
FENWICK SOLAR FARM

Preliminary Environmental Information Report

Volume III Appendix 8-4: Bat Survey Report

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Prepared for:
Fenwick Solar Project Limited

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Executive Summary

Between March and April 2023, AECOM (on behalf of Fenwick Solar Project Limited) undertook a Preliminary Ecological Appraisal (PEA) for the proposed Fenwick Solar Farm (hereafter referred to as the 'Scheme'). This PEA identified features such as trees, woodlands and buildings within the Scheme, and surveys were therefore undertaken to determine the suitability of these features as potential bat roosts and to establish the activity of bats using the habitat within the Scheme.

All bat species and their roosts are legally protected in the UK under the Conservation of Habitats and Species Regulations 2017 (as amended), which implements the EC Directive 92/43/EEC (the Habitats Directive). In addition, Barbastelle (*Barbastella barbastellus*), Lesser and Greater Horseshoe bats (*Rhinolophus hipposideros*) and (*Rhinolophus ferrumequinum*) and Bechstein's bat (*Myotis bechsteinii*) are listed in Annex II of the Habitats Directive, which requires sites to be designated in member states for their protection. Bats and their roosts are also protected under the Wildlife and Countryside Act 1981 (as amended).

The Scheme was assessed to determine the potential suitability of features for roosting bats (a Daytime Bat Walkover (DBW)) and surveys for bat activity, comprising bat activity transect and static detector surveys in accordance with good practice guidelines (Ref. 1, Ref. 2). Field surveys were supported by a desk study of existing bat records for the Scheme.

There were 12 desk study records of bats within 2 km of the Scheme, comprising the following species: Brown Long-eared bat (*Plecotus auratus*), Common Pipistrelle (*Pipistrellus pipistrellus*), Noctule (*Nyctalus noctule*) and Soprano Pipistrelle (*Pipistrellus pygmaeus*). Bat activity surveys undertaken comprised at least seven species: at least seven species: Common Pipistrelle, Soprano Pipistrelle, Pipistrelle species, Brown Long-eared bat, Noctule, Daubenton's bat (*Myotis daubentonii*) and myotis species (Daubenton's and/or other unknown Myotis species). No roosts were recorded within the Scheme.

The initial DBW of 137 trees found that, seven were recorded as having no features suitable for roosting bats (None), 83 were classified as further assessment required (FAR) and 47 trees had potential roost features that could be suitable for roosting bats (PRF).

Based on the field data collected from the DBW and bat activity surveys, there are likely to be roosts within or close to the Site Boundary of common and Soprano Pipistrelle, Noctule, and Daubenton's bat and potentially other myotis species. This is based on habitat features such as suitable trees for roosting bats and the timing of observations (from static and transect data) in relation to expected bat emergence times indicating roosts nearby. As a precautionary approach, based on the data collected, potential breeding/non-breeding bat roosts of Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared bat and Nathusius' Pipistrelle (*Pipistrellus nathusii*) have been assigned of up to District Importance and roosts of Daubenton's bat (and potentially other myotis species) and Noctule up to Country Importance.

There is foraging and commuting activity by bats with high reliance on habitats by Common Pipistrelle as demonstrated by regular use by larger¹ numbers of bats;

¹ As defined in the evaluation method in Section 3.3.

moderate reliance on habitats by Soprano Pipistrelle and Noctule bats as showed by regular use by smaller² numbers of bats; and low reliance on habitats by Brown Long-eared bats, Myotis sp. and Nathusius' Pipistrelle as demonstrated by limited evidence or irregular use and generally by small numbers of bats.

Small pockets of woodland across and around the Site form a relatively rare resource for foraging bats. Hedges and wider field margins provide habitat connectivity to habitats within and outside of the Site Boundary. Woodlands and other habitats of value are connected via hedges, but relatively few regularly used commuting routes are apparent.

Based on the reliance of the habitats, habitat features and potential roosts within the Site Boundary, habitat features are considered to be of District Importance to commuting and foraging bats.

Surveys are recommended in 2024 to complete the DBW and potentially additional roost surveys where potential roosts cannot be avoided. An additional bat activity survey is recommended along the Grid Connection Corridor to cover a proposed construction compound and other potential habitat loss.

² As defined in the evaluation method in Section 3.3.

1. Introduction

1.1 Background

- 1.1.1 This report forms a technical appendix to the **PEIR Volume I Chapter 8: Ecology**. This report provides information on the presence and distribution of bats relevant to the Fenwick Solar Farm project (hereafter referred to as the 'Scheme').

1.2 The Scheme

- 1.2.1 The proposed Scheme includes three locations (collectively referred to as the 'Site'):
- a. the land located east of Fenwick and immediately south of the River Went (hereafter referred to as the 'Solar PV Site');
 - b. the land between the Solar PV Site and the existing compound for Thorpe Marsh Substation (hereafter referred to as the 'Grid Connection Corridor'); and
 - c. the land located within the existing compound for Thorpe Marsh Substation (hereafter referred to as the 'Existing National Grid Thorpe Marsh Substation').
- 1.2.2 The Scheme comprises the installation of Solar PV Panels, On-Site Cables, Interconnecting Cables, associated Battery Energy Storage System (BESS) Battery Containers, an On-site Substation, a cable or line drop connecting the On-Site Substation to the Existing National Grid Thorpe Marsh Substation and other supporting infrastructure including fencing, access tracks, drainage, and biodiversity and landscaping enhancements.
- 1.2.3 This bat report includes the Solar PV Site only (Figure 1, Annex A). A separate assessment will be prepared for the Grid Connection Corridor (encompassing the Existing National Grid Thorpe Marsh Substation), if required as part of the Scheme.

1.3 The Site

- 1.3.1 The Solar PV Site is located near the village of Fenwick, approximately 12 kilometres (km) north of Doncaster, at Ordnance Survey national grid reference SE 60658 16767. It is approximately 421 hectares (ha) in area.
- 1.3.2 The Solar PV Site comprises arable (c. 70%) and pasture fields (c. 25%), and small patches of broadleaved woodlands, with the River Went delineating the northern Site Boundary, and two large drains running through the eastern part of the Solar PV Site (Fenwick Common Drain and Fleet Drain).
- 1.3.3 The Solar PV Site is bounded by further arable and pasture fields to the east, west and south, and the wider area consists of a landscape that is much the same in terms of land use. The small town of Askern is located approximately 3 km to the south west of the Solar PV Site and nearby rural villages Moss and Balne are present within a few kilometres to the south and north respectively.

1.4 Scope of this Report

- 1.4.1 The objective of the bat surveys reported in this document is to determine the presence and assemblages of roosting, foraging and commuting bat species within the Scheme. Note that for roosting bats only an initial Daytime Bat Walkover (DBW) Survey and desk study were undertaken to inform the Scheme and the current assumption is that roosts/potential roosts will be avoided.
- 1.4.2 This report includes the following information:
- a. Relevant legislation and policy;
 - b. Methods for desk and field-based assessments undertaken in 2023;
 - c. Limitations to the surveys undertaken and any assumptions made as a result of incomplete data;
 - d. Survey results; and
 - e. Conclusions and recommendations.

2. Relevant Legislation and Biodiversity Action Plan

2.1 Relevant legislation

2.1.1 The following wildlife legislation is relevant to bats in relation to the Scheme:

- a. Conservation of Habitats and Species Regulations 2017 (as amended) (Habitats and Species Regulations) (Ref. 3);
- b. Wildlife and Countryside Act 1981 (as amended) (WCA) (Ref. 4);
- c. Natural Environment and Rural Communities (NERC) Act 2006 (Ref. 5); and
- d. Countryside and Rights of Way (CRoW) Act 2000 (Ref. 6).

2.1.2 The above legislation has been considered when planning and undertaking the commissioned survey work detailed in Section 4 of this report. Compliance with legislation may require the attainment of relevant protected species licences prior to the implementation of the Scheme.

2.2 European Legislation and Wildlife and Countryside Act

2.2.1 All bat species and their roosts are legally protected in the United Kingdom (UK) under European legislation through the Habitats and Species Regulations (Ref. 3), which implements the EC Directive 92/43/EEC (the Habitats Directive) (Ref. 7) through the provisions of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Ref. 8). Four bat species are further listed under Annex II of the Habitats Directive which implies that sites must be designated for their protection. These bat species are Barbastelle (*Barbastella barbastellus*), Lesser Horseshoe (*Rhinolophus hipposideros*), Greater Horseshoe (*Rhinolophus ferrumequinum*) and Bechstein's (*Myotis bechsteinii*). Under the WCA (Ref. 4), bats and roosts are also protected through the designation of protected areas including Sites of Special Scientific Interest (SSSIs) and by promoting protections for such designated areas.

2.2.2 Taken together, the Habitats and Species Regulations (Ref. 3) and the WCA (Ref. 4) make it illegal to:

- a. Deliberately capture or intentionally take a bat;
- b. Deliberately or intentionally kill or injure a bat;
- c. Be in possession or control of any live or dead bat or any part of, or anything derived from a bat;
- d. Damage or destroy a breeding site or resting place of a bat;
- e. Intentionally or recklessly obstruct access to any place that a bat uses for shelter or protection;
- f. Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection; and
- g. Deliberately disturb bats, in particular any disturbance which is likely to (i) impair their ability to survive, breed, reproduce or to rear or nurture

their young; or in the case of hibernating or migratory species, to hibernate or migrate; or (ii) affect significantly the local distribution or abundance of the species to which they belong.

- 2.2.3 A bat roost is defined as any structure a bat uses for breeding, resting, shelter or protection. It is important to note that since bats tend to re-use the same roost sites, current legal opinion is that a bat roost is protected regardless of whether or not the bats are present at a specific point in time.

2.3 The Countryside and Rights of Way Act

- 2.3.1 The CROW Act 2000 (Ref. 6) introduced the offence of 'reckless' disturbance of threatened species protected under the WCA. It added extended powers relating to the protection and management of SSSIs as well, including powers for entering management agreements, placing a duty on public bodies to further the conservation and enhancement of SSSIs, increasing penalties for conviction, and appeal processes for the notification, management and protection of SSSIs.

2.4 Natural Environment and Rural Communities Act

- 2.4.1 In addition to the above legislation, seven bat species are listed as being Species of Principal Importance for conservation in England under section 41 of the NERC Act 2006 (Ref. 5). These include Barbastelle, Bechstein's, Noctule (*Nyctalus noctule*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Brown Long-eared (*Plecotus auratus*), Lesser Horseshoe and Greater Horseshoe. Section 41 of the NERC Act 2006 requires the Secretary of State to publish a list of habitats and species which are of Principal Importance for the conservation of biodiversity in England. The list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the NERC Act, to have regard to the conservation of biodiversity in England when carrying out their normal functions.

2.5 Local Biodiversity Action Plan

- 2.5.1 The Scheme is located within the county of South Yorkshire. Formerly, the Doncaster Biodiversity Action Plan (BAP) (Ref. 9) provided context to inform identification of threatened or uncommon species of local relevance, alongside priorities for conservation and enhancement targeted at a local level in South Yorkshire. However, under the Environment Act 2021 (Ref. 10), these are being replaced by Local Nature Recovery Strategies (LNRSs), which are a system of spatial strategies for nature which will support delivery of biodiversity net gain (BNG) and provide more focussed action for nature recovery. Whilst this is still being developed for South Yorkshire and with no specific habitat or species plans currently in place, this report references the Doncaster BAP, for which Brandt's (*Myotis brandtii*), Daubenton's, Whiskered (*Myotis mystacinus*), Natterer's (*Myotis nattereri*), Noctule, Common and Soprano Pipistrelle and Brown Long-eared are all listed, but with no specific action plans in place (Ref. 9).

3. Methods

3.1 Desk Study

- 3.1.1 Records of bat species within a 2 km radius of the Scheme were obtained through Doncaster Local Records Centre (DLRC) in February 2023.
- 3.1.2 Only records up to ten years old were considered within the assessment, as any records older than ten years are unlikely to be still representative of bat species in the local area.
- 3.1.3 A freely available online resource 'Multi-Agency Geographic Information for the Countryside' (MAGIC) (Ref. 11) was used to search for Special Areas of Conservation (SACs) within 30 km of the Scheme where bats are cited as one of the qualifying features. Granted licences (EPSMLs) in relation to bats within 2 km of the Scheme were also searched for.

3.2 Field Survey

- 3.2.1 All field surveys were led by competent ecologists (as defined by the Chartered Institute of Ecology and Environmental Management (CIEEM) Technical Guidance, Ref. 12) familiar with bat ecology and surveying.

Survey Area

- 3.2.2 The survey area included all habitat within the Scheme. The Scheme comprises of mostly low value suitability habitats for foraging and commuting bats and is dominated by open intensively managed arable fields. Hedgerows, woodland blocks, numerous mature trees and woodland are also present. In accordance with the bat survey guidelines (Ref. 1), habitats assessed as being of low value for foraging and commuting bats require three activity transects surveys within one season capturing spring, summer and autumn.

Daytime Bat Walkover Survey

- 3.2.3 A DBW survey was carried out on accessible features identified within the Solar PV Site. Where access was permitted, this assessment of relevant woodland blocks and trees was undertaken externally at ground level for their suitability for roosting bats in October 2023.
- 3.2.4 The aim of the survey was to undertake a rapid assessment to identify whether the trees had features or were suitably obscured to require further survey effort where impacts are likely, to determine roost presence/likely absence.
- 3.2.5 The DBW was undertaken in accordance with recently updated guidance in the Bat Surveys: Good Practice Guidelines for Professional Ecologists 4th Edition (Ref. 1). A global positioning system (GPS) was made to accurately record the location of individual trees, treelines, woodlands along with photographs and notes on each feature.
- 3.2.6 Based on the overall suitability for use as a bat roost, in accordance with good practice guidelines (Ref. 1) each woodland/tree was classified as;
 - a. NONE - no features;

- b. FAR - further assessment required; or
 - c. PRF - potential roost feature.
- 3.2.7 These assessments were carried out on a precautionary basis to inform any future amendments to the Scheme that may require further survey where potential roost disturbance or loss may occur. The results will help to inform the layout of the Scheme and any requirement for more detailed survey work to confirm the trees' potential suitability for roosting bats and presence or likely absence of bat roosts.

Bat Activity Survey

- 3.2.8 Bat activity surveys were undertaken in 2023 using four transect locations covering representative habitats across the Scheme. Each transect route (see Figure 1, Annex A) was surveyed in spring, summer and autumn. The transect routes were chosen so potential flight paths or foraging areas within the Scheme and between such areas and potential roost sites.
- 3.2.9 Prior to the start of the nighttime surveys in each new location, a daytime site visit was undertaken for each location by the lead surveyor in order to plan the works, assess any health and safety issues on the Site, and record the context of the survey locations.
- 3.2.10 Each activity survey involved two surveyors walking a transect route which included a series of counts at pre-determined points along the transect (presented as 'stopping points' on Figure 1, Annex A). These points were located at potentially higher value features with regards to foraging and, or commuting bats such as woodland edges and hedgerows. At each point, surveyors stopped and recorded bat activity for one minute using bat echolocation detectors. All bat activity encountered whilst walking between points was also noted. The direction of the transects was varied during each survey visit to ensure different areas of the transect were walked at different times.
- 3.2.11 Surveyors carried full spectrum bat echolocation detectors (Batlogger M) to determine which species were present. In accordance with survey guidelines current at the time of the surveys (Ref. 2), dusk surveys were carried out from sunset to at least two hours after sunset. The time, location, numbers, species (where practicable) and direction of flight were recorded for each bat pass (a discrete burst of echolocation heard, or bat activity observed) during the survey. Echolocation calls detected were analysed with specialist software (BatExplorer) to verify bat calls. Survey visits were conducted in this way where weather conditions allowed, with surveys scheduled to avoid nights with cold (<7 °C), wet or windy conditions.
- 3.2.12 In addition to the transect surveys, three automated static bat detectors (one SM4BAT-Full Spectrum detector on each transect) were placed across the Scheme in representative habitats to record bat activity over a longer period of time (i.e. a minimum of five nights per season). The locations of the static detectors are presented on Figure 11, Annex A).
- 3.2.13 All microphones were located at least one metre above the ground on trees, so they were clear of vegetation between the adjacent habitats and the microphone. All detectors were set on default settings to record in zero-crossing format. The static detectors were set up to record bat calls from

sunset to sunrise for the recommended minimum of five consecutive nights per season in spring, summer and autumn (see deployment dates and weather conditions in Annex D).

- 3.2.14 Weather conditions were recorded using the temperate log files on each static detector and rain/wind conditions were recorded at the nearest weather station using online resources (Ref. 13). Weather data were taken into consideration in the analysis. Where any prolonged period of strong wind >25 mph or rain was experienced, the static detectors were left for longer on the Site to obtain sufficient data during optimum weather conditions for bat activity.

3.3 Bat Data Analysis

Activity Surveys

- 3.3.1 The transect data were described in relation to species, number of passes (and where practicable number of bats), observed behaviour, temporal and spatial trends. The static bat detector data collected were analysed to determine the total number of bat passes for each species or species group (depending on the level of identification possible from the recordings made) and then used to derive a metric - the Bat Activity Index (BAI) for the bat activity at each survey location.
- 3.3.2 These analyses provide an indication of:
- seasonal variation in species activity and composition at each survey location;
 - relative levels of bat activity across the Scheme; and
 - potential roosting sites, important foraging areas and commuting routes.

Bat Activity Index (BAI)

- 3.3.3 BAI values were calculated by averaging the total number of bat passes per hour for each static bat detector unit at each location per survey period. The term 'pass' is defined as a single file made up of bat pulses of a single species i.e. this may be one bat in a recorded sound file or many bats in a single file.
- 3.3.4 Limited guidance is available on what constitutes low to high bat activity on a Site based on number of passes. As such, a relative scale is used by AECOM that follows the protocol used by Ecobat (Ref. 14) in this report where:
- Low activity: 0-20th percentiles;
 - Low to moderate activity: 21st-40th percentiles;
 - Moderate activity: 41st-60th percentiles;
 - Moderate to high activity: 61st-80th percentiles; and
 - High activity: 81st-100th percentiles.
- 3.3.5 For transect data, relative bat activity levels were described to aid the discussion. No guidance is available on what constitutes low, moderate or high bat activity based on number of passes during a transect (based on a

transect survey time of one and a half to three hours). As such a relative scale is used by AECOM in this report where:

- a. Very low activity is up to 5 passes per survey;
- b. Low activity is 6 to 25 passes per survey;
- c. Moderate activity is 26 to 99 passes per survey; and
- d. High activity is 100 passes per survey.

- 3.3.6 Reference to surveyor observations, including numbers of individual bats seen, flight routes and behaviour and detectability of individual species are also made to inform the overall evaluation.

Biodiversity Importance

- 3.3.7 An essential prerequisite step to allow ecological impact assessment of the Scheme was an evaluation of the relative biodiversity importance of the Survey Area for bats. This is necessary to set the terms of reference for the subsequent ecological impact assessment.

- 3.3.8 The method of evaluation that was utilised to assign biodiversity importance (i.e. sensitivity) of any bat roosts, foraging and commuting habitat has been developed with reference to the CIEEM Guidelines (Ref. 19). This gives guidance on scoping and carrying out environmental assessments and places appraisal in the context of relevant policies and at a geographical scale at which feature matters (i.e. international, national, regional, county, district, local or site). Data received through desk study and field-based surveys were used to identify the importance of the species addressed in this report. Professional judgement was also applied, where necessary. Relevant published national and local guidance and criteria can be used, where available, to inform the assessment of biodiversity importance and to assist consistency in evaluation.

- 3.3.9 For further details on the method used to determine biodiversity importance, please refer to Annex E.

- 3.3.10 Reference has also been made, where required, to:

- a. CIEEM Bat Mitigation Guidelines (Ref. 15);
- b. Natural England Joint Publication JP025: A Review of the Population and Conservation Status of British Mammals (Ref. 16);
- c. NERC Act section 41 list of species of principal importance (Ref. 5)
- d. Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals (Ref. 17); and
- e. The State of the UK's Bats 2017: National Bat Monitoring Programme Populations Trends (Ref. 18).

