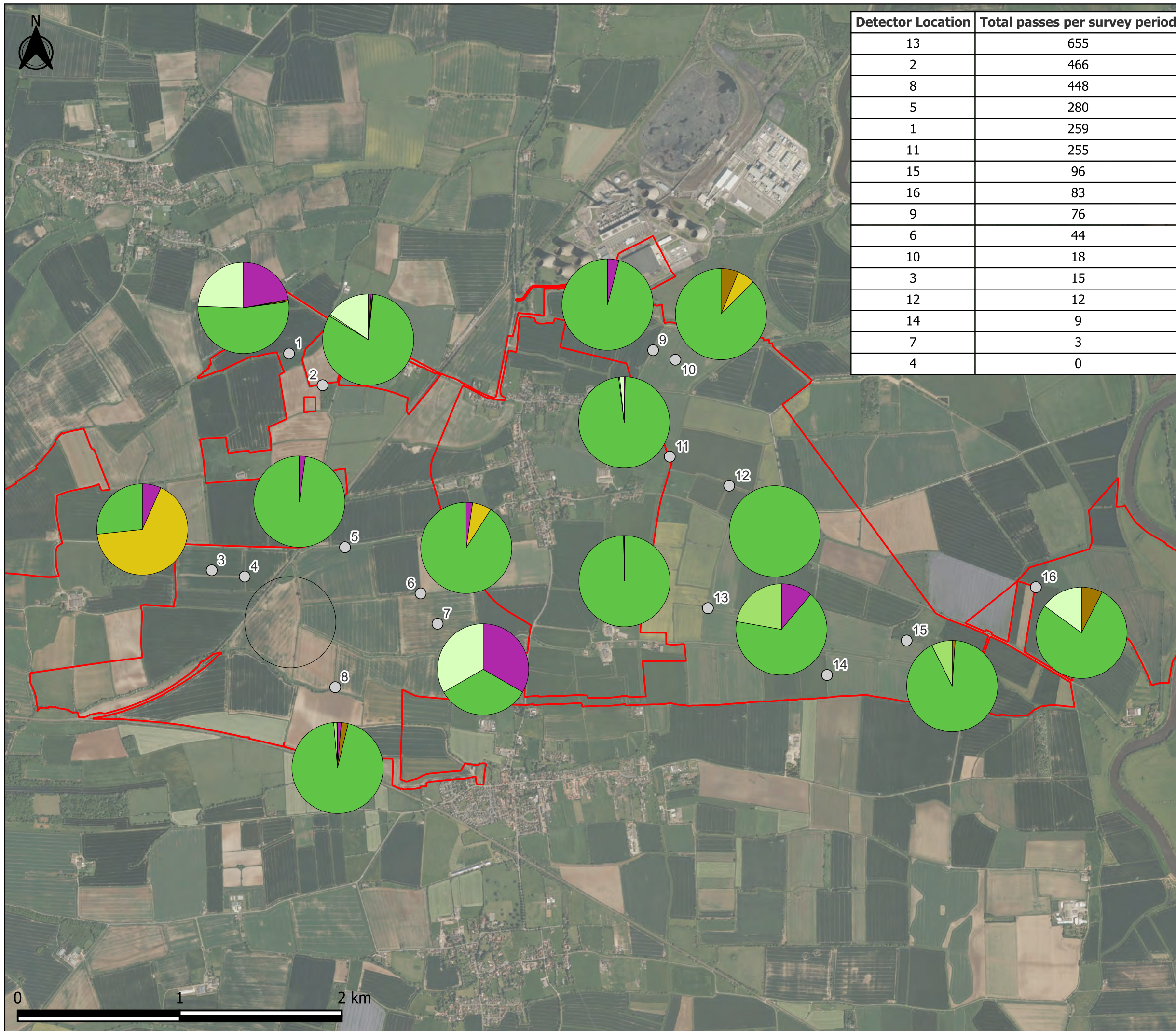




Detector Location	Total passes per survey period
13	655
2	466
8	448
5	280
1	259
11	255
15	96
16	83
9	76
6	44
10	18
3	15
12	12
14	9
7	3
4	0

Legend

- Site boundary
- Static Point
- Barbastelle
- Myotis sp.
- Leisler's
- Nyctalus sp.
- Noctule
- Common pipistrelle
- Common or Nathusius' pipistrelle
- Soprano pipistrelle
- Nathusius' pipistrelle
- Brown long-eared



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Figure 7.7.5.1: Static bat detector results - April

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Sources: BSG Ecology survey data