3.4 Assumptions and Limitations

Desk Study

- 3.4.1 The aim of the desk study was to help characterise the baseline context of the Scheme and provide valuable background information that would not be captured by site surveys alone. Information obtained during the desk study

was dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular species does not necessarily mean that the species does not occur in the Study Area. Likewise, the presence of records of species does not automatically mean that these still occur within the area of interest or are relevant in the context of the Scheme.

Daytime Bat Walkover

- 3.4.2 Due to access limitations, there were areas within the Solar PV Site in which surveys were not undertaken. This is a limitation and further surveys are required in 2024 to complete this work.

Bat Activity Field Survey

- 3.4.3 Transect 1 is situated near the River Went, there were several survey constraints around the bat activity transects due to flooding in the upper half of the transect during the second visit. The designated listening points were not accessible, and the route was diverted. This is not a significant limitation as there are not expected to be impacts to the River Went as it is retained and buffered from the Scheme, and a survey of representative habitats throughout the Scheme was undertaken.
- 3.4.4 Livestock were present in all fields for Transect 3a during the first and second bat activity transect visit. This resulted in the extension of Transect 3b route to divert around these fields and the route followed is reflected in Figure 4, Figure 7 and Figure 10 (Annex A).

Data Interpretation Limitations

- 3.4.5 It is accepted that *Myotis* bat species are difficult to identify with any degree of certainty from echolocation alone, therefore these species are often aggregated as 'Myotis species'. Noctule and Leisler's (*Nyctalus leisleri*), and Common Pipistrelle and Soprano Pipistrelle can be difficult to separate, therefore *Nyctalus* species and *Pipistrellus* species are used respectively unless identification is certain. These aggregations, where undertaken, are widely accepted and does not affect the evaluation of the results of activity surveys. Where further details are required roost inspections or bat trapping surveys may be undertaken to identify these species with certainty.
- 3.4.6 The DBW surveys undertaken were aimed at determining the presence or likely absence of potential roosting features (PRFs), therefore there would be a need for further surveys on PRFs if they are likely to be impacted by the Scheme. Whilst, not predicted, should future impacts be unavoidable, then sufficiently robust roost survey data are required to be collected for any future mitigation licence application for roost loss and, or modification and significant disturbance and to allow the City of Doncaster, the Local Planning Authority to evaluate the planning submission and discharge its legal biodiversity duty in accordance with Natural England's standing advice.
- 3.4.7 Bats are highly mobile and may roost in different locations each year where suitable roost features are present. Where required, a precautionary approach for mitigation would be proposed for trees or structures assessed with roost suitability but where roosts were not found.

- 3.4.8 Except for the requirement for additional DBW, these limitations do not significantly limit this report and assessment. Ecological data in relation to these species are valid for 18 months based on good practice guidance (Ref. 2). After this time, update surveys are likely to be required.

4. Results

4.1 Desk Study

- 4.1.1 A desk study was undertaken as part of the PEA (included as **PEIR Volume III Appendix 8-3: PEA**) There are no sites statutorily designated for international value for bats within 30 km of the Scheme. There are no national statutory sites designated for bats within 10 km of the Scheme or relevant non-statutory sites within 2 km of the Scheme.
- 4.1.2 DLRC holds 16 records of bats within the Study Area in the last ten years, including two roosts. All records are in the same location 1.7 km north west of the Site and are from 2014. The closest of the two bat roosts is located 1.2 km east of the Site, in 2015.
- 4.1.3 A further search of the MAGIC data showed that three Natural England bat mitigation licences were issued for the destruction of a Brown Long-eared and Common Pipistrelle non-breeding roost (2015-15069-EPS-MIT, 2020-49789-EPS-MIT and 2020-49789-EPS-MIT-1) between 2015 and 2020. The closest of these records is located 1.6 km north of the Site Boundary and was granted in 2015.

4.2 Field Survey

Daytime Bat Walkover Survey

- 4.2.1 In summary, an initial assessment of 137 trees found that:
- seven were recorded as having no features suitable for roosting bats (NONE);
 - 83 were classified as further assessment required (FAR); and
 - 47 trees that had features that were potentially suitable for roosting bats (PRF).
- 4.2.2 Detailed results of the DBW survey are presented in Annex B. The locations of all features surveyed are presented in Figure 11: Daytime Bat Walkover Results (Annex A).
- 4.2.3 There is one building present within the Solar PV Site Boundary (an agricultural barn), this has not been surveyed, however based on the indicative layout it looks to be retained, as such is not a limitation.

Bat Activity Survey

- 4.2.4 The results of these surveys and the BAI (as per the method in Section 3.2) are summarised below, with full results presented in Annex D. Transect mapping is presented in Figure 2 to Figure 10 (Annex A).

Transect Surveys

- 4.2.5 A total of nine transects were surveyed during 2023 to provide a representative coverage of the habitats within the Scheme. This comprised three transects; Transect 1, Transect 2 and Transect 3 (split into two parts 3a and 3b) as presented in Figure 1 to Figure 10 (Annex A). Each was surveyed

in the spring, summer and autumn of 2023, apart from Transect 3a that was re-routed in the spring and summer surveys due to livestock in the fields (see limitations). The transect included sampling representative habitats within the Scheme, comprising hedges/tree lines, woodland edge, roadside verges, and arable field margins.

- 4.2.6 At least seven species were recorded during the bat transect surveys Common Pipistrelle, Soprano Pipistrelle, Pipistrelle species, Brown Long-eared bat, Noctule, Daubenton's bat and Myotis species (Daubenton's and/or other unknown Myotis species).

Spring Surveys

- 4.2.7 Three transects were surveyed between 10 May 2023 and 11 May 2023. Bat activity is shown on Figure 2, Figure 3 and Figure 4 (Annex A).
- 4.2.8 Transect 2 had very low activity levels with six passes by Common Pipistrelle.
- 4.2.9 Transect 1 and 3b had low activity levels, with 13 and 11 passes respectively. Common Pipistrelle activity was dominated with occasional Myotis species passes.

Summer Surveys

- 4.2.10 Three transect were surveyed between 25 July 2023 and 27 July 2023. Bat activity is shown on Figure 5, Figure 6 and Figure 7 (Annex A). Activity levels were low on all transect.
- 4.2.11 Transect 1, 2 and 3b had 18 passes, 17 passes and 24 passes respectively. Dominated by Common Pipistrelle. Other species recorded were Soprano Pipistrelle, Myotis species, Daubenton's bat, Brown-long Eared bat and Noctule.

Autumn Surveys

- 4.2.12 Three transects were surveyed between 19 September 2023 and 21 September 2023. Mat activity is shown on Figures 8, 9 and 10 (Annex A).
- 4.2.13 Transect 1 h had moderate activity level with 29 passes of Soprano Pipistrelle, Pipistrelle species, Myotis species and Noctule.
- 4.2.14 Activity levels for Transect 2, 3a and 3b were low with 16 passes, 17 passes and six passes respectively, dominated by Common Pipistrelle. Other species recorded were Soprano Pipistrelle, Myotis species and Noctule.

Static Bat Detector Survey

- 4.2.15 Full results of the static bat detector surveys are provided in Annex D with static detector locations presented on Figure 11 in Annex A. A total of 90 nights of data were analysed from three statics located across the Solar PV Site, resulting in 41,232 records of bats. Species recorded comprised of at least nine species; Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle (*Pipistrellus nathusii*), Pipistrelle species, Noctule bat, *Nyctalus* species, Myotis species, Daubenton's bat and Brown Long-eared bat. Common Pipistrelle was the most frequently recorded species by far with 36,700 passes (see Plate 1). The highest overall activity was at T1 and T2 in the spring and T1 and T3 in the summer (see Table 1 and Plate 1).

Table 1 Summary of Bat Activity Index (BAI) from Static Bat Detector Surveys

Location	BAI* per hr	Activity Level	BAI* per hr	Activity Level	BAI* per hr	Activity Level
	Spring		Summer		Autumn	
T1	86.96	Moderate -high	106.45	High	37.24	Low-moderate
T2	72.41	Moderate -high	53.35	Moderate	39.01	Moderate
T3	27.34	Low	92.73	High	21.32	Low

* BAI = Bat Activity Index (overall number of bat passes per hour)

Plate 1 Total Number of Passes per Species

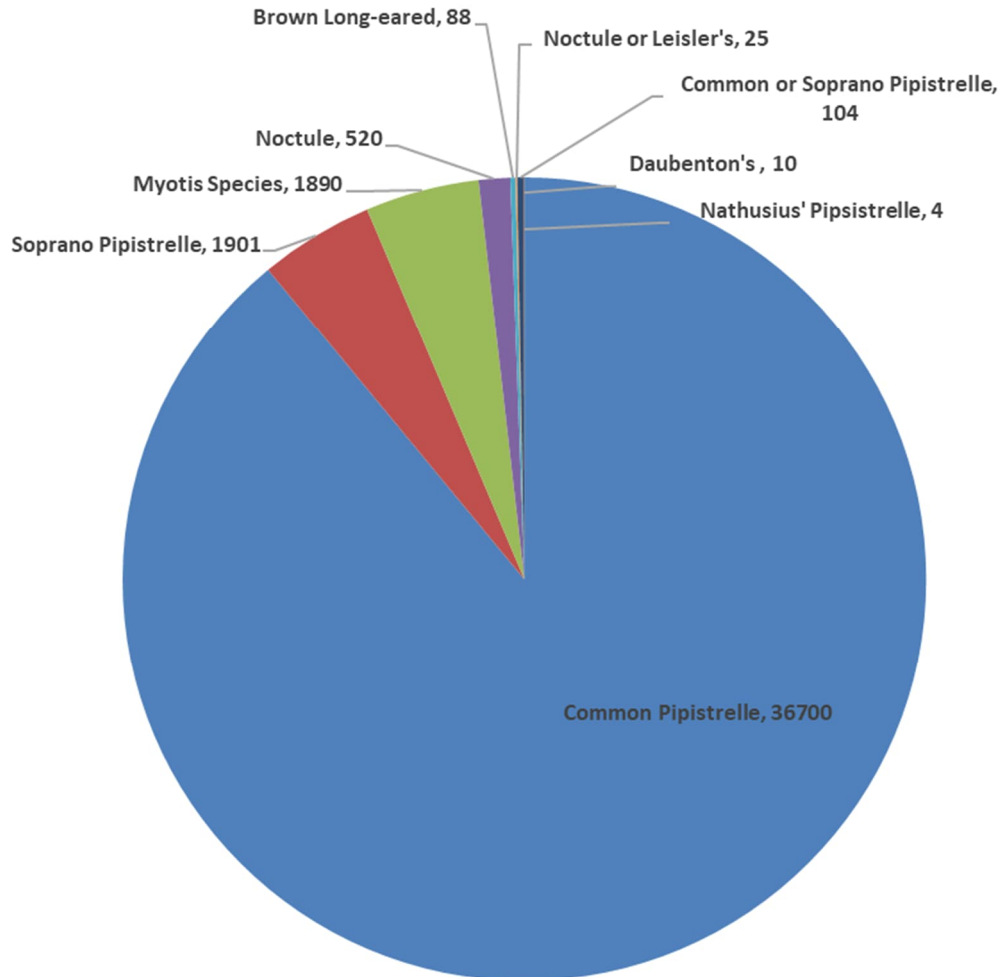
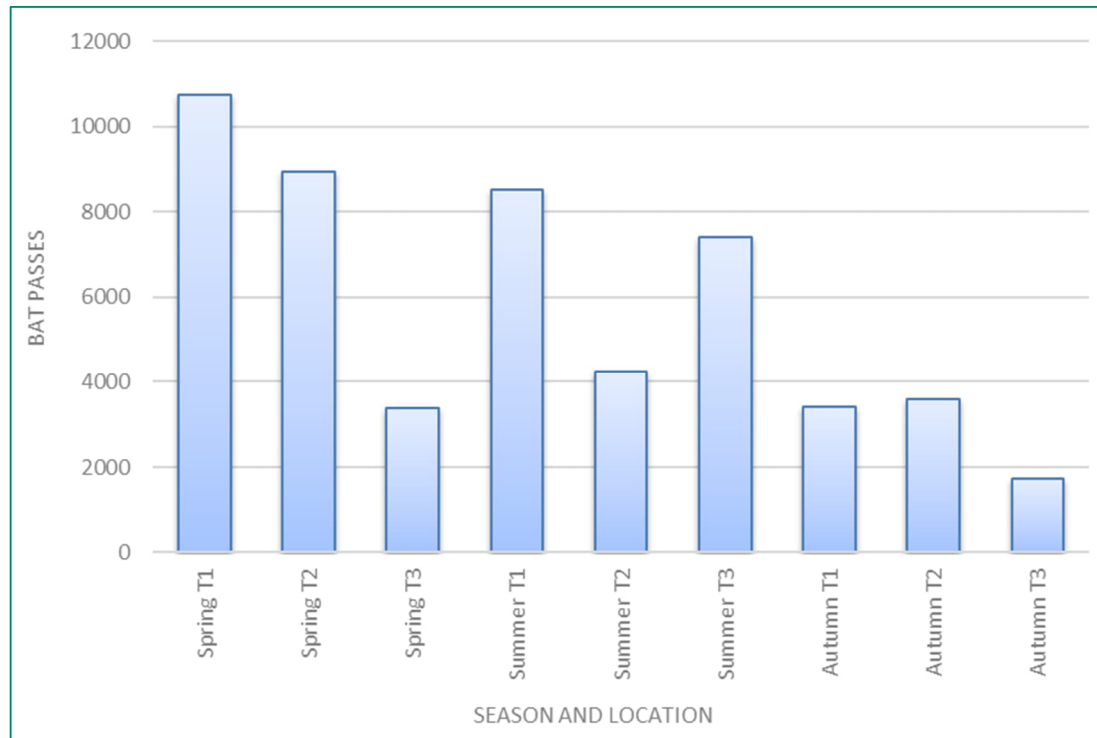


Plate 2 Number of Bat Passes per Season and Location



5. Evaluation

5.1 Sites Designated for their Biodiversity Value including for Bats

- 5.1.1 No designated sites of relevance to bats were identified and therefore are not considered further.

5.2 Roosts

- 5.2.1 The data search returned records of at least four bat species (Noctule, Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared bat and unknown Pipistrelle species), all of which were from the same location, 1.7 km north west of the Scheme.
- 5.2.2 Two roosts were identified in the desk study within the Site Boundary.
- 5.2.3 Based on the field data collected from the DBW and bat activity surveys, there are likely to be roosts within or close to the Site Boundary of Common and Soprano Pipistrelle, Noctule, Daubenton's bat and potentially other Myotis species. This is based on suitable habitat features such as suitable trees for roosting bats and the timing of observations (from static and transect data) in relation to expected bat emergence times indicating roosts nearby.
- 5.2.4 All potential roosts currently identified are outside the current footprint of the Scheme (due to avoidance of potential roosting features). As such no detailed roost presence/absence or characterisation has been undertaken to determine roost importance and therefore an estimated biodiversity importance to individual species has been assigned based on desk study data and activity surveys.
- 5.2.5 As a precautionary approach, based on the data collected, potential breeding and non-breeding bat roosts of Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared bat and Nathusius' Pipistrelle have been assigned of up to District Importance and roosts of Daubenton's bat (and potentially other Myotis species) and Noctule up to Country Importance (see Table 2).

5.3 Commuting and Foraging Habitats

- 5.3.1 Biodiversity importance of commuting and foraging bats is based on species rarity, activity, presence of nearby roosts and habitat type/complexity of community/foraging features (see Annex E). This also considers the lower detectability on bat detectors of species such as Brown Long-eared bat and Myotis species compared to species such as Common and Soprano Pipistrelle and Noctule (Ref. 1). It is not possible to adopt the same matrix-based approach for valuing commuting routes and foraging areas. It is inherently more difficult to assess them and requires a higher degree of professional judgement. For example, some routes may be used only at certain times of year, and hence show low numbers of bat passes, but they may be critical routes to hibernation sites. As such the importance of commuting and foraging areas are not interpreted in isolation and is judged

- on the overall knowledge of bat activity in the area using the desk study and survey data collected.
- 5.3.2 Species recorded on the activity surveys (combined activity transects and static bat detectors) in 2023 comprised at least seven species: Common Pipistrelle, Soprano Pipistrelle, Nathusius' pipistrelle, pipistrelle species, Noctule, *Nyctalus* species, Daubenton's bat, unknown *Myotis* species (Daubenton's bat and/or other species) and Brown Long-eared bat.
 - 5.3.3 The surveys identified a range of activity (including foraging, commuting and social calling) with multiple bats often recorded.
 - 5.3.4 Most of the areas with highest activity were located along linear features such as hedgerows/tree lines and woodland edges, with very limited foraging and commuting observed over open fields or crops (see Figure 2 to Figure 10, Annex A).
 - 5.3.5 As presented in Table 2, there is high reliance on habitats by Common Pipistrelle as demonstrated by regular use by larger numbers of bats; moderate reliance on habitats by Soprano Pipistrelle and Noctule bats as shown by regular use by smaller numbers of bats; and low reliance on habitats by Brown Long-eared bats, *Myotis* species and Nathusius' Pipistrelle as demonstrated by limited evidence or irregular use and generally by small numbers of bats.
 - 5.3.6 Small pockets of woodland across and around the Site form a relatively limited resource for foraging bats. Hedges and wider field margins provide habitat connectivity to habitats within and outside of the Scheme Boundary.
 - 5.3.7 Woodlands and other habitats of value are connected via hedges, but relatively few regularly used commuting routes are apparent.
 - 5.3.8 Taking the above into account, the habitats within the Site are of District Importance to commuting and foraging bats.

Table 2 Summary of Conservation Importance of Bats

Species	Importance of Roosts	Importance of Commuting and Foraging Habitat (summary of justification)	Importance of Assemblage
<p>Widespread: Common Pipistrelle Soprano Pipistrelle Brown Long-eared bat</p>	<p>Evidence of roosts for all these species including breeding roosts and other non-breeding roosts within the Site Boundary. Does not exceed District importance for each species.</p>	<p>There is foraging and commuting activity by diverse assemblage of bats with high reliance on habitats by Common Pipistrelle as demonstrated by regular use by larger numbers of bats; moderate reliance on habitats by Soprano Pipistrelle and Noctule bats as showed by regular use by smaller numbers of bats; and low reliance on habitats by Brown Long-eared bats, Myotis species and Nathusius' Pipistrelle as demonstrated by limited evidence or irregular use and generally by small numbers of bats.</p>	<p>(1 point per species) Score 3 for this part of the assemblage (of a maximum of 3)</p>
<p>Widespread in many geographies but not as abundant in all: Daubenton's bat and potentially other Myotis species Noctule</p>	<p>Possible breeding and non-breeding roosts of Daubenton's bat within the Order limits. Does not exceed County importance. Evidence of likely breeding and non-breeding roost/s of Noctule. Does not exceed County importance.</p>	<p>Small pockets of woodland across and around the Site form a relatively rare resource for foraging bats. Hedges and wider field margins provide habitat connectivity to habitats within and outside of the Site Boundary. Breeding roosts are likely to be present (e.g. Common and Soprano Pipistrelle and Noctule) in woodland and trees within Study Area.</p>	<p>(2 points per species) Score 4 for this part of the assemblage (of a maximum of 10)</p>
<p>Rarer or restricted distribution:</p>	<p>No evidence of roosts of these species, an unlikely with the Site Boundary, though possible within wider Study Area. For this</p>		<p>(3 points per species) Score 3 for this part of the assemblage (of a maximum of 15)</p>

Species	Importance of Roosts	Importance of Commuting and Foraging Habitat (summary of justification)	Importance of Assemblage
Nathusius' pipistrelle	species if present, unlikely to exceed District importance.	<p>Woodlands and other habitats of value are connected via hedges, but relatively few regularly used commuting routes are apparent.</p> <p>Taking the above into account, the habitats within the Site Boundary are considered to be of District Importance.</p>	
<p>Overall score: Assemblage score 10/28 = 36 %; does not meet any threshold for importance.</p>			

6. Conclusions and Recommendations

6.1 Further surveys

- 6.1.1 Prior to submission of the Environmental Statement (ES) for the Scheme, a DBW survey of the remaining Solar PV Site and the Grid Connection Corridor is required where there is a potential loss of roost features. It is also recommended that an additional bat activity survey is carried out along the Grid Connection Corridor to cover a proposed construction compound and other potential habitat loss.
- 6.1.2 Prior to construction and when further details of the Scheme are provided, including detailed design of construction compounds and access routes, if any trees, woodlands or buildings with potential suitability for roosting bats (e.g. trees classified as FAR or PRF) are impacted as a result of the Scheme, then these should be surveyed in more detail. These would comprise a Ground Level Tree Assessment (GLTA) and where required aerial inspection/s and/or emergence surveys to determine roost presence/absence and, where required, roost characterisation. Based on the current scheme layout, it is anticipated that impacts to potential roosts are likely to be avoided and that any further survey work, if required is likely to be minor (i.e. possibly a few individual trees) and on a precautionary basis.

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Annex A Figures

Figure 1: Bat Activity Survey Overview

Figure 2: Bat Activity Survey Spring, Transect 1

Figure 3: Bat Activity Survey Spring, Transect 2

Figure 4: Bat Activity Survey Spring, Transect 3

Figure 5: Bat Activity Survey Summer, Transect 1

Figure 6: Bat Activity Survey Summer, Transect 2

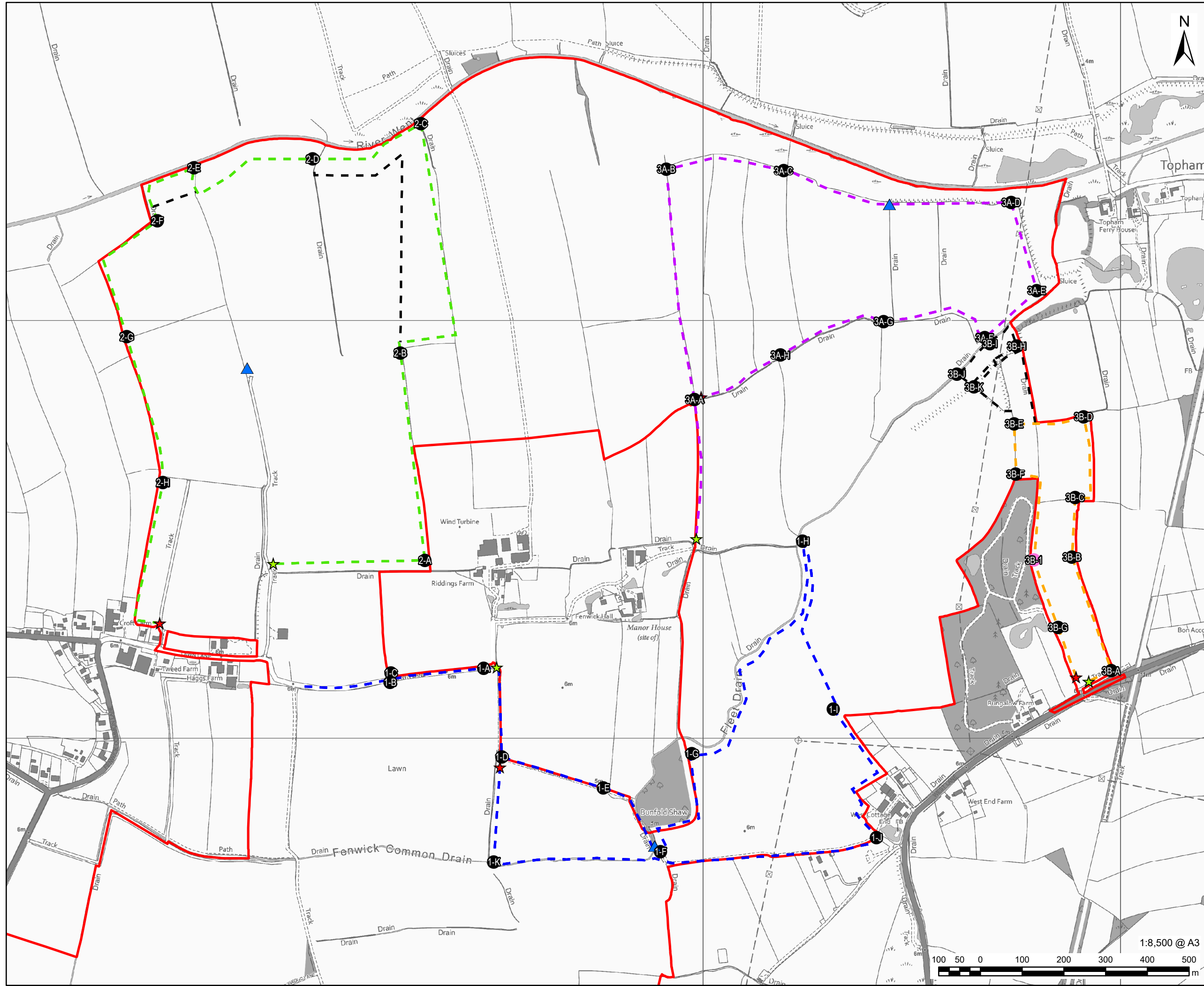
Figure 7: Bat Activity Survey Summer, Transect 3

Figure 8: Bat Activity Survey Autumn, Transect 1

Figure 9: Bat Activity Survey Autumn, Transect 2

Figure 10: Bat Activity Survey Autumn, Transect 3

Figure 11: Daytime Bat Walkover Results



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Fenwick Solar Farm

CLIENT
Fenwick Solar Project Limited

CONSULTANT
AECOM Limited
Midpoint,
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- LEGEND**
- Solar PV Site
 - ★ Start point
 - ★ End point
 - Location of Stopping Point
 - Additional Stopping Point for Transect 3b, Spring Visit
 - ▲ Recorder Location
 - Transect 1
 - Transect 2
 - Transect 3a
 - Transect 3b
 - Diverted route used for Summer visit for Transects 2 and 3b

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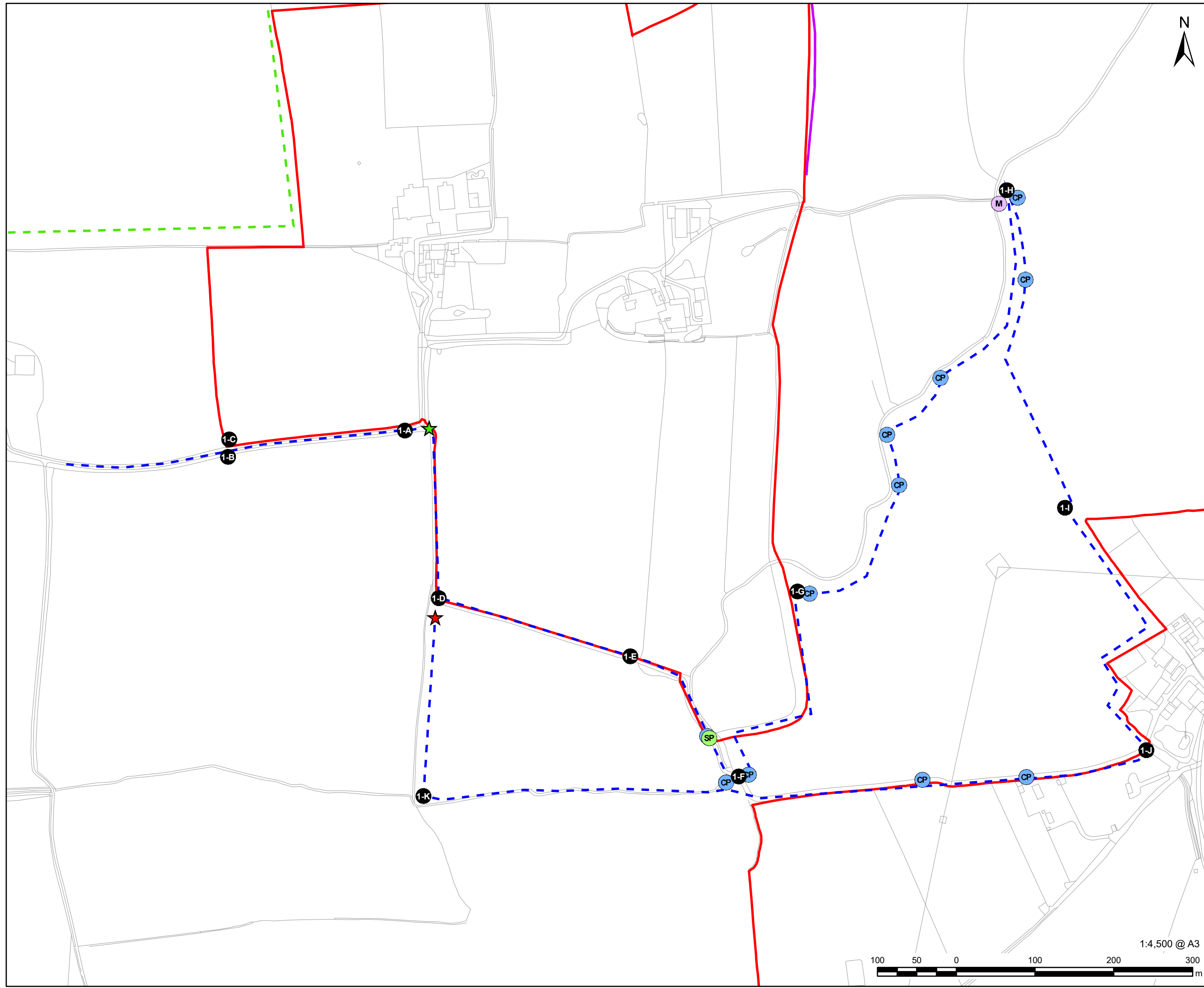
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FIGURE TITLE
Bat Activity Survey, Overview

FIGURE NUMBER
Figure 1

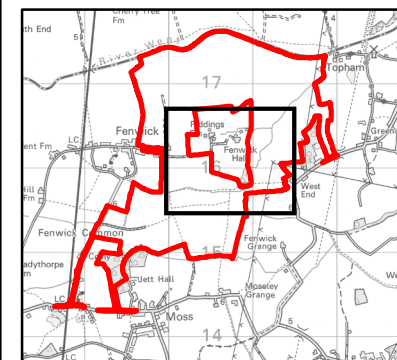


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LEGEND

- ▭ Solar PV Site
- - - Transect 1
- - - Other Transect
- - - Transect 2
- - - Transect 3a
- ★ Start point
- ★ End point
- Location of Stopping Point
- Bat Record**
- CP Common pipistrelle
- M Myotis
- SP Soprano pipistrelle



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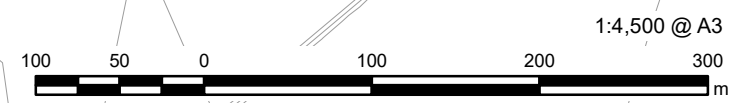
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FIGURE TITLE

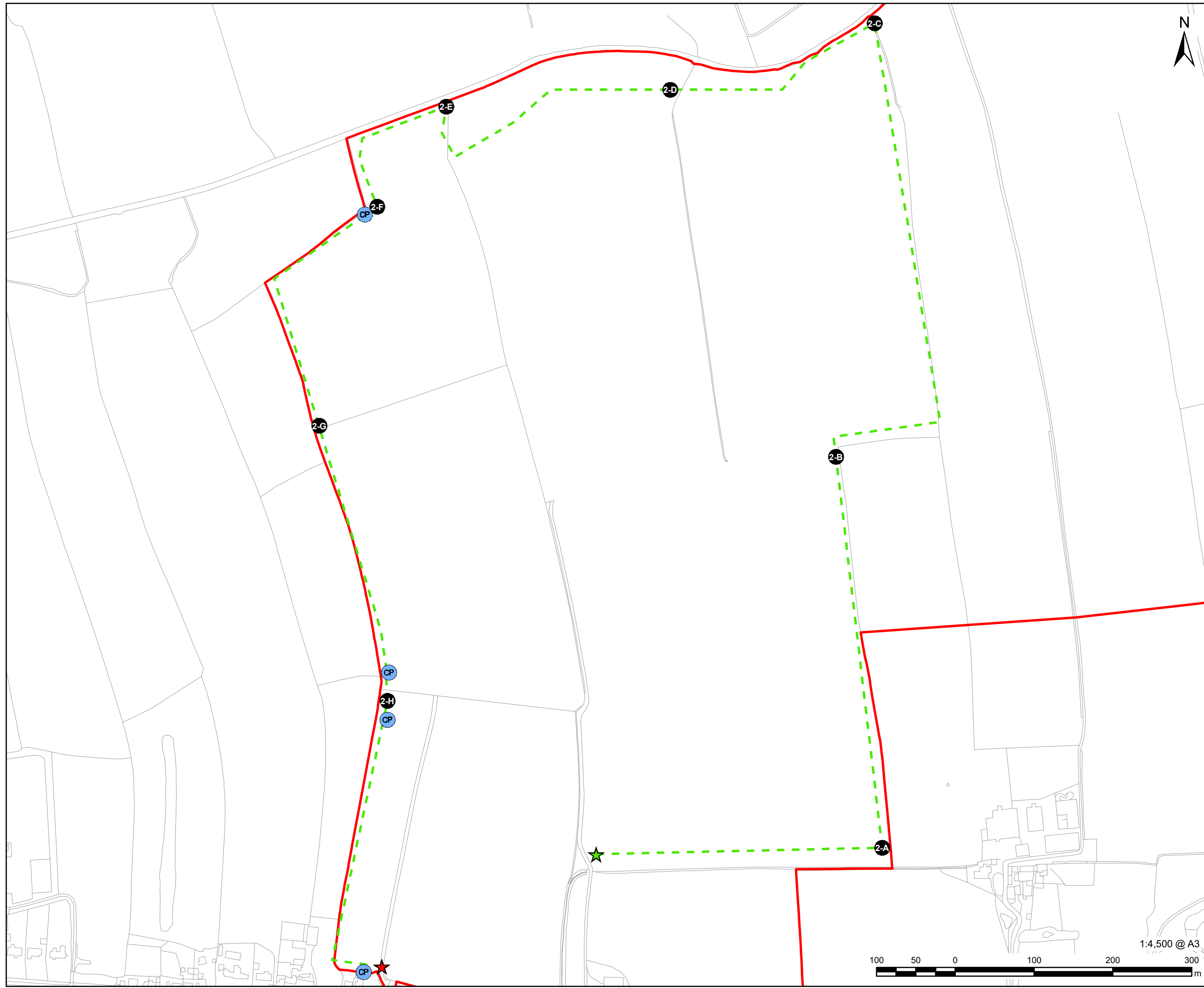
Bat Activity Survey, Spring - Transect 1

FIGURE NUMBER

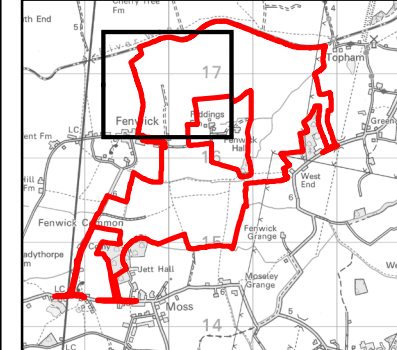
Figure 2



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- LEGEND**
- Solar PV Site
 - ★ Start point
 - ★ End point
 - Location of Stopping Point
 - Transect 2
- Bat Record**
- CP Common pipistrelle



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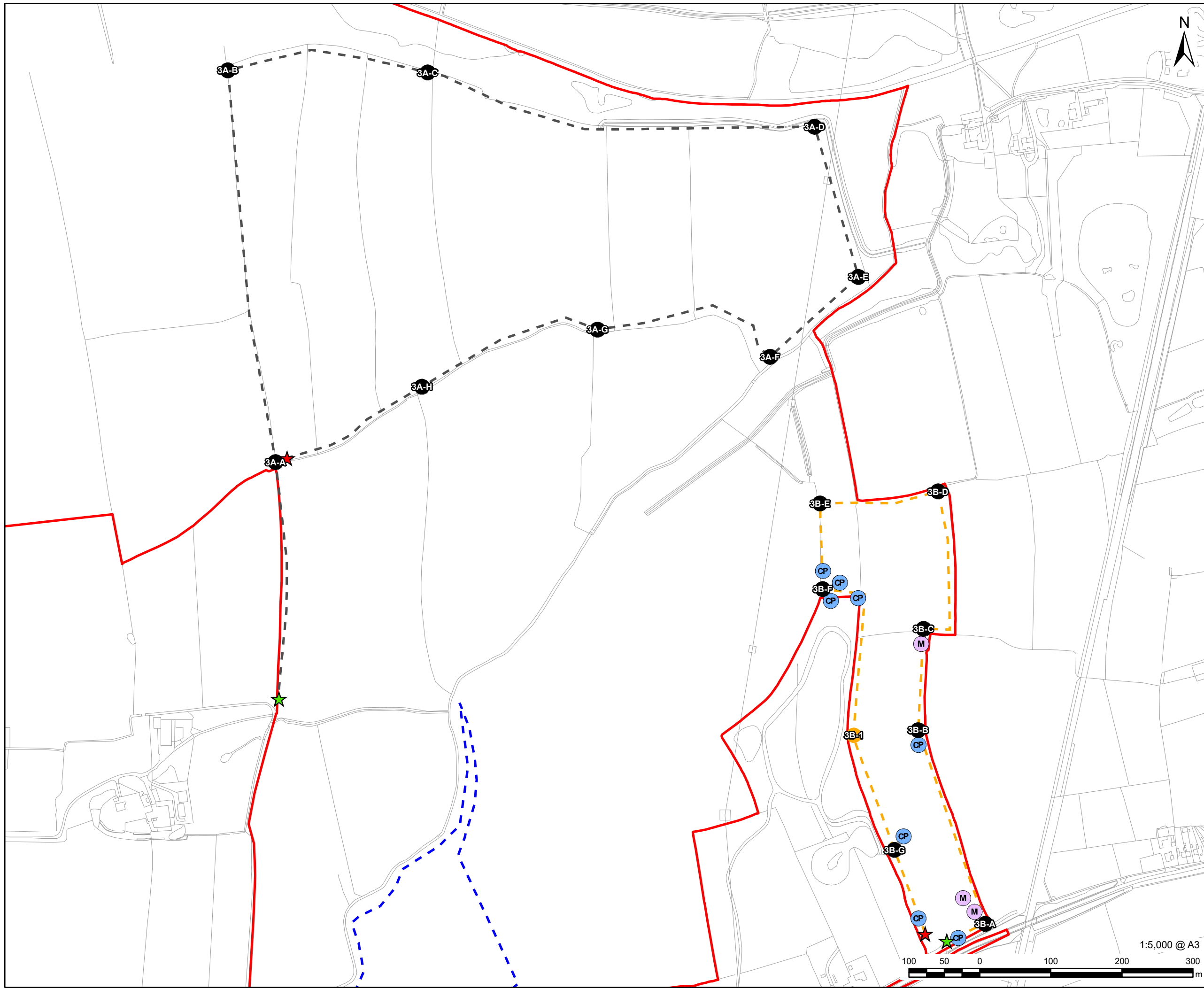
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FIGURE TITLE
Bat Activity Survey, Spring - Transect 2

FIGURE NUMBER
Figure 3



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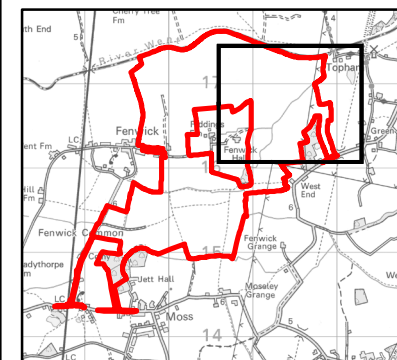