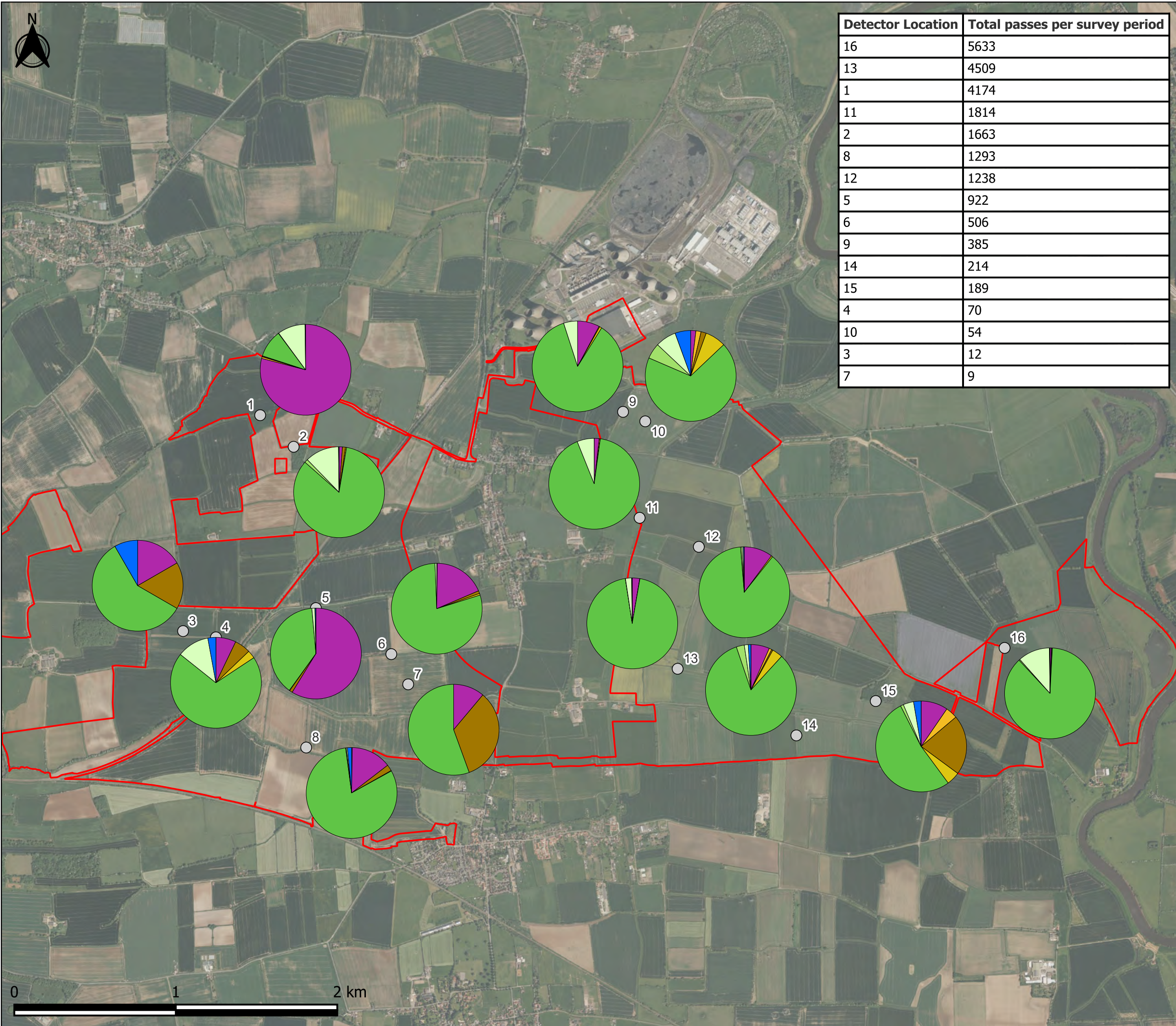
Graphics Ref. No.: 07251



Detector Location	Total passes per survey period
16	5633
13	4509
1	4174
11	1814
2	1663
8	1293
12	1238
5	922
6	506
9	385
14	214
15	189
4	70
10	54
3	12
7	9

Legend

- Site boundary
- Static Point
- Barbastelle
- Myotis sp.
- Leisler's
- Nyctalus sp.
- Noctule
- Common pipistrelle
- Common or Nathusius' pipistrelle
- Soprano pipistrelle
- Nathusius' pipistrelle
- Brown long-eared



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Figure 7.7.5.2: Static bat detector results - May

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Sources: BSG Ecology survey data