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Fenwick Solar Farm

CLIENT
Fenwick Solar Project Limited

CONSULTANT
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Alencon Link
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www.aecom.com

- LEGEND**
- Solar PV Site
 - ★ Start point
 - ★ End point
 - Location of Stopping Point
 - Additional Stopping Point for Spring Visit
 - Transect 3a (No Access)
 - Transect 3b
 - Other Transect**
 - Transect 1
 - Bat Record**
 - CP Common pipistrelle
 - M Myotis



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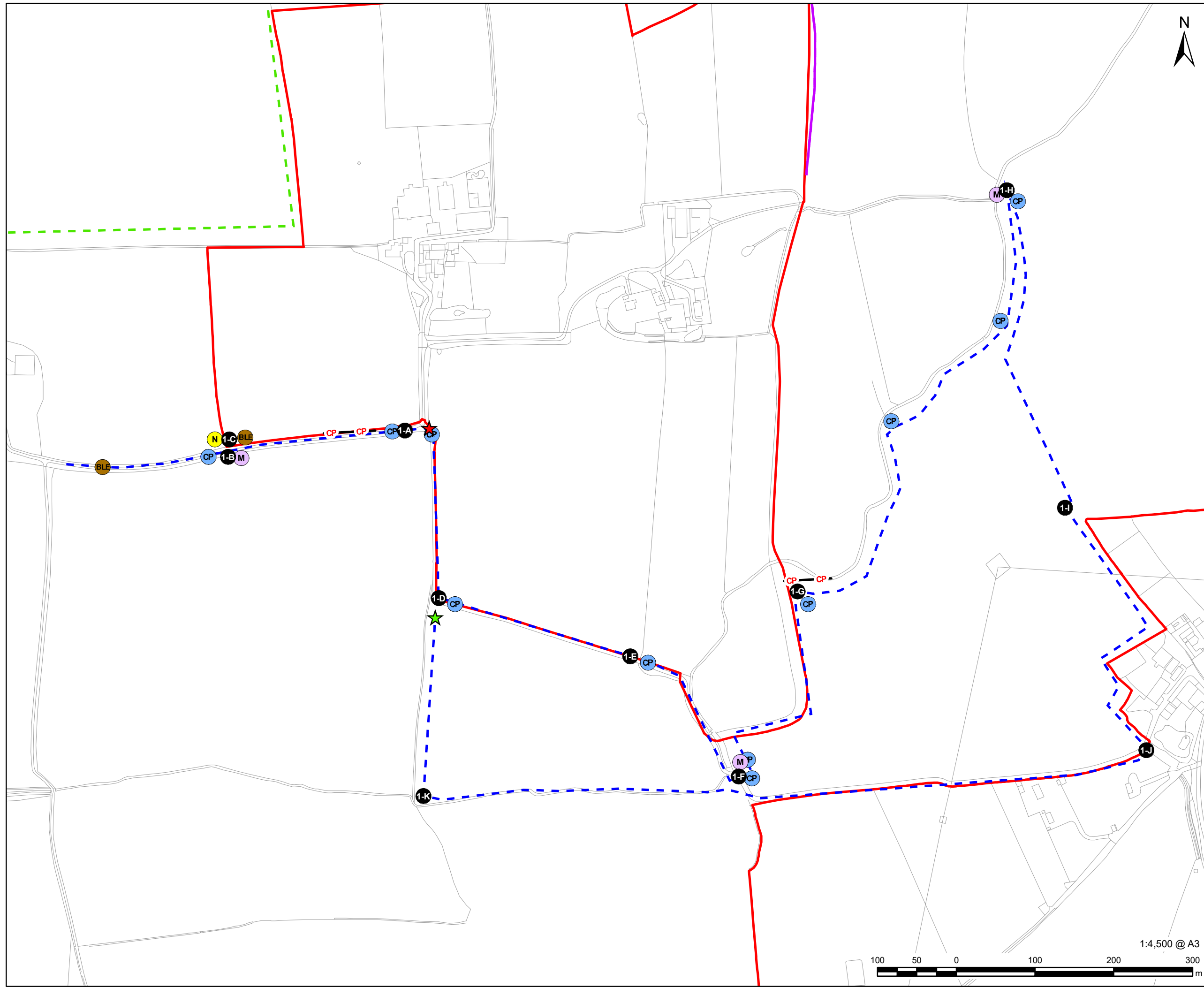
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FIGURE TITLE
Bat Activity Survey, Spring - Transect 3

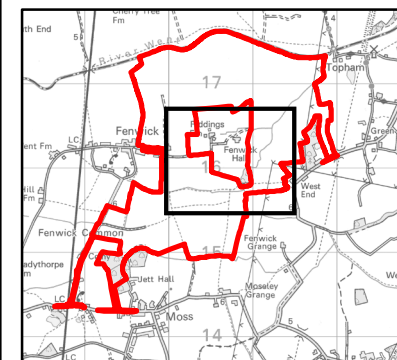
FIGURE NUMBER
Figure 4

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LEGEND

- Solar PV Site
- ★ End Point
- ★ Start Point
- Location of Stopping Point
- Transect 1
- Other Transect**
- Transect 2
- Transect 3a
- Bat Record**
- Brown long eared
- Common pipistrelle
- Myotis
- Noctule
- CP Common pipistrelle



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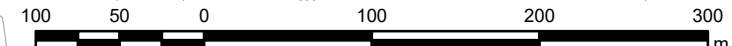
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FIGURE TITLE

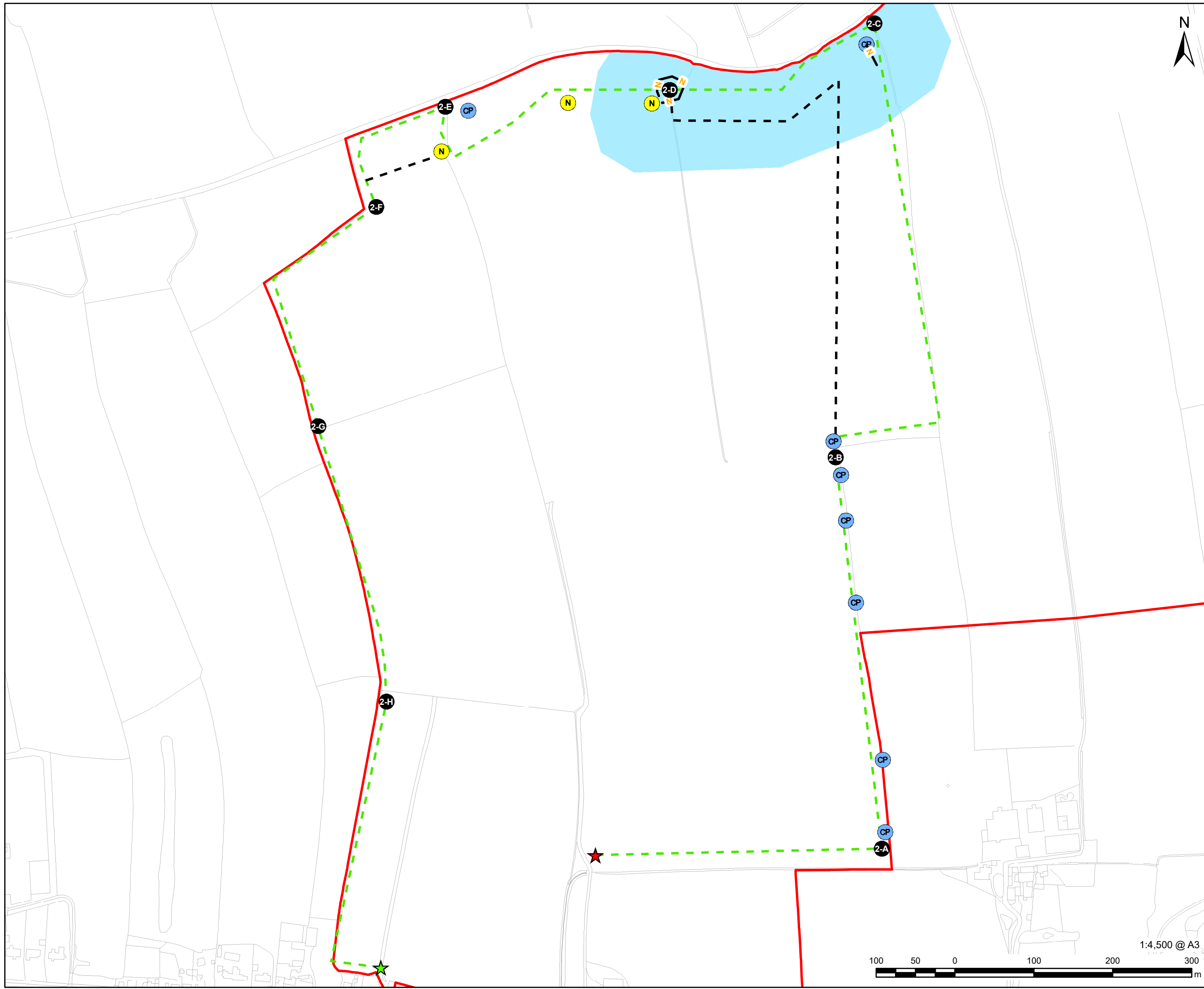
Bat Activity Survey, Summer - Transect 1

FIGURE NUMBER

Figure 5

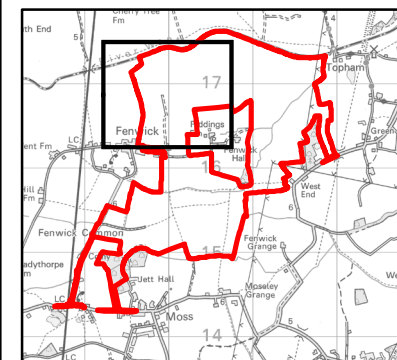


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LEGEND

- Solar PV Site
- ★ Start Point
- ★ End Point
- Location of Stopping Point
- Transect 2
- Diversion due to Flooding
- Bat Record**
- CP Common pipistrelle
- N Noctule
- Noctule
- Flooded Area



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FIGURE TITLE

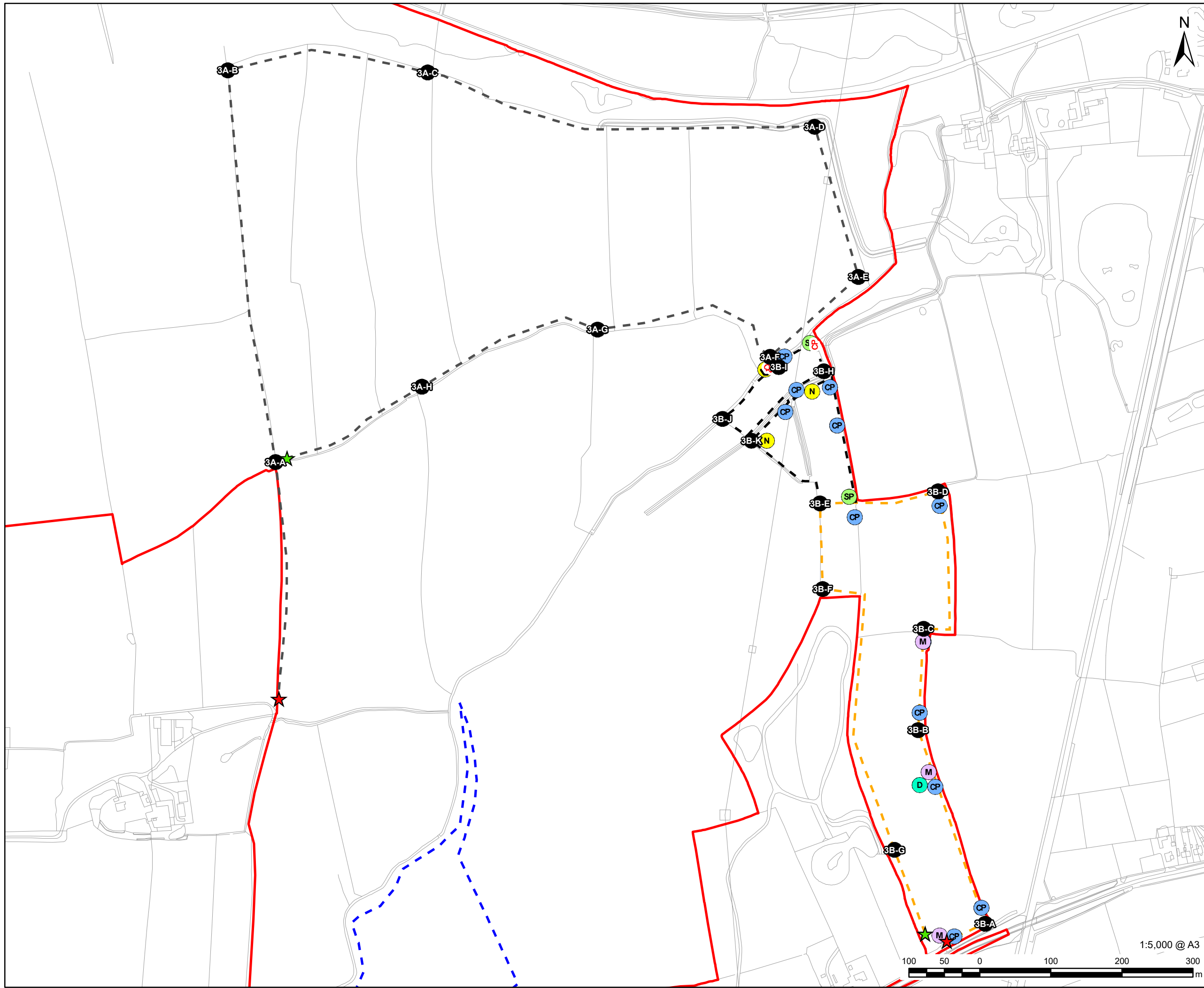
Bat Activity Survey, Summer - Transect 2

FIGURE NUMBER

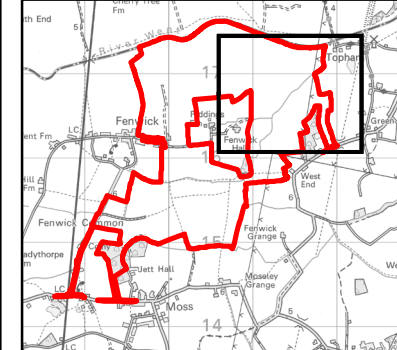
Figure 6



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- LEGEND**
- Solar PV Site
 - ★ Start Point
 - ★ End Point
 - Location of Stopping Point
 - Transect 3a (No Access)
 - Transect 3b
 - Diverted route used for Summer visit for Transect 3b
 - Other Transect**
 - Transect 1
 - Bat Record**
 - CP Common pipistrelle
 - D Daubentons
 - M Myotis
 - N Noctule
 - SP Soprano pipistrelle
 - CP Common pipistrelle



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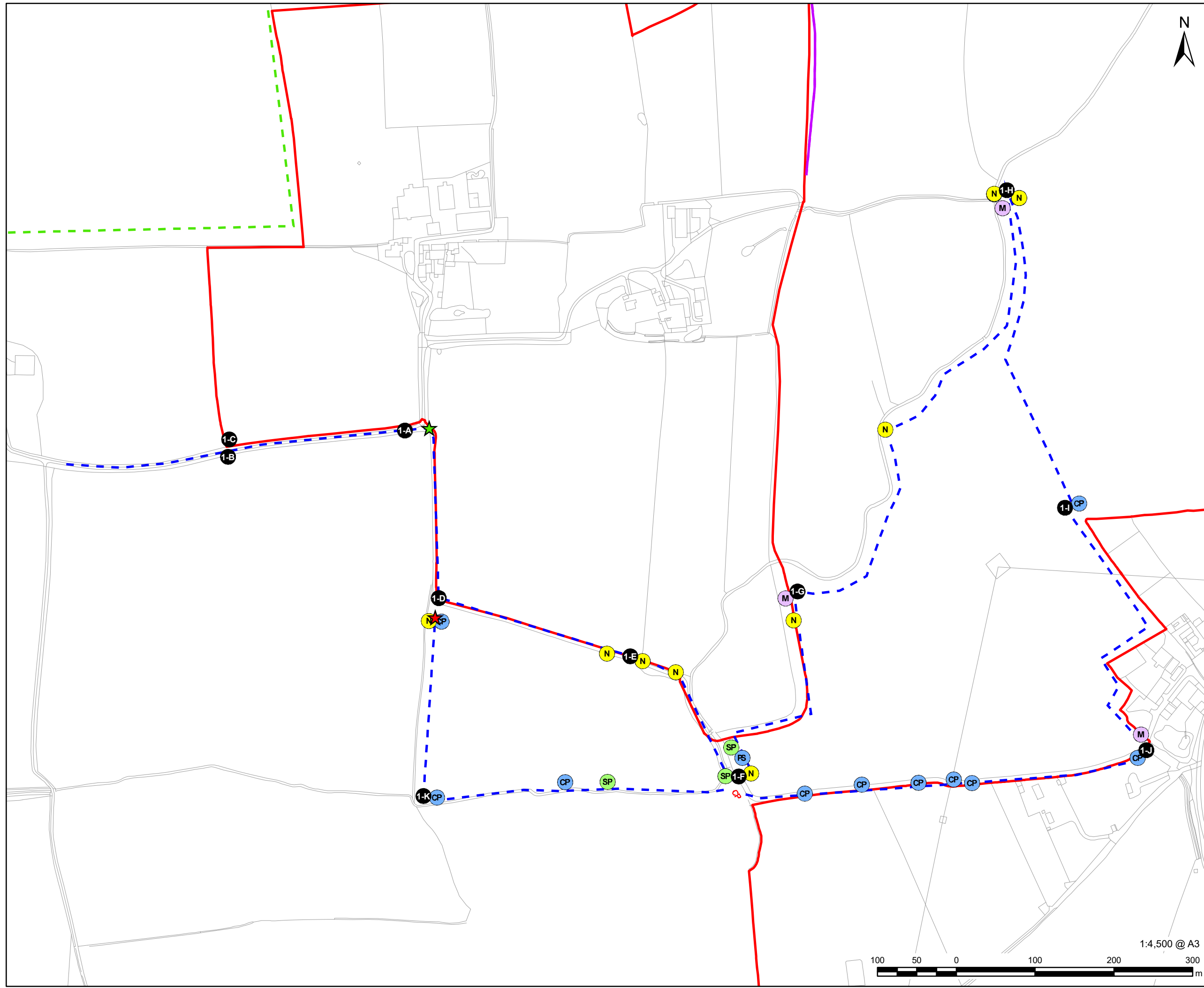
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FIGURE TITLE
Bat Activity Survey, Summer - Transect 3

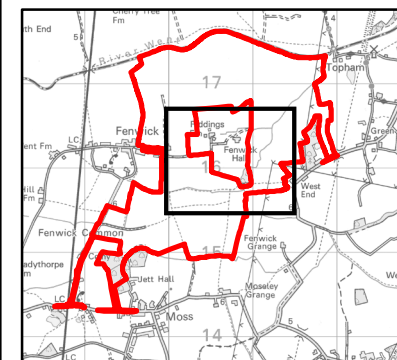
FIGURE NUMBER
Figure 7

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LEGEND

- Solar PV Site
- ★ Start point
- ★ End point
- Location of Stopping Point
- Transect 1
- Other Transect
- Transect 2
- Transect 3a
- Bat Record**
- CP Common pipistrelle
- M Myotis
- N Noctule
- FS Pipistrelle species
- SP Soprano pipistrelle
- CP Common pipistrelle



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PROJECT NUMBER

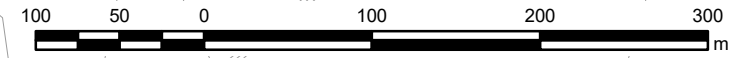
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FIGURE TITLE

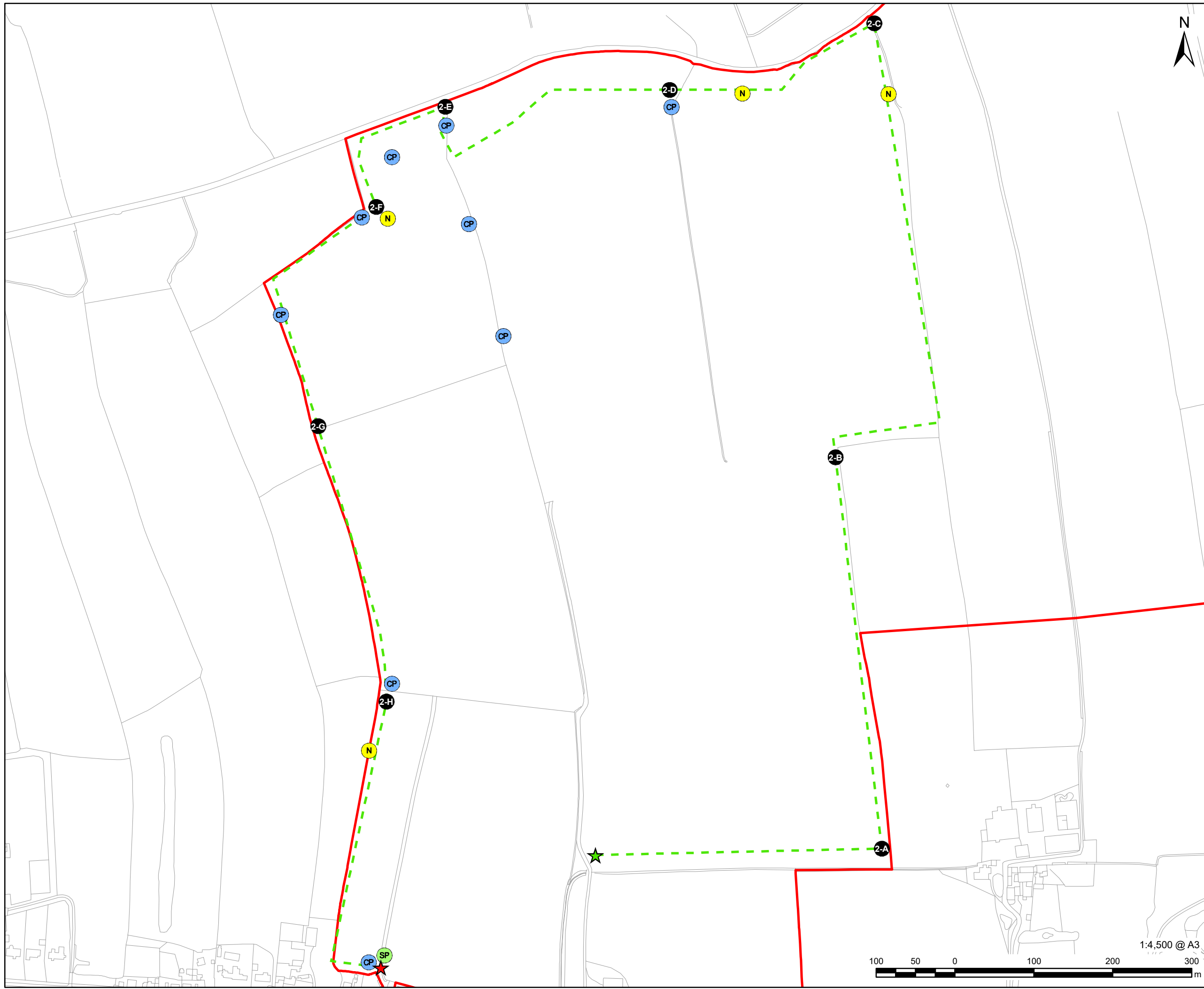
Bat Activity Survey, Autumn - Transect 1

FIGURE NUMBER

Figure 8

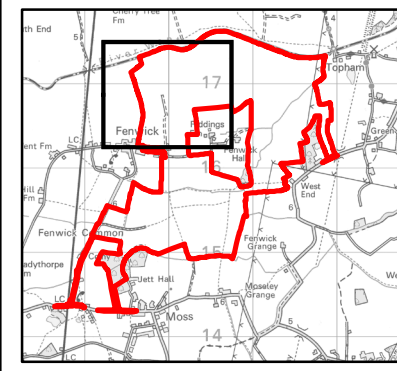


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LEGEND

- Solar PV Site
 - ★ Start point
 - ★ End point
 - Location of Stopping Point
 - Transect 2
- Bat Record**
- CP Common pipistrelle
 - N Noctule
 - SP Soprano pipistrelle



NOTES

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ISSUE PURPOSE

Bat Report

PROJECT NUMBER

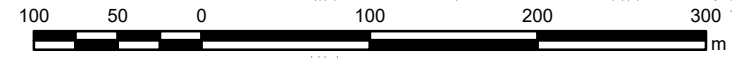
60698207

FIGURE TITLE

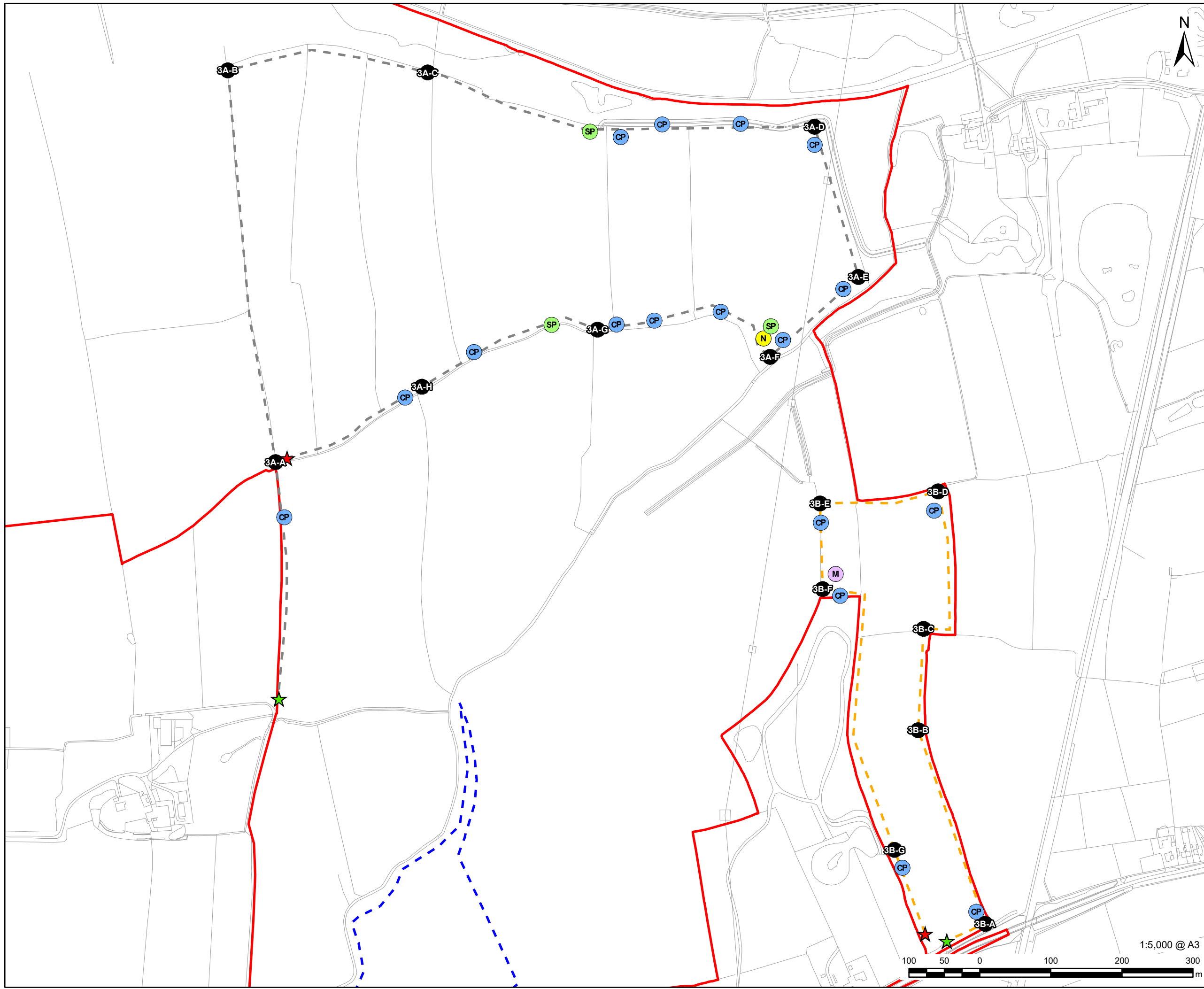
Bat Activity Survey, Autumn - Transect 2

FIGURE NUMBER

Figure 9



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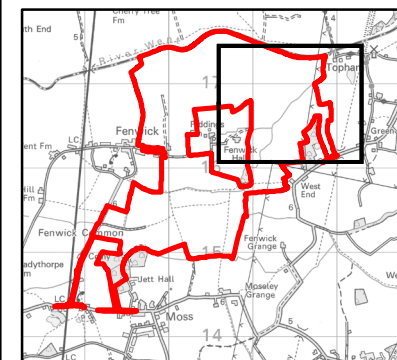
PROJECT
Fenwick Solar Farm

CLIENT
Fenwick Solar Project Limited

CONSULTANT
AECOM Limited
Midpoint,
Alencon Link
Basingstoke, RG21 7PP
www.aecom.com

LEGEND

- Solar PV Site
- ★ Start point
- ★ End point
- Location of Stopping Point
- Transect 3a (No Access)
- Transect 3b
- Other Transect**
- Transect 1
- Bat Record**
- CP Common pipistrelle
- M Myotis
- N Noctule
- SP Soprano pipistrelle



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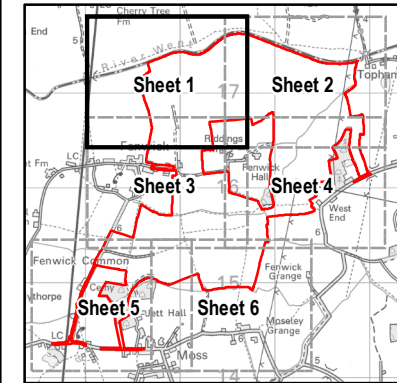
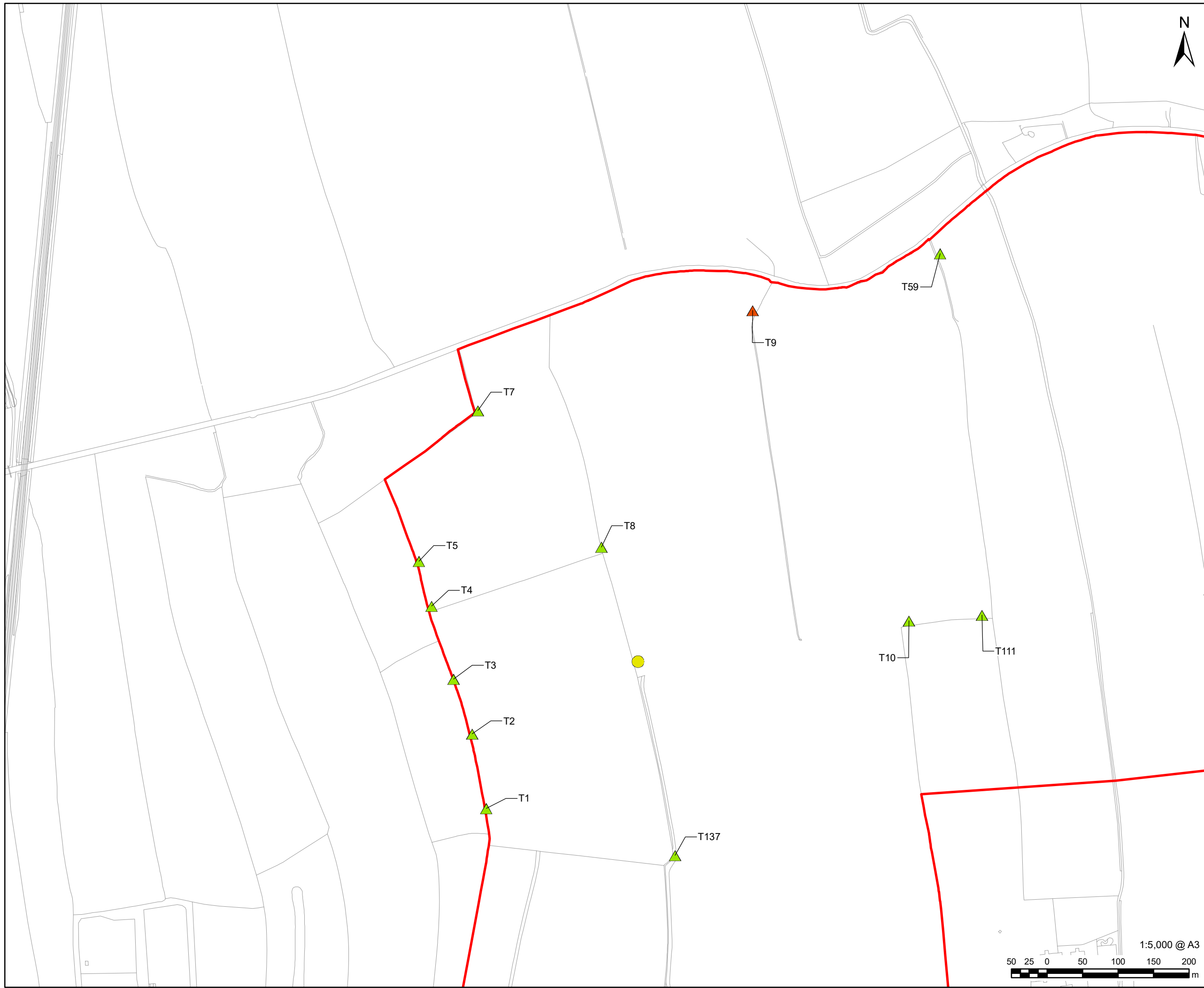
ISSUE PURPOSE
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PROJECT NUMBER
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FIGURE TITLE
Bat Activity Survey, Autumn - Transect 3

FIGURE NUMBER
Figure 10

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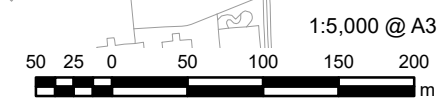
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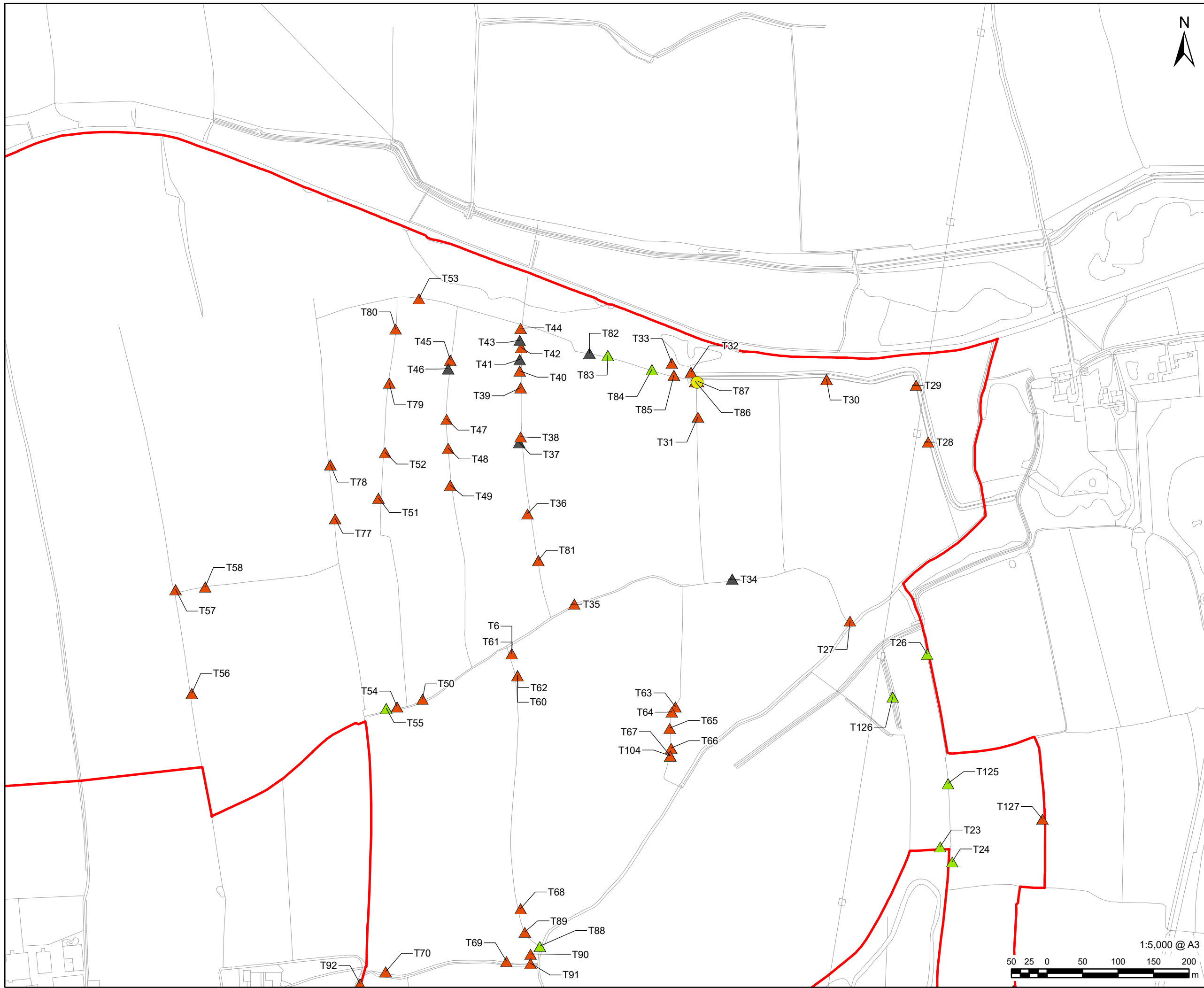
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FIGURE TITLE
Daytime Bat Walkover Results
Sheet 1 of 6

FIGURE NUMBER
Figure 11



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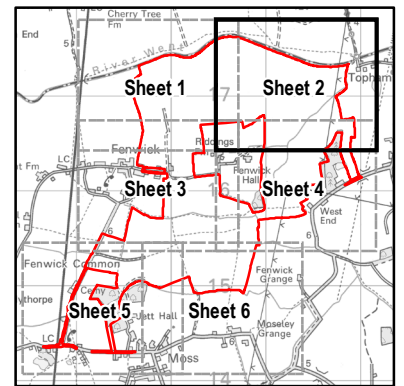