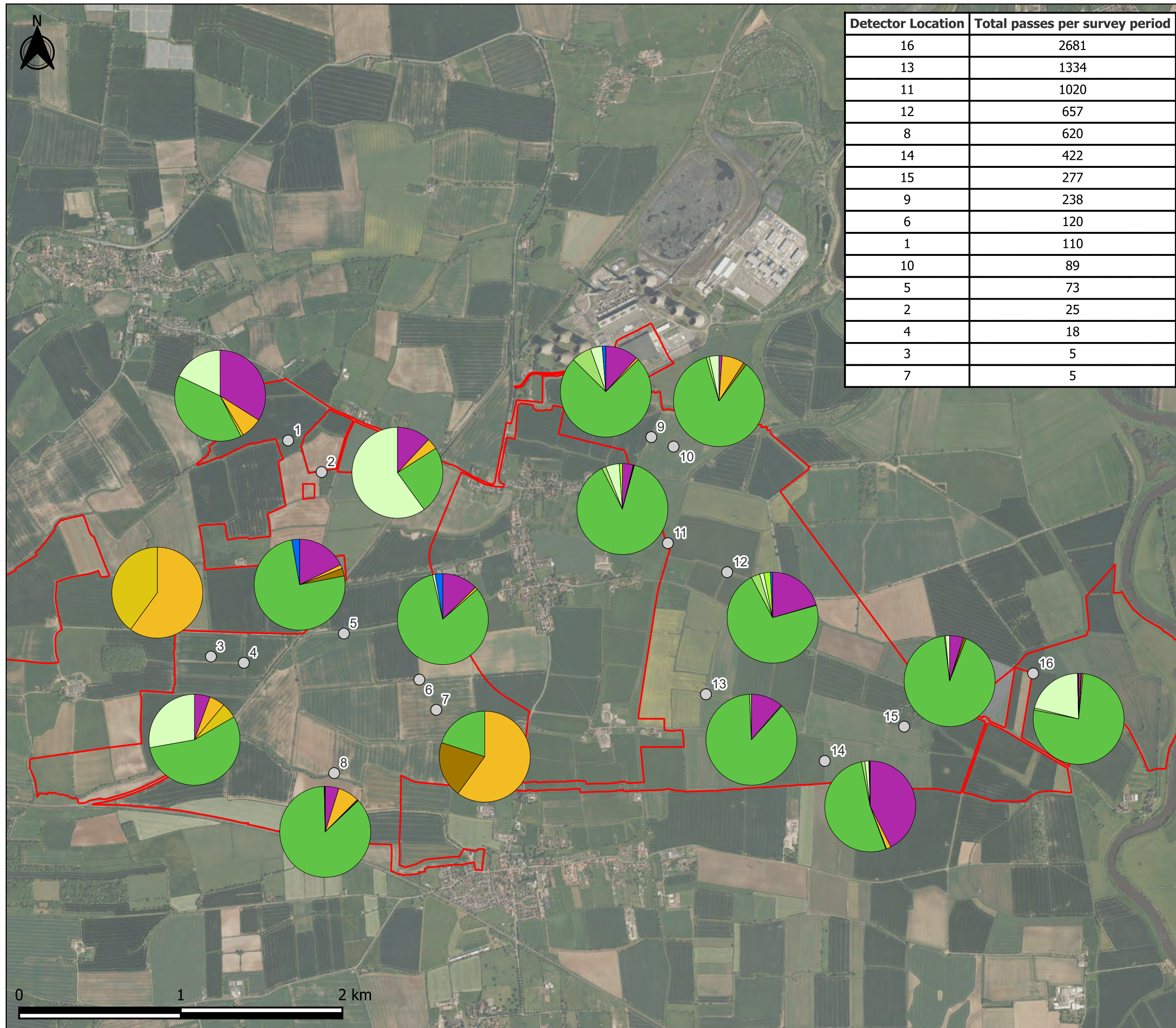
Graphics Ref. No.: 07356



Detector Location	Total passes per survey period
16	2681
13	1334
11	1020
12	657
8	620
14	422
15	277
9	238
6	120
1	110
10	89
5	73
2	25
4	18
3	5
7	5

Legend

- Site boundary
- Static Point Location
- Barbastelle
- Myotis sp.
- Leisler's
- Nyctalus sp.
- Noctule
- Common pipistrelle
- Common or Nathusius' pipistrelle
- Soprano pipistrelle
- Nathusius' pipistrelle
- Brown long-eared



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Figure 7.7.5.3: Static bat detector results - June

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Appendix 7.7.1: Bat activity survey details

Date	Sunset/Sunrise ⁸	Notes	Weather conditions
Bat night-time walkover surveys			
08.05.24	20:46	Lead surveyors: Fiona Shuttle ⁹ , Daniel Foster ¹⁰ , Gemma Watkins ¹¹ , Will Steele ¹² & Adele Antcliffe ¹³	Light breeze, 5/8 cloud cover, 17°C, no rain
17.06.24	21:34	Lead surveyors: Fiona Shuttle, Daniel Foster, Will Steele, Adele Antcliffe & Sidney Vickress ¹⁴	Light breeze, 1/8 cloud cover, 12°C, no rain.
Static survey periods			
18.04.24 – 23.04.24	20:10 / 05:56	Locations 1 – 8. April period	Calm and mild, 8 – 12 °C daytime temperature and minimum of 2 – 5 °C overnight. Mostly dry with occasional showers
25.04.24 – 30.04.24	20:22 / 05:40	Locations 9 – 16. April period	Calm and mild, 9 - 18 °C daytime temperature and minimum of 2 – 10 °C overnight. Mostly dry with rain one night.
09.05.24 – 14.05.24	20:47 / 05:13	Locations 1 – 8. May period	Warm summer evenings, calm with no rain. 19 - 23 °C daytime temperature and minimum of 10 - 13 °C overnight
14.05.24 – 19.05.24	20:55 / 05:04	Locations 9 – 16. May period	Warm summer evenings, with a few heavy rain showers. 16 - 19 °C daytime temperature and minimum of 10 - 12 °C overnight
11.06.24 – 16.06.24	21:30 / 04:35	Locations 1 – 8. June period	Warm, calm evenings, with light rain two evenings. 12 - 20 °C daytime temperature and minimum of 7 - 12 °C overnight
17.06.24 – 22.06.24	21:34 / 04:34	Locations 9 – 16. June period	Warm calm evenings, dry. 15 - 23 °C daytime temperature and minimum of 9 - 11 °C overnight