LEGEND

- Solar PV Site
- Static Detector Location

Daytime Bat Walkover Potential Suitability

- ▲ PRF
- ▲ FAR
- ▲ NONE



NOTES

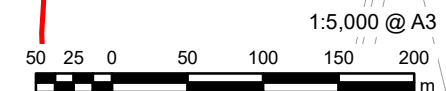
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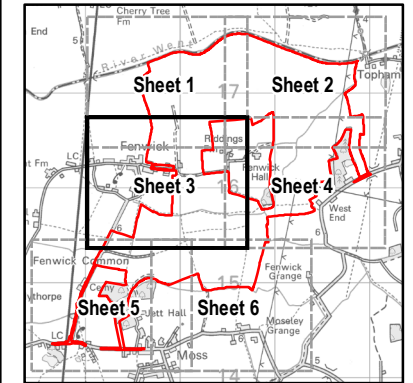
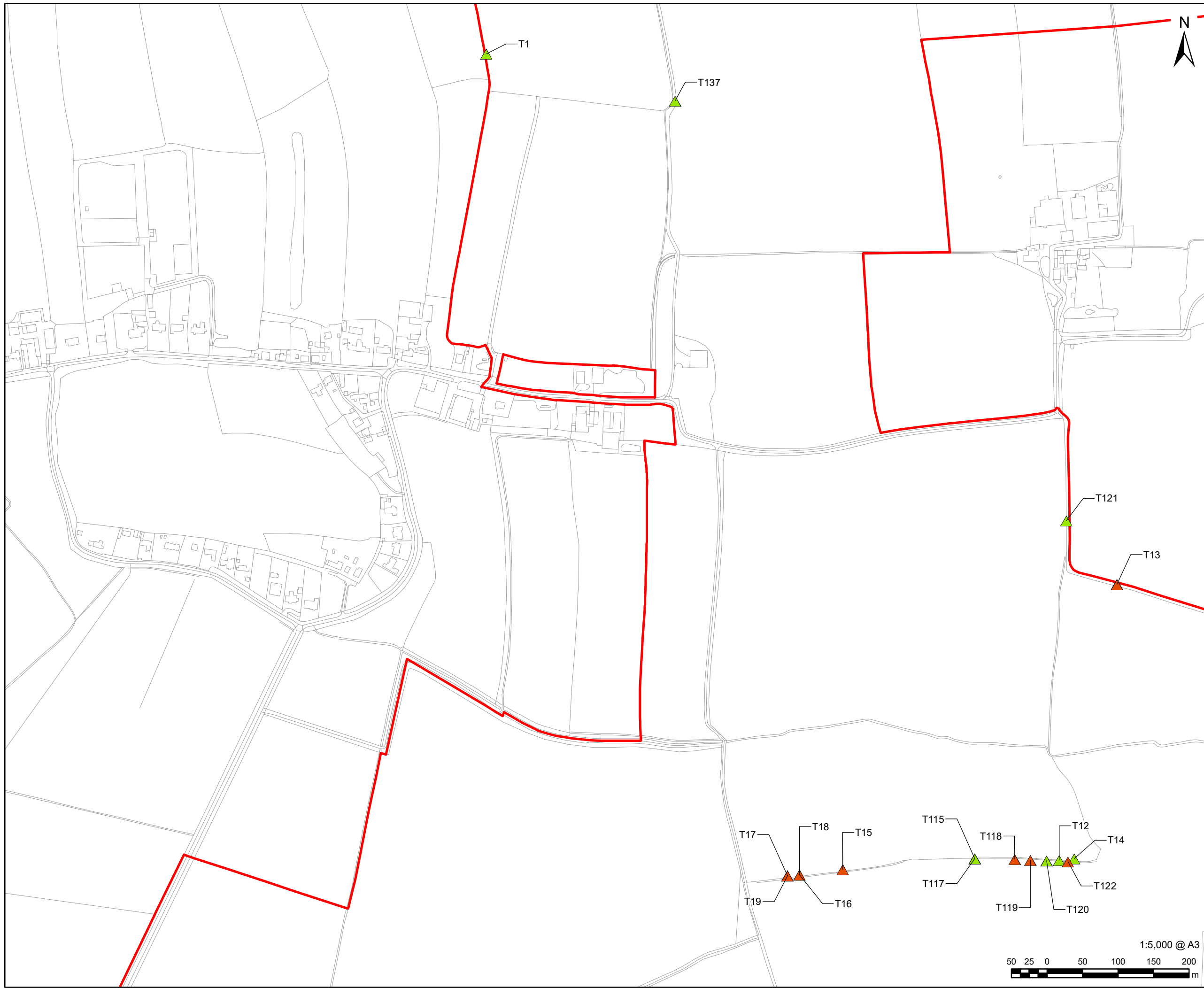
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FIGURE TITLE
Daytime Bat Walkover Results
Sheet 2 of 6

FIGURE NUMBER
Figure 11



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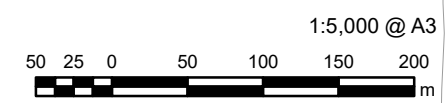
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Bat Report

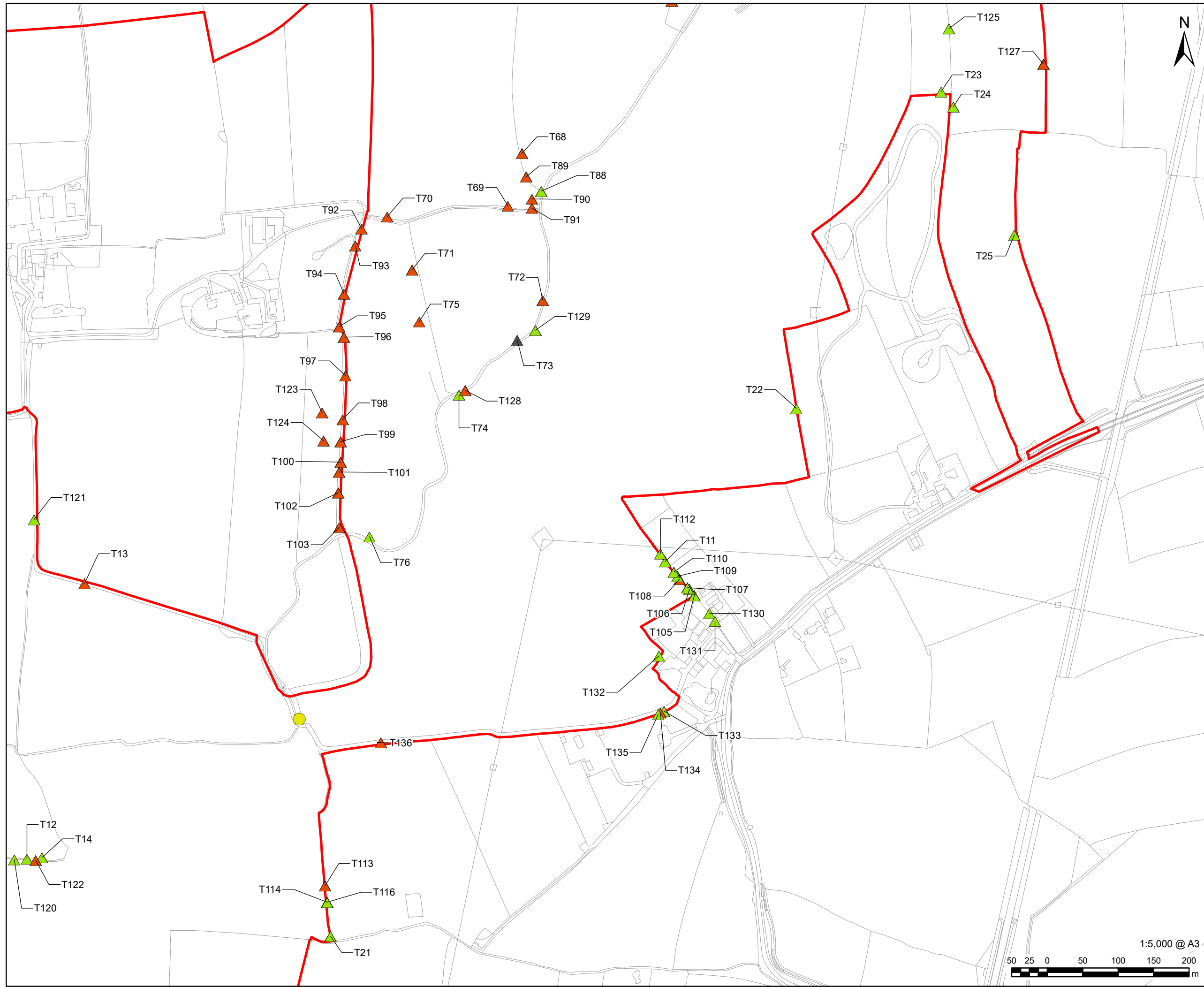
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FIGURE TITLE
Daytime Bat Walkover Results
Sheet 3 of 6

FIGURE NUMBER
Figure 11



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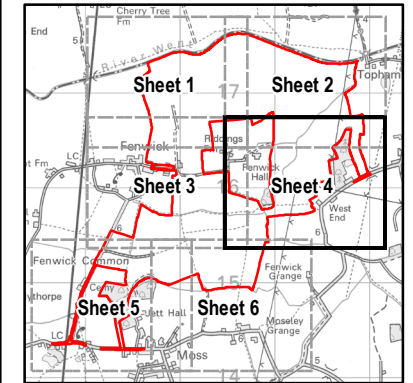


LEGEND

- Solar PV Site
- Static Detector Location

Daytime Bat Walkover Potential Suitability

- ▲ PRF
- ▲ FAR
- ▲ NONE



NOTES

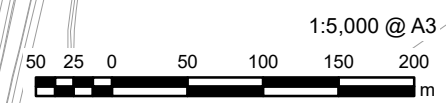
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ISSUE PURPOSE
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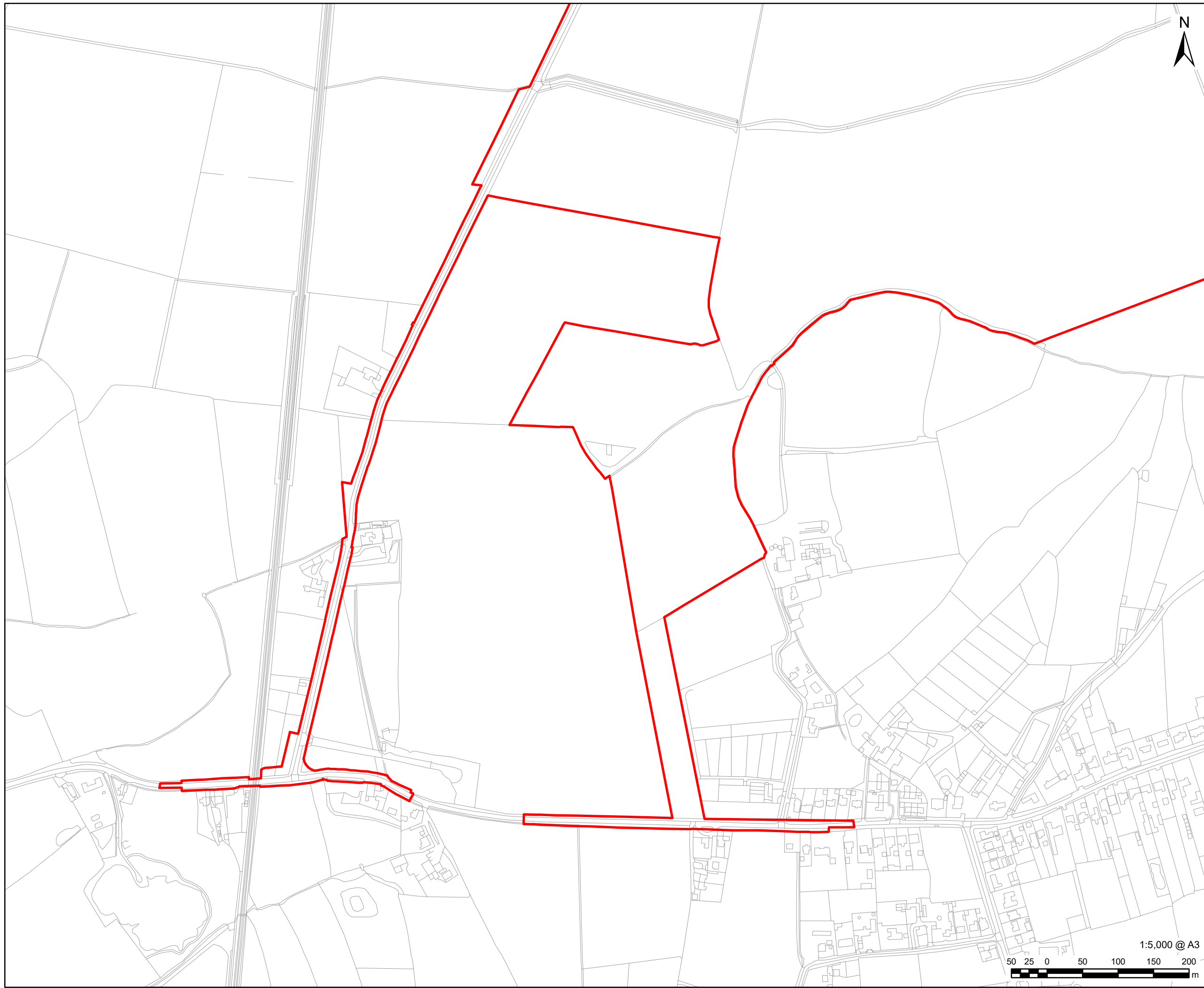
PROJECT NUMBER
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FIGURE TITLE
Daytime Bat Walkover Results
Sheet 4 of 6

FIGURE NUMBER
Figure 11



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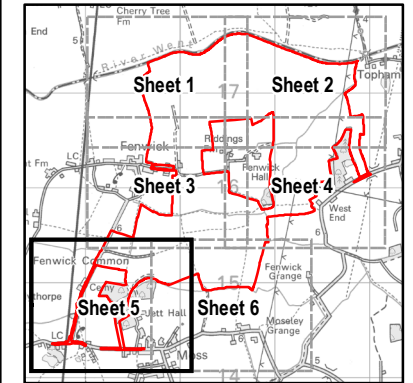
AECOM

PROJECT
Fenwick Solar Farm

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LEGEND
 Solar PV Site



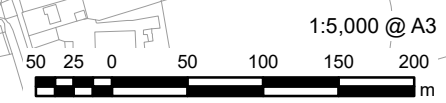
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Bat Report

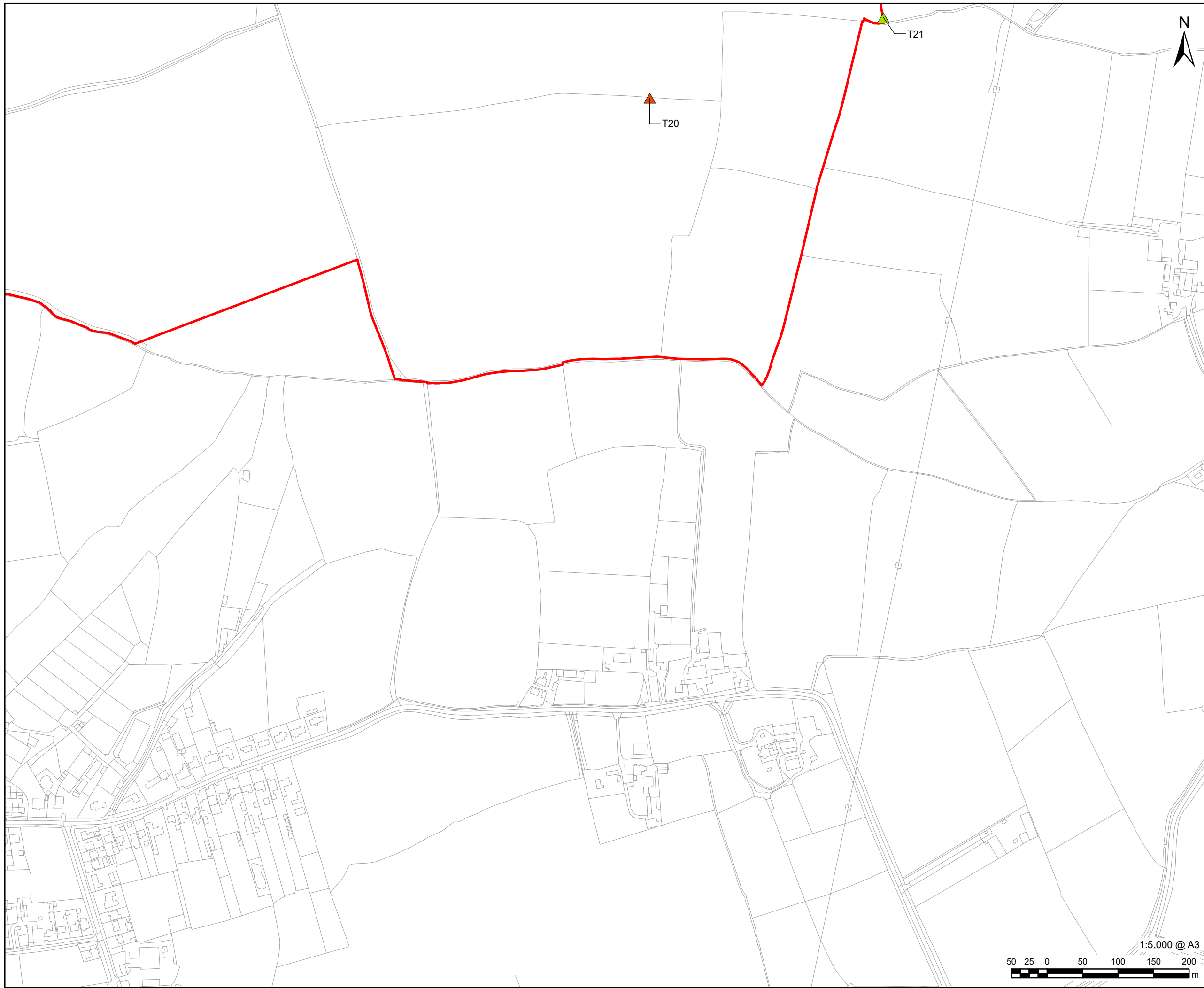
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FIGURE TITLE
Daytime Bat Walkover Results
Sheet 5 of 6

FIGURE NUMBER
Figure 11



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AECOM

PROJECT
Fenwick Solar Farm

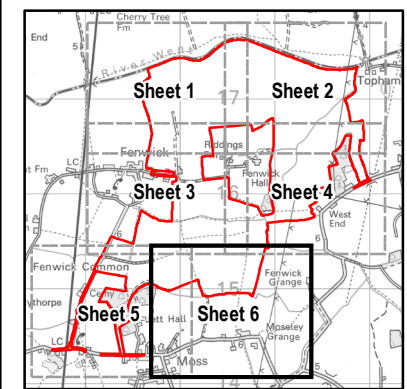
CLIENT
Fenwick Solar Project Limited

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LEGEND

- Solar PV Site
- ▲ PRF
- ▲ FAR

Daytime Bat Walkover Potential Suitability



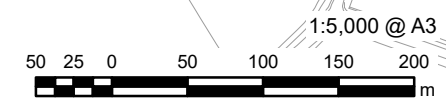
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ISSUE PURPOSE
Bat Report

PROJECT NUMBER
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FIGURE TITLE
Daytime Bat Walkover Results
Sheet 6 of 6

FIGURE NUMBER
Figure 11



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Annex B Daytime Bat Walkover (DBW) Survey Results

Feature Ref.	Grid Reference	Tree/group species	Tree Description	PRF Description (if applicable)	Suitability (NONE, FAR OR PRF)
T1	SE 59694 16679	Oak (<i>Quercus</i>)	Immature (25-30 years old), single stem	West facing woodpecker hole, east facing split in trunk	PRF
T2	SE 59674 16784	Oak	Immature, single stem	South-east facing hole in trunk	PRF
T3	SE 59648 16861	Oak	Single stem	South-east facing hole and snapped branches	PRF
T4	SE 59617 16964	Oak	Single stem	Two south east facing broken branches	PRF
T5	SE 59599 17027	Oak	Single stem	South facing hole, 3 m high	PRF
T6	SE 61187 16897	Oak	Semi-mature, single stem	South facing hole in an east facing branch.	PRF
T7	SE 59682 17239	Willow (<i>Salix</i>)	Some deadwood, single stemmed	Many cracks in trunk, snapped branches	PRF
T8	SE 59856 17047	Ash (<i>Fraxinus</i>)	Standing deadwood, single stem	Large trunk cavity to east, ground level to 3.5 m. Open branch cavity, 4.5 m east.	PRF
T9	SE 60069 17380	Willow	Single stem	N/A	FAR
T10	SE 60289 16943	Willow	Multi-stem	Lots of cracks in stem and snapped branches.	PRF
T11	SE 61401 15963	Willow	Multi-stem	Many cracks and snaps.	PRF

Feature Ref.	Grid Reference	Tree/group species	Tree Description	PRF Description (if applicable)	Suitability (NONE, FAR OR PRF)
T12	SE 60501 15544	Oak	Single stem	0.6m dbh, long trunk cavity and lifted bark on south east at 2 m to 4.5 m	PRF
T13	SE 60582 15932	Oak	Single immature oak	N/A	FAR
T14	SE 60522 15546	Ash	Single stem	North facing hole in branch, snapped branches.	PRF
T15	SE 60196 15531	Oak	Single stem	South facing holes, hard to see if holes go all the way in.	FAR
T16	SE 60135 15523	Willow	Multi-stem	Snapped stem and deadwood, north facing. Hollow stem on south side. Previously listed as high potential	PRF
T17	SE 60118 15522	Oak	Single stem	4 m south west facing hole and a north facing hole, and a torn branch.	FAR
T18	SE 60135 15523	Oak	Single stem	North facing lifted bark	FAR
T19	SE 60118 15522	Oak	Semi-mature oak, single stem	5 m north facing branch with tear out.	FAR
T20	SE 60600 15322	Oak	Standing deadwood oak	Potential roost features visible up northern aspect. Lifted bark and trunk crack	FAR
T21	SE 60929 15435	Oak	Semi-mature oak, single stem	woodpecker hole 3.5 m high on eastern side. Previously listed as moderate PRF	PRF

Feature Ref.	Grid Reference	Tree/group species	Tree Description	PRF Description (if applicable)	Suitability (NONE, FAR OR PRF)
T22	SE 61586 16179	Oak	Single stem	0.7 m dbh, trunk split from 1.5 m high to 4 m. Light visible. Previously listed as Moderate PRF.	PRF
T23	SE 61790 16625	Ash	Multi stemmed ash	50 cm DNA, two woodpecker holes at 4 and 4.5 m eastern aspect. Cluttered exit	PRF
T24	SE 61807 16604	Ash	Half dead ash tree	N/A	PRF
T25	SE 61893 16423	Oak	Immature oak, single stem	0.4 m dbh, branch split on eastern aspect to 2.5 m high	PRF
T26	SE 61772 16896	Oak	Single stem	Split in stem and broken branches	PRF
T27	SE 61663 16943	Willow	Multi-stemmed willow	N/A	FAR
T28	SE 61773 17195	Oak	Semi-mature, single stemmed	Snapped branches approximately 5 m up.	FAR
T29	SE 61756 17275	Oak	Semi-mature oak	N/A	FAR
T30	SE 61630 17283	Ash	Semi-mature ash	N/A	FAR
T31	SE 61449 17230	Willow	Mature willow with 10 stems	Cracks in stems	FAR
T32	SE 61439 17293	Willow	Multi- stem	Cracks in trunk and snapped branches.	FAR
T33	SE 61412 17306	Willow	Mature willow, single stem	Snapped branches, unsafe to climb	FAR
T34	SE 61497 17002	Oak	Semi-mature	Previously listed as Negligible	NONE
T35	SE 61275 16967	Oak	Semi-mature oak	N/A	FAR

Feature Ref.	Grid Reference	Tree/group species	Tree Description	PRF Description (if applicable)	Suitability (NONE, FAR OR PRF)
T36	SE 61209 17094	Willow	Single stem	Butt rot snapped branches, deadwood with cracks and crevices	FAR
T37	SE 61197 17194	Ash	Immature ash	Previously listed as Negligible	NONE
T38	SE 61199 17202	Oak	Semi-mature oak	N/A	FAR
T39	SE 61199 17271	Willow	Mature willow	Butt rot and fallen stems	FAR
T40	SE 61198 17295	Willow	Mature willow	N/A	FAR
T41	SE 61198 17311	Hawthorn (<i>Crataegus</i>)	Single stem	Previously listed as Negligible	NONE
T42	SE 61200 17328	Willow	Dead willow	Lots of fallen branches and deadwood	FAR
T43	SE 61198 17338	Hawthorn	Single stem	Previously listed as Negligible	NONE
T44	SE 61199 17355	Willow	Immature	N/A	FAR
T45	SE 61100 17310	Willow	Multi- stem	Split stems and snapped branches	FAR
T46	SE 61097 17298	Oak		Previously listed as Negligible	NONE
T47	SE 61095 17227	Willow		N/A	FAR
T48	SE 61097 17186	Oak	Single stem	N/A	FAR
T49	SE 61100 17134	Ash	Single stem	Two rot holes in the stem	FAR
T50	SE 61061 16833	Ash		N/A	FAR
T51	SE 60999 17116	Oak	Two stems – split from trunk	Tear outs and snapped branches	FAR

Feature Ref.	Grid Reference	Tree/group species	Tree Description	PRF Description (if applicable)	Suitability (NONE, FAR OR PRF)
T52	SE 61008 17180	DEADWOOD	Standing dead wood tree	N/A	FAR
T53	SE 61056 17397	Willow		Split trunk	FAR
T54	SE 61025 16822	Ash		N/A	FAR
T55	SE 61010 16820	Ash	Single stem	Dead branches, tear outs, has bat roost potential.	PRF
T56	SE 60736 16841	Oak	Single stem	Tear outs in stem and broken branches	FAR
T57	SE 60713 16987	Ash	Single stem	Tear out on one of the branches	FAR
T58	SE 60755 16991	Willow	Multi-stem, unsafe to climb	Large split	FAR
T59	SE 60333 17460	Oak	Semi-mature oak	0.5 m dbh, tear out/branch cavity at 4.5 m to west aspect. Previously listed as Moderate PRF	PRF
T60	SE 61195 16866	Ash	Dead	Half of the trunk has fallen away, upwards facing holes.	PRF
T61	SE 61187 16897	Ash	Immature ash	Snapped branch on east side	FAR
T62	SE 61195 16866	Ash	Single stem	Snapped branches, lifted bark	FAR
T63	SE 61417 16822	Willow	Mature willow adjacent to a ditch	Cracked branches, butt rot.	FAR
T64	SE 61412 16815	Willow	Single stem	Half snapped off, deadwood, butt rot, not safe to climb as it's dropping to pieces	FAR
T65	SE 61409 16792	Unsure	Single stem	Snapped branch, 6 m up	FAR

Feature Ref.	Grid Reference	Tree/group species	Tree Description	PRF Description (if applicable)	Suitability (NONE, FAR OR PRF)
T66	SE 61411 16764	Ash	Single stem	Snapped branches and rot holes approximately 6 m high.	FAR
T67	SE 61410 16753	Willow	Mature willow	But rot, dropping to pieces	FAR
T68	SE 61199 16538	Ash	Single stem	Tear out 6 m up on west side	FAR
T69	SE 61179 16464	Ash	Single stem	N/A	FAR
T70	SE 61009 16449	Ash	Single stem	snapped branches	FAR
T71	SE 61044 16374	Oak	Single semi-mature oak	N/A	FAR
T72	SE 61228 16331	Oak	Immature oak	Split in stem, tear out approximately 4 m high, west facing.	FAR
T73	SE 61192 16275	Oak	Semi-mature oak	Previously listed as Negligible	NONE
T74	SE 61110 16198	Oak	Semi-mature oak	But rot and snapped branches	PRF
T75	SE 61054 16301	Oak	Single semi-mature oak	N/A	FAR
T76	SE 60984 15998	Oak	Ivy-covered oak, semi-mature	Tear outs and missing branches	PRF
T77	SE 60938 17087	Oak	Mature oak within a large gap in the hedgerow along field boundary	N/A	FAR
T78	SE 60931 17163	Ash	Single stem	Splits in stem and snapped branches	FAR
T79	SE 61014 17278	Unknown	Half dead	Branch snaps and split stem	FAR

Feature Ref.	Grid Reference	Tree/group species	Tree Description	PRF Description (if applicable)	Suitability (NONE, FAR OR PRF)
T80	SE 61023 17354	Willow	Mature, multi-stem	Snapped branches	FAR
T81	SE 61224 17028	Oak	Multi-stem	N/A	FAR
T82	SE 61296 17320	Oak	Single stem	Previously listed as Negligible	NONE
T83	SE 61322 17317	Willow	Multi-stem	Previously listed as moderate/high potential	PRF
T84	SE 61384 17297	Willow	Two stems	Previously listed as high potential	PRF
T85	SE 61415 17289	Oak	Single stem	Previously listed as low potential	FAR
T86	SE 61445 17280	Willow	Single stem	Previously listed as low potential	FAR
T87	SE 61449 17280	Willow	Multi-stem	Previously listed as low potential	FAR
T88	SE 61226 16485	Oak	Single stem	N/A	PRF
T89	SE 61205 16505	Willow		N/A	FAR
T90	SE 61213 16474	Unknown		N/A	FAR
T91	SE 61213 16461	Unknown	Single stem	N/A	FAR
T92	SE 60973 16432	Willow	Multi-stem	N/A	FAR
T93	SE 60964 16408	Unknown	Two stems	N/A	FAR
T94	SE 60948 16340	Ash	Multi-stem	N/A	FAR
T95	SE 60941 16294	Unknown		N/A	FAR

Feature Ref.	Grid Reference	Tree/group species	Tree Description	PRF Description (if applicable)	Suitability (NONE, FAR OR PRF)
T96	SE 60948 16279	Willow (needs verifying)	Single stem, snapped in half	N/A	FAR
T97	SE 60950 16225	Unknown	Single stem	N/A	FAR
T98	SE 60946 16163	Unknown	Multi-stem	N/A	FAR
T99	SE 60943 16132	Unknown	Single stem	N/A	FAR
T100	SE 6094316103	Unknown	Single stem	N/A	FAR
T101	SE 6094116089	Unknown	Single stem	N/A	FAR
T102	SE 6094016060	Unknown	Multi-stem?	N/A	FAR
T103	SE 60941 16011	Unknown	Single stem	N/A	FAR
T104	SE 61410 16753	Willow	Dead and fallen willow tree stump, approximately 2.5 m tall.	N/A	FAR
T105	SE 61442 15915	Oak		Damaged limbs, previously listed as Low potential	PRF
T106	SE 61435 15924	Oak	Dead wood at the top	Dead wood at the top and lifted bark. Previously listed as Low potential	PRF
T107	SE 61432 15926	Oak		Snapped branches and damage limbs. Previously listed as Low potential.	PRF
T108	SE 61421 15938	Oak		Ivy covered oak with a split in trunk, previously listed as Low potential	FAR

Feature Ref.	Grid Reference	Tree/group species	Tree Description	PRF Description (if applicable)	Suitability (NONE, FAR OR PRF)
T109	SE 61418 15942	Oak		Tear out, previously listed as Moderate potential	PRF
T110	SE 61413 15948	Oak		Cracked bark	PRF
T111	SE 60392 16951	Oak		N/A	PRF
T112	SE 61394 15974	Oak	Dead, hollow oak	Rot holes all the way up the trunk. Previously listed as High potential.	PRF
T113	SE 60921 15506	Oak		N/A	FAR
T114	SE 60924 15483	Oak		N/A	FAR
T115	SE 60382 15546	Oak		Snapped limbs. Previously listed as Low potential	FAR
T116	SE 60924 15483	Willow	Many stemmed willow	Cracks in stem, previously listed as Moderate potential	PRF
T117	SE 60382 15546	Oak		Cavity 4 m up on the south side, snapped branches and splits. Previously listed as High potential.	PRF
T118	SE 60438 15545	Oak		Cracked or lifted bark. Cracks in trunk. Previously listed as Low potential.	FAR
T119	SE 60460 15544	Willow		Snaps in and off limbs. Trunk rot	FAR
T120	SE 60483 15543	Oak		Butt rot and dead and snapped branches. Previously listed as High potential	PRF

Feature Ref.	Grid Reference	Tree/group species	Tree Description	PRF Description (if applicable)	Suitability (NONE, FAR OR PRF)
T121	SE 60511 16022	Oak		Broken limbs and lifted bark. Previously listed as Moderate potential.	PRF
T122	SE 60513 15542	Unknown		N/A	FAR
T123	SE 60917 16173	Unknown		N/A	FAR
T124	SE 60919 16133	Unknown		N/A	FAR
T125	SE6180116714	Oak	Single stem	Large cavity in main trunk.	PRF
T126	SE6172316836	Oak	Single stem	Tear out with splits on surface.	PRF
T127	SE6193416664	Oak	Single stem	Broken limbs seen only surveyed from western side	FAR
T128	SE6111916204	Oak	Single stem	Snapped limb, unable to see if it goes into the main trunk.	FAR
T129	SE6121816289	Oak	Single stem	Snapped limb and split on main trunk facing south.	PRF
T130	SE6146315890	Oak	Single stem	Ivy covered tree with snapped limbs and knot holes facing east.	PRF
T131	SE6147115879	Oak	Single stem	Ivy covered tree with snapped limbs and knot holes facing east.	PRF
T132	SE6139215830	Ash	Single stem	Ivy covered tree, dead wood section with rot holes.	PRF

Feature Ref.	Grid Reference	Tree/group species	Tree Description	PRF Description (if applicable)	Suitability (NONE, FAR OR PRF)
T133	SE6139915752	Willow	Multi-stem	Woodpecker hole, 4 m high facing north with lifted bark on upper branches.	PRF
T134	SE6139415750	Willow	Multi-stem	Cavity opening on main trunk 2 m, further inspection needed to verify if it goes further into a cavity.	FAR
T135	SE6139115748	Oak	Single stem	Snapped branches with potential entry points at the base facing north (1 m and 3 m high).	PRF
T136	SE6100015708	Oak	Group of two trees	Snapped branch on northern side 4-5 m high.	FAR
T137	SE5996016613	Ash	Multi-stem	Wound on lower branch 0.5 m facing south	PRF

Annex C Bat Activity Survey Results

Beaufort wind force scale: 0 = No wind, 1 = Light air *smoke drifts*, 2 = Light Breeze *leaves rustle*, 3 = Gentle Breeze *small twigs move*, 4 = Mod Breeze *small branches move*, 5 = Fresh Breeze *small trees sway*, 6 = Strong Breeze *large branches move*, 7 = Mod Gale *whole trees in motion*

Rain Scale: 0-none, 1-drizzle 2-shower 3-rain 4-downpour 5-flood.

Oktas cloud scale: 0 = complete absence of cloud (fine), 1 = cloud amount of 1 eighth or less, but not zero (fine), 2 = 2/8 of sky covered (fine), 3 = 3/8 of sky covered (partly cloudy), 4 = 4/8 of sky covered (partly cloudy), 5 = 5/8 of sky covered (partly cloudy), 6 = 6/8 of sky covered (cloudy), 7 = 7/8 of sky covered (cloudy), 8 = sky completely covered (overcast).

Abbreviations: H&S = heard and seen; HNS = heard but not seen;
 QA = Species confirmed following a review of the recorded bat call:
 Surveyor's name codes: AJ, CM, TC, MR

SPRING

Surveyor: TC, MR Temp C: 13

Site: Transect 1 Wind: 0

Date: 10/05/2023 Rain: Recent rain

Sunset: 20:50 Cloud: 4

Start/end: 20:50 to
 10:36

Timestamp	Species	Comment
21:20	<i>Pipistrellus pipistrellus</i>	Heard not seen (HNS), several passes foraging activity
21:22	<i>Pipistrellus pygmaeus</i>	Added post QA
21:26	<i>Pipistrellus pipistrellus</i>	Heard and seen (H&S), commuting north to south along tree line
21:29	<i>Pipistrellus pipistrellus</i>	HNS
21:37	<i>Pipistrellus pipistrellus</i>	HNS, commuting
21:40	<i>Pipistrellus pipistrellus</i>	HNS
21:43	<i>Pipistrellus pipistrellus</i>	HNS, multiple passes

21:45	<i>Pipistrellus pipistrellus</i>	H&S, multiple passes along hedgerow
21:50	<i>Pipistrellus pipistrellus</i>	H&S, continuous distance foraging activity
21:50	<i>Myotis species</i>	Added post QA, multiple passes
21:54	<i>Pipistrellus pipistrellus</i>	HNS
22:14	<i>Pipistrellus pipistrellus</i>	HNS, brief pass
22:16	<i>Pipistrellus pipistrellus</i>	HNS

Surveyor: AJ, CM **Temp C:** 13

Site: Transect 2 **Wind:** 0

Date: 10/05/2023 **Rain:** Recent rain

Sunset: 20:50 **Cloud:** 4

Start/end: 20:50 to
10:36

Timestamp	Species	Comment
21:45	<i>Pipistrellus pipistrellus</i>	Added post QA
21:55	<i>Pipistrellus pipistrellus</i>	HNS, two brief passes, likely commuting
22:16	<i>Pipistrellus pipistrellus</i>	Added post QA
22:19	<i>Pipistrellus pipistrellus</i>	H&S, one pipistrelle foraging around the trees
22:27	<i>Pipistrellus pipistrellus</i>	Added post QA

Surveyor: TC, MR **Temp C:** 14

Site: Transect 3 **Wind:** 0

Date: 11/05/2023 **Rain:** Recent rain

Sunset: 20:52 **Cloud:** 4

Start/end: 20:52 to
10:33

Timestamp	Species	Comment
21:30	<i>Pipistrellus pipistrellus</i>	H&S, foraging in corner of field
21:31	<i>Pipistrellus pipistrellus</i>	HNS, commuting
21:35	<i>Pipistrellus pipistrellus</i>	H&S, foraging around corner
21:38	<i>Pipistrellus pipistrellus</i>	HNS, several passes
21:50	<i>Pipistrellus pipistrellus</i>	HNS, faint passes
21:55	<i>Pipistrellus pipistrellus</i>	HNS, faint passes
22:00	<i>Pipistrellus pipistrellus</i>	HNS
22:01	<i>Myotis species</i>	HNS, brief pass
22:06	<i>Myotis species</i>	HNS, commuting
22:11	<i>Pipistrellus pipistrellus</i>	HNS, brief foraging pass
22:16	<i>Myotis species</i>	HNS

SUMMER

Surveyor: TC, IW Temp C: 15

Site: Transect 1 Wind: 1

Date: 25/07/2023 Rain: Dry

Sunset: 21:11 Cloud: 2

Start/end: 21:11 to
23:11

Timestamp	Species	Comment
21:12	<i>Pipistrellus pipistrellus</i>	H&S, commuting
21:55	<i>Pipistrellus pipistrellus</i>	H&S, continuous foraging along hedgerow
21:56	<i>Myotis species</i>	Added post QA
22:01	<i>Pipistrellus pipistrellus</i>	HNS, foraging
22:05	<i>Pipistrellus pipistrellus</i>	HNS, commuting
22:10	<i>Pipistrellus pipistrellus</i>	H&S, seen commuting into tree line
22:12	<i>Pipistrellus pipistrellus</i>	H&S, commuting
22:19	<i>Pipistrellus pipistrellus</i>	H&S, foraging along woodland edge
22:21	<i>Pipistrellus pipistrellus</i>	H&S, x2 bats foraging along woodland edge
21:56	<i>Myotis species</i>	Added post QA
22:28	<i>Pipistrellus pipistrellus</i>	Added post QA
22:35	<i>Pipistrellus pipistrellus</i>	HNS, commuting
22:41	<i>Pipistrellus pipistrellus</i>	HNS, foraging passes
22:49	<i>Plecotus auritus</i>	Added post QA
22:52	<i>Plecotus auritus</i>	Added post QA
22:57	<i>Nyctalus noctula</i>	HNS, commuting
22:59	<i>Myotis species</i>	Added post QA

23:00	<i>Pipistrellus pipistrellus</i>	Added post QA
23:05	<i>Pipistrellus pipistrellus</i>	H&S, continuous foraging along road
23:08	<i>Pipistrellus pipistrellus</i>	HNS foraging