⁸ Sunset / sunrise times of first night of static survey periods

⁹ Natural England Bat Class Licence reference 2021-51224-CLS-CLS

¹⁰ Natural England Bat Class Licence reference 2015-14980-CLS-CLS

¹¹ Natural England Bat Class Licence reference 2022-10576-CL18-BAT

¹² Natural England Bat Class Licence reference 2019-43393-CLS-CLS





¹³ Natural England Bat Class Licence reference 2015-13206-CLS-CLS





¹⁴ Natural England Bat Class Licence reference 2022-10969-CL18-BAT




Appendix 7.7.2: Static bat detector locations

Detector reference	Grid reference	Description
S1	SK 77154 84812	In hedgerow along Oswald Beck to the south of Wheatley Road.
S2	SK 77346 84606	On north-western corner of woodland copse, adjacent to hedgerow and arable fields.
S3	SK 76704 83436	In the middle of an arable field south of High House Road.
S4	SK 76877 83428	Paired with Location 3, along a hedgerow directly east of Location 3.
S5	SK 77416 83613	In a hedgerow, next to a wet ditch and located adjacent to Springs Lane.
S6	SK 77966 83329	In a hedgerow, at the intersection of three arable fields.
S7	SK 78080 83162	Paired with Location 6, located within the middle of an arable field directly south of Location 6.
S8	SK 77433 82740	At the end of a hedgerow, facing a tree-lined stream.
S9	SK 79407 84838	In the hedgerow in a field north of Common Lane.
S10	SK 79525 84795	Paired with Location 10, in the middle of a field directly east of Location 9.
S11	SK 79511 84168	In brambles alongside Catchwater Drain, south of Common lane.
S12	SK 79869 83994	In a small hawthorn sapling associated with a hedgerow at the meeting point of 3 arable fields.
S13	SK 79735 83224	Outside of a group of large trees north of Fenton Lane.
S14	SK 80469 82850	In a hedgerow south of Fenton Lane.
S15	SK 81014 83024	On the south side of the wooded area south of Littleborough Road and west of Thornhill Lane.
S16	SK 81758 83370	On the corner of hedgerow within an area of small saplings east of Long Farm Lane.

Appendix 7.7.3: Preliminary bat inspection of on-Site buildings & bridges

Building reference	B1	B2	B3	B4
<p>Description</p>	<p>Agricultural shelter building approximately 14 m tall, open sided on all aspects with a domed corrugated asbestos / concrete roof. PRFs: None</p>	<p>Agricultural storage building with stone block and wooden panel walls. Corrugated pitched asbestos / concrete roof with skylights. PRFs: There is a barge boarding and lead flashing with potential gaps behind.</p>	<p>Open-sided garage building with brick walls and corrugated metal roof. PRFs: Missing / cracked mortar between brickwork providing gaps. A small number of scattered bat droppings found on farm machinery, indicating possible roost OR foraging activity inside building. Barn owl box present, barn owl flushed from box during survey (see Appendix 7.5: Barn owl report).</p>	<p>Small disused service / signal building in woodland copse adjacent to railway. Stone block walls and flat concrete roof. Partially overgrown by ivy and scrub. Open access through door / window inside. PRFs: Gap above stone brickwork approximately 1 cm wide, with gaps behind concrete block eaves approximately 2 x 2 cm wide.</p>
<p>Internal inspection?</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>Yes</p>
<p>Bat roost suitability status</p>	<p>Negligible</p>	<p>Low</p>	<p>High</p>	<p>Low</p>
<p>Photograph</p>				

Building reference	B5	B6	B7	B8
<p>Description</p>	<p>Agricultural storage building with corrugated metal walls and pitched, corrugated metal roof. Used for hay bale storage at time of survey. Open sided on southern aspect above the doors.</p> <p>PRFs: None</p> <p>Possibly suitable for barn owl (see Appendix 7.5: Barn owl report).</p>	<p>Flat roofed office cabins within West Burton Power Station. Boarded walls and roofing felt present.</p> <p>PRFs: Some gaps under barge boards on the western side. Lifted roof felt on southern side.</p>	<p>Single storey flat roofed 'café house' within west Burton power Station. Part brick, part corrugated metal walls.</p> <p>PRFs: Removed light fittings that now have bird nests and wasp nests in the cavities. Some lifting barge boards.</p>	<p>Two storey office block within West Burton Power Station, comprising corrugated metal walls and pitched metal roof.</p> <p>PRFs: None</p>
<p>Internal inspection?</p>	<p>No</p>	<p>No</p>	<p>No</p>	<p>No</p>
<p>Bat roost suitability status</p>	<p>Negligible</p>	<p>Low</p>	<p>Moderate</p>	<p>Negligible</p>
<p>Photograph</p>				

Building reference	B9	Railway bridge - west	Railway bridge - south	Bridges over field drains (9)
<p>Description</p>	<p>Large warehouse within West Burton Power Station, containing sub-station infrastructure. Corrugated metal walls and roof.</p> <p>PRFs: None</p>	<p>Brick built railway bridge along the western Survey Area boundary, approximately 7 m high, with a smooth concrete underside.</p> <p>PRFs: A few gaps where mortar is missing between bricks.</p>	<p>Brick built railway bridge along the southern Survey Area boundary, approximately 7 m high, with a smooth concrete underside.</p> <p>PRFs: Missing mortar between bricks, appear to extend into potential wall cavity. Several small gaps up to 3 cm wide, some extend back beyond 5 cm depth.</p>	<p>Seven brick bridges are present along Catchwater Drain and two smaller brick-built culverts / bridges are also present crossing field drains. These all have similar characteristics; they are up to 3 m high and 2 m wide, with mortar mostly intact, however a few low potential gaps were noted on each.</p> <p>PRFs: Missing mortar between bricks.</p>
<p>Internal inspection?</p>	<p>Yes</p>	<p>n/a</p>	<p>n/a</p>	<p>n/a</p>
<p>Bat roost suitability status</p>	<p>Negligible</p>	<p>Low</p>	<p>Moderate</p>	<p>Low</p>
<p>Photograph</p>		<p>(Image missing. Similar to railway bridge – south)</p>		

Appendix 7.7.4: Night-time bat walkover survey results

Survey month	Route	Species recorded	Number of bat passes	Total number of bat passes	Notes
May 2024	1	Common pipistrelle	5	9	First bat activity of common pipistrelle at 37 minutes after sunset commuting westwards along hedgerow. Bat activity was sporadic with no peak areas of activity recorded. Barn owl flushed from barn owl box in Building 3.
		Soprano pipistrelle	1		
		Noctule	3		
	2	Common pipistrelle	20	25	First bat common pipistrelle 47 minutes past sunset, along stream to the west of the railway. Bats more frequently recorded along railway and little activity recorded along the stream.
		Soprano pipistrelle	3		
		Nyctalus species	2		
	3	Common pipistrelle	14	19	First bat common pipistrelle 34 minutes after sunset, along road to the west of Sturton le Steeple. Bats more frequently recorded along road tracks.
		Soprano pipistrelle	3		
		Noctule	1		
		Myotis species	1		
	4	Common pipistrelle	22	30	First bat noctule at 45 minutes after sunset, flying high over fields adjacent to Cross Common Lane and unlikely to be roosting nearby. Bat activity increased along farm tracks, on the road bridge over Crosswater Drain and along the treeline along the northern Survey Area boundary. Barn owl recorded in flight over small field to the east of Cross Common Lane 13 minutes before sunset.
		Soprano pipistrelle	6		
		Noctule	1		
		Myotis species	1		
	5	Common pipistrelle	23	26	First bat common pipistrelle 46 minutes after sunset along hedgerow south of Littleborough Road. Bat activity mostly brief passes associated with hedgerows, farm tracks or field ditches.
Soprano pipistrelle		2			
Myotis species		1			
June 2024	1	Common pipistrelle	7	8	First bat common pipistrelle 47 minutes past sunset, commuting along road towards railway. Bat activity mostly brief passes associated with hedgerows and farm tracks.
		Soprano pipistrelle	1		
	2	Common pipistrelle	12	16	First bat common pipistrelle 55 minutes after sunset, commuting southwards along farm track away from railway. Bat activity mostly
		Soprano pipistrelle	2		

Survey month	Route	Species recorded	Number of bat passes	Total number of bat passes	Notes
		Myotis species	2		foraging associated with hedgerows and farm tracks in the north-west, with little activity recorded along the stream.
	3	Common pipistrelle	10	12	First bat common pipistrelle at 37 minutes after sunset, foraging along road to the west of Sturton le Steeple. Bat activity was sporadic with no peak areas of activity recorded.
		Myotis species	2		
	4	Common pipistrelle	11	13	First bat common pipistrelle at 63 minutes after sunset, commuting along Catchwater Drain. Bat activity increased along Cross Common Lane and hedgerow between Cross Common Lane and Catchwater Drain.
		Soprano pipistrelle	1		
		Nyctalus species	1		
	5	Common pipistrelle	12	15	First bat soprano pipistrelle at 68 minutes after sunset. Majority of bat activity recorded along Fenton Lane, with both foraging and brief commuting passes recorded.
		Soprano pipistrelle	2		
		Myotis species	1		

Appendix 7.7.5: Static bat detector survey results

Table A: Summary of static bat detector survey data showing total number of bat passes recorded per survey period (5 nights).