Surveyor: KC, EB **Temp C:** 15

Site: Transect 2 **Wind:** 1

Date: 25/07/2023 **Rain:** Dry

Sunset: 21:11 **Cloud:** 2

Start/end: 21:11 to
23:11

Timestamp	Species	Comment
21:02	<i>Nyctalus noctula</i>	H&S, foraging activity. Circled tree for a while then disappears into canopy
21:23	<i>Nyctalus noctula</i>	H&S, foraging activity.
21:45	<i>Nyctalus noctula</i>	HNS
21:48	<i>Nyctalus noctula</i>	HNS, foraging
21:56	<i>Nyctalus noctula</i>	HNS, foraging
21:59	<i>Nyctalus noctula</i>	HNS, foraging
22:01	<i>Nyctalus noctula</i>	H&S, seen circling tree during listening point
22:21	<i>Nyctalus noctula</i>	HNS, continuous foraging throughout listening point
22:22	<i>Pipistrellus pipistrellus</i>	HNS, foraging
22:39	<i>Pipistrellus pipistrellus</i>	HNS
22:41	<i>Pipistrellus pipistrellus</i>	HNS, foraging
22:43	<i>Pipistrellus pipistrellus</i>	HNS, social calls
22:44	<i>Pipistrellus pipistrellus</i>	HNS, foraging
22:47	<i>Pipistrellus pipistrellus</i>	HNS, foraging

22:53 *Pipistrellus pipistrellus* HNS, foraging

22:56 *Pipistrellus pipistrellus* HNS

22:58 *Pipistrellus pipistrellus* HNS, foraging

Surveyor: TC, IW **Temp C:** 18

Site: Transect 3b **Wind:** 0

Date: 27/07/2023 **Rain:** Dry

Sunset: 21:09 **Cloud:** 2

Start/end: 21:09 to 23:09

Timestamp	Species	Comment
21:05	<i>Pipistrellus pipistrellus</i>	H&S, commuting above hedgerow
21:14	<i>Pipistrellus pipistrellus</i>	H&S, x2 bats foraging along tree line
21:21	<i>Pipistrellus pipistrellus</i>	H&S, commuting along tree line
21:46	<i>Nyctalus noctula</i>	HNS, very faint pass commuting
21:51	<i>Pipistrellus pipistrellus</i>	HNS, commuting
22:04	<i>Nyctalus noctula</i>	Added post QA
22:06	<i>Pipistrellus pipistrellus</i>	HNS, commuting
22:14	<i>Pipistrellus pygmaeus</i>	Added post QA
22:17	<i>Pipistrellus pipistrellus</i>	HNS, commuting, intermittent activity
22:24	<i>Nyctalus noctula</i>	Added post QA
22:24	<i>Pipistrellus pipistrellus</i>	HNS, commuting
22:27	<i>Pipistrellus pipistrellus</i>	HNS, commuting

22:30	<i>Pipistrellus pygmaeus</i>	Added post QA
22:31	<i>Pipistrellus pipistrellus</i>	HNS, commuting
22:37	<i>Pipistrellus pipistrellus</i>	HNS, very faint pass
22:45	<i>Pipistrellus pipistrellus</i>	HNS, commuting
22:47	<i>Myotis species</i>	Added post QA
22:51	<i>Pipistrellus pipistrellus</i>	HNS, commuting
22:55	<i>Myotis daubentonii</i>	Added post QA
22:55	<i>Myotis species</i>	Added post QA
22:55	<i>Pipistrellus pipistrellus</i>	HNS, foraging
23:01	<i>Pipistrellus pipistrellus</i>	HNS, foraging
23:06	<i>Myotis species</i>	Added post QA
23:06	<i>Pipistrellus pipistrellus</i>	HNS, commuting

AUTUMN

Surveyor:	TC, KW	Temp C:	16
Site:	Transect 1	Wind:	3
Date:	20/09/2023	Rain:	Dry, rain during the day
Sunset:	19:09	Cloud:	7
Start/end:	19:09 to 21:09		

Timestamp	Species	Comment
19:34	<i>Nyctalus noctula</i>	Heard not seen (HNS), several passes commuting activity
19:37	<i>Nyctalus noctula</i>	HNS, commuting pass
19:41	<i>Nyctalus noctula</i>	HNS
19:44	<i>Nyctalus noctula</i>	HNS, commuting pass

19:45	<i>Pipistrellus species</i>	Added post QA
19:47	<i>Pipistrellus pipistrellus</i>	H&S, foraging into field
19:48	<i>Pipistrellus pygmaeus</i>	HNS
19:50	<i>Pipistrellus pygmaeus</i>	HNS
19:55	<i>Nyctalus noctula</i>	Added post QA
20:04	<i>Myotis species</i>	Added post QA
20:10	<i>Nyctalus noctula</i>	Added post QA
20:10	<i>Pipistrellus pipistrellus</i>	HNS, foraging throughout listening point
20:12	<i>Noctule</i>	HNS, quick commuting pass
20:13	<i>Myotis species</i>	Added post QA
20:21	<i>Pipistrellus pipistrellus</i>	Added post QA
20:27	<i>Pipistrellus pipistrellus</i>	Added post QA
20:31	<i>Pipistrellus pipistrellus</i>	HNS, foraging activity
20:38	<i>Pipistrellus pipistrellus</i>	HNS, commuting passes along hedgerow
20:41	<i>Pipistrellus pygmaeus</i>	HNS, foraging along hedgerow
20:43	<i>Pipistrellus pipistrellus</i>	HNS, foraging along hedgerow
20:45	<i>Pipistrellus pygmaeus</i>	HNS, foraging along hedgerow
20:51	<i>Pipistrellus pipistrellus</i>	HNS, foraging activity
20:53	<i>Pipistrellus pipistrellus</i>	HNS, foraging along hedgerow
20:53	<i>Pipistrellus pipistrellus</i>	HNS, activity along hedgerow
20:57	<i>Pipistrellus pipistrellus</i>	HNS, constant foraging with numerous passes throughout listening point

21:06	<i>Pipistrellus pipistrellus</i>	HNS, commuting
21:06	<i>Nyctalus noctula</i>	HNS, commuting
21:11	<i>Nyctalus noctula</i>	Added post QA
21:39	<i>Pipistrellus pipistrellus</i>	Added post QA

Surveyor: MR, EB **Temp C:** 16

Site: Transect 2 **Wind:** 3

Date: 20/09/2023 **Rain:** Dry, rain during the day

Sunset: 19:09 **Cloud:** 7

Start/end: 19:09 to
21:09

Timestamp	Species	Comment
19:41	<i>Nyctalus noctula</i>	HNS
19:52	<i>Nyctalus noctula</i>	HNS
19:55	<i>Pipistrellus pipistrellus</i>	HNS, foraging
20:10	<i>Pipistrellus pipistrellus</i>	HNS, foraging
20:16	<i>Pipistrellus pipistrellus</i>	HNS, foraging
20:20	<i>Pipistrellus pipistrellus</i>	HNS, faint pass
20:22	<i>Pipistrellus pipistrellus</i>	Added post QA
20:25	<i>Nyctalus noctula</i>	HNS
20:28	<i>Pipistrellus pipistrellus</i>	HNS
20:32	<i>Pipistrellus pipistrellus</i>	HNS, foraging
20:44	<i>Pipistrellus pipistrellus</i>	HNS
20:49	<i>Nyctalus noctula</i>	HNS
20:56	<i>Pipistrellus pygmaeus</i>	HNS, foraging

20:59 *Pipistrellus pipistrellus* HNS

21:01 *Nyctalus noctula* HNS

Surveyor: MR, IW **Temp C:** 14

Site: Transect 3a **Wind:** 1

Date: 21/09/2023 **Rain:** Dry

Sunset: 19:06 **Cloud:** 2

Start/end: 19:06 to
21:06 (for
both
Transect 3a
and 3b)

Timestamp	Species	Comment
19:50	<i>Pipistrellus pygmaeus</i>	Added post QA
19:51	<i>Pipistrellus pipistrellus</i>	H&S, foraging
19:55	<i>Pipistrellus pipistrellus</i>	HNS
19:57	<i>Pipistrellus pipistrellus</i>	HNS, foraging
19:59	<i>Pipistrellus pipistrellus</i>	H&S, x3 bats foraging
20:06	<i>Pipistrellus pipistrellus</i>	HNS, foraging
20:12	<i>Pipistrellus pipistrellus</i>	H&S, x2 bats foarging
20:15	<i>Nyctalus noctula</i>	Added post QA
20:15	<i>Pipistrellus pygmaeus</i>	Added post QA
20:17	<i>Pipistrellus pipistrellus</i>	HNS, foraging
20:18	<i>Pipistrellus pipistrellus</i>	HNS, foraging
20:19	<i>Pipistrellus pipistrellus</i>	HNS, foraging

20:22	<i>Pipistrellus pygmaeus</i>	Added post QA
20:24	<i>Pipistrellus pipistrellus</i>	HNS, foraging
20:24	<i>Pipistrellus pipistrellus</i>	HNS, foraging
20:29	<i>Pipistrellus pipistrellus</i>	HNS, foraging

Surveyor:	MR, IW	Temp C:	14
Site:	Transect 3b	Wind:	1
Date:	21/09/2023	Rain:	Dry
Sunset:	19:06	Cloud:	2
Start/end: 19:06 to 21:26 (for both Transect 3a and 3b)			

Timestamp	Species	Comment
20:55	<i>Pipistrellus pipistrellus</i>	HNS, foraging multi passes
21:07	<i>Pipistrellus pipistrellus</i>	H&S, x2 bats foraging
21:13	<i>Pipistrellus pipistrellus</i>	HNS, foraging
21:17	<i>Myotis species</i>	HNS, foraging
21:19	<i>Pipistrellus pipistrellus</i>	Added post QA
21:24	<i>Pipistrellus pipistrellus</i>	HNS, foraging multi passes

Annex D Static Survey Results

Species abbreviations: PIPI - Common Pipistrelle, PIPY - Soprano Pipistrelle, PINA – Nathusius’ Pipistrelle, PISP – Common or Soprano Pipistrelle, NYNO - Noctule, NYSP - Noctule or Leisler’s, MYSP - Myotis species, MYDA – Daubenton’s Bat, PLAU - Brown Long-eared. BAI = Bat Activity Index; hrs/nt = hours per night.

Season	Night Temp. range	Location	Dates	PIPI	PINA	PIPY	PISP	NYNO	NYSP	MYSP	MYDA	PLAU	Total	Nights	hrs/nt	BAI per hr	Activity Level
Spring	7°C - 18°C	T1	10/05/2023 - 23/05/2023	9566	0	172	1	159	2	820	1	19	10740	13	9.5	87.0	Moderate-high
Spring	7°C - 18°C	T2	10/05/2023 - 23/05/2023	8840	0	14	3	8	1	69	5	3	8943	13	9.5	72.4	Moderate-high
Spring	7°C - 18°C	T3	10/05/2023 - 23/05/2023	3073	0	165	30	41	1	50	5	12	3377	13	9.5	27.3	Low
Summer	9°C - 19°C	T1	25/07/2023 - 04/08/2023	7423	0	310	6	138	13	602	0	24	8516	10	8	106.5	High
Summer	9°C - 19°C	T2	25/07/2023 - 04/08/2023	3682	2	26	13	116	0	423	0	6	4268	10	8	53.4	Moderate
Summer	9°C - 19°C	T3	27/07/2023 - 04/08/2023	6872	0	221	0	61	7	252	0	0	7418	8	10	92.7	High
Autumn	6°C - 10°C	T1	20/09/2023 - 28/09/2023	2503	0	487	3	38	3	386	0	6	3426	8	11.50	37.2	Low-moderate
Autumn	6°C - 10°C	T2	20/09/2023 - 28/09/2023	2742	0	654	11	83	0	80	0	13	3589	8	11.50	39.0	Moderate
Autumn	6°C - 10°C	T3	21/09/2023 - 28/09/2023	1565	2	24	38	35	0	28	0	24	1716	7	11.50	21.3	Low
TOTALS				36700	4	1901	104	520	25	1890	10	88	7382	140	191.5		

Annex E Valuing Bat Roosts Foraging and Commuting Habitats in Ecological Impacts Assessment

The conservation importance of the roosting, foraging and commuting bats present on site is based on the rarity of individual bat species, importance of their roosts, commuting and foraging habitats and overall importance of the bat assemblages (see Tables below) based on the analysis framework in CIEEM Guidelines for Ecological Impact Assessment (Ref. 19), and in the CIEEM Bat Mitigation Guidelines (Ref. 15) and using professional judgement.

Rarity Category (Central England/Midlands)

Rarity category	Species
Widespread	<ul style="list-style-type: none"> a. Common pipistrelle b. Soprano Pipistrelle c. Brown Long-eared bat
Widespread in many geographies but not as abundant in all	<ul style="list-style-type: none"> a. Daubenton's bat b. Natterer's bat c. Noctule d. Brandt's bat e. Whiskered bat
Rarer or restricted distribution	<ul style="list-style-type: none"> a. Leisler's bat b. Nathusius' pipistrelle c. Serotine (<i>Eptesicus serotinus</i>)
Rarest Annex II species and very rare	<ul style="list-style-type: none"> a. Barbastelle

Note, this excludes other UK bat species that are unlikely to occur within the Order limits based on their current distribution.

Assessing Conservation Importance of Bat Roosts¹

Rarity category (species in each category are determined by region)	Roost category						
	Feeding perches; night-roosts Individual or very small occasional/transitional/opportunistic roosts	Non-breeding day roosts (small numbers of species)	Mating sites (excluding individual trees) Small numbers of hibernating bats	Larger transitional roosts	Hibernation sites ⁴	Autumn Swarming sites	Maternity sites ³
Widespread	Site	Site	Site	Site/Local	District/County [larger hibernation sites rare in the UK]	District/County (very large pipistrelle swarming sites as yet unknown in the UK)	Unlikely to exceed District importance unless colonies are atypically large; importance increased for assemblages.
Widespread in many geographies but not as abundant in all	Site	Site	Site, dependent on local distribution [for Myotis, see swarming site column]	District	District/County importance dependent on size ² and number of species	County/Regional importance dependent on size ² importance increased for larger sites that serve larger numbers/species	County/Regional importance on size ² and local distribution; increased value for assemblages.

Rarity category (species in each category are determined by region)	Roost category						
	Feeding perches; night-roosts Individual or very small occasional/transitional/opportunistic roosts	Non-breeding day roosts (small numbers of species)	Mating sites (excluding individual trees) Small numbers of hibernating bats	Larger transitional roosts	Hibernation sites ⁴	Autumn Swarming sites	Maternity sites ³
Rarer or restricted distribution	Site (very well-used night roosts may be of District importance for some species)	Site/Local/District, dependent on local distribution	Site/Local/District, dependent on local distribution	District	District/County importance on size ² and local distribution; increased value for assemblages.	County/Regional importance on size ² and local distribution; increased value for assemblages.	County/Regional importance on size ² and local distribution; increased value for assemblages.
Rarest Annex II species and very rare	Site (very well-used night roosts may be of District importance for some species)	Site/Local/District, dependent on local distribution	Site/Local/District, dependent on local distribution	District	County/Regional importance on size ² and local distribution; increased value for assemblages.	County/Regional importance on size ² and local distribution; increased value for assemblages.	County/Regional importance on size ² and local distribution; increased value for assemblages.

¹ Sites within or functionally-linked to SACs are of International importance for Qualifying Species. Sites that *could* be functionally-linked to SACs may or may not have that level of importance (e.g. a Barbastelle maternity roost from a multi-component 'bat' SAC may be too far away to be a direct satellite of a maternity roost within the SAC, but may be part of the same population through intermediate unidentified roosts). Sites meeting SSSI guidelines are of National importance (though note that many SSSI citations do not reflect the 'bat' importance of the sites they describe).

- ² In all cases, 'size' needs to be interpreted as 'relative to typical sizes for the species'.
- ³ Satellite roosts (i.e. alternative roosts found in close proximity to the main nursery colony) should be considered with the associated main colony.
- ⁴ For tree-roosting bats that are likely to hibernate in small numbers (which means individual hibernation sites are difficult to detect and many may be missed), the importance of the roost resource (i.e. the extent of woodland which contains trees suitable for hibernation) rather than individual confirmed roosts, should be assessed.

Assessing the Importance of a Bat Assemblage

Sites of importance to bats often support several species, and it can be helpful to consider the importance of the assemblage as a whole after the individual bat species have been assessed. Assigning a level of importance to an assemblage provides contextual information only; it is not expected that the assemblage as a whole would be assessed as a single receptor.

Rarity category	Species and Score
Widespread	a. Common pipistrelle 1 point each b. Soprano Pipistrelle c. Brown Long-eared bat
Widespread in many geographies but not as abundant in all	a. Daubenton's bat 2 points each b. Natterer's bat c. Noctule d. Brandt's bat e. Whiskered bat
Rarer or restricted distribution	a. Leisler's bat 3 points each b. Nathusius' pipistrelle c. Serotine
Rarest Annex II species and very rare	a. Barbastelle 4 points
Maximum score	26
45%	County 12
55%	Regional 14
70%	National 18

Importance of Ecological Features

Importance of Ecological Features Typical descriptors and examples of criteria

International or European	<p>An internationally designated site or candidate site including SAC, candidate or possible SACs (cSACs or pSACs¹) where bats are cited as a qualifying feature.</p> <p>Resident or regularly occurring populations of species which may be considered at an international or European level² where:</p> <p>the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale;</p> <p>the population forms a critical part³ of a wider population at this scale; or</p> <p>the species is at a critical phase⁴ of its life cycle at this scale.</p>
UK or National	<p>Sites designated at UK or national level e.g. SSSI, where bats are included as an interest feature.</p> <p>Resident or regularly occurring populations of species which may be considered at a UK or a national level⁵ where:</p> <p>the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale;</p> <p>the population forms a critical part of a wider population at this scale; or</p> <p>the species is at a critical phase of its life cycle at this scale.</p>
Regional	<p>Populations of species of value at a regional level (i.e. Yorkshire and the Humber).</p> <p>Resident or regularly occurring populations of species which may be considered at a regional level⁶ where:</p> <p>the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale;</p> <p>the population forms a critical part of a wider population at this scale; or</p> <p>the species is at a critical phase of its life cycle at this scale.</p>
County or Unitary Authority or District	<p>Populations of species of value at a County (South Yorkshire) level or District (Doncaster).</p> <p>Resident or regularly occurring populations of species which may be considered at a County (or District) level where:</p> <p>the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale;</p>

Importance of Ecological Features Typical descriptors and examples of criteria

	<p>the population forms a critical part of a wider population at this scale; or, the species is at a critical phase of its life cycle at this scale.</p>
Local	<p>Species populations of value in a local (i.e. within ~ 5 km of the site) context.</p> <p>Areas of habitat or populations and, or communities of species considered to appreciably enrich the habitat resource within the local context (such as veteran trees), including features of value for migration, dispersal or genetic exchange.</p>
Site	<p>Habitat that is of value in the context of the site only.</p> <p>Populations of common and widespread species.</p>

- 1 pSACs are sites which have been formally advised by to UK Government but have not yet been submitted to the European Commission. These sites should be valued at an international (European) level on the basis that they meet the relevant selection criteria for a SAC but are not yet designated as such.
- 2 Such species include those listed within Council Directive 92/43/EEC on the Conservation of natural habitats and of wild flora and fauna (i.e. Habitats Directive).
- 3 Such populations include sub-populations that are essential to maintenance of metapopulation dynamics e.g. critical emigration/immigration links between otherwise discrete populations.
- 4 Seasonal activity or behaviour upon which survival or reproduction depends.
- 5 Species which may be considered at the UK or national level means; other animals which receive legal protection in the basis of their conservation interest (those listed within the Wildlife and Countryside Act 1981 (as amended) Schedule 5 and 8); species listed for their principal importance for biodiversity (in accordance with the NERC Act section 41 England); priority species listed within the UK Post 2010 Biodiversity Framework (i.e. UK BAP); or species listed within the Red Data Book.
- 6 Such species include those listed in the appropriate Natural Character Area and key/priority species listed on the 2002 HABAP.

As well as assigning importance there is also a need to identify all legally protected species that could be affected by the Scheme in order that measures can be taken to ensure that adherence to the relevant legislation is observed. This may include the adoption of mitigation and appropriate licensing which is acceptable to Natural England.



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