Month	Location	Avg. passes per hour	Total no. of passes	Most frequently recorded species (no. of passes)	Other species recorded (no. of passes)
April	1	5.42	259	Common pipistrelle (134)	Soprano pipistrelle (62), Myotis sp. (56), common / soprano pipistrelle (5), noctule (1), Nyctalus sp. (1)
	2	9.75	466	Common pipistrelle (382)	Soprano pipistrelle (73), Myotis sp. (5), common / Nathusius' pipistrelle (3), Nyctalus sp. (2), noctule (1)
	3	0.31	15	Noctule (10)	Common pipistrelle (4), Myotis sp. (1)
	4	0.00	0	No bats recorded (3 nights only due to equipment failure)	
	5	5.86	280	Common pipistrelle (273)	Myotis sp. (6), common / soprano pipistrelle (1)
	6	0.92	44	Common pipistrelle (40)	Noctule (3), Myotis sp. (1)
	7	0.06	3	n/a	Common pipistrelle (1), soprano pipistrelle (1), Myotis sp. (1)
	8	9.37	448	Common pipistrelle (425)	Nyctalus sp. (11), Myotis sp. (6), common / Nathusius pipistrelle (5), soprano pipistrelle (1)
	9	1.66	76	Common pipistrelle (71)	Myotis sp. (3), common / soprano pipistrelle (2)
	10	0.39	18	Common pipistrelle (14)	Common / soprano pipistrelle (2), Nyctalus sp. (1), noctule (1)
	11	5.56	255	Common pipistrelle (249)	Soprano pipistrelle (4), Myotis sp. (1), common / Nathusius pipistrelle (1)
	12	0.26	12	Common pipistrelle (12)	None
	13	14.29	655	Common pipistrelle (653)	Soprano pipistrelle (1), brown long eared bat (1)
	14	0.20	9	Common pipistrelle (6)	Myotis sp. (1), common / Nathusius' pipistrelle (2)
	15	2.09	96	Common pipistrelle (87)	Common / soprano pipistrelle (1), Nyctalus sp. (1), common / Nathusius' pipistrelle (7)
	16	1.81	83	Common pipistrelle (62)	Soprano pipistrelle (12), Nyctalus sp. (6), common / soprano pipistrelle (3)

Month	Location	Avg. passes per hour	Total no. of passes	Most frequently recorded species (no. of passes)	Other species recorded (no. of passes)
May	1	100.45	4174	Myotis sp. (3295)	Soprano pipistrelle (411), common pipistrelle (410), Leisler's (24), noctule / Leisler's (12), brown long eared bat (8), common / soprano pipistrelle (6), common / Nathusius' pipistrelle (5), noctule (3)
	2	40.02	1663	Common pipistrelle (1385)	Soprano pipistrelle (200), common / nathusius' pipistrelle (20), Myotis sp. (19), noctule / Leisler's (18), common / soprano pipistrelle (11), noctule (6), brown long eared bat (3), barbastelle bat (1)
	3	0.29	12	Common pipistrelle (7)	Myotis sp. (2), Nyctalus sp. (2), brown long eared bat (1)
	4	1.68	70	Common pipistrelle (49)	Soprano pipistrelle (8), Myotis sp. (5), Nyctalus sp. (4), brown long eared bat (2), noctule (2)
	5	22.19	922	Myotis sp. (540)	Common pipistrelle (355), soprano pipistrelle (10), Nyctalus sp. (10), brown long eared bat (3), common / soprano pipistrelle (3), noctule (1)
	6	12.18	506	Common pipistrelle (401)	Myotis sp. (93), Nyctalus sp. (5), soprano pipistrelle (3), noctule (3), barbastelle (1)
	7	0.22	9	Common pipistrelle (5)	Nyctalus sp. (3), Myotis sp. (1)
	8	31.12	1293	Common pipistrelle (1044)	Myotis sp. (185), Nyctalus sp. (29), brown long eared bat (19), soprano pipistrelle (5), barbastelle (3), common / soprano pipistrelle (3), common / Nathusius' pipistrelle (3), noctule (2)
	9	9.58	385	Common pipistrelle (330)	Myotis sp. (30), soprano pipistrelle (19), noctule (3), common / soprano pipistrelle (2), Leisler's (1)
	10	1.34	54	Common pipistrelle (37)	Soprano pipistrelle (4), noctule (4), brown long eared bat (3), common / Nathusius' pipistrelle (3), Myotis sp. (1), Leisler's (1), Nyctalus sp. (1)
	11	45.14	1814	Common pipistrelle (1620)	Soprano pipistrelle (107), common / soprano pipistrelle (49), Myotis sp. (31), Leisler's (6), noctule (1)
	12	30.81	1238	Common pipistrelle (1085)	Myotis sp. (126), soprano pipistrelle (6), noctule (6), common / Nathusius' pipistrelle (6), common / soprano pipistrelle (5), brown long eared bat (4)
	13	112.21	4509	Common pipistrelle (4125)	Common / Soprano pipistrelle (159), Myotis sp. (115), soprano pipistrelle (94), brown long eared bat (9), Leisler's (4), common / Nathusius' pipistrelle (3)

Month	Location	Avg. passes per hour	Total no. of passes	Most frequently recorded species (no. of passes)	Other species recorded (no. of passes)
	14	5.33	214	Common pipistrelle (176)	Myotis sp. (14), noctule (8), common / Nathusius' pipistrelle (6), soprano pipistrelle (3), common / soprano pipistrelle (2), brown long eared bat (2), Leisler's bat (2), noctule / Leisler's (1)
	15	4.70	189	Common pipistrelle (99)	Noctule / Leisler's bat (40), Myotis sp. (18), noctule (9), Leisler's (8), soprano pipistrelle (7), brown long eared bat (5), common / Nathusius' pipistrelle (2), common / soprano pipistrelle (1)
	16	140.18	5633	Common pipistrelle (4878)	Soprano pipistrelle (635), common / soprano pipistrelle (41), Myotis sp. (31), common / Nathusius' pipistrelle (22), noctule / Leisler's bat (10), Leisler's (6), brown long eared bat (6), Nathusius' pipistrelle (4)
June	1	3.12	110	Common pipistrelle (42)	Myotis sp. (36), soprano pipistrelle (19), Leisler's (8), common / soprano pipistrelle (4), noctule (1)
	2	0.71	25	Soprano pipistrelle (15)	Common pipistrelle (6), Myotis sp. (3), Leisler's (1)
	3	0.14	5	Leisler's (3)	Noctule (2)
	4	0.51	18	Common pipistrelle (10)	Soprano pipistrelle (5), Myotis sp. (1), Leisler's (1), noctule (1)
	5	2.07	73	Common pipistrelle (55)	Myotis sp. (13), Brown long eared bat (2), Nyctalus sp. (2), Leisler's (1)
	6	3.40	120	Common pipistrelle (91)	Myotis sp. (14), common / soprano pipistrelle (10), brown long eared bat (3), soprano pipistrelle (1), noctule (1)
	7	0.14	5	Leisler's (3)	Common pipistrelle (1), Nyctalus sp. (1)
	8	17.59	620	Common pipistrelle (535)	Leisler's bat (47), Myotis sp. (30), common / soprano pipistrelle (3), noctule / Leisler's (2), brown long eared bat (1), noctule (1), common / Nathusius' pipistrelle (1)
	9	6.80	238	Common pipistrelle (178)	Myotis sp. (28), common / Nathusius' pipistrelle (17), soprano pipistrelle (10), brown long eared bat (3), Leisler's (2)
	10	2.54	89	Common pipistrelle (75)	Leisler's (7), soprano pipistrelle (3), Myotis sp. (1), common / Nathusius' pipistrelle (1), common / soprano pipistrelle (1), Nyctalus sp. (1)

Month	Location	Avg. passes per hour	Total no. of passes	Most frequently recorded species (no. of passes)	Other species recorded (no. of passes)
	11	29.13	1018	Common pipistrelle (891)	Soprano pipistrelle (49), Myotis sp. (39), common / Nathusius' pipistrelle (22), common / soprano pipistrelle (11), Nathusius' pipistrelle (2), Leisler's (2), noctule (2)
	12	18.76	647	Common pipistrelle (465)	Myotis sp. (133), common / Nathusius' pipistrelle (21), soprano pipistrelle (10), common / soprano pipistrelle (8), brown long eared bat (5), Nathusius' pipistrelle (4), Nyctalus sp. (1)
	13	38.10	1334	Common pipistrelle (1161)	Myotis sp. (151), common / Nathusius' pipistrelle (9), common / soprano pipistrelle (9), Leisler's (4)
	14	12.05	422	Common pipistrelle (221)	Myotis sp. (179), Leisler's (7), soprano pipistrelle (6), common / Nathusius' pipistrelle (6), common / soprano pipistrelle (1), brown long eared bat (1), noctule (1)
	15	7.91	277	Common pipistrelle (249)	Myotis sp. (13), common / soprano pipistrelle (7), soprano pipistrelle (4), Nyctalus sp. 2), Leisler's (1), common / Nathusius' pipistrelle (1)
	16	76.57	2681	Common pipistrelle (2020)	Soprano pipistrelle (547), common / soprano pipistrelle (45), Myotis sp. (25), common / Nathusius' pipistrelle (24), noctule (13), Nyctalus sp. (3), brown long eared (3), Leisler's (1)

Table B: Summary of static bat detector survey data showing number of passes for each static detector location, including all April, May and June 2024 survey periods.

Species	Detector location and number of passes																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
<i>Barbastelle</i>	0	1	0	0	0	1	0	3	0	0	0	0	0	0	0	0	5
<i>Brown long eared bat</i>	8	3	1	2	5	3	0	20	3	3	0	9	10	3	5	9	84
<i>Common / Nathusius' pipistrelle</i>	5	23	0	0	0	0	0	9	17	4	23	27	12	14	10	46	190
<i>Common / Soprano pipistrelle</i>	15	11	0	0	4	10	0	6	4	3	60	13	168	3	9	89	395
<i>Common pipistrelle</i>	586	1773	11	59	683	532	7	2004	579	126	2760	1562	5939	403	435	6960	24419
<i>Leisler's bat</i>	32	1	3	1	1	0	3	47	3	8	8	0	8	9	9	7	140
<i>Myotis sp.</i>	3387	27	3	6	559	108	2	221	61	2	71	259	266	194	31	56	5253
<i>Nathusius' pipistrelle</i>	0	0	0	0	0	0	0	0	0	0	2	4	0	0	0	4	10
<i>Noctule</i>	5	7	12	3	1	7	0	3	3	5	3	6	0	9	9	13	86
<i>Noctule / Leisler's bat</i>	13	20	2	4	12	5	4	42	0	3	0	1	0	1	43	19	169
<i>Soprano pipistrelle</i>	492	288	0	13	10	4	1	6	29	7	160	16	95	9	11	1194	2335
Grand Total	4543	2154	32	88	1275	670	17	2361	699	161	3087	1897	6498	645	562	8397	33086

Table C: Summary of static bat detector survey data showing the pass rates (bat passes per hour) for each static detector location, including all April, May and June 2024 survey periods.

Species	Detector location and pass rate																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Average
<i>Barbastelle</i>	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Brown long eared bat</i>	0.06	0.02	0.01	0.02	0.04	0.02	0.00	0.16	0.02	0.02	0.00	0.07	0.08	0.02	0.04	0.07	0.04
<i>Common / Nathusius' pipistrelle</i>	0.04	0.18	0.00	0.00	0.00	0.00	0.00	0.07	0.14	0.03	0.13	0.21	0.10	0.11	0.08	0.33	0.09
<i>Common / Soprano pipistrelle</i>	0.12	0.09	0.00	0.00	0.03	0.08	0.00	0.05	0.03	0.02	0.50	0.11	1.39	0.02	0.07	0.74	0.20
<i>Common pipistrelle</i>	4.70	14.23	0.09	0.56	5.48	4.27	0.06	16.08	4.78	1.04	22.80	12.91	49.07	3.33	3.59	57.49	12.53
<i>Leisler's bat</i>	0.26	0.01	0.02	0.01	0.01	0.00	0.02	0.38	0.02	0.07	0.07	0.00	0.07	0.07	0.07	0.06	0.07
<i>Myotis sp.</i>	27.18	0.22	0.02	0.06	4.49	0.87	0.02	1.77	0.50	0.02	0.59	2.14	2.20	1.60	0.26	0.46	2.65
<i>Nathusius' pipistrelle</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.12	0.00	0.01	0.00	0.10	0.02
<i>Noctule</i>	0.04	0.06	0.10	0.03	0.01	0.06	0.00	0.02	0.02	0.04	0.02	0.05	0.00	0.07	0.07	0.11	0.04
<i>Noctule / Leisler's bat</i>	0.10	0.16	0.02	0.04	0.10	0.04	0.03	0.34	0.00	0.02	0.00	0.01	0.00	0.01	0.36	0.16	0.09
<i>Soprano pipistrelle</i>	3.95	2.31	0.00	0.12	0.08	0.03	0.01	0.05	0.24	0.06	1.32	0.13	0.78	0.07	0.09	9.87	1.19

Table D: Summary of static bat detector survey data showing average pass rate (bat passes per hour) for each month (including all static locations).

Species	Passes per hour			
	Month			Mean
	April	May	June	
<i>Barbastelle</i>	0.00	0.01	0.00	0.00
<i>Brown long eared bat</i>	0.00	0.10	0.03	0.04
<i>Common / Nathusius' pipistrelle</i>	0.02	0.11	0.16	0.10
<i>Common / Soprano pipistrelle</i>	0.02	0.43	0.18	0.21
<i>Common pipistrelle</i>	3.30	24.48	10.67	12.82
<i>Leisler's bat</i>	0.00	0.08	0.16	0.08
<i>Myotis sp.</i>	0.11	6.89	1.18	2.73
<i>Nathusius' pipistrelle</i>	0.00	0.01	0.06	0.02
<i>Noctule</i>	0.02	0.07	0.04	0.04
<i>Noctule / Leisler's bat</i>	0.03	0.21	0.02	0.09
<i>Soprano pipistrelle</i>	0.21	2.31	1.19	1.24
Grand Total	3.72	34.69	13.69	17.37

Table E: Summary of static bat detector survey data showing total number of bat passes for each time period (including April – June 2024 survey periods, at all locations). Passes in the 'Night period' column were recorded between 120 minutes after sunset and 120 minutes before sunrise. Passes in the 'Day period' column were recorded before sunset or after sunrise.

	Time period													
	Day period	Minutes after sunset						Night period	Minutes before sunrise					
		0-20	21-40	41-60	61-80	81-100	101-120		120-101	100-81	80-61	60-41	40-21	20-0
<i>Barbastelle</i>	0	0	0	0	0	0	0	5	0	0	0	0	0	0
<i>Brown long eared bat</i>	0	0	0	0	3	3	8	62	2	2	4	0	0	0
<i>Common / Nathusius' pipistrelle</i>	0	0	1	4	14	20	11	92	8	10	14	1	0	0
<i>Common / Soprano pipistrelle</i>	2	0	1	27	18	4	10	143	34	85	50	20	0	1
<i>Common pipistrelle</i>	13	3	188	1155	1527	1689	1632	13505	1022	1258	1387	978	39	21
<i>Leisler's bat</i>	0	0	1	2	7	5	19	88	1	2	7	8	0	0
<i>Myotis sp.</i>	20	1	5	76	280	190	152	3676	444	252	118	28	7	4
<i>Nathusius' pipistrelle</i>	0	0	0	0	2	0	0	8	0	0	0	0	0	0
<i>Noctule</i>	0	1	10	10	4	6	14	28	0	3	6	3	0	1
<i>Noctule / Leisler's bat</i>	1	0	14	15	10	4	6	98	2	0	14	5	0	0
<i>Soprano pipistrelle</i>	10	3	25	157	272	171	168	1181	77	139	75	51	4	2
Total	46	8	245	1446	2137	2092	2020	18886	1590	1751	1675	1094	50	29